

This 2019 Integrated Resource Plan Report is based upon the best available information at the time of preparation. The IRP action plan will be implemented as described herein, but is subject to change as new information becomes available or as circumstances change. It is PacifiCorp's intention to revisit and refresh the IRP action plan no less frequently than annually. Any refreshed IRP action plan will be submitted to the State Commissions for their information.

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Cover Photos (Top to Bottom):

Marengo Wind Project Transmission Line Electric Meter Payant III Solar Plant

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APPENDIX A – LOAD FORECAST DETAILS

Introduction

This appendix reviews the load forecast used in the modeling and analysis of the 2019 Integrated Resource Plan (IRP), including scenario development for case sensitivities. The load forecast used in the IRP is an estimate of the energy sales, and peak demand over a 20-year period. The 20-year horizon is important to anticipate electricity demand in order to develop a timely response of resources.

In the development of its load forecast PacifiCorp employs econometric models that use historical data and inputs such as regional and national economic growth, weather, seasonality, and other customer usage and behavior changes. The forecast is divided into classes that use energy for similar purposes and at comparable retail rates. These separate customer classes include residential, commercial, industrial, irrigation, and lighting customer classes. The classes are modeled separately using variables specific to their usage patterns. For residential customers, typical energy uses include space heating, air conditioning, water heating, lighting, cooking, refrigeration, dish washing, laundry washing, televisions and various other end use appliances. Commercial and industrial customers use energy for production and manufacturing processes, space heating, air conditioning, lighting, computers and other office equipment.

Jurisdictional peak load forecasts are developed using econometric equations that relate observed monthly peak loads, peak producing weather and the weather-sensitive loads for all classes. The system coincident peak forecast, which is used in portfolio development, is the maximum load required on the system in any hourly period and is extracted from the hourly forecast model.

Summary Load Forecast

PacifiCorp updated its load forecast in September 2018. The compound annual energy growth rate for the 10-year period (2019 through 2028) is 0.87 percent. Relative to the load forecast prepared for the 2017 IRP Update, PacifiCorp 2028 energy forecasted energy requirement increased in all jurisdictions other than Wyoming and Idaho, while PacifiCorp system energy requirement increased approximately 3.15 percent. Figure A.1 has a comparison of energy forecasts from the 2019 IRP to the 2017 IRP Update.

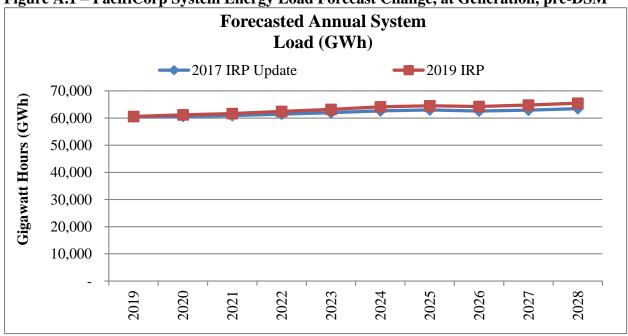


Figure A.1 – PacifiCorp System Energy Load Forecast Change, at Generation, pre-DSM

Table A.1 and Table A.2 show the annual load and coincident peak load forecast when not reducing load projections to account for new energy efficiency measures (Class 2 DSM). Table A.3 and Table A.4 show the forecast changes relative to the 2017 IRP Update load forecast for loads and coincident system peak, respectively.

Table A.1 Forecasted Annual Load, 2019 through 2028 (Megawatt-hours), at Generation, pre-DSM

Year	Total	OR	WA	CA	UT	WY	ID
2019	60,555,090	15,116,420	4,648,980	888,050	25,905,480	10,034,340	3,961,820
2020	61,200,990	15,458,460	4,683,290	894,090	26,240,960	9,947,800	3,976,390
2021	61,668,220	15,762,730	4,696,950	886,220	26,490,100	9,844,530	3,987,690
2022	62,430,120	16,073,620	4,724,840	883,300	26,889,210	9,851,110	4,008,040
2023	63,189,850	16,226,410	4,756,440	881,850	27,359,260	9,935,110	4,030,780
2024	64,099,060	16,422,560	4,802,810	882,180	27,876,700	10,058,210	4,056,600
2025	64,561,310	16,522,910	4,821,500	877,420	28,220,370	10,052,750	4,066,360
2026	64,235,860	16,669,290	4,855,450	873,460	27,647,290	10,110,510	4,079,860
2027	64,827,020	16,821,000	4,892,190	867,600	27,944,390	10,210,990	4,090,850
2028	65,443,430	17,016,870	4,944,450	863,690	28,255,530	10,260,170	4,102,720
	Compound Annual Growth Rate						
2019 - 2028	0.87%	1.32%	0.69%	-0.31%	0.97%	0.25%	0.39%

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¹ Class 2 demand-side management (DSM) load reductions are included as resources in the System Optimizer model.

Table A.2 – Forecasted Annual Coincident Peak Load (Megawatts) at Generation, pre-DSM

Year	Total	OR	WA	CA	UT	WY	ID			
2019	10,197	2,406	767	147	4,786	1,307	784			
2020	10,279	2,447	774	146	4,827	1,301	785			
2021	10,357	2,491	779	145	4,862	1,291	788			
2022	10,468	2,526	786	144	4,928	1,293	791			
2023	10,581	2,543	792	146	5,005	1,301	794			
2024	10,687	2,555	788	141	5,088	1,324	791			
2025	10,786	2,579	808	143	5,155	1,316	784			
2026	10,818	2,596	815	142	5,144	1,322	799			
2027	10,895	2,613	822	141	5,186	1,332	800			
2028	10,985	2,629	830	141	5,250	1,337	799			
	Compound Annual Growth Rate									
2019 - 2028	0.83%	0.99%	0.88%	-0.49%	1.03%	0.25%	0.21%			

Table A.3 – Annual Load Change: September 2018 Forecast less November 2017 Forecast (Megawatt-hours) at Generation, pre-DSM

(21208011000	regarrate notify at Generation, pro Delta											
Year	Total	OR	WA	CA	UT	WY	ID					
2019	106,560	(31,660)	46,810	(11,290)	33,630	28,140	40,930					
2020	516,600	286,760	60,670	2,420	211,460	(81,630)	36,920					
2021	715,580	544,030	76,140	2,350	279,490	(219,250)	32,820					
2022	978,340	757,450	90,500	3,300	389,520	(288,990)	26,560					
2023	1,206,810	803,410	103,860	5,170	556,490	(281,790)	19,670					
2024	1,437,060	851,760	113,690	6,560	712,080	(257,650)	10,620					
2025	1,556,540	893,570	120,030	8,490	842,170	(307,270)	(450)					
2026	1,657,600	947,910	127,000	8,850	905,310	(318,900)	(12,570)					
2027	1,904,560	1,004,000	137,810	6,900	1,069,810	(287,310)	(26,650)					
2028	1,998,380	1,062,760	152,300	3,490	1,157,930	(332,600)	(45,500)					

Table A.4 – Annual Coincident Peak Change: September 2018 Forecast less November 2017 Forecast (Megawatts) at Generation, pre-DSM

Year	Total	OR	WA	CA	UT	WY	ID
2019	192	50	10	(0)	101	27	4
2020	241	88	10	0	123	18	2
2021	248	123	12	(0)	111	3	(1)
2022	278	149	13	(0)	125	(5)	(4)
2023	314	157	15	(0)	155	(5)	(7)
2024	344	164	5	(3)	185	7	(15)
2025	366	173	17	(0)	194	(8)	(10)
2026	396	182	19	(0)	222	(10)	(16)
2027	433	192	20	(1)	253	(8)	(23)
2028	449	201	22	(3)	272	(14)	(29)

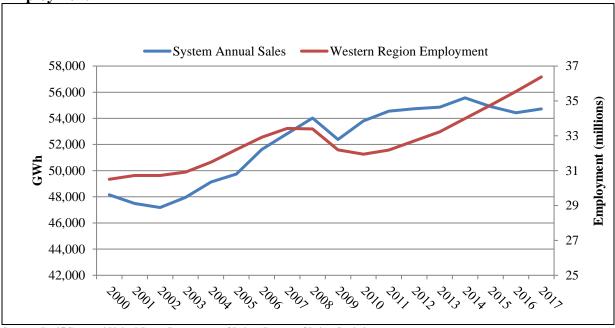
Load Forecast Assumptions

Regional Economy by Jurisdiction

The PacifiCorp electric service territory is comprised of six states and within these states the company serves customers in a total of 90 counties. The level of retail sales for each state and county is correlated with economic conditions and population statistics in each state. PacifiCorp

uses both economic data, such as employment, and population data, to forecast its retail sales. Looking at historical sales and employment data for PacifiCorp's service territory, 2000 through 2017, in Figure A.2, it is apparent that the company's retail sales are correlated to economic conditions in its service territory, and most recently the 2008-2009 recession.

Figure A.2 – PacifiCorp Annual Retail Sales 2000 through 2017 and Western Region Employment



Sources: PacifiCorp and United States Department of Labor, Bureau of Labor Statistics

The 2019 IRP forecast utilizes the February 2018 release of IHS Markit economic driver forecast; whereas the 2017 IRP Update relies on the February 2017 release from IHS Markit. As discussed below, although both the economic and demographic forecast is relatively unchanged from the 2017 IRP Update, the load forecast has increased. There are two changes which are driving the 2019 IRP load and peak forecast higher. First, higher projected demand from data centers are driving up the commercial forecast; whereas, a higher residential customer forecast is driving a higher residential forecast.

Figure A.3 shows the weather normalized average system residential use per customer. As illustrated, residential use per customer has been decreasing since 2010.



Figure A.3 – PacifiCorp Annual Residential Use per Customer 2001 through 2017

Residential use per customer across all six of PacifiCorp's states is changing due to increased energy efficiency driven primarily by lighting efficiency standards resulting from the 2007 Federal Energy legislation. In addition, there has been a shift from single-family and manufactured housing to multi-dwelling units and a trend of replacing older electric appliances with more energy efficient appliances.

Utah

PacifiCorp serves 26 of the 29 counties in the state of Utah, with Salt Lake City being the largest metropolitan area served by the company within the state. Utah is expected to experience an annual increase of 1.30 percent in non-farm employment over the next 10 years. Figure A.4 shows the change in population and employment forecasts between the 2017 IRP Update relative to the 2019 IRP forecast. This figure illustrates that the population forecast is slightly lower. The employment forecast is slightly higher over the 2019 through 2024 timeframe, while it is lower over the 2025 through 2028 timeframe. Relative to the load forecast prepared for the 2017 IRP Update, the Utah 2028 retail load forecast increased approximately 4.95 percent. This increase is attributable to higher projected demand from data centers driving up the commercial forecast and higher residential demand due to higher projected residential customers.

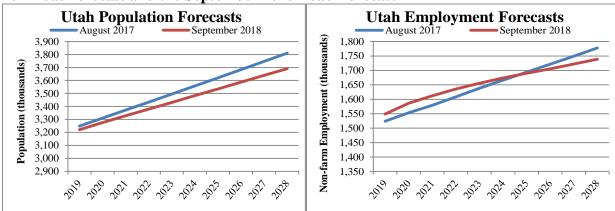
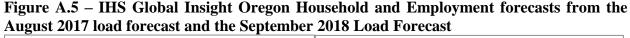
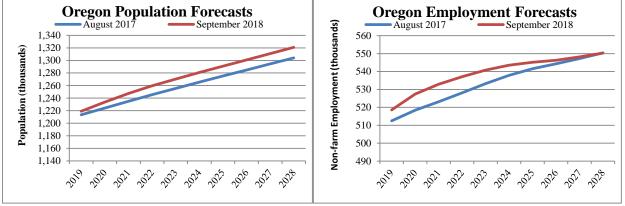


Figure A.4 – IHS Global Insight Utah Household and Employment forecasts from the August 2017 load forecast and the September 2018 Load Forecast

Oregon

PacifiCorp serves 25 of the 36 counties in Oregon, but provided only 26.6 percent of ultimate electric retail sales in the state of Oregon in 2017. Figure A.5 shows the change in population and employment forecasts for the 2017 IRP Update relative to the 2019 IRP forecast. This figure illustrates that the Oregon forecast of population and employment have both increased slightly. Relative to the load forecast prepared for the 2017 IRP Update, the Oregon 2028 retail load forecast has increased approximately 5.73 percent.





Wyoming

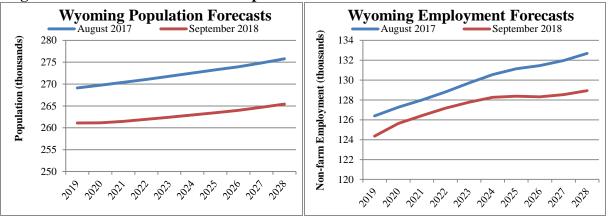
PacifiCorp serves 15 of the 23 counties in Wyoming, with Casper being the largest metropolitan area served by the company in the state. Industrial sales make up approximately 74 percent of PacifiCorp's Wyoming sales. Figure A.6 shows the change in population and employment forecasts for the 2017 IRP Update relative to the 2019 IRP forecast. This figure illustrates that the Wyoming population forecast used in the 2019 IRP forecast has decreased relative to the 2017 IRP Update. Similarly, the employment forecast has also decreased. Relative to the load forecast

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² Source: Oregon Public Utility Commission, 2017 Oregon Utility Statistics.

prepared for the 2017 IRP Update, the Wyoming 2028 retail load forecast decreased approximately 4.27 percent.

Figure A.6 – IHS Global Insight Wyoming Household and Employment forecasts from the August 2017 load forecast and the September 2018 Load orecast

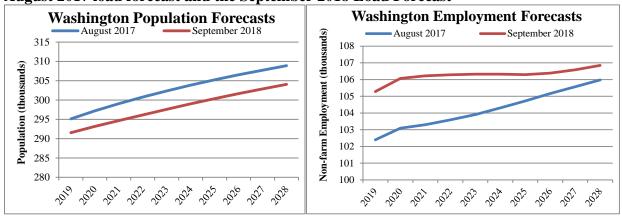


A risk to the Wyoming forecast is commodity prices, such as oil and natural gas, where volatility in prices and profitability can lead to swings in production and employment which translates to potential swings in the retail sales forecast.

Washington

PacifiCorp serves the following counties in Washington State: Benton, Columbia, Cowlitz, Garfield, Walla Walla, and Yakima. Yakima is the most populated county that the company serves in Washington State and has a large concentration of agriculture and food processing businesses. Residential and commercial sales are roughly equal in size each making up approximately 39 percent of PacifiCorp's Washington sales. Figure A.7 shows the change in population and employment forecasts for the 2017 IRP Update relative to the 2019 IRP forecast. This figure illustrates that the population forecast is lower, while the employment forecast has increased. Relative to the load forecast prepared for the 2017 IRP Update, the Washington 2028 retail load forecast increased approximately 1.78 percent.

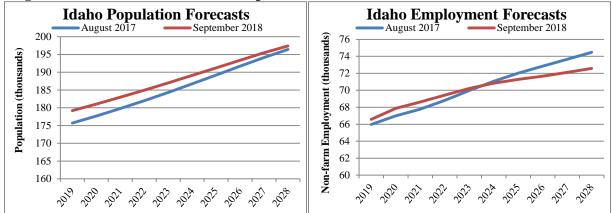
Figure A.7 – IHS Global Insight Washington Household and Employment forecasts from the August 2017 load forecast and the September 2018 Load Forecast



Idaho

PacifiCorp serves 14 of the 44 counties in the state of Idaho, with the majority of the company's service territory in rural Idaho. Industrial sales make up approximately 50 percent of the company's Idaho sales. Figure A.8 shows the change in population and employment forecasts for the 2017 IRP Update relative to the 2019 IRP forecast. This figure illustrates that the forecast for population has increased, while the employment forecast has increased over the 2019 to 2023 timeframe and declined over the 2024 to 2028 timeframe. Relative to the load forecast prepared for the 2017 IRP Update, the Idaho 2028 retail load forecast decreased approximately 1.32 percent.

Figure A.8 – IHS Global Insight Washington Household and Employment forecasts from the August 2017 load forecast and the September 2018 Load Forecast



California

The four northern California counties served by PacifiCorp are largely rural, which include Del Norte, Modoc, Shasta and Siskiyou Counties. Crescent City is the largest metropolitan area served by the company in California. Residential sales make up approximately 50 percent of the company's California sales. Figure A.9 shows the change in population and employment forecasts for the 2017 IRP Update relative to the 2019 IRP forecast. This figure illustrates that the population and employment forecasts have increased. Relative to the load forecast prepared for the 2017 IRP Update, the California 2028 retail load forecast increased 0.40 percent before energy efficiency (and decreased 0.85% after accounting for energy efficiency savings).

California Employment Forecasts **California Population Forecasts** September 2018 August 2017 August 2017 September 2018 Non-farm Employment (thousands) 78 32 **Bobolistics Approximate 1 Approximate 1 Approximate 2 Approximate 3 Approximate 4 Approximate 3 Approximate 4 Approximate 4** 31 30 29 28 27 26 71 25

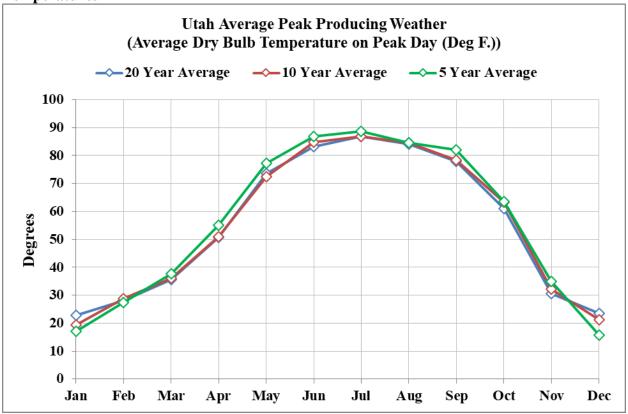
Figure A.9 – IHS Global Insight California Household and Employment forecasts from the August 2017 load forecast and the September 2018 Load Forecast

Weather

PacifiCorp's load forecast is based on normal weather defined by the 20-year time period of 1998-2017. The company updated its temperature spline models to the five-year time period of 2013-2017. PacifiCorp's spline models are used to model the commercial and residential class temperature sensitivity at varying temperatures.

PacifiCorp has reviewed the appropriateness of using the average weather from a shorter time period as its "normal" peak weather. Figure A.10 indicates that peak producing weather does not change significantly when comparing five, 10, or 20 year average weather.

Figure A.10 - Comparison of Utah 5, 10, and 20 Year Average Peak Producing Temperatures



Statistically Adjusted End-Use ("SAE")

PacifiCorp models sales per customer for the residential class using the SAE model, which combines the end-use modeling concepts with traditional regression analysis techniques. Major drivers of the SAE-based residential model are heating and cooling related variables, equipment shares, saturation levels and efficiency trends, and economic drivers such as household size, income and energy price. PacifiCorp uses ITRON for its load forecasting software and services, as well as SAE. To predict future changes in the efficiency of the various end uses for the residential class, an excel spreadsheet model obtained from ITRON was utilized; the model includes appliance efficiency trends based on appliance life as well as past and future efficiency standards. The model embeds all currently applicable laws and regulations regarding appliance efficiency, along with life cycle models of each appliance. The life cycle models, based on the decay and replacement rate are necessary to estimate how fast the existing stock of any given appliance turns over, i.e. newer more efficient equipment replacing older less efficient equipment. The underlying efficiency data is based on estimates of energy efficiency from the US Department of Energy's Energy Information Administration (EIA). The EIA estimates the efficiency of appliance stocks and the saturation of appliances at the national level and for individual Census Regions.

Individual Customer Forecast

PacifiCorp updated its load forecast for a select group of large industrial customers, self-generation facilities of large industrial customers, and data center forecasts within the respective jurisdictions.

Customer forecasts are provided by the customer to PacifiCorp through a regional business manager (RBM).

Actual Load Data

With the exception of the industrial class, PacifiCorp uses actual load data from January 2000 through February 2018. The historical data period used to develop the industrial monthly sales is from January 2000 through February 2018 in Utah, Wyoming, and Washington, January 2002 through February 2018 in Idaho, and January 2003 through February 2018 in California and January 2008 through February 2018 in Oregon.

The following tables are the annual actual retail sales, non-coincident peak, and coincident peak by state used in calculating the 2019 IRP retail sales forecast.

Table A.5 - Weather Normalized Jurisdictional Retail Sales 2000 through 2017

		System Reta	ail Sales - M	egawatt-hou	urs (MWh)*		
Year	California	Idaho	Oregon	Utah	Washington	Wyoming	System
2000	776,330	3,094,742	14,047,381	18,765,857	4,099,269	7,373,138	48,156,718
2001	778,256	2,987,391	13,529,960	18,490,759	4,020,032	7,680,903	47,487,300
2002	800,256	3,218,294	13,097,842	18,642,679	4,017,549	7,405,485	47,182,104
2003	819,413	3,243,349	13,071,848	19,279,071	4,067,427	7,471,935	47,953,042
2004	845,263	3,300,658	13,188,745	19,880,615	4,101,526	7,808,927	49,125,734
2005	835,878	3,232,797	13,199,197	20,253,628	4,211,933	8,011,258	49,744,691
2006	859,459	3,348,273	13,911,150	21,117,901	4,130,862	8,252,936	51,620,581
2007	874,813	3,384,194	14,023,385	21,983,724	4,076,966	8,481,524	52,824,605
2008	866,625	3,413,508	13,771,921	22,691,490	4,073,872	9,209,482	54,026,899
2009	828,967	2,965,022	13,128,912	22,157,832	4,048,793	9,258,055	52,387,581
2010	841,471	3,426,215	13,158,282	22,661,371	4,052,934	9,664,860	53,805,133
2011	803,462	3,472,522	13,029,055	23,457,892	4,018,089	9,765,559	54,546,579
2012	785,674	3,518,810	13,044,180	23,859,599	4,045,878	9,475,326	54,729,467
2013	775,001	3,549,834	13,081,879	23,839,238	4,059,599	9,551,554	54,857,105
2014	775,699	3,544,391	13,136,140	24,418,898	4,105,424	9,587,978	55,568,531
2015	747,798	3,468,932	13,093,004	24,117,031	4,102,238	9,377,276	54,906,279
2016	757,112	3,491,849	13,185,654	23,796,978	4,041,996	9,153,908	54,427,497
2017	760,943	3,574,912	13,164,078	23,707,035	4,080,132	9,433,527	54,720,628
		Con	npound Ann	ual Growth 1	Rate		
2000-17	-0.12%	0.85%	-0.38%	1.38%	-0.03%	1.46%	0.75%

^{*}System retail sales do not include sales for resale

Table A.6 - Non-Coincident Jurisdictional Peak 2000 through 2017

		Non-Coin	cident Peak	- Megawat	ts (MW)*		
Year	California	Idaho	Oregon	Utah	Washington	Wyoming	System
2000	176	686	2,603	3,684	785	1,062	8,995
2001	162	616	2,739	3,480	755	1,124	8,876
2002	174	713	2,639	3,773	771	1,113	9,184
2003	169	722	2,451	4,004	788	1,126	9,260
2004	193	708	2,524	3,862	920	1,111	9,318
2005	189	753	2,721	4,081	844	1,224	9,811
2006	180	723	2,724	4,314	822	1,208	9,970
2007	187	789	2,856	4,571	834	1,230	10,466
2008	187	759	2,921	4,479	923	1,339	10,609
2009	193	688	3,121	4,404	917	1,383	10,705
2010	176	777	2,552	4,448	893	1,366	10,213
2011	177	770	2,686	4,596	854	1,404	10,486
2012	159	800	2,550	4,732	797	1,338	10,376
2013	182	814	2,980	5,091	886	1,398	11,351
2014	161	818	2,598	5,024	871	1,360	10,831
2015	157	843	2,598	5,226	837	1,326	10,986
2016	155	848	2,584	5,018	819	1,300	10,724
2017	177	830	2,920	4,932	943	1,354	11,156
		Com	pound Anni	ual Growth 1	Rate		
2000-17	0.06%	1.13%	0.68%	1.73%	1.09%	1.44%	1.27%

^{*}Non-coincident peaks do not include sales for resale

Table A.7- Jurisdictional Contribution to Coincident Peak 2000 through 2017

		Coincid	lent Peak - I	Megawatts	(MW)*		
Year	California	Idaho	Oregon	Utah	Washington	Wyoming	System
2000	154	523	2,347	3,684	756	979	8,443
2001	124	421	2,121	3,479	627	1,091	7,863
2002	162	689	2,138	3,721	758	1,043	8,511
2003	155	573	2,359	4,004	774	1,022	8,887
2004	120	603	2,200	3,831	740	1,094	8,588
2005	171	681	2,238	4,015	708	1,081	8,895
2006	156	561	2,684	3,972	816	1,094	9,283
2007	160	701	2,604	4,381	754	1,129	9,730
2008	171	682	2,521	4,145	728	1,208	9,456
2009	153	517	2,573	4,351	795	987	9,375
2010	144	527	2,442	4,294	757	1,208	9,373
2011	143	549	2,187	4,596	707	1,204	9,387
2012	156	782	2,163	4,731	749	1,225	9,806
2013	156	674	2,407	5,091	797	1,349	10,474
2014	150	630	2,345	5,024	819	1,294	10,263
2015	152	805	2,472	5,081	833	1,259	10,601
2016	139	575	2,462	4,940	817	1,201	10,135
2017	152	593	2,547	4,911	787	1,306	10,296
		Com	pound Ann	ual Growth 1	Rate		
2000-17	-0.08%	0.74%	0.48%	1.70%	0.24%	1.71%	1.17%

^{*}Coincident peaks do not include sales for resale

System Losses

Line loss factors are derived using the five-year average of the percent difference between the annual system load by jurisdiction and the retail sales by jurisdiction. System line losses were updated to reflect actual losses for the five-year period ending December 31, 2017.

Forecast Methodology Overview

Class 2 Demand-side Management Resources in the Load Forecast

PacifiCorp modeled Class 2 DSM as a resource option to be selected as part of a cost-effective portfolio resource mix using the company's capacity expansion optimization model, System Optimizer. The load forecast used for IRP portfolio development excluded forecasted load reductions from Class 2 DSM; System Optimizer then determines the amount of Class 2 DSM—expressed as supply curves that relate incremental DSM quantities with their costs—given the other resource options and inputs included in the model. The use of Class 2 DSM supply curves, along with the economic screening provided by System Optimizer, determines the cost-effective mix of Class 2 DSM for a given scenario.

Modeling overview

The load forecast is developed by forecasting the monthly sales by customer class for each jurisdiction. The residential sales forecast is developed as a use-per-customer forecast multiplied by the forecast number of customers.

The customer forecasts are based on a combination of regression analysis and exponential smoothing techniques using historical data from January 2000 to February 2018. For the residential class, PacifiCorp forecasts the number of customers using IHS Global Insight's forecast of each state's number of population as the major driver.

For the 2019 IRP, PacifiCorp improved its residential customer forecasting methodology by adopting a differenced model approach in the development of the residential customer forecast. Rather than directly forecasting the number of customers as has been done in previous years, the differenced model predicts the monthly change in number of customers. The changes are accumulated and added to the initial number of customers to generate the final customer forecast. PacifiCorp had observed that directly forecasted customers, as done in previous years, consistently produced an under forecast of residential customers. PacifiCorp performed a historical comparison of the forecasted results using both methods against actual customer counts and determined the differenced model produced a more accurate customer forecast. As such the model was used to forecast load for the 2019 IRP, and resulted in an increase in the overall residential customer projections.

PacifiCorp models sales per customer for the residential class using the SAE model discussed above, which combines the end-use modeling concepts with traditional regression analysis techniques.

For the commercial class, the company forecasts sales using regression analysis techniques with non-manufacturing employment and non-farm employment designated as the major economic drivers, in addition to weather-related variables. Monthly sales for the commercial class are forecast directly from historical sales volumes, not as a product of the use per customer and number of customers. The development of the forecast of monthly commercial sales involves an additional step; to reflect the addition of a large "lumpy" change in sales such as a new data center, monthly commercial sales are increased based on input from PacifiCorp's RBM's. The treatment of large commercial additions is similar to the methodology for large industrial customer sales, which is discussed below.

Monthly sales for irrigation and street lighting are forecast directly from historical sales volumes, not as a product of the use per customer and number of customers.

The majority of industrial sales are modeled using regression analysis with trend and economic variables. Manufacturing employment is used as the major economic driver in all states with exception of Utah, in which an Industrial Production Index is used. For a small number of the very largest industrial customers, PacifiCorp prepares individual forecasts based on input from the customer and information provided by the RBM's.

After PacifiCorp develops the forecasts of monthly energy sales by customer class, a forecast of hourly loads is developed in two steps. First, monthly peak forecasts are developed for each state. The monthly peak model uses historical peak-producing weather for each state, and incorporates the impact of weather on peak loads through several weather variables that drive heating and cooling usage. The weather variables include the average temperature on the peak day and lagged average temperatures from up to two days before the day of the forecast. The peak forecast is based on average monthly historical peak-producing weather for the 20-year period, 1998 through 2017. Second, PacifiCorp develops hourly load forecasts for each state using hourly load models that include state-specific hourly load data, daily weather variables, the 20-year average temperatures as identified above, a typical annual weather pattern, and day-type variables such as weekends and holidays as inputs to the model. The hourly loads are adjusted to match the monthly peaks from the first step above. Hourly loads are then adjusted so the monthly sum of hourly loads equals monthly sales plus line losses.

After the hourly load forecasts are developed for each state, hourly loads are aggregated to the total system level. The system coincident peaks can then be identified, as well as the contribution of each jurisdiction to those monthly peaks.

Sales Forecast at the Customer Meter

This section provides total system and state-level forecasted retail sales summaries measured at the customer meter by customer class including load reduction projections from new energy efficiency measures from the Preferred Portfolio.

Table A.8 – System Annual Retail Sales Forecast 2019 through 2028, post-DSM

	Syster	m Retail Sal	es – Megav	vatt-hours (N	MWh)	·
Year	Residential	Commercial	Industrial	Irrigation	Lighting	Total
2019	16,212,700	18,034,090	18,920,232	1,466,024	133,696	54,766,743
2020	15,854,942	18,459,331	18,954,765	1,462,213	133,807	54,865,059
2021	15,638,202	18,734,789	18,834,645	1,458,187	132,854	54,798,677
2022	15,616,831	18,954,503	18,818,871	1,454,137	132,066	54,976,408
2023	15,631,036	19,074,719	18,859,396	1,449,880	131,097	55,146,128
2024	15,713,571	19,209,491	18,950,500	1,444,465	130,381	55,448,408
2025	15,659,140	19,230,120	18,896,281	1,437,742	128,815	55,352,098
2026	15,674,375	19,326,384	17,955,352	1,430,140	127,588	54,513,839
2027	15,702,419	19,410,838	18,013,973	1,421,958	126,313	54,675,500
2028	15,792,344	19,488,236	18,053,413	1,413,928	125,383	54,873,304
		Compound	d Annual Gr	owth Rate		
2019-28	-0.29%	0.87%	-0.52%	-0.40%	-0.71%	0.02%

Residential

Over the 2019-2028 timeframe, the average annual growth of the residential class sales forecast decreased from -0.28 percent in the 2017 IRP Update to -0.29 percent in the 2019 IRP. The number of residential customers across PacifiCorp's system is expected to grow at an annual average rate of 1.33 percent, reaching approximately 1.9 million customers in 2028, with Rocky Mountain Power states adding 1.64 percent per year and Pacific Power states adding 0.84 percent per year.

Commercial

Average annual growth of the commercial class sales forecast increased from 0.18 percent annual average growth in the 2017 IRP Update to 0.87 percent expected average annual growth. The number of commercial customers across PacifiCorp's system is expected to grow at an annual average rate of 0.95 percent, reaching approximately 233,000 customers in 2028, with Rocky Mountain Power states adding 1.20 percent per year and Pacific Power states adding 0.61 percent per year.

Industrial

Average annual growth of the industrial class sales forecast decreased from -0.23 percent annual average growth in the 2017 IRP Update to -0.52 percent expected annual growth. A portion of the company's industrial load is in the extractive industry in Utah and Wyoming; therefore, changes in commodity prices can impact the company's load forecast.

State Summaries

Oregon

Table A.9 summarizes Oregon state forecasted retail sales growth by customer class.

Table A.9 – Forecasted Retail Sales Growth in Oregon, post-DSM

	Orego	n Retail Sal	les – Megav	vatt-hours (I	MWh)	·
Year	Residential	Commercial	Industrial	Irrigation	Lighting	Total
2019	5,633,553	5,434,085	1,793,918	327,801	39,963	13,229,320
2020	5,585,633	5,629,864	1,801,507	327,928	40,220	13,385,151
2021	5,556,225	5,790,809	1,794,568	327,934	40,180	13,509,716
2022	5,556,664	5,918,154	1,786,929	327,933	40,220	13,629,900
2023	5,560,848	5,902,220	1,782,399	327,944	40,250	13,613,661
2024	5,585,036	5,896,025	1,782,806	327,778	40,386	13,632,030
2025	5,562,845	5,865,984	1,778,446	327,419	40,289	13,574,983
2026	5,564,157	5,851,239	1,781,633	327,076	40,308	13,564,414
2027	5,571,868	5,840,305	1,784,666	326,715	40,326	13,563,879
2028	5,605,191	5,846,409	1,791,562	326,393	40,460	13,610,015
		Compound	d Annual Gr	owth Rate		
2019-28	-0.06%	0.82%	-0.01%	-0.05%	0.14%	0.32%

Washington

Table A.10 summarizes Washington state forecasted retail sales growth by customer class.

Table A.10 – Forecasted Retail Sales Growth in Washington, post-DSM

	Washing	ton Retail S	Sales – Meg	awatt-hours	(MWh)	
Year	Residential	Commercial	Industrial	Irrigation	Lighting	Total
2019	1,592,714	1,578,131	784,573	158,742	9,629	4,123,789
2020	1,570,960	1,592,676	786,855	158,600	9,645	4,118,735
2021	1,554,764	1,588,547	783,146	158,437	9,592	4,094,486
2022	1,548,303	1,585,273	778,282	158,162	9,546	4,079,565
2023	1,545,173	1,580,260	773,376	157,836	9,484	4,066,130
2024	1,548,861	1,578,084	772,198	157,483	9,442	4,066,068
2025	1,540,807	1,566,204	768,629	157,091	9,342	4,042,072
2026	1,538,798	1,560,228	768,325	156,638	9,270	4,033,259
2027	1,537,675	1,556,561	768,111	156,191	9,197	4,027,735
2028	1,543,009	1,559,989	769,585	155,719	9,154	4,037,455
		Compound	d Annual Gr	owth Rate		
2019-28	-0.35%	-0.13%	-0.21%	-0.21%	-0.56%	-0.23%

California

Table A.11 summarizes California state forecasted sales growth by customer class.

Table A.11 – Forecasted Retail Sales Growth in California, post-DSM

	Califor	nia Retail Sa	ales – Mega	watt-hours	(MWh)	
Year	Residential	Commercial	Industrial	Irrigation	Lighting	Total
2019	367,897	235,353	58,162	85,073	1,862	748,349
2020	361,826	233,214	67,127	84,597	1,862	748,625
2021	355,511	229,650	66,226	84,195	1,848	737,430
2022	352,031	226,864	65,636	83,848	1,836	730,214
2023	349,717	223,699	64,992	83,434	1,820	723,662
2024	348,835	220,828	64,281	82,916	1,808	718,667
2025	345,089	216,362	63,212	82,405	1,782	708,850
2026	341,104	212,623	62,272	81,891	1,760	699,651
2027	335,738	208,827	61,282	81,350	1,738	688,935
2028	331,144	205,609	60,463	80,790	1,718	679,724
		Compound	d Annual Gr	owth Rate		
2019-28	-1.16%	-1.49%	0.43%	-0.57%	-0.90%	-1.06%

Utah

Table A.12 summarizes Utah state forecasted sales growth by customer class.

Table A.12 – Forecasted Retail Sales Growth in Utah, post-DSM

	Utah	Retail Sale	s – Megawa	tt-hours (M	(Wh)	
Year	Residential	Commercial	Industrial	Irrigation	Lighting	Total
2019	6,958,632	8,924,202	7,530,762	227,083	68,050	23,708,729
2020	6,722,640	9,127,823	7,641,629	226,518	67,972	23,786,583
2021	6,585,633	9,255,377	7,650,500	225,843	67,339	23,784,691
2022	6,586,282	9,355,618	7,689,331	225,172	66,786	23,923,189
2023	6,610,009	9,503,731	7,719,130	224,471	66,122	24,123,463
2024	6,664,829	9,652,768	7,763,907	223,747	65,575	24,370,827
2025	6,659,418	9,744,139	7,768,559	222,910	64,592	24,459,618
2026	6,686,629	9,887,868	6,828,384	222,092	63,782	23,688,755
2027	6,722,653	10,010,002	6,850,869	221,261	62,940	23,867,725
2028	6,788,210	10,091,495	6,900,904	220,444	62,269	24,063,321
		Compound	d Annual Gr	owth Rate		
2019-28	-0.28%	1.38%	-0.97%	-0.33%	-0.98%	0.17%

Idaho

Table A.13 summarizes Idaho state forecasted sales growth by customer class.

Table A.13 – Forecasted Retail Sales Growth in Idaho, post-DSM

	Idaho	Retail Sale	s – Megawa	att-hours (M	IWh)	
Year	Residential	Commercial	Industrial	Irrigation	Lighting	Total
2019	708,653	507,405	1,784,522	642,926	2,590	3,646,095
2020	699,473	517,175	1,784,139	640,292	2,580	3,643,660
2021	695,588	520,131	1,781,940	637,612	2,548	3,637,819
2022	697,223	524,387	1,780,536	634,963	2,518	3,639,627
2023	699,948	527,991	1,778,654	632,234	2,481	3,641,308
2024	706,271	531,511	1,777,222	628,727	2,446	3,646,179
2025	706,162	529,386	1,773,991	624,315	2,393	3,636,249
2026	709,090	527,395	1,771,600	619,091	2,345	3,629,521
2027	710,493	525,432	1,769,234	613,336	2,294	3,620,789
2028	710,115	525,478	1,767,661	607,711	2,249	3,613,214
		Compound	d Annual Gr	owth Rate		
2019-28	0.02%	0.39%	-0.11%	-0.62%	-1.55%	-0.10%

Wyoming

Table A.14 summarizes Wyoming state forecasted sales growth by customer class.

Table A.14 – Forecasted Retail Sales Growth in Wyoming, post-DSM

Wyoming Retail Sales – Megawatt-hours (MWh)						
Year	Residential	Commercial	Industrial	Irrigation	Lighting	Total
2019	951,251	1,354,914	6,968,294	24,398	11,603	9,310,460
2020	914,411	1,358,579	6,873,509	24,277	11,528	9,182,304
2021	890,481	1,350,275	6,758,266	24,167	11,347	9,034,535
2022	876,329	1,344,207	6,718,156	24,060	11,161	8,973,913
2023	865,341	1,336,818	6,740,843	23,962	10,940	8,977,905
2024	859,738	1,330,275	6,790,086	23,814	10,724	9,014,636
2025	844,820	1,308,045	6,743,444	23,601	10,416	8,930,325
2026	834,596	1,287,030	6,743,137	23,352	10,123	8,898,239
2027	823,992	1,269,711	6,779,811	23,106	9,818	8,906,437
2028	814,676	1,259,257	6,763,239	22,872	9,532	8,869,576
Compound Annual Growth Rate						
2019-28	-1.71%	-0.81%	-0.33%	-0.72%	-2.16%	-0.54%

Alternative Load Forecast Scenarios

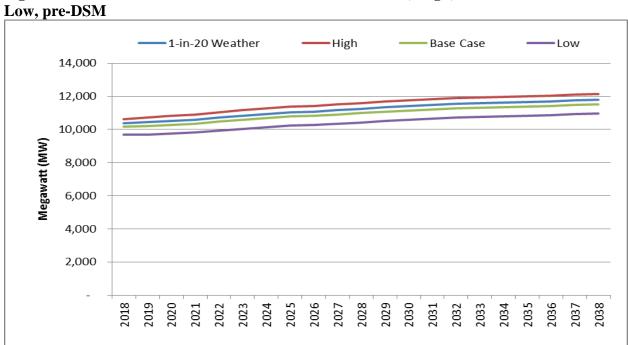
The purpose of providing alternative load forecast cases is to determine the resource type and timing impacts resulting from a change in the economy or system peaks as a result of higher than normal temperatures.

The September 2018 forecast is the baseline scenario. For the high and low load growth scenarios, optimistic and pessimistic economic driver assumptions from IHS Markit were applied to the economic drivers in PacifiCorp's load forecasting models. These growth assumptions were extended for the entire forecast horizon. Further, the high and low load growth scenarios also incorporate the standard error bands for the energy and the peak forecast to determine a 95 percent prediction interval around the base IRP forecast.

The 95 percent prediction interval is calculated at the system level and then allocated to each state and class based on their contribution to the variability of the system level forecast. The standard error bands for the jurisdictional peak forecasts were calculated in a similar manner. The final high load growth scenario includes the optimistic economic forecast plus the monthly energy adder and the monthly peak forecast with the peak adder. The final low load growth scenario includes the pessimistic economic forecast minus the monthly energy adder and monthly peak forecast minus the peak adder.

For the 1-in-20 year (5 percent probability) extreme weather scenario, PacifiCorp used 1-in-20 year peak weather for summer (July) months for each state. The 1-in-20 year peak weather is defined as the year for which the peak has the chance of occurring once in 20 years.

Figure A.11 shows the comparison of the above scenarios relative to the base case scenario.



APPENDIX B - IRP REGULATORY COMPLIANCE

Introduction

This appendix describes how PacifiCorp's 2019 Integrated Resource Plan (IRP) complies with (1) the various state commission IRP standards and guidelines, (2) specific analytical requirements stemming from acknowledgment orders for the company's 2017 Integrated Resource Plan (2017 IRP) and other ongoing IRP acknowledgement order requirements as applicable, and (3) state commission IRP requirements stemming from other regulatory proceedings.

Included in this appendix are the following tables:

- Table B.1 Provides an overview and comparison of the rules in each state for which IRP submission is required.¹
- Table B.2 Provides a description of how PacifiCorp addressed the 2017 IRP acknowledgement order requirements and other commission directives.
- Table B.3 Provides an explanation of how this plan addresses each of the items contained in the Oregon IRP guidelines.
- Table B.4 Provides an explanation of how this plan addresses each of the items contained in the Public Service Commission of Utah IRP Standard and Guidelines issued in June 1992.
- Table B.5 Provides an explanation of how this plan addresses each of the items contained in the Washington Utilities and Transportation Commission IRP guidelines issued in January 2006.
- Table B.6 Provides an explanation of how this plan addresses each of the items contained in the Wyoming Public Service Commission IRP guidelines updated in March 2016.

General Compliance

PacifiCorp prepares the IRP on a biennial basis and files the IRP with state commissions. The preparation of the IRP is done in an open public process with consultation from all interested parties, including commissioners and commission staff, customers, and other stakeholders. This open process provides parties with a substantial opportunity to contribute information and ideas in the planning process, and also serves to inform all parties on the planning issues and approach. The public input process for this IRP, described in Volume I, Chapter 2 (Introduction), as well as Volume II, Appendix C (Public Input Process) fully complies with IRP standards and guidelines.

The IRP provides a framework and plan for future actions to ensure PacifiCorp continues to provide reliable and least-cost electric service to its customers. The IRP evaluates, over a twenty-year planning period, the future load of PacifiCorp customers and the resources required to meet this load.

To fill any gap between changes in loads and existing resources, while taking into consideration potential early retirement of existing coal units as an alternative to investments that achieve

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¹ California Public Utilities Code Section 454.5 allows utility with less than 500,000 customers in the state to request an exemption from filing an IRP. However, PacifiCorp files its IRP and IRP supplements with the California Public Utilities Commission to address the company plan for compliance with the California RPS requirements.

compliance with environmental regulations, the IRP evaluates a broad range of available resource options, as required by state commission rules. These resource options include supply-side, demand-side, and transmission alternatives. The evaluation of the alternatives in the IRP, as detailed in Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) and Chapter 8 (Modeling and Portfolio Selection Results) meets this requirement and includes the impact to system costs, system operations, supply and transmission reliability, and the impacts of various risks, uncertainties and externality costs that could occur. To perform the analysis and evaluation, PacifiCorp employs a suite of models that simulate the complex operation of the PacifiCorp system and its integration within the Western interconnection. The models allow for a rigorous testing of a reasonably broad range of commercially feasible resource alternatives available to PacifiCorp on a consistent and comparable basis. The analytical process, including the risk and uncertainty analysis, fully complies with IRP standards and guidelines, and is described in detail in Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach).

The IRP analysis is designed to define a resource plan that is least-cost, after consideration of risks and uncertainties. To test resource alternatives and identify a least-cost, risk adjusted plan, portfolio resource options were developed and tested against each other. This testing included examination of various tradeoffs among the portfolios, such as average cost versus risk, reliability, customer rate impacts, and average annual carbon dioxide (CO₂) emissions. This portfolio analysis and the results and conclusions drawn from the analysis are described in Volume I, Chapter 8 (Modeling and Portfolio Selection Results).

Consistent with the IRP standards and guidelines of Oregon, Utah, and Washington, this IRP includes an Action Plan in Volume I, Chapter 9 (Action Plan). The Action Plan details near-term actions that are necessary to ensure PacifiCorp continues to provide reliable and least-cost electric service after considering risk and uncertainty. The Action Plan also provides a progress report on action items contained in the 2017 IRP and 2017 IRP Update.

The 2019 IRP and related Action Plan are filed with each commission with a request for acknowledgment or acceptance, as applicable. Acknowledgment or acceptance means that a commission recognizes the IRP as meeting all regulatory requirements at the time of acknowledgment. In a case where a commission acknowledges the IRP in part or not at all, PacifiCorp may modify and seek to re-file an IRP that meets their acknowledgment standards or address any deficiencies in the next plan.

State commission acknowledgment orders or letters typically stress that an acknowledgment does not indicate approval or endorsement of IRP conclusions or analysis results. Similarly, an acknowledgment does not imply that favorable ratemaking treatment for resources proposed in the IRP will be given.

California

Public Utilities Code Section 454.52, mandates that the California Public Utilities Commission (CPUC) adopt a process for load serving entities to file an IRP beginning in 2017. In February 2016, the CPUC opened a rulemaking to adopt an IRP process and address the scope of the IRP to be filed with the CPUC (Docket R.16.02.007).

Decision (D.) 18-02-018 instructed PacifiCorp to file an alternative IRP consisting of any IRP submitted to another public regulatory entity within the previous calendar year (Alternative Type

2 Load Serving Entity Plan). D. 18-02-018 also instructed PacifiCorp to provide an adequate description of treatment of disadvantaged communities, as well as a description of how planned future procurement is consistent with the 2030 Greenhouse Gas Benchmark.

On August 1, 2018, PacifiCorp resubmitted its 2017 IRP in compliance with D.18-02-018, and the CPUC approved PacifiCorp's resubmission in D.19-04-040 and deemed it to be in compliance.

On September 20, 2019 the CPUC issued a ruling in Docket R.16.02.007 setting forth proposed IRP filing requirements; CPUC Staff continues to recommend a nonstandard IRP filing plan for multi-jurisdictional utilities, including PacifiCorp. The company submitted comments in support of these filing requirements on October 14, 2019.

Idaho

The Idaho Public Utilities Commission's (Idaho PUC) Order No. 22299, issued in January 1989, specifies integrated resource planning requirements. This order mandates that PacifiCorp submit a Resource Management Report (RMR) on a biennial basis. The intent of the RMR is to describe the status of IRP efforts in a concise format, and cover the following areas:

Each utility's RMR should discuss any flexibilities and analyses considered during comprehensive resource planning, such as: (1) examination of load forecast uncertainties; (2) effects of known or potential changes to existing resources; (3) consideration of demand and supply side resource options; and (4) contingencies for upgrading, optioning and acquiring resources at optimum times (considering cost, availability, lead time, reliability, risk, etc.) as future events unfold.

This IRP is submitted to the Idaho PUC as the Resource Management Report for 2019, and fully addresses the above report components.

Oregon

This IRP is submitted to the Oregon Public Utility Commission (OPUC) in compliance with its planning guidelines issued in January 2007 (Order No. 07-002). The Oregon PUC's IRP guidelines consist of substantive requirements (Guideline 1), procedural requirements (Guideline 2), plan filing, review, and updates (Guideline 3), plan components (Guideline 4), transmission (Guideline 5), conservation (Guideline 6), demand response (Guideline 7), environmental costs (Guideline 8, Order No. 08-339), direct access loads (Guideline 9), multi-state utilities (Guideline 10), reliability (Guideline 11), distributed generation (Guideline 12), resource acquisition (Guideline 13), and flexible resource capacity (Order No. 12-013²). Consistent with the earlier guidelines (Order 89-507), the Oregon PUC notes that acknowledgment does not guarantee favorable ratemaking treatment, only that the plan seems reasonable at the time acknowledgment is given. Table B.3 provides detail on how this plan addresses each of the requirements.

Utah

This IRP is submitted to the Public Service Commission of Utah in compliance with its 1992 Order on Standards and Guidelines for Integrated Resource Planning (Docket No. 90-2035-01, "Report

² Public Utility Commission of Oregon, Order No. 12-013, Docket No. 1461, January 19, 2012.

and Order on Standards and Guidelines"). Table B.4 documents how PacifiCorp complies with each of these standards.

Washington

This IRP is submitted to the Washington Utilities and Transportation Commission (WUTC) in compliance with its rule requiring least cost planning (Washington Administrative Code 480-100-238) (as amended, January 2006). In addition to a least cost plan, the rule requires provision of a two-year action plan and a progress report that "relates the new plan to the previously filed plan."

The rule requires PacifiCorp to submit a work plan for informal commission review not later than 12 months prior to the due date of the plan. The work plan is required to lay out the contents of the IRP, the resource assessment method, and timing and extent of public participation. PacifiCorp filed a work plan with the WUTC on March 28, 2018, in Docket UE-180259. Table B.5 provides detail on how this IRP addresses each of the rule requirements.

Wyoming

Wyoming Public Service Commission issued new rules that replaced the previous set of rules on March 21, 2016. Chapter 3, Section 33 outlines the requirements on filing IRPs for any utility serving Wyoming customers. The rule, shown below, went into effect in March 2016. Table B.6 provides detail on how this plan addresses the rule requirements.

Section 33. Integrated Resource Plan (IRP).

Each utility serving in Wyoming that files an IRP in another jurisdiction shall file that IRP with the Commission. The Commission may require any utility to file an IRP.

Table B.1 – Integrated Resource Planning Standards and Guidelines Summary by State

Topic	Oregon	Utah	Washington	Idaho	Wyoming
Source	Order No. 07-002, Investigation Into Integrated Resource Planning, January 8, 2007, as amended by Order No. 07-047. Order No. 08-339, Investigation into the Treatment of CO2 Risk in the Integrated Resource Planning Process, June 30, 2008. Order No. 09-041, New Rule OAR 860-027-0400, implementing Guideline 3, "Plan Filing, Review, and Updates". Order No. 12-013, "Investigation of Matters related to Electric Vehicle Charging", January 19, 2012.	Docket 90-2035-01 Standards and Guidelines for Integrated Resource Planning June 18, 1992.	WAC 480-100-251 Least cost planning, May 19, 1987, and as amended from WAC 480-100-238 Least Cost Planning Rulemaking, January 9, 2006 (Docket # UE-030311)	Order 22299 Electric Utility Conservation Standards and Practices January, 1989.	Wyoming Electric, Gas and Water Utilities, Chapter 3, Section 33, March 21, 2016.
Filing Requirements	Least-cost plans must be filed with the Oregon PUC.	An IRP is to be submitted to commission.	Submit a least cost plan to the WUTC. Plan to be developed with consultation of WUTC staff, and with public involvement.	Submit Resource Management Report on planning status. Also file progress reports on conservation, low-income programs, lost opportunities and capability building.	Each utility serving in Wyoming that files and IRP in another jurisdiction, shall file the IRP with the commission.

Frequency	Plans filed biennially, within two years of its previous IRP acknowledgment order. An annual update to the most recently acknowledged IRP is required to be filed on or before the one-year anniversary of the acknowledgment order date. While informational only, utilities may request acknowledgment of proposed changes to the action plan.	File biennially.	File biennially.	RMR to be filed at least biennially. Conservation reports to be filed annually. Low income reports to be filed at least annually. Lost Opportunities reports to be filed at least annually. Capability building reports to be filed at least annually.	The commission may require any utility to file an IRP.
Commission Response	Least-cost plan (LCP) acknowledged if found to comply with standards and guidelines. A decision made in the LCP process does not guarantee favorable rate-making treatment. The OPUC may direct the utility to revise the IRP or conduct additional analysis before an acknowledgment order is issued. Note, however, that Rate Plan legislation allows pre-approval of near-term resource investments.	IRP acknowledged if found to comply with standards and guidelines. Prudence reviews of new resource acquisitions will occur during rate making proceedings.	The plan will be considered, with other available information, when evaluating the performance of the utility in rate proceedings. WUTC sends a letter discussing the report, making suggestions and requirements and acknowledges the report.	Report does not constitute pre-approval of proposed resource acquisitions. Idaho sends a short letter stating that they accept the filing and acknowledge the report as satisfying commission requirements.	Commission advisory staff reviews the IRP as directed by the Commission and drafts a memo to report its findings to the commission in an open meeting or technical conference.

Process	The public and other utilities are allowed significant involvement in the preparation of the plan, with opportunities to contribute and receive information. Order 07-002 requires that the utility present IRP results to the Oregon PUC at a public meeting prior to the deadline for written public comments. Commission staff and parties should complete their comments and recommendations within six months after IRP filing. Competitive secrets must be protected.	Planning process open to the public at all stages. IRP developed in consultation with the commission, its staff, with ample opportunity for public input.	In consultation with WUTC staff, develop and implement a public involvement plan. Involvement by the public in development of the plan is required. PacifiCorp is required to submit a work plan for informal commission review not later than 12 months prior to the due date of the plan. The work plan is to lay out the contents of the IRP, resource assessment method, and timing and extent of public participation.	Utilities to work with commission staff when reviewing and updating RMRs. Regular public workshops should be part of process.	The review may be conducted in accordance with guidelines set from time to time as conditions warrant. The Public Service Commission of Wyoming, in its Letter Order on PacifiCorp's 2008 IRP (Docket No. 2000-346-EA-09) adopted commission Staff's recommendation to expand the review process to include a technical conference, an expanded public comment period, and filing of reply comments.
Focus	20-year plan, with endeffects, and a short-term (two-year) action plan. The IRP process should result in the selection of that mix of options which yields, for society over the long run, the best combination of expected costs and variance of costs.	20-year plan, with short-term (four-year) action plan. Specific actions for the first two years and anticipated actions in the second two years to be detailed. The IRP process should result in the selection of the optimal set of resources given the expected combination of costs, risk and uncertainty.	20-year plan, with short-term (two-year) action plan. The plan describes mix of resources sufficient to meet current and future loads at "lowest reasonable" cost to utility and ratepayers. Resource cost, market volatility risks, demand-side resource uncertainty, resource dispatchability, ratepayer risks, policy impacts, and environmental risks, must be considered.	20-year plan to meet load obligations at least-cost, with equal consideration to demand side resources. Plan to address risks and uncertainties. Emphasis on clarity, understandability, resource capabilities and planning flexibility.	Identification of least-cost/least-risk resources and discussion of deviations from least-cost resources or resource combinations.

Elements

Basic elements include:

- All resources evaluated on a consistent and comparable basis.
- Risk and uncertainty must be considered.
- The primary goal must be least cost, consistent with the long-run public interest.
- The plan must be consistent with Oregon and federal energy policy.
- External costs must be considered, and quantified where possible. OPUC specifies environmental adders (Order No. 93-695, Docket UM 424).
- Multi-state utilities should plan their generation and transmission systems on an integratedsystem basis.
- Construction of resource portfolios over the range of identified risks and uncertainties.
- Portfolio analysis shall include fuel transportation and

IRP will include:

- Range of forecasts of future load growth
- Evaluation of all present and future resources, including demand side, supply side and market, on a consistent and comparable basis.
- Analysis of the role of competitive bidding
- A plan for adapting to different paths as the future unfolds.
- A cost effectiveness methodology.
- An evaluation of the financial, competitive, reliability and operational risks associated with resource options, and how the action plan addresses these risks.
- Definition of how risks are allocated between ratepayers and shareholders

The plan shall include:

- A range of forecasts of future demand using methods that examine the effect of economic forces on the consumption of electricity and that address changes in the number, type and efficiency of electrical end-uses.
- An assessment of commercially available conservation, including load management, as well as an assessment of currently employed and new policies and programs needed to obtain the conservation improvements.
- Assessment of a wide range of conventional and commercially available nonconventional generating technologies
- An assessment of transmission system capability and reliability.
- A comparative evaluation of energy supply resources (including transmission and distribution) and improvements in conservation using

Discuss analyses considered including:

- Load forecast uncertainties;
- Known or potential changes to existing resources;
- Equal consideration of demand and supply side resource options;
- Contingencies for upgrading, optioning and acquiring resources at optimum times;
- Report on existing resource stack, load forecast and additional resource menu.

Proposed Commission Staff guidelines issued July 2016 cover:

- Sufficiency of the public comment process
- Utility strategic goals, resource planning goals and preferred resource portfolio
- Resource need over the near-term and longterm planning horizons
- Types of resources considered
- Changes in expected resource acquisitions and load growth from the previous IRP
- Environmental impacts considered
- Market purchase evaluation
- Reserve margin analysis
- Demand-side management and conservation options

Table B.2 – Handling of 2017 IRP Acknowledgment and Other IRP Requirements

IRP Requirement or Recommendation	How the Requirement or Recommendation is
Kecommendadon	Addressed in the 2019 IRP
	Addressed in the 2019 IXI
Expect the company to consider public input meeting process concerns raised in the 2017 IRP as related to the Energy Vision 2020 projects and continue to evaluate all resource options and the best interest of customers when developing the 2019 IRP.	For the 2019 IRP, PacifiCorp expanded the public-input meeting process from seven to 18 public-input meetings and presented its preferred portfolio and draft action plan at the October 3-4, 2019 public-input meeting. See Volume II, Appendix C (Public Input Process).
The company should let its modeling fully assess when a coal plant should be retired, and provide resource portfolios that are least-cost based on modeling, and not assumed coal plan retirement.	Recognizing limitations in modeling regarding endogenous transmission retirements, PacifiCorp conducted comprehensive coal studies as part of its 2019 IRP. See Volume I, Chapter 8 (Modeling and Portfolio Selection Results) and Volume II, Appendix R (Coal Studies) in particular for more information.
Expect the company to continue improving its forecasting methodologies by analyzing a broad and diverse range of measures to avoid disadvantageous or unfair forecasting treatment of certain resources over others, including coal and wind.	See Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach).
Beginning in the third quarter of 2014, PacifiCorp will appear before the Commission to provide quarterly updates on coal plant compliance requirements, legal proceedings, pollution control investments, and other major capital expenditures on its coal plants or transmission projects. PacifiCorp may provide a written report and need not appear if there are no significant changes between the quarterly updates.	Order No. 14-288 modified the requirements, moving the date of the first meeting from the third quarter of 2014 to the fourth quarter of 2014. Order No. 16-071 further streamlined this requirement by requiring the company to continue to provide twice yearly updates on the status of demand-side management (DSM) IRP acquisition goals at public meetings and include in these updates information on future coal plant and transmission investment decisions. Also include information on 111(d) rule compliance analysis; Environmental/coal and transmission expenditures quarterly presentations were made at Commission special public meetings on October 28, 2014 and March 16, 2015. Quarterly presentations via written reports were provided on June 30, 2015 and October 1, 2015. The 2015 fourth quarter presentation was made at the Commission special public meeting on December 17, 2015. A biannual DSM update was provided at the Commission public meetings on March 10, 2015 and December 15, 2015
ii ii E c c c I T f b F r r E ii n a d ti c E F C u n p o c F n n	nput meeting process concerns raised in the 2017 IRP as related to the Energy Vision 2020 projects and continue to evaluate all resource options and the best interest of customers when developing the 2019 IRP. The company should let its modeling fully assess when a coal plant should be retired, and provide resource cortfolios that are least-cost based on modeling, and not assumed coal plant retirement. Expect the company to continue interior methodologies by analyzing a broad and diverse range of measures to avoid disadvantageous or unfair forecasting reatment of certain resources over others, including coal and wind. Beginning in the third quarter of 2014, PacifiCorp will appear before the Commission to provide quarterly apdates on coal plant compliance equirements, legal proceedings, collution control investments, and other major capital expenditures on its coal plants or transmission projects. PacifiCorp may provide a written eport and need not appear if there are no significant changes between the

Reference	IRP Requirement or Recommendation	How the Requirement or Recommendation is Addressed in the 2019 IRP
Reference	Recommendation	expenditures/111(d) and DSM were provided on August 30, 2016 and December 20, 2016.
		Please see Commission website for public meeting history and Docket RE 163 for presentations and written reports provided.
Order No. 14-252, p. 3	In future IRPs, PacifiCorp will provide: • Timelines and key decision points for expected pollution control options and transmission investments; and • Tables detailing major planned expenditures with estimated costs in each year for each plant or transmission project, under different modeled scenarios.	PacifiCorp has included two Regional Haze scenarios in the 2019 IRP. See Volume II, Appendix M (Case Study Fact Sheets) for discussion on specific Regional Haze assumptions. For modeling purposes PacifiCorp has included incremental transmission costs associated with specific resources. See Volume I, Chapter 6 (Resource Options) for discussion of these potential costs.
		Additional detail is provided on the data discs included with the 2019 IRP filing.
Order No. 14-252, p. 13	In the acknowledgement order the Commission provided the following recommendation: As part of the 2015, 2017, and 2019 IRPs, PacifiCorp will provide an updated version of the screening tool spreadsheet model that was provided to participants in the 2011 (docket LC 52) IRP Update.	The screening tool is no longer used to model competing retirement scenarios. In the 2019 IRP, PacifiCorp conducted comprehensive coal studies. See Volume I, Chapter 8 (Modeling and Portfolio Selection Results) and Volume II, Appendix R (Coal Studies) in particular for more information.
Order No. 14-252, p. 16	In future IRPs, PacifiCorp will provide yearly Demand Response (Class 1) and Energy Efficiency (Class 2) DSM acquisition targets in both GWh and MW for each year in the planning period, by state.	See Volume II, Appendix D (Demand-Side Management Resources) for the breakdown by state and year for both energy and capacity selected for the preferred portfolio.
Order No. 16-071, p. 4	The Commission expects the company to update its Clean Power Plan modeling in its 2015 IRP update or its next IRP (depending on when Oregon's compliance plan is known) to correctly reflect the final rule and Oregon's implementation plan.	PacifiCorp's 2019 IRP notes that the Clean Power Plan rule is stayed and that no implementation plans or compliance measures impacted the 2019 IRP.
Order No. 16-071, p. 5	In addition to the action item 3a irrigation pilot program, the Oregon PUC directs PacifiCorp to design and present additional pilots.	PacifiCorp presented information on potential demand response pilot opportunities at the Oregon PUC's August 16, 2016 public input meeting and explained that the 2017 IRP would inform whether the company would propose additional pilot programs.
Order No. 16-071, Appendix A, p.1 (action item 3b)	Continue to provide twice yearly updates on the status of DSM IRP acquisition goals at public meetings. Include in these updates information on future coal plant and transmission investment decisions, as a streamlined continuation of Order No. 14-288.	PacifiCorp provided updates on the status of DSM acquisition goals to the Oregon PUC on October 5, 2018 and August 5, 2019. PacifiCorp did not conduct a sensitivity on accelerated DSM in the 2019 IRP.

	IRP Requirement or	How the Requirement or Recommendation is
Reference	Recommendation Also include information on 111 (d)	Addressed in the 2019 IRP See Volume I, Chapter 8 (Modeling Portfolio
	rule compliance analysis; Provide more risk analysis on portfolios that include accelerated energy efficiency as a resource; Include annual incremental summer and winter peak demand capacity (MW) corresponding to 2015 through 2018 Energy Efficiency (Class 2) DSM annual energy savings targets; For the 2015 IRP Update, provide model run results of the preferred portfolio with base case DSM and with accelerated DSM for comparison purposes;	Selection Results) for the annual summer and winter peak demand capacity (MW) for Energy Efficiency DSM.
	Perform stochastic modeling on all portfolios with accelerated DSM.	
Order No. 16-071, Appendix A, p.2 (action item 5a) and Order No. 16- 071, p. 9.	Continue permitting Energy Gateway Segments D, E, F, and H until PacifiCorp files its 2017 IRP. The Oregon PUC acknowledges this action item only to the extent of PacifiCorp's permitting actions. The Oregon PUC expects to see updated analysis in the next IRP or before the company makes significant commitments to these transmission lines.	See Chapter 4 (Transmission), Chapter 7 (Modeling and Portfolio Evaluation Approach), Chapter 8 (Modeling and Portfolio Selection Results), and Chapter 9 (Action Plan) for updated analysis on the company's Energy Gateway transmission segments. See also Volume II, Appendix M (Case Fact Sheets Overview) for additional detail regarding the Energy Gateway transmission segments studied in the 2019 IRP.
Order No. 16-071, Appendix A, p.2 (additional actions - modeling)	 Include more robust analysis regarding the west BAA winter peak load/resource balance and portfolios to meet this peak load; Provide quantitative justification for the planning reserve margin of 13 percent; 	 See Volume I, Chapter 8 (Modeling and Portfolio Selection Results) including winter and summer peak load and resource tables. See Volume II, Appendix I (Planning Reserve Margin Study). The study concludes with a planning criteria that meets one day in 10 year planning targets at the lowest reasonable cost.
	3. Utilize the Balancing Authority's Area Control Error (ACE) Limit (BAAL) NERC standard in forthcoming wind integration studies, and confirm and demonstrate that the study is based on implementation of the BAAL standard;	 The company's Flexible Reserve Study (Appendix H) incorporates the specific requirements of the BAAL standard (BAL-001-2). Regional haze compliance is embedded in the portfolio-development process. Top performing portfolios reflected in PacifiCorp's 2019 IRP reflect consistent
	Use the same regional haze assumptions when directly comparing portfolios.	regional haze compliance requirements.

	IRP Requirement or	How the Requirement or Recommendation is
Reference	Recommendation	Addressed in the 2019 IRP
Order No. 18-138, Appendix A p. 19	PacifiCorp must: 1. Provide an updated economic analysis with the request for acknowledgement of the final shortlist from the 2017R RFP	 RFP information was provided in the 2017 IRP Update, Chapter 7 (Energy Vision 2020 Update). An update on Energy Vision 2020 was provided in the 2017 IRP Update, Chapter 7 (Energy Vision 2020 Update).
	2. Update its analysis of the Energy Vision 2020 projects as part of its 2017 IRP Update, including any changes resulting from the 2017R RFP or changes to critical assumptions, such as availability of tax credits corporate tax rate, then-current cost-and-performance data for repowered wind resources, cost-and-performance data from the 2017R RFP final shortlist, and cost assumptions for the transmission projects; and	3. PacifiCorp has provided quarterly updates in Docket No. LC-70 starting July 11, 2018. Subsequent updates were provided on October 30, 2018, January 7, 2019, May 7, 2019 and August 2, 2019.
	3. Provide quarterly updates to the Oregon PUC and Staff as development of the projects chosen in the 2017R RFP and the transmission projects proceed (through the date the projects go into service).	
Order No. 18-138, Appendix A p. 20	PacifiCorp must provide the Dave Johnston early retirement transmission analysis to the Oregon PUC and parties in LC 67 once the third-party review and validation has been finalized.	See 2017 IRP Update Filing, Chapter 6 (Portfolio Development).
Order No. 18-138, Appendix A p. 20	1. PacifiCorp is to report back in its 2017 IRP Update as to the current and forecasted use of front office transactions through 2036 and any changes in assumptions impacting front office transaction use from the initial filing of LC 67 in April 2017. 2. PacifiCorp should repeat its study of trading hub liquidity and also the market reliance risk analysis of front office transactions prior to the 2019 IRP.	See 2017 IRP Update Filing, Chapter 5 (Modeling and Assumptions Update). See 2019 IRP, Volume II, Appendix J (Western Resource Adequacy Evaluation) for an updated study. See Volume I, Chapter 8 (Modeling and Portfolio Selection Results).
Order No. 18-138,	3. For the 2019 IRP, if a generating resource is included in the preferred portfolio with an associated action item, then PacifiCorp will report on the cost and risk tradeoffs between the preferred portfolio and alternatives that do not include a generating resource. 1. PacifiCorp, in coordination with	PacifiCorp conducted an analysis in cooperation
Appendix A p. 21 as modified by Order No. 18-420	staff and the Energy Trust of Oregon (ETO) will conduct an analysis before the 2019 IRP that identifies and	with Navigant and the Energy Trust of Oregon as part of the 2019 IRP analysis. The report with recommendations was presented at public-input

Reference	IRP Requirement or	How the Requirement or Recommendation is
Order No. 18-138, Appendix A p. 21	compares the ongoing differences between ETO and PacifiCorp's near to long-term energy efficiency forecast with ETO's actual achieved savings. PacifiCorp will report on this analysis, including any recommendations to both organizations regarding forecast improvements, in the 2019 IRP. PacifiCorp will present the analysis as a public input IRP meeting. 2. Early in the public input process for the 2019 IRP, prior to finalizing energy efficiency supply curves, PacifiCorp will hold a DSM technical workshop to review and receive input regarding how the company models energy efficiency potential in the IRP and supporting studies such as the Conservation Potential Assessment. PacifiCorp will perform 25 system optimizer (SO) runs, one for each coal unit and a base case. PacifiCorp will summarize the results providing a table of the difference in the PVRR	Addressed in the 2019 IRP meetings (see below) and is available on PacifiCorp's website. 2. PacifiCorp provided demand-side management workshops as part of its 2019 IRP public-input meetings on June 28-29, 2018 and July 12, 2019. PacifiCorp provided the requested information in a public-input meeting presentation on June 28-29, 2018, and the presentation is available on the company's website. PacifiCorp presented an update on its coal studies at a special meeting at
	resulting from the early retirement of each unit, an itemized list of coal unit retirement cost assumptions used in each SO run, and a list of coal units that would free up transmission along the path from the proposed Wyoming wind projects if retired. PacifiCorp is to provide this information by June 30, 2018. If there is a dispute about modeling in the meantime, PacifiCorp, staff and parties should first attempt to resolve it informally, but if that fails, staff may report back to the Oregon PUC at a public meeting before the 2019 IRP is filed. An Oregon PUC commissioner workshop will likely be scheduled to review this analysis once it is complete.	the Oregon PUC on December 18, 2018.
Order No. 18-138, Appendix A p. 21	PacifiCorp will continue to model the assumption that EPA regional haze litigation against the company is successful and that PacifiCorp will be required to comply with the current requirements of the State Implementation Plan (SIP) and Federal Implementation Plan (FIP).	PacifiCorp has included two Regional Haze scenarios in the 2019 IRP. See Volume II, Appendix M (Case Study Fact Sheets) for discussion on specific Regional Haze assumptions.
Order No. 18-138, Appendix A p. 21	In the IRP Update PacifiCorp will explain the reasons for the (sometimes) low correlation in the short-term forecast.	See 2017 IRP Update Filing, Chapter 5 (Modeling and Assumptions Update).

Reference	IRP Requirement or Recommendation	How the Requirement or Recommendation is Addressed in the 2019 IRP
Order No. 18-138,	In the IRP Update PacifiCorp will	See 2017 IRP Update Filing, Chapter 5 (Modeling
Appendix A p. 22	model natural gas and storage for	and Assumptions Update).
Appendix A p. 22	meeting flexible reserve study needs.	and Assumptions Optiate).
	meeting nexible reserve study needs.	
Order No. 18-138,	PacifiCorp will work with staff and	In the 2019 IRP, PacifiCorp discussed distributed
Appendix A p. 22	parties to advance distributed energy	energy resources at its July 26-27, 2019 public-
	resource forecasting and representation	input meeting along with a workshop specific to
	in the IRP, and define a proposal for	energy storage.
	opening a distribution system planning	chargy storage.
	investigation.	
Order No. 18-138,	PacifiCorp will work with staff and	AMI data will further enhance the granularity of
Appendix A p. 22	parties to explore the use of AMI data	load forecasting and PacifiCorp will continue to
rippenam ri p. 22	in future IRPs.	evolve in its IRP process as more AMI data
	in ratare fixt 3.	becomes available.
Oudan No. 10 120	Desificant staff and nortice should	
Order No. 18-138,	PacifiCorp, staff and parties should	PacifiCorp discussed with Staff and parties over
Appendix A p. 22	discuss a potential study of the	conference call and agreed to evaluate its 2019
	capacity value of renewing QFs, and	IRP preferred portfolio load and resource balance
	staff shall bring this issue to a public	with the assumption of QF renewal and provide
	meeting before the 2017 IRP Update.	that information subsequent to the filing of the
		2019 IRP.
Utah		
Order, Docket No.	If PacifiCorp plans to use the System	The System Benefit Tool is not used in the 2019
15-035-04, p.18	Benefit Tool type of transmission	IRP.
	analytical tool in future IRPs,	
	PacifiCorp should introduce and vet	
	the tool in an IRP workshop setting	
	prior to utilizing the tool.	D ICC II AND III
Order, Docket No.	Encourage PacifiCorp in future IRP	PacifiCorp discussed its 2019 IRP supply-side
15-035-04, p.19	processes, to provide a stronger	resource table and inputs at the October 9, 2018
	demonstration of the reasonableness of	public-input meeting. The supply-side resource
	the range of renewable resource costs	table was updated based on stakeholder feedback.
0.1. D. 1. W	analyzed.	
Order, Docket No.	Direct PacifiCorp to identify the	See Volume I, Chapter 5 (Load and Resource
15-035-04, p.20	amount of distributed generation in the	Balance), which breaks out private generation in
	baseload forecast in its load and	the same manner as DSM and interruptible load
	resource table, as it does for existing	curtailment.
Onder Destact M	DSM and curtailment.	Cas Valuma II. Annua din I. (Western Dece
Order, Docket No.	Direct PacifiCorp to continue to	See Volume II, Appendix J (Western Resource
15-035-04, p.21	evaluate the depth of the western	Adequacy Evaluation) for an evaluation of market
	wholesale market, and to use	depth, and also cases studied to assess impacts of
	sensitivity cases and acquisition path	higher market prices provided in Volume I,
	analysis, including development of a	Chapter 8 (Modeling and Portfolio Selection
	contingency plan, to monitor the	Results). Also refer to acquisition path analysis for
	feasibility of long-term reliance on	contingencies in Volume I, Chapter 9 (Action
	Front Office Transactions to meet near-term load growth.	Plan).
Order, Docket No.	Recommend continued analysis of the	See Volume II, Appendix I (Planning Reserve
		Margin Study). The study concludes with a
15-035-04, p.21	planning reserve margin in future IRPs using results from both loss of load	planning criteria that meets one day in 10 year
	probability studies and analysis of the	planning targets at the lowest reasonable cost.
	tradeoffs between reliability and cost.	planning largets at the lowest reasonable cost.
Í	tradeon's detween remadinty and cost.	

Deference	IRP Requirement or	How the Requirement or Recommendation is
Reference Order, Docket No.	Recommendation Analysis behind Near-Term and Long-	Addressed in the 2019 IRP See acquisition path analysis for contingencies in
15-035-04, p.25	Term Resource Acquisition Paths (Table 9.3 in the 2015 IRP) could be improved in terms of identifying potential exogenous changes that would cause a significant change in acquisition path. Encourage PacifiCorp in future IRPs to further define the critical contingencies it is monitoring and identify the magnitude of changes that would be required to potentially trigger movement to any of the different paths listed in the table.	Volume I, Chapter 9 (Action Plan).
Order, Docket No. 15-035-04, p.31	Remind PacifiCorp of the requirement to future IRPs to present the Business Plan as a sensitivity case. If PacifiCorp has substantive objections to this requirement, PacifiCorp should file a motion for Commission action within 90 days of this order explaining the objection and requesting relief.	Please refer to the Sensitivity S-06- presented in Volume I, Chapter 8 (Modeling and Portfolio Selection Results) consistent with the Order in Docket No. 15-035-04.
Order, Docket No. 17-035-16, p.22	Encourage PacifiCorp and stakeholders to review recommendations of the DPU on process at the start of the 2019 IRP process.	PacifiCorp met with Utah stakeholders on August 9, 2018 and discussed recommendations of the Division of Public Utilities (DPU). PacifiCorp made best efforts to implement recommendations for timely materials and also shortened the lunch break and started earlier on the second day of public-input meetings.
Order, Docket No. 17-035-16, p.31	Encourage all parties to communicate in advance of the 2019 IRP about whether a training session on IRP capacity expansion and stochastic models would be appropriate and helpful. There is a distinction between requiring PacifiCorp to create opportunity for public involvement as required by the Guidelines, and requiring PacifiCorp to conduct analyses on behalf of parties.	PacifiCorp held a modeling workshop as part of its June 28-29, 2018 public-input meeting and provided information on its System Optimizer model and Planning and Risk model. PacifiCorp provided details on its models, functionality and planning assumptions throughout the public-input meeting process.
Order, Docket No. 17-035-16, p.35	To satisfy Guideline 3, any changes to the DSM modeling assumptions must be circulated during the IRP development process.	PacifiCorp provided a demand-side management workshop as part of a public-input meeting June 28-29, 2018. An additional workshop was held July 12, 2019. PacifiCorp discussed updates related to demand-side management modeling throughout its 2019 IRP process.
Order, Docket No. 17-035-16, p.37	PacifiCorp commits to conduct a workshop specific to energy storage as part of the 2019 IRP public input process prior to finalizing the supply-side resource table inputs for battery and energy storage.	PacifiCorp held an energy storage workshop August 30, 2018, and the presentation is available on the company's website.
Order, Docket No. 17-035-16, p.43	Expect PacifiCorp and stakeholders to review the DPU's recommendations on transmission modeling at the start of the 2019 IRP process.	PacifiCorp met with Utah stakeholders on August 9, 2018 and discussed recommendations of the Division of Public Utilities (DPU). PacifiCorp provided a transmission overview and update as

Reference	IRP Requirement or Recommendation	How the Requirement or Recommendation is Addressed in the 2019 IRP
		part of a public-input meeting September 27-28, 2018.
Washington		
UE-140546, Acknowledgement Letter, p.1	Encourage the company to continue the practice of including data discs with the filing in future IRP filings.	Data discs have provided as part of the 2019 IRP filing.
UE-140546, Acknowledgement Letter, p.2	Encourage the company to continue to evaluate how its method of developing capacity value of renewable resources compares to the effective load carrying capability method on which it was based, to ensure that the company's model is yielding accurate results.	See Volume II, Appendix N (Capacity Contribution Study), analyzing updated hourly profiles and transmission availability impacts to determine effectiveness in meeting system load. The 2019 IRP includes winter peak (in addition to summer peak) in its assumptions, allowing enhanced insight into solar penetration concerns.
UE-140546, Acknowledgement Letter, p.4	The cost impacts in S-10 in the 2015 IRP were on a system basis and the commission would like to see them on a balancing authority area basis. Requests the analysis be redone in the 2017 IRP and that the company use inputs consistent with the staff MSP power flow data or explain why different inputs are more appropriate. Request that the company incorporate the balancing area analysis in all future IRPs.	PacifiCorp plans to incorporate this sensitivity as part of its 2019 IRP Update.
UE-140546, Acknowledgement Letter, p.8	Encourage the company to continue to integrate the EIM into its IRP model, in particular to develop modeling capability to capture how different resources with different generation profiles would interact with the EIM, based on the company's experience with the market.	PacifiCorp incorporated flexible ramping procurement diversity savings from the EIM in its Flexible Reserve Study. See Volume II, Appendix F (Flexible Reserve Study).
UE-160353, Acknowledgement Letter Attachment, p.4-6	Expect examination of Jim Bridger and Colstrip Units 3 & 4 pursuant to specific questions to be addressed in the 2019 IRP.	PacifiCorp plans to incorporate responses to these questions as part of its 2019 IRP Update pursuant to the Washington Utilities and Transportation Commission's July 3, 2019 letter.
UE-160353, Acknowledgement Letter Attachment, p.6-7	Balancing Area analysis in all future IRPs that includes a west control area and an east control area analysis with a robust description of the modeling interaction between the two discrete systems.	See Volume II, Appendix J (Western Resource Adequacy Evaluation).
UE-160353, Acknowledgement Letter Attachment, p.8	Expect the company to incorporate principles in the commission's policy statement on energy storage in the 2019 IRP.	See Volume II, Appendix Q (Energy Storage Potential Evaluation).
UE-160353, Acknowledgement Letter Attachment, p.8-9	Expect the company to provide a market reliance risk assessment in the 2019 IRP and expect the analysis will result in a quantified representation of risk that can be folded into the IRP analytical framework.	See Volume II, Appendix J (Western Resource Adequacy Evaluation). PacifiCorp's 2019 IRP also included analysis of the impact of higher market prices on select cases (FOT cases). See Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) and Chapter 8 (Modeling and Portfolio Selection Results).

Reference	IRP Requirement or Recommendation	How the Requirement or Recommendation is Addressed in the 2019 IRP
Reference UE-160353, Acknowledgement Letter Attachment, p.9-10 UE-160353, Acknowledgement Letter Attachment, p.10-11	In future IRPs, the company should more prominently display the Quick Reference Guides included in Appendix M of its 2017 IRP. In future IRPs, the company should incorporate the cost of risk of future greenhouse gas regulation in addition to known regulations in its preferred portfolio. The cost estimate should come from a comprehensive, peerreviewed estimate of the monetary cost of climate change damages, produced by a reputable organization. WUTC suggests using the Interagency Working Group on Social Cost of Greenhouse Gases estimate with a three percent discount rate. The company should also continue to model other higher and lower cost estimates to understand how the	Addressed in the 2019 IRP PacifiCorp expanded Volume II, Appendix M (Case Fact Sheets Overview) to include more portfolio specific materials that were included in public-input meeting presentations throughout the course of the 2019 IRP process. Discussion in Volume I of the 2019 IRP draws more direct references to Volume II, Appendix M (Case Fact Sheets Overview) for simplified navigation. In the 2019 IRP, PacifiCorp assumed a CO ₂ price starting in 2025 in its base case analysis. It also performed assessments of certain top performing portfolios under a low gas/no CO ₂ , a high gas/high CO ₂ , and a social cost of carbon price-policy scenario that was developed using estimates by the Interagency Working Group on Social Cost of Greenhouse Gases. See Volume I, Chapter 8 (Modeling and Portfolio Selection Results).
UE-160353, Acknowledgement Letter Attachment, p.11	resource portfolio changes based on these costs. The company should develop a supply curve of emissions abatement and include this cost curve in the 2019 IRP. The analysis should identify all programs and technologies reasonably available in the company's service area, then use best available information to estimate the amount of emissions reductions each option might achieve, and at what cost.	PacifiCorp will use information from this analysis as part of its 2019 IRP Update.

Wyoming

The Wyoming Public Service Commission accepted Rocky Mountain Power's 2017 Integrated Resource Plan (Docket No. 20000-512-EA-17) without further action on the matter pursuant to action taken at its open meeting on November 20, 2017 and by Letter Order issued January 29, 2019.

Table B.3 - Oregon Public Utility Commission IRP Standard and Guidelines

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
Guideli	ne 1. Substantive Requirements	
1.a.1	All resources must be evaluated on a consistent and comparable basis: All known resources for meeting the utility's load should be considered, including supplyside options which focus on the generation, purchase and transmission of power – or gas purchases, transportation, and storage – and	PacifiCorp considered a wide range of resources including renewables, demand-side management, energy storage, power purchases, thermal resources, and transmission. Volume I, Chapter 4 (Transmission Planning), Chapter 6 (Resource Options), and Chapter 7 (Modeling and Portfolio Evaluation Approach) document how PacifiCorp developed these resources

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
	demand-side options which focus on conservation and demand response.	and modeled them in its portfolio analysis. All these resources were established as resource options in the company's capacity expansion optimization model, System Optimizer, and selected by the model based on load requirements, relative economics, resource size, availability dates, and other factors.
1.a.2	All resources must be evaluated on a consistent and comparable basis: Utilities should compare different resource fuel types, technologies, lead times, in-service dates, durations and locations in portfolio risk modeling.	All portfolios developed with System Optimizer were subjected to Monte Carlo production cost simulation. These portfolios contained a variety of resource types with different fuel types (coal, gas, biomass, nuclear fuel, "no fuel" renewables), lead-times (ranging from front office transactions to nuclear plants), in-service dates, operational lives, and locations. See Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach), Chapter 8 (Modeling and Portfolio Selection Results), and Volume II, Appendix K (Capacity Expansion Results Detail) and Appendix L (Stochastic Simulation Results).
1.a.3	All resources must be evaluated on a consistent and comparable basis: Consistent assumptions and methods should be used for evaluation of all resources.	PacifiCorp fully complies with this requirement. The company developed generic supply-side resource attributes based on a consistent characterization methodology. For demand-side resources, the company used the Applied Energy Group's supply curve data developed for this IRP for representation of DSM resources. The study was based on a consistently applied methodology for determining technical, market, and achievable DSM potentials. All portfolio resources were evaluated using the same sets of price and load forecast inputs. These inputs are documented in Volume I, Chapter 5 (Load and Resource Balance), Chapter 6 (Resource Alternatives), and Chapter 7 (Modeling and Portfolio Evaluation Approach) as well as Volume II, Appendix D (Demand-Side Management Resources).
1.a.4	All resources must be evaluated on a consistent and comparable basis: The after-tax marginal weighted-average cost of capital (WACC) should be used to discount all future resource costs.	PacifiCorp applied its nominal after-tax WACC of 6.92 percent to discount all cost streams.
1.b.1	Risk and uncertainty must be considered: At a minimum, utilities should address the following sources of risk and uncertainty: 1. Electric utilities: load requirements, hydroelectric generation, plant forced outages, fuel prices, electricity prices, and costs to comply with any regulation of greenhouse gas emissions.	Each of the sources of risk identified in this guideline is treated as a stochastic variable in Monte Carlo production cost simulation with the exception of CO ₂ emission compliance costs, which are treated as a scenario risk and evaluated as part of a CO ₂ price assumption and a no CO ₂ , a high CO ₂ , and a social cost of carbon price-policy scenario for specific studies. See Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) and Volume I, Chapter 8 (Modeling and Portfolio Selection Results).
1.b.2	Risk and uncertainty must be considered: Utilities should identify in their plans any additional sources of risk and uncertainty.	Resource risk mitigation is discussed in Volume I, Chapter 9 (Action Plan). Regulatory and financial risks associated with resource and transmission investments are highlighted in several areas in the IRP document, including Volume I, Chapter 3 (The

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
		Planning Environment), Chapter 4 (Transmission), Chapter 7 (Modeling and Portfolio Evaluation Approach), and Chapter 8 (Modeling and Portfolio Selection Results).
1.c	The primary goal must be the selection of a portfolio of resources with the best combination of expected costs and associated risks and uncertainties for the utility and its customers ("best cost/risk portfolio").	PacifiCorp evaluated cost/risk tradeoffs for each of the portfolios considered. See Volume I, Chapter 8 (Modeling and Portfolio Selection Results), Chapter 9 (Action Plan), and Volume II, Appendix K (Capacity Expansion Results Detail) and Appendix H (Stochastic Parameters) for the company's portfolio cost/risk analysis and determination of the preferred portfolio.
1.c.1	The planning horizon for analyzing resource choices should be at least 20 years and account for end effects. Utilities should consider all costs with a reasonable likelihood of being included in rates over the long term, which extends beyond the planning horizon and the life of the resource.	PacifiCorp used a 20-year study period (2019-2038) for portfolio modeling, and a real levelized revenue requirement methodology for treatment of end effects.
1.c.2	Utilities should use present value of revenue requirement (PVRR) as the key cost metric. The plan should include analysis of current and estimated future costs for all long-lived resources such as power plants, gas storage facilities, and pipelines, as well as all short-lived resources such as gas supply and short-term power purchases.	Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) provides a description of the PVRR methodology.
1.c.3.1	To address risk, the plan should include, at a minimum: 1. Two measures of PVRR risk: one that measures the variability of costs and one that measures the severity of bad outcomes.	PacifiCorp uses the standard deviation of stochastic production costs as the measure of cost variability. For the severity of bad outcomes, the company calculates several measures, including stochastic upper-tail mean PVRR (mean of highest three Monte Carlo iterations) and the 95 th percentile stochastic production cost PVRR.
1.c.3.2	To address risk, the plan should include, at a minimum: 2. Discussion of the proposed use and impact on costs and risks of physical and financial hedging.	A discussion on hedging is provided in Volume I, Chapter 9 (Action Plan).
1.c.4	The utility should explain in its plan how its resource choices appropriately balance cost and risk.	Volume I, Chapter 8 (Modeling and Portfolio Selection Results) summarizes the results of PacifiCorp's cost/risk tradeoff analysis, and describes what criteria the company used to determine the best cost/risk portfolios and the preferred portfolio.
1.d	The plan must be consistent with the long-run public interest as expressed in Oregon and federal energy policies.	PacifiCorp considered both current and potential state and federal energy/pollutant emission policies in portfolio modeling. Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) describes the decision process used to derive portfolios, which includes consideration of state and federal resource policies and regulations that are summarized in Volume I, Chapter 3 (The Planning Environment). Volume I, Chapter 8 (Modeling and Portfolio Selection Results) provides the results. Volume I,

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
		Chapter 9 (Action Plan) presents an acquisition path analysis that describes resource strategies based on regulatory trigger events.
Guideli	ne 2. Procedural Requirements	
2.a	The public, which includes other utilities, should be allowed significant involvement in the preparation of the IRP. Involvement includes opportunities to contribute information and ideas, as well as to receive information. Parties must have an opportunity to make relevant inquiries of the utility formulating the plan. Disputes about whether information requests are relevant or unreasonably burdensome, or whether a utility is being properly responsive, may be submitted to the Oregon PUC for resolution.	PacifiCorp fully complies with this requirement. Volume I, Chapter 2 (Introduction) provides an overview of the public process, all public-input meetings held for the 2019 IRP, which are documented in Volume II, Appendix C (Public Input Process). PacifiCorp also made use of a Stakeholder Feedback Form for stakeholders to provide comments and offer suggestions. Stakeholder Feedback Forms along with the public-input meeting presentations are available on PacifiCorp's webpage at: www.pacificorp.com/energy/integrated-resource-plan.html
2.b	While confidential information must be protected, the utility should make public, in its plan, any non-confidential information that is relevant to its resource evaluation and action plan. Confidential information may be protected through use of a protective order, through aggregation or shielding of data, or through any other mechanism approved by the Oregon PUC.	2019 IRP Volumes I and II provide non-confidential information used for portfolio evaluation, as well as other data requested by stakeholders. PacifiCorp also provided stakeholders with non-confidential information to support public meeting discussions via email and in response to Stakeholder Feedback Forms. Data discs will be available with public data. Additionally, data discs with confidential data will be provided to appropriate parties through use of protective order 18-216.
2.c	The utility must provide a draft IRP for public review and comment prior to filing a final plan with the Oregon PUC.	PacifiCorp distributed draft IRP materials for external review throughout the process prior to each of the public input meetings and solicited/and received feedback at various times when developing the 2019 IRP. The materials shared with stakeholders at these meetings, outlined in Volume I Chapter 2 (Introduction), is consistent with materials presented in Volumes I and II of the 2019 IRP report. PacifiCorp requested and responded to comments from stakeholders when establishing modeling assumptions and throughout its portfolio-development process and sensitivity definitions.
Guideli	ne 3: Plan Filing, Review, and Updates	
3.a	A utility must file an IRP within two years of its previous IRP acknowledgment order. If the utility does not intend to take any significant resource action for at least two years after its next IRP is due, the utility may request an extension of its filing date from the Oregon PUC.	The 2019 IRP complies with this requirement.
3.b	The utility must present the results of its filed plan to the Oregon PUC at a public meeting prior to the deadline for written public comment.	This activity will be conducted subsequent to filing this IRP.

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
3.c	Commission staff and parties should complete their comments and recommendations within six months of IRP filing.	This activity will be conducted subsequent to filing this IRP.
3.d	The Commission will consider comments and recommendations on a utility's plan at a public meeting before issuing an order on acknowledgment. The Commission may provide the utility an opportunity to revise the IRP before issuing an acknowledgment order.	This activity will be conducted subsequent to filing this IRP.
3.e	The Commission may provide direction to a utility regarding any additional analyses or actions that the utility should undertake in its next IRP.	Not applicable.
3.f	(a) Each energy utility must submit an annual update on its most recently acknowledged IRP. The update is due on or before the acknowledgment order anniversary date. Once a utility anticipates a significant deviation from its acknowledged IRP, it must file an update with the Oregon PUC, unless the utility is within six months of filing its next IRP. The utility must summarize the update at an Oregon PUC public meeting. The utility may request acknowledgment of changes in proposed actions identified in an update.	Not applicable to this filing; this activity will be conducted subsequent to filing this IRP.
3.g	 Unless the utility requests acknowledgment of changes in proposed actions, the annual update is an informational filing that: Describes what actions the utility has taken to implement the plan; Provides an assessment of what has changed since the acknowledgment order that affects the action plan to select best portfolio of resources, including changes in such factors as load, expiration of resource contracts, supply-side and demand-side resource acquisitions, resource costs, and transmission availability; and Justifies any deviations from the acknowledged action plan. 	Not applicable to this filing; this activity will be conducted subsequent to filing this IRP.
Guideli	ine 4. Plan Components: At a minimum, the plan	must include the following elements
4.a	An explanation of how the utility met each of the substantive and procedural requirements.	The purpose of this table is to comply with this guideline.
4.b	Analysis of high and low load growth scenarios in addition to stochastic load risk analysis with an explanation of major assumptions.	PacifiCorp developed low, high, and extreme peak temperature (one-in-twenty probability) load growth forecasts for scenario analysis using the System Optimizer model. Stochastic variability of loads was also captured in the risk analysis. See Volume I, Chapters 5 (Load and Resource Balance) and Chapter 7 (Modeling and Portfolio Evaluation Approach), and Volume II, Appendix A (Load Forecast Detail) for load forecast information.

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
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4.c	For electric utilities, a determination of the levels of peaking capacity and energy capability expected for each year of the plan, given existing resources; identification of capacity and energy needed to bridge the gap between expected loads and resources; modeling of all existing transmission rights, as well as future transmission additions associated with the resource portfolios tested.	See Chapter 5 (Resource Needs Assessment) for details on annual capacity and energy balances. Existing transmission rights are reflected in the IRP model topologies. Future transmission additions used in analyzing portfolios are summarized in Volume I, Chapter 4 (Transmission) and Chapter 7 (Modeling and Portfolio Evaluation Approach).
4.d	For gas utilities only.	Not applicable.
4.e	Identification and estimated costs of all supply-side and demand side resource options, taking into account anticipated advances in technology.	Volume I, Chapter 6 (Resource Options) identifies the resources included in this IRP, and provides their detailed cost and performance attributes. Additional information on energy efficiency resource characteristics is available in Volume II, Appendix D (Demand-Side Management Resources) referencing additional information on PacifiCorp's IRP website see footnote 3 of this Appendix B.
4.f	Analysis of measures the utility intends to take to provide reliable service, including cost-risk tradeoffs.	In addition to incorporating a 13 percent planning reserve margin for all portfolios evaluated, as supported by an updated Stochastic Loss of Load Study in Volume II, Appendix L (Stochastic Simulation Results), the company used several measures to evaluate relative portfolio supply reliability. These measures (Energy Not Served and Loss of Load Probability) are described in Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach).
4.g	Identification of key assumptions about the future (e.g., fuel prices and environmental compliance costs) and alternative scenarios considered.	Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) describes the key assumptions and alternative scenarios used in this IRP. Volume II, Appendix M (Case Study Fact Sheets) includes summaries of assumptions used for each case definition analyzed in the 2019 IRP.
4.h	Construction of a representative set of resource portfolios to test various operating characteristics, resource types, fuels and sources, technologies, lead times, in-service dates, durations and general locations – system-wide or delivered to a specific portion of the system.	This IRP documents the development and results of portfolios designed to determine resource selection under a variety of input assumptions in Volume I, Chapters 7 (Modeling and Portfolio Evaluation Approach) and Chapter 8 (Modeling and Portfolio Selection Results).
4.i	Evaluation of the performance of the candidate portfolios over the range of identified risks and uncertainties.	Volume I, Chapter 8 (Modeling and Portfolio Selection Results) presents the stochastic portfolio modeling results, and describes portfolio attributes that explain relative differences in cost and risk performance.
4.j	Results of testing and rank ordering of the portfolios by cost and risk metric, and interpretation of those results.	Volume I, Chapter 8 (Modeling and Portfolio Selection Results) provides tables and charts with performance measure results, including rank ordering.
4.k	Analysis of the uncertainties associated with each portfolio evaluated.	See responses to 1.b.1 and 1.b.2 above.

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
4.1	Selection of a portfolio that represents the best combination of cost and risk for the utility and its customers.	See 1.c above.
4.m	Identification and explanation of any inconsistencies of the selected portfolio with any state and federal energy policies that may affect a utility's plan and any barriers to implementation.	This IRP is designed to avoid inconsistencies with state and federal energy policies therefore none are currently identified.
4.n	An action plan with resource activities the utility intends to undertake over the next two to four years to acquire the identified resources, regardless of whether the activity was acknowledged in a previous IRP, with the key attributes of each resource specified as in portfolio testing.	Volume I Chapter 9 (Action Plan) presents the 2019 IRP action plan.
Guideli	ne 5: Transmission	
5	Portfolio analysis should include costs to the utility for the fuel transportation and electric transmission required for each resource being considered. In addition, utilities should consider fuel transportation and electric transmission facilities as resource options, taking into account their value for making additional purchases and sales, accessing less costly resources in remote locations, acquiring alternative fuel supplies, and improving reliability.	PacifiCorp evaluated four sensitivities on Energy Gateway transmission project configurations on a consistent and comparable basis with respect to other resources. Where new resources would require additional transmission facilities the associated costs were factored into the analysis. Fuel transportation costs were factored into resource costs.
Guideli	ne 6: Conservation	
6.a	Each utility should ensure that a conservation potential study is conducted periodically for its entire service territory.	A multi-state demand-side management potential study was completed in 2018, and those results were incorporated into this plan.
6.b	To the extent that a utility controls the level of funding for conservation programs in its service territory, the utility should include in its action plan all best cost/risk portfolio conservation resources for meeting projected resource needs, specifying annual savings targets.	PacifiCorp's energy efficiency supply curves incorporate Oregon resource potential. Oregon potential estimates were provided by the Energy Trust of Oregon. See the demand-side resource section in Volume I, Chapter 6 (Resource Options), the results in Volume I, Chapter 8 (Modeling and Portfolio Selection Results), the targeted amounts in Volume I, Chapter 9 (Action Plan) and the implementation steps outlined in Volume II, Appendix D (DSM Resources).
6.c	To the extent that an outside party administers conservation programs in a utility's service territory at a level of funding that is beyond the utility's control, the utility should: 1. Determine the amount of conservation resources in the best cost/risk portfolio without regard to any limits on funding of conservation programs; and 2. Identify the preferred portfolio and action plan consistent with the outside party's projection of conservation acquisition.	See the response for 6.b above.

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
Guideli	ne 7: Demand Response	
7	Plans should evaluate demand response resources, including voluntary rate programs, on par with other options for meeting energy, capacity, and transmission needs (for electric utilities) or gas supply and transportation needs (for natural gas utilities).	PacifiCorp evaluated demand response resources (Class 1 DSM) on a consistent basis with other resources.
Guidelin	ne 8: Environmental Costs	
8.a	Base case and other compliance scenarios: The utility should construct a base-case scenario to reflect what it considers to be the most likely regulatory compliance future for carbon dioxide (CO ₂), nitrogen oxides, sulfur oxides, and mercury emissions. The utility should develop several compliance scenarios ranging from the present CO ₂ regulatory level to the upper reaches of credible proposals by governing entities. Each compliance scenario should include a time profile of CO ₂ compliance requirements. The utility should identify whether the basis of those requirements, or "costs," would be CO ₂ taxes, a ban on certain types of resources, or CO ₂ caps (with or without flexibility mechanisms such as an allowance for credit trading as a safety valve). The analysis should recognize significant and important upstream emissions that would likely have a significant impact on resource decisions. Each compliance scenario should maintain logical consistency, to the extent practicable, between the CO ₂ regulatory requirements and other key inputs.	See Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach). In the 2019 IRP, PacifiCorp modeled a price on CO ₂ starting in 2025.
8.b	Testing alternative portfolios against the compliance scenarios: The utility should estimate, under each of the compliance scenarios, the present value revenue requirement (PVRR) costs and risk measures, over at least 20 years, for a set of reasonable alternative portfolios from which the preferred portfolio is selected. The utility should incorporate end-effect considerations in the analyses to allow for comparisons of portfolios containing resources with economic or physical lives that extend beyond the planning period. The utility should also modify projected lifetimes as necessary to be consistent with the compliance scenario under analysis. In addition, the utility should include, if material, sensitivity analyses on a range of reasonably possible regulatory futures for nitrogen oxides, sulfur oxides, and mercury to further inform the preferred portfolio selection.	Volume II, Appendix L (Stochastic Simulation Results) provides the stochastic mean PVRR versus upper tail mean less stochastic mean PVRR scatter plot diagrams that for a broad range of portfolios developed with a range of compliance scenarios as summarized in 8.a above. The company considers end-effects in its use of Real Levelized Revenue Requirement Analysis, as summarized in Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) and uses a 20-year planning horizon. Early retirement and gas conversion alternatives to coal unit environmental investments were considered in the development of all resource portfolios.
8.c	Trigger point analysis: The utility should identify at least one CO ₂ compliance "turning	See Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) for a description of initial

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
	point' scenario, which, if anticipated now, would lead to, or "trigger" the selection of a portfolio of resources that is substantially different from the preferred portfolio. The utility should develop a substitute portfolio appropriate for this trigger-point scenario and compare the substitute portfolio's expected cost and risk performance to that of the preferred portfolio – under the base case and each of the above CO ₂ compliance scenarios. The utility should provide its assessment of whether a CO ₂ regulatory future that is equally or more stringent that the identified trigger point will be mandated.	portfolio-development definitions. Comparative analysis of these case results is included in Volume I, Chapter 8 (Modeling and Portfolio Selection Results).
8.d	Oregon compliance portfolio: If none of the above portfolios is consistent with Oregon energy policies (including state goals for reducing greenhouse gas emissions) as those policies are applied to the utility, the utility should construct the best cost/risk portfolio that achieves that consistency, present its cost and risk parameters, and compare it to those in the preferred and alternative portfolios.	Several portfolios yield system emissions aligned with state goals for reducing greenhouse gas emissions. These cases are summarized in Volume I, Chapter 8 (Modeling and Portfolio Selection Results).
Guideli	ne 9: Direct Access Loads	
9	An electric utility's load-resource balance should exclude customer loads that are effectively committed to service by an alternative electricity supplier.	Oregon Docket UE 267 established a long-term opt out option for eligible PacifiCorp customers. Going forward PacifiCorp will cease planning for customers who elect direct-access service on a long-term basis (i.e. five-year opt out customers).
Guideli	ne 10: Multi-state Utilities	
10	Multi-state utilities should plan their generation and transmission systems, or gas supply and delivery, on an integrated system basis that achieves a best cost/risk portfolio for all their retail customers.	The 2019 IRP conforms to the multi-state planning approach as stated in Volume I, Chapter 2 under the section "The Role of PacifiCorp's Integrated Resource Planning". The company notes the challenges in complying with multi-state integrated planning given differing state energy policies and resource preferences.
Guideli	ne 11: Reliability	
11	Electric utilities should analyze reliability within the risk modeling of the actual portfolios being considered. Loss of load probability, expected planning reserve margin, and expected and worst-case unserved energy should be determined by year for topperforming portfolios. Natural gas utilities should analyze, on an integrated basis, gas supply, transportation, and storage, along with demand-side resources, to reliably meet peak, swing, and base-load system requirements. Electric and natural gas utility plans should demonstrate that the utility's chosen portfolio achieves its stated reliability, cost and risk objectives.	See the response to 1.c.3.1 above. Volume I, Chapter 8 (Modeling and Portfolio Selection Results) walks through the role of reliability, cost, and risk measures in determining the preferred portfolio. Scatter plots of portfolio cost versus risk at different CO ₂ cost levels were used to inform the cost/risk tradeoff analysis.

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
Guideli	ne 12: Distributed Generation	
12	Electric utilities should evaluate distributed generation technologies on par with other supply-side resources and should consider, and quantify where possible, the additional benefits of distributed generation.	PacifiCorp contracted with Navigant to provide estimates of expected private generation penetration. The study was incorporated in the analysis as a deduction to load. Sensitivities looked at both high and low penetration rates for private generation. The study is included in Volume II, Appendix O (Private Generation Study).
Guideli	ne 13: Resource Acquisition	
13.a	 An electric utility should, in its IRP: Identify its proposed acquisition strategy for each resource in its action plan. Assess the advantages and disadvantages of owning a resource instead of purchasing power from another party. Identify any Benchmark Resources it plans to consider in competitive bidding. 	Chapter 9 (Action Plan) outlines the procurement approaches for resources identified in the preferred portfolio. A discussion of the advantages and disadvantages of owning a resource instead of purchasing it is included in Chapter 9 (Action Plan). PacifiCorp has not at this time identified any specific benchmark resources it plans to consider in the competitive bidding process summarized in the 2019 IRP action plan.
13.b	For gas utilities only.	Not applicable.
Flexible	Capacity Resources	
1	Forecast the Demand for Flexible Capacity: The electric utilities shall forecast the balancing reserves needed at different time intervals (e.g. ramping needed within 5 minutes) to respond to variation in load and intermittent renewable generation over the 20- year planning period.	See Volume II, Appendix F (Flexible Reserve Study).
2	Forecast the Supply of Flexible Capacity: The electric utilities shall forecast the balancing reserves available at different time intervals (e.g. ramping available within 5 minutes) from existing generating resources over the 20-year planning period.	See Volume II, Appendix F (Flexible Reserve Study).
3	Evaluate Flexible Resources on a Consistent and Comparable Basis: In planning to fill any gap between the demand and supply of flexible capacity, the electric utilities shall evaluate all resource options, including the use of EVs, on a consistent and comparable basis.	See Volume II, Appendix F (Flexible Reserve Study).

Table B.4 – Utah Public Service Commission IRP Standard and Guidelines

No.	Requirement	How the Standards and Guidelines are Addressed in the 2019 IRP	
Procee	Procedural Issues		
1	The Commission has the legal authority to promulgate Standards and Guidelines for integrated resource planning.	Not addressed; this is a Public Service Commission of Utah responsibility.	

No.	Requirement	How the Standards and Guidelines are Addressed in the 2019 IRP	
2	Information Exchange is the most reasonable method for developing and implementing integrated resource planning in Utah.	Information exchange has been conducted throughout the IRP process.	
3	Prudence reviews of new resource acquisitions will occur during ratemaking proceedings.	Not an IRP requirement as the Commission acknowledges that prudence reviews will occur during ratemaking proceedings, outside of the IRP process.	
4	PacifiCorp's integrated resource planning process will be open to the public at all stages. The Commission, its staff, the Division, the Committee, appropriate Utah state agencies, and other interested parties can participate. The Commission will pursue a more active-directive role if deemed necessary, after formal review of the planning process.	PacifiCorp's public process is described in Volume I, Chapter 2 (Introduction). A description of public-input meetings is provided in Volume II, Appendix C (Public Input Process). Public-input meeting materials can also be found on PacifiCorp's website at: www.pacificorp.com/energy/integrated-resource-plan/public-input-process.html	
5	Consideration of environmental externalities and attendant costs must be included in the integrated resource planning analysis.	PacifiCorp used a scenario analysis approach along with externality cost adders to model environmental externality costs. See Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) for a description of the methodology employed, including how CO ₂ cost uncertainty is factored into the determination of relative portfolio performance through a base case planning assumption and other price-policy scenarios.	
6	The integrated resource plan must evaluate supply-side and demand-side resources on a consistent and comparable basis.	Supply, transmission, and demand-side resources were evaluated on a comparable basis using PacifiCorp's capacity expansion optimization model. Also see the response to number 4.b.ii below.	
7	Avoided cost should be determined in a manner consistent with the company's Integrated Resource Plan.	Consistent with Utah rules, PacifiCorp determination of avoided costs in Utah will be handled in a manner consistent with the IRP, with the caveat that the costs may be updated if better information becomes available.	
8	The planning standards and guidelines must meet the needs of the Utah service area, but since coordination with other jurisdictions is important, must not ignore the rules governing the planning process already in place in other jurisdictions.	This IRP was developed in consultation with parties from all state jurisdictions, and meets all formal state IRP guidelines.	
9	The company's Strategic Business Plan must be directly related to its Integrated Resource Plan.	Volume I, Chapter 9 (Action Plan) describes the linkage between the 2019 IRP preferred portfolio and December 2018 business plan resources. Significant resource differences are highlighted. The business plan portfolio was run consistent with requirements outlined in the Order issued by the Utah Public Service Commission on September 16, 2016, Docket No. 15-035-04.	
Standa	ards and Guidelines		
1	Definition: Integrated resource planning is a utility planning process which evaluates all known resources on a consistent and comparable basis, in order to meet current and future customer electric energy services needs at the lowest total cost to the utility and its customers,	Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) outlines the portfolio performance evaluation and preferred portfolio selection process, while Chapter 8 (Modeling and Portfolio Selection Results) chronicles the modeling and preferred portfolio selection process. This IRP	

No.	Requirement	How the Standards and Guidelines are Addressed in the 2019 IRP	
	and in a manner consistent with the long-run public interest. The process should result in the selection of the optimal set of resources given the expected combination of costs, risk and uncertainty.	also addresses concerns expressed by Utah stakeholders and the Utah commission concerning comprehensiveness of resources considered, consistency in applying input assumptions for portfolio modeling, and explanation of PacifiCorp's decision process for selecting top-performing portfolios and the preferred portfolio.	
2	The company will submit its Integrated Resource Plan biennially.	The company submitted its last IRP on April 4, 2017, and filed this IRP on October 18, 2019 meeting the requirement. PacifiCorp requested and was granted an extension of time to file the 2019 IRP in Docket No. 19-035-02.	
3	IRP will be developed in consultation with the Commission, its staff, the Division of Public Utilities, the Committee of Consumer Services, appropriate Utah state agencies and interested parties. PacifiCorp will provide ample opportunity for public input and information exchange during the development of its Plan.	PacifiCorp's public process is described in Volume I, Chapter 2 (Introduction). A record of public meetings is provided in Volume II, Appendix C (Public Input Process).	
4.a	PacifiCorp's integrated resource plans will include: a range of estimates or forecasts of load growth, including both capacity (kW) and energy (kWh) requirements.	PacifiCorp implemented a load forecast range for both capacity expansion optimization scenarios as well as for stochastic variability, covering both capacity and energy. Details concerning the load forecasts used in the 2019 IRP are provided in Volume I, Chapter 5 (Resource Needs Assessment) and Volume II, Appendix A (Load Forecast Details).	
4.a.i	The forecasts will be made by jurisdiction and by general class and will differentiate energy and capacity requirements. The company will include in its forecasts all on-system loads and those offsystem loads which they have a contractual obligation to fulfill. Non-firm off-system sales are uncertain and should not be explicitly incorporated into the load forecast that the utility then plans to meet. However, the Plan must have some analysis of the off-system sales market to assess the impacts such markets will have on risks associated with different acquisition strategies.	Load forecasts are differentiated by jurisdiction and differentiate energy and capacity requirements. See Volume I, Chapter 5 (Resource Needs Assessment) and Volume II, Appendix A (Load Forecast Details). Non-firm off-system sales are not incorporated into the load forecast. Off-system sales markets are included in IRP modeling and are used for system balancing purposes.	
4.a.ii	Analyses of how various economic and demographic factors, including the prices of electricity and alternative energy sources, will affect the consumption of electric energy services, and how changes in the number, type and efficiency of end-uses will affect future loads.	Volume II, Appendix A (Load Forecast Details) documents how demographic and price factors are used in PacifiCorp's load forecasting methodology.	
4.b	An evaluation of all present and future resources, including future market opportunities (both demand-side and supply-side), on a consistent and comparable basis.	Resources were evaluated on a consistent and comparable basis using the System Optimizer model and Planning and Risk production cost model using both supply side and demand side alternatives. See explanation in Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) and the results in Volume I, Chapter 8 (Modeling and Portfolio	

No.	Requirement	How the Standards and Guidelines are Addressed in the 2019 IRP
		Selection Results). Resource options are summarized in Volume I, Chapter 6 (Resource Options).
4.b.i	An assessment of all technically feasible and cost-effective improvements in the efficient use of electricity, including load management and conservation.	PacifiCorp included supply curves for Demand Response (Class 1) DSM (dispatchable/schedulable load control) and Energy Efficiency (Class 2) DSM in its capacity expansion model. Details are provided in Volume I, Chapter 6 (Resource Options).
4.b.ii	An assessment of all technically feasible generating technologies including: renewable resources, cogeneration, power purchases from other sources, and the construction of thermal resources.	PacifiCorp considered a wide range of resources including renewables, cogeneration (combined heat and power), power purchases, thermal resources, energy storage, and Energy Gateway transmission configurations. Volume I, Chapters 6 (Resource Options) and 7 (Modeling and Portfolio Evaluation Approach) contain assumptions and describe the process under which PacifiCorp developed and assessed these technologies and resources.
4.b.iii	The resource assessments should include: life expectancy of the resources, the recognition of whether the resource is replacing/adding capacity or energy, dispatchability, lead-time requirements, flexibility, efficiency of the resource and opportunities for customer participation.	PacifiCorp captures and models these resource attributes in its IRP models. Resources are defined as providing capacity, energy, or both. The DSM supply curves used for portfolio modeling explicitly incorporate estimated rates of program and event participation. The private generation study, modeled as a reduction to load, also considered rates of participation. Replacement capacity is considered in the case of early coal unit retirements as evaluated in this IRP as an alternative to coal unit environmental investments. Dispatchability is accounted for in both IRP models used; however, the Planning and Risk model provides a more detailed representation of unit dispatch than
		System Optimizer, and includes modeling of unit commitment and reserves.
4.c	An analysis of the role of competitive bidding for demand-side and supply-side resource acquisitions	A description of the role of competitive bidding and other procurement methods is provided in Volume I, Chapter 9 (Action Plan).
4.d	A 20-year planning horizon.	This IRP uses a 20-year study horizon (2019-2038).
4.e	An action plan outlining the specific resource decisions intended to implement the integrated resource plan in a manner consistent with the company's strategic business plan. The action plan will span a four-year horizon and will describe specific actions to be taken in the first two years and outline actions anticipated in the last two years. The action plan will include a status report of the specific actions contained in the previous action plan.	The IRP action plan is provided in Volume I, Chapter 9 (Action Plan). A status report of the actions outlined in the previous action plan (2017 IRP Update) is provided in Volume I, Chapter 9 (Action Plan). In Volume I, Chapter 9 (Action Plan) Table 9.1 identifies actions anticipated in the next two years and in the next four years.
4.f	A plan of different resource acquisition paths for different economic circumstances with a decision mechanism to select among and modify these paths as the future unfolds.	Volume I, Chapter 9 (Action Plan) includes an acquisition path analysis that presents broad resource strategies based on regulatory trigger events, change in load growth, extension of federal renewable resource tax incentives and procurement delays.

No.	Requirement	How the Standards and Guidelines are Addressed in the 2019 IRP
4.g	An evaluation of the cost-effectiveness of the resource options from the perspectives of the utility and the different classes of ratepayers. In addition, a description of how social concerns might affect cost effectiveness estimates of resource options.	PacifiCorp provides resource-specific utility and total resource cost information in Volume I, Chapter 6 (Resource Options). The IRP document addresses the impact of social concerns on resource cost-effectiveness in the following ways: Top performing portfolios were evaluated using a range of CO ₂ price-policy scenarios. A discussion of environmental policy status and impacts on utility resource planning is provided in Volume I, Chapter 3 (The Planning Environment). State and proposed federal public policy preferences for clean energy are considered for development of the preferred portfolio, which is documented in Volume I, Chapter 8 (Modeling and Portfolio Selection Results). Volume II, Appendix G (Plant Water Consumption) reports historical water consumption for PacifiCorp's thermal plants.
4.h	An evaluation of the financial, competitive, reliability, and operational risks associated with various resource options and how the action plan addresses these risks in the context of both the Business Plan and the 20-year Integrated Resource Plan. The company will identify who should bear such risk, the ratepayer or the stockholder.	The handling of resource risks is discussed in Volume I, Chapter 9 (Action Plan), and covers managing environmental risk for existing plants, risk management and hedging and treatment of customer and investment risk. Transmission expansion risks are discussed in Chapter 4 (Transmission). Resource capital cost uncertainty and technological risk is addressed in Volume I, Chapter 6 (Resource Options). For reliability risks, the stochastic simulation model incorporates stochastic volatility of forced outages for new thermal plants and hydro availability. These risks are factored into the comparative evaluation of portfolios and the selection of the preferred portfolio upon which the action plan is based. Identification of the classes of risk and how these risks are allocated to ratepayers and investors is discussed in Volume I, Chapter 9 (Action Plan).
4.i	Considerations permitting flexibility in the planning process so that the company can take advantage of opportunities and can prevent the premature foreclosure of options.	Flexibility in the planning and procurement processes is highlighted in Volume I, Chapter 9 (Action Plan), specifically, Table 9.1.
4.j	An analysis of tradeoffs; for example, between such conditions of service as reliability and dispatchability and the acquisition of lowest cost resources.	PacifiCorp examined the trade-off between portfolio cost and risk, taking into consideration a broad range of resource alternatives defined with varying levels of dispatchability. This trade-off analysis is documented in Volume I, Chapter 8 (Modeling and Portfolio Selection Results).
4.k	A range, rather than attempts at precise quantification, of estimated external costs which	PacifiCorp incorporated environmental externality costs for CO ₂ and costs for complying with current

N T		How the Standards and Guidelines are	
No.	Requirement	Addressed in the 2019 IRP	
consideration of them might affect selection of resource options. The company will attempt to quantify the magnitude of the externalities, for example, in terms of the amount of emissions		and proposed U.S. EPA regulatory requirements. For CO ₂ externality costs, the company used scenarios with various compliance requirements to capture a reasonable range of cost impacts. These modeling assumptions are described in Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach).	
4.1	A narrative describing how current rate design is consistent with the company's integrated resource planning goals and how changes in rate design might facilitate integrated resource planning objectives.	See Volume I, Chapter 3 (The Planning Environment). The role of Class 3 DSM (price response programs) at PacifiCorp and how these resources are modeled in the IRP are described in Volume I, Chapter 6 (Resource Options).	
5	PacifiCorp will submit its IRP for public comment, review and acknowledgment.	PacifiCorp distributed draft IRP materials for external review throughout the process prior to each of the public-input meetings and solicited/and received feedback at various times when developing the 2019 IRP. The materials shared with stakeholders at these meetings, outlined in Volume I Chapter 2 (Introduction), is consistent with materials presented in Volumes I and II of the 2019 IRP report. Public-input meetings materials can be located on PacifiCorp's website at: www.pacificorp.com/energy/integrated-resource-plan/public-input-process.html PacifiCorp requested and responded to comments from stakeholders in throughout its 2019 IRP process. The company also considered comments received via Stakeholder Feedback Forms that can be located on PacifiCorp's website at: www.pacificorp.com/energy/integrated-resource-plan/comments.html A total of 133 Stakeholder Feedback Forms were received and responded to during the 2019 IRP public-input process.	
6	The public, state agencies and other interested parties will have the opportunity to make formal comment to the Commission on the adequacy of the Plan. The Commission will review the Plan for adherence to the principles stated herein, and will judge the merit and applicability of the public comment. If the Plan needs further work the Commission will return it to the company with comments and suggestions for change. This process should lead more quickly to the Commission's acknowledgment of an acceptable Integrated Resource Plan. The company will give an oral presentation of its report to the Commission and all interested public parties. Formal hearings on the acknowledgment of the Integrated Resource Plan might be appropriate but are not required.	Not addressed; this is a post-filing activity.	
7	Acknowledgment of an acceptable Plan will not guarantee favorable ratemaking treatment of future resource acquisitions.	Not addressed; this is not a PacifiCorp activity.	

No.	Requirement	How the Standards and Guidelines are Addressed in the 2019 IRP
8	The Integrated Resource Plan will be used in rate cases to evaluate the performance of the utility	Not addressed; this refers to a post-filing activity.
	and to review avoided cost calculations.	

Table~B.5-Washington~Utilities~and~Transportation~Commission~IRP~Standard~and~Guidelines~(RCW~19.280.030~and~WAC~480-100-238)

Guide	How the Standards and Guidelines are Addressed in		
No.	Requirement	the 2019 IRP	
Requi	rements prior to IRP Filing		
(4)	Work plan filed no later than 12 months before next IRP due date.	PacifiCorp filed the 2019 IRP work plan on July 17, 2019 in Docket No. UE-180259, given an anticipated IRP filing date of October 18, 2019. PacifiCorp was granted approval in Docket No. UE-180259 on July 26, 2019 to file the IRP October 18, 2019.	
(4)	Work plan outlines content of IRP.	See pages 1-2 of the Work Plan document for a summarization of anticipated IRP contents.	
(4)	Work plan outlines method for assessing potential resources. (See LRC analysis below)	See pages 3-5 of the Work Plan document for a summarization of anticipated resource analysis.	
(5)	Work plan outlines timing and extent of public participation.	See pages 5-6 of the Work Plan. Table 1, page 6, document for the anticipated IRP schedule. PacifiCorp was granted approval in Docket No. UE-180259 on July 26, 2019 to file the 2019 IRP on October 18, 2019.	
(4)	Integrated resource plan submitted within two years of previous plan.	The WUTC issued an Order on December 11, 2008, under Docket No. UE-070117, granting the company permission to file its IRP on March 31 of each odd numbered year. PacifiCorp filed the 2017 IRP on April 4, 2017. PacifiCorp was granted approval in Docket No. UE-180259 on July 26, 2019 to file the IRP October 18, 2019.	
(5)	WUTC issues notice of public hearing after company files plan for review.	This obligation is not applicable to the company; this is a WUTC obligation.	
(5)	WUTC holds public hearing.	This obligation is not applicable to the company; this is a WUTC obligation.	
Requi	rements specific to IRP filing		
(2)(a)	Plan describes the mix of energy supply resources.	Volume I, Chapter 5 (Resource Needs Assessment) describes the mix of existing resources, while Volume I, Chapter 8 (Modeling and Portfolio Selection Results) describes the 2019 IRP preferred portfolio.	
(2)(a)	Plan describes conservation supply.	See Volume I, Chapter 6 (Resource Options) for a description of how conservation supplies are represented and modeled, and Volume I, Chapter 8 (Modeling and Portfolio Selection Results) for conservation supply in the preferred portfolio. Additional information on energy efficiency resource characteristics is available on PacifiCorp's IRP website.	
(2)(a)	Plan addresses supply in terms of current and future needs at the lowest reasonable cost to the utility and its ratepayers.	The 2019 IRP preferred portfolio was based on a resource needs assessment that accounted for forecasted load growth, expiration of existing power purchase contracts, resources under construction, contract, or reflected in the company's capital budget, as well as a capacity planning reserve margin. Details on PacifiCorp's findings of resource need are described in Volume I, Chapter 5 (Resource Needs Assessment).	
(2)(b)	Plan uses lowest reasonable cost (LRC) analysis to select the mix of resources.	PacifiCorp uses portfolio performance measures based on the Present Value of Revenue Requirements (PVRR) methodology. See the section on portfolio performance measures in Volume I, Chapter	

		How the Standards and Guidelines are Addressed in
No.	Requirement	the 2019 IRP
		7 (Modeling and Portfolio Evaluation Approach) and Volume I Chapter 8 (Modeling and Portfolio Selection Results).
(2)(b)	LRC analysis considers resource costs.	Volume I, Chapter 6 (Resource Options), provides detailed information on costs and other attributes for all resources analyzed for the IRP.
(2)(b)	LRC analysis considers market-volatility risks.	PacifiCorp employs Monte Carlo production cost simulation with a stochastic model to characterize market price and gas price volatility. Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) provides a summary of the modeling approach.
(2)(b)	LRC analysis considers demand side resource uncertainties.	PacifiCorp captured demand-side resource uncertainties through the development of numerous portfolios based on different sets of input assumptions.
(2)(b)	LRC analysis considers resource dispatchability.	PacifiCorp uses two IRP models that simulate the dispatch of existing and future resources based on such attributes as heat rate, availability, fuel cost, and variable O&M cost. The chronological production cost simulation model also incorporates unit commitment logic for handling start-up, shutdown, ramp rates, minimum up/down times, and run up rates, and reserve holding characteristics of individual generators.
(2)(b)	LRC analysis considers resource effect on system operation.	PacifiCorp's IRP models simulate the operation of its entire system, reflecting dispatch/unit commitment, forced/unforced outages, access to markets, and system reliability and transmission constraints.
(2)(b)	LRC analysis considers risks imposed on ratepayers.	PacifiCorp explicitly models risk associated with uncertain CO ₂ regulatory regimes, wholesale electricity and natural gas price escalation and volatility, load growth uncertainty, resource reliability, renewable portfolio standard requirement uncertainty, plant construction cost escalation, and resource affordability. These risks and uncertainties are handled through stochastic modeling and scenarios depicting alternative futures.
		In addition to risk modeling, the IRP discusses a number of resource risk topics not addressed in the IRP system simulation models. For example, Volume I, Chapter 9 (Action Plan) covers the following topics: (1) managing carbon risk for existing plants, (2) assessment of owning vs. purchasing power, (3) purpose of hedging, (4) procurement delays and (5) treatment of customer and investor risks. Volume I, Chapter 4 (Transmission) covers similar risks associated with transmission system expansion.
(2)(b)	LRC analysis considers public policies regarding resource preference adopted by Washington state or federal government.	In Volume I, Chapter 7 (Modeling and Portfolio Evaluation) the IRP modeling incorporates resource expansion constraints tied to renewable portfolio standards (RPS) currently in place for Washington. I-937 conservation requirements are explicitly accounted for in developing Washington conservation resource costs.
(2)(b)	LRC analysis considers cost of risks associated with environmental effects including emissions of carbon dioxide.	See (2)(b) above.
(2)(c)	Plan defines conservation as any reduction in electric power consumption that results from increases in the efficiency of energy use, production, or distribution.	A description of how PacifiCorp classifies and defines energy conservation is provided in Volume I, Chapter 6 (Resource Options).

		How the Standards and Guidelines are Addressed in
No.	Paguirament	the 2019 IRP
(3)(a)	Requirement Plan includes a range of forecasts of	PacifiCorp implemented a load forecast range. Details concerning
(3)(a)	future demand.	the load forecasts used in the 2017 IRP (high, low, and extreme
	Tuture demand.	peak temperature) are provided in Volume II, Appendix A (Load
		Forecast Details).
(3)(a)	Plan develops forecasts using	PacifiCorp's load forecast methodology employs econometric
	methods that examine the effect of	forecasting techniques that include such economic variables as
	economic forces on the consumption	household income, employment, and population. See Volume II,
	of electricity.	Appendix A (Load Forecast Details) for a description of the load
		forecasting methodology.
(3)(a)	Plan develops forecasts using	Residential sector load forecasts use a statistically-adjusted end-use
	methods that address changes in the	model that accounts for equipment saturation rates and efficiency.
	number, type and efficiency of	See Volume II, Appendix A (Load Forecast Details), for a
(2)(h)	electrical end-uses.	description of the residential sector load forecasting methodology.
(3)(b)	Plan includes an assessment of commercially available conservation,	PacifiCorp updated the system-wide demand-side management potential study in the 2019 IRP, which served as the basis for
	including load management.	developing DSM resource supply curves for resource portfolio
	merading load management.	modeling. The supply curves account for technical and achievable
		(market) potential, while the IRP capacity expansion model
		identifies a cost-effective mix of DSM resources based on these
		limits and other model inputs. The DSM potential study is included
		on the data disc, and available on PacifiCorp's IRP website at:
		www.pacificorp.com/energy/integrated-resource-plan/support.html.
(3)(b)	Plan includes an assessment of	A description of the current status of DSM programs and on-going
	currently employed and new policies	activities to implement current and new programs is provided in
	and programs needed to obtain the	Volume I, Chapter 5 (Resource Needs Assessment).
(2) ()	conservation improvements.	
(3)(c)	Plan includes an assessment of a wide	PacifiCorp considered a wide range of resources including
	range of conventional and	renewables, cogeneration (combined heat and power), customer
	commercially available nonconventional generating	standby generation, power purchases, thermal resources, energy storage, and transmission. Volume I, Chapters 6 (Resource Options)
	technologies.	and Chapter 7 (Modeling and Portfolio Evaluation Approach)
	teemorogres.	document how PacifiCorp developed and assessed these
		technologies.
(3)(d)	Plan includes an assessment of	PacifiCorp modeled transmission system capability to serve its load
	transmission system capability and	obligations, factoring in updates to the representation of major load
	reliability; to the extent such	and generation centers, regional transmission congestion impacts,
	information can be provided	import/export availability, external market dynamics, and
	consistent with applicable laws.	significant transmission expansion plans explained in Volume I,
		Chapter 4 (Transmission) and Chapter 7 (Modeling and Portfolio
		Evaluation Approach). System reliability given transmission
		capability was analyzed using stochastic production cost simulation
		and measures of insufficient energy and capacity for a load area
(3)(2)	Plan includes a comparative	(Energy Not Served and Unmet Capacity, respectively). PacifiCorp's capacity expansion optimization model (System
(3)(e)	evaluation of energy supply resources	Optimizer) is designed to compare alternative resources—including
	(including transmission and	transmission expansion options—for the least-cost resource mix.
	distribution) and improvements in	System Optimizer was used to develop numerous resource
	conservation using LRC.	portfolios for comparative evaluation on the basis of cost, risk,
		reliability, and other performance attributes. Potential energy
		savings associated with conservation voltage reduction are
		discussed in Volume I, Chapter 5 (Resource Needs Assessment).
(3)(f)	Plan includes integration of the	PacifiCorp integrates demand forecasts, resources, and system
	demand forecasts and resource	operations in the context of a system modeling framework described
	evaluations into a long range	in Volume I, Chapter 7 (Modeling and Portfolio Evaluation
	integrated resource plan describing	Approach). The portfolio evaluation covers a 20-year period (2019-

No.	Requirement	How the Standards and Guidelines are Addressed in the 2019 IRP
	the mix of resources that is designated to meet current and project future needs at the lowest reasonable cost to the utility and its ratepayers.	2038). PacifiCorp developed its preferred portfolio of resources judged to be least-cost after considering load requirements, risk, uncertainty, supply adequacy/reliability, and government resource policies in accordance with this rule.
(3)(g)	Plan includes a two-year action plan that implements the long range plan.	See Table 9.1 in Volume I, Chapter 9 (Action Plan), for PacifiCorp's 2019 IRP action plan.
(3)(h)	Plan includes a progress report on the implementation of the previously filed plan.	See Table 9.2 for a status report on action plan implementation from the 2017 IRP and 2017 IRP Update in Volume I, Chapter 9 (Action Plan).
Requir	rements from RCW 19.280.030 not discu	assed above
(1)(e)	An assessment of methods, commercially available technologies, or facilities for integrating renewable resources, and addressing overgeneration events, if applicable to the utility's resource portfolio;	See Volume I, Chapter 6 (Resource Options) for discussion of resource options in the 2019 IRP. Also see Volume II, Appendix P (Renewable Resources Assessment).
(1)(f)	The integration of the demand forecasts and resource evaluations into a long-range assessment describing the mix of supply side generating resources and conservation and efficiency resources that will meet current and projected needs, including mitigating overgeneration events, at the lowest reasonable cost and risk to the utility and its ratepayers;	See Volume II, Appendix A (Load Forecast Details) for a discussion of the load forecasts, supply-side and demand-side resources are discussed in Volume I, Chapter 6 (Resource Options). Also included is a discussion of DSM in Volume II, Appendix D (DSM Resources) are included in Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) and Chapter 8 (Modeling and Portfolio Selection Results) discuss the modeling methodology and selection of the preferred portfolio using least cost/least risk metrics.

<u>Table B.6 – Wyoming Public Service Commission Guidelines Regarding Electric IRP</u>

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
A	The public comment process employed as part of the formulation of the utility's IRP, including a description, timing and weight given to the public process;	PacifiCorp's public process is described in Volume I, Chapter 2 (Introduction) and in Volume II, Appendix C (Public Input Process).
В	The utility's strategic goals and resource planning goals and preferred resource portfolio;	Volume I, Chapter 8 (Modeling and Portfolio Selection Results) documents the preferred resource portfolio and rationale for selection. Volume I, Chapter 9 (Action Plan) constitutes the IRP action plan and the descriptions of resource strategies and risk management.
C	The utility's illustration of resource need over the near-term and long-term planning horizons;	See Volume I, Chapter 5 (Resource Needs Assessment).
D	A study detailing the types of resources considered;	Volume, I Chapter 6 (Resource Options), presents the resource options used for resource portfolio modeling for this IRP.
F	Changes in expected resource acquisitions and load growth from that presented in the utility's previous IRP;	A comparison of resource changes relative to the 2017 IRP Update is presented in Volume I, Chapter 9 (Action Plan). A chart comparing the peak load forecasts for the 2017 IRP, 2017 IRP Update, and 2019 IRP is included in Volume II, Appendix A (Load Forecast Details).
G	The environmental impacts considered;	Portfolio comparisons for CO ₂ and a broad range of environmental impacts are considered, including prospective early retirement and gas conversions of existing coal units as alternatives to environmental investments. See Volume I, Chapter 7 (Modeling and Portfolio Evaluation Approach) and Chapter 8 (Modeling and Portfolio

No.	Requirement	How the Guideline is Addressed in the 2019 IRP
		Selection) as well as Volume II, Appendix L (Stochastic Simulation Results).
Н	Market purchases evaluation;	Modeling of firm market purchases (front office transactions) and spot market balancing transactions is included in the 2019 IRP.
I	Reserve Margin analysis; and	PacifiCorp's planning reserve margin study, which documents selection of a capacity planning reserve margin is in Volume I, Appendix I (Planning Reserve Margin Study).
J	Demand-side management and conservation options;	See Volume I, Chapter 6 (Resource Options) for a detailed discussion on DSM and energy efficiency resource options. Additional information on energy efficiency resource characteristics is available on the company's website.

APPENDIX C – PUBLIC INPUT PROCESS

A critical element of this Integrated Resource Plan (IRP) is the public-input process. PacifiCorp has pursued an open and collaborative approach involving the commissions, customers and other stakeholders in PacifiCorp's IRP prior to making resource planning decisions. Since these decisions can have significant economic and environmental consequences, conducting the IRP with transparency and full participation from interested and affected parties is essential.

Stakeholders have been involved in the development of the 2019 IRP from the beginning. The public-input meetings held beginning in June 2018 were the cornerstone of the direct public-input process. There were a total of 18 public-input meetings, with eight lasting two days, the remainder being single days. Meetings were held jointly in both Salt Lake City, Utah and Portland, Oregon via video conference, with expanded video conference locations in Denver, Colorado and Cheyenne, Wyoming. Three meetings were held via phone conference. For all meetings, attendees off-site were able to conference in via phone.

The IRP public-input process also included state-specific stakeholder dialogue sessions held in June and August of 2018. The goal of these sessions was to capture key IRP issues of most concern to each state, as well as discuss how to tackle these from a system planning perspective. PacifiCorp wanted to ensure stakeholders understood IRP planning principles. These meetings continued to enhance interaction with stakeholders in the planning cycle and provided a forum to directly address stakeholder concerns regarding equitable representation of state interests during public-input meetings.

PacifiCorp solicited agenda item recommendations from stakeholders in advance of the state meetings. There was additional open time to ensure participants had adequate opportunity for dialogue.

PacifiCorp's integrated resource plan website housed feedback form discussed earlier in Chapter 2 - Introduction. This standardized form allowed stakeholders opportunities to provide comments, questions, and suggestions. PacifiCorp also posted its response to the feedback forms at the same location. Feedback forms and PacifiCorp's responses can be found via the following link: (www.pacificorp.com/energy/integrated-resource-plan/comments.html).

Participant List

PacifiCorp's 2019 IRP was a robust process involving input from many parties throughout. Organizations actively participated in the development of material, modeling process, and public meetings. Participants included commissions, stakeholders, and industry experts. Among the organizations that were represented and actively involved in this collaborative effort were:

Commissions

- Idaho Public Utilities Commission
- Oregon Public Utilities Commission
- Public Service Commission of Utah
- Washington Utilities and Transportation Commission

Wyoming Public Service Commission

Stakeholders and Industry Experts

- Alliance of Western Energy Consumers
- Applied Energy Group
- Avangrid
- Black & Veatch
- Breathe Utah
- Burns & McDonnell Engineering Company
- Cascade Natural Gas
- City of Kemmerer Wyoming
- Clarke Investments, LLC
- Enel Green Power
- Energy Trust of Oregon
- First Solar
- Gardner Energy
- Glenrock Energy
- Heal Utah
- Holladay United Church of Christ
- Idaho Conservation League
- Idaho Power Company
- Idaho Public Utility Commission Staff
- Individual Customers
- Industrial Customers of Northwest Utilities
- Intermountain Wind
- Lincoln County Commission
- Magnum Development
- National Grid Ventures
- Natural Resources Defense Council
- Navigant Consulting, Inc.
- Northwest Pipeline GP
- Oregon Department of Energy
- Oregon Department of Justice
- Oregon Public Utility Commission Staff
- Portland General Electric
- Power Quip
- Renewables Northwest
- Sierra Club
- Utah Clean Energy
- Utah Division of Public Utilities
- Utah Office of Consumer Services
- Utah Office of Energy Development
- Washington Office of Attorney General, Public Council Unit
- Western Resource Advocates
- Westmoreland

- Wyoming Coalition of Local Governments & Lincoln County
- Wyoming Department of Workforce Services
- Wyoming House District 18
- Wyoming Infrastructure Authority
- Wyoming Liberty Group
- Wyoming Office Of Consumer Advocate

PacifiCorp extends its gratitude for the time and energy participants have given to the IRP process. Their participation has contributed significantly to the quality of this plan and their continued participation will help PacifiCorp as it strives to improve its planning efforts going forward.

Public-Input Meetings

As mentioned above, PacifiCorp hosted 18 public-input meetings, as well as six state meetings during the public-input process. During the 2019 IRP public-input process presentations and discussions covered various issues regarding inputs, assumptions, risks, modeling techniques, and analytical results. Below are the agendas from the public-input meetings; the presentations cab be located at: www.pacificorp.com/energy/integrated-resource-plan.html.

General Meetings

June 28-29, 2018 – General Public Meeting

Day One (Confidential Discussion)

- Introductions
- Model Overview (System Optimizer / Planning and Risk)
- Unit-by-Unit Coal Study Results

Day Two (Public Discussion)

- 2017 IRP Update Highlights / 2019 IRP Topics and Timeline
- Demand-Side Management Workshop

July 26-27, 2018 – General Public Meeting

Day One

- Energy Storage Workshop
- Renewable Resource Schedules and Load Forecast
- Distribution System Planning
- Supply-Side Resource Study Efforts

Day Two

- Environmental Policy
- Renewable Portfolio Standards
- 2019 IRP Modeling Assumptions and Study Updates
 - Intra-Hour Dispatch Credit
 - Stochastic Parameters Update
 - Overview of Planning Reserve Margin and Capacity Contribution Studies

August 30-31, 2018 - General Public Meeting

Day One

- Private Generation Study
- Conservation Potential Assessment and Energy Efficiency Credits
- Portfolio Development Process / Initial Sensitivity Studies
- Flexible Reserve Study
- Process Improvement / Next Steps

Day 2

- Market Reliance Assessment
- Planning Reserve Margin Study / Capacity Contribution Study

September 26-27, 2018 – General Public Meeting

Day One

- Draft Supply-Side Resource Table
- Intra-Hour Flexible Resource Credit
- Environmental Policy / Price-Policy Scenarios
- Transmission Overview and Updates
- Stakeholder Feedback Form Recap

Day Two

- Flexible Reserve Study Cost Results
- Planning Reserve Margin / Capacity Contribution Results
- Portfolios Discussion / Coal Studies Next Steps
- Demand-Side Management Transmission and Distribution Credit / Conservation Potential Assessment

October 9, 2018 – General Public Meeting (Conference Call Only)

- Supply-Side Resource Table Levelized Costs
- Intra-Hour Flexible Resource Credits
- Updated CO₂ Assumption

November 1, 2018 – General Public Meeting

- Supply-Side Resource Table
- Modeling Improvements and Updates
- Update on Coal Analysis
- Stakeholder Feedback Form Recap

December 3-4, 2018 – General Public Meeting

Day One

Coal Studies Discussion

Day Two

- Coal Studies Discussion (continued)
- Stakeholder Feedback Form Recap

January 24, 2019 – General Public Meeting

- Capacity-Contribution Values for Energy-Limited Resources
- Coal Studies Discussion
- Stakeholder Feedback Form Recap

February 21, 2019 – General Public Meeting (Conference Call Only)

- General Updates
- Summary of Oregon Energy Efficiency Analysis Results
- Stakeholder Feedback Form Recap

March 21, 2019 – General Public Meeting

- Coal Studies Modeling Improvements and Updates
- Modeling Next Steps
- Stakeholder Feedback Form Recap

April 25, 2019 – General Public Meeting

- Coal Studies Discussion
- Stakeholder Feedback Form Recap

May 20-21, 2019 – General Public Meeting

Day One

- Conservation Potential Assessment Cost Correction
- DSM Bundling Portfolio Methodology
- Updated Portfolio Matrix
- Portfolio Analysis Results Discussion

Day Two

- Portfolio Analysis Results Discussion (continued)
- Stakeholder Feedback Form Recap

June 20-21, 2019 – General Public Meeting

Day One

- Modeling Updates
- Portfolio Analysis Results

Day Two

- Portfolio Analysis Results
- Stakeholder Feedback Form Recap

July 12, 2019 – DSM Workshop

- Conservation Potential Assessment
- Demand-Side Management Portfolio Methodology

July 18, 2019 – General Public Meeting (Conference Call Only)

- General Updates
- Stakeholder Feedback Form Recap

September 5, 2019 – General Public Meeting

- Portfolio Analysis Results
- Stakeholder Feedback Form Recap

October 3-4, 2019 – General Public Meeting

Day One

- Preferred Portfolio and Action Plan
- Portfolio Development and Selection

Day Two

- Portfolio Development and Selection
- Sensitivities
- Stakeholder Feedback Form Recap

November 12, 2019 – General Public Meeting (Planned)

- Stakeholder Q&A
- Transmission Modeling Workshop

State-Specific Input Meetings

June 11, 2018 – Oregon State Stakeholder Meeting

June 12, 2018 – Washington State Stakeholder Meeting

June 18, 2018 – Idaho State Stakeholder Meeting

June 19, 2018 – Wyoming State Stakeholder Meeting

June 20, 2018 – Utah State Stakeholder Meeting

August 9, 2018 - Utah State Stakeholder Meeting

Stakeholder Comments

For the 2019 IRP, PacifiCorp offered a Stakeholder Feedback Form which provided stakeholders a direct opportunity to provide comments, questions, and suggestions outside opportunities for discussion at public-input meetings. PacifiCorp recognizes the importance of stakeholder feedback to the IRP public-input process. A blank form, as well as those submitted by stakeholders and PacifiCorp's response, can be located on the PacifiCorp website at the IRP comments webpage at: www.pacificorp.com/energy/integrated-resource-plan/comments.html.

During the 2019 IRP development process, PacifiCorp received 132 Stakeholder Feedback Forms with a combined 564 questions. The Stakeholder Feedback Form allowed the company to review and summarize issues by topic as well as identify specific recommendations that were provided. Information collected was used to inform the 2019 IRP development process, including feedback related to process improvements and input assumptions, as well as responding directly to stakeholder questions. Stakeholder Feedback Forms were received from the following stakeholders:

- City of Kemmerer, Wyoming
- Energy Strategies, LLC
- First Solar
- Gridflex Energy, LLC

- Idaho Conservation League
- Idaho Public Utility Commission Staff
- Individual Stakeholders
- Interwest Energy Alliance
- Key Capture Energy
- Lawrence Berkeley National Laboratory
- Lincoln County School District
- National Grid Ventures
- Northwest Energy Coalition
- Northwest Power and Conservation Council
- Oregon Citizens' Utility Board
- Oregon Public Utility Commission Staff
- Oyster Ridge BOCES
- Powder River Basin Resource Council
- Renewable Northwest
- Sierra Club
- Sound Geothermal Corporation
- South Lincoln EMS
- South Lincoln Medical Center
- Southwest Energy Efficiency Project
- Utah Association of Energy Users
- Utah Clean Energy
- Washington Utilities and Transportation Commission Staff
- Western Resource Advocates
- Wyoming Business Council
- Wyoming Coalition of Local Governments & Lincoln County
- Wyoming House District 18
- Wyoming Office of Consumer Advocate

Some topics of note addressed in the forms include:

- Capacity Factors
- Coal Analysis
- Coal Combustion Residuals
- Coal Studies
- Conservation Credit
- Conservation Potential Assessment
- Consultant Reports
- Demand Response
- Demand-Side Management
- Demand-Side Management Modeling
- Distribution System Planning
- Energy Efficiency
- Energy Storage
- Environmental Policy
- Flexible Reserve Study

- General Comments
- Inflation Assumption
- Initial Sensitivity Studies
- Intra-hour Dispatch Credits
- IRP Filing Date
- IRP Public-Input Meeting Process
- Legislation
- Levelized Cost Curves
- Load Forecasting
- Market Purchases
- Market Reliance Assessment
- Modeling Assumptions
- Modeling Improvements
- Planning Reserve Margin
- Portfolio Analysis
- Private Generation Study
- Reliability Assessment
- Renewable Energy Resources
- Sensitivity Studies
- Supply-side Resource Costs
- Supply-side Resource Table
- Transmission
- Unit Specific Questions

Contact Information

PacifiCorp's IRP website: www.pacificorp.com/energy/integrated-resource-plan.html.

PacifiCorp requests any informal request be sent to the following address or email.

PacifiCorp IRP Resource Planning Department 825 N.E. Multnomah, Suite 600 Portland, Oregon 97232

Email Address: IRP@PacifiCorp.com

Phone Number: (503) 813-5245

APPENDIX D – DEMAND-SIDE MANAGEMENT RESOURCES

Introduction

This appendix reviews the studies and reports used to support the demand-side management (DSM) resource information used in the modeling and analysis of the 2019 Integrated Resource Plan (IRP). In addition, it provides information on the economic DSM selections in the 2019 IRP's Preferred Portfolio, a summary of existing DSM program services and offerings, and an overview of the DSM planning process in each of PacifiCorp's service areas.

Conservation Potential Assessment (CPA) for 2019-2038

Since 1989, PacifiCorp has developed biennial IRPs to identify an optimal mix of resources that balance considerations of cost, risk, uncertainty, supply reliability/deliverability, and long-run public policy goals. The optimization process accounts for capital, energy, and ongoing operation costs as well as the risk profiles of various resource alternatives, including: traditional generation and market purchases, renewable generation, and DSM resources such as energy efficiency, and demand response or capacity-focused resources. Since the 2008 IRP, DSM resources have competed directly against supply-side options, allowing the IRP model to guide decisions regarding resource mixes, based on cost and risk.

The Conservation Potential Assessment (CPA) for 2019-2038,¹ conducted by Applied Energy Group (AEG) on behalf of PacifiCorp, primarily seeks to develop reliable estimates of the magnitude, timing, and costs of DSM resources likely available to PacifiCorp over the IRP's 20-year planning horizon. The study focuses on resources realistically achievable during the planning horizon, given normal market dynamics that may hinder resource acquisition. Study results were incorporated into PacifiCorp's 2019 IRP and will be used to inform subsequent DSM planning and program design efforts. This study serves as an update of similar studies completed since 2007.

For resource planning purposes, PacifiCorp classifies DSM resources into four classifications, differentiated by two primary characteristics: reliability and customer choice. These resources classifications can be defined as: demand response (Class 1 DSM) (e.g., a firm, capacity focused resource such as a load control), energy efficiency (Class 2 DSM) (e.g., a firm energy intensity resource such as conservation), Class 3 DSM (e.g., a non-firm, capacity focused such as pricing response or load shifting), and Class 4 DSM (e.g., a behavioral-based resource such as education and information).

From a system-planning perspective, demand response resources can be considered the most reliable, as they can be dispatched by the utility. In contrast, Class 4 DSM resources are the least reliable due to the resource's dependence on voluntary behavioral changes. With respect to customer choice, demand response and energy efficiency resources should be considered involuntary in that, once equipment and systems have been put in place, savings can be expected

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¹ PacifiCorp's Demand-Side Resource Potential Assessment for 2017-2036, completed by AEG, can be found at: www.pacificorp.com/energy/integrated-resource-plan/support.html.

to occur over a certain period of time. Class 3 and Class 4 DSM activities involve greater customer choice and control. This assessment estimates potential from demand response, energy efficiency, and Class 3 DSM.

The CPA excludes an assessment of Oregon's energy efficiency resource potential, as this work is performed by the Energy Trust of Oregon, which provides energy efficiency potential in Oregon to PacifiCorp for resource planning purposes.

Current DSM Program Offerings by State

Currently, PacifiCorp offers a robust portfolio of DSM programs and initiatives, most of which are offered in multiple states, depending on size of the opportunity and the need. Programs are reassessed on a regular bases. PacifiCorp has the most up-to-date programs on its website.² Demand response and energy efficiency program services and offerings are available by state and sector. Energy efficiency services listed for Oregon, except for low income weatherization services, are provided in collaboration with the Energy Trust of Oregon.³ Table D.1 provides an overview of the breadth of demand response and energy efficiency program services and offerings available by Sector and State.

PacifiCorp has numerous Class 3 DSM offerings currently available. They include metered time-of-day and time-of-use pricing plans (in all states, availability varies by customer class), residential seasonal inverted block rates (Idaho and Utah) and residential year-round inverted block rates (California, Oregon, Washington, and Wyoming). System-wide, approximately 17,500 customers were participating in metered time-of-day and time-of-use programs as of December 31, 2017.

All of PacifiCorp's residential customers not opting for Class 3 DSM time-of-use rates are currently subject to seasonal or year-round inverted block rate plans. Savings associated with these resources are captured within the company's load forecast and are thus captured in the integrated resource planning framework. PacifiCorp continues to evaluate Class 3 DSM programs for applicability to long-term resource planning.

PacifiCorp provides Class 4 DSM offerings. Educating customers regarding energy efficiency and load management opportunities is an important component of PacifiCorp's long-term resource acquisition plan. A variety of channels are used to educate customers including television, radio, newspapers, bill inserts and messages, newsletters, school education programs, and personal contact. Load reductions due to Class 4 DSM activity will show up in demand response and energy efficiency program results and non-program reductions in the load forecast over time. Table D.2 provides an overview of DSM related *watt* smart Outreach and Communication activities (Class 4 DSM activities) by state.

² Programs for Rocky Mountain Power can be found at www.rockymountainpower.net/savings-energy-choices.htmland programs for Pacific Power can be found at www.pacificorp.com/environment/demand-side-management.html.

³ Funds for low-income weatherization services are forwarded to Oregon Housing and Community Services.

Table D.1– Current Demand Response and Energy Efficiency Program Services and Offerings by Sector and State

Program Services & Offerings by Sector and State	California	Oregon	Washington	Idaho	Utah	Wyoming
Residential Sector						
Air Conditioner Direct Load Control	√	√	√	√	√	√
Lighting Incentives	√	√	√	√	1	√
New Appliance Incentives	√	√	√	√	1	√
Heating And Cooling Incentives	√	√	√	√	√	√
Weatherization Incentives - Windows, Insulation, Duct	1	√	√	1	1	1
Sealing, etc. New Homes	1	√	√	\ √	1	
Low-Income Weatherization	V	V	V	V	1	V
Home Energy Reports	·	·	V	1	1	V
School Curriculum		√	V	·	1	
Energy Saving Kits	√	√	√	√	V	√
Financing Options With On-Bill Payments		√				
Trade Ally Outreach	√	√	√	√	1	√

Program Services & Offerings by Sector and State	California	Oregon	Washington	Idaho	Utah	Wyoming
Non-Residential Sector						
Air Conditioner Direct Load Control		√		√	1	
Irrigation Load Control		V		√	1	
Standard Incentives	√	√	V	√	√	√
Energy Engineering Services	√	√	V	√	√	√
Billing Credit Incentive (offset to DSM charge)		√			1	√
Energy Management	√	√	V	√	1	V
Energy Profiler Online	V	√	√	√	√	√
Business Solutions Toolkit	V	√	√	√	√	√
Trade Ally Outreach	V	√	√	√	√	√
Small Business Lighting	√	√	√	√	√	√
Lighting Instant Incentives	√	√	√	√	√	√
Small to Mid-Sized Business Facilitation	√	√	√	√	√	√
DSM Project Managers Partner With Customer Account Managers	1	√	1	√	√	√

Table D.2 – Current wattsmart Outreach and Communications Activities

Wattsmart Outreach &
Communications (incremental
to program specific
advertising)
Advertising
Sponsorships

California	Oregon	Washington
	√	V
	1	

Idaho	Utah	Wyoming
√	√	√
	√	

Wattsmart Outreach &
Communications (incremental
to program specific
advertising)
Social Media
Public Relations
Business Advocacy (awards at
customer meetings,
sponsorships, chamber
partnership, university
partnership)
Wattsmart Workshops and
Community Outreach
Be wattsmart, Begin at Home -
in school energy education

California	Oregon	Washington
√	√	√
√	√	√
V	√	√
4	1	7
		1

Idaho	Utah	Wyoming
√	√	√
	√	√
√	√	√
√	1	√
√	1	√

State-Specific DSM Planning Processes

A summary of the DSM planning process in each state is provided below.

Utah, Wyoming and Idaho

The company's biennial IRP and associated action plan provides the foundation for DSM acquisition targets in each state. Where appropriate, the company maintains and uses external stakeholder groups and vendors to advise on a range of issues including annual goals for conservation programs, development of conservation potential assessments, development of multi-year DSM plans, program marketing, incentive levels, budgets, adaptive management and the development of new and pilot programs.

Washington

The company is one of three investor-owned utilities required to comply with the Energy Independence Act (also referred to as I-937) approved in November 2006. The Act requires utilities to pursue all conservation that is cost-effective, reliable, and feasible. Every two years, each utility must identify its 10-year conservation potential and two-year acquisition target based on its IRP and using methodologies that are consistent with those used by the Northwest Power and Conservation Council. Each utility must maintain and use an external conservation stakeholder group that advises on a wide range of issues including conservation programs, development of conservation potential assessments, program marketing, incentive levels, budgets, adaptive management and the development of new and pilot programs. PacifiCorp works with the conservation stakeholder group annually on its energy efficiency program design and planning.

California

On September 15, 2017, PacifiCorp filed Application 17-09-010 requesting authorization to continue offering its energy efficiency programs (through 2020). The Commission issued Decision 18-11-033 on December 6, 2018, approving the company's application to continue administering its programs through 2020. PacifiCorp expects to submit an application for the continuation of energy efficiency programs beyond 2020.

Oregon

Energy efficiency programs for Oregon customers are planned for and delivered by the Energy Trust of Oregon in collaboration with PacifiCorp. The Energy Trust's planning process is comparable to PacifiCorp's other states, including establishing resource acquisition targets based on resource assessment and integrated resource planning, developing programs based on local market conditions, and coordinating with stakeholders and regulators to ensure efficient and cost-effective delivery of energy efficiency resources.

Preferred Portfolio DSM Resource Selections

The following tables show the economic DSM resource selections by state and year in the 2019 IRP preferred portfolio, P45CNW.

Table D.3 – Incremental Demand Response Resource Selections (2019 IRP Preferred Portfolio)

State/Product by Year	2019	2021	2023	2025	2026	2029	2030	2032	2035	2036	2037	2038	Total/Products (MW)
California-3rd Party Contracts												1.1	1.1
California-Cool/WH												1.5	1.5
California-Irrigate											4.8		4.8
California-Thermostat											5.8		5.8
Oregon-3rd Party Contracts												10.9	10.9
Oregon-Ancillary Services						7.5							7.5
Oregon-Irrigate											13.3		13.3
Washington-3rd Party Contracts												10.9	10.9
Washington-Ancillary Services						1.9							1.9
Washington-Cool/WH												7.7	7.7
Washington-Irrigate											8.3		8.3
Washington-Thermostat											16.6		16.6
Utah-3rd Party Contracts												76.7	76.7
Utah-Ancillary Services			8.3	5.3							3.2		16.7
Utah-Cool/WH	4.1	7.0	9.9		7.2	6.7		6.8	7.0			7.2	55.9
Utah-Irrigate												1.9	1.9
Utah-Thermostat						116.7	8.2		8.3			5.1	138.3
Idaho-Irrigate								5.2		3.7		1.8	10.6
Wyoming-3rd Party Contracts												37.3	37.3
Wyoming-Ancillary Services				3.0									3.0
Wyoming-Cool/WH												5.2	5.2
Wyoming-Irrigate											1.8	,	1.8
Wyoming-Thermostat											5.5	1.2	6.7
Total by Year	4.1	7.0	18.1	8.2	7.2	132.7	8.2	12.0	15.3	3.7	48.7	166.0	431.2

Table D.4 – Incremental Energy Efficiency Resource Selections (2019 IRP Preferred Portfolio)

Energy Efficiency E	nergy Efficiency Energy (MWh) Selected by State and Year												
State	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028			
CA	5,130	5,710	5,270	5,540	6,240	6,180	6,760	6,830	6,710	6,900			
OR	182,370	168,410	165,580	177,040	170,830	175,640	163,960	158,100	152,370	144,500			
WA	42,090	39,900	40,550	44,450	46,490	46,420	45,300	43,710	42,870	41,510			
UT	255,470	254,270	254,120	254,590	260,140	256,810	252,620	244,500	244,770	236,870			
ID	18,100	17,190	17,590	18,410	20,920	20,580	20,450	20,740	20,400	20,020			
WY	59,320	50,960	54,960	71,250	79,200	83,290	84,430	91,700	91,270	88,540			
Total System	562,480	536,440	538,070	571,280	583,820	588,920	573,520	565,580	558,390	538,340			

State	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
CA	6,690	6,400	6,220	5,890	5,380	4,110	4,440	3,660	3,040	2,640
OR	130,550	122,100	118,120	113,420	98,860	99,240	96,100	95,190	87,690	84,090
WA	37,970	36,610	34,390	32,040	30,230	22,700	22,740	18,190	15,620	15,330
UT	216,320	213,380	200,900	198,880	184,760	135,510	122,290	93,920	80,230	87,710
ID	19,410	18,210	17,480	17,400	15,760	12,850	11,930	9,810	8,370	8,640
WY	81,230	75,380	66,490	61,490	56,140	43,140	40,520	35,180	25,690	25,880
			·						•	
Total System	492,170	472,080	443,600	429,120	391,130	317,550	298,020	255,950	220,640	224,290

For the 20-year assumed nameplate capacity contributions (MW impacts) by state and year associated with the Energy Efficiency resource selections above, see Table 8.18 – PacifiCorp's 2019 IRP Preferred Portfolio, in Volume I of the 2019 IRP.

APPENDIX E – SMART GRID

Introduction

Smart grid is the application of advanced communications and controls to the electric power system. As such, a wide array of applications can be defined under the smart grid umbrella. PacifiCorp has identified specific areas for research that include technologies such as dynamic line rating, phasor measurement units, distribution automation, advanced metering infrastructure (AMI), automated demand response and other advanced technologies. PacifiCorp has reviewed relevant smart grid technologies for transmission and distribution systems that provide local and system benefits. When considering these technologies, the communications network is often the most critical infrastructure decision. This network must have relevant speed, reliability, and security and be scalable to support the entire service territory and interoperable for many device types, manufacturers, and generations of technology.

PacifiCorp has focused on those technologies that present a positive benefit for customers and has implemented functions such as advanced metering, dynamic line rating, and distribution automation. This will optimize the electrical grid when and where it is economically feasible, operationally beneficial and in the best interest of customers. PacifiCorp is committed to consistently evaluating the value of emerging technologies for integration when they are found to be appropriate investments. The company is working with state commissions to improve reliability, energy efficiency, customer service, and integration of renewable resources by analyzing the total cost of ownership, performing thorough cost-benefit analyses, and reaching out to customers concerning smart grid applications and technologies. As technology advances and development continues, PacifiCorp is able to improve cost estimates and benefits of smart grid technologies that will assist in identifying the best suited technologies for implementation.

Transmission Network and Operation Enhancements

Dynamic Line Rating

Dynamic line rating is the application of sensors to transmission lines to indicate the real-time current-carrying capacity of the lines in relation to thermal restrictions. Transmission line ratings are typically based on line loading calculations given a set of worst-case weather assumptions, such as high ambient temperatures and very low wind speeds. Dynamic line rating allows an increase in current-carrying capacity when more favorable weather conditions are present and the transmission path is not constrained by other operating elements. The Standpipe-Platte (formally Miners-Platte) project was implemented in 2014 and has moved from pilot stage into full deployment. Standpipe-Platte is currently the only dynamic line rating application in PacifiCorp. The Standpipe-Platte project has delivered positive results as windy days are directly linked to increased wind power generation and increased transmission ratings. A dynamic line rating system is used to determine the resulting cooling effect of the wind on the line. The current carrying capacity is then updated to a new weather dependent line rating. The Standpipe-Platte 230 kilovolt (kV) transmission line is one of three lines in the TOT4A transmission corridor, and had been one of the limits of the corridor power transfer. As a result of this project, the TOT4A Western Electricity Coordinating Council (WECC) non-simultaneous path rating was increased.

Dynamic line rating will be considered for all future transmission needs as a means for increasing capacity in relation to traditional construction methods. Dynamic line rating is only applicable for

thermal constraints and only provides additional site-dependent capacity during finite time periods, and it may or may not align with expected transmission needs of future projects. PacifiCorp will continue to look for opportunities to cost-effectively employ dynamic line rating systems, and the Standpipe-Platte dynamic line rating system will be redeployed with newer equipment in 2020.

Digital Fault Recorders / Phasor Measurement Unit Deployment

To meet compliance with the North American Electric Reliability Corporation (NERC) MOD-033-1 and PRC-002-2 standards, PacifiCorp has installed over 100 multifunctional digital fault recorders (DFR) which include phasor measurement unit (PMU) functionality. The installations are at key transmission and generation facilities throughout the six-state service territory, generally placed on WECC identified critical paths. PMUs provide sub-second data for voltage and current phasors, which can be used for MOD-033-1 event analysis and model verification. DFRs have a shorter recording time with higher sampling rate to validate dynamic disturbance modelling per PRC-002-2. The DFR/PMUs will deliver dynamic PMU data to a centralized phasor data concentrator (PDC) storage server where offline analysis can be performed by transmission operators, planners, and protection engineers. Installation of the communications and data transfer systems between the individual PMUs and the PDC is underway and planned for completion by the end of 2019. Additionally, transient DFR data will be downloaded manually at substations.

Transmission planners will use the phasor data quantities from actual system events to benchmark performance of steady-state and transient stability models of the interconnected transmission system and generating facilities. Using a combination of phasor data from the PMUs and analog quantities currently available through Supervisory Control and Data Acquisition System (SCADA), transmission planners can set up the system models to accurately depict the transmission system prior to, during, and following an event. Differences in simulated versus actual system performance will then be evaluated to allow for enhancements and corrections to the system model.

Model validation procedures are being evaluated, in conjunction with data and equipment availability to fulfill MOD-033-1. Creation of a documented process to validate data that includes the comparison of a planning power flow model to actual system behavior and the comparison of the planning dynamic model to actual system response is ongoing. PacifiCorp will continually evaluate potential benefits of PMU installation and intelligent monitoring as the industry considers PMU in special protection, remedial action scheme and other roles that support transmission grid operators. With the transitions at Peak Reliability, PacifiCorp will continue to work with the California Independent System Operator (CAISO)'s Reliability Coordinator West to share data as appropriate.

Distribution Automation and Reliability

Distribution Automation

Distribution automation encompasses a wide field of smart grid technology and applications that focus on using sensors and data collection on the distribution system, as well as automatically adjusting the system to optimize performance. Distribution automation can also provide improved outage management with decreased restoration times after failure, operational efficiency, and peak load management using distributed resources and predictive equipment failure analysis using complex data algorithms. PacifiCorp is working on distribution automation initiatives focused on improved system reliability through improved outage management and response.

In Oregon, PacifiCorp identified 40 circuits on which cost benefit analyses were performed. From this analysis two circuits in Lincoln City, Oregon were selected to have a fault location, isolation and service restoration (FLISR) system installed. The project is on track to be installed by the end of 2019. This pilot is intended to provide field validation of lab tested solutions for outage management and automated restoration, and will identify improvements to the operating systems and drive implementation of FLISR throughout the service territory.

Wildfire Mitigation

In response to concerns of wildfire danger to customers, PacifiCorp began developing communication systems and practices to improve system reliability in at risk areas. Selected substations in Siskiyou County, California and Wasatch County, Utah are preliminary sites that will have remote communication installed to allow dispatch operators to modify re-closer settings. Development of standards for re-closers to enable the remote communication have been completed and the pilot implementation will be provided to at risk substations by the conclusion of 2019. The ability to integrate legacy systems to various communication networks will allow PacifiCorp to improve its response to failures in remote locations.

Distribution Substation Metering

Substation monitoring and measurement of various electrical attributes were identified as a necessity due to the increasing complexity of distribution planning driven by growing levels of primarily solar generation as distributed energy resources. Enhanced measurements improve visibility into loading levels and generation hosting capacity as well as load shapes, customer usage patterns, and information about reliability and power quality events.

In 2017, an advanced substation metering project was initiated to provide an affordable option for gathering required substation and circuit data at locations where SCADA is unavailable and/or uneconomical. SCADA has been the preferred form of gathering load profile data from distribution circuits, however SCADA systems can be expensive to install and additional equipment is required to provide the data needed to perform distribution system and power quality analysis. When system data rather than data and control is important, SCADA is no longer the best option.

A preliminary wave of approximately 20 meter replacements with cellular communications were deployed in 2018, with 30 additional meters to be fully deployed by the end of 2019 at identified substations to fully investigate their capabilities. Specialized software will provide users a refined view the reliability and power quality information in addition to the standard substation and circuit data. The project will also evaluate if the metering solutions provide cost effective situational awareness and control.

Distributed Energy Resources

Energy Storage Systems

In 2017, PacifiCorp filed the Energy Storage Potential Evaluation and Energy Storage Project proposal with the Public Utilities Commission or Oregon. This filing was in alignment with PacifiCorp's strategy and vision regarding the expansion and integration of renewable technologies. The company proposed a utility-owned targeted energy storage system (ESS) pilot project. In 2019 PacifiCorp began project development and is progressing to build an ESS on a Hillview substation distribution circuit in Corvallis, Oregon. This is a 20.8 kV radial distribution circuit with a peak load of 20 megawatts (MW). The intent of this project is to integrate the ESS

into the existing distribution system with the capability and flexibility to potentially advance to a future micro grid system.

PacifiCorp is installing a stationary battery system and photovoltaic (PV) solar array to test the effectiveness of using non-traditional methods to correct the voltage issues during peak loading conditions. The project location is on a distribution circuit out of the Panguitch substation located in Garfield County, Utah with an anticipated in-service date of November 2019. This project is intended to reduce the loading on the power transformer, improve voltage conditions, and mitigate costs associated with upgrading the upstream 69 kV transmission system under a traditional poles and wires build-out. The battery system is rated at one MW capacity and five megawatt-hours (MWh) of energy delivery, and the solar PV array is rated at 650 kilowatts (kW) of capacity.

PacifiCorp is partnering with Utah State University to demonstrate the ability to integrate solar PV, natural gas generation, energy storage, and electronic controls to create a customer managed microgrid. This microgrid is designed to operate autonomously and seamlessly connect and disconnect from the company's electric grid based on demand and supply. The microgrid system will be located at Utah State University's Electric Vehicle Roadway facility in Logan, Utah and is expected to be fully operational by the end of 2019.

Demand Response

In 2018, PacifiCorp transitioned to the automatic dispatch of the residential air conditioner (A/C) program in Utah, utilizing two-way communication devices to respond to frequency dispatch signals. Known as Cool Keeper this frequency dispatch innovation is a grid-scale solution using fast-acting residential demand response resources to support the bulk power system. Some utilities use generating resources to perform this function, but as higher levels of wind and solar resources are added, additional balancing resources are required. The Cool Keeper system provides over 200 MWs of operating reserves to the system through the control of more than 108,000 A/C units.

Dispatchable Customer Resources

PacifiCorp partnered with a developer in 2018 to make an innovative solar and battery solution possible at a 600 unit multi-family community in Utah. Known as Soleil Lofts, this project provides a unique opportunity for the company to implement an innovative solution using solar and battery storage integration along with demand response and advanced management of the grid through daily energy load shaping. The project will include the development of a company-owned utility data and dispatch portal with direct access to 621 Sonnen batteries, each rated at 8kW, for a total of 4.8 MWs of capacity and 12 MWh of energy within the project area. In addition to the cost savings with leveraging the Soleil community partnership, the project creates opportunity to develop and test new programs related demand response, load shaping and rate design.

Advanced Metering Infrastructure

Advanced metering infrastructure (AMI) is an integrated system of smart meters, communications networks, and data management systems that provide interval data available on a daily basis. This infrastructure can also provide advanced functionalities including remote connect/disconnect, outage detection and restoration signals, and support distribution automation schemes. In 2016, PacifiCorp identified economical AMI solutions for California and Oregon that delivered tangible benefits to customers while minimizing the impact on consumer rates. The California AMI project was completed in 2018 and the Oregon project is on schedule for completion before the end of 2019. The California project installed approximately 45,000 smart meters and constructed a field area network covering the 11,000 square mile California service area. The Oregon project will

install approximately 608,000 smart meters and construct a field area network covering the 21,000 square mile Oregon service area.

A new information technology (IT) infrastructure for the AMI project was put in place prior to the start of field network and meter deployments. This IT solution included all required data acquisition, connect/disconnect, outage detection/restoration and related functions as well as an enhanced customer website that allows customers to view their hourly, daily, weekly, and monthly usage. The information provided through the enhanced website provides customers with more tools to better monitor and manage their energy usage.

In 2018, AMI projects were approved for Utah and Idaho, and work on these projects is underway and scheduled for completion by the end of 2021. The projects will be executed under one management structure with two strategies, and involves replacing nearly all Idaho meters with Itron Riva smart meters and constructing a field area network that will allow two-way meter communication. AMI functionality consistent with California and Oregon will be delivered in Idaho including capturing interval read data, remote connect and disconnect capability, outage management functionality and analytic data.

In Utah, a hybrid AMR/AMI system will be put in place, and approximately 172,000 Itron Riva smart meters will be installed in strategic locations. These meters will deliver full AMI functionality, consistent with Idaho. The field area network will be able to communicate with the new Riva meters and the approximately 790,000 remaining AMR meters that were installed beginning with the initial AMR deployment started in 2006. This hybrid solution will enable interval data and outage management capability for the AMR meters while allowing the investment to be better utilized. Over time, the AMR meters will be replaced with AMI meters as they fail, or new meters are connected, or in areas where customer or business benefits are identified.

Outage Management Improvements

PacifiCorp is in the process of upgrading its outage management software to incorporate smart meters outage notifications. These notifications, in concert with customer reported outages, will provide higher visibility into distribution systems to identify the most likely point of failure. With this information field operations will be able to locate and isolate the damaged sections and restore customers sooner, while providing better clarity to customers through the existing web-based outage map. The software upgrade will be completed in mid-2020.

In Utah, PacifiCorp has initiated a project to enhance the ability to receive outage notifications from intelligent line sensors, smart meters and existing AMR meters. The intelligent line sensors will be installed on distribution circuits that will provide service to critical facilities. For the purpose of this project, critical facilities have been defined as major emergency facility centers such as hospitals, trauma centers, police and fire dispatch centers, etc. The information provided by the line sensors will allow control center operators to target restoration at critical facilities during major outages sooner than is currently possible. Full implementation of the project is expected to be completed by December 2021, concurrent with the completion of the AMI project.

Future Smart Grid

PacifiCorp is continuing to evaluate smart grid technologies and pilot projects that can benefit customers. The company regularly develops smart grid reports to examine the quantifiable costs and benefits of individual components of the smart grid. While the net present value of implementing a comprehensive smart grid system throughout PacifiCorp is negative at this time, the company has implemented specific projects and programs that have positive benefits for customers and continue to explore pilot projects in other areas of interest. In order to reduce risks to the company, the grid, our customers and supporting systems, it is essential to identify affordable advanced technologies and implement industry best practices.

APPENDIX F – FLEXIBLE RESERVE STUDY

Introduction

This 2019 Flexible Reserve Study (FRS) estimates the regulation reserve required to maintain PacifiCorp's system reliability and comply with North American Electric Reliability Corporation (NERC) reliability standards as well as the incremental cost of this regulation reserve. The FRS also compares PacifiCorp's overall operating reserve requirements, including both regulation reserve and contingency reserve, to its flexible resource supply over the Integrated Resource Plan (IRP) study period.

PacifiCorp operates two Balancing Authority Areas (BAAs) in the Western Electricity Coordinating Council (WECC) NERC region, PacifiCorp East (PACE) and PacifiCorp West (PACW). The PACE and PACW BAAs are interconnected by a limited amount of transmission across a third-party transmission system and the two BAAs are each required to comply with NERC standards. PacifiCorp must provide sufficient regulation reserve to remain within NERC's balancing authority area control error (ACE) limit in compliance with BAL-001-2, as well as the amount of contingency reserve required in order to comply with NERC standard BAL-002-WECC-2. BAL-001-2 is a regulation reserve standard that became effective July 1, 2016, and BAL-002-WECC-2a is a contingency reserve standard that became effective January 24, 2017. Regulation reserve and contingency reserve are components of operating reserve, which NERC defines as "the capability above firm system demand required to provide for regulation, load forecasting error, equipment forced and scheduled outages and local area protection."

Apart from disturbance events that are addressed through contingency reserve, regulation reserve is necessary to compensate for changes in load demand and generation output, so as to maintain ACE within mandatory parameters established by the BAL-001-2 standard. The FRS estimates the amount of regulation reserve required to manage variations in load, variable energy resources⁴ (VERs), and resources that are not VERs ("Non-VERs") in each of PacifiCorp's BAAs. Load, wind, solar, and Non-VERs were each studied because PacifiCorp's data indicates that these components or customer classes place different regulation reserve burdens on PacifiCorp's system due to differences in the magnitude, frequency, and timing of their variations from forecasted levels.

The FRS is based on PacifiCorp operational data recorded from January 2017 through December 2017 for load, wind, solar, and Non-VERs. PacifiCorp's primary analysis, focuses on the

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¹ NERC Standard BAL-001-2, www.nerc.com/files/BAL-001-2.pdf, which became effective July 1, 2016. ACE is the difference between a BAA's scheduled and actual interchange, and reflects the difference between electrical generation and Load within that BAA.

² NERC Standard BAL-002-WECC-2a, www.nerc.com/files/BAL-002-WECC-2a.pdf, which became effective January 24, 2017. BAL-002-WECC-2a clarified that non-traditional resources can qualify as spinning reserves if they meet technical and performance requirements.

³ NERC Glossary of Terms: www.nerc.com/files/glossary_of_terms.pdf, updated May 13, 2019.

⁴ VERs are resources that resources that: (1) are renewable; (2) cannot be stored by the facility owner or operator; and (3) have variability that is beyond the control of the facility owner or operator. *Integration of Variable Energy Resources*, Order No. 764, 139 FERC ¶ 61,246 at P 281 (2012) ("Order No. 764"); *order on reh* 'g, Order No. 764-A, 141 FERC ¶ 61,232 (2012) ("Order No. 764-A"); *order on reh* 'g and clarification, Order No. 764-B, 144 FERC ¶ 61,222 at P 210 (2013) ("Order No. 764-B").

variability of load, wind, solar, and Non-VERs during 2017. A supplemental analysis discusses how the total variability of the PacifiCorp system changes with varying levels of load, wind and solar capacity. The estimated regulation reserve amounts determined in this study represent the incremental capacity needed to ensure compliance with BAL-001-2 for a particular operating hour. The regulation reserve requirement covers variations in load, wind, solar, and Non-VERs, while implicitly accounting for the diversity between the different classes. An explicit adjustment is also made to account for diversity benefits realized as a result of PacifiCorp's participation in the Energy Imbalance Market (EIM) operated by the California Independent System Operator Corporation (CAISO).

The methodology in the FRS is similar to that employed in PacifiCorp's previous regulation reserve requirement analysis in the 2017 IRP, but has been enhanced in some key ways.⁵ First, regulation reserve requirements are co-optimized in a quantile regression model. Second, actual hourly load schedules are employed as compared to the proxy schedules developed in the previous study. Third, the FRS uses actual solar schedules reflecting the widespread penetration of utility scale solar facilities that has occurred since the previous study. Fourth, the FRS reflects updated data based on actual operational experience, including the data and benefits from PacifiCorp's participation in the EIM.⁶

The FRS results produce an hourly forecast of the regulation reserve requirements for each of PacifiCorp's BAAs that is sufficient to ensure the reliability of the transmission system and compliance with NERC and WECC standards. This regulation reserve forecast covers the combined deviations of the load, wind, solar and Non-VERs on PacifiCorp's system and varies as a function of the wind and solar capacity on PacifiCorp's system, as well as forecasted levels of wind, solar and load.

The regulation reserve requirement methodologies produced by the FRS was applied in the Planning and Risk (PaR) production cost model to determine the cost of the reserve requirements associated with incremental wind and solar capacity. These integration costs are applied to potential wind and solar resource options in the System Optimizer (SO) model portfolio expansion model, which does not otherwise account for regulation reserve requirements. When a portfolio is studied in the PaR model, the regulation reserve requirements specific to that portfolio are calculated and included in the study inputs, such that the production cost of the requirements is incorporated in the reported results, so it is not necessary to add integration costs to the PaR results.

Overview

The FRS first estimates the regulation reserve necessary to maintain compliance with NERC Standard BAL-001-2 given a specified portfolio of wind and solar resources. The FRS next calculates the cost of holding regulation reserve for incremental wind and solar resources. Finally, the FRS compares PacifiCorp's overall operating reserve requirements over the IRP study period, including both regulation reserve and contingency reserve, to its flexible resource supply.

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⁵ 2017 Flexible Reserve Study, Appendix F in Volume II of PacifiCorp's 2017 IRP report: www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2017_IRP/2017_IRP_VolumeII_2017_IRP_Final.pdf

⁶ PacifiCorp presented the FRS for the 2019 IRP to the Technical Review Committee (TRC) that reviewed the FRS for the 2017 IRP. In light of the robust methodology developed for the 2017 IRP, and the relatively limited modifications for the 2019 IRP, TRC members indicated that continuing the formal review process was unnecessary.

The FRS estimates regulation reserve based on the specific requirements of NERC Standard BAL-001-2. It also incorporates the current timeline for EIM market processes, as well as EIM resource deviations and diversity benefits based on actual results. The FRS also includes adjustments to regulation reserve requirements to account for the changing portfolio of solar and wind resources on PacifiCorp's system and accounts for the diversity of using a single portfolio of regulation reserve resources to cover variations in load, wind, solar, and Non-VERs. A comparison of the results of the current analysis and that from the 2017 IRP is shown in Table F.1 and Table F.2.

Table F.1 - Portfolio Regulation Reserve Requirements

			Stand-alone	Portfolio	Regulation
	Wind	Solar	Regulation	Diversity	Requirement
	Capacity	Capacity	Requirement	Credit	with Diversity
Case	(MW)	MW	(MW)	(%)	(MW)
2017 Base Case	2,757	1,050	998	38%	617
2019 Base Case	2,750	1,021	994	47%	531

Table F.2 - 2019 FRS Flexible Resource Costs as Compared to 2017 Costs, \$/MWh

	Wind 2017 FRS (2016\$)	Solar 2017 FRS (2016\$)	Wind 2019 FRS (2018\$)	Solar 2019 FRS (2018\$)
Study Period	2017	2017	2018-2036	2018-2036
Intra-hour Reserve	\$0.43	\$0.46	\$1.11	\$0.85
Inter-hour System Balancing	\$0.14	\$0.14	n/a	n/a
Total Flexible Resource Cost	\$0.57	\$0.60	\$1.11	\$0.85

In the 2017 FRS, PacifiCorp calculated an inter-hour system balancing integration cost reflecting sub-optimal gas plant commitment based on day-ahead load, wind, and solar forecasts, rather than actuals. However, gas plants are dispatched in EIM to meet regional demand, not just the PacifiCorp demand reflected in the PaR model, and quick-start gas plants can be committed within EIM. In light of the minimal impact of the calculated cost in the 2017 IRP, and possible interaction with EIM, the company opted not to include inter-hour system balancing integration costs in the 2019 IRP.

The 2019 FRS results are applied in the 2019 IRP portfolio development process as a cost for wind and solar generation resources. Once candidate resource portfolios are developed using the SO model, the PaR model is used to evaluate portfolio risks. The PaR model inputs include regulation reserve requirements specific to the resource portfolio developed using the SO model. As a result, the IRP risk analysis using PaR includes the impact of differences in regulation reserve requirements between portfolios.

Flexible Resource Requirements

PacifiCorp's flexible resource needs are the same as its operating reserve requirements over the planning horizon for maintaining reliability and compliance with the North American Electric Reliability Corporation (NERC) regional reliability standards. Operating reserve generally consists of three categories: (1) contingency reserve (i.e., spinning and supplemental reserve), (2) regulation reserve, and (3) frequency response reserve. Contingency reserve is capacity that PacifiCorp holds available to ensure compliance with the NERC regional reliability standard BAL-

002-WECC-2a.⁷ Regulation reserve is capacity that PacifiCorp holds available to ensure compliance with the NERC Control Performance Criteria in BAL-001-2.⁸ Frequency response reserve is capacity that PacifiCorp holds available to ensure compliance with NERC standard BAL-003-1.⁹ Each type of operating reserve is further defined below.

Contingency Reserve

Purpose: Contingency reserve may be deployed when unexpected outages of a generator or a transmission line occur. Contingency reserve may not be deployed to manage other system fluctuations such as changes in load or wind generation output.

Volume: NERC regional reliability standard BAL-002-WECC-2a specifies that each BAA must hold as contingency reserve an amount of capacity equal to three percent of load and three percent of generation in that BAA.

Duration: Except within 60 minutes of a qualifying contingency event, a BAA must maintain the required level of contingency reserve at all times. Generally, this means that up to 60 minutes of generation are required to provide contingency reserve, though successive outage events may result in contingency reserves being deployed for longer periods. To restore contingency reserves, other resources must be deployed to replace any generating resources that experienced outages, typically either market purchases or generation from resources with slower ramp rates.

Ramp Rate: Only up capacity available within ten minutes can be counted as contingency reserve. In accordance with Requirement 2 of BAL-002-WECC-2a, at least half of a BAA's requirement must be met with "spinning" resources that are online and immediately responsive to system frequency deviations, while the remainder can come from "non-spinning" resources that do not respond immediately, though they must still be fully deployed in ten minutes. ¹⁰

Regulation Reserve

Purpose: NERC standard BAL-001-2, which became effective July 1, 2016, does not specify a regulation reserve requirement based on a simple formula, but instead requires utilities to hold sufficient reserve to meet specified control performance standards. The primary requirement relates to area control error ("ACE"), which is the difference between a BAA's scheduled and actual interchange, and reflects the difference between electrical generation and load within that BAA. Requirement 2 of BAL-001-2 defines the compliance standard as follows:

Each Balancing Authority shall operate such that its clock-minute average of Reporting ACE does not exceed its clock-minute Balancing Authority ACE Limit (BAAL) for more than 30 consecutive clock-minutes...

⁷ NERC Standard BAL-002-WECC-2a – Contingency Reserve: www.nerc.com/files/BAL-002-WECC-2.pdf

⁸ NERC Standard BAL-001-2 - Real Power Balancing Control Performance: www.nerc.com/files/BAL-001-2.pdf

⁹ NERC Standard BAL-003-1 — Frequency Response and Frequency Bias Setting: www.nerc.com/pa/Stand/Reliability%20Standards/BAL-003-1.pdf

 $^{^{10}}$ Retirement of the minimum spinning reserve obligation in BAL-002-WECC-2a is being considered due to redundancy with frequency response obligations under BAL-003-1. More information is available online at: www.wecc.org/Standards/Pages/WECC-0115.aspx

In addition, Requirement 1 of BAL-001-2 specifies that PacifiCorp's Control Performance Standard 1 ("CPS1") score must be greater than equal to 100 percent for each preceding 12 consecutive calendar month period, evaluated monthly. The CPS1 score compares PacifiCorp's ACE with interconnection frequency during each clock minute. A higher score indicates PacifiCorp's ACE is helping interconnection frequency, while a lower score indicates it is hurting interconnection frequency. Because CPS1 is averaged and evaluated on a monthly basis, it does not require a response to each and every ACE event, but rather requires that PacifiCorp meet a minimum aggregate level of performance in each month. Regulation reserve is thus the capacity that PacifiCorp holds available to respond to changes in generation and load to manage ACE within the limits specified in BAL-001-2.

Volume: NERC standard BAL-001-2 does not specify a regulation reserve requirement based on a simple formula, but instead requires utilities to hold sufficient reserve to meet performance standards as discussed above. The 2019 FRS estimates the regulation reserve necessary to meet Requirement 2 by compensating for the combined deviations of the load, wind, solar and Non-VERs on PacifiCorp's system. These regulation reserve requirements are discussed in more detail later on in the study.

Ramp Rate: Because Requirement 2 includes a 30 minute time limit for compliance, ramping capability that can be deployed within 30 minutes contributes to meeting PacifiCorp's regulation reserve requirements. The reserve for CPS1 is not expected to be incremental to the need for compliance with Requirement 2, but may require that a subset of resources held for Requirement 2 be able to make frequent rapid changes to manage ACE relative to interconnection frequency.

Duration: PacifiCorp is required to submit balanced load and resource schedules as part of its participation in EIM. PacifiCorp is also required to submit resources with up flexibility and down flexibility to cover uncertainty and expected ramps across the next hour. Because forecasts are submitted prior to the start of an hour, deviations can begin before an hour starts. As a result, a flexible resource might be called upon for the entire hour. In order to continue providing flexible capacity in the following hour, energy must be available in storage for that hour as well. The likelihood of actually deploying for two hours or more for reliability compliance (as opposed to economics) is expected to be small.

Frequency Response Reserve

Purpose: NERC standard BAL-003-1 specifies that each BAA must arrest frequency deviations and support the interconnection when frequency drops below the scheduled level. When a frequency drop occurs as a result of an event, PacifiCorp will deploy resources that increase the net interchange of its BAAs and the flow of generation to the rest of the interconnection.

Volume: When a frequency drop occurs, each BAA is expected to deploy resources that are at least equal to its Frequency Response Obligation. The incremental requirement is based on the size of the frequency drop and the BAA's Frequency Response Obligation, expressed in megawatt (MW)/0.1 Herts (Hz). To comply with the standard, a BAA's median measured frequency response during a sampling of under-frequency events must be equal to or greater than its Frequency Response Obligation. PacifiCorp's 2019 Frequency Response Obligation was 20.2 MW/0.1Hz for PACW, and 47.4 MW/0.1Hz for PACE. PacifiCorp's combined obligation amounts to 67.6 MW for a frequency drop of 0.1 Hz, or 202.8 MW for a frequency drop of 0.3 Hz.

The performance measurement for contingency reserve under the Disturbance Control Standard (BAL-002-3)¹¹, allows for recovery to the lesser of zero or the ACE value prior to the contingency event, so increasing ACE above zero during a frequency event reduces the additional deployment needed if a contingency event occurs. Because contingency, regulation, and frequency events are all relatively infrequent, they are unlikely to occur simultaneously. Because the frequency response standard is based on median performance during a year, overlapping requirements that reduced PacifiCorp's response during a limited number of frequency events would not impact compliance.

As a result, any available capacity not being used for generation is expected to contribute to meeting PacifiCorp's Frequency Response Obligation, up to the technical capability of each unit, including that designated as contingency or regulation reserves. Frequency response must occur very rapidly, and a generating unit's capability is limited based on the unit's size, governor controls, and available capacity, as well as the size of the frequency drop. As a result, while a few resources could hold a large amount of contingency or regulation reserve, frequency response may need to be spread over a larger number of resources. Additionally, only resources that have active and tuned governor controls as well as outer loop control logic will respond properly to frequency events.

Ramp Rate: Frequency response performance is measured over a period of seconds, amounting to under a minute. Compliance is based on the average response over the course of an event. As a result, a resource that immediately provides its full frequency response capability will provide the greatest contribution. That same resource will contribute a smaller amount if it instead ramps up to its full frequency response capability over the course of a minute or responds after a lag.

Duration: Frequency response events are less than one minute in duration.

Black Start Requirements

Black start service is the ability of a generating unit to start without an outside electrical supply and is necessary to help ensure the reliable restoration of the grid following a blackout. At this time, PACW grid restoration would occur in coordination with Bonneville Power Administration black start resources. The Gadsby combustion turbine resources are capable of supporting grid restoration in PACE. PacifiCorp has not identified any incremental needs for black start service during the IRP study period.

Ancillary Services Operational Distinctions

In actual operations, PacifiCorp identifies two types of flexible capacity as part of its participation in the EIM. The contingency reserve held on each resource is specifically identified and is not available for economic dispatch within the EIM. Any remaining flexible capacity on participating resources that is not designated as contingency reserve can be economically dispatched in EIM based on its operating cost (i.e. bid) and system requirements and can contribute to meeting regulation reserve obligations. Because of this distinction, resources must either be designated as contingency reserve or as regulation reserve. Contingency events are relatively rare while opportunities to deploy additional regulation reserve in EIM occur frequently. As a result,

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NERC Standard BAL-002-3 – Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event: www.nerc.com/pa/Stand/Reliability Standards/BAL-002-3.pdf

PacifiCorp typically schedules its lowest-cost flexible resources to serve its load, and blocks off capacity on its highest-cost flexible resources to meet its contingency obligations, subject to any ramping limitations at each resource. This leaves resources with moderate costs available for dispatch up by EIM, while lower-cost flexible resources remain available to be dispatched down by EIM.

Regulation Reserve Data Inputs

Overview

This section describes the data used to determine PacifiCorp's regulation reserve requirements. In order to estimate PacifiCorp's required regulation reserve amount, PacifiCorp must determine the difference between the expected load and resources and actual load and resources. The difference between load and resources is calculated every four seconds and is represented by the ACE. ACE must be maintained within the limits established by BAL-001-2, so PacifiCorp must estimate the amount of regulation reserve that is necessary in order to maintain ACE within these limits.

To estimate the amount of regulation reserve that will be required in the future, the FRS identifies the scheduled use of the system as compared to the actual use of the system during the study term. For the baseline determination of scheduled use for load and resources, the FRS used hourly base schedules. Hourly base schedules are the power production forecasts used for imbalance settlement in the EIM and represent the best information available concerning the upcoming hour. 12

The deviation from scheduled use was derived from data provided through participation in the EIM. The deviations of generation resources in EIM were measured on a five-minute basis, so five-minute intervals are used throughout the regulation reserve analysis.

EIM base schedule and deviation data for each wind, solar and Non-VER transaction point were downloaded using the SettleCore application, which is populated with data provided by the CAISO. Since PacifiCorp's implementation of EIM on November 1, 2014, PacifiCorp requires certain operational forecast data from all of its transmission customers pursuant to the provisions of Attachment T to PacifiCorp's Federal Energy Regulatory Commission (FERC) approved Open Access Transmission Tariff (OATT). This includes EIM base schedule data (or forecasts) from all resources included in the EIM network model at transaction points. EIM base schedules are submitted by transmission customers with hourly granularity, and are settled using hourly data for load, and fifteen-minute and five-minute data for resources. A primary function of the EIM is to measure load and resource imbalance (or deviations) as the difference between the hourly base schedule and the actual metered values.

¹² The CAISO, as the market operator for the EIM, requests base schedules at 75 minutes (T-75) prior to the hour of delivery. PacifiCorp's transmission customers are required to submit base schedules by 77 minutes (T-77) prior to the hour of delivery – two minutes in advance of the EIM Entity deadline. This allows all transmission customer base schedules enough time to be submitted into the EIM systems before the overall deadline of T-75 for the entirety of PacifiCorp's two BAAs. The base schedules are due again to CAISO at 55 minutes (T-55) prior to the delivery hour and can be adjusted up until that time by the EIM Entity (i.e., PacifiCorp Grid Operations). PacifiCorp's transmission customers are required to submit updated, final base schedules no later than 57 minutes (T-57) prior to the delivery hour. Again, this allows all transmission customer base schedules enough time to be submitted into the EIM systems before the overall deadline of T-55 for the entirety of PacifiCorp's two BAAs. Base schedules may be finally adjusted again, by the EIM Entity only, at 40 minutes (T-40) prior to the delivery hour in response to CAISO sufficiency tests. T-40 is the base schedule time point used throughout this study

A summary of the data gathered for this analysis is listed below, and a more detailed description of each type of source data is contained in the following subsections.

Source data:

- Load data
 - o Five-minute interval actual load
 - Hourly base schedules
- VER data
 - o Five-minute interval actual generation
 - Hourly base schedules
- Non-VER data
 - o Five-minute interval actual generation
 - o Hourly base schedules

Load Data

The Load class represents the aggregate firm demand of end users of power from the electric system. While the requirements of individual users vary, there are diurnal and seasonal patterns in aggregated demand. The Load class can generally be described to include three components: (1) average load, which is the base load during a particular scheduling period; (2) the trend, or "ramp," during the hour and from hour-to-hour; and (3) the rapid fluctuations in load that depart from the underlying trend. The need for a system response to the second and third components is the function of regulation reserve in order to ensure reliability of the system.

The PACE BAA includes several large industrial loads with unique patterns of demand. Each of these loads is either interruptible at short notice or includes behind the meter generation. Due to their large size, abrupt changes in their demand are magnified for these customers in a manner which is not representative of the aggregated demand of the large number of small customers which make up the majority of PacifiCorp's loads.

In addition, interruptible loads can be curtailed if their deviations are contributing to a resource shortfall. Because of these unique characteristics, these loads are excluded from the FRS. This treatment is consistent with that used in the CAISO load forecast methodology (used for PACE and PACW operations), which also nets these interruptible customer loads out of the PACE BAA.

Actual average load data was collected separately for the PACE and PACW BAAs for each five-minute interval. Load data was downloaded from PacifiCorp's Ranger PI system and has not been adjusted for transmission and distribution losses.

Wind and Solar Data

The wind and solar classes include resources that: (1) are renewable; (2) cannot be stored by the facility owner or operator; and (3) have variability that is beyond the control of the facility owner or operator.¹³ Wind and solar, in comparison to load, often have larger upward and downward

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¹³ Order No. 764 at P 281; Order No. 764-B at P 210.

fluctuations in output that impose significant and sometimes unforeseen challenges when attempting to maintain reliability. For example, as recognized by FERC in Order No. 764, "Increasing the relative amount of [VERs] on a system can increase operational uncertainty that the system operator must manage through operating criteria, practices, and procedures, *including the commitment of adequate reserves*." The data included in the FRS for the wind and solar classes include all wind and solar resources in PacifiCorp's BAAs, which includes: (1) third-party resources (OATT or legacy contract transmission customers); (2) PacifiCorp-owned resources; and (3) other PacifiCorp-contracted resources, such as qualifying facilities, power purchases, and exchanges. In total, the FRS includes 2,750 megawatts of wind and 1,021 megawatts of solar.

Non-VER Data

The Non-VER class is a mix of thermal and hydroelectric resources and includes all resources which are not VERs, and which do not provide either contingency or regulation reserve. Non-VERs, in contrast to VERs, are often more stable and predictable. Non-VERs are thus easier to plan for and maintain within a reliable operating state. For example, in Order No. 764, FERC suggested that many of its rules were developed with Non-VERs in mind and that such generation "could be scheduled with relative precision." The output of these resources is largely in the control of the resource operator, particularly when considered within the hourly timeframe of the FRS. The deviations by resources in the Non-VER class are thus significantly lower than the deviations by resources in the Wind class. The Non-VER class includes third-party resources (OATT or legacy transmission customers); many PacifiCorp-owned resources; and other PacifiCorp-contracted resources, such as qualifying facilities, power purchases, and exchanges. In total, the FRS includes 2,202 megawatts of Non-VERs.

In the FRS, resources that provide contingency or regulation reserve are considered a separate, dispatchable resource class. The dispatchable resource class compensates for deviations resulting from other users of the transmission system in all hours. While non-dispatchable resources may offset deviations in loads and other resources in some hours, they are not in the control of the system operator and contribute to the overall requirement in other hours. Because the dispatchable resource class is a net provider rather than a user of regulation reserve service, its stand-alone regulation reserve requirement is zero (or negative), and its share of the system regulation reserve requirement is also zero. The allocation of regulation reserve requirements and diversity benefits is discussed in more detail later on in the study.

Regulation Reserve Data Analysis and Adjustment

Overview

This section provides details on adjustments made to the data to align the ACE calculation with actual operations, and address data issues.

Base Schedule Ramping Adjustment

In actual operations, PacifiCorp's ACE calculation includes a linear ramp from the base schedule in one hour to the base schedule in the next hour, starting ten-minutes before the hour and

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¹⁴ Order No. 764 at P 20 (emphasis added).

¹⁵ *Id.* at P 92.

continuing until ten-minutes past the hour. The hourly base schedules used in the study are adjusted to reflect this transition from one hour to the next. This adjustment step is important because, to the extent actual load or generation is transitioning to the levels expected in the next hour, the adjusted base schedules will result in reduced deviations during these intervals, potentially reducing the regulation reserve requirement. Figure F.1 below illustrates the hourly base schedule and the ramping adjustment. The same calculation applies to all base schedules: Load, Wind, Non-VERs, and the combined portfolio.

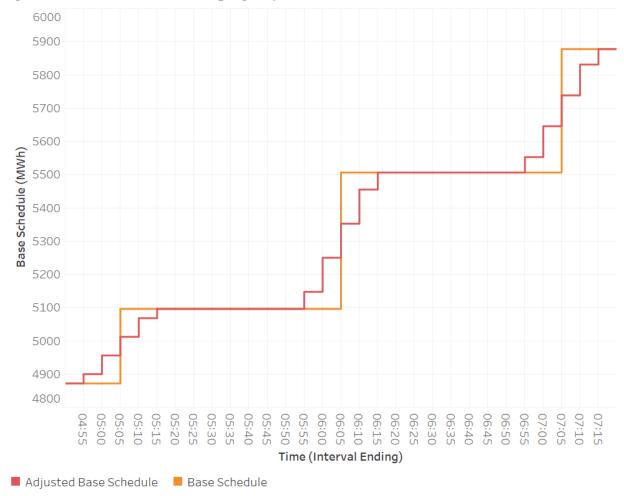


Figure F.1 - Base Schedule Ramping Adjustment

Data Corrections

The data extracted from PacifiCorp's systems for, wind, solar and Non-VERs was sourced from CAISO settlement quality data. This data has already been verified for inconsistencies as part of the settlement process and needs minimal cleaning as described below. Regarding five minute interval load data from the PI Ranger system, intervals were excluded from the FRS results if any five-minute interval suffered from at least one of the data anomalies that are described further below:

Load:

Stuck meter/flat meter reading

• Telemetry spike/poor connection to meter

Wind, Solar, and Non-VERs:

- Generator trip events
- Curtailment events

Load in PacifiCorp's BAAs changes continuously. While a BAA could potentially maintain the exact same load levels in two five-minute intervals in a row, it is extremely unlikely for the exact same load level to persist over longer time frames. When PacifiCorp's energy management system (EMS) load telemetry fails, updated load values may not be logged, and the last available load measurement for the BAA will continue to be reported.

Similarly, rapid spikes in load either up or down are also unlikely to be a result of conditions which require deployment of regulation reserve, particularly when they are transient. Such events could be a result of a transmission or distribution outage, which would allow for the deployment of contingency reserve, and would not require deployment of regulation reserve. Load telemetry spike irregularities were identified by examining the intervals with the largest changes from one interval to the next, either up or down. Intervals with inexplicably large and rapid changes in load, particularly where the load reverts back within a short period, were assumed to have been covered through contingency reserve deployment or to reflect inaccurate load measurements. Because they don't reflect periods that require regulation reserve deployment, such intervals are excluded from the analysis.

As with Load, certain Wind and Non-VER deviations are more likely to be a result of conditions that allow for the deployment of contingency reserve, rather than regulation reserve. In particular, contingency reserve can be deployed to compensate for unexpected generator outages. For Non-VERs, these are relatively straightforward—namely, periods when generation drops to zero despite base schedules indicating otherwise. Certain Wind outages also qualify as contingency events. Notably, wind generators can be curtailed when wind speed exceeds the maximum rating of the equipment (sometimes referred to as "high speed cutout"). In such instances, generation is curtailed until wind speeds drop back into a safe operating range in order to protect the equipment. When wind speed oscillates above and below the cut-off point, generation may ramp down and up repeatedly. Because events which qualify for deployment of contingency reserve do not require deployment of regulation reserve they have been excluded from the analysis.

As the regulation reserve requirements are calculated using a rolling thirty-minute timeline, data from the prior hour is necessary during the first several five-minute intervals of the next hour. An error in one hour thus results in the need to remove the following hour. This is relevant to error adjustments for both Wind and Non-VERs.

After review of the data for each of the above anomaly types, and out of 105,120 five-minute intervals evaluated, only 1.1 percent and 0.52 percent of the total FRS term hours were removed from PACW and PACE, respectively. The system-wide error rate was 1.36 percent, slightly lower than the sum of the PACW and PACE rates due to coincident hours. While cleaning up or replacing anomalous hours could yield a more complete data set, determining the appropriate conditions in those hours would be difficult and subjective. By removing anomalies, the FRS sample is smaller but remains reflective of the range of conditions PacifiCorp actually experiences, including the impact on regulation reserve requirements of weather events experienced during the study period.

Regulation Reserve Requirement Methodology

Overview

This section presents the methodology used to determine the initial regulation reserve needed to manage the load and resource balance within PacifiCorp's BAAs. The five-minute interval load and resource deviation data described above informs a regulation reserve forecast methodology that achieves the following goals:

- Complies with NERC standard BAL-001-2;
- Minimizes regulation reserve held; and
- Uses data available at time of EIM base schedule submission at T-40.¹⁶

The components of the methodology are described below, and include:

- Operating Reserve: Reserve Categories;
- Calculation of Regulation Reserve Need;
- Balancing Authority ACE Limit: Allowed Deviations;
- Planning Reliability Target: Loss of Load Probability ("LOLP"); and
- Regulation Reserve Forecast: Amount Held.

Following the explanation below of the components of the methodology, the next section details the forecasted amount of regulation reserve for:

- Wind;
- Solar:
- Non-VERs: and
- Load.

Components of Operating Reserve Methodology

Operating Reserve: Reserve Categories

Operating reserve consists of three categories: (1) contingency reserve (i.e., spinning and supplemental reserve), (2) regulation reserve, and (3) frequency response reserve. These requirements must be met by resources that are incremental to those needed to meet firm system demand. The purpose of the FRS is to determine the regulation reserve requirement. The contingency reserve and frequency response requirements are defined formulaically by their respective reliability standards.

Of the three categories of reserve referenced above, the FRS is primarily focused on the requirements associated with regulation reserve. Contingency reserve may not be deployed to manage other system fluctuations such as changes in load or wind generation output. Because deviations caused by contingency events are covered by contingency reserve rather than regulation reserve, they are excluded from the determination of the regulation reserve requirements. Because frequency response reserve can overlap with that held for contingency and regulation reserve requirements it is similarly excluded from the determination of regulation reserve requirements.

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¹⁶ See footnote 12 above for explanation of PacifiCorp's use of the T-40 base schedule time point in the FRS.

The types of operating reserve and relationship between them are further defined in in the Flexible Resource Requirements section above.

Regulation reserve is capacity that PacifiCorp holds available to ensure compliance with the NERC Control Performance Criteria in BAL-001-2, which requires a BAA to carry regulation reserve incremental to contingency reserve to maintain reliability.¹⁷ The regulation reserve requirement is not defined by a simple formula, but instead is the amount of reserve required by each BAA to meet specified control performance standards. Requirement two of BAL-001-2 defines the compliance standard as follows:

Each Balancing Authority shall operate such that its clock-minute average of Reporting ACE does not exceed its clock-minute Balancing Authority ACE Limit (BAAL) for more than 30 consecutive clock-minutes...

PacifiCorp has been operating under BAL-001-2 since March 1, 2010, as part of a NERC Reliability-Based Control field trial in the Western Interconnection, so PacifiCorp has experience operating under the new standard, even though it did not become effective until July 1, 2016.

The three key elements in BAL-001-2 are: (1) the length of time (or "interval") used to measure compliance; (2) the percentage of intervals that a BAA must be within the limits set in the standard; and (3) the bandwidth of acceptable deviation used under each standard to determine whether an interval is considered out of compliance. These changes are discussed in further detail below.

The first element is the length of time used to measure compliance. Compliance under BAL-001-2 is measured over rolling thirty-minute intervals, with 60 overlapping periods per hour, some of which include parts of two clock-hours. In effect, this means that every minute of every hour is the beginning of a new, thirty-minute compliance interval under the new BAL-001-2 standard. If ACE is within the allowed limits at least once in a thirty-minute interval, that interval is in compliance, so only the minimum deviation in each rolling thirty-minute interval is considered in determining compliance. As a result PacifiCorp does not need to hold regulation reserve for deviations with duration less than 30 minutes.

The second element is the number of intervals where deviations are allowed to be outside the limits set in the standard. BAL-001-2 requires 100 percent compliance, so deviations must be maintained within the requirement set by the standard for all rolling thirty-minute intervals.

The third element is the bandwidth of acceptable deviation before an interval is considered out of compliance. Under BAL-001-2, the acceptable deviation for each BAA is dynamic, varying as a function of the frequency deviation for the entire interconnect. When interconnection frequency exceeds 60 Hz, the dynamic calculation does not require regulation resources to be deployed regardless of a BAA's ACE. As interconnection frequency drops further below 60 Hz, a BAA's permissible ACE shortfall is increasingly restrictive.

Planning Reliability Target: Loss of Load Probability

When conducting resource planning, it is common to use a reliability target that assumes a specified loss of load probability (LOLP). In effect, this is a plan to curtail firm load in rare

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¹⁷ NERC Standard BAL-001-2, www.nerc.com/files/BAL-001-2.pdf

circumstances, rather than acquiring resources for extremely unlikely events. The reliability target balances the cost of additional capacity against the benefit of incrementally more reliable operation. By planning to curtail firm load in the rare event of a regulation reserve shortage, PacifiCorp can maintain the required 100 percent compliance with the BAL-001-2 standard and the Balancing Authority ACE Limit. This balances the cost of holding additional regulation reserve against the likelihood of regulation reserve shortage events.

The 2019 FRS assumes that a regulation reserve forecasting methodology that results in 0.50 loss of load hours per year due to regulation reserve shortages is appropriate for planning and ratemaking purposes. This is in addition to any loss of load resulting from transmission or distribution outages, resource adequacy, or other causes. The FRS applies this reliability target as follows:

- If the regulation reserve available is greater than the regulation reserve need for an hour, the LOLP is zero for that hour.
- If the regulation reserve held is less than the amount needed, the LOLP is derived from the Balancing Authority ACE Limit probability distribution as illustrated below.

Balancing Authority ACE Limit: Allowed Deviations

Even if insufficient regulation reserve capability is available to compensate for a thirty-minute sustained deviation, a violation of BAL-001-2 does not occur unless the deviation also exceeds the Balancing Authority ACE Limit.

The Balancing Authority ACE Limit is specific to each BAA and is dynamic, varying as a function of interconnection frequency. When WECC frequency is close to 60 Hz, the Balancing Authority ACE Limit is large and large deviations in ACE are allowed. As WECC frequency drops further and further below 60 Hz, ACE deviations are increasingly restricted for BAAs that are contributing to the shortfall, *i.e.* those BAAs with higher loads than resources. A BAA commits a BAL-001-2 reliability violation if in any thirty-minute interval it doesn't have at least one minute when its ACE is within its Balancing Authority ACE Limit.

While the specific Balancing Authority ACE Limit for a given interval cannot be known in advance, the historical probability distribution of Balancing Authority ACE Limit values is known. Figure F.2 below shows the probability of exceeding the allowed deviation during a five-minute interval for a given level of ACE shortfall. For instance, a 43 MW ACE shortfall in PACW has a one percent chance of exceeding the Balancing Authority ACE Limit. WECC-wide frequency can change rapidly and without notice, and this causes large changes in the Balancing Authority ACE Limit over short time frames. Maintaining ACE within the Balancing Authority ACE Limit under those circumstances can require rapid deployment of large amounts of operating reserve. To limit the size and speed of resource deployment necessitated by variation in the Balancing Authority ACE Limit, PacifiCorp's operating practice caps permissible ACE at the lesser of the Balancing Authority ACE Limit or four times L_{10} . This also limits the occurrence of transmission flows that exceed path ratings as result of large variations in ACE. 18,19 This cap is reflected in Figure F.2.

¹⁸ "Regional Industry Initiatives Assessment." NWPP MC Phase 3 Operations Integration Work Group. Dec. 31, 2014. Pg. 14. Available at: www.nwpp.org/documents/MC-Public/NWPP-MC-Phase-3-Regional-Industry-Initiatives-Assessment12-31-2014.pdf

¹⁹ "NERC Reliability-Based Control Field Trial Draft Report." Western Electricity Coordinating Council. Mar. 25, 2015. Available at: www.wecc.biz/Reliability/RBC% 20Field% 20Trial% 20Report% 20Approved% 203-25-2015.pdf

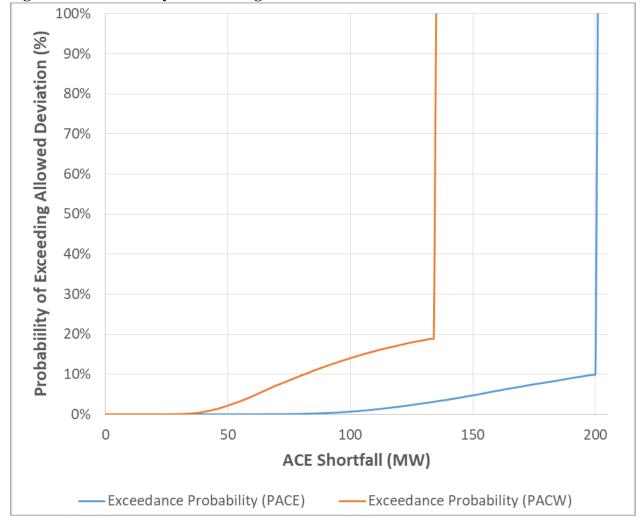


Figure F.2 - Probability of Exceeding Allowed Deviation

In 2017, PacifiCorp's deviations and Balancing Authority ACE Limits were uncorrelated, which indicates that PacifiCorp's contribution to WECC-wide frequency is small. PacifiCorp's deviations and Balancing Authority ACE Limits were also uncorrelated when periods with large deviations were examined in isolation. If PacifiCorp's large deviations made distinguishable contributions to the Balancing Authority ACE Limit, ACE shortfalls would be more likely to exceed the Balancing Authority ACE Limit during large deviations. Since this is not the case, the probability of exceeding the Balancing Authority ACE Limit is lower, and less regulation reserve is necessary to comply with the BAL-001-2 standard.

Regulation Reserve Forecast: Amount Held

In order to calculate the amount of regulation reserve required to be held while being compliant with BAL-001-2 – using a LOLP of 0.5 hours per year or less – a quantile regression methodology was used. The regression variables consist of:

- The combined deviation of load, wind, solar, and Non-VERs;
- Forecasted load as a percentage of peak load;
- Forecasted wind generation as a percentage of total system wind capacity;
- Forecasted solar generation as a percentage of total system solar capacity; and
- Forecasted Non-VER generation as a percentage of maximum Non-VER schedules.

The combined deviations of load, wind, solar and non-VERs (Combined Diversity Error) is calculated as [Load Error – Wind Error – Solar Error – Non VER Error] as illustrated below in Table F.3 for PACE.

Table F.3 - Combined Diversity Error Example

Trading	Trading	Trading	Load	Non VER	Wind	Solar	Combined Diversity
Date	Hour	Interval	Error	Error	Error	Error	Error
1/1/2017	3	5	49	-5	-21	0	75
1/1/2017	3	10	40	-6	-16	0	61
1/1/2017	3	15	36	-3	-14	0	53
1/1/2017	3	20	35	-6	-55	0	97
1/1/2017	3	25	34	-6	-48	0	87
1/1/2017	3	30	36	-4	-26	0	67
1/1/2017	3	35	36	-7	-41	0	84
1/1/2017	3	40	32	-8	-39	0	80
1/1/2017	3	45	30	-5	-39	0	74
1/1/2017	3	50	31	2	-37	0	66
1/1/2017	3	55	37	1	-37	0	73
1/1/2017	3	60	45	2	-32	0	75

The individual errors (load, wind, solar and non-VERs) are calculated as the difference between the actual meter data and the adjusted hourly base schedules as illustrated below for PACE wind in Table F.4.

Table F.4 – Wind Error Example

Table 1.4 – White Error Example								
Trading Date	Trading Hour	Trading Interval	Adjusted Base Schedules	Actuals	Wind Error			
1/1/2017	3	5	957	936	-21			
1/1/2017	3	10	956	940	-16			
1/1/2017	3	15	955	941	-14			
1/1/2017	3	20	955	900	-55			
1/1/2017	3	25	955	908	-48			
1/1/2017	3	30	955	929	-26			
1/1/2017	3	35	955	914	-41			
1/1/2017	3	40	955	916	-39			
1/1/2017	3	45	955	916	-39			
1/1/2017	3	50	955	918	-37			
1/1/2017	3	55	954	917	-37			
1/1/2017	3	60	951	919	-32			

An illustration of the combined diversity error and the forecasted levels of load as a percentage of peak load, the forecasted levels of wind as a percentage of total system capacity, the forecasted levels of solar as a percentage of total system capacity and the forecasted levels of Non-VERs as a percentage of peak schedule are illustrated below in Table F.5 for PACE.

Table F.5 – Regression Inputs Example

Trading Date	Trading Hour	Trading Interval	Combined Diversity Error	Wind Forecast	Solar Forecast	Load Forecast	Non VER Forecast
1/1/2017	3	5	72	50.5%	0%	56%	55%
1/1/2017	3	10	60	50.4%	0%	56%	55%
1/1/2017	3	15	53	50.3%	0%	56%	55%

1/1/2017	3	20	97	50.3%	0%	56%	55%
1/1/2017	3	25	87	50.3%	0%	56%	55%
1/1/2017	3	30	67	50.3%	0%	56%	55%
1/1/2017	3	35	84	50.3%	0%	56%	55%
1/1/2017	3	40	80	50.3%	0%	56%	55%
1/1/2017	3	45	74	50.3%	0%	56%	55%
1/1/2017	3	50	66	50.3%	0%	56%	55%
1/1/2017	3	55	68	50.3%	0%	56%	55%
1/1/2017	3	60	58	50.1%	0%	56%	55%

The Load Forecast, Wind Forecast, Solar Forecast and Non VER Forecast are calculated as a percentage of some measure of capacity or peak. The forecasted levels of PACE wind as a percentage of total system capacity is illustrated below in Table F.6.

Table F.6 – Wind Forecast Level Example

Trading Date	Trading Hour	Trading Interval	Adjusted Base Schedules	Capacity	Wind Forecast
1/1/2017	3	5	957	1898	50.5%
1/1/2017	3	10	956	1898	50.4%
1/1/2017	3	15	955	1898	50.3%
1/1/2017	3	20	955	1898	50.3%
1/1/2017	3	25	955	1898	50.3%
1/1/2017	3	30	955	1898	50.3%
1/1/2017	3	35	955	1898	50.3%
1/1/2017	3	40	955	1898	50.3%
1/1/2017	3	45	955	1898	50.3%
1/1/2017	3	50	955	1898	50.3%
1/1/2017	3	55	954	1898	50.3%
1/1/2017	3	60	951	1898	50.1%

Quantile regression is a type of regression analysis. Whereas the typical method of ordinary least squares results in estimates of the conditional mean (50th percentile) of the response variable given certain values of the predictor variables, quantile regression aims at estimating other specified percentiles of the response variable. For the 2019 FRS the response variable – Combined Diversity Error – was expressed as a function of four predictor variables – Wind Forecast, Solar Forecast, Load Forecast and Non VER Forecast. Each predictor variable contributes to the regression as a combination of linear, square, and cubic effects. Specifically:

```
Combined Diversity Error varies as a function of:

Wind Forecast + Wind Forecast<sup>2</sup> + Wind Forecast<sup>3</sup> +

Solar Forecast + Solar Forecast<sup>2</sup> + Solar Forecast<sup>3</sup> +

Load Forecast + Load Forecast<sup>2</sup> + Load Forecast<sup>3</sup> +

Non VER Forecast + Non VER Forecast<sup>2</sup>
```

The instances requiring the largest amounts of regulation reserve occur infrequently, and many hours have very low requirements. If periods when requirements are likely to be low can be distinguished from periods when requirements are likely to be high, less regulation reserve is necessary to achieve a given reliability target. The regulation reserve forecast is not intended to compensate for every potential deviation. Instead, when a shortfall occurs, the size of that shortfall determines the probability of exceeding the Balancing Authority ACE Limit and a reliability

violation occurring. The forecast is adjusted to achieve a cumulative LOLP that corresponds to the annual reliability target.

2017 Regulation Reserve Forecast

Overview

The following forecasts are polynomial functions that cover a targeted percentile of all historical deviations. These forecasts are stand-alone forecasts - based on the difference between hour-ahead base schedules and actual meter data - expressing the errors as a function of the level of forecast. The stand-alone reserve requirement shown achieves the annual reliability target of 0.5 hours per year, after accounting for the dynamical Balancing Authority ACE Limit. The combined diversity error system requirements are discussed later on in the study.

Wind

Figure F.3 illustrates the relationship between the regulation reserve requirements for PACE wind during 2017 and the forecasted level of output, stated as a capacity factor (*i.e.*, a percentage of the nameplate wind capacity). Figure F.4 illustrates this relationship for PACW.

Figure F.3 - Wind Regulation Reserve Requirements by Forecast - PACE 2017 PACE Wind Forecast vs Error



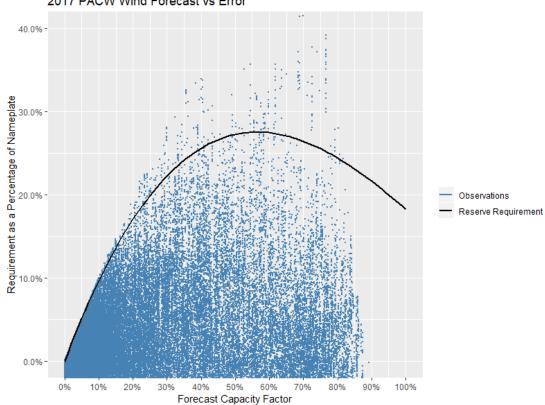


Figure F.4 - Wind Regulation Reserve Requirements by Forecast Capacity Factor-PACW
2017 PACW Wind Forecast vs Error

The forecast results in an average 2017 stand-alone regulation reserve requirement for wind of 434 MW for the PacifiCorp system, or approximately 15.8 percent of nameplate capacity.

Solar

Figure F.5 illustrates the relationship between the regulation reserve requirements for PACE solar during 2017 and the forecasted level of output, stated as a capacity factor (*i.e.*, a percentage of the nameplate solar capacity). Figure F.6 illustrates this relationship for PACW.

Figure F.5 - Solar Regulation Reserve Requirements by Forecast Capacity Factor-PACE

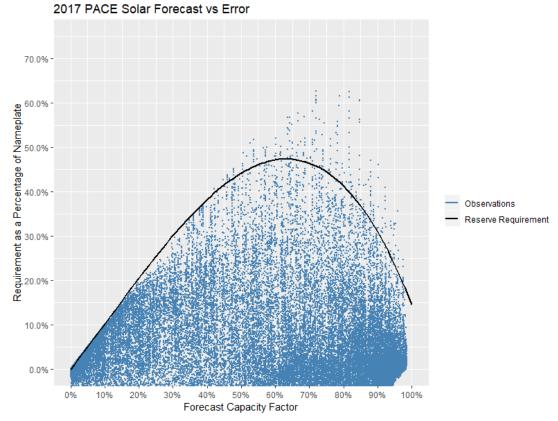
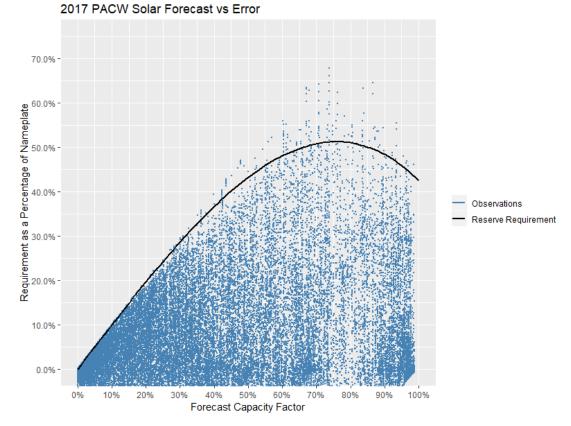


Figure F.6 - Solar Regulation Reserve Requirements by Forecast Capacity Factor-PACW

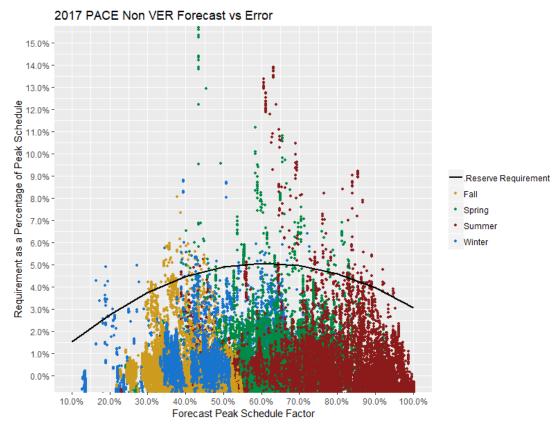


The forecast results in an average 2017 stand-alone regulation reserve requirement for solar of 145 MW for the PacifiCorp system, or approximately 14.8 percent of nameplate capacity.

Non-VERs

Figure F.7 below illustrates the regulation reserve requirements for PACE Non-VERs during 2017 as a function of the forecasted level of output, stated as a peak schedule factor (*i.e.*, a percentage of the peak Non-VER schedule observed for 2017). Figure F.8 illustrates this relationship for PACW.

Figure F.7 – Non-VER Regulation Reserve Requirements by Forecast Schedule Factor-PACE



2017 PACW Non VER Forecast vs Error 15.0% 14.0% 13.0% Requirement as a Percentage of Peak Schedule 12.0% 10.0% 9.0% .Reserve Requirement • Fall 8.0% - Spring 7.0% - Summer Winter 6.0% -5.0% -4.0% 3.0% 2.0% 1.0% -0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0% 90.0% 100.0% Forecast Peak Schedule Factor

Figure F.8 – Non-VER Regulation Reserve Requirements by Forecast Schedule Factor-PACW

The forecast results in an average 2017 stand-alone regulation reserve requirement for non VERs of 110 MW for the PacifiCorp system, or approximately 5.7 percent of the peak schedule.

Load

Figure F.9 below illustrates the regulation reserve requirements for PACE load during 2017 as a function of the forecasted level of output, stated as a peak load factor (*i.e.*, a percentage of the peak load observed during 2017) for PACE. Figure F.10 illustrates this relationship for PACW.

 $Figure \ F. 9-Stand-alone \ Load \ Regulation \ Reserve \ Requirements-PACE$

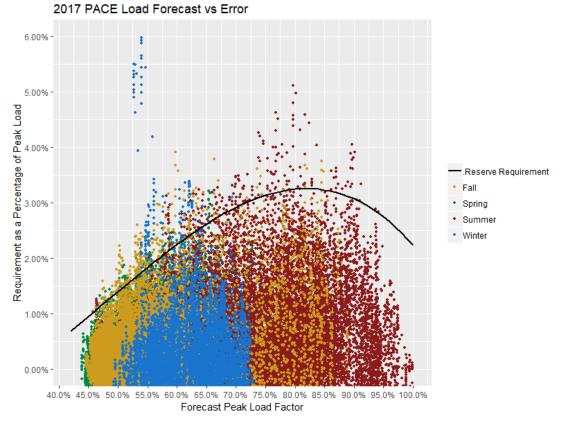
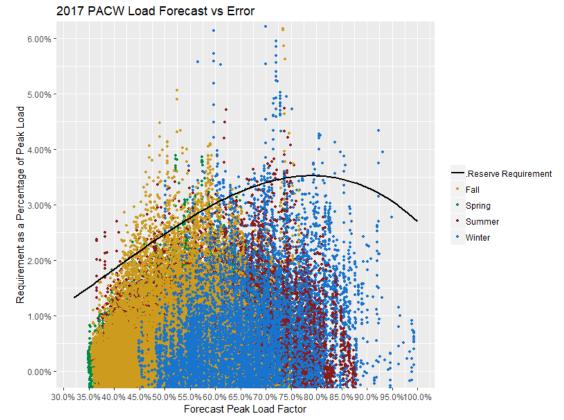


Figure F.10 – Stand-alone Load Regulation Reserve Requirements-PACW



The forecast results in an average 2017 stand-alone regulation reserve requirement for load of 305 MW for the PacifiCorp system, or approximately 3.0 percent of the peak load.

Portfolio Diversity and EIM Diversity Benefits

The EIM is a voluntary energy imbalance market service through the CAISO where market systems automatically balance supply and demand for electricity every fifteen and five minutes, dispatching least-cost resources every five minutes.

PacifiCorp and CAISO began full EIM operation on November 1, 2014. A number of additional participants have since joined the EIM, and more participants are scheduled to join in the next several years. PacifiCorp's participation in the EIM results in improved power production forecasting and optimized intra-hour resource dispatch. This brings important benefits including reduced energy dispatch costs through automatic dispatch, enhanced reliability with improved situational awareness, better integration of renewable energy resources, and reduced curtailment of renewable energy resources.

The EIM also has direct effects related to regulation reserve requirements. First, as a result of EIM participation, PacifiCorp has improved data used in the analysis contained in this FRS. The data and control provided by the EIM allow PacifiCorp to achieve the portfolio diversity benefits described in the first part of this section. Second, the EIM's intra-hour capabilities across the broader EIM footprint provide the opportunity to reduce the amount of regulation reserve necessary for PacifiCorp to hold, as further explained in the second part of this section.

Portfolio Diversity Benefit

The regulation reserve forecasts described above independently ensure that the probability of a reliability violation for each class remains within the reliability target; however, the largest deviations in each class tend not to occur simultaneously, and in some cases deviations will occur in offsetting directions. Because the deviations are not occurring at the same time, the regulation reserve held can cover the expected deviations for multiple classes at once and a reduced total quantity of reserve is sufficient to maintain the desired level of reliability. This reduction in the reserve requirement is the diversity benefit from holding a single pool of reserve to cover deviations in Solar, Wind, Non-VERs, and Load. As a result, the regulation reserve forecast for the portfolio can be reduced while still meeting the reliability target. For this reason the portfolio regulation requirements were calculated on the Combined Diversity Error.

As shown in Table F.7 below, PacifiCorp calculated the proportional reduction to the standalone requirements that could be applied such that the PacifiCorp system achieves the target determined through the quantile regression on the Combined Diversity Error. A total portfolio requirement of 635 MW was the result of this regression, a reduction of 36 percent. Applying this 36 percent reduction to each of the stand-alone regulation forecasts results in the diversity benefits shown in the second column. The last column shows the regulation requirements for each class after subtracting the portfolio diversity benefit.

Scenario	Stand-alone Regulation Forecast (aMW)	Diversity Benefit (aMW)	Portfolio Regulation Forecast (aMW)
Non-VER	110	(40)	70
Load	305	(110)	195
VER - Wind	434	(157)	277
VER - Solar	145	(53)	93
Total	994	(360)	635

Table F.7 - Results with PacifiCorp Portfolio Diversity

EIM Diversity Benefit

In addition to the direct benefits from EIM's increased system visibility and improved intra-hour operational performance described above, the participation of other entities in the broader EIM footprint provides the opportunity to further reduce the amount of regulation reserve PacifiCorp must hold.

By pooling variability in load, wind, and solar output, EIM entities reduce the quantity of reserve required to meet flexibility needs. The EIM also facilitates procurement of flexible ramping capacity in the fifteen-minute market to address variability that may occur in the five-minute market. Because variability across different BAAs may happen in opposite directions, the flexible ramping requirement for the entire EIM footprint can be less than the sum of individual BAA requirements. This difference is known as the "diversity benefit" in the EIM. This diversity benefit reflects offsetting variability and lower combined uncertainty. This flexibility reserve (uncertainty requirement) is in addition to the spinning and supplemental reserve carried against generation or transmission system contingencies under the NERC standards.

The CAISO calculates the EIM diversity benefit by first calculating an uncertainty requirement for each individual EIM BAA and then by comparing the sum of those requirements to the uncertainty requirement for the entire EIM area. The latter amount is expected to be less than the sum of the uncertainty requirements from the individual BAAs due to the portfolio diversification effect of forecasting a larger pool of load and resources using intra-hour scheduling and increased system visibility in the hypothetical, single-BAA EIM. Each EIM BAA is then credited with a share of the diversity benefit calculated by CAISO based on its share of the stand-alone requirement relative to the total stand-alone requirement.

The EIM does not relieve participants of their reliability responsibilities. EIM entities are required to have sufficient resources to serve their load on a standalone basis each hour before participating in the EIM. Thus, each EIM participant remains responsible for all reliability obligations. Despite these limitations, EIM imports from other participating BAAs can help balance PacifiCorp's loads and resources within an hour, reducing the size of reserve shortfalls and the likelihood of a Balancing Authority ACE Limit violation. While substantial EIM imports do occur in some hours, it is only appropriate to rely on PacifiCorp's diversity benefit associated with EIM participation, as these are derived from the structure of the EIM rather than resources contributed by other participants.

Table F.8 below provides a numeric example of uncertainty requirements and application of the calculated diversity benefit.

Table F.8 - EIM Diversity Benefit Application Example

	CAISO req't. before benefit	NEVP req't. before benefit	PACE req't. before benefit	PACW req't. before benefit	Total req't. before benefit	Total req't. after benefit	Total diversity benefit	Diversity benefit ratio	PACE benefit	PACE req't. after benefit
Hour	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
1	550	110	165	100	925	583	342	37.0%	61	104
2	600	110	165	100	975	636	339	34.8%	57	108
3	650	110	165	110	1,035	689	346	33.4%	55	110
4	667	120	180	113	1,080	742	338	31.3%	56	124

While the diversity benefit is uncertain, that uncertainty is not significantly different from the uncertainty in the Balancing Authority ACE Limit described above. In the 2019 FRS, PacifiCorp has credited the regulation reserve forecast with a historical distribution of calculated EIM diversity benefits. While this FRS considers regulation reserve requirements in 2017, the CAISO identified an error in their calculation of uncertainty requirements in early 2018. CAISO's published uncertainty requirements and associated diversity benefits are now only valid for March 2018 forward. To capture these additional benefits for this analysis, PacifiCorp has applied the historical distribution of EIM diversity benefits from March 2018 through the beginning of this study in July 2018. Relatively small incremental EIM diversity benefits are expected going forward as additional entities participate in EIM; however, operational data on new participants was not available at the time the study was prepared.

The inclusion of EIM diversity benefits in the 2019 FRS reduces the probability of reserve shortfalls and, in doing so, reduces the overall regulation reserve requirement. This allows PacifiCorp's forecasted requirements to be reduced. As shown in Table F.9 below, the resulting regulation reserve requirement is 531 MW, a 47 percent reduction (including the portfolio diversity benefit) compared to the stand-alone requirement for each class. The average regulation reserve requirement is reduced by 104 MW relative to the PacifiCorp portfolio reserve requirement without the EIM diversity benefit. The portfolio regulation forecast is expected to achieve an LOLP of 0.5 hours per year, based on a quantile regression at a 99.35 percent exceedance level.

Table F.9 - 2017 Results with Portfolio Diversity and EIM Diversity Benefits

Scenario	Stand-alone Regulation Forecast (aMW)	Stand- alone Rate (%)	Portfolio Regulation Forecast w/EIM (aMW)	Portfolio Rate (%)	2017 Capacity (MW)	Rate Determinant
Non-VER	110	5.7%	59	3.1%	1,912	12 CP
Load	305	3.0%	163	1.6%	10,044	12 CP
VER - Wind	434	15.8%	232	8.4%	2,750	Nameplate
VER - Solar	145	14.8%	78	7.9%	983	Nameplate
Total	994		531			

Fast-Ramping Reserve Requirements

As previously discussed, Requirement 1 of BAL-001-2 specifies that PacifiCorp's CPS1 score must be greater than equal to 100 percent for each preceding 12 consecutive calendar month period, evaluated monthly. The CPS1 score compares PacifiCorp's ACE with interconnection frequency during each clock minute. A higher score indicates PacifiCorp's ACE is helping interconnection

frequency, while a lower score indicates it is hurting interconnection frequency. Because CPS1 is averaged and evaluated on a monthly basis, it does not require a response to each and every ACE event, but rather requires that PacifiCorp meet a minimum aggregate level of performance in each month.

The 2017 Regulation Reserve Forecast described above is evaluating requirements for extreme deviations that are at least 30 minutes in duration, for compliance with Requirement 2 of BAL-001-2. In contrast, compliance with CPS1 requires reserve capability to compensate for the majority of over a minute to minute basis. These fast-ramping resources would be deployed frequently, and would also contribute to compliance with Requirement 2 of BAL-001-2, so they are a subset of the 2017 Regulation Reserve Forecast described above.

To evaluate CPS1 requirements, PacifiCorp compared the net load change for each five-minute interval in 2017 to the corresponding value for Requirement 2 compliance in that hour from the 2017 Regulation Reserve Forecast, after accounting for diversity (resulting in the 531 MW average requirement shown in Table F.9). Resources may deploy for Requirement 2 compliance over up to 30 minutes, so the average requirement of 531 MW would require ramping capability of at least 17.7 MW per minute (531 MW / 30 minutes).

Because CPS1 is averaged and evaluated on a monthly basis, it does not require a response to each and every ACE event, but rather requires that PacifiCorp meet a minimum aggregate level of performance in each month. Resources capable of ensuring compliance in 95 percent of intervals are expected to be sufficient to meet CPS 1, and given that ACE may deviate in either a positive or negative direction, the 97.5th percentile of incremental requirements was evaluated. This corresponds to 87 MW, or approximately 16.3 percent of the average Requirement 2 value. Because this value is for a five-minute interval, meeting it would require a ramping capability of at least 17.3 MW per minute (87 MW / 5 minutes). This value is actually slightly lower than the ramping capability for Requirement 2.

Note that resources must respond immediately to ensure compliance with Requirement 1, as performance is measured on a minute to minute basis. As a result, resources that respond after a delay, such as quick-start gas plants or certain interruptible loads, would not be suitable for Requirement 1 compliance, so these resources cannot be allocated the entire regulation reserve requirement. However, because Requirement 1 compliance is a small portion of the total regulation reserve requirement, these restrictions on resource type are unlikely to be a meaningful constraint.

In addition, CPS1 compliance is weighted toward performance during conditions when interconnection frequency deviations are large. The largest frequency deviations would also result in deployment of frequency response reserves, which are somewhat larger in magnitude, though they have a less stringent performance metric under BAL-003-1, based on median response during the largest events.

In light of the overlaps with BAL-001-2 Requirement 2 and BAL-003-1 described above, CPS1 compliance is not expected to result in an additional requirements beyond what is necessary to comply with those standards.

Incremental Regulation Reserve Requirements

The IRP portfolio optimization process contemplates the addition of new wind and solar capacity as part of its selection of future resources, as well as changes in peak load due to load growth and energy efficiency measures. As PacifiCorp's portfolio grows, the diversity of that portfolio is also expected to increase. As a result, incremental regulation reserve requirements are expected to be lower than the average requirement for a given portfolio.

The need to develop realistic deviation data for a period during which resources did not exist makes measuring an incremental diversity effect a difficult proposition. Instead, PacifiCorp's FRS evaluated the change in regulation reserve requirements associated with cumulatively stacking the individual wind and solar facilities throughout the two BAAs. Under this methodology as each MW of VERs is added to the system the rate of increase of the regulation reserve requirement is quantified and incorporated in the forecasted portfolio regulation results discussed later on in the study. Figure F.11 and Figure F.12 show this relationship between increased capacity and increasing reserve requirements for wind and solar by BAA.

Similarly for load the relationship between the daily peak load and the daily maximum error over the course of 2017 was observed for both BAAs and this relationship was extrapolated forward to develop a multiplier for the effect of peak load on the reserve requirements. A linear relationship between daily peak load and daily maximum error was observed for both BAAs as illustrated in Figure F.13 through Figure F.14.

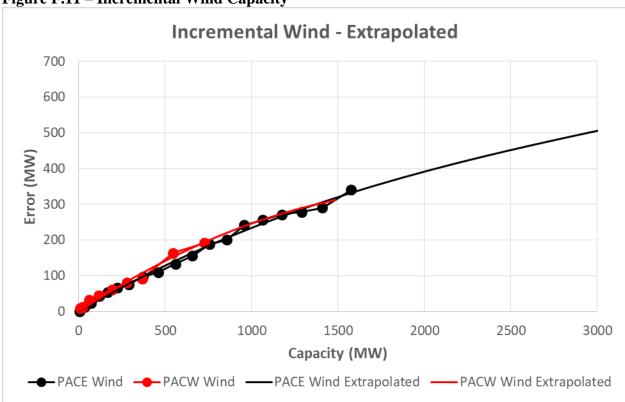


Figure F.11 – Incremental Wind Capacity

Figure F.12 – Incremental Solar Capacity

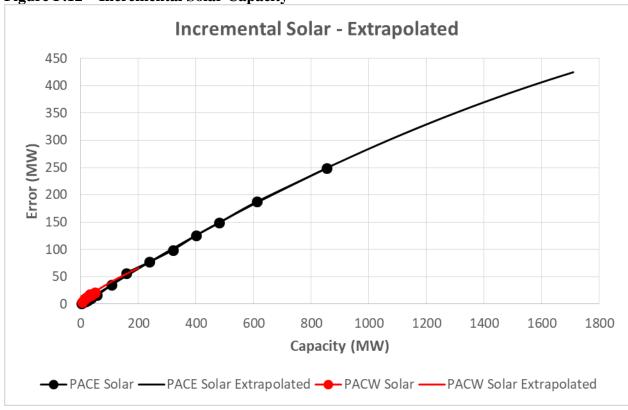
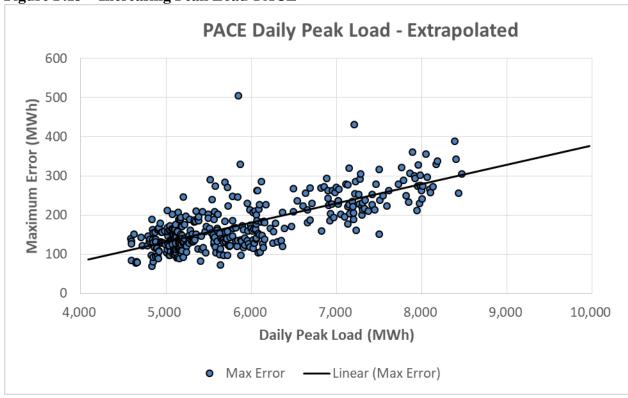


Figure F.13 – Increasing Peak Load-PACE



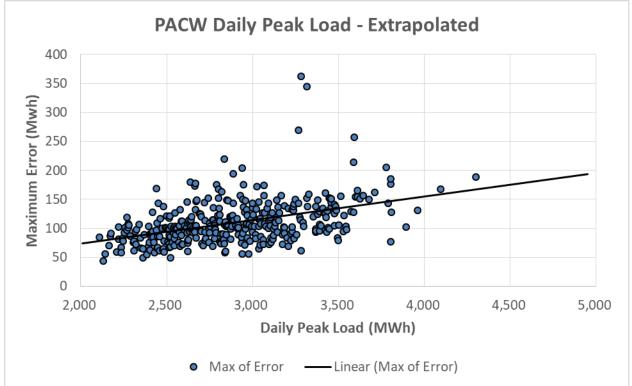


Figure F.14 – Increasing Peak Load-PACW

Portfolio Regulation Reserve Requirements

Overview

A single pool of regulation reserve is held to cover deviations by load, wind, solar, and non-dispatchable generation. Simultaneous large deviations by all classes are unlikely – as a result, this pool of regulation reserve can be smaller than what these classes would require on their own. The reduction in regulation reserve is a result of the diversity of the portfolio of requirements. The most important element in PacifiCorp's portfolio diversity estimate is the system diversity, including EIM benefits, associated with load, wind, solar and Non-VERs during 2017. This diversity reduced reserve requirements by 47 percent. This captures the majority of the regulation reserve requirements today and in likely future scenarios over the near term. However, as PacifiCorp's portfolio evolves over time, the regulation reserve requirements and diversity associated with that portfolio will vary. This section describes how incremental regulation reserve requirements for load, wind, and solar are combined to produce portfolio-specific requirements.

Results

Table F.10 presents the portfolio regulation requirement results for various scenarios. As the wind and solar capacity on PacifiCorp's system increases, regulation requirements increase, but those requirements are partially offset by the increasing diversity of the portfolio. The 2019 base case regulation reserve requirements are 531 MW. By comparison, PacifiCorp's 2017 base case from the 2017 IRP identified regulation reserve requirements of 617 MW.

Table F.10 – Total Regulation Requirement, by Scenario

Case	Portfolio	Wind Capacity (MW)	Solar Capacity (MW)	Regulation Requirement with Diversity (MW)
2017 Base Case	2015 Actuals + Projected Solar	2,757	1,050	617
2019 Base Case	2017 Actuals	2,750	1,021	531
2019 Forecast	2030 Portfolio	3,196	2,201	672
2019 Incr. Wind	2030 Portfolio + 500 MW Wind	3,696	2,201	722
2019 Incr. Solar	2030 Portfolio + 500 MW Solar	3,196	2,701	698

Table F.11 presents a comparison of the regulation reserve requirement results in the current study and the prior study.

Table F.11 - Portfolio Regulation Requirements, Percent of Nameplate/Peak Capacity

Study	Load	Wind	Non-VER	Solar	Notes
2017 FRS Base Case	2.8%	8.9%	2.4%	4.6%	2015 portfolio
2019 FRS Base Case	1.6%	8.4%	3.1%	7.9%	2017 portfolio
Sensitivities:					
Without diversity	3.0%	15.8%	5.7%	14.8%	2017 portfolio
Incremental Wind		10.1%			2030 portfolio: +500 MW wind
Incremental Solar				5.1%	2030 portfolio: +500 MW solar

The 2019 FRS calculates the regulation reserve requirement for the entire portfolio implicitly accounting for diversity among components at various penetration levels. This allows incremental requirements for load, wind and solar to be aligned with the new resource additions being contemplated in the IRP. The incremental requirements for wind are slightly higher than the average requirements for wind when diversity is included, but still well below the stand-alone requirements for wind without diversity. On the other hand, the incremental requirements for solar are less than the average requirements for solar even when diversity is included. These outcomes are reasonable since solar capacity is smaller than wind capacity in the evaluated portfolio, so incremental solar capacity makes the portfolio relatively more diverse.

For the first time, the 2019 FRS accounts for the incremental impact of changes in forecasted load on regulation reserve requirements. For instance, energy efficiency selections (which reduce load), also reduce reserve requirements. The impact of these changes is accounted for within the results reported by the PaR model.

Regulation Reserve Cost

A series of PaR scenarios were prepared to isolate the regulation reserve cost associated with incremental wind and solar capacity additions as discussed below. All studies reflect regulation reserve requirements on an hourly basis.

1. Base Case

The base case portfolio is the same as that used to set the planning reserve margin for the 2019 IRP, as discussed in Appendix I. This case incorporates assumptions consistent with the 2017 IRP Update, updated to reflect current inputs as of August 2018 and without any wind or solar resources additions beyond those that had already been committed at that time. This case was evaluated over the study period 2018-2036.

2. Wind Reserve Case

The wind reserve case adds the incremental regulation reserve requirement associated with 500 MW of proxy wind resource additions. Wind capacity increases by 100 MW at each of five locations: Dave Johnston, Goshen, Utah South, Walla Walla, and Yakima. The addition of this wind capacity results increases regulation reserve requirements by an average of 50 MW. This case was evaluated for the study period 2030. Wind integration costs are equal to the increase in system cost in Study 2 relative to Study 1, divided by the incremental wind generation.

3. Solar Reserve Case

The solar reserve case adds the incremental regulation reserve requirement associated with 500 MW of proxy solar resource additions. Solar capacity increases by 250 MW in Utah South and by 125 MW each in Southern Oregon and Yakima. The addition of this solar capacity results increases regulation reserve requirements by an average of 24 MW. This case was evaluated for the study period 2030. Solar integration costs are equal to the increase in system cost in Study 3 relative to Study 1, divided by the incremental solar generation.

4. 50 MW Reserve Case

This case includes an additional 50 MW reserve requirement in every hour. This case was evaluated over the study period 2018-2036 and was used to escalate the wind and solar results over time, relative to the 2030 values.

The incremental regulation reserve cost results for wind and solar are shown in Figure F.15. The comparable regulation reserve costs from the 2017 FRS are also shown. While regulation reserve costs in 2018 are comparable to the result in the prior study, the 2019 FRS demonstrates how these costs are expected to vary over time.

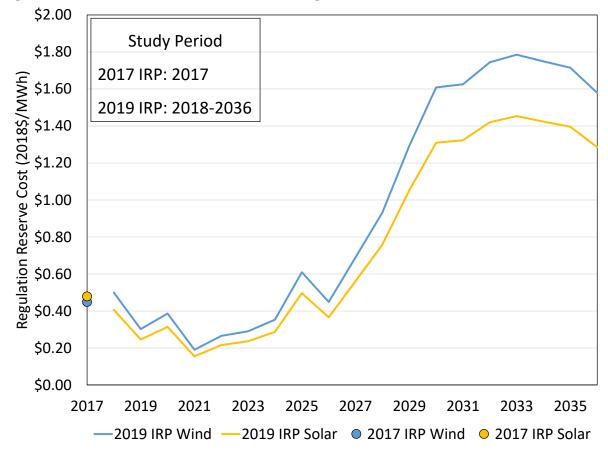


Figure F.15 – Incremental Wind and Solar Regulation Reserve Costs

The difference in regulation reserve costs for wind and solar reflects timing differences. Per MWh of generation, the wind reserve obligation is approximately 60 percent higher than the solar obligation; however, the solar obligation is higher during the summer when market prices and marginal reserve costs are typically higher. As a result, per MWh of generation, wind integration costs are only slightly higher than solar integration costs.

The 2019 FRS results are applied in the portfolio development process as an additional cost for proxy wind and solar generation resources available for selection within the SO model. Once the SO model has developed a candidate resource portfolio, the PaR model is used to evaluate portfolio risks. The PaR model inputs include regulation reserve requirements specific to the resource portfolio developed using the SO model, so the costs identified in the 2019 FRS are not applied in the PaR results. Instead, the IRP risk analysis using PaR specifically accounts for both differences in regulation reserve requirements and the resources available to meet those requirements in each portfolio.

When evaluated in PaR, a portfolio will be evaluated on its ability to meet operating reserve requirements, including regulation reserves, but as indicated previously, the SO model does not account for either reserve obligations or the reserve capability that resources can provide. While integration costs have previously been used to account for regulation reserve obligations, for the first time in the 2019 IRP an analogous credit has been applied to highly flexible resources that primarily provide operating reserves. This "operating reserve credit" has been applied to proxy storage, gas peaking units, and Class 1 DSM (interruptible load) that are available for selection

within the SO model. While other resources, such as combined cycle gas plants and renewables, are also capable of providing operating reserves these resources primarily provide energy which the SO model is already accounting for. As a result, no operating reserve credits are applied to these other resources. For a resource that is available throughout the year, such as a gas peaking unit, the operating reserve credit amounts to \$50/kw-year (2018\$), based on the costs calculated in the 50 MW Reserve Case relative to the Base Case. For resources with limited availability, such as seasonal Class 1 DSM resources or storage combined with wind or solar, the credits are prorated to account for the periods when a resource provides operating reserves.

Flexible Resource Needs Assessment

Overview

In its Order No. 12013 issued on January 19, 2012 in Docket No. UM 1461 on "Investigation of matters related to Electric Vehicle Charging", the Oregon Public Utility Commission (OPUC) adopted the OPUC staff's proposed IRP guideline:

- 1. Forecast the Demand for Flexible Capacity: The electric utilities shall forecast the balancing reserves needed at different time intervals (e.g. ramping needed within 5 minutes) to respond to variation in load and intermittent renewable generation over the 20-year planning period;
- 2. Forecast the Supply of Flexible Capacity: The electric utilities shall forecast the balancing reserves available at different time intervals (e.g. ramping available within 5 minutes) from existing generating resources over the 20-year planning period; and
- 3. Evaluate Flexible Resources on a Consistent and Comparable Basis: In planning to fill any gap between the demand and supply of flexible capacity, the electric utilities shall evaluate all resource options including the use of electric vehicles (EVs), on a consistent and comparable basis.

In this section, PacifiCorp first identifies its flexible resource needs for the IRP study period of 2019 through 2038, and the calculation method used to estimate those requirements. PacifiCorp then identifies its supply of flexible capacity from its generation resources, in accordance with the Western Electricity Coordinating Council (WECC) operating reserve guidelines, demonstrating that PacifiCorp has sufficient flexible resources to meet its requirements.

Forecasted Reserve Requirements

Since contingency reserve and regulation reserve are separate and distinct components, PacifiCorp estimates the forward requirements for each separately. The contingency reserve requirements are derived from stochastic simulations run using the Planning and Risk (PaR) model. The regulating reserve requirements are part of the inputs to the PaR model, and are calculated by applying the methods developed in the Portfolio Regulation Reserve Requirements section. The contingency and regulation reserve requirements include three distinct components and are modeled separately in the 2019 IRP: 10-minute spinning reserve requirements, 10-minute non-spinning reserve requirements, and 30-minute regulation reserve requirements. The reserve requirements for PacifiCorp's two balancing authority areas are shown in Table F.12 below.

Table F.12 - Reserve Requirements (MW)

]	East Requiremen	t	7	Vest Requiremer	nt
Year	Spin (10-minute)	Non-spin (10-minute)	Regulation (30-minute)	Spin (10-minute)	Non-spin (10-minute)	Regulation (30-minute)
2019	193	193	359	93	93	196
2020	194	194	377	94	94	207
2021	194	194	491	96	96	211
2022	196	196	493	97	97	198
2023	199	199	502	97	97	196
2024	202	202	593	98	98	283
2025	203	203	601	99	99	282
2026	203	203	592	99	99	280
2027	205	205	591	100	100	278
2028	207	207	597	101	101	275
2029	208	208	539	101	101	288
2030	210	210	651	102	102	286
2031	212	212	642	102	102	286
2032	214	214	644	102	102	282
2033	215	215	626	102	102	296
2034	216	216	620	102	102	296
2035	217	217	604	101	101	299
2036	219	219	601	101	101	308
2037	220	220	600	101	101	307
2038	221	221	560	101	101	301

Flexible Resource Supply Forecast

Requirements by NERC and the WECC dictate the types of resources that can be used to serve the reserve requirements.

- **10-minute spinning reserve** can only be provided by resources currently online and synchronized to the transmission grid;
- 10-minute non-spinning reserve may be served by fast-start resources that are capable of being online and synchronized to the transmission grid within ten minutes. Interruptible load can only provide non-spinning reserve. Non-spinning reserve may be provided by resources that are capable of providing spinning reserve.
- **30-minute regulation reserve** can be provided by unused spinning or non-spinning reserve. Incremental 30-minute ramping capability beyond the 10-minute capability captured in the categories above also counts toward this requirement.

The resources that PacifiCorp employs to serve its reserve requirements include owned hydro resources that have storage, owned thermal resources, and purchased power contracts that provide reserve capability.

Hydro resources are generally deployed first to meet the spinning reserve requirements because of their flexibility and their ability to respond quickly. The amount of reserve that these resources can provide depends upon the difference between their expected capacities and their generation level at the time. The hydro resources that PacifiCorp may use to cover reserve requirements in the PacifiCorp West balancing authority area include its facilities on the Lewis River and the Klamath

River as well as contracted generation from the Mid-Columbia projects. In the PacifiCorp East balancing authority area, PacifiCorp may use facilities on the Bear River to provide spinning reserve.

Thermal resources are also used to meet the spinning reserve requirements when they are online. The amount of reserve provided by these resources is determined by their ability to ramp up within a 10-minute interval. For natural gas-fired thermal resources, the amount of reserve can be close to the differences between their nameplate capacities and their minimum generation levels. In the current IRP, PacifiCorp's reserve are served not only from existing coal- and gas-fired resources, but also from new gas-fired resources selected in the preferred portfolio.

Table F.13 lists the annual reserve capability from resources in PacifiCorp's East and West balancing authority areas.²⁰ All the resources included in the calculation are capable of providing all types of reserve. The non-spinning reserve resources under third party contracts are excluded in the calculations. The changes in the flexible resource supply reflect retirement of existing resources, addition of new preferred portfolio resources, and variation in hydro capability due to forecasted streamflow conditions, and expiration of contracts from the Mid-Columbia projects that are reflected in the preferred portfolio.

Table F.13 - Flexible Resource Supply Forecast (MW)

Year	East Supply (10-Minute)	West Supply (10-Minute)	East Supply (30-Minute)	West Supply (30-Minute)
2019	1,843	701	2528	965
2020	1,893	703	2528	967
2021	1,897	684	2472	948
2022	1,913	671	2488	935
2023	1,931	683	2387	947
2024	2,158	965	2613	1262
2025	2,166	963	2621	1260
2026	2,278	963	2734	1260
2027	2,228	964	2734	1261
2028	2,144	1,143	2650	1440
2029	2,268	1,645	2773	1876
2030	2,562	1,645	2987	1876
2031	2,592	1,645	3017	1876
2032	2,604	1,765	3029	1996
2033	2,604	1,884	3029	2016
2034	2,426	1,884	2789	2016
2035	2,441	1,884	2804	2016
2036	2,445	1,988	2808	2120
2037	3,104	2,240	3308	2372
2038	3,601	2,622	3804	2622

Figure F.16 and Figure F.17 graphically display the balances of reserve requirements and capability of spinning reserve resources in PacifiCorp's East and West balancing authority areas

²⁰ Frequency response capability is a subset of the 10-minute capability shown. Battery resources are capable of responding with their maximum output during a frequency event, and can provide an even greater response if they were charging at the start of an event. PacifiCorp has sufficient frequency response capability at present and by 2024 the battery capacity added in the preferred portfolio will exceed of PacifiCorp's current 202.8 MW frequency response obligation for a 0.3 Hz event. As a result, compliance with the frequency response obligation is not anticipated to require incremental supply.

respectively. The graphs demonstrate that PacifiCorp's system has sufficient resources to serve its reserve requirements throughout the IRP planning period.

Figure F.16 - Comparison of Reserve Requirements and Resources, East Balancing Authority Area (MW)

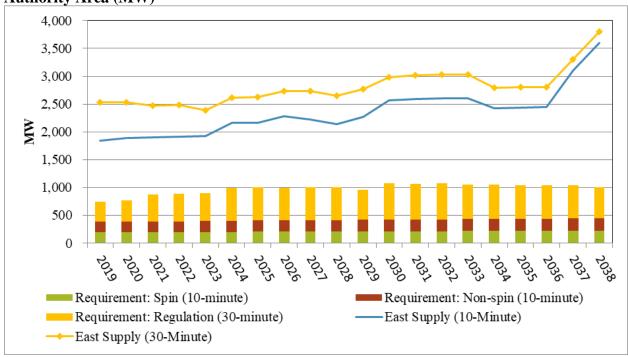
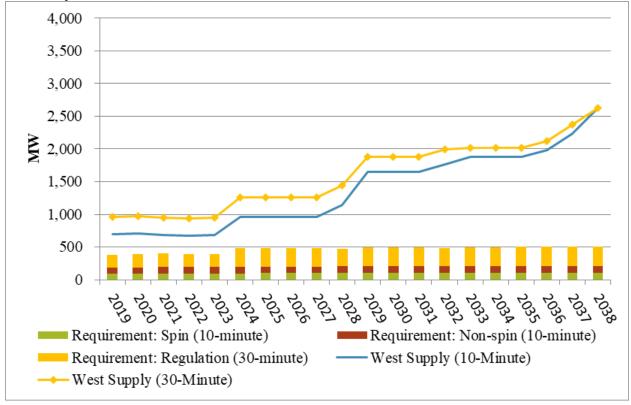


Figure F.17 - Comparison of Reserve Requirements and Resources, West Balancing Authority Area (MW)



Flexible Resource Supply Planning

In actual operations, PacifiCorp has been able to serve its reserve requirements and has not experienced any incidents where it was short of reserve. PacifiCorp manages its resources to meet its reserve obligation in the same manner as meeting its load obligation – through long term planning, market transactions, utilization of the transmission capability between the two balancing authority areas, and operational activities that are performed on an economic basis.

PacifiCorp and the California Independent System Operator Corporation implemented the energy imbalance market (EIM) on November 1, 2014, and participation by other utilities has expanded significantly with more participants scheduled for entry through 2022. By pooling variability in load and resource output, EIM entities reduce the quantity of reserve required to meet flexibility needs. Because variability across different BAAs may happen in opposite directions, the uncertainty requirement for the entire EIM footprint can be less than the sum of individual BAAs' requirements. This difference is known as the "diversity benefit" in the EIM. This diversity benefit reflects offsetting variability and lower combined uncertainty. PacifiCorp's regulation reserve forecast includes a credit to account for the diversity benefits associated with its participation in EIM.

As indicated in the OPUC order, electric vehicle technologies may be able to meet flexible resource needs at some point in the future. However, the electric vehicle technology and market have not developed sufficiently to provide data for the current study. Since this analysis shows no gap between forecasted demand and supply of flexible resources over the IRP planning horizon, this IRP does not evaluate whether electric vehicles could be used to meet future flexible resource needs.

APPENDIX G – PLANT WATER CONSUMPTION

The information provide in this appendix is for PacifiCorp owned plants. Total water consumption and generation includes all owners for jointly-owned facilities.

Table G.1 – Plant Water Consumption with Acre-Feet per Year

			-	Acre-Feet	t Per Year	_			MWhs Per Year				4-year Average	
	Zero	Cooling					4-year						Gals/	GPM/
Plant Name	Discharge	Media	2014	2015	2016	2017	Average		2014	2015	2016	2017	MWH	MW
Chehalis	Yes	Air	150	52	48	54	76		2,543,785	1,090,728	1,395,513	1,748,295	15	0.2
Currant Creek	Yes	Air	92	78	124	116	102		2,498,058	2,257,106	1,474,686	1,193,242	18	0.3
Dave Johnston	No	Water	9,474	9,736	8,864	8,231	9,076		5,183,347	5,140,970	5,088,504	4,519,908	594	9.9
Gadsby	No	Water	367	259	262	100	247		325,677	123,796	120,903	92,814	485	8.1
Hunter	Yes	Water	16,662	16,386	14,225	15,383	15,664		9,098,918	5,988,318	5,503,890	5,399,777	786	13.1
Huntington	Yes	Water	10,240	9,888	9,189	9,653	9,743		6,300,558	9,630,419	8,161,219	8,582,142	389	6.5
Jim Bridger	Yes	Water	23,936	22,493	18,000	19,047	20,869	П	14,016,315	13,439,341	11,688,747	11,642,810	536	8.9
Lake Side	No	Water	2,960	3,369	3,619	2,698	3,161	П	4,351,182	4,549,274	5,726,042	3,340,561	229	3.8
Naughton	No	Water	7,484	7,215	6,896	6,927	7,130	Π	4,958,589	4,899,321	4,871,839	4,740,158	477	8.0
Wyodak	Yes	Air	332	228	329	332	305		2,625,183	2,565,603	2,056,439	2,565,053	41	0.7
TOTAL			71,695	69,704	61,556	62,541	66,374		51,901,612	49,684,876	46,087,782	43,824,760	452	7.5

^{*} Gadsby includes a mix of both Rankine steam units and peaking gas turbines.

1 acre-foot of water is equivalent to 325,851 Gallons or 43,560 Cubic Feet.

^{**} Naughton Unit 3 was rerated in September 2015 from 330 megawatts (MW) to 280 MW. The averages remain as 4-year averages.

Table G.2 – Plant Water Consumption by State (acre-feet)

	UTAH PLANTS										
Plant Name	2012	2013	2014	2015	2016	2017					
Currant Creek	90	84	92	78	124	116					
Gadsby	1,059	610	367	259	262	100					
Hunter	18,266	17,001	16,662	16,386	14,225	15,383					
Huntington	10,423	10,643	10,240	9,888	9,189	9,653					
Lake Side	1,693	1,361	2,960	3,369	3,619	2,698					
TOTAL	31,531	29,699	30,320	29,980	27,419	27,950					

Percent of total water consumption = 42.3

	WYOMING PLANTS										
Plant Name	2012	2013	2014	2015	2016	2017					
Dave Johnston	7,721	8,941	9,474	9,736	8,864	8,231					
Jim Bridger	23,977	25,059	23,936	22,493	18,000	19,047					
Naughton	8,745	9,622	7,484	7,215	6,896	6,927					
Wyodak	322	319	332	228	329	332					
TOTAL	40,765	43,941	41,225	39,672	34,089	34,537					

Percent of total water consumption = 55.9

Table G.3 – Plant Water Consumption by Fuel Type (acre-feet)

COAL FIRED PLANTS						
Plant Name	2012	2013	2014	2015	2016	2017
Dave Johnston	7,721	8,941	9,474	9,736	8,864	8,231
Hunter	18,266	17,001	16,662	16,386	14,225	15,383
Huntington	10,423	10,643	10,240	9,888	9,189	9,653
Jim Bridger	23,977	25,059	23,936	22,493	18,000	19,047
Naughton	8,745	9,622	7,484	7,215	6,896	6,927
Wyodak	322	319	332	228	329	332
TOTAL	69,454	71,585	68,127	65,946	57,503	59,573

Percent of total water consumption = 93.7

NATURAL GAS FIRED PLANTS						
Plant Name	2012	2013	2014	2015	2016	2017
Currant Creek	90	84	92	78	124	116
Chehalis	55	86	150	52	48	54
Gadsby	1,059	610	367	259	262	100
Lake Side	1,693	1,361	2,960	3,369	3,619	2,698
TOTAL	2,897	2,141	3,568	3,758	4,053	2,968

Percent of total water consumption = 4.6

 $Table\ G.4-Plant\ Water\ Consumption\ for\ Plants\ Located\ in\ the\ Upper\ Colorado\ River\ Basin\ (acre-feet)$

Plant Name	2012	2013	2014	2015	2016	2017
Hunter	18,266	17,001	16,662	16,386	14,225	15,383
Huntington	10,423	10,643	10,240	9,888	9,189	9,653
Naughton	8,745	9,622	7,484	7,215	6,896	6,927
Jim Bridger	23,977	25,059	23,936	22,493	18,000	19,047
TOTAL	61,411	62,325	58,322	55,982	48,310	51,010

Percent of total water consumption = 82.0

APPENDIX H – STOCHASTIC PARAMETERS

Introduction

For this IRP, PacifiCorp updated and re-estimated the stochastic parameters provided in the 2017 IRP for use in the Planning and Risk (PaR) model runs.

PaR, as used by PacifiCorp, develops portfolio cost scenarios via computational finance in concert with production simulation. The model stochastically shocks the case-specific underlying electricity price forecast as well as the corresponding case-specific key drivers (e.g., natural gas, loads, and hydro) and dispatches accordingly. Using exogenously calculated parameters (i.e., volatilities, mean reversions, and correlations), PaR develops scenarios that bracket the uncertainty surrounding a driver; statistical sampling techniques are then employed to limit the number of representative scenarios to 50. The stochastic model used in PaR is a two-factor (short- and long-run) mean reverting model.

PacifiCorp used short-run stochastic parameters for this Integrated Resource Plan (IRP); long-run parameters were set to zero since PaR cannot re-optimize its capacity expansion plan. This inability to re-optimize or add capacity can create a problem when dispatching to meet extreme load and/or fuel price excursions, as often seen in long-term stochastic modeling. Such extreme out-year price and load excursions can influence portfolio costs disproportionately while not reflecting plausible outcome. Thus, since long-term volatility is the year-on-year growth rate, only the expected yearly price and/or load growth is simulated over the forecast horizon¹.

Key drivers that significantly affect the determination of prices tend to fall into two categories: loads and fuels. Targeting only key variables from each category simplifies the analysis while effectively capturing sensitivities on a larger number of individual variables. For instance, load uncertainty can encompass the sensitivities of weather, transmission availability, unit outages, and evolving end-uses. Depending on the region, fuel price uncertainty (especially natural gas) can encompass the sensitivities of weather, load growth, emissions, and hydro availability. The following sections summarize the development of stochastic process parameters and describe how these uncertain variables evolve over time.

Overview

Long-term planning demands specification of how important variables behave over time. For the case of PacifiCorp's long-term planning, important variables include natural gas and electricity prices, regional loads, and regional hydro generation. Modeling these variables involves not only a description of their expected value over time as with a traditional forecast, but also a description of the spread of possible future values. The following sections summarize the development of stochastic process parameters to describe how these uncertain variables evolve over time².

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¹ Mean reversion is assumed to be zero in the long run.

² A stochastic or random process is the counterpart to a deterministic process. Instead of dealing with only one possible reality of how the variables might evolve over time, there is some indeterminacy in the future evolution described by probability distributions.

Volatility

The standard deviation³(σ) is a measure of how widely values are dispersed from the average value:

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \mu)^2}{(n-1)}}$$

where μ is the average value of the observations $\{x1, x2,...,xn\}$, and n is the number of observations.

Volatility (σ_T) incorporates a time component so a variable with constant volatility has a larger spread of possible outcomes two years in the future than one year in the future:

$$\sigma_T = \sigma \sqrt{T}$$

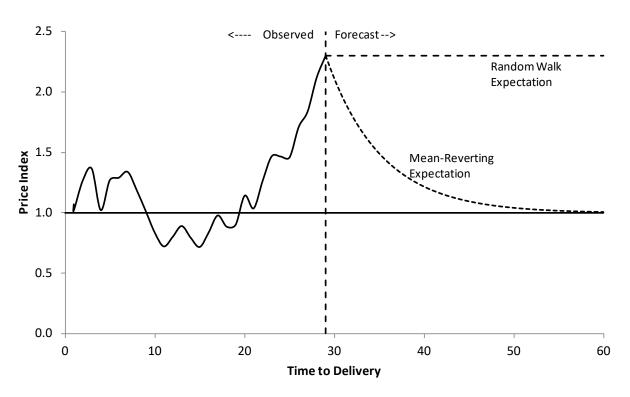
Volatilities are typically quoted on an annual basis but can be specified for any desired time period (T). Suppose the annual volatility of load is two percent. This implies that the standard deviation of the range of possible loads a year from now is two percent, while the standard deviation four years from now is four percent.

Mean Reversion

If volatility was constant over the forecast period, then the standard deviation would increase linearly with the square root of time. This is described as a "Random Walk" process and often provides a reasonable assumption for long-term uncertainty. However, for energy commodities as well as many other variables in the short-term, this is not typically the case. Excepting seasonal effects, the standard deviation increases less quickly with longer forecast time. This is called a mean reverting process - variable outcomes tend to revert back towards a long-term mean after experiencing a shock.

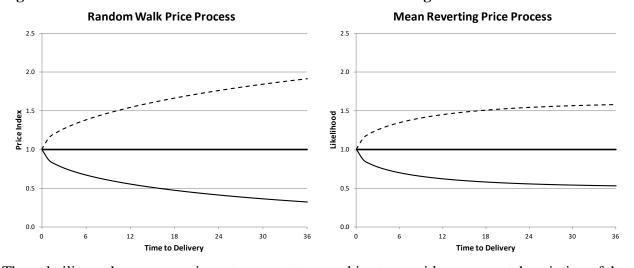
³ "Standard Deviation" and "Variance" are standard statistical terms describing the spread of possible outcomes. The Variance equals the Standard Deviation squared.

Figure H.1 – Stochastic Processes



For a random walk process, the distribution of possible future outcomes continues to increase indefinitely, while for a mean reverting process, the distribution of possible outcomes reaches a steady-state. Actual observed outcomes will continue to vary within the distribution, but the distribution across all possible outcomes does not increase:

Figure H.2 – Random Walk Price Process and Mean Reverting Process



The volatility and mean reversion rate parameters combine to provide a compact description of the distribution of possible variable outcomes over time. The volatility describes the size of a typical shock or deviation for a particular variable and the mean reversion rate describes how quickly the variable moves back toward the long-run mean after experiencing a shock.

Estimating Short-term Process Parameters

Short-term uncertainty can best be described as a mean reverting process. The factors that drive uncertainty in the short-term are generally short-lived, decaying back to long-run average levels. Short-term uncertainty is mainly driven by weather (temperature, windiness, rainfall) but can also be driven by short-term economic factors, congestion, outages, etc. The process for estimating short-term uncertainty parameters is similar for most variables of interest. However, each of PacifiCorp's variables have characteristics that make their processes slightly different. The process for estimating short-term uncertainty parameters is described in detail below for the most straightforward variable – natural gas prices. Each of the other variables is then discussed in terms of how they differ from the standard natural gas price parameter estimation process.

Stochastic Process Description

The first step in developing process parameter estimates for any uncertain variable is to determine the form of the distribution and time step for uncertainty. In the case of natural gas, and for prices in general, the lognormal distribution is a good representation of possible future outcomes. A lognormal distribution is a continuous probability distribution of a random variable whose logarithm is normally distributed⁴. The lognormal distribution is often used to describe prices because it is bounded on the bottom by zero and has a long, asymmetric "tail" reflecting the possibility that prices could be significantly higher than the average:

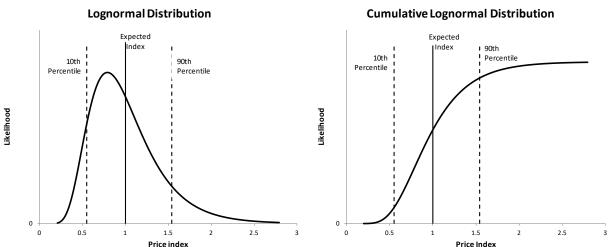


Figure H.3 – Lognormal Distribution and Cumulative Lognormal Distribution

The time step for calculating uncertainty parameters depends on how quickly a variable can experience a significant change. Natural gas prices can change substantially from day-to-day and are reported on a daily basis, so the time step for analysis will be one day.

⁴ A normal distribution is the most common continuous distribution represented by a bell-shaped curve that is symmetrical about the mean, or average, value.

All short-term parameters were calculated on a seasonal basis to reflect the different dynamics present during different seasons of the year. For instance, the volatility of gas prices is higher in the winter and lower in the spring and summer. Seasons were defined as follows:

Table H.1 - Seasonal Definitions

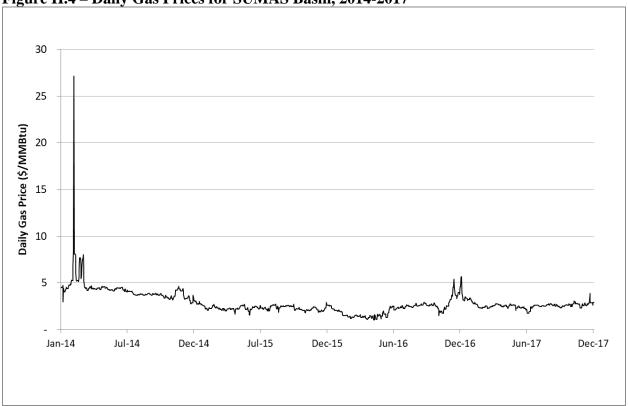
Winter	December, January, and February
Spring	March, April, and May
Summer	June, July, and August
Fall	September, October, and November

Data Development

Basic Data Set:

The natural gas price data was organized into a consistent dataset with one natural gas price for each gas delivery point reported for each delivery day. The data was checked to make sure that there were no missing or duplicate dates. If no price is reported for a particular date, the date is included but left blank to maintain a consistent 24-hour time step between all observed prices. Four years of daily data from 2014 to 2017 was used for this short-term parameter analysis. The following chart shows the resulting data set for the Sumas gas basin:

Figure H.4 – Daily Gas Prices for SUMAS Basin, 2014-2017



Development of Price Index:

Uncertainty parameters are estimated by looking at the movement, or deviation, in prices from one day to the next. However, some of this movement is due to expected factors, not uncertainty. For instance, gas prices are expected to be higher during winter or as we move toward winter. This

expectation is already included in the gas price forecast and should not be considered a shock, or random event. In order to capture only the random or uncertain portion of price movements, a price index is developed that takes into account the expected portion of price movements. Three categories of price expectations are calculated:

<u>Seasonal Average</u>: The level of gas prices may be different from one year to the next. While this can be attributed to random movements or shocks in the gas markets, it is not a short-term event and should not be included in the short-term uncertainty process. In order to account for this possible difference in the level of gas prices, the average gas price for each season and year is calculated. For example, Sumas prices in the winter of 2014 average \$4.92/MMBtu.

Monthly Average: Within a season, there are different expected prices by month. For instance, within the fall season, November gas prices are expected to be much higher than September and October prices as winter is just around the corner. A monthly factor representing the ratio of monthly prices to the seasonal average price is calculated. For example, February prices in Sumas are 106 percent of the winter average price.

<u>Weekly Shape</u>: Many variables exhibit a distinct shape across the week. For instance, loads and electricity prices are higher during the middle of the week and lower on the weekends. The expected shape of gas prices across the week was calculated and found to be insignificant (expected variation by weekday did not exceed two percent of the weekly average).

These three components – seasonal average, monthly shape, and weekly shape – combine to form an expected price for each day. For example, the expected price of gas in Sumas in February of 2014 was \$5.22/MMBtu, the product of the seasonal average and the monthly shape factor

Expected Gas Price = Seasonal Avg. Price * Monthly Shape within the Season

The following chart shows the comparison of the actual Sumas prices with the "expected" prices:



Figure H.5 – Daily Gas Prices for SUMAS Basin with "expected" prices, 2014-2017

Dividing the actual gas prices by the expected prices forms a price index that averages one. This index, illustrated by the chart below, captures only the random component of price movements—the portion not explained by expected seasonal, monthly, and weekly shape.

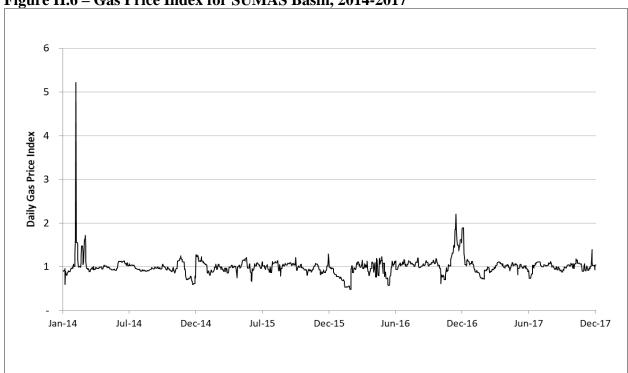


Figure H.6 – Gas Price Index for SUMAS Basin, 2014-2017

Parameter Estimation – Autoregressive Model

Uncertainty parameters are calculated for each variable by regressing the movement of each region's price index compared to the previous day's index.

Step 1 - Calculate Log Deviation of Price Index

Since gas prices are lognormally distributed, the regression analysis is performed on the natural log of prices and their log deviations. The log deviations are simply the differences between the natural log of one day's price index and the natural log of the previous day's price index.

Step 2 - Perform Regression

The log deviations of price index are regressed against the previous day's logarithm of price index for each season as well as for the entire data set. The following chart shows the log of the price index versus the log deviations for Sumas gas for all seasons and the resulting regression equation:

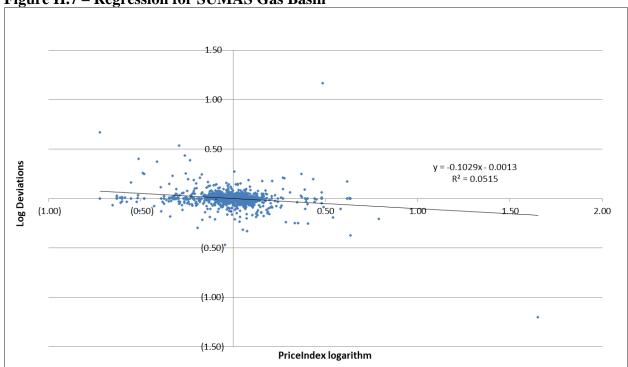


Figure H.7 – Regression for SUMAS Gas Basin

Step 3 - Interpret the Results

The INTERCEPT of the regression represents the log of the long-run mean. So in this case, the intercept is approximately zero, implying that the long-run mean is equal to one. This is consistent with the way in which the price index is formulated.

The *SLOPE* of the regression is related to the auto correlation and mean reversion rate:

auto correlation =
$$\emptyset = 1 + slope$$

Mean Reversion Rate $\alpha = -\ln(\emptyset)$

The autocorrelation measures how much of the price shock from the previous time period remains in the next time period. For instance, if the autocorrelation is 0.4 and gas prices yesterday experienced a 10 percent jump over the norm, today's expected price would be 4 percent higher than normal. In addition, today's gas price will experience a shock today that may result in prices higher or lower than this expectation. The mean reversion rate expresses the same thing in a different manner. The higher the mean reversion rate, the faster prices revert to the long-run mean.

The last component of the regression analysis is the *STANDARD ERROR* or *STEYX*. This measures the portion of the price movements not explained by mean reversion and is the estimate of the variable's volatility.

Both the mean reversion rate and volatility calculated with this process are daily parameters and can be applied directly to daily movements in gas prices.

Step 4 - Results

The natural gas price parameters derived through this process are reported in the table below.

Table H.2 - Uncertainty Parameters for Natural Gas

	Winter	Spring	Summer	Fall
KERN OPAL				
Daily Volatility	11.14%	3.90%	2.46%	3.62%
Daily Mean Reversion Rate	0.110	0.152	0.102	0.071
SUMAS				
Daily Volatility	12.00%	6.07%	4.87%	4.38%
Daily Mean Reversion Rate	0.092	0.265	0.105	0.107

Electricity Price Process

For the most part, electricity prices behave very similarly to natural gas prices. The lognormal distribution is generally a good assumption for electricity. While electricity prices do occasionally go below zero, this is not common enough to be worth using the Normal distribution assumption, and the distribution of electricity prices is often skewed upwards. In fact, even the lognormal assumption is sometimes inadequate for capturing the tail of the electricity price distribution. Similar to gas prices, electricity price can experience substantial change from one day to the next, so a daily time step should be used.

Basic Data Set:

The electricity price data was organized into a consistent dataset with one price for each region reported for each delivery day, similar to gas prices. The data covers the 2014 through 2017 time period. However, electricity prices are reported for "High Load Level" periods (16 hours for six days a week) and "Low Load Level" periods (eight hours for six days a week and 24 hours on Sunday & NERC holidays). In order to have a consistent price definition, a composite price, calculated based on 16 hours of peak and eight hours of off-peak prices, is used for Monday through Saturday. The Low Load Level price was used for Sundays since that already reflects the 24 hour price. Missing and duplicate data is handled in a fashion similar to gas prices. Illiquid delivery point prices are filled using liquid hub prices as reference. Mid-C is the most liquid market in PACW, so missing prices for COB are filled using the latest available spread between COB and Mid-C markets. Similarly, Four Corner prices are filled using Palo Verde prices.

Development of Price Index:

As with gas prices, an electricity price index was developed which accounts for the expected components of price movements. The "expected" electricity price incorporates all three possible adjustments: seasonal average, monthly shape and weekly shape. For instance, the expected price for January 2, 2014 in the Four Corners region was \$43.12/megawatt hours (MWh). This price incorporates the 2014 winter average price of \$39.14/MWh times the monthly shape factor for January of 102 percent and the weekday index for Thursday of 108 percent. The following chart shows the Four Corners actual and expected electricity prices over the analysis time period.



Figure H.8 – Daily Electricity Prices for Four Corners, 2014-2017

Electricity Price Uncertainty Parameters

Uncertainty parameters are calculated for each electric region, similar to the process for gas prices. The electricity price parameters derived through this process are reported in the table below.

Table H.3 - Uncertainty Parameters for Electricity Regions	Table H.3 -	Uncertainty	Parameters fo	or Electricity	Regions
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	Winter	Spring	Summer	Fall
Four Corners				
Daily Volatility	9.84%	10.41%	15.47%	10.13%
Daily Mean Reversion Rate	0.125	0.434	0.338	0.370
CA-OR Border				
Daily Volatility	13.44%	13.44% 26.13%		10.19%
Daily Mean Reversion Rate	0.119	0.119 0.551		0.257
Mid-Columbia				
Daily Volatility	16.55%	47.46%	21.28%	10.34%
Daily Mean Reversion Rate	0.140	0.551	0.271	0.279
Palo Verde				
Daily Volatility	9.22%	7.46%	14.08%	9.83%
Daily Mean Reversion Rate	0.110	0.211	0.220	0.415

Regional Load Process

There are only two significant differences between the uncertainty analysis for regional loads and natural gas prices. The distribution of daily loads is somewhat better represented by a normal distribution rather than a lognormal distribution, and, similar to electricity prices, loads have a significant expected shape across the week. The chart below shows the distribution of historical

load outcomes for the Portland area as well as normal and lognormal distribution functions representing load possibilities. Both distributions do a reasonable job of representing the spread of possible load outcomes, but the tail of the lognormal distribution implies the possibility of higher loads than is supported by the historical data.

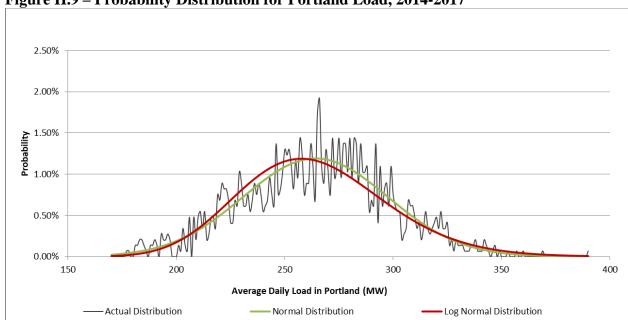


Figure H.9 – Probability Distribution for Portland Load, 2014-2017

Development of Load Index:

As with electricity prices, a load index was developed which accounts for the expected components of load movements, incorporating all three possible adjustments. For instance, the expected load for January 2, 2014 in Portland was 324 megawatts (MW). This load incorporates the 2014 winter average load of 305 MW times the monthly shape factor for January of 103 percent and the weekday index for Thursday also of 103 percent. The following chart shows the Portland actual and expected loads over the analysis time period.

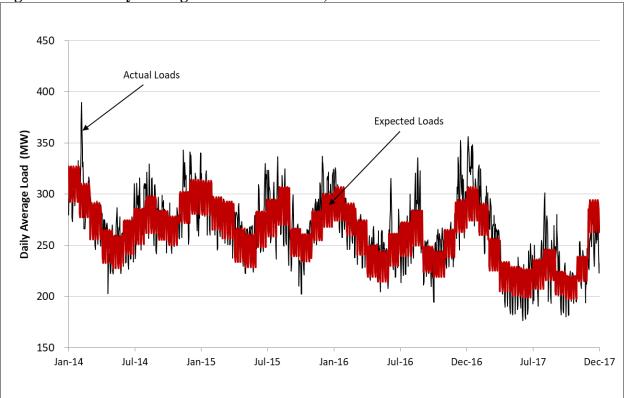


Figure H.10 – Daily Average Load for Portland, 2014-2017

Load Uncertainty Parameters:

Uncertainty parameters are calculated for each load region, similar to the process for gas and electricity prices. Since loads are modeled as normally, rather than log-normally distributed, deviations are simply calculated as the difference between the load index and the previous day's index.

The uncertainty parameters for regional loads derived through this process are reported in the table below.

Table H.4 - Uncertainty Parameters for Load Regions

	.4 - Oncertainty 1 arameters for 1	Winter	Spring	Summer	Fall
Califor	nia				
	Daily Volatility	4.7%	4.2%	3.8%	4.9%
	Daily Mean Reversion Rate	0.268	0.218	0.185	0.311
Idaho					
	Daily Volatility	3.5%	6.5%	5.1%	4.2%
	Daily Mean Reversion Rate	0.153	0.204	0.095	0.218
Portla	nd				
	Daily Volatility	3.9%	3.3%	5.0%	3.9%
	Daily Mean Reversion Rate	0.177	0.241	0.280	0.242
Orego	n Other				
	Daily Volatility	4.2%	3.4%	4.2%	4.2%
	Daily Mean Reversion Rate	0.182	0.379	0.195	0.253
Utah					
	Daily Volatility	2.1%	2.8%	4.5%	3.5%
	Daily Mean Reversion Rate	0.363	0.595	0.213	0.249
Washi	ngton				
	Daily Volatility	5.3%	3.7%	5.0%	4.3%
	Daily Mean Reversion Rate	0.181	0.341	0.157	0.203
Wyom	ing				
	Daily Volatility	1.6%	1.8%	1.6%	1.7%
	Daily Mean Reversion Rate	0.273	0.254	0.235	0.267

Hydro Generation Process

There are two differences between the uncertainty analysis for hydro generation and natural gas prices. Hydro generation varies on a slower time frame than other variables analyzed. As such, average hydro generation is calculated and analyzed on a weekly, rather than daily, basis. Generation is calculated as the average hourly generation across the 168 hours in a week. The hydro analysis covers the 2013 through 2017 time period.

Development of Hydro Index:

A hydro generation index was developed which accounts for the expected components of hydro movements, incorporating seasonal and monthly adjustments. For instance, the expected hydro generation for the week of January 1, 2013 through January 7, 2013 in the Western Region was 388 MW. This generation incorporates the 2013 winter average generation of 422 MW times the monthly shape factor for January of 92 percent. The following chart shows the western hydro actual and expected generation over the analysis time period.

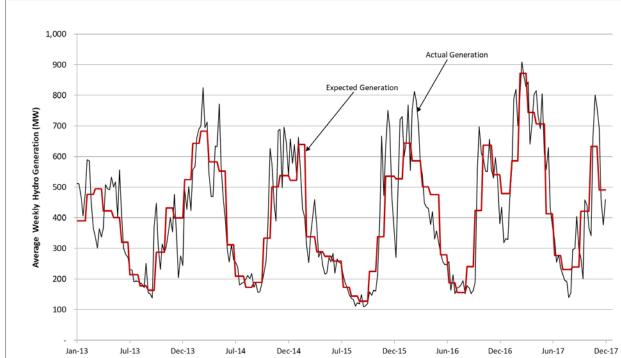


Figure H.11 – Weekly Average Hydro Generation in the West, 2013-2017

Hydro Generation Uncertainty Parameters:

Uncertainty parameters are calculated for each hydro region, similar to the process for gas and electricity prices. The uncertainty parameters for hydro generation derived through this process are reported in the table below.

Table H.5 - Uncertainty Parameters for Hydro Generation

	Winter	Spring	Summer	Fall
Weekly Volatility	21.15%	16.17%	16.78%	30.08%
Weekly Mean Reversion Rate	0.63	0.50	1.51	0.86

Short-term Correlation Estimation

Correlation is a measure of how much the random component of variables tend to move together. After the uncertainty analysis has been performed, the process for estimating correlations is relatively straight-forward.

Step 1 - Calculate Residual Errors

Calculate the residual errors of the regression analysis for all of the variables. The residual error represents the random portion of the deviation not explained by mean reversion. It is calculated for each time period as the difference between the actual value and the value predicted by the linear regression equation:

 $Error = Actual \ Deviation - (Slope * Previous \ Deviation + Intercept)$ All of the residual errors are compiled by delivery date.

Step 2 - Calculate Correlations

Correlate the residual errors of each pair of variables:

$$Correlation(X,Y) = \frac{\sum_{i}^{n} \left[\left(x_{i} - x_{avg.} \right) * \left(y_{i} - y_{avg.} \right) \right]}{\sqrt{\sum_{i}^{n} \left(x_{i} - x_{avg.} \right)^{2} * \sum_{i}^{n} \left(y_{i} - y_{avg.} \right)^{2}}}$$

There are a few things to note about the correlation calculations. First, correlation data must always be organized so that the same time period is being compared for both variables. For instance, weekly hydro deviations cannot be compared to daily gas price deviations. Thus, a daily regression analysis was performed for the hydro variables.

Also, note that what is being correlated are the residual errors of the regression – only the uncertain portion of the variable movements. Variables may exhibit similar expected shapes – both loads and electricity prices are higher during the week than on the weekend. This coincidence is captured in the expected weekly shapes input into the planning model. The correlation calculated here captures the extent to which the shocks experienced by two different variables tend to have similar direction and magnitude. The resulting short-term correlations by season are reported below.

Table H.6 - Short-term Winter Correlations SHORT-TERM WINTER CORRELATIONS

_	K-O	SUMAS	4C	COB	Mid-C	PV	CA	ID	Portland	OR Other	UT	WA	WY	Hydro
K-O	100%	89%	63%	35%	38%	66%	3%	14%	20%	13%	10%	24%	10%	5%
SUMAS	89%	100%	57%	40%	42%	61%	5%	17%	17%	14%	8%	22%	12%	6%
4C	63%	57%	100%	58%	57%	83%	10%	15%	27%	27%	20%	29%	12%	3%
СОВ	35%	40%	58%	100%	94%	61%	14%	19%	30%	37%	21%	43%	19%	6%
Mid-C	38%	42%	57%	94%	100%	59%	14%	21%	36%	40%	25%	46%	24%	2%
PV	66%	61%	83%	61%	59%	100%	10%	10%	24%	23%	17%	29%	12%	3%
CA	3%	5%	10%	14%	14%	10%	100%	24%	27%	66%	35%	32%	21%	-4%
ID	14%	17%	15%	19%	21%	10%	24%	100%	23%	30%	32%	31%	34%	-11%
Portland	20%	17%	27%	30%	36%	24%	27%	23%	100%	67%	48%	65%	30%	-4%
OR Other	13%	14%	27%	37%	40%	23%	66%	30%	67%	100%	49%	65%	29%	3%
UT	10%	8%	20%	21%	25%	17%	35%	32%	48%	49%	100%	49%	38%	-8%
WA	24%	22%	29%	43%	46%	29%	32%	31%	65%	65%	49%	100%	34%	15%
WY	10%	12%	12%	19%	24%	12%	21%	34%	30%	29%	38%	34%	100%	-2%
Hydro	5%	6%	3%	6%	2%	3%	-4%	-11%	-4%	3%	-8%	15%	-2%	100%

Deviation events that impact one part of PacifiCorp's system do not necessarily affect other parts of the system, due to its geographic diversity and transmission constraints. The correlation between these different deviations can be low if the deviations are caused by different drivers. An example from the winter season is the -11 percent correlation between the Southeast Idaho load area, which is driven by weather events in PacifiCorp's PACE balancing area, and Hydro, which is predominantly driven by weather events in PacifiCorp's PACW balancing area, the unit commitment stack and unplanned unit outages.

Table H.7	- Short-term	Spring 6	Correlations
SHORT-TERM	SPRING CORRELA	ATIONS	

_	K-O	SUMAS	4C	СОВ	Mid-C	PV	CA	ID	Portland	OR Other	UT	WA	WY	Hydro
K-O	100%	55%	20%	10%	7%	33%	7%	7%	2%	0%	7%	5%	1%	3%
SUMAS	55%	100%	6%	8%	7%	13%	10%	2%	4%	3%	-5%	8%	3%	2%
4C	20%	6%	100%	34%	36%	62%	0%	7%	7%	6%	15%	12%	11%	-9%
СОВ	10%	8%	34%	100%	86%	39%	13%	-3%	24%	21%	8%	31%	13%	0%
Mid-C	7%	7%	36%	86%	100%	31%	13%	1%	26%	21%	11%	29%	15%	0%
PV	33%	13%	62%	39%	31%	100%	3%	16%	17%	14%	24%	24%	15%	-3%
CA	7%	10%	0%	13%	13%	3%	100%	18%	20%	55%	17%	33%	9%	-1%
ID	7%	2%	7%	-3%	1%	16%	18%	100%	6%	20%	43%	20%	17%	-17%
Portland	2%	4%	7%	24%	26%	17%	20%	6%	100%	63%	22%	57%	27%	11%
OR Other	0%	3%	6%	21%	21%	14%	55%	20%	63%	100%	31%	65%	23%	10%
UT	7%	-5%	15%	8%	11%	24%	17%	43%	22%	31%	100%	25%	30%	-11%
WA	5%	8%	12%	31%	29%	24%	33%	20%	57%	65%	25%	100%	24%	18%
WY	1%	3%	11%	13%	15%	15%	9%	17%	27%	23%	30%	24%	100%	-1%
Hydro	3%	2%	-9%	0%	0%	-3%	-1%	-17%	11%	10%	-11%	18%	-1%	100%

Similarly, the spring season shows a very low correlation of nine percent between the Northern California and Wyoming loads, which are driven by different local weather deviations and different customer types. Wyoming loads are mostly driven by large industrial customers, whose loads are relatively flat across the year.

Table H.8 - Short-term Summer Correlations SHORT-TERM SUMMER CORRELATIONS

_	K-O	SUMAS	4C	СОВ	Mid-C	PV	CA	ID	Portland	OR Other	UT	WA	WY	Hydro
K-O	100%	45%	5%	0%	2%	0%	0%	5%	-3%	-3%	8%	4%	-4%	-1%
SUMAS	45%	100%	5%	5%	10%	1%	-1%	-5%	3%	0%	-4%	5%	-7%	0%
4C	5%	5%	100%	27%	29%	52%	21%	11%	17%	17%	21%	18%	13%	-4%
СОВ	0%	5%	27%	100%	85%	44%	15%	16%	32%	28%	9%	28%	8%	7%
Mid-C	2%	10%	29%	85%	100%	51%	22%	16%	48%	45%	15%	38%	4%	4%
PV	0%	1%	52%	44%	51%	100%	22%	16%	28%	25%	25%	20%	16%	5%
CA	0%	-1%	21%	15%	22%	22%	100%	39%	33%	55%	30%	47%	14%	-3%
ID	5%	-5%	11%	16%	16%	16%	39%	100%	18%	27%	47%	26%	22%	5%
Portland	-3%	3%	17%	32%	48%	28%	33%	18%	100%	80%	11%	68%	-5%	16%
OR Other	-3%	0%	17%	28%	45%	25%	55%	27%	80%	100%	20%	78%	1%	9%
UT	8%	-4%	21%	9%	15%	25%	30%	47%	11%	20%	100%	24%	48%	-7%
WA	4%	5%	18%	28%	38%	20%	47%	26%	68%	78%	24%	100%	4%	9%
WY	-4%	-7%	13%	8%	4%	16%	14%	22%	-5%	1%	48%	4%	100%	-11%
Hydro	-1%	0%	-4%	7%	4%	5%	-3%	5%	16%	9%	-7%	9%	-11%	100%

In the summer season, zero correlation has been observed between the deviations of Kern-Opal gas prices and Palo Verde power prices. Palo Verde prices are driven by a resource mix of southwest nuclear operations and gas unit dispatch based off SoCal gas prices. The operations of gas storage facilities and physical planned and unplanned maintenance of Kern-Opal and SoCal pipelines are independent of each other.

Table H.9 - Short-term Fall Correlations SHORT-TERM FALL CORRELATIONS

_	K-O	SUMAS	4C	СОВ	Mid-C	PV	CA	ID	Portland	OR Other	UT	WA	WY	Hydro
K-O	100%	73%	14%	15%	12%	13%	15%	6%	11%	19%	11%	17%	7%	2%
SUMAS	73%	100%	10%	13%	13%	7%	28%	10%	25%	33%	24%	32%	22%	4%
4C	14%	10%	100%	36%	22%	53%	19%	10%	23%	20%	21%	21%	4%	-4%
СОВ	15%	13%	36%	100%	78%	63%	9%	2%	24%	16%	24%	19%	3%	-2%
Mid-C	12%	13%	22%	78%	100%	44%	10%	8%	22%	18%	19%	22%	3%	-4%
PV	13%	7%	53%	63%	44%	100%	9%	9%	16%	7%	20%	9%	-5%	1%
CA	15%	28%	19%	9%	10%	9%	100%	29%	47%	70%	34%	54%	38%	-5%
ID	6%	10%	10%	2%	8%	9%	29%	100%	19%	25%	41%	25%	24%	-12%
Portland	11%	25%	23%	24%	22%	16%	47%	19%	100%	78%	45%	73%	39%	12%
OR Other	19%	33%	20%	16%	18%	7%	70%	25%	78%	100%	45%	83%	47%	7%
UT	11%	24%	21%	24%	19%	20%	34%	41%	45%	45%	100%	44%	44%	-1%
WA	17%	32%	21%	19%	22%	9%	54%	25%	73%	83%	44%	100%	42%	9%
WY	7%	22%	4%	3%	3%	-5%	38%	24%	39%	47%	44%	42%	100%	4%
Hydro	2%	4%	-4%	-2%	-4%	1%	-5%	-12%	12%	7%	-1%	9%	4%	100%

In the fall, a very low correlation of three percent has been observed between Mid-C market price deviations and Wyoming load deviations. Market deviations are due to deviations in northwest weather patterns and resource mix while Wyoming loads are mostly dictated by planned or unplanned outages of industrial customer class.

APPENDIX I - PLANNING RESERVE MARGIN STUDY

Introduction

The planning reserve margin (PRM), measured as a percentage of coincident system peak load, is a parameter used in resource planning to ensure there are adequate resources to meet forecasted load over time. PacifiCorp selects a PRM for use in its resource planning by studying the relationship between cost and reliability among eight different PRM levels, accounting for variability and uncertainty in load and generation resources. Costs include capital and run-rate fixed costs for new resources required to achieve eight different PRM levels, ranging from 11 to 18 percent, along with system production costs (fuel and non-fuel variable operating costs, contract costs, and market purchases). In analyzing reliability, PacifiCorp performed a stochastic loss of load study using the Planning and Risk (PaR) production cost simulation model to calculate the following reliability metrics for each PRM level:

- Expected Unserved Energy (EUE): Measured in gigawatt-hours (GWh), EUE reports the expected (mean) amount of load that exceeds available resources over the course of a given year. EUE measures the magnitude of reliability events, but does not measure frequency or duration.
- Loss of Load Hours (LOLH): LOLH is a count of the expected (mean) number of hours in which load exceeds available resources over the course of a given year. A LOLH of 2.4 hours per year equates to one day in 10 years, a common reliability target in the industry. LOLH measures the duration of reliability events, but does not measure frequency or magnitude.
- Loss of Load Events (LOLE): LOLE is a count of the expected (mean) number of reliability events over the course of a given year. An LOLE of 0.1 events per year equates to one event in 10 years, a common reliability target in the industry. LOLE measures the frequency of reliability events, but does not measure magnitude or duration.

PacifiCorp's loss of load study results reflect its participation in the Northwest Power Pool (NWPP) reserve sharing agreement. This agreement allows a participant to receive energy from other participants within the first hour of a contingency event, defined as an event when there is an unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch, or other electrical element. PacifiCorp's participation in the NWPP reserve sharing agreement improves reliability at a given PRM level. Upon evaluating the relationship between cost and reliability in its PRM study, PacifiCorp will continue to use a 13 percent target PRM in its resource planning.

Objective

The purpose of the PRM is to ensure that Integrated Resource Plan (IRP) portfolios a) meet customer load b) while maintaining operating reserves, c) meeting a one day in ten year reliability target, d) at a low reasonable cost. The 2019 IRP PRM selection is made by analyzing:

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¹ Costs and reliability metrics are calculated for eight different PRM levels, ranging from 11 to 18 percent. Comparative analysis among each PRM is performed for seven different PRM levels by comparing the cost and reliability results from PRM levels ranging between 11 and 18 percent to those from the 10 percent PRM.

- Relationships between reliability modeling and production cost modeling results
- PRM cases range from 11 to 18 percent in the target year (2030)
- Bookend cases will be run for years 2022 and 2036

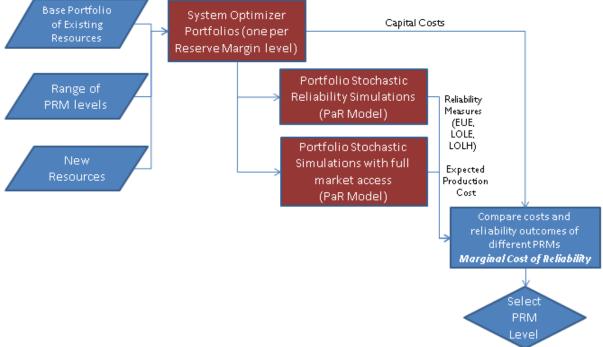
The target year of 2030 is selected based on a preliminary assessment aligned with significant assumed retirements; bookend years were developed as a check on this assumption.

Methodology

Figure I.1 shows the workflow used in PacifiCorp's PRM study. The four basic modeling steps in the workflow include: (1) using the System Optimizer (SO) model, produce resource portfolios among seven different PRM levels ranging between 11 and 18 percent; (2) using PaR, produce reliability metrics for each resource portfolio; (3) using PaR, produce system stochastic variable production costs with full market access for each resource portfolio; (4) produce the marginal cost of reliability using outcomes of different PRM levels, (5) select PRM level.

Figure I.1 - Workflow for Planning Reserve Margin Study

Base Portfolio System Optimizer



Development of Resource Portfolios

The SO model is used to produce resource portfolios assuming PRM levels ranging between 11 and 18 percent. The SO model optimizes expansion resources over a 20-year planning horizon to meet peak load inclusive of the PRM applicable to each case.

Consistent with the 2017 IRP, as the PRM level increases additional resources are added to the portfolio. Resource options used in this step of the workflow include demand-side management (DSM), gas-fired combined cycle combustion turbines (CCCT), gas-fired simple cycle combustion turbines (SCCT), renewable resources and front office transactions (FOTs).

Updated Assumptions

Front Office Transactions (FOT)

FOTs are considered as a resource expansion option in this phase of the workflow. FOTs are proxy resources used in the IRP portfolio development process that represent firm forward short-term market purchases for summer and winter on-peak delivery, which coincides with the time of year and time of day in which PacifiCorp observes its coincident system peak load.

These proxy resources are a reasonable representation of firm market purchases when performing comparative analysis of different resource portfolios to arrive at a preferred portfolio in the IRP.

The front office transaction reserve credit, previously calculated at six percent of load, has been lowered to three percent, reflecting the three percent of load/three percent of generation requirement which is new this IRP cycle.

Market Purchases

The SO model planning limit for FOT selection as a capacity resource in the 2019 IRP is 1,425 megawatt (MW) in both summer and winter. In past IRPs, PaR has allowed for market balancing purchases up to transmission limits for the purpose of valuing portfolios in all months of the year. As a consequence, in the 2017 IRP, all PRM levels met PaR loss of load hour (LOLH) requirements, relying on market purchases.

In the 2019 IRP, PaR market purchases are restricted to FOT limits in all months of the PRM models. This change makes PaR reliability measures consistent with market reliance assumptions, and allows the impact of market purchase reliance to be assessed in reliability analysis.

Planning Capacity Factor (PCF)

The planning capacity factor for DSM, solar and natural gas resources has been updated for the 2019 IRP Planning Reserve Margin Study, based on updated analysis and the latest information.

Demand Response (Class 1 DSM)

Demand Response contracts define limits on the number of interruptible hours per day and hours per year reduce capacity contribution. In order to represent these limitations accurately, the capacity factor (CF) approximation method has been applied to each demand response program. PCF is consequently reduced by a weighted average of 11 percent, ranging from -2 to -22 percent by program. Also, in alignment with actual practice, summer demand response availability has been expanded to June through September and winter, and winter demand response has been expanded to October through December.

Energy Efficiency (Class 2 DSM)

Similar to demand response, energy efficiency has limitations on hours per day and hours per year, restricting capacity contribution. Taking these limitations into account reduces energy efficiency PCF by a weighted average of 15 percent, ranging from -24 to +13 percent by bundle.

Solar

In response to rapid increases in solar penetration, PacifiCorp assessed a 2030 solar resource PCF, measured relative to a case with no solar. East solar has an overall effective capacity contribution of 29.3 percent, down from 37.9 percent for fixed and 59.7 percent for tracking. West solar has an

overall effective capacity contribution of 35.6 percent, down from 53.9 percent for fixed and 64.8 percent for tracking.

Natural Gas

Past IRPs have relied on monthly average temperature impacts. The 2019 IRP uses a summer peak temperature to improve PCF consistency with peak capacity needs.

Upfront capital and run-rate fixed costs from each portfolio are recorded and used later in the workflow where the relationship between cost and reliability is analyzed. Resources from each portfolio are used in the subsequent workflow steps where reliability metrics and production costs are produced in PaR.

Development of Reliability Metrics

The PaR model is used to produce reliability metrics for each of the resource portfolios developed assuming PRM levels ranging between 11 and 18 percent. PaR is a production cost simulation model, configured to represent PacifiCorp's integrated system that uses Monte Carlo random sampling of stochastic variables to produce a distribution of system operation. For this step in the workflow, reliability metrics are produced from a 500-iteration PaR simulation with Monte Carlo draws of stochastic variables that affect system reliability—load, hydro generation, and thermal unit outages. As discussed above, system balancing hourly purchases are enabled to capture the contribution of firm market purchases to system reliability. The PaR reliability studies are used to report instances where load exceeds available resources, including system balancing hourly purchases. Reported EUE measures the stochastic mean volume of instances where load exceeds available resources, and is measured in GWh. EUE measures the magnitude of reliability events. Reported LOLH is a count of the stochastic mean hours in which load exceeds available resources. LOLH measures the duration of reliability events. Reported LOLE is a count of the stochastic mean events in which load exceeds available resources. LOLE is a measure of the frequency of reliability events.

Each of the reliability metrics described above is adjusted to account for PacifiCorp's participation in the NWPP reserve sharing agreement, which allows a participant to receive energy from other participants within the first hour of a contingency event. PacifiCorp accounts for the NWPP reserve sharing agreement by assuming the first hour of any event is covered and removed in the tabulation of EUE, LOLH and LOLE measures. NWPP participation reduces each of these measures by roughly half.

For PaR, the contribution of firm market purchases are removed and instead include system balancing hourly purchases that cover the firm market purchases, limited by transmission and market depth limits, for the reliability metrics.

Development of System Variable Production Costs

In addition to using PaR to develop reliability metrics, PaR is also used to produce system variable production operating costs for each of the resource portfolios developed assuming PRM levels ranging between 11 and 18 percent. For PaR's system variable production cost runs, its Monte Carlo sampling of stochastic variables is expanded to include natural gas and wholesale market prices in addition to load, hydro generation, and thermal unit outages. At this step, the stochastic treatment of market prices is key given its influence on the economic dispatch of system resources,

cost of system balancing purchases, and revenues from system balancing sales. In this step, full market access is included for the simulation. The stochastic mean of system variable costs is added to the upfront capital and run-rate fixed costs from each portfolio so that total portfolio costs are captured for each PRM level.

Selection of the Planning Reserve Margin

Using the incremental cost of reliability analysis, guided by additional measures detailed below, the PRM level is selected for use in the 2019 IRP.

Results

Resource Portfolios

Table I.1 shows new resources added to the portfolio for the summer at PRM levels ranging between 11 and 18 percent. Each portfolio includes FOTs ranging from 1,312 MW to 1,416 MW. In the summer, FOTs don't vary much as all PRMs are relying on most of the FOT limit during the peak. Natural gas resource additions escalate from 1,264 MW of resource to 1,865 MW across the PRM studies as the margin increases. DSM resource additions range between 218 MW and 891 MW.

In the summer, each 1 percent PRM increases system capacity by roughly 100MW. At each odd-numbered PRM increase, the model adds an additional single-cycle gas resource, partially offset by a reduction in FOTs and interruptible load selections. This trade-off occurs because new gas resources are added in blocks indicative of a typical plant size (i.e. the model cannot add a two MW SCCT plant), and thus the additions in each separate resource category do not move uniformly with an increase in the PRM.

Table I.1 – Summer Expansion Resource Additions by PRM

			Capacity at Summer Peak (MW)			
	DS	M			Geo-	
PRM (%)	Energy Efficiency	Demand Response	FOT	Natural Gas	Thermal/ Other	Total
11	824	240	1,313	1,264	31	3,672
12	821	219	1,416	1,287	31	3,775
13	830	244	1,313	1,459	31	3,877
14	844	218	1,416	1,468	31	3,977
15	854	241	1,313	1,639	31	4,078
16	870	271	1,312	1,694	31	4,177
17	853	273	1,315	1,810	31	4,282
18	891	323	1,313	1,865	31	4,423

Table I.2 shows new resources added to the portfolio for the winter at PRM levels ranging between 11 and 18 percent. Winter additions are led by summer additions where summer DSM selection may contribute to winter depending on the attributes of bundle selections; while winter additions follow a general trend, variations are observed at the 16 and 18 percent PRM levels in particular.

In aggregate, the summer and winter additions result in a smooth progression of reliability measures (e.g., loss of load hours, loss of load events, and incremental cost of reliability) reported in the next section of this appendix.

Table I.2 - Winter Expansion Resource Additions by PRM

			Capacity at Winter Peak (MW)			
	DS	M			Geo-	
PRM	Energy	Demand		Nat.	Thermal/	
(%)	Efficiency	Response	FOT	Gas	Other	Total
11	729	0	306	1,458	31	2,524
12	727	0	314	1,484	31	2,556
13	736	0	321	1,682	31	2,769
14	749	0	328	1,692	31	2,801
15	759	0	336	1,889	31	3,015
16	775	0	0	1,915	31	2,721
17	759	0	350	2,087	31	3,227
18	796	0	0	2,113	31	2,940

Reliability Metrics

Table I.3 shows EUE, LOLH, and LOLE reliability results before and after adjusting these reliability metrics for PacifiCorp's participation in the NWPP reserve sharing agreement. Each of the reliability metrics generally improve as the PRM increases and after accounting for benefits associated with PacifiCorp's participation in the NWPP reserve sharing agreement. After accounting for its participation in the NWPP reserve sharing agreement, all PRM levels meet a one day in ten year planning criteria (LOLH at or below 2.4), and PRM levels of between 17 and 18 percent meet a one event in ten year planning criteria (LOLE at or below 0.1).

Table I.3 - Simulated Reliability Metrics by PRM

		Before	NWPP Adju	stment	After NWPP Adjustment					
Year	PRM (%)	Simulated Energy Not Served (GWh)	LOLH (<2.4 target year) (Hour)	Loss of Load Episodes	EUE (GWh)	LOLH (Hour)	Modeled Loss of Load Episodes			
	2019 IRP									
	11	602	2.46	1.12	327	1.34	0.54			
	12	1,038	3.75	1.45	637	2.30	0.78			
	13	514	1.97	0.90	279	1.07	0.45			
2030	14	377	1.64	0.79	196	0.85	0.37			
2030	15	193	0.98	0.44	106	0.54	0.23			
	16	157	0.87	0.38	88	0.49	0.18			
	17	71	0.54	0.27	35	0.27	0.09			
	18	107	0.41	0.19	56	0.21	0.08			

The reliability metrics do not monotonically improve with each incremental increase in the PRM. This is influenced by the physical location of new resources within PacifiCorp's system at varying PRM levels and the ability of these resources to serve load in all load pockets when Monte Carlo sampling is applied to load, hydro generation, and thermal unit outages.

The 12 percent reports higher EUE, but is able to meet the 12 percent PRM with an efficiency that keeps the incremental cost of EUE in line with the rest of the PRM levels (refer to Table I.5 under System Costs, below). Absent the NWPP adjustment, the PRM 13 percent is the cross over point where the LOLH is below the 2.4 hour per year limit.

Considering that the reliability metrics are measuring very small magnitudes of change among the different PRM levels, the PaR outputs are fit to a logarithmic function to report the overall trend in reliability improvements as the PRM level increases. Table I.4 shows the fitted EUE LOLH, and LOLE results. Figure I.2, Figure I.3 and Figure I.4 show a plot of the fitted trend for EUE, LOLH, and LOLE, respectively, after accounting for PacifiCorp's participation in the NWPP reserve sharing agreement.

Table I.4 - Fitted Reliability Metrics by PRM

	Befor	re NWPP A	djustment	Afte	r NWPP Ad	ljustment
		LOLH				
221		(<2.4 target	Modeled Loss			Modeled Loss
PRM	EUE	year)	of Load	EUE	LOLH	of Load
(%)	(GWh)	(Hour)	Episodes	(GWh)	(Hour)	Episodes
11	504	1.92	0.78	878	3.36	1.44
12	353	1.38	0.58	619	2.43	1.05
13	265	1.06	0.46	467	1.88	0.82
14	202	0.84	0.37	360	1.50	0.66
15	154	0.66	0.31	276	1.20	0.53
16	114	0.52	0.25	208	0.95	0.43
17	81	0.40	0.21	151	0.74	0.35
18	52	0.29	0.17	101	0.56	0.27

Figure I.2 - Expected and Fitted Relationship of EUE to PRM

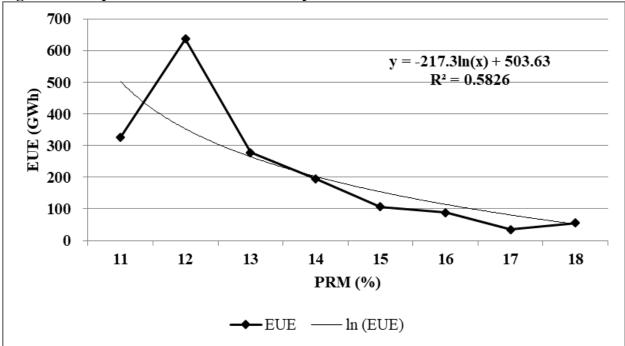
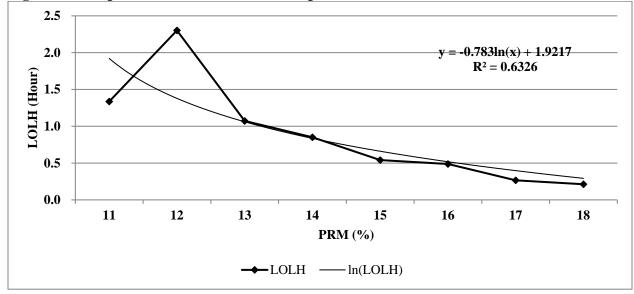


Figure I.3 - Expected and Fitted Relationship of LOLH to PRM



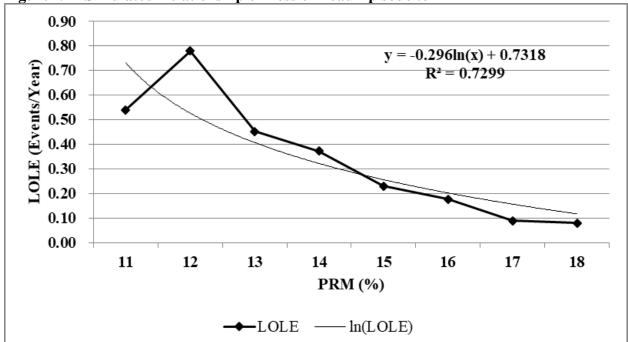


Figure I.4 - Simulated Relationship of Loss of Load Episode to PRM

System Costs

For the 2020 reference year, Table I.5 shows the stochastic mean of system variable production costs and the upfront capital and run-rate fixed costs, including the cost of new DSM resources, for each portfolio developed at PRM levels ranging between 11 and 18 percent. The fixed costs associated with these new resource additions drive total costs higher as PRM levels increase. DSM run-rate costs vary depending on resource additions for demand response and new resources where gas was added.

Table I.5 – System Variable, Up-front Capital, and Run-rate Fixed Costs by PRM

PRM (%)	System Production Costs (\$m)	Energy Efficiency (\$m)	Demand Response (\$m)	Existing Resource Fixed Costs (\$m)	New Resource Fixed Cost (\$m)	Total (\$m)
11	11,368	818	120	2,823	3,398	18,527
12	11,383	802	131	2,823	3,472	18,611
13	11,352	833	122	2,823	3,540	18,670
14	11,302	855	130	2,823	3,609	18,719
15	11,313	886	120	2,823	3,684	18,825
16	11,134	936	132	2,823	3,862	18,887
17	11,289	863	134	2,823	3,830	18,939
18	11,149	983	137	2,823	3,931	19,023

Incremental Cost of Reliability

Figure I.5 depicts the incremental cost of reliability, stated as the nominal levelized cost of EUE relative to 11 percent PRM, at PRM levels ranging between 12 and 18 percent. The incremental cost of reliability rises intuitively as PRM levels increase, and illustrates a significant step-change noted when the PRM hits 15 percent and onward.

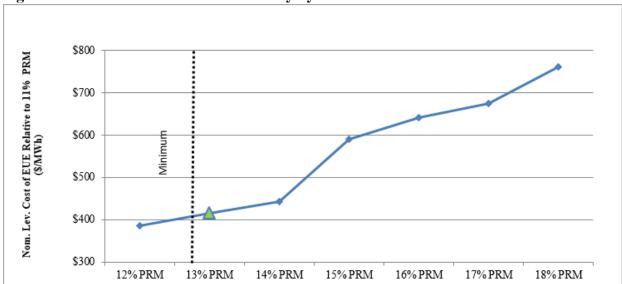


Figure I.5 - Incremental Cost of Reliability by PRM

Conclusion

PacifiCorp will continue to use a 13 percent target PRM in its resource planning after evaluating the relationship between cost and reliability in the PRM study. A PRM below 13 percent would not sufficiently cover the need to carry short-term operating reserve needs (contingency and regulating margin) and longer-term uncertainties such as extended outages and changes in customer load.² A PRM above 15 percent improves reliability above a one event in ten year planning level, although with a 300 to 700 percent increase in the incremental cost per megawatt-hour of reduced EUE when compared to a 13 percent PRM. With these considerations, the selected 13 percent PRM level ensures PacifiCorp can reliably meet customer loads while maintaining operating reserves, with a planning criteria that meets one day in 10 year planning targets, at the lowest reasonable cost.

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² PacifiCorp must hold approximately six percent of its resources in reserve to meet contingency reserve requirements and an estimated additional 4.5 percent to 5.5 percent of its resources in reserve, depending upon system conditions at the time of peak load, as regulating margin. This sums to 10.5 percent to 11.5 percent of operating reserves before even considering longer-term uncertainties such as extended outages (transmission or generation) and customer load growth.

APPENDIX J – WESTERN RESOURCE ADEQUACY EVALUATION

Introduction

The Public Service Commission of Utah, in its 2008 Integrated Resource Plan (IRP) Order, directed PacifiCorp to conduct two analyses pertaining to the company's ability to support reliance on market purchases:

Additionally, we direct the Company to include an analysis of the adequacy of the western power market to support the volumes of purchases on which the Company expects to rely. We concur with the Office [of Consumer Services], the WECC is a reasonable source for this evaluation. We direct the Company to identify whether customers or shareholders will be expected to bear the risks associated with its reliance on the wholesale market. Finally, we direct the Company to discuss methods to augment the Company's stochastic analysis of this issue in an IRP public input meeting for inclusion in the next IRP or IRP update.¹

In the past, PacifiCorp has fulfilled this requirement by evaluating the Western Electricity Coordinating Council (WECC) Power Supply Assessment (PSA) to glean trends and conclusions from the supporting analysis. While an updated PSA has not been published in time for this IRP, there is a published update available for the North American Electric Reliability Corporation (NERC) Long Term Reliability Assessment (LTRA). Past PSA reports were based on data publicly available in the NERC LTRA, and the latest available LTRA report² is used in lieu of the WECC PSA in this appendix. This evaluation, along with a discussion on risk allocation associated with reliance on market purchases, is provided below. As part of this evaluation, PacifCorp also reviewed the status of resource adequacy assessments prepared for the Pacific Northwest by the Pacific Northwest Resource Adequacy Forum.

NERC 2018 Long Term Reliability Assessment

The NERC LTRA, issued December 20, 2018, was developed based on data collected from seven regional entities, including WECC. NERC staff independently assesses collected data to develop the LTRA for the North American Bulk-Power System. The NERC LTRA assessment identifies trends and risks over a 10-year (2019-2028) study period. The 2018 LTRA concludes that the WECC, inclusive of four U.S. and two Canadian subregions, are expected to have sufficient generation capacity to exceed reserve requirements during the assessment period.

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¹ Public Service Commission of Utah, PacifiCorp 2008 Integrated Resource Plan, Report and Order, Docket No. 09-2035-01, p. 30.

² North American Electric Reliability Corporation 2018 Long Term Reliability Assessment, www.nerc.com/pa/RAPA/ra/Pages/default.aspx

Resources

The NERC LTRA organizes resources into two broad categories its 10 year WECC region reliability assessment:

Anticipated Resources:

- Existing generating capacity able to serve peak hour load with firm transmission)
- Capacity that is either under construction or has received approved planning requirements
- Firm net capacity transfers with firm contracts
- Less confirmed retirements

Prospective Resources:

- Existing capacity that may be available to serve peak hour load, but lacks certainty associated with firm transmission, peak availability, etc.
- Capacity additions that have been requested but not received approval
- Nonfirm net capacity transfers and transfers without firm contracts, but assessed to have a high probability of future implementation
- Less unconfirmed retirements

Planning Reserve Margin

The LTRA defines "planning reserve margin" as Resources less Demand, divided by Demand, shown as a percentile.

Resources in this calculation are reduced by expected operating limits due to fuel availability, transmission and environmental limitations. Comparing the *anticipated* resource-based reserve margin to the reference planning margin yields one of three risk determinations:

- Adequate: Anticipated Reserve Margin exceeds the Reference Margin Level
- Marginal: Anticipated Reserve Margin exceeds the Reference Margin Level but there are low expectations in meeting all forecast parameters; alternately, Anticipated Reserve Margin is below the Reference Margin Level but sufficient Tier 2 resources are projected to cover the shortall.
- Inadequate: Anticipated Reserve Margin is significantly less than Reference Margin Level and load interruption is likely.

WECC Subregions

Table J.1 presents the WECC subregions used for the NERC LTRA. In the data that follows, the two subregions in Canada are not considered.

Table J.1 – WECC Subregion Descriptions

Designation	Subregion	Country	Peaking Assumption
CAMX	California to Mexico	United States	Summer
NWPP	Northwest Power Pool	United States	Summer
RMRG	Rocky Mountain Reserve Group	United States	Summer
SRSG	Southwest Reserve Sharing Group	United States	Summer
AB	Alberta	Canada	Winter
BC	British Columbia	Canada	Winter

LTRA WECC Assessment

Table J.2 through J.4 represent the three types of reserve margins relevant to the WECC planning reserve margin calculation. In each table, the figures do not include WECC subregions outside of the United States.

Table J.2 – NERC LTRA Anticipated Reserve Margin

	Anticipated Reserve Margin												
U.S. WECC Subregion Peaking Assumption 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028													
NWPP	Summer	27.6%	25.9%	24.6%	22.8%	23.8%	23.6%	23.7%	23.7%	26.5%	22.0%		
RMRG	Summer	33.7%	26.6%	24.9%	23.5%	21.1%	19.6%	18.0%	16.8%	15.5%	14.0%		
SRSG	Summer	30.8%	29.4%	27.5%	24.0%	20.9%	18.8%	16.6%	15.0%	12.0%	10.5%		
CAMX	Summer	23.3%	30.6%	24.3%	23.6%	24.5%	20.7%	20.4%	20.9%	20.7%	20.3%		

Table J.3 – NERC LTRA Prospective Reserve Margin

	Prospective Reserve Margin												
U.S. WECC Subregion Assumption 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028													
NWPP	Summer	27.8%	26.1%	24.8%	22.9%	24.0%	23.8%	23.8%	23.9%	26.6%	22.2%		
RMRG	Summer	33.7%	26.6%	24.9%	23.5%	21.5%	20.0%	18.4%	17.1%	15.8%	14.4%		
SRSG	Summer	33.6%	32.4%	30.9%	27.5%	24.3%	22.1%	19.9%	18.2%	15.1%	13.6%		
CA/MX	Summer	32.5%	43.3%	42.1%	42.9%	43.9%	40.2%	39.8%	40.4%	40.2%	39.7%		

Table J.4 – NERC LTRA Reference Reserve Margin

Ş													
	Reference Planning Reserve Margin												
U.S. WECC Subregion Peaking Assumption 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028													
NWPP	Summer	19.7%	19.7%	19.5%	19.6%	19.6%	19.5%	19.4%	19.4%	19.3%	19.1%		
RMRG	Summer	16.8%	16.8%	16.5%	16.4%	16.1%	15.9%	15.7%	15.6%	15.4%	15.3%		
SRSG	Summer	15.1%	15.1%	14.9%	14.6%	14.5%	14.3%	14.2%	14.0%	13.9%	13.8%		
CAMX	Summer	12.4%	12.3%	12.1%	12.1%	12.0%	12.1%	12.0%	12.0%	12.0%	12.0%		

Using this data, a reserve margin position can be calculated to show project shortfalls, both with and without the inclusion of prospective resource additions. Table J.5 reports the reserve margin differential based on Anticipated resources, whereas Table J.6 reportes the reserve margin differential assuming Prospetive resources are achieved during the study period. In either table, a

positive percentage represents a margin of overage where WECC is expected to have resources above the Reference Margin target; a negative number (highlighted for emphasis) represents a year where a given subregion is at risk of falling below the Referene Margin.

Based on this evaluation, potential shortfalls in Planning Reserve Margin are small and 8-9 years distant.

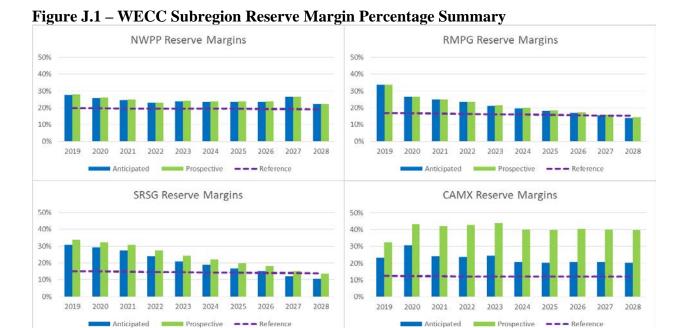
Table J.5 – Planning Reserve Margin Shortfalls by Subregion with Anticipated Resources

	Shortfalls Assuming Anticipated Reserve Margin												
U.S. WECC Subregion	Peaking Assumption	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028		
NWPP	Summer	7.9%	6.2%	5.1%	3.2%	4.3%	4.2%	4.3%	4.3%	7.2%	2.9%		
RMRG	Summer	16.9%	9.8%	8.4%	7.1%	5.1%	3.7%	2.3%	1.2%	0.1%	-1.2%		
SRSG	Summer	15.7%	14.3%	12.6%	9.4%	6.4%	4.5%	2.5%	1.0%	-2.0%	-3.3%		
CA/MX	Summer	10.9%	18.3%	12.2%	11.6%	12.5%	8.6%	8.4%	8.9%	8.7%	8.2%		

Table J.6 -- Planning Reserve Margin Shortfalls by Subregion with Prospective Resources

	Shortfalls Assuming Prospective Reserve Margin												
U.S. WECC Subregion	Peaking Assumption	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028		
NWPP	Summer	8.1%	6.4%	5.3%	3.3%	4.5%	4.3%	4.4%	4.5%	7.4%	3.1%		
RMRG	Summer	16.9%	9.8%	8.4%	7.1%	5.4%	4.0%	2.6%	1.5%	0.4%	-0.9%		
SRSG	Summer	18.5%	17.3%	16.0%	12.8%	9.8%	7.8%	5.7%	4.2%	1.2%	-0.2%		
CA/MX	Summer	20.2%	31.0%	30.0%	30.8%	31.9%	28.1%	27.8%	28.4%	28.2%	27.7%		

Figure J.1 graphically illustrates the relative margins for each subregion.



Prior Measures

PacifiCorp's past assessents, relying on caluclations incorporated into the WECC PSA, have reporting a rolling succession of power supply margins, where each year there is a downward trend in reserve margins extending into the future. Figure J.2 presents this trend based on past WECC PSA reports. The rolling nature of each year's outcome tells us that while declining reserve margins are important, in reality the trend line is rarely followed from one year to the next – rather the trend line tends to be pushed forward like a wave, where the future shortage is not allowed to materialize because of cumulative actions taken within the WECC in recognition of future need.

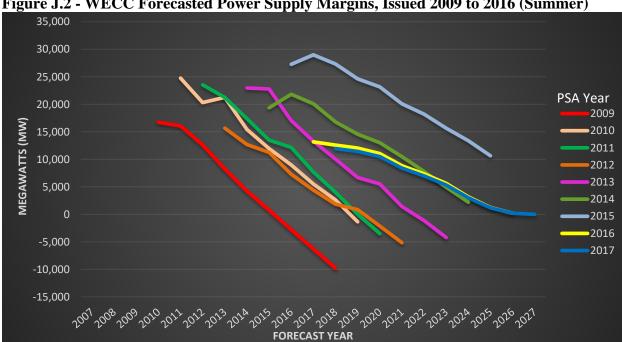


Figure J.2 - WECC Forecasted Power Supply Margins, Issued 2009 to 2016 (Summer)

Note: WECC Power Supply Assessments include Class 1 Planned Resources Only

Pacific Northwest Resource Adequacy Forum's Adequacy Assessment

As in the 2017 IRP, the Pacific Northwest Resource Adequacy Forum (later replaced by the Resource Adequacy Advisory Committee) issued resource adequacy standards in April 2008, which were subsequently adopted by the Northwest Power and Conservation Council. The standard calls for assessments three and five years out, conducted every year, and including only existing resources and planned resources that are already sited and licensed. The Resource Adequacy Advisory Committee issued a Pacific Northwest Power Supply Adequacy Assessment for 2021 on August 10, 2016³. This assessment concluded that power supply is expected to be adequate through 2021 primarily focused on winter season. Consistent with the prior year filing, the updated forecasts indicate Pacific Northwest energy and capacity surplus will become a deficit around years 2021 and 2022, primarily focused on winter and spring season.

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³ Pacific Northwest Power Supply Adequacy Assessment for 2021, at: www.nwcouncil.org/media/7150504/2021adequacy-assessment-final-aug 9 2016.pdf

Customer versus Shareholder Risk Allocation

Market purchase costs are reflected in rates. Consequently, customers bear the price risk of PacifiCorp's reliance on a given level of market purchases. However, customers also bear the cost impact of the company's decision to build or acquire resources if those resources exceed market alternatives and result in an increase in rates. These offsetting risks stress the need for robust IRP analysis, efficient RFPs and ability to capture opportunistic procurement opportunities when they arise.

PacifiCorp's Energy Position

Figure J.3 to Figure J.5 illustrates PacifiCorp's energy position developed from the 2017 IRP Update, progress from annual to hourly views of system position:

- System Annual Heavy Load Hour (HLH) position
- July Monthly Heavy Load Hour position
- Sample July Peak Day Position

The energy position is compared to a load target, where load includes projected sales and reserve requirement. The gap between energy and load are met by market energy, however in many cases could have been met by other system resources.

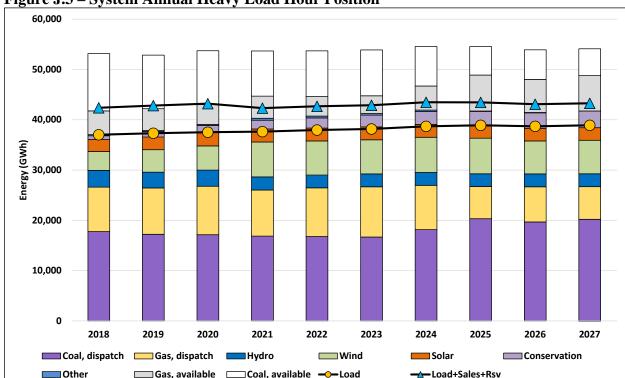
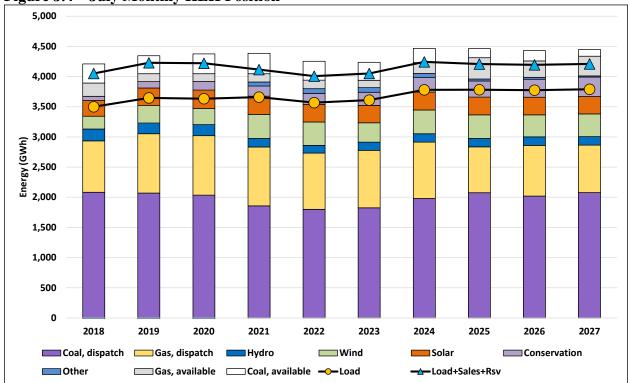


Figure J.3 – System Annual Heavy Load Hour Position

The annual position during heavy load hour with existing and planned resources, demonstrated system position without market purchases. The top blocks on each bar represents available

undispatched capacity. The gap between energy position and load-plus-sales-plus-reserves could be met by market purchases, increased dispatch, reduction in sales, or a combination actions.





The peak heavy load hour is the month of July, the system runs tighter compared to the annual basis. There is less undispatched thermal capacity available to meet load-plus-sales-plus-reserves than in the system annual HLH view. However, undispatched capacity still exceeds requirements on a monthly level. The gap between energy position and load-plus-sales-plus-reserves could be met by market purchases, increased dispatch, reduction in sales, or a combination of the three. The model makes this decision on the basis of economics and prevailing transmission constraints in a given hour.

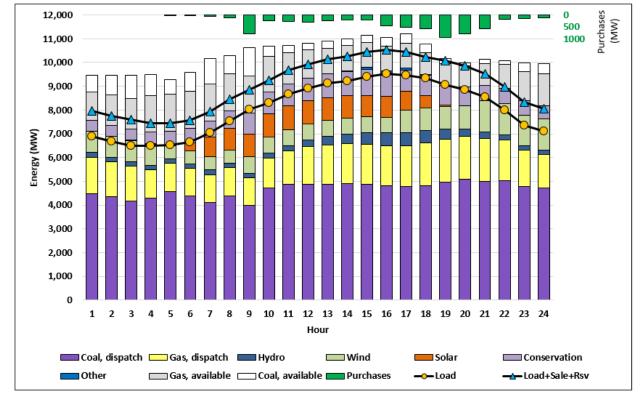


Figure J.5 – Sample July Peak Day Position

The peak heavy load hour day runs tighter again compared to both annual and month view. The hourly variations and purchase drivers are captured in the sample day that cannot be seen in either annual or month peak HLH in Figure J.4 and Figure J.5. On an energy basis, the gap between energy and load-plus-sales is highest in hour 19 and 20. This is generally consistent with the highest solar shoulder hour, or twilight peak, where solar is fading and other generation is ramping up to meet the gap.

Market Purchases

As described in Volume I, Chapter 6 (Resource Options), PacifiCorp, other utilities, and power marketers who own and operate generation engage in market purchases and sales of electricity on an ongoing basis to balance the system and maximize the economic efficiency of power system operations. In addition to reflecting spot market purchase activity and existing long-term purchase contracts in the IRP portfolio analysis, PacifiCorp models front office transactions (FOT). FOTs are proxy resources, assumed to be firm, that represent procurement activity made on an on-going forward basis to help PacifiCorp cover short positions.

Solicitations for FOTs can be made years, quarters or months in advance, however, most transactions made to balance PacifiCorp's system are made on a balance of month, day-ahead, hour-ahead, or intra-hour basis. Annual transactions can be available three or more years in advance. Seasonal transactions are typically delivered during quarters and can be available from one to three years or more in advance. The terms, points of delivery, and products will all vary by individual market point.

In developing FOT limits for the 2019 IRP, PacifiCorp reviewed the studies described in the sections above as part of its assessment of market reliance in addition to consideration of its active participation in wholesale power markets, its view of physical delivery constraints, and market liquidity and market depth. The 2019 IRP FOT limits is 1,425 MW, reduced from 1,575 MW in the 2017 IRP, due to a COB decrease of 150 MW, reflecting expired reservation and review of historical derates as shown in Table J.7.

Table J.7 – Maximum Available Front Office Transactions by Market Hub

Table 5.7 - Maximum Myanable 110ne		Availability		
Market Hub/Proxy FOT Product Type		2019		2017
The state of the s	Summer	Winter	Summer	Winter
	(July)	(December)	(July)	(December)
Mid-Columbia (Mid-C)				
Flat Annual or Heavy Load Hour	400	400	No	Change
Heavy Load Hour	375	375	No	Change
California Oregon Border (COB)				
Flat Annual or Heavy Load Hour	250	250	Reduced to	o 250 from 400
Nevada Oregon Border (NOB)				
Heavy Load Hour	100	100	No	Change
Mona				
Heavy Load Hour	300	300	No Change	
Total	1,425	1,425	1,575	1,575

Figure J.6 shows PacifiCorp historical market purchases at three volume thresholds. The majority of actual purchases conform to IRP FOT planning limits. As PacifiCorp is a summerpeaking system higher volume purchases occurred more frequently in the summer than in the winter. This assessment showed that from 2009 to 2017, 27 percent of winter peak load hour purchases and 43 percent of summer peak load hour purchases were higher than the assumed IRP FOT planning limit of 1,425 MW.

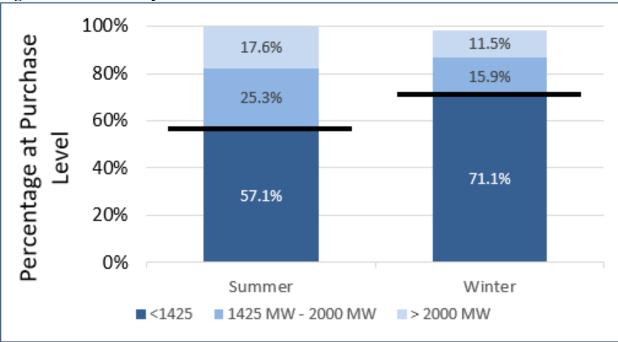


Figure J.6 – PacifiCorp Market Purchases

Aligned with review of the regional studies discussed above, and the historical market purchases and transactions, PacifiCorp has selected a peak-season FOT limit of 1,425MW for the 2019 IRP. The company will continue to refine its assessments of market depth and liquidity for transactions, informed by actual operations, to quantify the risk associated with the level of market reliance. Several FOT studies are discussed and evaluated in Volume I, Chapter 7 (Modeling and Portfolio Evluation Approach) and Chapter 8 (Modeling and Portfolio Selection Results).

APPENDIX K – CAPACITY EXPANSION RESULTS DETAIL

Portfolio Case Build Tables

This section provides the System Optimizer portfolio build tables for each of the case scenarios as described in the portfolio development section of Chapter 7. There are thirty Initial Development cases, ten C-cases, seven CP-cases, six front office transactions (FOT) risk assessment cases, six Gateway & No Gas cases, eight sensitivity cases, three re-bundled demand-side management (DSM) cases, and five P-70 cases.

Table K.1 – Initial Development Study Reference Guide

	i iniciai Developin		SO	nee Gun					1st Year of
Case	Description	Parent Case	PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	New Thermal
P-01	Coal Study Benchmark	1	24,407	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2033
P-02	Regional Haze References/ Regional Haze Base	-	23,191	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2031
P-03	Regional Haze Intertemporal/ Regional Haze Base Intertemporal	-	21,951	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2030
P-04	Coal Study C-42/ Coal Study Base	-	21,720	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2028
P-06	Transition Case C- 44a/Alternative Base	-	21,980	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2030
P-07	Transition Case C-44b	P-06	21,905	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2029
P-08	Naughton 3 Small GC (P-03 basis)	P-03	21,979	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2030
P-09	Naughton 3 Large GC (P-03 basis)	P-03	21,885	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2030
P-10	Economic Retirement 1*	P-04	21,723	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2029
P-11	Cholla 4 Retirement 2020	P-09	21,873	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2030
P-12	Economic Retirement 2*	P-06	21,854	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2029
P-13	Bridger 1&2 SCR	P-11	22,346	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2032
P-14	Naughton and Jim Bridger Retirement 2022 (P11 Basis)	P-09	21,696	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2028
P-15	Retire All Coal by 2030	P28	22,132	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2027
P-16	No CO ₂	P04	18,634	Base	Base	Med Gas, No CO ₂	Base	None	2028
P-17	High CO ₂	P-15	22,070	Base	Base	Med Gas, High CO ₂	Base	Segment F	2028
P-18	Social Cost of Carbon	P-15	30,022	Base	Base	Low Gas, SCC CO ₂	Base	Segment F	2028
P-19	Low Gas	P-04	20,882	Base	Base	Low Gas, Med CO ₂	Base	Segment F	2023
P-20	High Gas	P-07	22,746	Base	Base	High Gas, Med CO ₂	Base	Segment F	2029
P-28	Early Coalstrip Retirement	P-11	21,805	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2030
P-30	Naughton 1 & 2 Retirement 2022 (P11 Basis)	P-11	21,708	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2029
P-31	Naughton 1 & 2 Retirement 2025 (P11 Basis)	P-11	21,652	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026
P-32	Naughton 1 & 2 Retirement 2025 (P07 Basis-No Gadsby 2020)	P-07	21,763	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026

P-33	Oregon Study (P11 – JB1 & 2 Retire 2022)	P-11	21,895	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2030
P-34	Oregon Study (P11 – JB1 & 2 Retire 2022, Gadsby Retire)	P-11	21,949	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2028
P-35	Jim Bridger 3 & 4 Retiring 2022 (P11 with JB3 and 4 retiring 2022)	P-11	21,732	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2029
P-45	P31 with JB 1 & 2 Retirement	P-31	21,593	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026
P-46	P31 with JB 2 & 4 Retirement	P-31	21,419	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026
P-53	P-31 with JB1-2 Retiring 2025, JB3 Retiring 2028, and JB4 Retiring 2032	P-31	21,438	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026
P-54	P-31 with JB2 Retiring 2024	P-31	21,708	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026

Table K.2 – C-Case Study Reference Guide

Table K.2 – C-Case Study Reference Guide											
Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1 st Year of New Thermal		
P-31C	P-11 with Naughton 1-2 Accelerated to 2025	P-31	21,639	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-36C	Economic Retirement 2* with Gateway Segment F (P12 with Gateway Segment F)	P-36	21,553	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-45C	P31 with JB 1 & 2 Retirement	P-45	21,431	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-46C	P31 with JB 2 & 4 Retirement	P-46	21,422	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-46J23C	Jim Bridger 3 & 4 Retirement 2023	P-46	21,385	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-47C	P45 GWS 2025-2028	P-47	21,467	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-48C	P45 and GWS 2023	P-48	21,482	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-53C	P-31 with JB1-2 Retiring 2025, JB3 Retiring 2028, and JB4 Retiring 2032	P-53	21,450	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-53J23C	Jim Bridger 1 & 2 Retirement 2023	P-53	21,394	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-54C	P-31 with JB2 Retiring 2024	P-54	21,591	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		

PACIFICORP – 2019 IRP **Table K.3 – CP-Case Study Reference Guide**

1 abic ix	Table K.5 – Cr-Case Study Reference Guide										
Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1 st Year of New Thermal		
P-36CP	Economic Retirement 2* with Gateway Segment F (P12 with Gateway Segment F)	P-36	21,553	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-45CP	P31 with JB 1 & 2 Retirement	P-45	21,480	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-46CP	P31 with JB 2 & 4 Retirement	P-46	21,460	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P- 46J23CP	P46C with JB3-4 Retiring 2023	P-46	21,402	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-47CP	P45 GWS 2025-2028	P-47	21,469	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-48CP	P45 and GWS 2023	P-48	21,457	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-53CP	P-31 with JB1-2 Retiring 2025, JB3 Retiring 2028, and JB4 Retiring 2032	P-53	21,479	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		

Table K.4 – Preferred Portfolio Reference Guide

Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1 st Year of New Thermal
P- 45CNW	P45CP No DJ Wind	P-45	21,624	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026

Table K.5 – FOT Risk Assessment Case Study Reference Guide

					, =====================================						
Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1 st Year of New Thermal		
P-45CP- FOT	P31 with JB 1 & 2 Retirement	P-45CP	21,977	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-46CP- FOT	P31 with JB 2 & 4 Retirement	P-46CP	21,960	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-47CP- FOT	P45 GWS 2025-2028	P-47CP	21,942	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-48CP- FOT	P45 and GWS 2023	P-48CP	21,936	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P-53CP- FOT	P-31 with JB1-2 Retiring 2025, JB3 Retiring 2028, and JB4 Retiring 2032	P-53CP	21,979	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		
P- 45CNW- FOT	P45CP No DJ Wind	P-45CP	22,154	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026		

Table K.6 – Gateway & No Gas Case Study Reference Guide

Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1 st Year of New Thermal
P-29	P-45CNW, No New Gas Option	P- 45CNW	21,798	Base	Base	Med Gas, Med CO2	Base	Segment F	-
P-29 PS	P-29 with Pumped Storage	P-29	21,970	Base	Base	Med Gas, Med CO2	Base	Segment F	-

Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1 st Year of New Thermal
P-22	P-45CNW, Energy Gateway Segment D.3	P- 45CNW	21,886	Base	Base	Med Gas, Med CO2	Base	Add D.3	2030
P-23	P-45CNW, Energy Gateway Segment D.1 and F	P- 45CNW	22,151	Base	Base	Med Gas, Med CO2	Base	Add Seg. F and D.1	2026
P-25	P-45CNW, Energy Gateway Segment D.3, E and H	P- 45CNW	22,273	Base	Base	Med Gas, Med CO2	Base	Add Sub- seg. D.3 & Seg. E & H	2028
P-26	P-45CNW, Energy Gateway Segment H	P- 45CNW	21,579	Base	Base	Med Gas, Med CO2	Base	Add Seg. H	2028

Table K.7 - Sensitivity Case Study Reference Guide

Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1 st Year of New Thermal
S-01	Low Load	P45CNW	20,617	Low	Base	Base	Base	Base	2030
S-02	High Load	P45CNW	22,602	High	Base	Base	Base	Base	2026
S-03	1 in 20 Load Growth	P45CNW	21,634	1 in 20	Base	Base	Base	Base	2026
S-04	Low Private Generation	P45CNW	21,758	Base	Low	Base	Base	Base	2029
S-05	High Private Generation	P45CNW	21,371	Base	High	Base	Base	Base	2030
S-06	Business Plan	P45CNW	21,695	Base	Base	Base	Base	Base	2028
S-07	No Customer Preference	P45CNW	21,609	Base	Base	Base	Base	Base	2030
S-08	All Customer Preference	P45CNW	21,636	Base	Base	Base	Base	Base	2030

Table K.8 – DSM Bundled Case Study Reference Guide

I WOIC II	o Don't Dunaica	, iterer enec Guiuc								
Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1st Year of New Thermal	
P-45DP	P31 with JB 1 & 2 Retirement	P-45	21,536	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026	
P-46DP	P31 with JB 2 & 4 Retirement	P-46	21,458	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026	
P-53DP	P-31 with JB1-2 Retiring 2025, JB3 Retiring 2028, and JB4 Retiring 2032	P-53	21,478	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026	

PACIFICORP – 2019 IRP **Table K.9 – P70 Case Study Reference Guide**

I abic is	170 Case Study	terer ene							
Case	Description	Parent Case	SO PVRR (\$m)	Load	Private Gen	CO ₂ Policy	FOTs	Gateway	1 st Year of New Thermal
P-70	P-01 with JB 1 2022 RET	P-01	22,326	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026
P-71	P-01 with NTN 1 2022 RET	P-01	22,482	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026
P-72	P-01 with Hayden 1 2022 RET	P-01	22,432	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026
P-73	P-01 with Hunter 1 RET	P-01	22,455	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026
P-74	P-01 with Craig 1 2022 RET	P-01	22,447	Base	Base	Med Gas, Med CO ₂	Base	Segment F	2026

Table K.10 – East Side Resource Name and Description

Resource List	Detailed Description
CCCT - DJohns - J 1x1	Combine Cycle Combustion Turbine J-Machine 1x1 with Duct Firing - Dave Johnston
CCCT III-1 C III-1	Brownfield Combine Combinetion Tracking I Marking 1st said Day't Figins - Utah Conth
CCCT - Utah-S - J 1x1	Combine Cycle Combustion Turbine J-Machine 1x1 with Duct Firing - Utah South
CCCT - Utah-S - G 1x1	Combine Cycle Combustion Turbine G-Machine 1x1 with Duct Firing - Utah South
IC Aero UN	Inter-cooled Simple Cycle Combustion Turbine Aero - Utah North
SCCT Aero UN	Simple Cycle Combustion Turbine Aero - Utah North
SCCT Frame DJ	Simple Cycle Combustion Turbine Frame - Dave Johnston Brownfield
SCCT Frame UTN	Simple Cycle Combustion Turbine Frame - Utah North
SCCT Frame UTS	Simple Cycle Combustion Turbine Frame - Utah North
Battery Storage - Utah S	Battery Storage - Utah South
Battery Storage - WYSW	Battery Storage - Wyoming Southwest
Battery Storage - Idaho	Battery Storage - Idaho
CAES - East	Compressed Air Energy Storage
Wind, Djohnston	Wind, Wyoming After DJ Retirement
Wind, GO	Wind, Goshen Idaho
Wind, UT	Wind, Utah
Wind, WYAE	Wind, Wyoming Aeolus
Wind+Storage, GO	Wind + Battery, Goshen Idaho
Wind+Storage, UT	Wind + Battery, Utah
Wind+Storage, WYAE	Wind + Battery, Wyoming Aeolus
Utility Solar - PV - Utah-S	Utility Solar - Photovoltaic - Utah South
Utility Solar - PV - WYSW	Utility Solar - Photovoltaic - Wyoming Southwest
Utility Solar - PV - Utah-N	Utility Solar - Photovoltaic - Utah North
Utility Solar+Storage - PV - Utah-S	Utility Solar + Battery - Photovoltaic - Utah South
Utility Solar+Storage - PV - GO	Utility Solar + Battery - Photovoltaic - Goshen Idaho
Utility Solar+Storage - PV - Huntington	Utility Solar + Battery - Photovoltaic - Huntington Brownfield
Utility Solar+Storage - PV - Utah-N	Utility Solar + Battery - Photovoltaic - Utah North
Demand Response, ID-3rd Party Contracts	Curtailment - Idaho
Demand Response, ID-Smart APPI	Direct Load Control Smart Appliances - Idaho
Demand Response, ID-Cool/WH	Direct Load Control-Cooling & Water Heating-Residential, Commercial & Industrial - Idaho
Demand Response, ID-Thermostat	Direct Load Control-Smart Thermostat-Residential - Idaho
Demand Response, ID-Space HT	Direct Load Control-Space Heating-Residential, Commercial & Industrial - Idaho

Demand Response, ID-Irrigate	Direct Load Control-Irrigation -Idaho
Demand Response, UT-Cool/WH	Direct Load Control-Cooling & Water Heating-Residential, Commercial & Industrial - Utah
Demand Response, UT-3rd Party Contracts	Curtailment - Utah
Demand Response, UT-Elec Vehicle	Direct Load Control-Electric Vehicle Charging -Utah
Demand Response, UT-Smart APPI	Direct Load Control-Cooling & Water Heating-Residential, Commercial & Industrial - Utah
Demand Response, UT-Space HT	Direct Load Control-Space Heating-Residential, Commercial & Industrial - Utah
Demand Response, UT-Thermostat	Direct Load Control-Smart Thermostat-Residential - Utah
Demand Response, UT-ICE storage	Ice Energy Storage - Utah
Demand Response, UT-Irrigate	Direct Load Control-Irrigation -Utah
Demand Response, WY-Cool/WH	Direct Load Control-Cooling & Water Heating-Residential, Commercial & Industrial - Wyoming
Demand Response, WY-Irrigate	Direct Load Control-Irrigation -Wyoming
Demand Response, WY-3rd Party Contracts	Curtailment - Wyoming
Demand Response, WY-Ancillary Services	Ancillary Services - Wyoming
Demand Response, WY-ICE storage	Ice Energy Storage - Wyoming
Demand Response, WY-Room AC	Direct Load Control-Air Conditioning - Wyoming
Demand Response, WY-Smart APPI	Direct Load Control Smart Appliances - Wyoming
Demand Response, WY-Thermostat	Direct Load Control-Smart Thermostat-Residential - Wyoming
Demand Response, WY-Space HT	Direct Load Control-Space Heating-Residential, Commercial & Industrial - Wyoming
Energy Efficiency, ID	Energy Efficiency - Idaho
Energy Efficiency, UT	Energy Efficiency - Utah
Energy Efficiency, WY	Energy Efficiency - Wyoming
FOT Mona - SMR	Front Office Transaction - Summer HLH Product - Mona

Table K.11 – West-Side Resource Name and Description

Resource List	Detailed Description
CCCT - SOregonCal - J 1x1	Combine Cycle Combustion Turbine J-Machine 1x1 with Duct Firing - Southern Oregon
CCCT - WillamValcc - G 1x1	Combine Cycle Combustion Turbine G-Machine 1x1 with Duct Firing - Willamette Valley, Oregon
CCCT - WillamValce - J 1x1	Combine Cycle Combustion Turbine J-Machine 1x1 with Duct Firing - Willamette Valley, Oregon
CCCT - Yakima - G 1x1	Combine Cycle Combustion Turbine G-Machine 1x1 with Duct Firing - Yakima, Washington
IC Aero PO	Inter-cooled Simple Cycle Combustion Turbine Aero - Portland-North Coast, Oregon
IC Aero SO	Inter-cooled Simple Cycle Combustion Turbine Aero - Southern Oregon
IC Aero WV	Inter-cooled Simple Cycle Combustion Turbine Aero - Willamette Valley, Oregon
IC Aero WW	Inter-cooled Simple Cycle Combustion Turbine Aero - Walla Walla, Washington
SCCT Frame SO	Simple Cycle Combustion Turbine Frame - Southern Oregon
Battery Storage - S Oregon	Battery Storage – West
Battery Storage - Wilamette Valley	Battery Storage – West
Battery Storage - Portland NC	Battery Storage – West
Battery Storage - Walla Walla	Battery Storage – West
Battery Storage - Yakima	Battery Storage – West
Wind, SO	Wind, Southern Oregon
Wind, YK	Wind, Yakima, Washington
Wind+Storage, SO	Wind + Battery, Southern Oregon
Wind+Storage, YK	Wind + Battery, Yakima, Washington
Utility Solar - PV - S-Oregon	Utility Solar - Photovoltaic - Southern Oregon
Utility Solar - PV - Yakima	Utility Solar - Photovoltaic - Yakima, Washington
Utility Solar+Storage - PV - Jbridger	Utility Solar + Battery - Photovoltaic - Bridger Plant
Utility Solar+Storage - PV - S-Oregon	Utility Solar + Battery- Photovoltaic - Southern Oregon
Utility Solar+Storage - PV - Yakima	Utility Solar + Battery- Photovoltaic - Yakima, Washington
Geothermal, Greenfield - West	Geothermal, Greenfield - West
Demand Response, CA-Cool/WH	Direct Load Control-Cooling & Water Heating-Residential, Commercial & Industrial - California
Demand Response, CA-3rd Party Contracts	Curtailment - California
Demand Response, CA-Irrigate	Direct Load Control-Irrigation - California
Demand Response, CA-ICE storage	Ice Energy Storage - California
Demand Response, CA-Thermostat	Direct Load Control-Smart Thermostat-Residential - California
Demand Response, CA-Space HT	Direct Load Control-Space Heating-Residential, Commercial & Industrial - California
Demand Response, OR-Cool/WH	Direct Load Control-Cooling & Water Heating-Residential, Commercial & Industrial - Oregon

Demand Response, OR-3rd Party Contracts	Curtailment - Oregon
Demand Response, OR-Irrigate	Direct Load Control-Irrigation -Oregon
Demand Response, OR-Thermostat	Direct Load Control-Smart Thermostat-Residential - Oregon
Demand Response, OR-Ancillary Services	Ancillary Services - Oregon
Demand Response, OR-Elec Vehicle	Direct Load Control-Electric Vehicle Charging - Oregon
Demand Response, OR-ICE storage	Ice Energy Storage - Oregon
Demand Response, OR-Thermostat	Direct Load Control-Smart Thermostat-Residential - Oregon
Demand Response, OR-Room AC	Direct Load Control-Air Conditioning - Oregon
Demand Response, OR-Smart APPI	Direct Load Control Smart Appliances - Oregon
Demand Response, WA-Cool/WH	Direct Load Control-Cooling & Water Heating-Residential, Commercial & Industrial - Washington
Demand Response, WA-3rd Party Contracts	Curtailment - Washington
Demand Response, WA-Irrigate	Direct Load Control-Irrigation -Washington
Demand Response, WA-Thermostat	Direct Load Control-Smart Thermostat-Residential - Washington
Demand Response, WA-Ancillary Services	Ancillary Services - Washington
Demand Response, WA-ICE storage	Ice Energy Storage - Washington
Demand Response, WA-Room AC	Direct Load Control-Air Conditioning - Washington
Demand Response, WA-Smart APPI	Direct Load Control Smart Appliances - Washington
Energy Efficiency, CA	Energy Efficiency - California
Energy Efficiency, OR	Energy Efficiency - Oregon
Energy Efficiency, WA	Energy Efficiency - Washington
FOT COB - SMR	Front Office Transaction - Summer HLH Product - California Oregon Border
FOT COB - WTR	Front Office Transaction - Winter HLH Product - California Oregon Border
FOT MidColumbia - SMR	Front Office Transaction - Summer HLH Product - Mid Columbia
FOT MidColumbia - SMR - 2	Front Office Transaction - Summer HLH Product - Mid Columbia
FOT MidColumbia - WTR	Front Office Transaction - Winter HLH Product - Mid Columbia
FOT MidColumbia - WTR2	Front Office Transaction - Winter HLH Product - Mid Columbia
FOT NOB - SMR	Front Office Transaction - Summer HLH Product - Nevada Oregon Border
FOT NOB - WTR	Front Office Transaction - Winter HLH Product - Nevada Oregon Border

Table K.12 - Initial Cases, Detailed Capacity Expansion Portfolios

P-01	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resourc 10-year
xisting Plant Retirements and PPA Termination								(82)													(82
raig 1 (Coal Early Retirement/Conversions) raig 2		+	-	-	-	-	-	(82)		-	-	-	_	-	-		(82)		-		- (82
ayden 1		<u> </u>	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-			_
Hayden 2 Huntington 1			-		-	-	-	-		-	-	-	(33)	-	-		-	-	(459)	,—-	
luntington 2		-	-	-		-	-		-	-	-	-	-	-	-	-	-	-	(450)	<i>i</i>	-
Cholla 4 (Coal Early Retirement/Conversions) DayeJohnston 1	_ -		(387)			-			-	(99)				- 1				-	-	-	(387
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-		(106
DaveJohnston 3 DaveJohnston 4			-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-		(220
Naughton 1			-	-		-			-	(330)	-	(156)			-		-	-			- (330
Naughton 2	-		-	-	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	(280
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6		(280)	-				-			-	-	-		-	(356)		-	-	-		(280
Retire - Hydro	-		-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-		(20
Retire - Wind			-	(49)	-		-	-	-	-	-	(40)	-	-	(181)	-	-	-	-		
Expire - Wind PPA Expire - Solar PPA		(27)	(17)	(49)	(0)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)		(160
Retire - Other		-	-	-	- '	- ` `	-	-	-	-	-	-	-	-	-	(1)				(32)	· -
Expansion Resources SCCT Frame NTN				_		_		- 1	_		- 1				370				185		
SCCI Frame WYSW	-	-	-			-				-	-			-	-		-		370		+
Total SCCT			-	-	-	-	-	-	-	-	-	-	-	-	370	-	-	-	555		
Wind, Djohnston Wind, GO			_			_		-		-	620	1.100		-	-		-	-			
Wind, WYAE			-	-	-	1,920	-			-		-		-	-			-	-		1,920
Total Wind Utility Solar - PV - Utah-S		-	146	- 59	- 67	1,920 28	-	-	-	-	620	1,100	328	-	-		_	400	-		1,920
Utility Solar - PV - WYSW	-	-	146	- 29	-	100		-	-	-	-	-			-	-		- 400	-		100
Utility Solar+Storage - PV - Utah-S			-	-	-		-	-	-	-	-	-	172	-	-	-	-	-	-		_
Utility Solar+Storage - PV - Huntington Utility Solar - PV - Utah-N				-	-		-		48	37	- 3	726			-					909	85
Utility Solar+Storage - PV - Utah-N						87			-	-	- 3	-									87
Total Solar			146	59	67	215	-	-	48	37	3	726	500	-	-	-	-	400	- 2.6	909	572
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts			-	-	-	-	-	-	-		-	-		-	-		-		1.8		+
Demand Response, ID-Irrigate					-		-			-				-	5.2			-	3.7	1.8	
Demand Response, ID-Thermostat	4.1		7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	8.3		28.1
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1		7.0	-	9.9	-	-	- 1.2	-	-	- 6.7	-		- 0.8	-		7.0	-	74.1	2.6	28.1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH			-	-	-	-	-	-	-	-	-	-	-	-	124.9	-	8.3	-	3.4	5.1 1.8	
Demand Response, WY-3rd Party Contracts			-	-		-			-		-				-		-	-	39.4	- 1.0	+
Demand Response, WY-Irrigate			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8		
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services		├	8.3	-	-	-		-	-	-	-	-		-	-		-	-	18.7 3.2	1.2	12.6
Demand Response, WY-Ancillary Services	-	-	-		-	-	5.3 3.0	-	-	-	-	-		-	-	-	-	-			13.5 3.0
Demand Response Total	4.1 6		15.3		9.9		8.2	7.2			6.7	- 6		6.8	130.0	,	15.3	- 3	157.1	21.6	44.6 70
Energy Efficiency, ID Energy Efficiency, UT	58		67	69	75	68	67	68	65	62	54	53	50	50	49	36	34	26	24	26	667
Energy Efficiency, WY	10	12	13	14	17	16	17	18	18	18	15	14	13	12	11	9	8	7	5	5	152
Energy Efficiency Total Battery Storage - Utah-N	74	85	86	90	100	92	91	93	90	87 525.0	76	74	69	67	65	49	46	37	32	34 495	
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	90.0	-	-	-	-	-	-	-	-	-	300.0	90.0
Battery Storage - Idaho FOT East - Summer			-	_	-	-	-	-	-	-	-	277	300	289	248	250	- 88	300	255.0 300		
FOT East - Winter	-	-	-		-	-	-	-			-		-	- 209	-	- 230	300	-	-	-	
Existing Plant Retirements and PPA Termination			,											, ,							
JimBridger 1 JimBridger 2	_ -	-	-			-		- :	-									-	-	(351)	:
JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	· -
JimBridger 4			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(353)	4 -
Hermiston Retire - Hydro		(1)	(169)	-	(1)	-		(1)	-	(7)	-		(6)		-	(75)	-	(1)	(237)	4 -	
Expire - Wind PPA	-	-	-	(175)	-	(41)	-	-												-	(179
Expire - Solar PPA									-	-	(75)	(10)		(20)	(20)	-	-	(10)	(10)	-	1 1
				_	-		-	-		(2)	(75) -	(10)	(67)	(20) (49)	(20)	_ :	(1)	(10) (115)	(10) (175)	-) -) (11)	1 1
Expansion Resources SCCT Frame WV	_		-			-	-		-	-	(75)	(10)		(20) (49)	(20)	-	(1)	(10) (115)	(175)	(11)	1 1
Expansion Resources SCCT Frame WV Total SCCT	-	-	-	-	-	-	-	-	-	-	(75) - -	(10) - - -		(49) - -		-	(1)	(10) (115)	(175)	(11)	(216
Expansion Resources SCCT Frame WV Total SCCT Utility Solar - PV - S-Oregon	-	-	-	-	-	- - - 500	-	-	-	-		- - - - -		(20) (49)		-	(1)	(10) (115)	(175)		(216) (2 - - 500 405
Expansion Resources SCCT Forms WV Total SCCT Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima Utility Solar - PV - Jakima Utility Solar Stonge - PV - Jbridger	-	-	-	-		-	-		-	-	(75) - - - - - -	- - - - - - -		(49) - - 475 -	(20) - - - - - -		- (1)	(10) (115)	(175)	(11)	(216) (2 - - 500 405
Espansion Resources SCCT Frame WV Total NCCT Utility Solar-PV-St Coopen Utility Solar-PV-St Coopen Utility Solar-Storage PV-Jbridge Utility Solar-Storage PV-Jbridge Utility Solar-Storage PV-Jbridge	-	-	-	-		- - - 500			-	-	(75)			(49) - -		-	- (1)	(10) (115)	(175) 443 443 - -	1,408	(216) (2 - - 500 405
Equation Resources	-	-	-	-	-	- - - 500	-	-		-	(75)	(10) - - - - - - - -		(49) - - 475 -			- (1)	(10) (115)	(175)	(11)	(216) (2 500 405
Espansion Resources SCCT Frames V Total SCCT Hole SCCT			-	-	-	- 500 405	-	-		-	(75)	(10) - - - - - - - - - - -		(49) 475 100 575	(20) - - - - - - - - - 8		- (1)	(10) (115)	(175) 443 443 - - - - 430	(11)	(216) (2 500 405
Espansion Resources SCCT Forms WV Total SCCT Uhility Solar: PV- Vakim Total Solar Demand Response; OK-Aneillary Services Demand Response; W-A-Aneillary Services			-	-	-	- 500 405	-	-	-	-	(75)	(10) - - - - - - - - - - - - -		(49) - - 475 - - 100	(20)	-	- (1)	(10) (115)	(175) 443 443 - - - - 430	(11)	(216) (2 500 405
Espansion Resources SCCT Frame WV Total SCCT Uhliky Solar - PV - S-Oregon Uhliky Solar - PV - Vakim Uhliky Solar - PV - Walm Demand Response, OR-Ancillary Services Demand Response, CA-Cost-WH Demand Resp	-	-	-	-	-	- 500 405	-	-	-	-				(49) 475 100 575	(20)	-	- (1)	(10) (115)	(175) 443 443 - - 430 430 - 1.5	1,408	(216) (2 500 405
Espansian Resources SCCT Frome WV Total SCCT Ultility Schart VV. SChopen Ultility Schart VV. SChopen Ultility Schart VV. Schopen Ultility Schart VV. Schopen Ultility Schart Schopen PV. Johnshaper Ultility Schart Schopen PV. Johnshaper Ultility Schart Schopen PV. Valkinu Total Solar Demand Response, OR. Ancillary Services Demand Response, OR. Ancillary Services Demand Response, CASchopen Schopen Schop				-		- 500 405	-	-	-	-	(75)			(49) 475 100 575	(20)	-	- (1)	(10) (115)	(175) 443 443 430 430 1.5 1.1 4.8	1,408	(216) (2 500 405
Espansian Resources SCCT Frame WV Total SCCT Unitly Solar: PV - S-Oregon Unitly Solar: PV - Yakima Unitly Solar: PV - Yakima Unitly Solar: PV - Walia Walia Unitly Solar: PV - Walia Walia Unitly Solar: PV - Walia Walia Unitly Solar: Storage: PV - Yakima Total Solar Demand Response, OR-Aucillary Services Demand Response, WA-Ancillary Bornal Response, CA-Sul Walia Demand Response, CA-Sul Walia Demand Response, CA-Sul Walia Demand Response, OR-Sul Walia Demand Response, OR-Sul Walia Demand Response, OR-Sul Walia				-	-	- 500 405	-	-	-	-	(75)			(49) 475 100 575	(20)		- (1)	(10) (115)	(175) 443 443	1,408	(216) (2 500 405
Espansian Res ources SCCT Forme V. Total SCCT. Total SCCT. Unity Solar - P.V ScOrgeon Unity Solar - P.V Schregeon Unity Solar - Stronge - P.V Invisiger Unity Solar - Stronge - P.V Invisiger Unity Solar - Stronge - P.V Valena Total Solar Total Solar Total Solar Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CAC-Solar Unity Solar - Solar					-	- 500 405	-	-	-	-	(75)			(49) 475 100 575	(20)		- (1)	(10) (115)	(175) 443 443 - - 430 - 1.5 1.1 4.8 5.8 23.3 35.7	1,408	(216 (216) (2) (2) (3) (405) (
Espansian Resources SCCT Frame WV Total SCCT Utility Schar: PV - Schregen Utility Schar: PV - Valarim Total Schar Demand Response, OR-Aneillary Services Demand Response, WA-Aneillary Services Demand Response, WA-Aneillary Services Demand Response, CA-God-WH Demand Response, CA-God-WH Demand Response, CA-Grigate Demand Response, CA-Grigate Demand Response, CA-Grigate Demand Response, OR-Grod-WH Demand Response, OR-Grod					-	- 500 405	-	-		-	(75)	(10)		(49) 475 100 575	(20)	-	- (1)	(10) (115)	(175) 443 443 443 430 430 - 1.5 1.1 4.8 5.8 5.8 3.3 35.7	(11)	(216 (216) (2) (2) (3) (405) (
Espansian Res ources SCCT Forme W Total & CCT. Total &				-	-	- 500 405		-		-	(75)	(10)		(49) 475 100 575	(20)		- (1)	(10) (115)	(175) 443 443 443 430 430 - 1.5 1.1 4.8 5.8 5.8 3.5.7 13.3 61.4	1,408 	(216 (216) (2) (2) (3) (405) (
Espansian Resources SCCT Forme WV Total SCCT. Vis. Scr. Septembrio. Unity Solar. NV. S. Cropmin Unity Solar. Stronge. FV. Johnse Unity Solar. Stronge. FV. Valida Demand Response. OR. Anoillary Services Demand Response. (A. And Party Contracts Demand Response. OR. Carol Valida Demand Response. (OR. Themsatat Demand Response. (OR. Themsatat Demand Response.) (OR. Themsatat Demand Response.) (OR. Themsatat Demand Response.) (W. A. Del Party Contracts Demand Response.) (W. A. Del Party Contracts						- 500 405		-		-	(75)	(10)		(49) 475 100 575	(20)		- (1)	(10) (115) 	(175) 443 443 430 430 430 1.5 1.1 4.8 5.8 2.3.3 5.7 13.3 61.4 7.7 9.9	(11)	(216 (216) (2) (2) (3) (405) (
Espansian Resources SCCT Frame V. S. Tudal S.C.T. Tudal S						- 500 405				-	(75)	(10)		(49) 475 100 575	8		- (1)	(10) (115)	(175) 443 443 4430 430 430 1.5 1.1 4.8 5.8 5.8 3.5.7 13.3 61.4 7.7 9.9 8.3	(11)	(216) (2) (2) (2) (2) (3) (405) (405
Espansian Resources SCCT Forme WV Tudal SCCT. SCRIPPO. Tudal SCCT. Tudal Scalar Utility Solar-Stronge. PV. Judany Utility Solar-Stronge. PV. Judany Utility Solar-Stronge. PV. Judany Tudal Solar Tud						- 500 405		-		-	(75)	(10)		(49) 475 100 575	(20)		- (1)	(10) (115)	(175) 443 443 430 430 430 1.5 1.1 4.8 5.8 2.3.3 5.7 13.3 61.4 7.7 9.9	(11)	(216) (2) (2) (2) (2) (3) (2) (3) (405) (4
Espansian Resources SCCT Forme V Total SCCT. Total SCCT. Total SCCT. Total SCCT. Hilly Stater. P.V. Schregen Unity Stater. P.V. Schregen Unity Stater. P.V. Vakima Unity Stater. P.V. Walla Walla Unity Stater. P.V. Vakima Demman Response, OR. Ancellary Services Demman Response, C.A. Chot Wallay Services Demman Response, C.A. Chot Wallay Demman Response, C.A. Chot Wall Demman Response, C.A. Chot Wall Demman Response, C.A. Chot Wall Demman Response, OR. Scale Part Contracts Demman Response, W.A. Chot Wall Demman Response, W.A. Scale Wall Demman Response, W.A. Scale Wall Demman Response, W.A. Thermostat Demman Response M.A. Thermostat Demman Response M.A. Thermostat Demman Response M.A. Thermostat Demman Response M.A. The						- 500 405 - - - - - - - - - - - - - - - - - - -			-	(2)		-	- (- (- (- (- (- (- (- (- (- (- (- (- (-	(49)	8 8			(115)	(175) 443 443 430 430 430 - 1.5 1.1 4.8 23.3 35.7 13.3 61.4 7.7 9.9 8.3 16.6 189.4	1,408 	(216) (216)
Sepantion Resources SCCT Frame WV Total SCCT. Total SCCT. SCCT Frame WV Total SCCT. SCCT Frame WV Total SCCT. SCCT Frame WV Unity Science, PV. Schregen Unity Science, PV. Schregen Unity Science, PV. Schregen Unity Science, PV. Visikina Total Solar Total Solar Demand Response, OR-Annillary Societies Demand Response, CA-Good-WH Demand Response, OR-Good-WH Demand Response, WA-Horizott						- 500 405 - - - - - - - - - - - - - - - - - - -				(2)	(75)	(10)		(49) 475 100 - 575	8		(1)	(10) (15) (15) (15) (15) (15) (15) (15) (15	(175) 443 443 4430 430 430 1.5 1.1 4.8 5.8 5.8 3.5.7 13.3 61.4 7.7 9.9 8.3	(11)	(216) (216)
Spanston Resources SCCT Forms WV Total SCCT Utility Solutar V. S. Chopmo Utility Solutar Stornge - PV. J Brisdger Utility Solutar Stornge - PV. Valkins Total Solutar Demand Response, OR. Ancillary Services Demand Response, OR. Ancillary Services Demand Response, W. A. Ancillary Services Demand Response, C. A. Solutar V. S. Chopmon Demand Response, OR. ChopWill Demand Response, OR. ChopWill Demand Response, OR. ChopWill Demand Response, W. A. Solutar V. S. Chopwood Demand Response, V. A. Solutar V. S. Chopwood Demand Response, W. A. Solutar V. S. Chopwood Demand Response, V. A. Solutar V. S. Chopwood Demand Response V. S. Chopwood Demand Response V. S. Chopwood Demand Response V. S. Chopwood Demand R			11		12 60	- 500 405				(2)		-	- (- (- (- (- (- (- (- (- (- (- (- (- (-	(49)	8 8			(115)	(175) 443 443 430 430 430 - 1.5 1.1 4.8 23.3 35.7 13.3 61.4 7.7 9.9 8.3 16.6 189.4	(11)	(216) (216)
Espansian Resources SCCT Frame W. Tudal S.C.T. Tudal S.C.T. Unity Solar - F.V S.C S S S S S S			11		60 15			11					- (67)	(49)	8 8 8 8	6		(115)	(175) 443 443	(11)	(216) (216)
Espansian Resources SCCT Frame V Todal SCCT Todal S			11		12 60			11		(2)			- (67)	(49)	8 8 8 8	6		(115)	(175) 443 443	(11)	(216) (216)
Espansion Resources SCCT Frame V Todal SCCT Todal S			11		12 60 15 75			11					- (67)	(49)	8 8 8 8	6		(115)	(175) 443 443	(11)	(216) (216)
Espansion Resources SCCT Frame WV Toda SCCT Unity Solar W. S. Chegara Unity Solar Storage of PV. Threlage Unity Solar Storage of PV. Threlage Unity Solar Storage of PV. Threlage Demand Response, OR. Ancillary Services Demand Response, W. A. Ancillary Services Demand Response, C. A. S. Chegara Demand Response, C. Chegara Demand Response, OR. Chegara Demand Response, W. A. S. Chegara Demand Response, W. A. B.	52		11 51		12 60 15 75 -	500 405 	49 - - -	11	51					(49)	8	- - - -		(115)	(175) 443 443 443 440 430 430 430 430 430 430	(11) (11) (13) (14) (14) (15) (15) (16) (17) (17) (17) (17) (17) (17) (17) (17	(216) (216)
Espansion Resources SCCT Frame V Todal SCCT Todal S		49 - - - - 959 131	11 51 - - - - 621 269	55 - - - - - 684 304	12 60 15 75 -	500 405 	49 - - -	11 48 - - - - 255 257		- (2)			- ((49) 475 475 		6 33 - - - - - 1,075		(115)	(175) 443 443	(11) 1,408	(216) (216)
Espansian Resources SCCT Forme W Tutal SCCT Utility Science PV- Yukine Utility Science PV- Yukine Utility Science PV- Walla Walla Utility Science PV- Walla Walla Utility Science Science PV- Vukine Tutal Science	52 - - - - - 998	49 - - - - 959 131 (308)	11 51 - - - 621 269 (573)	- - - - - - - 684	12 60 15 75 - 105 716 314 (1)	500 405 	49 - - - - 279 254	11 48 - - - - 255 257 (148)	51 - - - - - 313					(49) 	8 8	6 33 - - - - - 1,075		(115)	(175) 443 443 443 440 430 430 430 430 430 430	(11) (11) (12) (13) (14) (15) (14) (15) (15) (15) (15) (15) (15) (15) (15	(216) (216)

Nating Trust Retriements and PFA Termination	Resource		2034		2032	- (44)	2030	2029	2028	-		2025	2024	2023	2022	2021	2020	2019	Existing Plant Retirements and PPA Termination
Satisfy Flast Reference Conversions	(82) (82) (82) (82) (82) (82) (450) (450) (74) (387) (99) (100) (200) (330) (230) (280) (280) (280) (200)			-	- - - -	- (44)	-	-	-	- (82)	(82)	-		-	-	-	-	-	Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)
Cong 2 (Coal largy Retrement/Conversions)			-	-	-		-		-	(82)	(82)	-		-	-	-	-	-	
Hayden 1	- (450) - (74) -	-	- - - - - -	-	-		-								-	-	-	-	Craig 2 (Coal Early Retirement/Conversions)
Hantington	- (450) - (74) -	-	-	-	-	(33)				-	-	-		-	-	-	-	-	Hayden 1
Colding A (Coal fairly Retinement/Conversions)	(74) (387) (387) (99) (200) (330) (330) (330) (280) (280) (200) (200) (200) (200) - (60) (80) - (160) (35) (94) (849) - (160)	-	-	-		-		-		-	-			-	-			-	Huntington 1
Colating 4 (Coal farty Retinement/Conversions)		-	-		-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	
DaveInhaton 1	(99) (100) (220) (330) (280) (280) (20) (20) (60) (80) - (160) (35) (94) (849) - (116)		-	-		-	-	-		-	-		-	-	-	-		-	Colstrip 4 (Coal Early Retirement/Conversions)
DaveInhaton 3	(220) (30) (30) (280) (20) (20) (60) (80) - (160) (35) (94) (849) - (16)			-	-	-	-	-	(99)		(387)	-		-		-	-		
Development of the content of the	(330) (280) (280) (200) (60) (80) - (160) (35) (94) (849) - (160)	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	
Naughton 1		-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	Dave Johnston 4
Naughton 3 (Coal flatly Retirement/Conversions) - (280) - - - - - - - - -	(20) (60) (80) - (160) (35) (94) (849) - (1)	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	Naughton 1
Cade by 1-6 - - - - - - - - -			-	-	-	-	(201)	-	-		-	-		-		-	(280)		Naughton 2 Naughton 3 (Coal Early Retirement/Conversions)
Refrice - Wind PA		-	-	(356)	-	-	-	-	-	-	-	-	-	-	-	-	-	1	Gadsby 1-6
Equire - Wand FPA	(35) (94) (849) - (1)	-	-	-	-		(40)	-	-		-	-	(20)	-	-		-		Retire - Hydro Retire - Wind
Retire - Other	(35) (94) (849) - (1)		(80)	(181)	(45)	(200)	(99)	(19)	-	(3)	(65)	-		(0)	(49)	(17)	(27)	-	Expire - Wind PPA
SCCT Frame NTS		(35)	- (1)	-	-		-	-	-		-	-	(1)	(1)	-		-		Expire - Solar PPA Retire - Other
SCCT Faine WYSW			(-)																Expansion Resources
Total SCCT	- 370	-	-	370	-	185	-	-	-	-	-	-	-	-	-	-	-	-	SCCT Frame NTN SCCT Frame WYSW
World, GO	370	-	-	370	-	185	-	-	-	-	-	-	-	-	-	-	-	-	Total SCCT
Wand, WYAE	294	-	-		-	-	1 091	326	294	-	-	-		-	-	-	-	-	
Urilay Solar - PV - Utah.S 146	1,920	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	Wind, WYAE
Utility Solar - PV - WYSW 100	2,214 - 400 288		1	<u> </u>		1	1,091	326	294	-	-	-		- 67	- 50	146	-	-	
Utility Solar-Stonge - PV - CD	100	-	-		-		-	-	-	-	-		100	-	-	- 146			Utility Solar - PV - WYSW
Utility Solar-Stonge - PV - Huntington	500 12	500	-		-	-	- 0	-	-	-	-	-	12	-	-	-	-	-	Utility Solar+Storage - PV - Utah-S Utility Solar+Storage - PV - GO
Utility Solar-Storage - PV - Utah-N	909 -	-	-		-	-	- 1	-	-	-	-	-	-			-	-	-	Utility Solar+Storage - PV - Huntington
Total Solar 146 59 67 312 - 3 722 - 3 722	184	-	- : -	-	-	-	713	3	-	-	-	-	184	-	-	-	-	-	Utility Solar - PV - Utah-N Utility Solar+Stomge - PV - Utah-N
Demand Response, ID-Cool/WH	500 400 - 909 584	500	-		-	-	722	- 3	-			-		67	59	146	-		Total Solar
Demand Response ID-3rd Party Contracts	2.6	-		-	-	-	-		-	-	-	-		-	-	-	-	-	Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts
Demand Response, ID-Irrigate 5.2 -	3.7 1.8 -	-		5.2			-												Demand Response, ID-Irrigate
Demand Response, ID-Thermostat	8.3 7.0 7.2 28.1	7.0	-	-	- 6 9	-	-	- 67	-	-	7.2	-	-	-	-	7.0	-	- 4.1	Demand Response, ID-Thermostat
Demand Response, UT-3d Party Contracts	- 74.1 2.6 -	7.0		-	-	-	-	-	-		- 7.2		- 1			-		4.1	Demand Response, UT-3rd Party Contracts
Demad Response, UT-frigate	1.9 - - 8.3 5.1 -	-	-	-	-	-	124.0	-	-	-	-	-	-	-	-	-	-	-	Demand Response, UT-Irrigate
Demad Response, U1-1 Internostat	3.4 1.8 -	-	-	-	-	-	124.9	-	-	-	-	-	-	-	-	-	-	-	Demand Response, U1-Thermostat Demand Response, WY-Cool/WH
Demand Response, WY-3rd Party Contracts	39.4	-	-	-		-	-		-	-	-		-	-	-	-		-	Demand Response, WY-3rd Party Contracts
Demad Response, Wy-Irrigate	1.8 - 18.7 1.2 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Demand Response, WY-Thermostat
Demand Response, UT-Ancillary Services 8.3 5.3	3.2 - 13.5 3.0	-	-	-	-	-	-		-	-	-			-	-	8.3	-	-	Demand Response, UT-Ancillary Services
Demand Response Total 4.1 - 15.3 - 9.9 - 8.2 7.2 6.7 124.9 - 6.8 5.2 -	7.0 - 165.4 21.6 44.6	7.0				-	124.9	6.7	-		7.2			9.9		15.3		4.1	Demand Response Total
Decay Efficiency, ID	4 3 3 3 69 32 26 25 26 662	4	4			6	6		7	7		7	7	7	7	6	6	6	Energy Efficiency, ID
Energy Efficiency, WY 10 10 11 14 15 16 17 18 19 18 15 14 13 12 11 9	8 7 5 5 149	8	9	11	12		14	15	18	19	18	17	16	15	14	11	10		Energy Efficiency, WY
Energy Efficiency Total 74 83 85 88 91 92 92 94 91 90 76 74 71 68 65 49 Hattery Stronge, Utah-N 28.50	45 37 33 35 879 495 285	45	49	65	68	71	74	76		91	94	92	92	91	88	85	83	74	Energy Efficiency Total
Battery Storage - WYSW 105.0	285.0 105.0	-		-	-	-	-	-	105.0			-	-	-	-			-	Battery Storage - WYSW
Battery Storage	105.0 225.0 - 300 300 300 300 6	300	- 284	- 282	236	265	300	- 56	- 64	-	-	-	-	-	-	-	_	-	Battery Storage - Idaho
Existing Plant Retirements and PPA Termination		300	204	282	230	203	300	50	04										Existing Plant Retirements and PPA Termination
Justitridger 2	(351) - (356) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	JimBridger 1
2mmsruger 2	(349) -	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	JimBridger 3
JimBridger 4	(353) - - (237)	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	JimBridger 4
Hermiton	- (1) (179)	-	(75)	-	-	(6)		-	(7)		(1)	-	-	(1)		(169)	(1)		Retire - Hydro
Epire - Wind PPA	- (10) (10) - (216) (1) (115) (175) (11) (2)	- (1)	-	(20)	(20)	-	(10)	(75)	-	-	-	-	(41)	-	(175)	-	-	-	Expire - Wind PPA
Epper-Solar PPA (∠) (b/) (49)		(1)			(49)	(6/)			(2)					-					Expansion Resources
SCCT Frame WV	443	-		-			-		-		-				-			-	SCCT Frame WV
Utility Solar - PV - S-Oregon 500 182	500	-				182			-										
Utility Solar-PV-Vajkerm 405	405 1,056	-	1			-		-	-	-	-	-	405		-	-	-	-	Utility Solar - PV - Yakima
Utility Solar - PV - Walla Walla 100		-																	
Utility Solar Storage - PV - S-Cregon		-			293	-	-	-	-	-	-	-			-	-	-	-	Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima
Total Solar 905 182 393	- 430 1,056 905	-	-				-	-	-			-	905				-	-	Total Solar
Demaid Response, WA-Ancillary Services		-		<u> </u>			8	-	-	-	-	-		-	-	-	-	-	Demand Response, OR-Ancillary Services
Demand Response, CA-Cool/WH	- 1.5	-			-				-										Demand Response, CA-Cool/WH
Demand Response, CA July Detruy Contracts	1.1	-		-	- 4 0			-	-	-	-	-		-	-	-	-	-	Demand Response, CA-3rd Party Contracts
Demand Response, CA-Thermostat	- 5.8		-			-	-	-	-	-	-					-			Demand Response, CA-Thermostat
Demand Response, OR-Cool/Wil	23.3 - 35.7	-	1			-		-	-	-	-	-			-	-	-	-	Demand Response, OR-Cool/WH Demand Response, OR-3rd Porty Contracts
Demand Response, OR-Irrigate 4.1 -	- 9.2	-		4.1					-										Demand Response, OR-Irrigate
Demard Response, W.A.Cool/WH	7.7 - 9.9	-		-				-	-	-	-	-		-	-	-	-	-	Demand Response, WA-Cool/WH
Demand Response, WA-Irrigate 5.2	- 3.1		-		5.2	-	-	-	-	-	-					-			Demand Response, WA-Irrigate
Demaid Response, Varieties	16.6 - 114.0	-	-	- 4 1	-	-	- 0.4	-	-	-	-	-	-	-	-	-	-	-	Demand Response, WA-Thermostat
Energy Efficiency, CA 1 2 2 2 2 2 2 2 2 2 2 2 2 1	1 1 1 1 18	1	- 1	2	2	2	2	2	- 2	- 2		2	- 2	- 2		2	2	1	Energy Efficiency, CA
Energy Efficiency, OR 40 37 37 42 39 39 43 41 39 37 33 31 30 29 26 27	26 26 25 24 392 6 5 4 4 110	26	27	26	29	30	31	33	37	39	41	43	39	39	42	37	37	40	Energy Efficiency, OR
Energy Efficiency Total 52 49 48 55 53 53 56 54 52 49 44 41 40 38 35 34	6 5 4 4 110 33 32 30 29 520	33	34		38	40		44	49	52	54	56	53	53	55	48	49	52	Energy Efficiency Total
Battery Storage - Willamette Valley	345 135	-	-	-	-	-	-	-	345	-	-	-	-	-	-	-	-	-	Battery Storage - S-Oregon
Battery Storage - Portland NC:	135	-								-						-			
Battery Storage - Walla Walla 135 1	135	-	-	-	-	-	-	-	135	-	-	-	-	-	-	-	-	-	Battery Storage - Walla Walla
	105		1,075	1,075	1,075	1,075	1,075	1,075	1,075			203	208			585	959	998	
FOT West - Winter 151 131 268 303 314 246 252 254 303 435 426 385 453 374 324 248 3	943 878 1,052 1,075 587		248	324	374	453	385	426	435	303	254		246	314	303	268	131		FOT West - Winter
	943 878 1,052 1,075 587 265 251 266	203 .		(557)	(114)	(350)	(506)	(93)	(912)										
Annual Additions, Long Term Resources 130 132 294 201 221 3,282 156 155 142 1,648 456 2,062 478 516 479 83	943 878 1,052 1,075 587	(36) (3 585	83						1,648		155						132		Annual Additions, Long Term Resources

1/ Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average

P-03	2019	2020	2021	2022	2023	2024	2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
xisting Plant Retirements and PPA Termination																					
raig 1 (Coal Early Retirement/Conversions) raig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-		-	-	-	-		-	-	-	-	(82)
layden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
layden 2 Iuntington 1	-	-	-	-	-		-	-	-	-			(33)	-	-		-		(459)	-	
Iuntington 2	-	-	-		-	-	-			-	-	-	-	-	-	_	-	-	(450)	-	-
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	-	-	(74) (74)	-	-		-		-	-	-	-	-	(74 (74
holla 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(387)	-	-		-	-	-	-		-	-	-	-	(387
PaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99
DaveJohnston 2 DaveJohnston 3	-	-	-	-	-	-	-	-	-	(106) (220)		-	-	-	-		-	-	-	-	(106)
DaveJohnston 4	-	-	-		-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
laughton 1	-	-	-	-	-	-	-	-	-	-	_	(156) (201)	-	-	-		-	-	-	-	-
laughton 2 laughton 3 (Coal Early Retirement/Conversions)		(280)	-	-	-	-	-	-	-	-	-	- (201)	-	-	-	-	-	-	-	-	(280
iads by 1-6	-	-	-		-	-	-	-	-	-	-	-		-	(356)	-	-	-	-	-	-
etire - Hydro etire - Wind		-	-	-	-	(20)	-	-	-	-		(40)		-	-		-	-	-	-	(20
expire - Wind PPA	-	(27)	(17)	(49)		-		(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60)	(80)	-	(160
opire - Solar PPA Letire - Other	-	-	-	-	(1)	(1)	-	-	-	-			-	-	-	(1)	(35)	(94)	(849)	(32)	(1)
Expansion Resources		-										· · · · · · · · · · · · · · · · · · ·				(1)				(32)	
CCT Frame NTN CCT Frame WYSW	-	-	-		-	-	-	-	-	-	-	185	185	-	185 370	-	-	-	-	-	-
CCT Frame WYSW otal SCCT		-	-	-	-	-	-	-		-		185	185	-	555		-	-	-	-	-
Vind, Djohnston	-	-	-	-	-	-	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-
Vind, GO Vind, WYAE	-	-	-	-		1.920	-	-	-	-		1,061		T			-	-	-	-	1.920
otal Wind						1,920					620	1,061									1,920
tility Solar - PV - Utah-S	_	-	146	59	67	20	-	-	-	-	-		-	-	-	-	-	400	-	-	292
Itility Solar - PV - WYSW Itility Solar+Storage - PV - Utah-S	1	-	-		-	100	-	-	-	-	_	500	-		-	-	-	-	-	-	100
Itility Solar+Storage - PV - GO	-	-	-	-	-	- 1	-	-	-	-	-	39	-	-	-	-	-	-		-	-
Itility Solar+Stomge - PV - Huntington Itility Solar - PV - Utah-N	-	-	-	-	-		-	-	-	- 37		720		-	-		-	-	897	12	- 37
Itility Solar+Storage - PV - Utah-N				-	-	144	-	-	-	-	-	-	-	-	-	-	-	-		-	144
otal Solar			146	59	67	272	-	-		37		1,259	-		-			400	897		580
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	1	-	-		-	-	-	-	-	-	_		-		1.8	-	-	-	2.6	-	
Demand Response, ID-Irrigate	-	-	-		-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	3.7		-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	- 9 9	-	-	7.2	-	-	6.7		-	6.8	-		7.0	-	8.3	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-		-	-			-	-	-	-	-	-		-	-	74.1	2.6	-
Demand Response, UT-Irrigate	-	-	-		-	-	-	-	-	-	116.7	8.2		-		-	8.3	-	-	1.9 5.1	-
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH	-	-	-	-	-	-	-		-	-	116.7	8.2		-	-		- 8.3	-	3.4	1.8	-
Demand Response, WY-3rd Party Contracts	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-	-	39.4	-	-
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-		-	-	-	1.8 18.7	-	-	-	-	1.2	-
Demand Response, UT-Ancillary Services		-	8.3	-	-		5.3	-		-			-		-		-	-	3.2	-	13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	15.3		9.9	-	3.0 8.2	7.2	-	-	123.3	8.2		12.0	22.3	-	15.3	-	134.8	21.6	3.0 44.6
nergy Efficiency, ID	6		6	7	7	7	7	7.2	7	7	6	6.2	- 6	6	6	- 4	13.3	3	3	3	68
nergy Efficiency, UT	58 10	67	67 11	68 14	69 15	66 16	67 16	68 18	65 19	62 18	54 15	54 14	52 13	50 12	49 11	36	32 8	26	23	24	657 147
nergy Efficiency, WY nergy Efficiency Total	74			88		89	91	93	91	87	76	75	72	68	66	49		36	31	32	872
lattery Storage - Utah-N	-	-	-	-	-	-	-	-	-	435.0	-	-	-	-	-	-	-	-	135	615	435
lattery Storage - WYSW lattery Storage - Idaho										285.0											
	-		-		-	-	-	-					-	-			-	-	-	- 15.0	285.0
OT East - Summer	-		-		-	-	-	-	-	- 78	258	300	270	281	267	270	300	300	540.0	15.0 300	285.0
OT East - Summer xisting Plant Retirements and PPA Termination	-	-	=		-	-	-	-	-	-		300	270	281	267	270	300	300	540.0	15.0 300	- 8
OT East - Summer Existing Plant Retirements and PPA Termination imBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	258	300	-	281	-	270	300	300	540.0 300	15.0 300	- 8
OT East - Summer Xisting Plant Retirements and PPA Termination inBindger 1 (Coal Early Retirement/Conversions) inBindger 2 (Coal Early Retirement/Conversions) inBindger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	- - - - -	-		-	-		300	- 270	281	267 - (356)	- 270 - - -	300	300	540.0	300 - - (349)	- 8
OT East - Summer Xisting Plant Retirements and PPA Termination imBridger 1 (Coal Early Retirement/Conversions) imBridger 2 (Coal Early Retirement/Conversions) imBridger 3 imBridger 3	-		-	-	-	-	-	-	-	-		300	-	281	(356)	- 270	- - 300	300	540.0	300	- 8
OT East - Summer Xisting Plant Retirements and PPA Termination inBindger 1 (Coal Early Retirement/Conversions) inBindger 2 (Coal Early Retirement/Conversions) inBindger 3 (Coal Early Retirement/Conversions)	-		- - - - - - (169)	-	- (1)	-		- - - - - (1)		-		300	-	281	(356)	- 270 - - - - (75)	300	- - 300	540.0 300	300 - - (349)	- 8
OT East - Summer Skiting Plant Retirements and PPA Termination individes 1 (Coal Early Retirement/Conversions) individes 2 (Coal Early Retirement/Conversions) individes 2 (Coal Early Retirement/Conversions) individes 3 Individes 3 (Coal Early Retirement/Conversions) individes 4 (Coal Early Retirement/Conversions) individes 3 Element on English State 1 Hydro Spane - Wind PPA	-	-	- - - - - 0 (169)	- - - - - - (175)	- (1)	- - - - - - - (41)	-			- 78 (7)		- 300	- - - - (6)	(20)	(356)	-		- - - - (1)	- 540.0 300 - - - - (237) - (10)	300 - - (349) (353) - -	- 8 (179 (216
OT East - Summer Sisting Plant Retriements and PPA Termination individage 1 (Coal Early Retriement/Conversions) individage 2 (Coal Early Retriement/Conversions) individage 3 (Coal Early Retriement/Conversions) individage 3 individage 4 interviewed to the second coal Early Retriement/Conversions) individage 4 interviewed to the second coal Early Retriement/Conversions) individual Coal Early Retriement/Conversions)	-	-			- (1)	- - - - - - - (41)	-		-	- 78	(351)				(356) - - -	-	300	(1)	- 540.0 300 - - - - (237) - (10)	300 - - (349)	- 8
OT East - Summer Makting Plant Retriements and PPA Termination individeor 1 (Coal Early Retriement/Convensions) individeor 1 (Coal Early Retriement/Convensions) individeor 3 individeor 3 individeor 3 individeor 4 termisch to the convention of th	-	-	- (169)		- (1)		-		-	- 78 (7)	(351)		- - - - (6)	(20)	(356) - - -	-		- - - - (1)	- 540.0 300 - - - (237) 0 - 0 (175)	300 - - (349) (353) - -	- 8 (179 (216
OT East - Summer Saking Plant Retirements and PPA Termination individage 1 (Coal liarly Retirement/Conversions) individage 2 (Coal liarly Retirement/Conversions) individage 3 (Coal liarly Retirement/Conversions) individage 4 individual 4	-	-	- - - - - (169)		- (1)				-	- 78 (7)	(351)		- - - - (6)	(20)	(356)	-		- - - - (1)	- 540.0 300 - - - (237) - (10) (175)	300 - - (349) (353) - -	- 8 (179 (216
OT East - Summer String Plant Retirements and PPA Termination individage 1 (Coal liarly Retirement/Conversions) individage 2 (Coal liarly Retirement/Conversions) individage 3 (Coal lardy Retirement/Conversions) individual and individual retirement/Conversions) individual and individual retirement/Conversions individual retirement/Co	-	-		(175)	- (1)	- - - - 421			-	- 78 (7)	(351)		- - - - (6)	(20)	- (356) - - - (20) - 221	-		- - - - (1)	- 540.0 300 - - - (237) 0 - (10) (175) 221 223	300 - - (349) (353) - -	- 8 (179 (216 (2
OT East - Summer Makting Plant Retriements and PPA Termination individeor 1 (Coal Early Retriement/Convensions) individeor 2 (Coal Early Retriement/Convensions) individeor 3 individeor 3 individeor 3 individeor 4 demission spire - Wind PPA ppire - Solar PPA ppire	-	-	(169)		- (1)	-			-	- 78 (7)	(351)		- - - - (6)	- - - - (20) (49)	(356) 	-		- - - - (1)	- 540.0 300 - - - (237) 0 - (175) (175) 221 223	300 - - (349) (353) - -	- 8 (179 (216 (2 421 405
OT East - Summer Stating Plant Retirements and PPA Termination individage 1 (Coal Early Retirement/Conversions) individage 2 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individual 4 (Coal Early Retirement/Coal Early Retirement/Coal Early Retirement/Coal Early Retirement/Coal Early Retirem		-		(175)	- (1)	- - - - 421				- 78 (7)	(351)		- - - (6) - (67)	- - - - (20) (49)	- (356) - - - (20) - 221	-		- - - - (1)	- 540.0 300 - - - (237) 0 - (175) (175) 221 223	300 - - (349) (353) - -	- 8 (179 (216 (2
OT East - Summer Staffing Plant Retirements and PPA Termination individing 1 (Coal Early Retirement/Conversions) individing 2 (Coal Early Retirement/Conversions) individing 3 (Coal Early Retirement/Conversions) individing 3 (Coal Early Retirement/Conversions) individing 3 (Coal Early Ea		-			- (1)	421				- 78 (7)	(351)		- - - - (6)	- - - - - (20) (49)	(356) 	-	(1)	- - - - (1)	- 540.0 300 - - - (237) 0 - (175) (175) 221 223	300	- 8
OT East - Summer Saking Plant Referements and PPA Termination individual of Local Early Retirement/Conversions) individual of Local Early Retirement/Conversions) individual of Local Early Retirement/Conversions) individual of Local individual of Local Early		- (1)		(175)	- (1) - - - - - - - -	- - - - 421				- 78 (7)	(351)		- - - (6) - (67)	- - - - (20) (49)	- (356) - - - (20) - 221 - 221 - 359	-	(1)		- 540.0 300 300 (237) 0 (10) 0 (175) 221 233 455 	300	- 8 (179) (216
OT East - Summer SASTing Plant Referements and PPA Termination individage 1 (Coal Early Retirement/Conversions) individage 2 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individage 4 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individual PPA spire. Solar PPA spire. Solar PPA spire. Solar PPA Spire. Solar PPA CCT Frome WV CCT Frome WV CCT Frome WV CCT Frome WV (CCT Frome WV		- (1)		(175)	- (1) - - - - - - - -	421				- 78 (7)	(351)		- - - (6) - (67)	- - - - - (20) (49)	- (356) - - - (20) - 221 - 221 - 359	-	(1)		- 540.0 300 300 (237) 0 (10) 0 (175) 221 233 455 	300	- 8
OT East - Summer Skifting Plant Retirements and PPA Termination individuage 1 (Coal Early Retirement/Conversions) individuage 2 (Coal Early Retirement/Conversions) individuage 3 (Coal Early Retirement/Conversions) individuage 3 (individual Early Retirement/Conversions) individuage 3 (individual Early Ear		- (1)	(169)	(175)	- (1) - - - - - - - -	- - - 421 405 - - - 79				- 78 (7)	(351)		- - - (6) - (67) - - - - - - 100		(356)	-	(1)		- 540.0 300 	300 (349) (353) (11) (11)	- 8 (179 (216 (2 421 405 79 79
OT East - Summer SASTing Plant Referements and PPA Termination individage 1 (Coal Barty Retirement/Conversions) individage 2 (Coal Barty Retirement/Conversions) individage 3 (Coal Barty Retirement/Conversions) individage 4 fermination individue 5 fermindividue 5 fermination individue 5 fermination individue 5 fermin		- (1)	(169)	(175)	- (1) - - - - - - - -	- - - 421 405 - - - 79				- 78 (7)	(351)		- - - (6) - (67) - - - - - - 100		(356)	-	(1)		- 540.0 300 	300 (349) (353) (11) (11)	- 8 (179 (216 (2 421 405 79 79
OT East - Summer SMARING Plant Referements and PPA Termination individage 1 (Coal Early Retirement/Conversions) individage 1 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individage 4 (Coal Early Retirement/Conversions) individual Coal Early PPA Spansion Resources CCT Frame WV CCT Frame		- (1)		(175)	- (1)	- - - 421 405 - - - 79				- 78 (7)	(351)		- (67) - (77) -		- (356) 	-	(1)	(1) (10) (10) (10) (10) (10) (10) (10) (300 (349) (353) (11) (11)	- 88 8
OT East - Summer Saking Plant Referements and PPA Termination individue 1 (Coal Early Retirement/Conversions) individue 2 (Coal Early Retirement/Conversions) individue 3 individue 3 individue 3 individue 4 ind		- (1)	(169)	(175)	- (1)	- - - 421 405 - - - 79				- 78 (7)	(351)		- - - (6) - (67) - - - - - - 100		(356)	-	(1)			300 (349) (353) (11) (11)	- 8 8 8
OT East - Summer Saking Plant Referencets and PPA Termination individes 1 (Coal Early Retirement/Conversions) individes 2 (Coal Early Retirement/Conversions) individes 2 (Coal Early Retirement/Conversions) individes 3 individes 3 individes 4 ind		- (1)	(169)	(175)	- (1)	- - - 421 405 - - - 79				- 78 (7)	(351)		- (67) - (77) -		- (356) (3-6) - (20) - (20) - (21) - (21) - (359) - (3	-	(1)	(1) (10) (10) (10) (10) (10) (10) (10) (300	- 88 8
OT East - Summer SMARING Plant Referements and PPA Termination individing 1 (Coal Early Retirement/Conversions) individing 2 (Coal Early Retirement/Conversions) individing 3 (Coal Early Retirement/Conversions) individing 4 fermix of the state of the s		- (1)		(175)	- (1)	- - - 421 405 - - - 79				- 78 (7)	(351)		- (67) - (77) -			-	(1)	(1) (10) (10) (10) (10) (10) (10) (10) (300	- 88 8
OT East - Summer SASTing Plant Referements and PPA Termination individage 1 (Coal Early Retirement/Conversions) individage 2 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individage 4 termination individage		- (1)			- (1)	- - - 421 405 - - - 79				- 78 (7)	(351)		- (67) - (77) -		- (356) (3-6) - (20) - (20) - (21) - (21) - (359) - (3	-	(1)	(1) (10) (10) (10) (10) (10) (10) (10) (300	- 88 8
OT East - Summer SASTing Plant Referements and PPA Termination individage 1 (Coal Early Retirement/Conversions) individage 2 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individage 4 termination individue 5 termindividue 5 termination individue 5 termination individue 5 termin		- (1)		(175)	- (1)	- - - 421 405 - - - 79				- 78 (7)	(351)		- (67) - (77) -			-	(1)	(1) (10) (10) (10) (10) (10) (10) (10) (- 540.0 300 300	300(349) (353)(11)	- 88 8
OT East - Summer Saking Plant Referements and PPA Termination individual of Local Early Retirement/Conversions) individual of Local Early Solar-Early Early Local Early Solar-Early Early Early Early Solar-Early Early Early Solar-Early Early Early Solar-Early Early Early Solar-Early Early		- (1)			- (1)	- - - 421 405 - - - 79				- 78 (7)	(351)		- (67) - (77) -		(356) 		(1)	(1) (10) (10) (10) (10) (10) (10) (10) (300(349) (353)(11)	- 88 8
OT East - Summer Saking Plant Referements and PPA Termination individes 1 (Coal Early Retirement/Conversions) individes 2 (Coal Early Retirement/Conversions) individes 2 (Coal Early Retirement/Conversions) individes 3 individes 4 series - Life Annual Conversions 1 individes - Life Annual Conve			- (169) (169) - (169)	(175)	- (1)	- - - 421 405 - - - 79				- 78 (7)	(351)		- (67) - (77) -				(1)	(1) (10) (10) (10) (10) (10) (10) (10) (300	- 8
OT East - Summer Saking Plant Referements and PFA Termination individues 1 (Coal Early Retirement/Conversions) individues 2 (Coal Early Retirement/Conversions) individues 3 (Coal Early Retirement/Conversions) individues 4 (Coal Early Early Contracts individues					(1)					78	(351)		- (6) (67) (67) 					(10) (10) (115) (1		300	- 8 - (179) (216) (2) - (2) - (2) - (2) - (3) - (42) - (42)
OT East - Summer Saking Plant Referements and PPA Termination individes 1 (Coal Early Retirement/Conversions) individes 2 (Coal Early Retirement/Conversions) individes 2 (Coal Early Retirement/Conversions) individes 3 individes 4 series - Life Annual Conversions 1 individes - Life Annual Conve					(1)					- 78 (7)	(351)		- (67) - (67) 				(1)	- (1) (115)		300	- 8 - (179) (216) (2) - (2) - (2) - (2) - (3) - (42) - (42)
OT East - Summer Starting Plant Referements and PPA Termination individage 1 (Coal Early Retirement/Conversions) individage 2 (Coal Early Retirement/Conversions) individage 3 (Coal Early Retirement/Conversions) individage 4 termination individat	40	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			(1)				11	78	(351)		(6) (7) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	20) (49) (49) (49) (49) (49) (49) (49) (49	(356)		(1)			300 (349) (353) (11)	- 8 8
OT East - Summer Saking Plant Referements and PPA Termination individual of Local Early Retirement/Conversions) individual of Local Early Early Local Early Local Early Early Local Early Local Early Local Early Local Early Early Local Early Early Local	40 11	- (1) - (1)			(1)		12		11	-788	(351)		- (67) (67) (67) 		(356) 		(1)			300 (349) (353) (11)	- 8
OT East - Summer SMARING Plant Referements and PPA Termination individage 1 (Coal Barty Retirement/Conversions) individage 2 (Coal Barty Retirement/Conversions) individage 3 (Coal Barty Retirement/Conversions) individage 4 termination individage	40 11	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			(1)		12		11	78	(351)		- (67) (67) (67) 		(356) 		(1)			300 (349) (353) (11)	- 8 8
OT East - Summer SMARING Plant Referements and PPA Termination individage 1 (Coal Barty Retirement/Conversions) individage 2 (Coal Barty Retirement/Conversions) individage 3 (Coal Barty Retirement/Conversions) individage 4 fermination individage 5 fermination individage 5 fermination individage 6 fermination individage 7 fermination individage	40 11 52 -	- (1) - (1)			(1)		12 56 - -		111 52 -	-788	(351)				(356) 		(1)	(115) (115) (115) (115) (115) (117)		300	- 8 8
OT East - Summer Solving Plant Referencests and PPA Termination individes of 1 (Coal Early Retirement/Conversions) individes of 1 i	40 11				(1)		12 56 - - - - 175		11 52 - - - 254	-78	(351)	(10)	(6) (7) (7) (8) (8) (8) (8) (8) (8) (8) (8) (8) (8	20) (49) (49) (49) (49) (49) (49) (49) (49	(356)		(1)	- (115) (115		300 (349) (353) (11)	- 8 - 1 - 1 - 1 - 1 - 2 - 2 - 2 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3
OT East - Summer SMARING Plant Referements and PPA Termination individage 1 (Coal Barty Retirement/Conversions) individage 2 (Coal Barty Retirement/Conversions) individage 3 (Coal Barty Retirement/Conversions) individage 4 fermination individage 5 fermination individage 5 fermination individage 6 fermination individage 7 fermination individage	40 111 52 - - - - 998 151				(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	- 421 405 79 905	12 56 - - - 175 232		111 52 - - - 254 283 (85)	-78	(351)				(356) 		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			300 (349) (353) (11)	- 8 8

										Capacity	(MW)										Resource To	tals 1/
P-04	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year 20	0-year
Existing Plant Retirements and PPA Termination								(82)													(82)	(82
Craig 1 (Coal Early Retirement/Conversions) Craig 2	-	-	-		-	-	-	- (82)	-	-		-	-	-	-	-	(82)		-	-	- (82)	(8:
Hayden 1 Hayden 2	-	-	-	-	-		-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	(4
Huntington 1	-		-	-	-	-		-	-	-	-		-		-	-	-		(459)	-	-	(45
Huntington 2 Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-		-	-	-	-			-		-	-	-		(450)	-	(387)	(45
DaveJohnston 1	-	-	-	-	-	-		-		(99)			-		-	-	-				(99)	(9
DaveJohnston 2 DaveJohnston 3	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106) (220)	(22
DaveJohnston 4			-	-	-			-		(330)			-		-	-	-				(330)	(33
Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	(156) (201)	-	-	-	-	-					-	-	-	-	-	-	(156) (201)	(2)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	-	-			-		-					-		-				(280)	(28
Ciads by 1-6 Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(20)	(3:
Retire - Hydro Retire - Wind			-	-	-	- (20)		-		-		(40)			-			-			- (20)	(-
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)		(160)	(9
Expire - Solar PPA Retire - Other	-	-	-	-	- (1)	- (1)	-	-	-	-			-		-	(1)) -	- (94)	- (342)	(32)	- (1)	()
Expansion Resources SCCT Frame WYSW				- 1	- 1			_		370					_	_				_	370	3
Total SCCT	-		-	-	-	-	-	-	-	370	-		-	-	-	-	-	-	-	-	370	3
Wind, Djohnston	-	-	-	-	-		-	-	-	232	388	1,088	-	-	-	-	-	-	-	-	232	1,0
Wind, GO Wind, WYAE	-		-	-	-	1,920		-		-		-	-		-	-	-			-	1,920	1,9
Total Wind	-	-	- 22	-	-	1,920	-	-	-	232	388	1,088	-	-	-	-	-	400	-	-	2,152	3,6
Utility Solar - PV - Utah-S Utility Solar - PV - WYSW				-		100												-			100	1
Utility Solar+Storage - PV - Utah-S	-	-	-	-	278	-		-	-	-			452	48	-	-	-	-	-	-	278	7
Utility Solar+Storage - PV - GO Utility Solar - PV - Naughton	-	-	-	-	-	637	-	-	-	-			-	- 12	-	-	-	-	-	-	637	-
Utility Solar+Stomge - PV - Huntington	-	-	-	-	-	- '	-	-	-	-	-	-	- 1	-	-	-	-	-	897	12		
Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N	-	-	136	64	- 7	600	-	-	-	-		94			-	-	-	-	-	-	806	8
Total Solar	-	-	157	64	285	1,337	-	-	-	-	-	94	452	60	-	-	-	400	897		1,843	3,7
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-		-	-	-	-	-	-				:		1.8	-	-	-	2.6	-		-
Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	1.8	-	10
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	8.3	7.2	28.1	5:
Demand Response, UT-3rd Party Contracts	-			-				-		-	-		-	-	-		-		74.1	2.6	-	7
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	79.4		-	-	-	37.3			8.2		-	-	8.3	-	-	1.9 5.1	116.7	13
Demand Response, WY-Cool/WH	-	-	-	-	-	-		-		-	-	-		-	-	-	-		3.4	1.8	-	
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	37.3	-	-	3
Demand Response, WY-Thermostat	-	-	-		-			-	-	-			-		18.7	-	-		-	1.2	-	1
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	8.3	-	-		5.3 3.0	-	-	-			-		-	-	-		3.2	-	13.5 3.0	1
Demand Response Total	4.1		15.3		89.2		8.2	7.2		37.3	6.7		8.2	6.8	27.4	-	15.3	-	132.7	21.6	161.2	386
Energy Efficiency, ID Energy Efficiency, UT	6 58	67		7 73	8 75	7 66	7 67	7 66		7 62	6 54	6 54	52 52	50	6 49	4 36		3 26	3 23		70 668	1,0
Energy Efficiency, WY	10	12	13	15	18	16	16	18	19	18	15	14	13	12	11	9	8	7	5	5	154	2
Energy Efficiency Total Battery Storage - Utah-N	74	85	88	95	100 240.0	89	91	91	91	87 60.0	76	74	71	67	65	49	45	36	31 240		891 300	1,4
Battery Storage - WYSW	-	-	-	-	210.0	-	-	-	-	-	-	-	-	-	-	-	-	-	15.0	285.0	210.0	51
Battery Storage - Idaho FOT East - Summer	-	-	-	-	295	-	-	-	-	300	282	293	245	292	293	295	300	300	270.0 300		- 60	39
Existing Plant Retirements and PPA Termination										300	202	2,7,5	243	2,72	2,55	2,7,5	300	500	300	300		
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-		(351)	-	-	-	-	-					-	-	-	-	-	-	(351)	(:
JimBridger 3	-	-	-	-	-	-		-		-	-	-		-	-	-	-		-	(349)	-	Ć.
JimBridger 4 Hermiston	-	-	-		-	-	-	-	-	-					-	-	-	-	(237)	(353)	-	G
Retire - Hydro	-	(1)	(169)	-	(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	-	-	(179)	(2
Expire - Wind PPA Expire - Solar PPA	-	-	-	(175)	-	(41)	-	-	-	- (2)	(75)	(10)	(67)	(20) (49)	(20)	-	- (1)	(10)	(10)	(11)	(216)	(:
Expansion Resources										(-)			(07)	(42)			(-)	(113)	(173)	(11)	(2)	
SCCT Frame WV Total SCCT	-	-	-	-	-	-	-	-	-	-			-		221 221	-	221 221	-	-	-	-	
Utility Solar - PV - S-Oregon			-	-	-	500		-		-	-		-		-	-	-				500	- :
Utility Solar - PV - Yakima Utility Solar - PV - jbridger		_	1	-	713	405	-	-	-	- T			⊢ : ∃		-	-	1	-	-	-	405 713	
Utility Solar+Storage - PV - Jbridger				-	-	-		-		-									-	702	-	
Utility Solar - PV - Walla Walla Utility Solar+Storage - PV - S-Oregon	-	-	-	-	-	-	-	-	-	-	-	-	100	-	- 475	-	-	-	-	-	-	
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-		-	-	-	-		-		-			-		-			-	430	-	-	
Total Solar Demand Response, OR-Ancillary Services	-	-	-	-	713	905	-	-	-	- 8	-	-	100	-	475	-	-	-	430	702	1,618	3,
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	<u> </u>	-		-	-	-	-	-	-	1.9			 		-	-	-	-	-	-	1.9	_
Demand Response, CA-Cool/WH	-	-	-	-	-	-	-	-	-	- 4.8	-	-	-	-	-	-	-	-	1.5	-	- 4.8	
Demand Response, CA-Irrigate Demand Response, CA-Thermostat	-	-	-	-	-	-	-	-	-	4.8 5.8	-		 - 	-	-	-	-	-	-	-	4.8 5.8	
Demand Response, OR-Cool/WH	-	-	-	-	-	-	-	-	-	- 1	-	-	-	-	26.8	-	-	-	23.3	-		2
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-	-	-	9.2	-	-	-	-	4.1	-			-	26.8	-	-	-	-	-	13.3	
Demand Response, WA-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	-		_
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-	-		-	5.2	-	-	-	-	-		-			9.9	-	3.1	-	-	-	5.2	
Demand Response, WA-Thermostat	-	-	-	-	11.3	-	-	-	-		-	-		-	5.3	-	3.1	-	-	-	11.3	
Demand Response Total Energy Efficiency, CA	- 1	- 2	- 2	- 2	25.7	- 2	- 2	- 2	- 2	24.0	- 2	- 2	- 2	- 2	42.0	- 1		- 1	32.5	- 1	49.7	1.
Energy Efficiency, OR	40	43	43	49	47 12	39	43	41	39	37	33	31	30	29	26	26	26	26	25	24	419 113	
Energy Efficiency, WA Energy Efficiency Total	11 52			12 63	12 61	12 52	12 56	11 54		11 49	9	42		38	8 35	6 34	6 33	5 32	30		113 550	_
Battery Storage - S-Oregon	-	-	-	-	-	-	-	-	-	-				-	-	-	-	-	450	60	-	_
Battery Storage - Willamette Valley Battery Storage - Portland NC	-	-	-	-	60 30	-	-	-	-		-				-	-	-	-	105	60 75	60 30	
Battery Storage - Walla Walla		-	-	-	195	-	-	-	-	-		-		-	-	-	-	-	-	180	195	
Battery Storage - Yakima FOT West - Summer	998	958	- 559	- 589	105 1,075	903	995	969	1,027	1,075	1,075	1,075	1,075	1,075	1,075	1,075	953	- 889	1,075	1,075	105 915	
FOT West - Winter	151	131	265	299	309	274	280	281	328	340	361	360	385	336	29	-	-	-	-	-	266	
Existing Plant Retirements/Conversions Annual Additions, Long Term Resources		(308)		(224)	(1,065) 2,114	(62) 4,304	155	(148) 152			(93) 514	(149) 1,297		(114) 172	(557) 866	(156) 83	(117)	(280) 469				
Annual Additions, Long Term Resources Annual Additions, Short Term Resources	1,149	1,089		888	1,680	1,176	1,275	1,251		1,715			1,706	1,703						1,375	l	
Total Annual Additions	1 270	1.230	1 140	1 110	2 704	5 490	1.420	1.402	1 407	2 575	2 222	2.025	2 270	1 975	2 262	1.452	1.570	1 650	4.009	2.280		

P-05	2010	2020	2021	2022	2023	2024	2025	2026	2027	Capacity 2028		2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource	Т
xisting Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025		2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	
raig 1 (Coal Early Retirement/Conversions)	-		-	-	-		-	(82)	-	-	-	-	-	-	-	-	(82)	-	-		(82))
Fraig 2 Hayden 1		-	-		-	-	-	-		-	-	-	(44)	-	-		(82)		-		-	+
Jayden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-		-	-	-	1
Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459) (450)	-	-	+
Huntington 2 Cholla 4 (Coal Early Retirement/Conversions)	-	+	(387)	-	-				-	-			-		-		-		- (430)		(387)	5
DaveJohnston 1	-		-	-	-	-	-	í	-	(99)	-	-	-		-	-	-	-	-	-	(99)	
DaveJohnston 2 DaveJohnston 3	+ :	-	-	-			-	-	-	(106) (220)	-		-	-	-	-	-	-	 		(106) (220)	
DaveJohnston 4	-	-	-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-		-	-	(330)	0)
Naughton 1 (Coal Early Retirement/Conversions)	-	_	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	-		-	(156)	
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	-	-		(201)	
inds by 1-6	-	-	(238)	-	-	-	-	-	-	-	-	-	-	-	(119)	-	-	-	-	-	(238)	()
Retire - Hydro Retire - Wind	-	-	-	-	-	(20)	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	(20))
Spring - Wind PPA		(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	5
Espire - Solar PPA	-		-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1))
Retire - Other Expansion Resources	-		-	-		-	-	-	-		-	- 1	-	-	-	(1)	-	-		(32)	-	╧
SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	370	Ŧ
Total SCCT	-		-		-	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	370	Ι
Wind, Djohnston Wind, GO	-	-	-	-	-	-	-	-	-	620	-	1,100	-	-	-	-	-	-			620	
Wind, WYAE	-	-	-	-	-	1,920	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,920	
Fotal Wind				-	-	1,920	-	-	-	620	-	1,100	-	- 29	-	-	-	400		-	2,540	Ŧ
Jtility Solar - PV - Utah-S Jtility Solar - PV - WYSW	1	+				100	-	-	-	-	-	-	-	- 29	-	-	-	- 400			100	+
Jtility Solar+Storage - PV - Utah-S	-	-	-	-	300	-	-	-	-	-	-	-	-	471	-	-	-	-	-	-	300	I
Jtility Solar - PV - Naughton Jtility Solar - PV - Huntington	-		-	-	425	212	-	-	-	-	-	-	-	-	-	-	-	-	- 19	-	637	+
Jtility Solar - PV - Huntington Jtility Solar+Storage - PV - Huntington	_ :																		890	=		t
Jtility Solar+Storage - PV - Utah-N	-		159	64		600	-	-	-	-	-	-	-	= :	-	-	-		-	-	900	I
Total Solar Demand Response, ID-Cool/WH	-	-	159	64	802	912	-	-	-	-	-		-	500	-	-	-	400	909	-	1,937	+
Demand Response, ID-Cool WH Demand Response, ID-3rd Party Contracts	1 -	+			-		-	-	-	-	-	-	-		1.8	-		-			-	+
Demand Response, ID-Irrigate	-		-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	1.8	-	1
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7		-	6.8	-	-	7.0	-	8.3	7.2	28.1	+
Demand Response, UT-3rd Party Contracts	-	-	- 7.0	-	31.8		-		-	-	-	-	-	-	-	-		-	42.3	2.6	31.8	+
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	1.9	-	Т
Demand Response, UT-Thermostat	-		-	-	79.4	-	-	-	-	37.3	-	-	8.2	-	-	-	8.3	-	3.4	5.1 1.8	116.7	+
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-		-	-	-		-		-	-	- :	-	-	-	-	-	-	-	39.4		-	+
Demand Response, WY-Irrigate	-		-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-		-	-	-	T
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	+	83	-	12.9		- 53		-	-	-		-		5.8	-	-	-	3.2	1.2	12.9 13.5	
Demand Response, WY-Ancillary Services	-			-	-		3.0	-		-		-	-	-	-	-	-	-	- 3.2		3.0	
Demand Response Total	4.1		15.3	-	134.0	-	8.2	7.2	-	37.3	6.7	-	8.2	6.8	14.6	-	15.3	-	103.0	21.6	205.9	
energy Efficiency, ID	6 58			7 69	71	7 66	7 65	7 65	7 62	62	- 7 57	54	52	50	49	4 36	33	3 26	3 22	24	69 652	+
energy Efficiency, WY	10	12	13	14	16	16	16	17	18	18	16	14	13	12	11	9	8	7	5	5	149	,
energy Efficiency Total	74	85	86	90		89	89	88	86	87	80	74	71	67	65	49	46	36	30 285	32 435	870	
Battery Stomge - Utah-N Battery Stomge - WYSW	-		-	-	240.0 60.0		-	-	-	-	45.0		-		-	-		-	283	375.0	240 60.0	
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225.0	-	-	I
OT East - Summer Existing Plant Retirements and PPA Termination	-		-	-	295		-	-	-	300	183	197	264	205	223	225	300	300	300	300	60	_
imBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	(351)	ΣĪ
imBridger 2 (Coal Early Retirement/Conversions)	-		-	-	(356)	-	-	-	-	-	-	-	-	-	-	-	-	-	-		(356))
imBridger 3	-		-	-	-		-		-	-	-	-	-	-	-	-	-	-		(349)		+
imBridger 4 Hermiston	-		-	-			-		-	-	- :	-	-	-	-	-	-	-	(237)	- (333)	-	+
Retire - Hydro	-	(1)	(169)	-	(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	-	-	(179)	
Spire - Wind PPA Spire - Solar PPA	-	+	-	(175)) -	(41)	-			- (2)	(75)	(10)	(67)	(20)	(20)		(1)	(10)	(10)	(11)	(216)	4
Expansion Resources					1					(-)			()	(127			(-)	(110)	21	()	(=)	_
SCCT Frame WV	-		_	-				-		-		-	-	-	-		-	-	443 443		-	4
Total SCCT Jtility Solar - PV - S-Oregon		+	-	-		-	-	-	-	-	-		-	-	90	-	-	-	- 443		-	+
Jtility Solar - PV - Yakima	-	-	-	-	-	228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	228	
Jtility Solar - PV - jbridger	-		-	-	275 438		-		-	-	-	- 1	-	-		-	-	-	-	13 330	275 438	
Jtility Solar+Storage - PV - Jbridger Jtility Solar - PV - Walla Walla		-	-	-	436	-	-	-	-	-	-	-	-	100	-	-	-	-	-	- 330	-	$^{+}$
Jtility Solar+Storage - PV - S-Oregon	-		-	-	-	500	-	-	-	-	-	-	-	-	385	-	-	-	-	-	500	
Jtility Solar+Storage - PV - Yakima Fotal Solar	+ -		-	-	713	177 905	-	-	-	-	-	-	-	100	475	-	-	-	430 430	343	177 1,618	
Oemand Response, OR-Ancillary Services		-	-	-		-	-	-	-	- 8	-	-	-	-	-	-	-	-	-	-	8	:
Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-		-	1.9	
Demand Response, CA-Cool/WH Demand Response, CA-3rd Party Contracts		+	-	-		-	-	-	-		-	-	-	-	-	-	-	-	1.5		-	+
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate	_ :									4.8									- 1.1	=	4.8	
Demand Response, CA-Thermostat	-		-	-	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-			5.8	
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts	-	+	-	-	30.3		-	-	-	-	-		-	-	5.4	-	-	-	23.3	2.0	30.3	+
Demand Response, OR-Irrigate			1		9.2					4.1					-					-	13.3	
Demand Response, WA-Cool/WH	-		-	-	-	-	-	-		-	-	-	-	-		-	-	-	7.7	-	-	
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	1 -	+ -			4.3 5.2					-	-		-		5.5		3.1		+		4.3 5.2	\pm
					11.3					3.3		-			2.0		-				14.6	,
Demand Response, WA-Thermostat					60.3		-			27.3	-	-	- 2	- ,	13.0	- 1	3.1		33.6	2.0	87.6 18	
Demand Response, WA-Thermostat Demand Response Total	40		43	42	47	39	36	41	39	37	33	31	30	29	26	27	26	26			405	;
Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA		11	11	42 12		12	12	11	11	10	10	9	9	8	8	6	6	5	4	24 4	112	:
Demand Response, WA-Thermostat Demand Response Total inergy Efficiency, CA inergy Efficiency, OR inergy Mickeny, WA	11		55	55			50	54	52	49	45	42	40	38	35	34	33	32			534	
Demand Response, WA-Thermostat Demand Response Total inergy Efficiency, CA inergy Efficiency, CR inergy Efficiency, OR inergy Efficiency, WA inergy Efficiency, Total					1.5	-	-	-	-		-		-		-				390	- 60	15 105	+
Demand Response, WA. Thermostat Demand Response Total inergy Efficiency, CA inergy Efficiency, CR inergy Efficiency, CR inergy Efficiency, CR inergy Efficiency, WA and the Company of the Company and the Com	11		-	-	105	- 1																
Demmid Response, WA. Thermostat Demmid Response Total increy Efficiency, CA increy Efficiency, CR increy Efficiency, WA increy Efficiency, WA increy Efficiency, WA increy Ford School Company incredit School Company incredi	11	-	-	-	105 60	-	-	-	-	-	-	-	-	-	-	-	-		30	105	60	1
Demand Response, W.A. Thermostat Demand Response Total lengy Efficiency, C.A. lengy Efficiency, O.R. lengy Efficiency, W.A. lengy Efficiency, W.A	11	-	-	-	60 105	-	-			-		1 1	-	-	-		-	-	30		60 105	_
Demmid Response, WA. Thermostat Demmid Response Total increy Efficiency, CA increy Efficiency, CR increy Efficiency, WA increy Efficiency, WA increy Efficiency, WA increy Ford School Company incredit School Company incredi	11	-	-	- - - - 806	60 105 105	- - - - 808	- - - - 899	-	- - - 931	1,075	-	1,075	1,075	-		1,075	-	- - - 1,011	-	105 165	60	
Demand Response, WA. Thermostat Demand Response Total Demand Response Total Demand Response Total Demand Response Demand	111 52 - - - - - 998 151	- - - - - 955 131	- - 777 265	299	105 105 105 1,075 307	113	- - - 899 118	- - 873	166	178	- - - 1,075 198	198	196	1,075 175	- 1,075 114	57	1,075	- 1,011	1,075	105 165 - 1,075	60 105 105	; ;
Demand Response, W.A. Thermostat Demand Response Total lengy Efficiency, C.A. lengy Efficiency, O.R. lengy Efficiency, O.R. lengy Efficiency, W.A. lengy Efficiency, W.A. lengy Efficiency Total lattery Stonge - S-Oregon lattery Stonge - Willmortte Valley lattery Stonge - Portland NC lattery Stonge - Portland NC lattery Stonge - Walla Walla lattery Stonge - Walla Walla lattery Stonge - Walla Walla lattery Stonge - Yakima O'T West - Summer	111 52 - - - - - - - - 998 151	955 131 (308)	- - 777 265) (810)	299 (224)	60 105 105 1,075 307 (1,065)	113 (62)		- - - 873	166	178 (764)	- - - 1,075 198 (93)	198 (149)		- 1,075 175 (114)	- 1,075	57 (156)	- 1,075 - (117)	1,011	1,075 - (2,260)	105 165 - 1,075 - (745)	60 105 105 920	; ;

171

Conig 1. Conig 2. Con	n 2 gton 1 gton 2 gton 1 gton 2 g 3 a) (Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) shaston 1 shaston 2 shaston 3 shaston 4 ton 1 ton 1 ton 1 ton 2 Hydro Wind PPA Solar PPA	2019	2020	2021 			2024	2025	(82) (82) 	2027	2028 - - - -	2029	2030 - - - -	2031 - - (44) (33)	2032	2033 - - -	2034	2035	2036	2037	2038	(82) (82)
Conig 1. Conig 2. Con	(Coal Early Retirement/Conversions) (Coal Early Retirement/Conversions) 1 1 1 2 10 2 11 1 1 10 2 11 1 1 1 11 1 1 1 11 1 1 1 11 1 1 1 1	-	-	- - - - - - - (387)				- - -	(82)			-	-		-	-	-	-	-	-		(82)
Conig 2 c Hayden Hayde	(Coal Early Retirement/Conversions) 1 1 2 2 gton 1 gton 2 gton 1 gton 2 4 Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) shoston 2 shoston 2 shoston 4 ton 1 ton 1 ton 3 ton 3 cloal Early Retirement/Conversions) Hetro 1 Hetro 2 Hetro 3 Coal Early Retirement/Conversions)	-		- - - - - (387)	- - - -	- - - -	-	-	(82)	-		-	-		-	-	-	-	-	-	-	
Hayden : Huntingt Huntingt Colstrip . Colstr	n 2 gton 1 gton 2 gton 1 gton 2 g 3 a) (Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) shaston 1 shaston 2 shaston 3 shaston 4 ton 1 ton 1 ton 1 ton 2 Hydro Wind PPA Solar PPA			(387)		-	-	-	-	-		-	-			-	-:-	-	-	-	-	-
Huntingt Fluntingt Colstrip Colstrip Colstrip Colstrip Cholia 4 Dave Joh Dave Joh Dave Joh Dave Joh Naughto Naughto Naughto Naughto Cadd by I Retire - E Espire - X Espire - S Retire - C Coul Ret Expansion SCCT Fr SCCT Fr SCCT Fr SCCT Fo Wind, D Wind, C Wind, C Wind, C Wind, C C Wind, D Wind, C C Coll Ret C Coll Ret C Coul Ret C C Coul Ret C C Coul Ret C C C C C C C C C C C C C C C C C C C	gton 1 gton 1 gton 2 3 (Coal Early Retirement/Conversions) 9 4 (Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) honston 1 honston 2 honston 3 honston 4 ton 1 ton 2 ton 1 ton 2 ton 1 ton 2 ton 1 ton 3 ton 3 ton 3 ton 3 ton 3 ton 4 ton		-	- (387)		-		-		_												
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Colstrip - Cholla 4 DaveJoh DaveJoh DaveJoh DaveJoh DaveJoh Naughto Naughto Naughto Naughto Cads by i Retire - I Retire - C Conl Ret Expansio SCCT Fr SCCT Fr SCCT Fr SCCT Fr SCCT Fr SCCT Fr Und, D Wind, W Total Wi Utilaty Sc Utility Sc Utility Sc Utility Sc	4 (Coal Early Retirement/Conversions) 4 (Coal Early Retirement/Conversions) hhiston 1 hhiston 2 hhiston 3 hhiston 4 ton 1 ton 1 ton 2 ton 3 (Coal Early Retirement/Conversions) 1-16 Hydro Wind PPA Solar PPA		-	(387)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	
Cholla 4 DaveJoh DaveJoh DaveJoh DaveJoh DaveJoh Naughto Naughto Naughto Naughto Naughto Service Retire - V Espire - S Retire - C Coal Ret Expansio SCCT Fr SCCT Fr Total SC Wind, D Wind, O Wind, W Utility Se Utility Se Utility Se	4 (Coal Early Retirement/Conversions) hhatson 1 hhatson 2 hhatson 3 hhatson 4 ton 1 ton 1 ton 2 ton 2 ton 2 ton 4 ton 4 ton 4 ton 5 ton 1 ton 1 ton 2 ton 2 ton 2 ton 2 ton 3 ton 4 ton 4 ton 5 ton 1 ton 9 ton 1 ton 1 ton 1 ton 2 ton 2 ton 2 ton 2 ton 3 ton 4		-	(387)				-	-	-	(74) (74)	-		-		-	-	-	-		-	(74) (74)
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DaveJoh DaveJoh DaveJoh Naughto Naughto Naughto Sanghto Sanghto Sanghto Expire - V Expire - S Retire - C Coal Ret Expansion SCCT Fri Total SC Wind, Dj Wind, C Wind, W Utility Sc Utility Sc Utility Sc	bhaston 3 bhaston 4 ton 1 ton 1 ton 2 ton 3 (Coal Early Retirement/Conversions) y 1-6 Hlydro Wind PPA Solar PPA	-	-		-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)
Dave Joh Naughto Naughto Naughto Naughto Lidds by J Retire - F Retire - V Expire - N Expire - N Expire - S Expire - S Expire - S C Coal Ret Expansion SCCT Fr SCCT Fr Total SC Wind, D Wind, C Wind, W Utility Sc Utility Sc	hhiston 4 ton 1 ton 2 ton 2 ton 3 (Coal Early Retirement/Conversions) t-1-6 Hydro Wind M Wind M Wind M Solar PPA Solar PPA	-		-	-			-	-	-	(220)	-		-				-	-	-	-	(106)
Naughto Naughto Cads by J. Retire - F. Retire - V. Espire - S. Espire - S. Espire - S. Coal Ret Expansio SCCT Fri SCCT Fri SCCT Fri SCCT Fri Total SC Wind, D Utility Sc Utility Sc Utility Sc	ton 2 ton 3 (Coal Early Retirement/Conversions) y 1-6 Hydro Wind DPA Solar PPA	-	-	-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughto Cadsby I Retire - I Retire - I Expire - S Retire - C Coal Ret Expansio SCCT Fn SCCT Fn Total SC Wind, Di Wind, CM Wind, Wind, CM Utility Sc Utility Sc Utility Sc	ton 3 (Coal Early Retirement/Conversions) 1-6		-	-	-	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	
Gads by I Retire - F Retire - F Retire - V Expire - V Expire - V Expire - C Coal Ret Expansio SCCT Fin SCCT Fin Total SC Wind, Di Wind, Di Wind, Di Utility Sc Utility Sc Utility Sc Utility Sc	y 1.6 Hydro Wind Wind Solar PPA	_	(280)	-	-	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	(280)
Retire - V Espire - V Espire - V Espire - V Conl Ret Expansio SCCT Fr SCCT Fr Total SC Wind, Dj Wind, Cd Wind, W Total Wi Utility Sc Utility Sc Utility Sc	- Wind - Wind PPA - Solar PPA	-	-	(238)	-	-	-	-	-	-	-	-	-	-	-	(119)	-	-	-	-	-	(238)
Expire - V Expire - S Retire - C Coal Ret Expansio SCCT Fr Total SC Wind, Di Wind, Di Wind, W Utility Se Utility Se Utility Se	- Wind PPA - Solar PPA	-	-	-	-	-	(20)	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	(20)
Expire - S Retire - C Coal Ret Expansio SCCT Fn SCCT Fn Total SC Wind, Dj Wind, G Wind, W Total Wi Utility Sc Utility Sc Utility Sc	- Solar PPA		(27)	(17)	(49)	(0)		-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Coal Ret Expansio SCCT Fri SCCT Fri Total SC Wind, Dj Wind, GG Wind, W Total Wi Utility Sc Utility Sc Utility Sc		-	-	-	-	(1)	(1)	-	-	-	-	-		-	-	- 1	-	(35)	(94)	(849)		(1)
Expansio SCCT Fro SCCT Fro Total SC Wind, Dj Wind, GO Wind, W Total Wi Utility Sc Utility Sc Utility Sc	Other et_WY - Gas RePower		247	-				-	-	-	-	-	(247)	-		-	(1)	-	-		(32)	247
SCCT From SCCT Wind, Control Wind, W Total William ScCT Utility ScCUtility ScCUtili	ion Resources		247	_		-		_	-	_	_		(247)	-		_	-	_	_	_	_	247
Total SC Wind, Dj Wind, G Wind, W Total Wi Utility Sc Utility Sc Utility Sc	Frame NTN	-	-	-	-	-	-	-	-	-	-	-	555	-	-	-	-	-	-	-	-	
Wind, Dj Wind, GC Wind, W Total Wi Utility Sc Utility Sc Utility Sc	Frame WYSW SCCT		-	-	-			-	-	-		-	555	-		370 370	-	-	-	-		
Wind, GO Wind, W Total Wi Utility So Utility So Utility So	Djohnston	-	-	-	-	-	-	-	-	-	345	275	-	-	-	-	-	-	-	-	-	345
Total Wi Utility So Utility So Utility So	GO	-	-	-	-	-	1.920	-	-	-	-	-	1,083	17	-	-	-	-	-	-	-	1.920
Utility So Utility So Utility So			-				1,920	-	-	-	345	275	1,083	17	-	-	-	-	-	-	-	2,265
Utility Sc	Solar - PV - Utah-S	-	-	146	59	-	27	-	-	-	- 1	-	-	- 1	-	-	-	-	400	-	-	232
	Solar - PV - WYSW	-	-	-	-	-	100		-	-	-	-	341	159	-	-	-	-	-	-	-	100
	Solar+Storage - PV - Utah-S Solar - PV - Huntington		-	 -			- 68	-	-	-		-	341	- 159	-	-	-	-	-	- 8	-	- 68
Utility Sc	Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	901	-	-
Utility So Total Sol	Solar - PV - Utah-N	-	-	146	- 59		195		-	-	<u> </u>	-	900 1,241	159	-	-	-	-	400	909	-	400
	d Response, ID-Cool/WH		-	-		-	- 193	-	-	-		-	1,241	- 139	-	-	-	-	- 400	2.6	-	
Demand	d Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8		
Demand	d Response, ID-Irrigate		-	-		H : T					<u> </u>			1	5.2		7	-		3.7 8.3	1.8	
Demand	d Response, ID-Thermostat d Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1
Demand	d Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6	-
	d Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	116.7	-	8.2	-	-	-	-	-	-	8.3	1.9 5.1	116.7
	d Response, UT-Thermostat d Response, WY-Cool/WH		-	-	-	-	-	-	-	-	- 116.7		- 0.2	-	-	-	-	-	-	3.4	1.8	- 116.7
Demand	d Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.4	-	-
Demand	d Response, WY-Thermostat		-	8.3	-	-	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	1.2	13.5
Demand	d Response, UT-Ancillary Services d Response, WY-Ancillary Services		-	- 8.3	-	-		3.0	-	-	-	-	-	-	-	-	-	-	-		-	3.0
Demand	d Response Total	4.1	-	15.3	-	9.9		8.2	7.2	-	116.7	6.7	8.2		12.0	-		7.0	-	144.9		161.2
	Efficiency, ID Efficiency, UT	- 6 - 58	67	69	71		66	67	7 65		62	6 54	6 53	52	50	6 49	4 36	32	26	3 25		69 665
Energy E	Efficiency, WY	10	12	13	14	18	16	16	17	18	18	1.5	14	13	12	11	9	8	7	5	5	152
	/ Efficiency Total / Storage - Utah-N	74	85	88	93	100 75.0	89	91	89	89	90.0	76	74	71	67	65	49	45	37	33 270	35 435	886 165
	Storage - WYSW		-	-		-	-	-	-	-	315.0	-	-		-	-			-	-	90.0	315.0
Battery S	Storage - Idaho		-	-	-	-	-	-	-	-	- 200	- 200	300	- 200	- 200	-	- 260	- 200	- 200	195.0		30
Existing	ast - Summer og Plant Retirements and PPA Termination		-	-		- 1	-		_	-	300	300	300	300	300	266	269	300	300	300	300	30
JimBridge	lger 1 (Coal Early Retirement/Conversions)	-	-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351)
JimBridge JimBridge	Iger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	(349)	-
JimBridge					-			-	-			-	-			-		-	-		(353)	
Hermisto	ton	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-
Retire - H	- Hydro - Wind PPA		(1)	(169)	(175)	(1)	(41)	-	(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)	-	(1)	(10)	-	(179) (216)
	- Solar PPA	-	-	-	-	-	- (-1)	-	-	-	(2)	- (/3)	-	(67)	(49)	-	-	(1)		(175)		(2)
Expansio	ion Resources															221						
Total SC	Frame WV	-	-		-	-	-	-	-	-		-	-	-	-	221 221	-	-	-	221	-	-
Utility Sc	Solar - PV - S-Oregon	-	-	-	-	-	500	-	-	-	-	-	-	95	-	-	-	-	-	-	-	500
Utility Sc	Solar - PV - Yakima	-	-	-	-	- 244	405	-	-	-		-	-	-	-	250	-	-	-	-	49	405
	Solar - PV - jbridger Solar+Storage - PV - Jbridger	-	-	-	-	354	-	-	-	-	-	-	-	-	-	359	-	-	-	-	26 676	354
Utility Sc	Solar - PV - Walla Walla	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	
Utility Sc	Solar+Storage - PV - S-Oregon Solar+Storage - PV - Yakima	-	-	-	-	-	-	-	-	-	-	-	-	162	218	-	-	-	-	-	381	
Total Sol	folar		-			354	905	-	-	-		-	-	357	218	359	-	-	-	-	1,132	1,259
	d Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	8
	d Response, WA-Ancillary Services d Response, CA-Cool/WH	-	-	-	-		-	-	-	-	1.9	-			-	-	-	-	-	1.5	-	1.9
	d Response, CA-Cool W H d Response, CA-3rd Party Contracts		-		-	-		-	-	-		-	-	-	-	-	-	-	-	1.1	-	
Demand	d Response, OR-Cool/WH	-	-	-	-	-		-	-	-	-	-	-	-			-		-	23.3	-	
	d Response, OR-3rd Party Contracts d Response, OR-Irrigate		-	-	-	-		-	-	-		-		4.1		-	-	-	-	30.3	-	
	d Response, WA-Cool/WH		-																	7.7		
Demand	d Response, WA-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-			-		-	9.9		
	d Response, WA-Irrigate d Response Total	-	-	-	-	-	-	-	-	-	9.4	-	-	4.1	-	-	-	-	-	3.1 76.9	-	9.4
	Efficiency, CA	1	2	2	2	2	2	2	2	2	211	2	2	2	2	2	1	1	1	1	1	18
Energy E	Efficiency, OR	40	43	43	49	47	39	36	41	39	37	33	31	30	29	26	26	26	26	1 25	24	412
Energy F	Efficiency, WA / Efficiency Total	11 52					12 52	11 49	11 54		10 49	9	9 41	9 40	8 38	8 35	6 33	33	5 32	4 30	29	112 542
Energy F	/ Storage - S-Oregon	-	-	-	-	120	- 32	-	-	-	90	-	- 41	-	-	-	-	-	- 32	315		210
Energy E	Storage - Willamette Valley	-	-	-	-	60	-	-	-	-	45	-	-	-	-	-	-	-	-	-	60	105
Battery S Battery S	stomge - Portland NC stomge - Walla Walla		-	-	-	15 135	-	-	-	-	60	-	-		-	-	-	-	-	60	180	75 135
Battery S Battery S Battery S	/ Storage - Walla Walla / Storage - Yakima					105			-								=				-	105
Battery S Battery S Battery S Battery S Battery S		998				1,029	480	573	562	620		1,075	1,075	1,075	1,075	1,075	1,075	1,049	984	1,075	1,075	733
Battery S Battery S Battery S Battery S Battery S Battery S	/est - Summer	151	131	268	303	313	242	249	250	297	429	420	384	414	354	74			-		_	263
Battery S Battery S Battery S Battery S Battery S Battery S	/est - Summer /est - Winter	151					(62)		(230)								(156)	(36)	(280)	(2.260)	(745)	203
Battery S Battery S Battery S Battery S Battery S Battery S	/est - Summer	130	(61)	(810)	(224)	(352)	(62) 3,162	148	(230) 150	(3)	(912)	(93) 401	(753)	(350) 648	(114)	(676) 1,051	(156) 82	(36) 85	(280) 469	(2,260)		263

P-07									Capacity											Resource
Existing Plant Retirements and PPA Termination	2019	2020	2021	2022 2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Craig 1 (Coal Early Retirement/Conversions)	-	-	-		-	-	(82)	-		-	-	-	-	-	-	-	-	-	-	(82)
Craig 2 (Coal Early Retirement/Conversions) Hayden 1	-	-	-		-	+ -	(82)	-	-		-	(44)	-	-	-	-	-		-	(82)
Hayden 2	-	-	-		-	-	-	-	-	-	-	(33)	-	-	-	-	-	-	-	-
Huntington 1 Huntington 2	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-	(459) (450)	-	-
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)		_	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74) (387)
DaveJohnston 1	-	-	- (387)		-	-	-	-	(99)		-	-	-	-	-	-	-	-	-	(99)
DaveJohnston 2	-	-	-		-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)
DaveJohnston 3 DaveJohnston 4	-	-	-		-	-	-	-	(220)		-	-	-	-	-	-	-	-	-	(220)
Naughton 1	-	-	-		-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-
Naughton 2	-	(280)	-		-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	(280)
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6	-	- (280	(238)		-	-	-	-	-	-	-	-	-	(119)	-	-	-	-	-	(238)
Retire - Hydro	-	-			(20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)
Retire - Wind Expire - Wind PPA	-	(27	(17)	(49)	(0) -	-	(65)	- (3)		(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA	-				1) (1) -	-	- (-)	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1)
Retire - Other	-	247	-		-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247
Coal Ret_WY - Gas RePower Expansion Resources	-	247						-			(247)	- 1	-	-	-	-	-		-	247
SCCT Frame NTN	-	-	-		-	-	-	-	-	370	555	-	-	-	-	-	-	-	-	-
SCCT Frame WYSW Total SCCT	1	-	-		+ -	+ -	-	-		370 370			-	-	-		-	-	-	-
Wind, Djohnston	-	-	- 1					-	-	620	-	-	-	-	-	-	-	-	-	-
Wind, GO Wind, WYAE	H -	-	-		1.920	-	-	-	-		1,055	-	-	-	-	-	-	-	-	1,920
Wind, WYAE Total Wind	1	-	-		1,920		-	-		620	1,055		-	-	-	-	-	-	-	1,920
Utility Solar - PV - Utah-S	-	-	146	59 -	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-	205
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S	-	-	1 -		100	-	-	-			-	500	-	-	-	-	-	-	-	100 95
Utility Solar+Storage - PV - GO	_ =				- 9:		-					45								- 93
Utility Solar - PV - Huntington	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	27	-	
Utility Solar+Storage - PV - Huntington Utility Solar - PV - Utah-N	1 -	-			+ :	+ -	-	-			900		-		-	-	-	882	-	- :
Total Solar	-	-	146	59 -	195	-		-	-	-	900	545		-	-		400	909		400
Demand Response, ID-Cool/WH	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	-
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	-	-			-	-	-	-			-	-	5.2	-		-	-	1.8 3.7	1.8	-
Demand Response, ID-Thermostat	-	-	-		-	-	-	-	-	-	-	-		-	-		-	8.3	-	-
Demand Response, UT-Cool/WH	4.1		7.0		.9 -	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	74.1	7.2 2.6	28.1
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-	- 74.1	1.9	-
Demand Response, UT-Thermostat	-	-	-		-	-	-	-	116.7	-	8.2	-	-	-	-	8.3	-	- 3.4	5.1	116.7
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-	3.4		-
Demand Response, WY-Irrigate	-	-	-		-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-
Demand Response, WY-Thermostat	-	-	- 83		-	5.3	-	-	-	-	-	-		18.7	-	-	-	3.2	1.2	13.5
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-			-	3.0		-	-		-	-	-	-	-	-	-		-	3.0
Demand Response Total	4.1		15.3		.9 -	8.2			116.7	6.7			12.0	20.5	- 4	15.3	- 3	136.6		161.2
Energy Efficiency, ID Energy Efficiency, UT	6	6	6			7 7					6	6	6							
	58	67	67	73	5 68	67	65		62	54	54	52	50	49	36			25		665
Energy Efficiency, WY	10	12	13	14	75 68 8 16	17	17	63 17	17	54 15	14	13	12	49 11	36 9	32 8	26 7	25 5	26 5	665 150
Energy Efficiency, WY Energy Efficiency Total		12	13	14	5 68	17	17	63 17		54	14			49	36	32 8	26	5 33	26 5 34	665
Energy Efficiency, WY Energy Efficiency Total Battery Storage - Utah-N Battery Storage - WYSW	10	12	13	14	75 68 8 16 90 91	17	17	63 17	17	54 15	14	13	12	49 11	36 9	32 8	26 7	5 33 300 -	26 5 34 615 105.0	665 150
Energy Efficiency, WY Energy Efficiency Total Battery Storage - Utah-N Battery Storage - WYSW Battery Storage - Idaho	10	12	13	93 10	75 68 8 16 90 91	17	17	63 17	17 87 - 300.0	54 15 76	14 75 -	13 71 - -	12 67 - -	49 11 65 -	36 9 49	32 8 44 -	26 7 36	33 300 - 300.0	26 5 34 615 105.0 75.0	665 150 883 - 450.0
Bacray Efficiency, WY Earray Efficiency Total Battery Stonage - Utah-N Battery Stonage - WySW Battery Stonage - WySW FOT East - Summer	10	12	13	93 10	75 68 8 16 90 91	17	17	63 17	17 87	54 15	14 75 -	13	12	49 11	36 9	32 8 44 -	26 7	33 300 - 300.0	26 5 34 615 105.0 75.0	665 150 883
Bangy Efficiency, WY Energy Efficiency Total Battery Stonage - Utah-N Battery Stonage - Utah-N Battery Stonage - Idaho FOT East - Summer Kisting Plant Retirements and PPA Termination Dubblidger Coal Easty Retirement/Convenions)	10	12	13	93 10	5 68 8 16 90 91 -	17	17 89 - - -	63 17	17 87 - 300.0	54 15 76 - - 212	14 75 -	13 71 - -	12 67 - - - 174	49 11 65 -	36 9 49	32 8 44 - - 300	26 7 36	33 300 - 300.0	26 5 34 615 105.0 75.0	665 150 883 - 450.0
Bangy Efficiency, WY Energy Efficiency Total Battery Storage - Utala.N Battery Storage - WyNW Battery Storage - Balan Battery Storage - Balan Battery Storage - Balan Battery Storage - Balan Battery Battery - Battery Batte	10	12	13	14 93 10 150 	5 68 8 16 90 91 -	17	17	63 17	17 87 - 300.0	54 15 76	14 75 -	13 71 - -	12 67 - -	49 11 65 -	36 9 49	32 8 44 -	26 7 36	33 300 - 300.0	26 5 34 615 105.0 75.0 300	665 150 883 - 450.0 - 29
Bangy Efficiency, WY Energy Efficiency Total Battery Stonage - Utah. N Battery Stonage - WYSW Battery Stonage - Idaho FOT East - Summer Kisting Plant Referements and PPA Termination Jindividual Coal Eastly Retirement/Convenions) Jindividual Coal Eastly Retirement/Convenions)	10	12	13	14 93 10 150 	5 68 8 16 90 91 -	17	17 89 - - -	63 17	17 87 - 300.0	54 15 76 - - 212	14 75 -	13 71 - -	12 67 - - - 174	49 11 65 -	36 9 49	32 8 44 - - 300	26 7 36	33 300 - 300.0	26 5 34 615 105.0 75.0 300	665 150 883 - 450.0 - 29
Bongy Efficiency, WY Farry Efficiency Total Battery Stonage - Utah-N Battery Stonage - WYSW Battery Stonage - Idaho FOT East - Summer Existing Plant Retrements and PPA Termination Buildingd = 1 (Cotal Early Retrement/Convensions) Buildingde 2 (Cotal Early Retrement/Convensions) Buildingde 3 (Buildingde 4) Buildingde 4 Buildingde 4	10	12 85	13 86 	14 93 11 156	(5) 68 8 10 90 99 	17	177 899 	63 17 87	17 87 - 300.0 - 286	54 15 76 - - 212	14 75 -	13 71 - - - 300	12 67	49 11 65 -	36 9 49 - - - 300	32 8 44 - - 300	26 7 36 - - - 300	33 300 - 300.0	26 5 34 615 105.0 75.0 300	665 150 883 - 450.0 - 29 (351) - -
Inongy Efficiency, WY Derry Efficiency Total Battery Stonage - Utala-N Battery Stonage - Utala-N Battery Stonage - Utala-N Battery Stonage - Idaho FOT Fast - Stonage - Idaho FOT Fast - Stonage - Idaho Dankhdiger Cool Fasty Retirement conventions) Justificiager 2 (Coal Fasty Retirement Conventions) Justificiager 2 (Coal Fasty Retirement Conventions) Hardwidger 2 (Coal Fasty Retirement Conventions) Hardwidger 3 (Hardwidger 2 (Coal Fasty Retirement Conventions) Hardwidger 3 (Hardwidger 2 (Coal Fasty Retirement Conventions) Hardwidger 3 (Hardwidger 2 (Coal Fasty Retirement Conventions)	10	12	13 86 	14 93 11 - 150	(5) 68 8 10 90 91 	5 17 91	17 89 - - -	63 17 87	17 87 - 300.0	54 15 76 - - - 212 (356)	14 75	13 71 - -	12 67	49 11 65 - - 298	36 9 49	32 8 44 - - 300	26 7 36 - - - 300	5 33 300 - 300.0 300 - - - (237)	26 5 34 615 105.0 75.0 300 - - (349) (353) -	665 150 883 - 450.0 - 29 (351) - - - (179)
Inongy Efficiency, WY Derry Efficiency Total Battery Storage - UtahN Battery Storage - WYSW Battery Storage - Idaho FOT Tast - Storage - Idaho FOT Tast - Storage - Idaho Datableger Cool Tasty Retirement conventions) Junibulger 2 (Coal Tasty Retirement Conventions) Junibulger 2 (Coal Tasty Retirement Conventions) Junibulger 3 (Coal Tasty Retirement Conventions) Junibulger 3 (Coal Tasty Retirement Conventions) Junibulger 4 (Hourt Storage - Idaho) Bertin - Hydro Egypt - Wind PPA Eppie - Solar PPA	10	12 85	13 86 	14 93 11 156	(5) 68 8 10 90 99 	5 17 91	177 899 	63 17 87	17 87 - 300.0 - 286	54 15 76 - - 212	14 75	13 71 - - - 300	12 67	49 11 65 -	36 9 49 - - - 300	32 8 44 - - 300	26 7 36 - - - 300	5 33 300 - 300.0 300	26 5 34 615 105.0 75.0 300	665 150 883 - 450.0 - 29 (351) - -
Energy Efficiency, WY Energy Efficiency Total Battery Storage - Unda-N Battery Storage - WYW Heavy Storage - WYW For Tan - Storage - Unda-N Battery Storage - WYW FOR Tan - Storage - Unda-N Battery Storage - Unda-N Bat	10	12 85	13 86 	14 93 11 - 150	(5) 68 8 10 90 91 	5 17 91	177 899 	63 17 87	17 87 - 300.0 - 286	54 15 76 - - - 212 (356)	14 75	13 71 - - - 300	12 67 - - 174	49 11 65 - - 298	36 9 49 - - - 300	32 8 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300.0 300.0 300 - - - (237) (10) (175)	26 5 34 615 105.0 75.0 300 - - (349) (353) - - (111)	665 150 883 - 450.0 - 29 (351) - - - (179) (216)
Bangy Efficiency, WY Energy Efficiency Total Battery Storage - Utala.N Battery Storage - WyNW Battery Storage - Bolan Battery	10	12 85	13 86 	14 93 11 - 150	55 66 8 10 00 91 	5 17 5 191 	177 899 	63 17 87	17 87 - 300.0 - 286	54 15 76 - - - 212 (356)	14 75	13 71 - - - 300	12 67 - - 174 - - - - (20) (49)	49 11 65 - - 298	36 9 49 - - 300	32 8 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300 - 300.0 300 - - - - (237) - (10)	26 5 34 615 105.0 75.0 300 - - (349) (353) - - (11)	665 150 883 - 450.0 - 29 (351) - - - (179) (216) (2)
Bangy Efficiency, WY Largery Efficiency Total Battery Stonage - UtahN Battery Stonage - WySW Battery Stonage - WySW Battery Stonage - Idaho FOT East - Summer Existing Plant References and PPA Termination Dushidder 1 (coal Early Retirement Conventions) Journaling 2 (coal Early Retirement Conventions) Journaling 3 Journaling 4 Journaling 4 Express - Summer 1 Express - Wind PPA Expression Resources SCCT Frame WV Total SCCT Utility Solar - PV - Schegon	10	12 85	13 86 	14 93 11 - 150	(1) - (1) - (2) - (3) - (4) -	5 17 91 	177 899 	63 17 87	17 87 - 300.0 - 286	54 15 76 - - - 212 (356)	14 75	13 71 - - - 300	12 67 - - 174	49 11 65 - - 298	36 9 49 - - 300	32 8 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300 - 300.0 300.0 - - - (237) - (10) (175)	26 5 34 615 105.0 75.0 300 - - (349) (353) - - - (11)	665 150 883 - 450.0 - 29 (351) - - - (179) (216) (2) -
Bangy Efficiency, WY Energy Efficiency Total Battery Storage - Utala.N Battery Storage - Wy W Battery Storage - Utala.N Battery Storage - Baho Battery Storage - Battery Retirement/Convensions) Battery Storage - Battery Battery - Battery	10	12 85	13 86 	14 93 11	5 66 8 10 9 1	5 17 91 	177 899 	63 17 87	17 87 - 300.0 - 286	54 15 76	14 14 7-5 7-5 296 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-	13 71 - - - 300	12 67 - - 174 - - - - (20) (49)	49 11 65 - - 298	36 9 49 - - 300	32 8 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300 - 300.0 300.0 - - - (237) - (10) (175)	26 5 34 615 105.0 75.0 300 - - (349) (353) - - - (11)	665 150 883 - 450.0 - 29 (351) - - - (179) (216) (2) - - 90 405
Bangy Efficiency, WY Energy Efficiency Total Battery Storage - Utala. N Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Balan Efficiency Battery - Battery B	10	12 85 	13 86 	14 93 11	(1) - (1) - (2) - (3) - (4) -	5 17 91 	177 899 	63 17 87	17 87 - 300.0 - 286	54 15 76 - - - 212 (356)	14 14 7-5 7-5 296 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-	13 71 - - - 300	12 67	49 11 65 - - 298	36 9 49 - - 300	32 8 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300 - 300.0 300.0 - - - (237) - (10) (175)	26 5 34 615 105.0 75.0 300 - - (349) (353) - - - (11)	665 150 883 - 450.0 - 29 (351) - - - (179) (216) (2) -
Bengy Efficiency, WY Energy Efficiency Total Battery Storage - Usaha N Battery Storage - WYW Hottery Storage - WYW FOT Tear - Summer Existing Plant Referement and PPA Termination Horbidger 1 (Cotal Early Retirement/Conversions) Horbidger 1 (Cotal Early Retirement/Conversions) Horbidger 3 (Lotal Early Retirement/Conversions) Horbidger 3 Hormstory Hormstory Hormstory English Storage - WY - Storage SCCT Frame WY Total SCCT Unity Solar - PV - Schegon Unity Solar - PV - Schegon Unity Solar - PV - Hordger Unity Solar - PV - Hordger Unity Solar - PV - Hordger Unity Solar - PV - Wilda Walla	10	12 85	13 86 	14 93 11	(4)	5 177 91 91	177 899 	63 17 87	17 87 - 300.0 - 286	54 15 76	14 14 7-5 7-5 296 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-	13 71 - - - 300	12 67	49 11 65 - - 298	36 9 49 - - 300	32 8 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300 - 300.0 300.0 - - - (237) - (10) (175)	26 5 34 615 105.0 75.0 300 - - (349) (353) - - - (11)	(351)
Bangy Efficiency, WY Energy Efficiency Total Battery Storage - Utala. N Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Balan Editory Storage - Balan Editory Storage - Balan Editory Storage - Balan Individual - Clean Energy Retirement/Conversions) Individual - Clean Energy Retirement/Conversions) Individual - Clean Energy Retirement/Conversions) Individual - Balan Egipe - Solar PPA Egipnison Recources SCCT Frame W Total SCCT Total - WY Unitery Solar - PV - Storage Unitery Solar - PV - Storage Unitery Solar - PV - Wallan Unitery Solar - PV - P	10	12 85 	13 86 	143	11)	5 177 91 91	177 899 	63 17 87	17 87 - 300.0 - 286	54 155 76	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300	12 67	49 11 65 - - 298	36 9 49 - - 300	32 8 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300 - 300.0 300.0 - - - (237) - (10) (175)	26 5 34 615 105.0 75.0 300 - - (349) (353) - - - (11)	665 150 883 - 450.0 - 29 (351) - - - (179) (216) (2) - - 90 405
Bangy Efficiency, WY Derry Efficiency Total Battery Storage - Utah. N Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Idaho FOL Tast - Storage - Idaho FOL Tast - Storage - Idaho Battery Storage - Idaho Fol Tast - Storage - Idaho Battery Foundation Ekitang Plant Reference and PPA Termination Ekitang Plant Reference and PPA Termination Batterier - Idaho Folder - Idah	10	12 85	13 86 	143	(4)	177 17 17 17 17 17 17 17 17 17 17 17 17	170	63 17 87	17	54 15 76	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300	12 67	49 11 65 - - 298	36 9 49 - - 300	32 8 8 44 44	26 7 36 - - 300 - - - (1) (10)	5 33 300 - 300.0 300.0 - - - (237) - (10) (175)	26 5 34 34 105.0 75.0 300 - (349) (353) - - - (11) - - - - - - - - - - - - - - - - - -	665 1500 883 - 450.0 - 29 (351) - - - - (179) (216) (20) - - - - - - - - - - - - - - - - - - -
Bengy Efficiency, WY Derry Efficiency Total Battery Storage - Utah. N Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Edaho Battery Storage - WYSW Battery Storage - PV - Bridger Utility Sodar - PV - Walling Utility Sodar - PV - Walling Utility Sodar - PV - Walling Battery Storage - PV - Walling Buttery Sodar Buttery Sodar Buttery Sodar Buttery Sodar - PV - Sodar Buttery Sodar - PV - Sodar Buttery Sodar - PV - Walling Buttery Sodar - PV - P	10	12 85	13 86 	143	11)	177 17 17 17 17 17 17 17 17 17 17 17 17	170	63 17 87	17 87 - 300.0 286 	54 155 76	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300	12 67 	49 11 65 - - 298	36 9 49 - - 300	32 8 8 44 44	26 7 36 - - 300 - - - (1) (10)	5 33 300 - 300.0 300.0 - - - (237) - (10) (175)	26 26 34 105.0 105	665 1500 883 - 450.0 - 29 (351) - - - (179) (210) (2) - - - - - - - - - - - - - - - - - - -
Bangy Efficiency, WY Barry Efficiency Total Battery Storage - Utah. N Battery Storage - WySW Battery Storage - WySW Battery Storage - Batho Battery Storage - Battery	10	12 85	13 86 	143	11)	177 17 17 17 17 17 17 17 17 17 17 17 17	170	63 17 87	17	54 155 76	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300	12 67 	49 11 65 - - 298	36 9 49 - - 300	32 8 8 44 44	26 7 36 - - 300 - - - (1) (10)	5 33 300.0 - 300.0 - - - (237) - (10) (175) - - - - - - - - - - - - - - - - - - -	26 5 34 105.0 300 300 	665 1500 883 - 450.0 - 29 (351) - - - - (179) (216) (20) - - - - - - - - - - - - - - - - - - -
Bengy Efficiency, WY Energy Efficiency Total Battery Storage - Usaha N Battery Storage - WYW Hottery Morage - WYW Hottery Morage - WYW FOT Fast - Summer Estimp Fam Retirements and PPA Termination Horbidger 1 (Cotal Early Retirement/Conversions) Horbidger 1 (Cotal Early Retirement/Conversions) Horbidger 3 (Lotal Early Retirement/Conversions) Horbidger 3 Horbidger 4 Horbidger 3 Horbidger 4 Horbidger 4 Horbidger 5 Horbidger 5 Horbidger 5 Horbidger 5 Horbidger 5 Horbidger 6 Horbidger 6 Horbidger 7 Horbidger 7 Horbidger 7 Horbidger 7 Horbidger 8 Horbidger 8 Horbidger 8 Horbidger 9 Horbidg	10	12 12 12 12 12 12 12 12 12 12 12 12 12 1	13 86 	14 93 11	11)	177 17 17 17 17 17 17 17 17 17 17 17 17	170	63 17 87	17 87 - 300.0 286 	545 76	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300		49 11 65 - - 298	36 9 49 - - 300	3.2 8 44 44	26 7 36 - - 300 - - - (1) (10)	5 33 300.0 - - - - - - - - - - - - - - - - - -	26 5 34 105.0 300 300 	665 1500 883 - 450.0 - 29 (351) - - - (179) (210) (2) - - - - - - - - - - - - - - - - - - -
Bangy Efficiency, WY Energy Efficiency Total Battery Storage - Utala.N Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Bahn Battery Storage - Battery Retirement/Conversions) Battery Storage - Battery -	10	12 12 12 12 12 12 12 12 12 12 12 12 12 1	13 86 	14 93 11	11)	177 17 17 17 17 17 17 17 17 17 17 17 17	170	63 17 87	17 87 - 300.0 286 	54 76 -	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300		49 11 65 - - 298	36 9 49 - - 300	3.2 8 44 44	26 7 36 - - 300 - - - (1) (10)	5 33 300.0 - 300.0 - - - (237) - (10) (175) - - - - - - - - - - - - - - - - - - -	26 5 34 105.0 300 300 	665 1500 883 - 450.0 - 29 (351) - - - (179) (210) (2) - - - - - - - - - - - - - - - - - - -
Bangy Efficiency, WY Barry Efficiency Total Battery Storage - Utala.N Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Balan FOF Taca - Survey Medical Conversions Battery Storage - Balan FOF Taca - Survey Battery Battery Storage Battery Ba	10	12 12 12 12 12 12 12 12 12 12 12 12 12 1	13 86 	14 93 11	11)	177 17 17 17 17 17 17 17 17 17 17 17 17	170	63 17 87	17 87 - 300.0 286 	545 76	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300		49 111 65 	36 9 49 - - 300	3.2 8 44 44	26 7 36 - - 300 - - - (1) (10)	5 33 300.0 300.0 	26 34 615 105.0 105	665 1500 883 - 450.0 - 29 (351) - - - (179) (210) (2) - - - - - - - - - - - - - - - - - - -
Bangy Efficiency, WY Energy Efficiency Total Battery Storage - Utah. N. Battery Storage - WYW Battery Storage - WYW Battery Storage - Bahn Battery - B	10	182	13 86 	143	5 66 67 67 67 67 67 67 67 67 67 67 67 67	177 17 17 17 17 17 17 17 17 17 17 17 17	189	63 17 87	17 87 - 300.0 286 	54 76 	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300	127	49 11 65 - - 298	36 9 49 - - 300	32 8 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300.0 - 300.0 - - - (10) (237) (175) 443 443 - - - - - - - - - - - - - - - -	26 34 615 105.0 105	665 1500 883 - 450.0 - 29 (351) - - - (179) (210) (2) - - - - - - - - - - - - - - - - - - -
Bengy Efficiency, WY Energy Efficiency Total Battery Storage - Uraha N Battery Storage - WYAW Mattery Storage - WYAW Horry Storage - WYAW Horry Storage - WYAW Horry Storage - WYAW HORRING - WYAW - WYAWA - W	10	125	13 86 	14 93 11	5 66 67 67 67 67 67 67 67 67 67 67 67 67	177 17 17 17 17 17 17 17 17 17 17 17 17	179 899	63 17 87	17 87 - 300.0 286 	54 76 -	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300		49 111 65 	36 9 49 - - 300	32 8 44 44	26 7 36 - - 300 - - - (1) (10)	5 33 300.0 300.0 	26 34 615 105.0 105	665 1500 883 - 450.0 - 29 (351) - - - (179) (210) (2) - - - - - - - - - - - - - - - - - - -
Bengy Efficiency, WY Energy Efficiency Total Battery Storage - Uraha-N Battery Storage - WYW Battery Storage - WYW Hottery Monage - WYW FOT Tast - Summer Estimp Pant Retrements and PPA Termination Horbidger 1 (Cotal Early Retrement/Conversions) Horbidger 1 (Cotal Early Retrement/Conversions) Horbidger 1 (Lotal Early Retrement/Conversions) Horbidger 3 Horbidger 4 Horbidger 4 Horbidger 4 Horbidger 5 Egnes - Whot PPA Espire - Wind PPA Espire - Wind PPA Espire - Solar PPA Espire - Wood PPA Es	10	12 85 5	13 86 	143	5 66 67 67 67 67 67 67 67 67 67 67 67 67	177 17 17 17 17 17 17 17 17 17 17 17 17	189	63 17 87	17 87 - 300.0 286 	14	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300	127	49 111 65 	36 9 49 - - 300	32 44 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300 300,0 300,0 - - - - - - - - - - - - - - - - - -	26 34 34 615 105.0	665 1500 883 - 450.0 - 29 (351) - - - (179) (210) (2) - - - - - - - - - - - - - - - - - - -
Banguy Efficiency, WY Barry Efficiency Total Battery Storage - Utah.N Battery Storage - WySW Battery Storage - WySW Battery Storage - Behav Ba	10	12 85 5	13 86 	143	5 66 67 67 67 67 67 67 67 67 67 67 67 67	177 17 17 17 17 17 17 17 17 17 17 17 17	189	63 17 87	17 87 - 300.0 286 	54 76 	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 - - - 300	127	49 11 65	36 9 49 - - 300	32 44 44 	26 7 36 - - 300 - - - (1) (10)	5 33 300.0 300.0 	26 34 34 615 105.0	665 1500 883 - 450.0 - 29 (351) - - - (179) (210) (2) - - - - - - - - - - - - - - - - - - -
Banguy Efficiency, WY Barry Efficiency Total Battery Storage - Utah.N Battery Storage - WySW Battery Storage - WySW Battery Storage - WySW Battery Storage - Baho Control of the Cont	10 10 10 10 10 10 10 10 10 10 10 10 10 1	185	186	14 93 11	.5 6 16 16 29 19 19 19 19 19 19 19 19 19 19 19 19 19	5 171 - 171	187	6.7 8.7 8.7 8.7 8.7 8.7 8.7 8.7 8.7 8.7 8	17 87 - 300.0 286 	14	14 17 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 	127	49 111 65 	36 39 49 49 300 300 400 400 400 400 400 400	32 44 44 	26 26 26 26 26 26 26 26 26 26 26 26 26 2	5 333 300.0 300.0 300.0 (237) (175)	26 34 4 615 5 7 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	665 1500 8883
Banguy Efficiency, WY Energy Efficiency Total Battery Storage - Utah-N Battery Storage - WYW Battery Storage - WYW Battery Storage - Utah-N Bat	104	185	130	143	S	5 171 	189	637 87 87 87 87 87 87 87 87 87 87 87 87 87	17 87 300.0 286 	54 76 76 77 71 72 73 75 75 75 75 75 75 75 75 75 75	14 17 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 1	167	49 111 65 	300 	32 8 44 	26 26 26 26 26 26 26 26 26 26 26 26 26 2	5 33 300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	26 5 34 615 105.0 300 300 (349) (349) (353) 	665 1500 8883
Bengy Efficiency, WY Energy Efficiency Total Battery Storage - Uraba N Battery Storage - WYAW Mattery Storage - WYAW Hort Storage - WYAW FOT Tast - Summer Estimp Fam Referement and PPA Termination Jandridger 1 (Coal Early Retrement/Conventions) Jandridger 1 (Coal Early Retrement/Conventions) Jandridger 3 Jandridg	10 10 10 10 10 10 10 10 10 10 10 10 10 1	12 12 85 5	130 86	14 93 11 93 11 - 156	.5 616 618 6	5 171 171 171 171 171 171 171 171 171 17	179 899	37 87 87 87 87 87 87 87 87 87 87 87 87 87	17 87 	14 76 76 76 76 76 76 76 76 76 76 76 76 76	14 17 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 	127	49 111 65 	36	32 44 44 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	26 26 26 26 26 26 26 26 26 26 26 26 26 2	5 333 300.0 300.0 300.0 (237) (175)	26 34 615 105.00 105.00 300 (349) (349) (353) 	665 1500 8883
Bengy Efficiency, WY Energy Efficiency Total Battery Storage - Uraha-N Battery Storage - WYW Mattery Storage - WYW FOT Tart - Summer Existing Plant Retrements and PPA Termination Harbridger 1 (Coal Early Retrement/Conversions) Harbridger 1 (Coal Early Retrement/Conversions) Harbridger 3 (Local Early Retrement/Conversions) Harbridger 3 Harbridger 4 Retree - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Nolar PPA Espire - Solar PPA Espire - Wind PPA	104	85	130	14 13 3 11 - 156 (3) - (3) - (175) (3) - (3) - (4)	S	191 191	189	637 87 87 87 87 88 88 88 88 88 88 88 88 88	17 87 300.0 286 - - - - - - - - - - - - - - - - - - -	54 76 76 77 71 72 73 75 75 75 75 75 75 75 75 75 75	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1	167	49 111 65 	300 	32 44 44 	26	5 33 300 300,0 300,0 300,0 300,0 300,0 300,0 (175) 443 443 443 443 443 303,3 303,3 303,3 303,3 303,3 303,3 303,3 304,0 3	26 5 34 615 175.0	665 1500 8883 - 450.0 - 29 (351) (351) (351) (210) (220) (230) (250)
Banguy Efficiency, WY Energy Efficiency Total Battery Storage - Utah.N Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Eduho Battery -	104	85	130	14 93 11	.5 6 16 16 29 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	5 171	189	637 87 87 87 87 88 88 88 88 88 88 88 88 88	17 87 	54 76 	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1	167	49 11 65	36 39 49 49 40 50 60 60 60 60 60 60 60 60 60 6	32 44 44 	26 8 5 5	5 333 300 	26 5 34 615 175.0	665 1500 8883 450.0
Bengy Efficiency, WY Energy Efficiency Total Battery Storage - Usah-N Battery Storage - WYW Battery Storage - WYW Battery Storage - WYW FOT Tear - Summer Existing Plant Referement and PPA Termination Insubsidge 1 (Cotal Early Referement/Conversions) Jindbridge 1 (Cotal Early Referement/Conversions) Jindbridge 3 (Journal Early Efficiency 4 (Journal Early	104	85	130	14 93 11	.5 616 617 6	5 171	189	637 87 87 87 87 88 88 88 88 88 88 88 88 88	17 87 300.0 286 - - - - - - - - - - - - - - - - - - -	54 76 	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1	167	49 11 65	36 39 49 49 40 50 60 60 60 60 60 60 60 60 60 6	32 44 44 	26 8 5 5	5 33 300 300,0 300,0 300,0 300,0 300,0 300,0 (175) 443 443 443 443 443 303,3 303,3 303,3 303,3 303,3 303,3 303,3 304,0 3	26 5 34 615 175.0	665 1500 8883 - 450.0 - 29 (351) (351) (351) (210) (220) (230) (250)
Bengy Efficiency, WY Energy Efficiency Total Battery Storage - Unda-N Battery Storage - Unda-N Battery Storage - Unda-N Battery Storage - WYW Defficiency - William	104	85	130	143 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	.5	5 171	189	637 87 87 87 87 88 88 88 88 88 88 88 88 88	17 87 300.0	54 76 	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1	167	49 11 65	36 39 49 49 40 50 60 60 60 60 60 60 60 60 60 6	32 44 44 	26 8 5 5	5 33 300 300,0 300,0 300,0 300,0 300,0 300,0 (175) 443 443 443 443 443 303,3 303,3 303,3 303,3 303,3 303,3 303,3 304,0 3	26 5 34 615 175.0	665 1500 8883
Bengty Efficiency, WY Energy Efficiency Total Battery Storage - Uraha-N Battery Storage - WYAW Mattery Storage - WYAW FOT Bart - Summer Estiring Plant Referement and PPA Termination Jandhidger 1 (Coal Early Referement/Conventions) Jandhidger 1 (Coal Early Referement/Conventions) Jandhidger 3 (Local Early Referement/Conventions) Jandhidger 3 Jandhidger 3	10 10 10 10 10 10 10 10 10 10 10 10 10 1	12 855	186	14 93 11	10	5 171 171 171 171 171 171 171 171 171 17	187 189	37 87 87 87 87 87 87 87 87 87 87 87 87 87	17 87 	54 76 76 	14 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	13 71 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1	167	49 11 65	30	32 44 44 	26 26 26 26 26 26 26 26 26 26 26 26 26 2	5 333 300.0 300.0 300.0 	26 34 615 105.00 105.00 300 (349) (353) 	665 1500 8883
Baengy Efficiency, WY Barry Efficiency Total Battery Storage - Usaha N Battery Storage - WYW Battery Storage - WHANGE Battery Storage - WHANGE Battery Storage - Walley Ba	704	825 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	180	143 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	15	502	1879	37 87 87 87 87 87 88 88 88 88 88 88 88 88	17 87 300.0 286 - - - - - - - - - - - - - - - - - - -	54 76 	14 175 175 175 175 175 175 175 175 175 175	13 71 300	167 174 174 174 175 176 177 179 179 179 179 179 179 179 179 179	49 11 65 	36	3 8 44 44 44 44 44 44 44 44 44 44 44 44 4	26 8 5 5	5 33 300 300,0 300,0 300,0 300,0 300,0 300,0 443,4 443,4 443,4 443,4 443,4 443,4 443,4 443,4 443,4 443,4 443,4 443,4 443,4 443,4 4,4 4	26 34 615 105.00 300 (349) (349) (353) 	665 1500 8883
Bangy Efficiency, WY Energy Hifficiency Total Battery Storage - Unda. N Battery Storage - Unda. N Battery Storage - WYW Battery Storage - WYW Battery Storage - William - W	704	825 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	180	143 1-1 1-1 1-1 1-1 1-1 1-1 1-1 1-1 1-1 1-	.5	5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	187	6.7 8.7 8.7 8.7 8.7 8.7 8.7 8.7 8.7 8.7 8	17 87 300.0 17 286 1	54	14 14 75 75 75 75 75 75 75 75 75 75 75 75 75	13 71 300	167 167 174 174 174 179 179 179 179 179 179 179 179	49 11 65	300	3 8 44 44 44 44 44 44 44 44 44 44 44 44 4	26	5 33 300 	26 34 4 615 7 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	665 1500 8883

											Capacity	y(MW)										Resource	Totals 1/
	P-08	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-year
East	Existing Plant Retirements and PPA Termination								(82)													(82)	(82)
	Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)		-	-		-	-	-	- (82)	(82)		-	-	-	-	-	-	-	-	-	-	(82)	(82)
	Hayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	(44)
	Hayden 2 Huntington 1	- :	-			-		-			- :			(33)		-		-		(459)	-	-	(459)
	Huntington 2	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	(450)	-	(74)	(450)
	Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	- :	-	-		-	-	-			(74)						-		-			(74)	(74)
	Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1		-	-	-	-	-	-	(387)	-	(99)	-	-	-	-	-	-	-	-	-	-	(387) (99)	(387)
	DaveJohnston 2		-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)	(106)
	DaveJohnston 3 DaveJohnston 4		-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	(330)
	Naughton 1	-	-	-	-	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	(156)
	Naughton 2 Naughton 3 (Coal Early Retirement/Conversions)	- :	(280)			-		-			- :		(201)	-		-		-		-	-	(280)	(201)
	Gads by 1-6 Retire - Hydro	-	-		-	-	(20)	-	-	-	-				-	(356)		-	-	-		(20)	(356)
	Retire - Wind	-	-	-		-	-		-	-	-		(40) (99)		-		-	-	-	-		-	(40) (924)
	Expire - Wind PPA Expire - Solar PPA	-	(27)	(17)	(49)	(0)	(1)	-	(65)	(3)		(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160)	(924) (979)
	Retire - Other	-	- 35	-	-	- '	- '	-		-	-	-	-	-	-	-	(1)	-	-	-	(32)	35	(33)
	Coal Ret_WY - Gas RePower Expansion Resources		35	-	-	- 1	-	-	-	-		-	(35)	-		-	-	-	-	-	-	35	
	SCCT Frame NTN SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	-	-	370	-	-	185 370	-	-	-	-	-	-	555 370
	Total SCCT		-		-	-	-	-	-	-	_	-	370	_	-	555		-	-	-	-	-	925
	Wind, Djohnston	-	-	-	-	-	-	-	-	-		620	1,100		-	-	-	-	-	-	-	-	620
	Wind, GO Wind, WYAE						1,920						-			-		-		-		1,920	1,100 1,920
	Total Wind Utility Solar - PV - Utah-S		-	146	- 59	- 67	1,920	-	-	-	-	620	1,100	-	-	-	-	-	400	- :	-	1,920 300	3,640 700
	Utility Solar - PV - WYSW	-	-	-	-		100	-	-	-	-	-	-	500	-	-	-	-	-	-	-	100	100
	Utility Solar+Storage - PV - Utah-S Utility Solar+Storage - PV - Huntington					-			-	-				500		-				909			500 909
	Utility Solar - PV - Utah-N	-	-	-	-	-	124	-	-	11	37	-	729	-	-	-	-	-	-	-	-	47 124	776 124
	Utility Solar+Storage - PV - Utah-N Total Solar			146	- 59	67	252			11	37		729	500					400	909		571	3,109
	Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-		-	-		-	1.8	-	-	-	2.6	-	-	2.6 1.8
	Demand Response, ID-Irrigate	- :	-	-		-	-	-	-			-			5.2	-	-		-	3.7	1.8		10.6
	Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9			7.2	-		6.7	-	-	6.8			7.0	-	8.3	7.2	28.1	8.3 55.9
	Demand Response, UT-3rd Party Contracts	-	-	-			-		-	-	-	-		-	-	-		-	-	74.1	2.6	-	76.7
	Demand Response, UT-Irrigate Demand Response, UT-Thermostat		-	-	-	-	-	-	-	-		116.7	8.2	-	-	-	-	8.3	-	-	1.9 5.1	-	1.9 138.3
	Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	3.4 39.4	1.8	-	138.3 5.2 39.4
	Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate		-	-		-	-	-	-	-			-	-	-	1.8	-		-	- 39.4	-	-	1.8
	Demand Response, WY-Thermostat	-	-	- 83	-	-	-	- 53	-	-	-				-	18.7		-	-	3.2	1.2	- 13.5	19.9
	Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services		-	-	-	-	-	3.0	-	-		-		-	-	-	-	-	-	-	-	3.0	16.7 3.0
	Demand Response Total Energy Efficiency, ID	4.1	- 6	15.3	7	9.9	7	8.2	7.2	- 7	7	123.3	8.2	- 6	12.0	22.3	- 4	15.3	- 3	134.8	21.6	44.6 69	382.2 117
	Energy Efficiency, UT Energy Efficiency, WY	58 10	67 10	67 11	68 14	69 15	68 16	67 17	68 18	65 19	62 18	54 15	56 14	52 13	50 12	49 11	36 9	32 8	26	25 6	26	659 149	1,065 251
	Energy Efficiency Total	74	83	85	88		92	92	94	91	87		76		68	66	49	45	37	33	35	876	1.433
	Battery Storage - Utah-N Battery Storage - WYSW		-	-	-	-	-	-	-	-	300.0 165.0	-	-	-	-	-	-	-	-	330 225.0	330 45.0	300 165.0	960 435.0
	Battery Stomge - Idaho FOT East - Summer		-	-	-	-	-	-	-	-	101	- 298	292	300	- 261	- 227	229	300	300	210.0 300	210.0	- 10	420.0
	Existing Plant Retirements and PPA Termination		-			-	_	-	_		101			300	261	227	229	300	300	300	300	10	
	JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-		-	-			-		-	(351)			-	(356)			-	-			(351)
	JimBridger 3		-	-		-	-			-	-			-	-	-	-		-		(349)	-	(349)
	JimBridger 4 Hermiston			- :	-	-	-	-	-	-				-	-	-	- :	-	-	(237)	(353)	-	(353)
	Retire - Hydro	-	(1)	(169)	(175)	(1)	- (41)	-	(1)	-	(7)	(75)	- (10)	(6)	(20)	- (20)	(75)		(1)		-	(179) (216)	(262)
	Expire - Wind PPA Expire - Solar PPA		-	- :	- (1/3)	-	(41) -	-		-	(2)	- (73)	(10)	(67)	(49)	(20)	- :	(1)	(10) (115)	(10) (175)	(11)	(216)	(420)
	Expansion Resources SCCT Frame WV		- 1	-	-	- 1	-	-	-					-	- 1	221	-	- 1	- 1	221		- 1	443
	Total SCCT	-	-	-	-	-	-	-	-	-	-	-			-	221	-	-	-	221	-		443
	Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima		-	-	-	-	500 405	-	-	-		-	114	14	-	-	-	-	-	-	31	500 405	628 436
	Utility Solar - PV - jbridger Utility Solar+Storage - PV - Jbridger			-	-	-	-	-	-	-		354				298 61		-	-	-	343	-	652 404
	Utility Solar - PV - Walla Walla		-	-	-	-	-		-	-				-	100	-	-	-	-	-	343	-	100
	Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-		-	-	-		-	-	-		-		346	-		-	-	-	- 399	-	346 399
	Total Solar		-			-	905		-			354	114	14	446	359					773	905	2,966
					-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	1.9
	Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-	-	-				-			-	-	-	-	-			-	1.5	-	-	1.9
	Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH	-	-	-	-	-	-	-										-		1.2			
	Demand Response, WA-Ancillary Services	-	-	-		-	-	-				-			:	4.8				1.1			1.1 4.8
	Demand Response, CA-CoolWH Demand Response, CA-CoolWH Demand Response, CA-Gray Demand Response, CA-Arrigate Demand Response, CA-Hrigate Demand Response, CA-Thermostat	- - - - -	-	-	- - - -	-	-	-	1	-	=	-	-	-	-	4.8 5.8	-	-	-	1.1 - -		-	4.8 5.8
	Demand Response, W.A-Ancillary Services Demand Response, C.A-Cod/WH Demand Response, C.A-Jird Party Contracts Demand Response, CA-Irrigate Demand Response, CA-Irrigate Demand Response, CA-Thermostat Demand Response, CR-God/WH Demand Response, OR-B-dP Party Contracts	-	-	-	- - - - -	-				-	-	-		-	-	5.8 - 5.4	-	-	-	1.1 - - 23.3 30.3		-	4.8 5.8 23.3 35.7
	Demand Reoponse, WA-Ansillary Services Demand Reoponse, CA-Cod/WH Demand Reoponse, CA-Salt Party Contracts Demand Reoponse, CA-Salt Party Contracts Demand Reoponse, CA-Thermostat Demand Reoponse, CR-Child Permand Reoponse, CR-Child Permand Reoponse, CR-Cod/WH Demand Reoponse, CR-Salt Party Contracts Demand Reoponse, CR-Salt Party Contracts Demand Reoponse, CR-Salt Party Contracts	-		-	-			-		-		-	-	-	-	5.8	-	-	-	1.1 - - 23.3 30.3		-	4.8 5.8 23.3 35.7 13.3
	Demand Reoponse, WA-Ansillary Services Demand Reoponse, CA-Cool/WH Demand Reoponse, CA-Salt Party Contracts Demand Reoponse, CA-Salt Party Contracts Demand Reoponse, CA-Thermostat Demand Reoponse, CR-Cool/WH Demand Reoponse, CR-Cool/WH Demand Reoponse, CR-Salt Party Contracts Demand Reoponse, CR-Salt Party Contracts Demand Reoponse, WA-Cool/WH Demand Reoponse, WA-Cool/WH Demand Reoponse, WA-Salt Party Contracts			-	-	-	1 1 1 1 1 1	-		-				-	-	5.8 - 5.4 13.3	-	-		1.1 - - 23.3 30.3 - 7.7 9.9	-	-	4.8 5.8 23.3 35.7 13.3 7.7 9.9
	Demund Reoponse, WA-Ancillary Services Demund Reoponse, CA-Cool/WH Demund Response, CA-Salt Party Contracts Demund Response, CA-Salt Party Contracts Demund Response, CA-Thermostat Demund Response, CR-Cool/WH Demund Response, CR-Cool/WH Demund Response, CR-Salt Party Contracts Demund Response, CR-Salt Party Contracts Demund Response, CR-Salt Party Contracts Demund Response, WA-Cool/WH Demund Response, WA-Salt Party Contracts Demund Response, WA-Trigate Demund Response, WA-Trigate Demund Response, WA-Trigate	-			-	-		-	1					-		5.8 - 5.4 13.3 - - 5.2 16.6	-	-	-	1.1 - - 23.3 30.3 - 7.7 9.9 3.1	-	-	4.8 5.8 23.3 35.7 13.3 7.7 9.9 8.3 16.6
	Demand Response, W.A.Ansillary Services Demand Response, C.A.CodVH Demand Response, C.A.Sid Party Contracts Demand Response, C.A.Sid Party Contracts Demand Response, C.A.Fidgate Demand Response, C.A.Fidgate Demand Response, OR.CodV WH Demand Response, OR.CodV WH Demand Response, W.A.CodV WH Demand Response, W.A.Sid Party Contracts Demand Response, W.A.Sid Party Contracts Demand Response, W.A.Sid Party Contracts Demand Response, W.A.Tidgate Demand Response, W.A.Tidgate Demand Response, W.A.Tidgate			-				-			-		- - - - - 9.4	-		5.8 - 5.4 13.3 - - 5.2	-	-	-	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9	-	-	4.8 5.8 23.3 35.7 13.3 7.7 9.9 8.3 16.6
	Demand Response, W.A.Ansillary Services Demand Response, C.A.CouVWH Demand Response, C.A.Sid Party Contracts Demand Response, C.A.Sid Party Contracts Demand Response, C.A.Frigate Demand Response, C.A.Frigate Demand Response, C.R.CouVWH Demand Response, OR.CouVWH Demand Response, OR.Sid Party Contracts Demand Response, OR.AndragwH Demand Response, OR.AndragwH Demand Response, W.A.Artgary Demand Response, W.A.Trigate Demand Response, W.A.Trigate Demand Response, V.A.Trigate Demand Response Total Benery Efficiency, CA Benery Efficiency, CA Benery Efficiency, CA	- - - - - - - - - - - - - - - - - - -		- - - - - 2 37	- - - - - - - - - - - - - - - - - - -	39	- - - - - 2 39	- - - - - - - - - - - - - - - - - - -	- - - - - - - - 2 41	- - - - - 2 39	- - - - - - - 2 37	- - - - - - - 2 33		2 30	- - - - - - - - - - - - - - - - - - -	5.8 - 5.4 13.3 - - 5.2 16.6 51.1 2		- - - - - - - - 1 26	- - - - - - - - - 1 26	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 25	- - - - - - - 1 24	- - - - - 18 392	4.8 5.8 23.3 35.7 13.3 7.7 9.9 8.3 16.6 137.4
	Demand Response, W.A.Ansillary Services Demand Response, C.A.Cod/VII Demand Response, C.A.Salf Party Contracts Demand Response, W.A.Cod/WII Demand Response, W.A.Salf Party Contracts Demand Response, W.A.Salf Party Contracts Demand Response, W.A.Thermostat Demand Response, W.A.Thermostat Demand Response, V.A.Thermostat Demand Respo			- - - - - 2 37 10	- - - - - - - - - - - - - - - - - - -	39 12	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - 11 11 54	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - 2 37 11 49	- - - - - - - - 2 33 9	- - - 9.4 2 31	2		5.8 - 5.4 13.3 - - 5.2 16.6 51.1 2 27 8		- - - - - - - - 1 26 6		1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9	- - - - - - - - - 1	- - - - - 18 392 110	4.8 5.8 23.3 35.7 13.3 7.7 9.9 8.3 16.6 137.4 33 668 178
	Demand Response, W.A.Ansillary Services Demand Response, C.A.Cod/VII Demand Response, C.A.Salf Party Contracts Demand Response, C.A.Salf Party Contracts Demand Response, C.A.Frigate Demand Response, C.A.Frigate Demand Response, C.A.Brigate Demand Response, C.A.Brigate Demand Response, C.A.Salf Party Contracts Demand Response, W.A.Cod/VII Demand Response, W.A.Salf Party Contracts Demand Response, W.A.Frigate Demand Response, W.A.Trigate Demand Response, W.A.Trigate Demand Response, V.A.Trigate Demand Resp	40 11	10	- - - - - 2 37	42 11	39 12	- - - - - - 2 39	12	11	- - - - - 2 39 11	11 49 210	9	- - - - - 9.4 2	2 30 9		5.8 - 5.4 13.3 - - 5.2 16.6 51.1 2	26 6	- - - - - - - - 1 26 6 33	26 5	1.1 - - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 25	- - - - - - - - - 1	- - - - - 18 392 110 520 210	4.8 5.8 23.3 35.7 13.3 7.7 9.9 8.3 16.6 137.4 33 668 178
	Demand Response, W.A.Ansillary Services Demand Response, CA.CodVWH Demand Response, CA.Sid Party Contracts Demand Response, CA.Sid Party Contracts Demand Response, CA.Thermostat Demand Response, CA.Thermostat Demand Response, CR.CodVWH Demand Response, OR.GodVMT Demand Response, OR.GodVMT Demand Response, W.A.Sid Party Contracts Demand Response, W.A.B. Demand Response, W.A.B. Demand Response, W.B. Demand Response,	40 11	10	- - - - - 2 37 10	42 11	39 12	- - - - - - 2 39	12	11	- - - - - 2 39 11	11 49	9	- - - 9.4 2 31	2 30 9		5.8 - 5.4 13.3 - - 5.2 16.6 51.1 2 27 8	26 6	- - - - - - - - - 1 26 6	26 5	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 25 4 30	- - - - - - - - - 1	- - - - - 18 392 110 520	4.8 5.8 23.3 35.7 13.3 7.7 9.9 8.3 16.6 137.4
	Demand Response, W.A.Ansillary Services Demand Response, C.A.CodVWH Demand Response, C.A.Sid Party Contracts Demand Response, C.A.Sid Party Contracts Demand Response, C.A.Frigate Demand Response, C.A.Frigate Demand Response, C.R.CodVWH Demand Response, OR.Sid Party Contracts Demand Response, OR.A.Sid Party Contracts Demand Response, W.A.Sid Party Contracts Demand Response, W.A.B. Demand Response, W.A.B. Demand Response, W.B. Demand Response, V.B. Dema	40 11	10	- - - - - 2 37 10	42 11	39 12	- - - - - - 2 39	12	11	- - - - - 2 39 11	11 49 210 120 75 120	9	- - - 9.4 2 31	2 30 9	- - - - - - - - - - - - - - - - - - -	5.8 - 5.4 13.3 - - 5.2 16.6 51.1 2 27 8	26 6		26 5	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 25 4 30	- - - - - - - - - 1	- - - - - - 18 392 110 520 210 120 75	4.8 5.8 23.3 35.7 13.3 7.7 9.9 8.3 16.6 137.4 33 668 879 240 120 75
	Demand Response, W.A.Ansillary Services Demand Response, C.A.Cod/WH Demand Response, C.A.Sid Party Continues Demand Response, C.A.Sid Party Continues Demand Response, C.A.Frigate Demand Response, C.A.Frigate Demand Response, C.A.Frigate Demand Response, C.A.Grigate Demand Response, OR-Sid Party Continues Demand Response, W.A.Cod/WH Demand Response, W.A.Trigate Demand Response, V.A. Service Strick Str	40 11 52 - - - - - - 998	10 48 - - - - - 925	- - - - 2 37 10 48 - - - -	42 11 55 - - - - - 606	39 12 53 - - - - - - - - 639	- - - - 2 39 12 52 - - - -	12 56 - - - - - 223	11 54 - - - - - 224	- - - - 2 39 11 52 - - - -	11 49 210 120 75 120 105	9 44 - - - - - 1,075	- - - 9.4 2 31 9 42 - - - - 1,075	2 30 9 40 - - - - 1,075		5.8 - 5.4 13.3 - - 5.2 16.6 51.1 2 27 8	26 6		26 5	1.1 - - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 25 4 30 30	- - - - - - - - - 1	- - - - - - - - - - - - - - - - - - -	4.8 5.8 23.3 35.7 7.7 9.9 8.3 16.6 137.4 33 668 879 240 120 75 5 165 105
	Demand Response, W.A.Ansillary Services Demand Response, CA.CodVWH Demand Response, CA.Sid Party Contracts Demand Response, CA.Sid Party Contracts Demand Response, CA.Frigate Demand Response, CA.Frigate Demand Response, OR.CodV WH Demand Response, OR.CodV WH Demand Response, OR.CodV WH Demand Response, W.A.Sid Party Contracts Demand Response, W.A.Sid Party Contracts Demand Response, W.A.Trigate Demand Response, W.A.Trigate Demand Response, W.A.Trigate Demand Response, V.A.Trigate Demand Response, V.A.Tri	40 11 52 - -	10 48 - - - - - 925 131	- - - - 2 37 10 48 - - - - - - - - 2 37 10 48 - - - - - - - - - - - - - - - - - -	42 11 55 - - - - 606 303	39 12 53 - - - - - - - - 639 314	- - - 2 39 12 52 - - - - - - - - - - - - - - - - - -	12 56 - - - -	11 54 - - - - 224 256	- - - - 2 39 11 52 - - - - - - - - - - - - - - - - - -	11 49 210 120 75 120 105 1,075 437	9 44 - - - - 1,075 428	- - - - 9.4 2 31 1 9 42 - - - - 1,075 436	2 30 9 40 - - - - 1,075 441	- - - - 1,075 379	5.8 5.4 13.3 5.2 16.6 51.1 2 2 7 8 36 1,075 83	26 6 34 - - - - 1,075 3		26 5 32 - - - - - 939 20	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - - 76.9 1 25 4 30 30 - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - 18 392 110 520 210 120 75 120	4.8 5.8 23.3 35.7 7.7 9.9 8.3 16.6 137.4 33 668 879 240 120 75 5 165 105
	Demand Response, W.A-Ancillary Services Demand Response, CA-CodVWH Demand Response, CA-Sald Party Contracts Demand Response, CA-Sald Party Contracts Demand Response, CR-Gregoria Demand Response, W.A-CodVWH Demand Response, W.A-July Party Contracts Demand Res	40 11 52 - - - - - - 998	10 48 - - - - - 925 131 (273) 132	- - - - 2 37 10 48 - - - -	42 11 55 - - - - - 606	39 12 53 - - - - 639 314 (1) 221	- - - - 2 39 12 52 - - - -	12 56 - - - - - 223	11 54 - - - - - 224	- - - - 2 39 11 52 - - - 278 305 (85)	11 49 210 120 75 120 105 1,075 437 (912)	9 44 - - - 1,075 428 (444) 1,217	9.4 2 31 9 42 1,075 436 (541)	2 30 9 40 - - - - 1,075		5.8 - 5.4 13.3 - - - - - - - - - - - - -	26 6 34 - - -	- - - - 1,004 20 (36)	26 5 32 -	1.1 -23.3 30.3 -7.7 9.9 3.1 -76.9 1 1 25 4 30 30 30 -4 4 5 		- - - - - - - - - - - - - - - - - - -	4.8 5.8 23.3 35.7 7.7 9.9 8.3 16.6 137.4 33 668 879 240 120 75 5 165 105

P-09	2010	2022	2021	2022	2022	2021	2027	2021	2027	Capacity		2022	2021	2022	2022	2021	2027	2025	2027	2022	Resource
existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
mig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-		-	-	(82)
Craig 2 (Coal Early Retirement/Conversions) Hayden 1	-		-	-		-		-	(82)				(44)		-		-	-	-	-	(82)
Hayden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	-	-	-
Huntington 1	-	-	-	-	-		-		-	-	-	-	-	-	-	-	-	-	(459)	-	-
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-		-		-	-	(74)	-		-		-	-	-	-	(450)	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-		-	-	(74)	-	-		-	-	-	_			-	(74)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(387)	-	-	-	-	-	-	-	-	-	-	-	-	(387)
DaveJohnston 1 DaveJohnston 2	-	-	-	-	-	-		-		(99) (106)	-		-	-	-		-	-	-		(99) (106)
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)
DaveJohnston 4	-	-	-	-	-	-	-	-	-	(330)	-	(156)	-	-	-	-	-	-	-	-	(330)
Naughton 1 Naughton 2	-	-	-	-	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	(280)
Gads by 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-
Retire - Hydro Retire - Wind	-	-	-	-	-	(20)		-			-	(40)	-	-	-		-	-			(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA Retire - Other	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	- (1)	(35)	(94)	(849)	(32)	(1)
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-		- (1)		-	-	(32)	247
Expansion Resources														•		,					
SCCT Frame NTN	-	-	-	-	-	-	-	-	-	-	-	370	-	-	185	-	-	-	-	-	-
SCCT Frame WYSW Total SCCT	-	-	-	-	-	-					-	370	-	-	370 555	-	-	-	-		
Wind, Djohnston	-	-	-	-		-	-			-	620	-		-	-			-	-		
Wind, GO	_	-	-	-	-	1,920	-	-	-	-	-	1,083	-	-	-	-	-	-	-	-	1,920
Wind, WYAE Total Wind	-	-	-			1,920	-	-	-	-	620	1,083	-			-	-	-		-	1,920
Utility Solar - PV - Utah-S	-	-	146	59	67	28	-	-	-	-	-	-	-	-	-	-	-	400	-	-	300
Utility Solar - PV - WYSW	-	-	-	-	- 1	100	-			-	-	- 1	500		-	-	-	-	-	-	100
Utility Solar+Stomge - PV - Utah-S Utility Solar+Stomge - PV - GO	-	-	-	-		-	-	-	-	-			500 17		-	-	-	-		-	
Utility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	897	12	-
Utility Solar - PV - Utah-N	-	-	-	-		135	-		-	37	-	729		-		-	-	-	-	-	37 135
Utility Solar+Storage - PV - Utah-N Total Solar		-	146	- 59	67	263		-	-	37		729	517		-		-	400	897	12	571
Demand Response, ID-Cool/WH	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-	-	2.6		-
Demand Response, ID-3rd Party Contracts	_	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	3.7	- 1.8	-
Demand Response, ID-Irrigate Demand Response, ID-Thermostat	-					-		-	-		-	- :		5.2		- :	-		3.7 8.3	1.8	
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6	-
Demand Response, UT-Irrigate Demand Response, UT-Thermostat		-	-					-				124.9		-	-		8.3		-	1.9 5.1	
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	1.8	-
Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	39.4	-	-
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-		-				-	-				-	-	-	1.8 18.7	-	-	-	-	1.2	
Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5
Demand Response, WY-Ancillary Services	-	-	-		-	-	3.0		-	-			-	-		-	-	-	-	-	3.0
Demand Response Total Energy Efficiency, ID	4.1	- 6	7.0	- 7	18.1	- 7	8.2	7.2	- 7	- 7	6.7	124.9	- 6	12.0	22.3	- 4	15.3	- 3	134.8	21.6	44.6 68
Energy Efficiency, UT	58		67	68	69	68	67	68	65	62	54	54	52	50	49	36	32	26	25	26	659
Energy Efficiency, WY	10 74	10 83	11 85	14 88	15 91	16 92	16 91	18 93	19 91	18 87	15 76	14 74	13 71	12 68	11 66	9 49	8 45	7 37	5 33	5 35	147 874
Energy Efficiency Total Battery Stomge - Utah-N	- 74	- 83	- 63	- 00	- 91	- 92		- 93	- 91	405.0	- 76	- /4	- /1	-	-	- 49	- 43	-	60	225	405
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	45.0	-	-	-	-	-	-	-	-	-	300.0	45.0
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	131	294	300	290	269	271	300	300	225.0 300	60.0 300	
FOT East - Summer Existing Plant Retirements and PPA Termination		_									131	294	300	290	209	2/1	300	300	300	300	
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-		-	-	(351)	-	-	-	-	-	-	-	-	-	-
JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	(349)	-
JimBridger 4	-	-	-	-		-	-	-		-		-	-	-	-	-		-	-	(353)	
Hermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-
Retire - Hydro Expire - Wind PPA	-	(1)	(169)	(175)	(1)	(41)		(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75) -	-	(1)	(10)	-	(179)
Expire - Wind PPA Expire - Solar PPA				- (1/3)		- (41)				(2)	- (73)	- (10)	(67)	(49)	- (20)	:	(1)	(115)	(175)	(11)	(216)
Expansion Resources		_																			
SCCT Frame WV Total SCCT	-	-	-				-		-	-	-	-	-		221 221	-	-	-	221	-	
Utility Solar - PV - S-Oregon	-	-	-	-	-	482	-	-	-	-	-	-	-	276	-	-	-	-	-	-	482
Utility Solar - PV - Yakima	-	-	-	-	- 1	405	-	-	-	-	- 354			-	359	-	-	-		-	405
Utility Solar - PV - jbridger Utility Solar+Stomge - PV - Jbridger	-	-	-			-		-	-	-	- 334	- :			- 339		-	-		702	
Utility Solar - PV - Walla Walla	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-
Utility Solar+Storage - PV - S-Oregon	-	-	-	-		18	-	-	-	-	-			199	-	-	-	430	-	-	18
Utility Solar+Storage - PV - Yakima Total Solar	-	-	-			905	-	-	-	-	354		100	475	359	-	-	430		702	905
Demand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-
Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-		-	-	1.5	-	-
Demand Response, CA-Cool/WH Demand Response, CA-3rd Party Contracts	-							-	-		-		-		-		-	-	1.5	-	
Demand Response, CA-Irrigate	-	-	-	-	-	-	-	-	-	-	-		-	-	4.8	-	-	-	-	-	
Demand Response, CA-Thermostat	-	-	-	-	- 1			-	-	-		- 1		-	5.8		-	-	23.3		
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts	-				-			-	-		-		-	-	5.4	-	-	-	30.3	-	
Demand Response, OR-Irrigate	-	-	-	-	-	-	-		-	-	-	-	-	-	13.3	-	-	-	-	-	-
Demand Response, WA-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7 9.9	-	-
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-	-	-	-		-	-	-	-	-	-	- :	-		5.2	-	-	-	3.1	-	
Demand Response, WA-Thermostat	-	-	-			-	-	-		-				-	16.6				-		
Demand Response Total	- 1		-		- 2	-				- 2	-	9.4	- 2		51.1	- 1			76.9		- 17
Energy Efficiency, CA Energy Efficiency, OR	40		37	36	39	39	36	41	39	37	33	31	30	29	2 26	26	26	25	1 25	23	375
Energy Efficiency, WA	11	9	10	10	11	12	11	11	11	10	9	9	8	8	8	6	6	5	4	4	107
Energy Efficiency Total	52	43	48	48	52	52	49	54	52	49	44	41	40	38	35	33	33	31	30	28	499
Battery Storage - S-Oregon Battery Storage - Portland NC	-	-			-			-	-	210 195	-	- : -	- :	- : +	- : -	- :	-		435 15	-	210 195
Battery Storage - Walla Walla	-	-	-	-	-	-	-	-	-	135	-	-	-	-	-	-	-		45	-	135
Battery Storage - Yakima	998	719	- 462	503	- 400	-	- 10-	187	233	105 930	1,075	- 1.07-	1.075	1.075	1.075	1.075	1.045	870	1,075	1.075	105
		/19	493	503	498	190	185	187	233	930	1.075	1,075	1,075	1,075	1,075	1,075	1,046	870	1,075	1,075	494
FOT West - Summer FOT West - Winter	151	131													119	41		-	-	-	263
FOT West - Summer FOT West - Winter Existing Plant Retirements/Conversions Annual Additions, Long Term Resources	151	131 (61)	268 (186)	303 (224)	314	240 (62) 3,231	246	248 (535) 154	297 (85) 142	429 (912)	420 (444)	383 (753) 2,431	436 (350) 728	417 (114)	(913) 1,309	(156) 82	58 (36)	(280)		(745) 1,383	263

									Capacity	(MW)										Resource T
P-10	2019	2020	2021	2022 202	3 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
isting Plant Retirements and PPA Termination aig 1 (Coal Early Retirement/Conversions)	- 1	_		- 1		1 -	(82)	_			_		_			_	1 -		_	(82)
raig 1 (Coal Early Retirement/Conversions)			-	-	-	-	- (82)	-	-	-	-	-	-	-	-	(82)	-	-		- (82)
layden I	-	-	-	-	-	-	-	-	-		-	(44)	-	-	-	-	-	-	-	-
nyden 2 untington 1		_	-	-	-	-	-	-	-	-	-	- (33)		-	-	-	-	(459)	-	-
untington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-
holla 4 (Coal Early Retirement/Conversions) ave.Johnston 1	-		(387)	-		-	-	-	(99)	-	-			-	-	-	-	-	-	(387)
DaveJohnston 2	-	-	-	-		-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)
Dave Johnston 3 Dave Johnston 4			-	-	-		-	-	(220)	-	-			-	-	-			-	(220)
laughton 1 (Coal Early Retirement/Conversions)	-		-	- (56) -		-	-	-	-	-	-	-	-	-	-	-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions)	-	(200)	-	- (201) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(201)
Naughton 3 (Coal Early Retirement/Conversions) Gadsby 1-6	-	(280)	-	-		-	-	-	-	-	-		-	(356)		-	-		-	(280)
Retire - Hydro	-	-	-	-	· (C	20) -	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)
Retire - Wind Expire - Wind PPA		(27)	(17)	(49)	(0) -	-	(65)	(3)		(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA	-	-	-			(1) -	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1)
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247
Expansion Resources		247				_					(247)									247
SCCT Frame NTN	-	-	-	-	-	-	-	-	-	185	185	-	-	185	-	-	-	-	-	-
SCCT Frame W YSW Total SCCT		_	-	-		-	-	-	-	185	185	-		185	-	-	-	-	-	-
Wind, Djohnston		-	-	-		-	-	-	536	84		-	-	-	-	-	-	-	-	536
Wind, GO Wind, WYAE			-	-	1.92		-	-	-	-	1,090			-	-	-	-	-	-	1.920
Fotal Wind	-		-	-	1,92		-	-	536	84	1,090	-	-	-	-	-	-	-	-	2,456
Utility Solar - PV - Utah-S	-	-	146			-	-	-	-	-	-	-	-	-	-	-	400	-	-	146
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S		-	-	-	33 12		-	-		-	-		500	-	-	-	-	-	-	100 154
Utility Solar+Storage - PV - GO		-	-	-		-	-	-	-		-	10	-	-	-	-	-	-	-	-
Utility Solar - PV - Naughton Utility Solar+Storage - PV - Huntington					357 -	-	-	-	-	-	-			-	-	-	-	909	-	357
Utility Solar - PV - Utah-N			-	-		-	-	-	-	-	231	-	-	-	-			-		-
Utility Solar+Storage - PV - Utah-N Fotal Solar			146	64 64	5 60	00 -	-	-	- 1	-	231	10	500	-	-	-	400	909	-	669 1,426
Oemand Response, ID-Cool/WH			-	-									-		-		-	2.6		-
Demand Response, ID-3rd Party Contracts		-	-	-	-	-	-	-	-		-	-		1.8	-	-	-	-	-	-
Demand Response, ID-Irrigate Demand Response, ID-Thermostat				-	-	-	-	-		-	-		5.2	-	-	-	-	3.7 8.3	1.8	
Demand Response, UT-Cool/WH	4.1		7.0	-	9.9 -		7.2	-	-	6.7	-	-	6.8	-		7.0	-	-	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6 1.9	-
Demand Response, UT-Irrigate Demand Response, UT-Thermostat			-	- 7	9.4 -	-	-	-	37.3	-	8.2	-	-	-	-	8.3	-	-	5.1	116.7
Demand Response, WY-Cool/WH	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-	3.4	1.8	-
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate			-	-	-		-	-		-	-		-	1.8	-	-		39.4	-	
Demand Response, WY-Thermostat		-	-	-		-	-	-	-	-	-	-	-	18.7	-	-	-	-	1.2	-
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	8.3 -	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5
Demand Response Total	4.1		7.0	- 9	7.5 -	8.2		-	37.3	6.7	8.2		12.0	22.3		15.3	-	134.8	21.6	161.2
Energy Efficiency, ID	6	6		7	8	7 7	7	7	7	6	6	6	6	6	4		3	3	3	70
Energy Efficiency, UT Energy Efficiency, WY	58 10	67 12		72 14		66 67			62 18	54 15		52 13	50 12	49 11	36 9		26 7	25 5	26 5	667 153
Energy Efficiency Total	74	85	86	93		91	93	91	87	76	74	71	68	65	49	45	37	33		890
Battery Storage - Utah-N Battery Storage - WYSW			-	- 27	0.0	-	-	-	15.0 210.0	-	-			-	-	-	-	255 195.0		285 210.0
Battery Storage - Idaho	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	195.0	240.0	-
FOT East - Summer Existing Plant Retirements and PPA Termination				-	295 -			-	300	150	230	300	231	298	300	300	300	300	300	60
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-		351) -	-	-	-	- 1	-	-	- 1	-	-	-	-	-	-	-	(351)
SimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	- (356) -	-	-	-	-	-	-	-	-	-	-	-	-	-	- (2.40)	(356)
imBridger 3 imBridger 4	-		-	-		-	-	-		-	-			-	-	-	-	-	(349)	-
Hermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-
Retire - Hydro Expire - Wind PPA		(1)	(169)	(175)	(1) -		(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)	-	(1)	(10)	-	(179) (216)
Expire - Solar PPA			-	-		-	-	-	(2)	-	-	(67)	(49)	- (20)		(1)	(115)	(175)	(11)	(2)
Expansion Resources SCCT Frame WV																		443		_
Total SCCT				-														443 443		
Utility Solar - PV - S-Oregon	-	-	-	-	- 28		-	-	-	-	-	-	_	62	-	-		_	-	288
Utility Solar - PV - Yakima Utility Solar - PV - jbridger				-	713 -	-	+ -	-		-	-		-	-	-	141	-		48	405 713
		-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	654	-
			-	-	- 2	-	-	-		-	-		100	413	-	-	-	-	-	212
Jtility Solar - PV - Walla Walla									-			-		-		267	22			-
Jtility Solar - PV - Walla Walla Jtility Solar+Stomge - PV - S-Oregon Jtility Solar+Stomge - PV - Yakima			-										100	475	-	408	22	_	702	1,618
Jtility Solar - PV - Walla Walla Jtility Solar+Storage - PV - S-Oregon Jtility Solar+Storage - PV - Yakima Total Solar	- - -		-	-	713 90	-	-	-	- 0	-										
Utility Solar - PV - Walla Walla Utility Solar - Storage - PV - ScOregon Utility Solar-Storage - PV - Vakima Total Solar Demand Response, OR-Ancillary Services	-	-	-	-	713 90	- 05 - -	-	-	- 8 1.9	-	-	-	-	-	-	-	-	-	-	1.9
Dility Solar-PV- Walla Walla Ulitiny Solar-Stronge - PV- S-Oregon Utility Solar-Stronge - PV- Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, W.AAncillary Services Demand Response, CA-3rd Party Contracts	- - - - - -		-		713 90		-	-		-	-	-	-	-	-	-	-	- - 1.1	-	1.9
Jility Solar- FV- Walla Walla Lility Solar- Stonge - PV - S Cregon Jility Solar- Stonge - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA - Ancillary Services Demand Response, WA - Ancillary Services Demand Response, CA - Jirajate - Wallary Services Demand Response, CA - Jirajate - Wallary Services Demand Response, CA - Jirajate - Wallary Services		-	-	-			-	-		4.8		-	-	-	-	1	-	1.1	-	1.9
Jility Solar- PV- Walla Walla Lility Solar- Stonge - PV - S- Oregon Jility Solar- Stonge - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA - Ancillary Services Demand Response, WA - Ancillary Services Demand Response, CA - Air Party Contracts Demand Response, CA - Irrigate Demand Response, OR-Cool/WH				-	713 90 			- - - - - -		- - - 4.8 5.8		-	- - - - -	-	-	-	-	3.0	-	1.9
Jilliy Solar- PV- Walla Walla Jilliy Solar-Stonge - PV- S-Oregon Jilliy Solar-Stonge - PV- Vakima Fordal Solar Jermand Response, OR-Ancillary Services Jermand Response, Wa-Ancillary Services Jermand Response, Wa-Ancillary Services Jermand Response, Wa-Ancillary Services Jermand Response, Wa-Ancillary Services Jermand Response, CA-Tirgane Jermand Response, CA-Tirgane Jermand Response, CA-Tirgane Jermand Response, OR-Tirgane Jermand Response, OR-Tirgane Jermand Response, OR-Tirgane Jermand Response Jermand Response Jermand Response Jermand Response Jermand Response Jermand Response Jermand Response Jermand Response Jermand Response		- :					-			5.8	-			- - - - - - 5.4	- - - - -		-	-	-	1.9
Jility Solar- FV- Walla Walla Jility Solar- Stonge - PV - S Cregon Jility Solar- Stonge - PV - S Cregon Jility Solar- Stonge - PV - Vakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA - Ancillary Services Demand Response, CA - Jirajate Demand Response, OR-Cod-WH Demand Response, OR-Cod-WH Demand Response, OR-Cod-WH	-									5.8	-			-	-	-	-	3.0	-	1.9 - - - - -
Lillay Solar- PV. Walla Walla Lillay Solar- Stomage - PV - S. Crogon Lillay Solar- Stomage - PV - Yakima Total Solar Demmad Response, O.R. Ancillary Services Demmad Response, W.A. Ancillary Services Demmad Response, W.A. Ancillary Services Demmad Response, C.A. Tripate Demmad Response, C.A. Tripate Demmad Response, C.A. Tripate Demmad Response, O.R. Cool/WI Demmad Response, O.R. Cool/WI Demmad Response, O.R. Cool/WI Demmad Response, O.R. Tripate Demmad Response, O.R. Tripate Demmad Response, O.R. Tripate Demmad Response, W.A. Tripate Demmad Response, W.A. Tripate		-	-				-			5.8 - - 4.1 - 5.2	-			- - - - 5.4 9.2	-		-	3.0	-	
Utility Solars' SOMap - PV - Walla Walla Utility Solars' Somap - PV - S. Crogon Utility Solars' Somap - PV - Yakima Total Solar Demmad Response, OR. Ancillary Services Demmad Response, W. Ancillary Services Demmad Response, C. A. Jarigate Demmad Response, C. A. Tripate Demmad Response, C. A. Tripate Demmad Response, C. A. Tripate Demmad Response, OR. Cool/WII Demmad Response, OR. Cool/WII Demmad Response, OR. Cool/WII Demmad Response, OR. Tripate Demmad Response, OR. Tripate Demmad Response, OR. Tripate Demmad Response, W. A. Jarigate Demmad Response, W. A. Jarigate		-	-	-			-	-		5.8	-			- - - - - - 5.4		-	-	3.0	-	
Dility Solar- FV- Walla Walla Likity Solar-Stonge - PV - S-Oregon Likity Solar-Stonge - PV - Yakima Protal Solar Demand Response, Ole-Ancillary Services Demand Response, Wa-Ancillary Services Demand Response, Wa-Ancillary Services Demand Response, CA-Jurgate Demand Response, CA-Iripate Demand Response, CA-Iripate Demand Response, CA-Iripate Demand Response, CA-Iripate Demand Response, Wa-Salar Party Contracts Demand Response Demand Response Demand Response Demand Response Demand Respons									1.9 - - - - - - - - - - - - - - - - - - -	5.8 - - 4.1 - 5.2 4.8 24.7			- - - - - - 2	- - - - 5.4 9.2 - - 11.8 26.4	- - - - - - - - - - 1	- - - 3.1 - 3.1	- - - - - - - - - - 1	3.0 30.3 - 9.9 - - 44.3	- - - - - - 1	- - - - - - - - - - - - - - - - - - -
Dilly Solar- BV Walla Walla Lilly Solar- Storage - PV - S. Chegon Lilly Solar- Storage - PV - Vakima Total Solar Demand Response, Ol-Ancillary Services Demand Response, Wa-Ancillary Services Demand Response, Wa-Ancillary Services Demand Response, CA-Triguite Demand Response, CA-Triguite Demand Response, CA-Triguite Demand Response, CA-Triguite Demand Response, Ol-And Party Contracts Demand Response, Ol-And Party Contracts Demand Response, Ol-And Party Contracts Demand Response, Wa-And Party Contracts Demand Response, Valley Demand Response, Wa-And Party Contracts Demand Response, Valley Demand Response,	40	- - - - - 2 43				- - - - - - - - - - - - - - - - - - -	- - - - - - 2 41		1.9	5.8 	- - - - - - - 2 31		- - - - - - 2 29	- - - 5.4 9.2 - - 11.8 26.4 2	26	- - - 3.1 - 3.1 1 26	- - - - - - - - - - - 1 26	3.0 30.3 - 9.9 - - 44.3 1	- - - - - 1 24	- - - - - - - - - - - - - - - - - - -
Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency, Total		- - - - - - 2 43 11	11		2 47 112		- - - - - 2 41	11	1.9 - - - - - - - - - - - - - - - - - - -	5.8 - - 4.1 - 5.2 4.8 24.7	- - - - - - 2 31	9	- - - - - - 2	- - - - 5.4 9.2 - - 11.8 26.4	26 6	- - - 3.1 - 3.1 1 26 6	- - - - - - - - - - 1	3.0 30.3 - 9.9 - - 44.3 1 25 4 30	- - - - 1 24 4 29	
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Utility Solars FOY- Walla Walla Utility Solars Storage - PV - S-Oregon Utility Solars Storage - PV - S-Oregon Utility Solars Storage - PV - Yakim Tutal Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Minder Demand Response, CA-Minder Demand Response, CA-Minder Demand Response, CA-Minder Demand Response, OR-S-ID Party Contracts Demand Response, OR-S-ID Party Contracts Demand Response, OR-Minder Demand Response, WA-Minder Demand Response Demand Resp	40 11 52 -	- - - - - - 2 43 11 56	11				- - - - 2 41 11 54	11	1.9	5.8 	- - - - - - - - - - - - - - - - - - -	9 40 - -	- - - - 2 29 8 38	- - - - - - - - - - - - - - - - - - -	26 6 33 -	3.1 - 3.1 1 26 6 333		3.0 30.3 - 9.9 - - 44.3 1 25 4 30 105	- - - - 1 24 4 29 15	
Utility Solars FOY- Walla Walla Utility Solars Storage - PV - S-Oregon Utility Solars Storage - PV - Yakim Total Solar Demand Response, OR-Aneillary Services Demand Response, WA-Aneillary Services Demand Response, WA-Aneillary Services Demand Response, CA-Jirijate Demand Response, CA-Jirijate Demand Response, CA-Jirijate Demand Response, OR-Joh Party Contracts Demand Response, OR-Joh Party Demand Response, WA-Joh Party Contracts Demand Response, WA-Jirijate Demand Response Demand Respon	40 11	- - - - - - 2 43 11	11		2 47 12 61 65 30 45 45		- - - - 2 41	11	1.9 - - - - - - - - - - - - - - - - - - -	5.8 - - 4.1 - 5.2 4.8 24.7 2 33	- - - - - - - 2 31	9	- - - - - - - 2 29 8		26 6	- - - 3.1 - 3.1 1 26 6	- - - - - - - - - - 1 26 5	3.0 30.3 - 9.9 - - 44.3 1 25 4 30	- - - - 1 24 4 29 15	
Utility Solar's Normage - PV - S - Cregon Utility Solar's Storage - PV - S - Cregon Utility Solar's Storage - PV - S - Cregon Utility Solar's Storage - PV - Yakima Total Solar Demmad Response, OR-Ancillary Services Demmad Response, W-A-Ancillary Services Demmad Response, C-A-Irigate Demmad Response, C-A-Irigate Demmad Response, C-A-Irigate Demmad Response, C-A-Irigate Demmad Response, OR-Cool-VIII Demmad Response, OR-Irigate Demmad Response, OR-Irigate Demmad Response, W-A-Irigate Demmad Response Demmad Response Demmad Response Demmad Response De	40 11 52 - - -	- - - - - 2 43 111 56	11 56 - - - -			2 2 299 433 22 122 56	- - - - 2 41 11 54 - -	11 52 - - - -	1.9	5.8 - - 4.1 - 5.2 4.8 24.7 2 33 9 44		9 40 - - - -	- - - - - 2 29 8 38	5.4 9.2 - 11.8 26.4 27 8 36	26 6 33 	3.1 3.1 1 26 6 33 -		- 3.0 30.3 - 9.9 - - 44.3 1 2.5 4 30 105 - - 60	- - - 1 24 4 29 15 30 105 60	
Jülly Solar- PV- Walla Walla Jülly Solar- Storage - PV- S-Cregom Jülly Solar- Storage - PV- Vakinn Total Solar- Total Sola	40 11 52 -	- - - - - - - 2 43 111 56 - - - - - - - - - - - - - - - - - -	11 56 - - - - - - 492 265		2 47 5 12 665 30 45 45 45 5 105 5 775 66 110 110	2 2 2 19 43 22 12 2 56 	- - - - - - 2 41 11 54 - - - - - - - - - - - - - - - - - -	11 52 - - - - - - - 741 243	1.9	5.8 		9 40 - - - - 1,075 266	- - - - - 2 29 8 38 - - - - - 1,075 250		26 6 33 - - - - 1,075 125	3.1 - 3.1 1 26 6 33 - - - 1,075 23		3.0 30.3 30.3 - 9.9 - 44.3 1 2.5 4 4 30 105 - - - - - - - - - - - - - - - - - - -	- - - - 1 24 4 29 15 30 105 60	
Isitisy Solar- Five. Walla Walla Isitisy Solar-Stonge - PV - Schegon Isitisy Solar-Stonge - PV - Schegon Isitisy Solar-Stonge - PV - Vakima old Solar Demand Response, Ole-Ancillary Services beamed Response, CA-Brain Services beamed Response, CB-Brain Services beamed Response, WA-Thrigate beamed Response bea	40 11 52 - - - - - - - - 998	- - - - - - 2 43 11 56 - - - - - - - 1719 131 (61)	11 56 - - - - - 492 265 (573)		2 47 112 616 30 - 45 45 - 45 - 105 - 5110 1110		- - - - - - - - - - - - - - - - - - -	11 52 - - - - 741 243 (3)	1.9	5.8 		9 40 - - - - 1,075 266 (350)	- - - - - 2 29 8 8 38		26 6 33 - - - 1,075 125 (156)	3.1 - 3.1 1 26 6 33 - - - - 1,075 23 0 (117)		- - 3.0 30.3 - 9.9 - - 44.3 1 25 4 30 105 - - 60 105	- - - - - - 1 24 4 29 15 30 105 60 - - 1,075	

P-11	2019	2020	2021	2022 202	202	24 2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
Existing Plant Retirements and PPA Termination	2017	2020	2021	2022 202	202	2023		2027	2020	2029	2030	2031	2032	2000	2034	2000	2030	2037	2030	
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-			(82)	(82)	-	-	-	-			-	-	-		-	(82) (82)
Hayden 1		-	-	-			-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
Hayden 2 Huntington 1		-	-	-			-		-	-	-	(33)		-	-	-	-	(459)	-	-
Huntington 2	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	(450)		-
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)		-	-	-			-	-	(74) (74)	-	-	-		-	-	-	-	-	-	(74) (74)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-		-	-		-	-		-	-	-	-	-	-	-	-	(387)
DaveJohnston 1 DaveJohnston 2	-	-	-	-			-	-	(99) (106)	-	-	-	-	-	-	-	-	-	-	(99) (106)
DaveJohnston 2 DaveJohnston 3	-	-	-	-			-	-	(220)	-	-	-		-	-	-	-	-	-	(220)
DaveJohnston 4	-	-	-	-		-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 1 Naughton 2	-	-	-	-			-	-	-	-	(156) (201)	-		-	-	-	-	-	-	-
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)) -	-			-	-	-	-	-	-	-	-	-	-	-	-	-	(280)
Gads by 1-6 Retire - Hydro	-	-	-	-		(20) -	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(20)
Retire - Hydro Retire - Wind	-	-	-	-			-	-	-	-	(40)	-		-	-	-	-	-	-	- (20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)		(65)	(3)	-	(19)	(99)		(45)	(181)	(80)		(60)			(160)
Expire - Solar PPA Retire - Other		-	-	-	(1)	(1) -	-	-		-	-	-		-	- (1)	(35)	(94)	(849)	(32)	(1)
Coal Ret_WY - Gas RePower	-	247	-	-			-	-	-	-	(247)	-	-	-	- (-	-	-	-	-	247
Expansion Resources											185	185		185						
SCCT Frame NTN SCCT Frame WYSW	-	-	-	-			-	-	-	-	- 183	-		370	-	-	-	-	-	-
Total SCCT	-	-	-	-			-	-			185	185	-	555	-	-	-	-	-	
Wind, Djohnston Wind, GO		-	-	-		-	-	-	33	33	554 1,096			-	-	-	-	-		33
Wind, WYAE					1,	920 -					-									1,920
Total Wind		-	- 146	-	1,	920 -	-	-	33	33	1,650		-	-	-		- 400	-	-	1,953
Utility Solar - PV - Utah-S Utility Solar - PV - WYSW		-	146	- 59	67	28 -	-	-		-	-			-	-	-	400	-		300 100
Utility Solar+Storage - PV - Utah-S	-	-	-	-			-	-	-	-	500	-	-	-	-	-	-	-	-	- "
Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington		-	-	-		-	-	-		-	- 4			-	-	-	-	897	- 12	
Utility Solar - PV - Utah-N									37		729							- 09/	- 12	37
Utility Solar+Storage - PV - Utah-N		-		- 59		135 -	-		- 37	-	-	-	-	-	-	-	-			135
Total Solar Demand Response, ID-Cool/WH		-	146			263 -	-	-	- 37	-	1,233		-	-	-	-	400	897 2.6		571
Demand Response, ID-3rd Party Contracts	-	-	-	-			-	-	-	-	-	-	-	1.8	-	-	-	-	-	-
Demand Response, ID-Irrigate	-	-	-	-		-	-	-	-	-	-	-	5.2	-	-	-	-	3.7 8.3	1.8	-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	0.9		7.2	-	-	6.7	-	-	6.8	-		7.0	-	-	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-			-	-	-	-	-	-		-	-	-	-	74.1	2.6	-
Demand Response, UT-Irrigate Demand Response, UT-Thermostat		-		-		-	-	-		-	124.9	-			-	8.3	-	-	1.9 5.1	-
Demand Response, WY-Cool/WH		-		-			-			-	124.9			-	-		-	3.4	1.8	-
Demand Response, WY-3rd Party Contracts		-	-	-			-	-	-	-	-	-	-		-	-	-	39.4	-	-
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-	-	-			-	-		-	-	-		1.8 18.7	-	-	-	-	1.2	-
Demand Response, UT-Ancillary Services	-	-	-	-	3.3	- 5	3 -		-	-		-		-	-	-	-	3.2	-	13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	7.0		3.1	- 3.0		_	-	6.7	124.9		12.0	22.3	-	15.3	-	134.8	21.6	3.0 44.6
Energy Efficiency, ID	6	6	6	7	7	7	7 7	7	7	6	6	6	6	6	4	4	3	3	3	69
Energy Efficiency, UT	58 10	67 10	67 11	68 14	69 15	68 6' 16 1'	7 68 7 18	65 19	62 18	54 15	56 14	52 13	50 12	49 11	36 9	32 8	26	25	26	659 149
Energy Efficiency, WY Energy Efficiency Total	74			88	91	92 9:		91	87	76	76	72	68	66	49			33	35	876
Battery Storage - Utah-N	-	-	-	-			-	-	240.0	-	-	-	-	-	-	-	-	285	390	240
Battery Storage - WYSW Battery Storage - Idaho	-	-	-	-			-	-	240.0	-	-	-		-	-	-	-	15.0 255.0	150.0 75.0	240.0
FOT East - Summer	-	-	-	-			-	-	-	189	300	270	300	279	281	300	300	300	300	-
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)		_		- 1											,			T -		- 1
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	_			_			(351)										
JimBridger 3				-			-	-	-	(351)	-	-		(356)	-	-	-	-	-	-
JimBridger 4		-	-	-			-		-		-	-	-	(356)	-	-			(349)	-
		-	-				-	-	-	(351)		-		(356)	-			- (237)	(353)	-
Jimininger 4 Herniston Retire - Hydro	-	- - (1)	- - - (169)	-	(1)		- (1)	-	- - - - (7)	-		- - - - (6)	-	-	(75)	-	- (1)	(237)	(353)	- - - (179)
Hermiston Retire - Hydro Expire - Wind PPA		-	- - -) (169)		(1)		-	-	-		(10)	-	- (20)	- - - (20)	(75)	-) - -	(10)	(10)	(353)	(216)
Hermiston Retire - Hydro		-	- - - (169)	-	(1)	(41)	(1)	-	(7)	-	- (10)	- - - (6)	-	- (20)	(75)	-	(10)	(10) (175)	(353)	
Hermiston Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire -		-	- - (169)	-	(1)		(1)	-	-	-	- (10)	-	- (20)	(20)	(75)	-) - -	(10)	(10) (175)	(353)	(216)
Hemisiton Retire - Hydro Espire - Wind PPA Espire - Solar PPA Expusion Resources SCCT Frame WV Total SCCT		-	(169)	-	(1)		(1)		-	-	- (10)	-	(20) (49)	- (20)	(75)	-) - -	(10)	(10) (175)	(353)	(216)
Hermiston Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Solar PPA Espire - Solar PPA Espire - Solar - PPA Espire - Solar - PPA Uliliy Solar - PV - Schregon Uliliy Solar - PV - Vakima	-	- (1)	- - -) (169) - - -	-	(1)	(41)	(1)	-	-	(75)		-	- (20)	- - (20) - 221 221	(75)	-) - -	(10)	(10) (175)	(353)	(216)
Hemiston Retire - Hydro Bapire - Wind PPA Bapire - Solar PPA Expansion Res ources SCCT Frame W W Total SCCT Ultity Solar - PV - S-Oregon Ultity Solar - PV - Parlage	-	- (1)	- - () (169) - - - - -	-	(1)	 325 -	(1)	-	-	-	(10)	-	(20) (49)	(20)	(75)	-) - -	(10) (115)	(10) (175)	(353)	(216) (2) - - - 325
Hermiston Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Solar PPA Espire - Solar PPA Espire - Solar - PPA Espire - Solar - PPA Uliliy Solar - PV - Schregon Uliliy Solar - PV - Vakima	-	- (1)	- - - (169) - - - - - - -	-	(1)		(1)	-	-	(75)		-	(20) (49)	- - (20) - 221 221	(75)	-) - -	(10) (115)	(10) (175)	(353)	(216) (2) - - 325 405 - -
Hermiston Retire - Hydro Baptie - Wind PPA Baptie - Solar PPA Baptie - Baptie	-	- (1)	- - (169) - - - - - - - -	-	(1)	 325 -	- (1)		-	(75)		(67)	(20) (49)	- - (20) - 221 221		-) - -	(10) (115) 	(10) (175)	(353) - - (11) - - - - - 702	(216) (2) - - - 325
Hemiston Retire - Hydro Bapire - Wind PPA Bapire - Solar PPA Kpansion Resources SCCT Frame WV Total SCCT Ulity Solar - PV - S-Oregon Ulity Solar - PV - Firdiger Ulity Solar - PV - Walta Walla Ulity Solar - PV - Walta Walla Ulity Solar - PV - Walta Walla Ulity Solar - Sonage - PV - S-Oregon		- (1)	- (169)	-	(1)		- (1)		-	- - - (75)		- (67) 100	- (20) (49) - - 469 - - - - 6	221 221 221 - 359	- (75)	-) - -	(10) (115) 	(10) (175)	(353)	(216) (2) - - - 325 405 - - - 175
Hermiston Retire - Hydro Eppre - Wind PPA Eppre - Solar PPA Eppre - Solar PPA Expression Revouves Total S.C.T Utility Solar - PV - St. Cregon Utility Solar - PV - Springer Utility Solar - PV - Portiger Utility Solar - PV - Walma Utility Solar - Solar - PV - Walma Total Solar - Solar - PV - Walma Dommal Response, OR-Ancillary Sorvices		- (1)	- (169)	-	(1)		- (1)		-	(75)		(67)	- (20) (49) - - 469	- - (20) - 221 221		-) - -	(10) (115) 	(10) (175)	(353) - - (11) - - - - - 702	(216) (2) - - 325 405 - -
Hemston Retire - Hydro Espire - Ward PPA Espire - Solar - PV - Walin Unity Solar - Solar - PV - Walin Unity Solar - Solar - PV - Walin Unity Solar - Solar - PV - Walin Unity Solar - Solar - PV - Walin Unity Solar - Solar - PV - Solar - PV - Solar - PV - Solar - PV - Total Solar Demmal Response, OR-Ancillary Services Demmal Response, WA-Ancillary Services		- (1)	- (169)	-	(1)		- (1)		-	- (75) - (75) - 354 354		- (67) 100	- (20) (49) - - 469 - - - - 6	221 221 221 - 359	- (75)	(1)	(10) (115) 	- (10) (175) 221 221 	(353)	(216) (2) - - - 325 405 - - - 175
Hermiston Retire - Hydro Espire - Wind PPA Espire - Solar PPA Utility Solar - PV - Solvegon Utility Solar - PV - Solar - PV - Solar - PV - Bridger Utility Solar - PV - Pridger Utility Solar - PV - Pridger Utility Solar - PV - Wallin Utility Solar - PV - Wallin Utility Solar - PV - Wallin Utility Solar - PV - Solar - PV - Solar - PV - Wallin Utility Solar - PV - Solar - PV - Solar - PV - Solar - PV - Wallin Utility Solar - PV - Wallin Utility Solar - PV - Solar - PV - Solar - PV - Solar - PV - Wallin Utility Solar - PV - Wallin Utility Solar - PV - Solar - PV - Solar - PV - Wallin Utility Solar - PV - Wallin Utility Solar - PV - Solar - PV - Solar - PV - Wallin Utility Solar - PV - PV - PV - Wallin Utility Solar - PV - PV - PV - Wallin Utility Solar - PV - P		- (1)	- - - - - - - - - - - - - - - - - - -	-	(1)		- (1)		-	- - - (75)		- (67) 100	- (20) (49) - - 469 - - - - 6	221 221 221 - 359		-) - -	(10) (115) 	(10) (175)	(353)	(216) (2) - - - 325 405 - - - 175
Hermiston Resite - Hydro Espire - Wind PPA Espire - Solar - PPA Unity Solar - PPA - Solar - PPA Unity Solar Solar - PP		- (1)	- - - - - - - - - - - - - - - - - - -	-	(1)		- (1)		-	- (75) - (75) - 354 354		- (67) 100	- (20) (49) - - 469 - - - - 6	- (20) - (20) - (21) 221 - (21) - (21		(1)	(10) (115) 	- (10) (175) 221 221 	(353)	(216) (2) - - - 325 405 - - - 175
Hemiston Retire - Hydro Espire - Sular PPA Espire - Solar PPA Unity Solar - PV - Solar Solar PPA Unity Solar - PV - Solar Solar PPA Unity Solar - PV - Solar Solar PPA Unity Solar - Solar - Solar S		- (1)	- (169) - (169	- (175)	(1)		- (1)		-			- (67) 100	- (20) (49) - - 469 - - - - 6	- - - - - - - - - - - - - - - - - - -		(1)	(10) (115) 	- (10) (175) (175) 221 221 	(353)	(216) (2) - - - 325 405 - - - 175
Hermiston Resite - Hydro Espire - Wind PPA Espire - Solar - PPA Unity Solar - PPA - Solar - PPA Unity Solar Solar - PP		- (1)	- - - - - - - - - - - - - - - - - - -	- (175)	(1)		- (1)		-			- (67) 100	- (20) (49) - - 469 - - - - 6			(1)	(10) (115) 	- (10) (175) (175) 221 221 	(353)	(216) (2) - - - 325 405 - - - 175
Hemsiton Retite - Hydro Bepire - Wind PPA Espire - Solar PPA Unity Solar - PV - Schepen Unity Solar - PV - Schepen Unity Solar - PV - Shridger Unity Solar - Solar - PV - Walten Unity Solar - Solar - PV - Walten Unity Solar - Solar - PV - Walten Unity Solar - Solar - PV - Schepen Unity Solar - Solar - PV - Schepen Unity Solar - Solar - PV - Schepen Unity Solar - Solar - PV - Walten Total Solar Demund Response, - PV - Schepen Unity Solar - Solar - Solar - PV - Walten Total Solar Demund Response, - Wa-Ancellary Services Demund Response, - Wa-Ancellary Services Demund Response, - Wa-Ancellary Services Demund Response, - CA-Iriques Demund Response, - CR-Unity Will Demund Response, - OR-Unity Will Demund Response,		- (1) - (1)		(175)	(1)		- (1)		-			- (67) 100	- (20) (49) - - 469 - - - - 6	221 221 221 21 21 21 21 21 21 21 21 21 2	(75)	(1)	(10) (115) 	- (10) (175) 221 221 	(353)	(216) (2) - - - 325 405 - - - 175
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Hemsiston Resites - Hydro Espire - Wind PPA Espire - Solar - PPA Utility - Solar - Solar - PPA Espire - Solar - P			- (169)		(1)				-	(75) 		- (67) 100	- (20) (49) - (4			(1)	(10) (115) 	- (10) (175) 221 221 	(353)	(216) (2) - - - 325 405 - - - 175
Hemsiton Relite - Hydro Espire - Wind PPA Espire - Solar - PPA Espire -					(1)				-	(75) 	8 1.9	- (67) 100	- (20) (49) - (4	221 221 221 23 359 		(1)	(10) (115) 	. (10) (175)	(353) 	(216) (2) - - - 325 405 - - - 175
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Hermiston Regive - Wind PPA Espies - Solar PPA Utility Solar - PV - St. Cregon Utility Solar - PV - St. Cregon Utility Solar - PV - St. Cregon Utility Solar - PV - Walliar Utility Solar - PV - Walliar Utility Solar - PV - Walliar Utility Solar - PV - Walliar Utility Solar - PV - Walliar Demmad Response, OR - Ancillary Services Demmad Response, CA - Terminolat Demmad Response, CA - And Party Contracts Demmad Response, WA - Crost - Walliar Demmad Response, WA - Crost - Walliar Demmad Response, WA - And Party Contracts Demmad Response, WA -	- - - 1 40	- (1) - (1)		- (175) - (175	2 2 39 12 12		- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11		75)		- (67)		- (20) - (21) -			(10) (115) (- (10) (175)	(353) (11) (11)	(210) (22) (23) (23) (24) (24) (25) (25) (25) (25) (25) (25) (25) (25
Hemsiton Retite - Hydro Espire - Wind PPA Espire - Solar - PPA Utility Solar - PPA - Pridger Utility Solar - PPA - Solar - PPA Utility Solar - PPA Utility Solar - Solar - PPA Utility Solar - PPA Utility Solar - Solar - PPA Utility Solar - Solar - PPA Utility Solar - PPA	- - 1 40	- (1) - (1)		(175) 	2 2 3 3 9		- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11		(75) 		- (67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49	2211 2211 221 359 359			(10) (115) (- (10) (175) (175) 221 221 	(353) (311) (311) (353)	(210) (22) (23) (23) (24) (24) (25) (25) (25) (25) (25) (25) (25) (25
Hemsiton Relitie - Hydro Beptie - Wind PPA Beptie - Solar PPA Expansion Recourses SCCT Frame W Total ACCT Total SCCT Tota	- - - 1 40	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		(175)	2 2 3 9 12 5 3 3 9 12 5 5 3		- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11	(2)	75)		- (67)	- (20) (49) - (4	- (20) - (21) -		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(10) (115) (. (10) (175)	(353) (313) (11) (11) (11) (12) (12) (12) (13) (13) (13) (13) (13) (13) (13) (13	(210) (2) (2) (2) (2) (3) (4) (5) (4) (5) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7
Hemsiton Regive - Wind PPA Espire - Solar - PPA Utility Solar - PPA - Socregio Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA - Solar - PPA Utility Solar - Solar - PPA Demmad Response, OR - Ancillary Services Demmad Response, CA - Cool PVII Demmad Response, WA - Chool PVII	- - - 1 40	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		- (175) - (175	2 2 39 12 53		- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11				- (67)		. (20)			(10) (115) (- (100) (175	(353) (11) (11) (12) (13) (12) (13) (13) (13) (13) (13) (13) (13) (13	(210) (22) (23) (23) (24) (25) (25) (25) (25) (25) (25) (25) (25
Hemsiton Regive - Wind PPA Espire - Solar PPA Espir	1 40 11 52	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		(175)	2 2 3 3 12 5 3 3		- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11 52 - - - -		- (75) - (75) - (75) (75) - (75) -		- (67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49	- (20) - (21) - (21) - (21) - (359) - (359) - (48) - (58) - (48) - (51) - (16) - (51) - (7) - (8) - (8) - (8) - (9) - (9) - (10)		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(10) (115) (- (10) (175)	(353) (311) (11) (11) (12) (13) (14) (15) (15) (16) (16) (17) (17) (17) (17) (18) (18) (18) (18) (18) (18) (18) (18	(210) (22) (23) (23) (24) (25) (25) (25) (25) (25) (25) (25) (25
Hermiston Regive - Wind PPA Espies - Solar PPA Utility Solar - PV - Solar Solar - PV - Solar Solar - PV - Solar -	- - 1 40 11 52 - - - - 998	- (1) - (1)			2 39 12 53		- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11 52 - - - - 200	- (2) - (- (- (- (- (- (- (- (- (- (- (- (- (75)		- (67)		- (20) - (21) -			(10) (115) (- (100) (175	(353) (311) (11) (11) (12) (13) (14) (15) (15) (16) (16) (17) (17) (17) (17) (18) (18) (18) (18) (18) (18) (18) (18	(210) (22) (23) (24) (25) (26) (27) (27) (27) (27) (27) (27) (27) (27
Hemsiton Regive - Wind PPA Espire - Solar PPA Espir	1 40 11 52	- (1) - (1)			2 2 3 3 9 12 5 3 3 12 12 14		- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11 52 - - - -		- (75) - (75) - (75) (75) - (75) -		- (67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49	- (20) - (21) - (21) - (21) - (359) - (359) - (48) - (58) - (48) - (51) - (16) - (51) - (7) - (8) - (8) - (8) - (9) - (9) - (10)		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(10) (115) (- (10) (175)	(353) (311) (311) (353)	(210) (22) (23) (23) (24) (25) (25) (25) (25) (25) (25) (25) (25

										Capacit	y (MW)										Resource To
P-12	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)								(82)												1	(82)
Craig 2 (Coal Early Retirement/Conversions)				- :	-	-	-	(82)				-					-	-			(82)
layden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
Hayden 2 Huntington 1		-	-		-	-	-	-	-		-	-	- (33)	-		-	-	-	(459)		
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	(450)	-	-
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)			-		-	-			-	(74) (74)				-	-	-			-		(74)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(387)	-	-	-	-	-	-	-	-	-	-	-	-	(387)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)
DaveJohnston 2 DaveJohnston 3	-	-	-		-	-	-	-	-	(106) (220)	_	-	-	-	-	-	-	-	-	-	(106) (220)
DaveJohnston 4	-	-	-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 1 Naughton 2	-	-	-	-	-	-	-	-	-	-	-	(156) (201)	-	-	-	-	-	-	-	-	-
Naughton 3 (Coal Early Retirement/Conversions)		(280)				-	-			-	-	(201)				-	-		-	-	(280)
Gadsby 1-6	-	-	(238)	-	-	-	-	-	-	-	-	-	-	-	(119)	-	-	-	-	-	(238)
Retire - Hydro Retire - Wind		-	-	-	-	(20)	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)		-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)		(160)
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1)
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247
Expansion Resources		_ , ,																			- 1,
SCCT Frame NTN SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	-	185	555	185	-	-	-	-	-	-	-	-
Total SCCT	-	-	-	-	-	-	-	-	-	-	185	555	185	-	-	-	-	-	-	-	-
Wind, Djohnston	-	-	-	-	-	-	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-
Wind, GO Wind, WYAE		-	-		-	1 920	-	-	-	-	-	1,100	-	-	-	-		-	-	-	1 920
Total Wind	-	-	-	-	-	1,920	-	-	-	-	620		-	-	-	-	-	-	-	-	1,920
Utility Solar - PV - Utah-S	-	-	146	59	-	31 100	-	-	-	-	-	91	-	-	-	-	-	400	-	-	236 100
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S		-	-	-	-	100	-	-	-	-	-	400	- 9	-	-	-	-	-	-	-	100
Utility Solar+Storage - PV - Huntington		-	-	-	-	-		-	-			-	-	-	-	-	-	-	715	-	-
Utility Solar - PV - Utah-N	-	-	-	-	-	- 588	-	-	-	-	-	312	-	-	-	-	-	-	-	-	588
Utility Solar+Storage - PV - Utah-N Total Solar		-	146	- 59	-	588 783		-	-	-	-	803	- 9	-	-	-		400	715	-	588 988
Demand Response, ID-Cool/WH	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6		- 1
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	1.8	1.8	-
Demand Response, ID-Thermostat		-			-	-	-		-	-	-	-	-		-	-	-	-	8.3		
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7		-	6.8	-	-	7.0	-	-	7.2	28.1
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate		-	-		-	-	-	-	-	-	-	-	-	-		-	-	-	74.1	2.6 1.9	
Demand Response, UT-Thermostat	_	-	-	-	-	-	-	-	-	116.7	-	8.2	-	-	-		8.3	-	-	5.1	116.7
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4		-
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate		-	-		-	-		-	-	-	-	-	-	-	1.8	-	-	-	39.4	-	
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7		-	-	-	1.2	-
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services		-	8.3		-	-	5.3 3.0	-	-	-	-	-	-	-		-	-	-	3.2	-	13.5 3.0
Demand Response Total	4.1		15.3		9.9	-	8.2	7.2		116.7	6.7	8.2	-	12.0	20.5	_	15.3		136.6	21.6	161.2
Energy Efficiency, ID	6 58	6 67	6 67	7 69	8 75	7 68	7 67	7 68	7 65	7 62	6 54	53	6 52	6 50	6 49	4 36	4 34	3 26	3 24		70 667
Energy Efficiency, UT Energy Efficiency, WY	10	12	13	14		16	17	18	19	18	15	14	13	12	11	9	8	7	5	5	154
Energy Efficiency Total	74	85	86	90	100	92	92	94	91	87	76	74	71	67	65	49	46	37	32		891
Battery Storage - Utah-N Battery Storage - WYSW		-	-		-	-	-	-	-	420.0	-	-	-	-	-	-	-	-	360	375 120.0	420.0
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	255.0	150.0	-
FOT East - Summer Existing Plant Retirements and PPA Termination	-	-	-	-	-	-	- 1	-	-	212	300	300	273	174	298	300	300	300	300	300	21
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	-		(349)	-
JimBridger 3 JimBridger 4			-		-	-			-		-		-	-	-	-			-	(0.10)	
Hermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	(237)	-	-
Retire - Hydro	-	(1)	(169)	(175)	(1)	(41)	-	(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)	-	(1)	(10)	-	(179) (216)
Expire - Wind PPA Expire - Solar PPA		-	-	(1/3)	-	- (41)	-	-	-	(2)	(/3)	- (10)	- (67)	(49)	- (20)	-	(1)	(115)	(175)	(11)	(216)
Expansion Resources											_	,							443		
SCCT Frame WV Total SCCT			-		-	-		-	-	-	-			-	-	-	-	-	443 443		
Utility Solar - PV - S-Oregon	-	-		-	-	500	-	-	-	-	-	-		95	-	-	-	-	-	-	500
Utility Solar - PV - Yakima Utility Solar - PV - jbridger			-	-	354	405	- 1	-		-	359			-	-	-			10	- 48	405 354
Utility Solar - PV - Jbridger Utility Solar+Storage - PV - Jbridger	-	- 1	-	-	- 334	-		-	-		- 339	-	-	-	-	-	-	-		654	- 334
Utility Solar - PV - Walla Walla	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-
Utility Solar+Storage - PV - S-Oregon			-	-	-	-	-	-	-	-	-	-		380	-	-	-	-	420	-	
Hillity Solani-Stoman DV Vakima			-	-	354	905	-	-	-	-	359	-	-	575	-	-	-	-	430		1,259
Utility Solar+Storage - PV - S-Origion Utility Solar+Storage - PV - Yakima Total Solar		- 1		-	-	-	-	-	-	8	-	-	-	-	-	-	-	-		-	8
Utility Solar+Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services		-	-			-	-	-	-	1.9	-		-		-	-	-	-	1.5	-	1.9
Utility Solar+Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-		-	-	-	-														
Utility Solart-Stronge - PV - Vakima Total Solar Demand Response, OR-Ancillary Services Demand Response, W.AAncillary Services Demand Response, W.AAncillary Services Demand Response, C.ACool/WH Demand Response, C.ACool/WH Demand Response, C.AGool/WH Demand Response	- - - - -	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-
Utility Solar-Stonge - PV- Vakima Total Stale Denmad Response, OR-Ancillary Services Denmad Response, WA-Ancillary Services Denmad Response, CA-Cool WH Denmad Response, CA-Sad Party Contracts Denmad Response, CA-Sad Party Denmad Response, CA-Sad	-	-		-	-	-	-	-	-	-	4.8		-	-	-	-	-	-	1.1	-	-
Utility Solar-Stonge - PV - Vakima Triul Solar Demand Response, OR-Ancillary Services Demand Response, WA - Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Cool/WH Demand Response, CA-Grigate Demand Response, CA-Irrigate Demand Response, CA-Irrigate Demand Response, CA-Irrigate		-		-	-	-	-	-		-	4.8		-		-	1 1	-	-	1.1 - - 23.3	-	-
Utility Solar+Stonge - PV - Yakima Trotal Solar Dermand Response, OR-Ancillary Services Dermand Response, WA-Ancillary Services Dermand Response, CA-Cool/WH Dermand Response, CA-Cool/WH Dermand Response, CA-Grigate Dermand Response, CA-Irrigate Dermand Response, CA-Irrigate Dermand Response, CA-Irrigate Dermand Response, OR-Cool/WH Dermand Response, OR-Cool/WH Dermand Response, OR-Cool/WH Dermand Response, OR-Cool/WH	-	-	-	- - - - - -	-	-	-		-	-	5.8		- - - -		- - - - 5.4		-		1.1	-	
Utility Solar-Stonge - PV - Vakima Total Stalar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-CoolWH Demand Response, CA-CoolWH Demand Response, CA-Adrigate Demand Response, CA-Adrigate Demand Response, CA-Brigate Demand Response, OR-Brigate	-	-	-		-	-	-	-	-				-		5.4			-	1.1 - - 23.3 30.3	-	-
Utility Solar-Storage - PV - Vakima Total Stalar Demand Response, OR-Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Ancillary Demand Response, CA. Ancillary Demand Response, CA. Arrigate Demand Response, CA. Arrigate Demand Response, CA. Brighte Demand Response, CA. Brighte Demand Response, OR-Ancillary Demand Response,	-	-			-	-	-	-	-	-	5.8 - - 13.3	- - - -	- - - - - -		5.4		-		1.1 - - 23.3 30.3 - 7.7 9.9	-	
Utility Solar-Stonge - PV - Vakim Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Cool/WH Demand Response, CA-Lingate Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, CR-Irigate Demand Response, CR-Irigate Demand Response, OR-Lord Party Contracts Demand Response, OR-Lord Party Contracts Demand Response, OR-Lord Party Contracts Demand Response, WA-Jod Party Contracts	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - -	-			-	-	-	-	-	5.8 - - 13.3	- - - -	- - - - - - -	-	-				1.1 - - 23.3 30.3 - 7.7	-	
Utility Solar-Storage - PV - Vakinu Total Stalar Demand Response, OR-Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Airigate Demand Response, CA. Airigate Demand Response, CA. Airigate Demand Response, CA. Airigate Demand Response, CA. Brigate Demand Response, W.A. Cool/WH Demand Response, W.A. Cool/WH Demand Response, W.A. Arigate Demand Response, W.A. Arigate Demand Response, W.A. Arigate	-	-	-	-		-	-	-	-		5.8			-				-	1.1 - - 23.3 30.3 - 7.7 9.9		
Utility Solar-Storage - PV - Yakima Total Salar Demand Response, OR-Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. CodVWH Demand Response, CA. Harry Contracts Demand Response, W.A. Cod/WH Demand Response, W.A. Cod/WH Demand Response, W.A. Trigate	- - - - - - - - - - - - - - - - - - -		- - - - - 2	-		- - - - 2	- - - - - - - - - - - - - - - - - - -		2	2	5.8 - - 13.3 - - 5.2 11.3 40.4	- - - - - - - - - 2	- - - - - - - - - - - - - - - - - - -		- - - 5.3 10.7	- - - - - - - - - 1	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - 1	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9	- - - - - - - - 1	- - - - 9.4
Utility Solar-Storage - IV- Vakima Total Stafe - Demand Response, OR-Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, C.A. Cond Will Demand Response, C.A. Tremsetat Demand Response, C.A. Tremsetat Demand Response, C.A. Tremsetat Demand Response, OR-Indigate Demand Response, W.A. Cond Will Demand Response, W.A. Andrews Demand Response, W.A. Themsetat Demand Response, W.A. A. Themsetat Demand Response Total Energy Efficiency, CA Energy Efficiency, CA		- - - - - - - - - - - - - - - - - - -	- - - - - 2 43	- - - - - - - - 2 47	- - - - - - - - - - - - - - - - - - -	- - - - 2 39	- - - - - - - - - - - - - - - - - - -		- - - - - 2 39	2 37	5.8 - - 13.3 - - 5.2 11.3 40.4 2 33			- - - - - - 2 29		- - - - - - 1 26		- - - - - - - - - - - - - - - - - - -	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 22	- - - - - - - - 1	- - - 9.4 19 417
Utility Solar-Storage - PV- Yakima Total Salar Demand Response, OR-Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Cool/WH Demand Response, CA. Arigate Demand Response, CA. Arigate Demand Response, CA. Arigate Demand Response, CA. Brigate Demand Response, CA. Brigate Demand Response, CA. Brigate Demand Response, OR-Brigate Demand Response, OR-Brigate Demand Response, OR-Brigate Demand Response, WA Cacol/WH Demand Response, WA Cacol/WH Demand Response, WA Cacol/WH Demand Response, WA Cacol/WH Demand Response, WA Finger Demand Response, W		11	- - - - 2 43 11	- - - - - - - - - - - - - - - - - - -	12	- - - - - 2 39	12	- - - - - - - - - - - - - - - - - - -	2	2 37 11	5.8 - 13.3 - - 5.2 11.3 40.4 2 33	- - - - - - - - - 2 31	- - - - - - - - 2 30 8	- - - - - - - - 2 29 8	- - - 5.3 10.7 2 26	6	6	- - - - - - - - - 1 25 5	1.1 - - - 23.3 30.3 - 7.7 9.9 3.1 - - 76.9 1 22 4 27	- - - - - - - 1 21 4 26	- - - - 9.4
Litility Solari-Storage - IV' - Yakima Trotal Sadar Demand Response, OR-Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, C.A. Cond Will Demand Response, C.A. Cond Will Demand Response, C.A. Trigate Demand Response, C.A. Trigate Demand Response, C.A. Trigate Demand Response, C.M. Trigate Demand Response, OR-Margia Demand Response, W.A. Andreas Demand Response, W.A. Andreas Demand Response, W.A. Thermostat Demand Response, W.A. Thermostat Demand Response, W.A. Thermostat Demand Response, W.A. Andreas	11	11	- - - - 2 43 11	12	12	- - - 2 39 12 52	12	11	- - - - 2 39 11	2 37 11 49 105	5.8 - 13.3 - 5.2 11.3 40.4 2 333 9 44	- - - - - - - - - 2 31	8	8	- - - 5.3 10.7 2 26	6	6	5	1.1 - - 23.3 30.3 - - 7.7 9.9 3.1 - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - 9.4 19 417 113 548 150
Utility Solar-Storage - IV- Vakima Total Stalar Dermand Response, Ol-Ancillary Services Dermand Response, W.A. Ancillary Services Dermand Response, W.A. Ancillary Services Dermand Response, CA. Cool-WH Dermand Response, CA. Cool-WH Dermand Response, CA. Cool-WH Dermand Response, CA. Cool-WH Dermand Response, Ol-Cool-WH Dermand Response, Ol-Storage Value Dermand Response, Ol-Storage Dermand Response, Ol-Storage Dermand Response, Ol-Storage Dermand Response, Ol-Storage Dermand Response, W.A. Cool-WH Dermand Response, W.A. Cool-WH Dermand Response, W.A. Arigate Dermand Response, W.A. Arigate Dermand Response, W.A. Trigate Dermand Response, W.A. T	11	11	- - - - 2 43 11	12	12 61	- - - 2 39 12 52	12	11	- - - - 2 39 11	2 37 11 49 105 180	5.8 13.3 5.2 11.3 40.4 2 33 9 444	- - - - - - - - - 2 31	8	8	- - - 5.3 10.7 2 26	6	6	5	1.1 - - - 23.3 30.3 - 7.7 9.9 3.1 - - 76.9 1 22 4 27	- - - - - - - - 1 21 4 226 45 15	- - - - 9.4 19 417 113 548 150 180
Unity Solar-Stonge - PV- Yakima Total Salar Demand Response, OR-Ancillary Services Demand Response, W.AAncillary Services Demand Response, W.AAncillary Services Demand Response, CAAncillary Services Demand Response, CAGod/WH Demand Response, CAGod/WH Demand Response, CAGod/WH Demand Response, CAGod/WH Demand Response, OR-Solar WH Demand Response, W.ACod/WH Demand Response, W.ATotal Total Demand Response, W.ATotal Demand Response, W.ATotal Demand Response, W.ATotal Inergy Hilliciancy, CA Inergy Hilliciancy, CA Inergy Hilliciancy, W.A. Inergy Hilliciancy, W.A. Inergy Hilliciancy, W.A. Inergy Hilliciancy, W.A. Interty Stonge - Sortpon Hattery Stonge - Portland NC Hattery Stonge - Vakima	11 52 - - - -	11 56 - - -	- - - 2 43 11 56 -	12 60 - -	12 61 45 - - 105	- - - - 2 39 12 52	12 56 - -	11 54 - - -	- - - 2 39 11 52	2 37 11 49 105 180 135	5.8		8 40 - - -	8 38 - -	5.3 10.7 2 26 8 35	- - -	6 31	5 30 - -	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 22 4 27 120	- - - - - - 1 21 4 26 6 45 15 30	
Utility Solar-Stonge - IV- Vakima Total State Demand Response, OR. Ancillary Services Demand Response, OR. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Coul/WH Demand Response, CA. Coul/WH Demand Response, CA. Thomestat Demand Response, CA. Thomestat Demand Response, OR. Coul/WH Demand Response, OR. Coul/WH Demand Response, OR. Livigate Demand Response, W. A. Coul/WH Demand Response, W. A. Coul/WH Demand Response, W. A. Thomestat Demand Response, W. A. Thomestat Demand Response, V. A. Thomestat Demand Response, V. A. B. Livigate Demand Response, V. A. B. Demand Response Total Demand Response, V. A. B. Demand Response Total Demand Response, V. A. Thomestat Demand Response,	11 52 - - - - - - - - 998	11 56 - - - - - 719	- - - - 2 43 11 56 - - -	12 60 - - - - 629	12 61 45 - - 105	- - - - 2 39 12 52	12 56 - - - - - 393	11 54 - - - - 418	- - - 2 39 11 52 - -	2 37 11 49 105 180 135	5.8		8 40 - - -	8 38 - -	5.3 10.7 2 26 8 35	- - -	6 31	5 30 - -	1.1 - - - 23.3 30.3 - 7.7 9.9 3.1 - - 76.9 1 22 4 27	- - - - - - - - 1 21 4 226 45 15	
Utility Solar-Stonge - PV- Vakinu Total Solar Demand Response, OR-Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Artifate Deman	11 52 - - - -	11 56 - - - - - 719 131	- - - 2 43 11 56 - - - - - - - - - - - - - - - - - -	12 60 - - - - 629 300	12 61 45 - 105 1,007 310	- - - 2 39 12 52 - - - 300 239	12 56 - -	11 54 - - - - 418 245	- - - 2 39 11 52 - - - - 476	2 37 11 49 105 180 135 - 1,075 423	5.8		8 40 - - - - 1,075 390	8 38 - - - - 1,075 360	- - 5.3 10.7 2 26 8 35 - - - 1,075 288	6 33 - - - - 1,075 194	6 31 - - - 1,074 212	5 30 - - - 1,010 211	1.1 - - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 22 4 27 120 - - - - - - - - - - - - -		
Littley Solar-Stonge - PV. Vakims Total Solar Demand Response, ORAncillary Services Demand Response, W.A. Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, CCood W.I. Demand Response, WCood P.W.I. Demand Response, WCood P.W.I. Demand Response, WCood P.W.I. Demand Response, WCood W.I. Demand	11 52 - - - - - - - - 998	11 56 - - - - 719 131 (61) 141	- - - - 2 43 11 56 - - - - - - - - - - - - - - - - - -	12 60 - - - - 629	12 61 45 - 105 1,007 310 (352)	- - - - - - - - - - - - - - - - - - -	12 56 - - - - 393 243	11 54 - - - - 418	- - - 2 39 11 52 - -	2 37 11 49 105 180 135 - 1,075 423 (912)	5.8		8 40 - - -	8 38 - -	5.3 10.7 2 26 8 35	- - -	6 31 - - - 1,074 212 (36) 93	5 30 - -	1.1 - 23.3 30.3 - 7.7 9.9 3.1 - 76.9 1 22 4 27 120		

P-13	2019	2020	2021	2022	2023	2024	2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)								(82)													(82)
Craig 2 (Coal Early Retirement/Conversions)		-	-	-	-	-		- (82)	(82)	-	-	-	-	-			-			-	(82)
Hayden 1	-	-	-	-	-	-	-	-	-	-		-	(44)		-	-	-			-	-
Hayden 2 Huntington 1		-	-	-	-	-		-	-		-	-	(33)		-		-	-	(459)	-	
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)		-
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74) (74)	-	-	-	-	-	-	-	-		-	(74) (74)
Cholla 4 (Coal Early Retirement/Conversions)		-	(387)	-	-	-		-	-	-	-			-	-		-	-	(·	-	(387)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)		-	-		-	-	-	-		-	(99)
DaveJohnston 2 DaveJohnston 3			-	-	-	-		-	-	(106) (220)		-	-	-	-		-	-	-	-	(106)
DaveJohnston 4	-	-	-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-		-	-	(330)
Naughton 1 Naughton 2		-		-	-	-		-	-		-	(156) (201)	-	-	-		-	-		-	
Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	(280)
Gads by 1-6 Retire - Hydro	-	-	-	-	-	-	-	-	-	-		-	-		(356)	-	-	-		-	-
Retire - Hydro Retire - Wind			-	-	-	(20)		-	-		-	(40)	-	-	-		-	-		-	(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60)			(160)
Expire - Solar PPA Retire - Other		-	-	-	(1)	(1)		-	-	-	-		-	-	-	(1)	(35)	(94)	(849)	(32)	(1)
Coal Ret_WY - Gas RePower		247	-	-			-	-		-		(247)	-			- (1)	-			- (32)	247
Expansion Resources				T										185	370						
SCCT Frame NTN SCCT Frame WYSW		-	-	-	-	-		-	-	-	-	-	-	- 183	-		-	-	370	-	
Total SCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	185	370	-	-	-	370		
Wind, Djohnston Wind, GO	-	-	-	-	-	-	-	-	-		620	1,099	-	-	-	-	-	-		-	
Wind, WYAE						1,920		-	-		-	-				<u> </u>					1,920
Total Wind	-	-	- 142	-		1,920	-	-	-		620	1,099	-	-	-	-		-		-	1,920
Utility Solar - PV - Utah-S Utility Solar - PV - WYSW		-	146	- 59	- 67	28 100	-	-	-		-	-		-	-		-	400	۲	-	300 100
Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	-	-	-	-	-	-	-	500	-	-	-	-	-	-	-	-
Utility Solar+Storage - PV - Huntington Utility Solar - PV - Utah-N		-	⊢ : ∃		-			-	- 40	- 37	- 3	- 726	- : T	-	-		-			909	- 76
Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N						95			- 40		- 3	-								-	95
Total Solar	-	-	146	59	67	223	-	-	40	37	3	726	500		-	-	-	400		909	571
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts		-	 	-	-	-		-	-		-	-	-	-	-		-	-	2.6 1.8	-	
Demand Response, ID-Irrigate	_	-	-	-	-	-	_	-		-	-	-	-	5.2	-		-	-	3.7	1.8	-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH		-	7.0	-	-	-	-	-	-	-		-	-	-	-	-	-	-	8.3		-
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9	-		7.2	-		6.7	-	-	6.8	-		7.0	-	74.1	7.2 2.6	28.1
Demand Response, UT-Irrigate	-	-	-	-	-	-		-		-	-	-	-	-	-	-	-			1.9	-
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	124.9	-	-	-	-	8.3	-	3.4	5.1 1.8	
Demand Response, WY-3rd Party Contracts		-	-	-	-	-		-	-	-	-		-	-	-		-	-	39.4		
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services		-			8.3		5.3	-	-		-			-		_	-		18.7 3.2	1.2	13.5
Demand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-		-	-	-	-	3.0
Demand Response Total	4.1		7.0	- 7	18.1	- 7	8.2	7.2	- 7	- 7	6.7	124.9	- 6	12.0	- 6	- 4	15.3	- 2	157.1	21.6	44.6 68
Energy Efficiency, ID Energy Efficiency, UT	58	67	67	68	69	68	67	68	65	62	54	53	52	50	49	36	32	26	20	22	659
Energy Efficiency, WY Energy Efficiency Total	10 74			14 88	15 91	16 91	16 91	18 93	19 91	18 87	15 76		13 71	12 68	11 65	9 49		7 36	5 28		147 873
Battery Storage - Utah-N	- /4	- 63	- 83	-	-	- 91	- 91	- 93	- 91	315.0	- 76	- /-4	- /1		- 63	- 49	- 43	-	- 28	525	315
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	405.0	-	-	-	-	-	-	-			-	405.0
Battery Storage - Idaho FOT East - Summer		-	-		-			-	-	-	-	300	289	165	219	221	300	300	300	300.0	
Existing Plant Retirements and PPA Termination																					
JimBridger 1		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-		(351)	
JimBridger 2 JimBridger 3		-	-	-	-	-		-	-	-	-	-	-	-	-		-	-		(356)	
JimBridger 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	(353)	-
Hermiston Retire - Hydro		(1)	(169)	-	(1)	-		(1)	-	- (7)	-		(6)	-	-	(75)	-	- (1)	(237)	-	(179)
Expire - Wind PPA	-	- (3)	-	(175)		(41)	-	-	-	-	(75)	(10)	-	(20)	(20)		-	(10)	(10)	-	(216)
Expire - Solar PPA		-		-				-	-	(2)	-		(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)
Expansion Resources SCCT Frame WV		-	1			- 1		-	-	1		-	1						443		
Total SCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	
Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima	-	-		-	-	500 405	-	-	-	-	-	-	403		-	-	-	-	-	-	500 405
Utility Solar+Storage - PV - Jbridger	-	-		-	-	-	-	-	-	-	-	-	-	-		-		-		1,056	-
Utility Solar - PV - Walla Walla Utility Solar+Storage - PV - S-Oregon	-		⊢ - ⊤	-	- 7		-		-	- T		-	100	- 72	-	-	-			-	
Utility Solar+Storage - PV - Yakima														- 12					430		
Total Solar	-	-	-	-	-	905	-	-	-	-	-	-	503	72	-	-	-	-	430	1,056	905
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	_	-		-				-	-			1.9			-		-	-	-	-	
Demand Response, CA-Cool/WH	-	-		-	-		-	-	-	-	-	-	-			-		-	1.5		-
Demand Response, CA-3rd Party Contracts	-	-		-	-	-	-	-	-	- 1	-	-	-		-		-		1.1	-	
Demand Response, CA-Irrigate Demand Response, CA-Thermostat		-		-	-	-			-		-	-	- :	-	-	-		-	4.8 5.8	-	
Demand Response, OR-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.3	-	-
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	35.7 13.3	-	
Demand Response, WA-Cool/WH				-	-	-						-			-				7.7	-	
Demand Response, WA-3rd Party Contracts	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	9.9	-	-
Demand Response, WA-Irrigate Demand Response, WA-Thermostat		-		-	-						-				-		-		8.3 16.6	-	
Demand Response Total	-	-	-	-	-	-	-	-	-	-	-	9.4	-	-	-	-	-	-	128.0	-	-
Energy Efficiency, CA	1		37	2	2	39	2	2	2	2	2	2	2	2	2	1	1	1	1	1	18
Energy Efficiency, OR Energy Efficiency, WA	40 11	9	10	42 10		12	36 12	41 11	39 11	37 10	33 9	9	30 8	29 8	26 8	26 6	6	26 5	22 4	21 4	381 108
Energy Efficiency Total	52			54	53		50		52	49	44	41	40	38	35	33	33	32	27		507
Battery Storage - S-Oregon Battery Storage - Willamette Valley	-	-	<u> </u>	-		-	-	-	-	15 120	-		1		-		-	-		345	15 120
Battery Storage - Willamette Valley Battery Storage - Portland NC		-		-	-	-		-	-	135	-	-	-	-	-			-			135
Battery Storage - Walla Walla	-	-	-	-	-	-	-	-	-	135	-	-	-	-	-	-	-	-	-	-	135
Battery Storage - Yakima	998	719	493	503	498	182	177	179	225	105 946	889	1.075	1.075	1.075	1.075	1.075	996	931	1.052	1.075	105 492
FOT West - Summer							249						476	451	386	299		301		1,073	264
FOT West - Winter	151			303			249				423										
	151	(61)	(573)	(224)	(1)	(62)	149	(148)	(85)	(912)	(93) 750	(753)	(350)	(114)	(557) 470	(156) 82	(36)	(280)	(2,260)	(1,451)	

P-14	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
xisting Plant Retirements and PPA Termination								(82)													(82
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	_	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-			(82
Hayden 1 Hayden 2		-	-	-	-	-	-			-	-		(44)	-	-	-		- :	 -		
Huntington 1	-	-	-		-	-	-				-	-	-	-	-		-		(459)	-	
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-		-	-	-	(450)	-	- (74
Colstrip 4 (Coal Early Retirement/Conversions)	- :						-			(74)	-						-				(74
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	-	-	(387)	-	-	-	-		-	(99)		-	-	-		-	-			-	(38)
DaveJohnston 1 DaveJohnston 2		-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-			(10
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	_	-	(22)
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)		-	-	-	(156)	-	-	-	-	(330)	-	-	-	-		-	-	-			(33)
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-		(201)	-	-		-	-		-	-	-	-	-	-		-	-	(20
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-		-	(280
Retire - Hydro						(20)	-				-				(330)		-			- :	(20
Retire - Wind	-	- (27)	- (17)	- (40)	- (0)	-	-	- (66)	- (2)	-	- (10)	(40)	- (200)	- (46)	- (101)	- (0.0)	-	-	-	-	-
Expire - Wind PPA Expire - Solar PPA		(27)	(17)	(49)	(0)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)			(160
Retire - Other	-	-	-	-	- '	- '	-	-	-	-	-	-	-	-	-	(1)		-		(32)	-
Coal Ret_WY - Cas RePower Expansion Resources		247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	-	-	-			24
SCCT Frame NTN	-	-	-	-	-	-	-	-	-	-	-	185	-	-	185	-	-	-	'	-	-
SCCT Frame UTN SCCT Frame WYSW	-	-	-	-	195	-	-	-	-	370	-	-	-	-	-	-	-	-		-	19:
Fotal SCCT	_	-	-	-	195	-	-	-	-	370	-	185	-	-	185	-	-	-		_	56
Wind, Djohnston	-	-	-	-	-	-	-	-	-	-	222	398	-	-		-	-	-		-	-
Wind, GO Wind, WYAE	-	-	-	-	-	1,920	-	-	-	-	-	1,100	-	-	-	-	-	-			1,920
Total Wind	-	-	-	-	-	1,920	-	-	-	-	222	1,498	-	-	-	-	-	-		-	1,920
Utility Solar - PV - Utah-S Utility Solar - PV - WYSW		-	146	-	-	154	-	-	-	-	-	-	289	-		100	-	400			300
Utility Solar-PV - WYSW Utility Solar+Storage - PV - Utah-S													211	-		-					
Utility Solar - PV - Naughton	-	-	-	-	172	-	-	-	-	-	-	-	-	-	-	-	-	-	901		17.
Utility Solar+Stomge - PV - Huntington Utility Solar+Stomge - PV - Utah-N				- 64															-	- 8	70
Total Solar	-	-	146	64	214		-	-	-	-	-	-	500	-	-	100	-	400		8	1,17
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6 1.8		-
Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	3.7	1.8	-
Demand Response, ID-Thermostat	4.1	-	7.0	-	5.3		-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	3.0	7.2	5. 28.
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	- 4.1	-		-	31.8		-	- 7.2	-	-	-	-	-	-	-	-	- 7.0	-	42.3	2.6	31.
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	1.9	
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH		-	-	-	79.4 3.4	-	-	-	-	37.3	-	8.2	-	-	-	-	8.3	-		5.1 1.8	116.
Demand Response, WY-3rd Party Contracts	-	-	-	-	27.1	-	-	-	-	-	-	-	-	-	-	-	-	-	12.3	-	27.
Demand Response, WY-Thermostat	-	-	-	-	12.9 8.3		5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	1.2	12.
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services		-	-	-	-	-	3.0		-	-	-		-	-	-	-	-	-			3.0
Demand Response Total	4.1		7.0		178.0		8.2	7.2	-	37.3	6.7	8.2	-	12.0			15.3	-	69.0	21.6	241.
Energy Efficiency, ID Energy Efficiency, UT	- 6 - 58		69	72	8 75		67	7 68	65	65	7 54	56	6 52	50	51	36	32	26	23	25	67
Energy Efficiency, WY	10			14				18	19		14		13	12	11	9	8	7	5		14
Energy Efficiency Total Battery Storage - Utah-N	74	83	88	93	98	92	91	93	91	150.0	75	77	71	68	68	49	45	36 15	31 480	34 45	15
Battery Storage - WYSW	-	-	-	-	60.0	-	-	-	-	90.0	-	-	-	-	15.0	-	-	-	300.0	15.0	150.
Battery Storage - Idaho FOT East - Summer		-	-	-	20	-	-	-	-	224	233	255	284	298	15.0 288	287	300	300	210.0 300	30.0 300	- 24
FOT East - Summer Existing Plant Retirements and PPA Termination		_	_		20	_	-			224	233	233	284	298	200	287	300	300	300	300	
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	(351)	-	-	-	-	-	-	-	-	-		-	-	-		-	(35
JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 (Coal Early Retirement/Conversions)		-	-	-	(356)		-	-	-		-	-	-	-		-	-	-	 -		(356
JimBridger 4 (Coal Early Retirement/Conversions)	-	-	-		(353)		-		-	-	-	-	-	-	-	-	-		-	-	(35)
Hermiston Retire - Hydro		- (1)	(169)	-	(1)	-	-	(1)		- (7)			(6)	-	-	(75)	-	- (1)	(237)		(179
Expire - Wind PPA	-	- (1)	- (102)	(175)	- (1)	(41)	-	- (1)		-	(75)	(10)	-	(20)	(20)	- (73)	-	(10)		-	(210
Expire - Solar PPA	-	-	-	-	-	-	-	-	-	(2)	-	-	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(:
Expansion Resources SCCT Frame WV	-	-	-	-	-	-	-	-	-	-	-	- 1	-	- 1	221	-	-	-	221	-	-
Total SCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	221	-	-	-	221	-	-
Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima	-	-	-	-	-	499 405	-		-	-	-		184	-	-	-	-				49:
Utility Solar - PV - jbridger	-	-	-		561	-	-		-		-	-	-	-	-	-	-	-	-	-	56
Utility Solar+Storage - PV - Jbridger Utility Solar - PV - Walla Walla	-	-	-	-	495	-	-	-	-	-	-	-	-	100	-	-	-	-		-	49:
Utility Solar - PV - Walla Walla Utility Solar+Storage - PV - S-Oregon													145	145							
Utility Solar+Storage - PV - Yakima			-		1.055	- 001					-		330	245				-		430	1.05
Total Solar Demand Response, OR-Ancillary Services		-	-	-	1,056	904	-	-	-	- 8	-		330	- 245	-	-	-	-		430	1,96
Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-		-	1.9
Demand Response, CA-Cool/WH Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-
Demand Response, CA-Irrigate							-			4.8	-						-		-		4.3
Demand Response, CA-Thermostat	-	-	-		15.9	-	-	-	-	5.8	-	-	-	-		-	-		7.4	-	5.1 15.1
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts		-	-	-	30.3		-	-	-	-	-	-	-	-	- :	-	-	-	7.4	2.0	30.:
Demand Response, OR-Irrigate	-	-	-	-	9.2	-	-	-		4.1	-	-	-	-	-	-	-	-	-	-	13.3
Demand Response, OR-Thermostat Demand Response, WA-Cool/WH		-	-	-	41.2	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7		41.2
Demand Response, WA-3rd Party Contracts	-	-	-	-	4.3	-				-	-	-		-	-				5.5	1.1	4.:
Demand Response, WA-Irrigate	-	-	-	-	5.2 11.3		-	-	-	-	-	-	-	-	-	-	-	-	3.1	-	5.: 11.:
Demand Response, WA-Thermostat Demand Response Total	÷				11.3					24.0			_						26.4	3.0	141.
Energy Efficiency, CA			2	2	2	2	2	2	2	2	2	2	2	2	2	1		1	1	1	1
Energy Efficiency, OR Energy Efficiency, WA	40 11			49 12				41 11	39 11				30 9	30 8	27 8	26 6		26 5	24	23	42
Energy Efficiency Total	52			63	61	59		54	52	49	44		40	40	36			32		28	55
Battery Storage - S-Oregon	-	-	-	-	300		-	-	-	180	-	-	-	-	-	-	-	-		(75)	486
Battery Storage - Willamette Valley Battery Storage - Portland NC	-	-	-	-	45 75		-	-		- 60	-	-	-	-	-	-	-		15 15	120	7:
Battery Storage - Walla Walla	-	-	-		120	-			-	15	-	-		-	-	-		-		165	135
Battery Storage - Yakima FOT West - Summer	998	713	486	491	1,075	632	724	697	769	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,062	997	1,075	1,075	105 766
FOT West - Winter	151	127	257	285	419	378	383	396	443	600	607	558	602	499	27	3	-	-		-	344
Existing Plant Retirements/Conversions	-	(61)		(224) 220				(148) 154	(85) 142				(350) 941	(114) 365	(557)	(156)		(280) 483		(43) 824	4
Annual Additions, Long Term Resources	130	139	297												541	182	92				

P-15 Existing Plant Retirements and PPA Termination	2019	2020	2021	2022 2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
Craig 1 (Coal Early Retirement/Conversions)	-	_	-		(8		-	-	-	-	-	-	-	-	-	-	-		-	(82)
Craig 2 (Coal Early Retirement/Conversions) Hayden 1 (Coal Early Retirement/Conversions)			-		(8	2) -	(44)	-	-	-	-	-		-	-	-	-		 	(82) (44)
Hayden 2 (Coal Early Retirement/Conversions)	-	-	-		-	(33)	-		-	- (418)	-	-	-	-		-	-	-	-	(33)
Hunter 1 (Coal Early Retirement/Conversions) Hunter 2 (Coal Early Retirement/Conversions)	+		-		-	-	-	-	-	(418)	(269)	-		-	-	-	-		 	
Hunter 3 (Coal Early Retirement/Conversions)	-	-	-		-	-	-		-	- (459)	-	(471)	-	-		-	-	-	-	-
Huntington 1 (Coal Early Retirement/Conversions) Huntington 2 (Coal Early Retirement/Conversions)	+	-	-		-	-	-	-	-	(439)	(450)	-		-	-	-	-		+ -	
Colstrip 3 (Coal Early Retirement/Conversions)			-		-	-	-	(74)	-	-		-	-	-		-	-		-	(74)
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	+		(387)		-	-	-	(74)	-	-	-	-		-	-	-	-		+	(74)
DaveJohnston 1		-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)
DaveJohnston 2 DaveJohnston 3	+	-	-		-	-	-	-	(106) (220)	-	-	-		-	-	-	-		+	(106)
DaveJohnston 4			-		-	-	-	-	(330)	-	-	-	-	-	-	-	-		-	(330)
Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)		-	-	- (2	(15		-	-	-	-	-	-		-	-	-	-		 	(156) (201)
Naughton 3 (Coal Early Retirement/Conversions)	1	(280)	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	(280)
Wyodak (Coal Early Retirement/Conversions) Gads by 1-6			-		-	-	-	-	-	-	-	(268)		(356)	-	-	-			
Retire - Hydro	-	-	-		(2)) -	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)
Retire - Wind Expire - Wind PPA		(27)	(17)	(49)	(0) -	-	(65)	- (3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA	-	-		-	(1) (D -	-	-	-	-		-	- (42)	- (101)	-	(35)	(94)	(849)	-	(1)
Retire - Other	-	247	-	-	-	-	-	-	-		(247)	-	-	-	(1)	-	-		(32)	247
Coal Ret WY - Gas RePower Expansion Resources		247			_	_		_	-	-	(247)	-	_	-		-	_			
CCCT - Utah-N - J 1xl		-	-		-	-	-	252 252	315 315	-	-	-	-	-	-	-	-			567 567
Total CCCT SCCT Frame NTN	+	-	-		-	-	-	- 232	- 313	-	370	-		-	-	-	-		+ -	- 367
SCCT Frame UTS		-	-		-	-	-	-	-	- 370	-	195	-	-	-	-	-			
SCCT Frame WYSW Total SCCT	+	-	 	-	+ :	+ -	-	-		370 370	370	195		-	-	-	-	-	 	\vdash
Wind, Djohnston	1 -		-		-	-	-	-	-	337	283	-	-	-	-	-	-	-		
Wind, GO Wind, WYAE	+	-			1,92		-	-	- : -	-	1,079	-		-	-	-	-		+ :-	1,920
Total Wind			-	-	1,92	-	-		-	337	1,363	-	-	-	-	-	-		-	1,920
Utility Solar - PV - Utah-S Utility Solar - PV - WYSW	+ -		146		-		_	-	- 1	-	-	100					400		+ = = = = = = = = = = = = = = = = = = =	146
Utility Solar+Storage - PV - Utah-S					15	1 -						306								154
Utility Solar+Storage - PV - GO	+		-		- 11 15	-	_	-	-	-	21	-	-	-	-	-	-		_	- 267
Utility Solar - PV - Naughton Utility Solar+Storage - PV - Huntington	+==				- 15	<u> </u>	—	-		265	450	-		-	-	-	-		+ = +	- 267
Utility Solar - PV - Utah-N		-	-	- 64	- 23	-	-	-	-	33	-	-	-	-	-	-	-	-	-	300
Utility Solar+Storage - PV - Utah-N Total Solar			146		11 54		-	-	-	298	471	406	_	-	-	-	400		 	300 867
Demand Response, ID-Cool/WH	-		-		-	-	-	-	-	-	-	2.6	-	-		-	-	-	-	-
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate			- :		-	-	-	-	-	-			1.8 5.2		-	-	3.7	 '	1.8	
Demand Response, ID-Thermostat	-	-	-		-	-	-	-	-	-	-	8.3	-	-	-	-	-		-	-
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1		7.0		.9 -	-	7.2	-	- : -	6.7		68.5	6.8		-	7.0			7.2 2.6	28.1
Demand Response, UT-Irrigate			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH			-	-	-	_	-	116.7	-	-	8.2	3.4	-	-	_	8.3	-		5.1 1.8	116.7
Demand Response, WY-3rd Party Contracts	-	-	-		-	-	-	-	-	-	-	37.3	-	-		-	-	-	-	-
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-			-	-	-	-	-	18.7	1.8	-	_	-	-	-	-		1.2	
Demand Response, UT-Ancillary Services			-	- 1	.3 -	5.3				-				-			-	3.2	- 1.2	13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1		7.0	- 1	.1 -	3.0 8.2		116.7	-	25.4	10.0	120.2	13.8		-	15.3	3.7	3.2	21.6	3.0 161.2
Energy Efficiency, ID	6	7	7	7	8	3 7	7	7	7	7	7	6	6	6	5	4	4	3	3	71
Energy Efficiency, UT Energy Efficiency, WY	58 10	69 12	72 13	73 14	75 7 17 1	5 71 7 17	74 18	70 19	67 18	62 16	65 15	61 13	58 12	58 11	40		32	20	23	704 155
Energy Efficiency Total	74	87	92	94 1	9 9	96	99	96	92	85	87	81	76	75	53		43	28		929
Battery Storage - Utah-N Battery Storage - WYSW			-	-	105.	-	435.0	180.0	-	360.0 150.0	120.0	30.0 285.0	60.0	330.0 30.0	-	-	-			540 180.0
Battery Storage - W 15W Battery Storage - Idaho			-		-			-		-	330.0	-	-	60.0						-
FOT East - Summer Existing Plant Retirements and PPA Termination					-		71	246	235	300	300	300	300	300	300	300	300	300	300	55
JimBridger 1 (Coal Early Retirement/Conversions)																				
JimBridger 2 (Coal Early Retirement/Conversions)		-	- 1	- -	-	-	-	(351)	- 1	-	-	- 1	-	-	-	-	-	-	-	(351)
JimBridger 3 (Coal Early Retirement/Conversions)	-		-	- :		-	(356)	(351)	-	-	-	-	- :	-	-	-	-	-	-	(351) (356)
JimBridger 4 (Coal Early Retirement/Conversions)			-		(34	- (353)	(356)	(351)	-	-	-	-	-	-		-	-	-	-	(351) (356) (349) (353)
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston	-		-		-		-	(351)			-	-	-	-	-	-	-	- (237)	-	(356) (349) (353)
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston Retire - Hydro		- (1)	- - - - (169)		(1) -	(353)	-) - (1)	(351)	- (7)	-	- - - - -	- - - (6)	- :		(75)	-	- - - - (1)	-		(356) (349) (353) - (179)
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston Retire - Hydro Espire - Wind PPA Espire - Solar PPA	-	(1)	- - - - (169)		(1) -	(353)	-	(351)	- - - - (7)	(75)	- - - - (10)	- - - (6) - (67)	- - - - (20) (49)	(20)	- - - - (75)	-	(10)	(10)	-) - -	(356) (349) (353)
Jimbridger 4 (Coal Early Retirement/Conversions) Hermiston Retire - Hydro Espre - Wind PPA Espre - Solar PPA Espre - Solar PPA COCT - Justicer - J Isl	-	(1)	- - - 0 (169)		(1) -	(353)	-) - (1)	(351)	-	-	- - - - (10)	-	- - (20)	(20)	(75)		(10)	(10)	-) - -	(356) (349) (353) - (179) (216)
JimBridger 4 (Coal Early Retirement/Conversions) Hemiston Retire - 1 Hydro Espire - Wand PPA Espire - Solar PPA Espire - Solar PPA CCCT - Jimidger - J 1st Total CCCT	-	(1)	- - - 0 (169) -		(1) -	(353)	(1)	(351)	(2)	(75)	- 487 487	-	- - (20)	(20)	(75)		(10)	(10)	-) - -	(356) (349) (353) (179) (216) (2)
Junibulger 4 (Coal Early Retirement/Conversions) Hermiston Reiries - Hydro Espire - Word PPA Espire - Solar PPA Coct - Juniger - Hol Total CCCT - Mulger - Hol Total CCCT	-	(1)	- - - 0 (169) - -		(1) -	(353)	(1)	(351)	(2)	- - (75) - - - 443	- 487 487	-	- - (20)	(20)	- - - (75)		(10)	(10)	-) - -	(356) (349) (353) - (179) (216) (2)
JimBridger 4 (Coal Early Retirement/Conversions) Hemiston Retire - 1 Hydro Espire - Wand PPA Espire - Solar PPA Espire - Solar PPA CCCT - Jimidger - J 1st Total CCCT	-	(1)			- (1) - (4 - -	(353)	(1)	-	(2)	(75)	- 487 487	-	- - (20)	- (20)	(75)		(10)	(10)	-) - -	(356) (349) (353) - (179) (216) (2) 487 487 - -
Junibulger 4 (Coal Early Retirement/Conversions) Hermiston Retire - Hydro Retire	-	-		(175)	- (1) - (4 - - - - - - 34	(353)	(1) - (1) -	(351)	(2)	- (75) - - - 443 443	- 487 487	-	- (20) (49)	- (20)	(75)	- - - (1)	(10)	(10)		(356) (349) (353) - (179) (216) (2) 487 487 - - - - 436
Junkhalgar 4 (Coal Early Retirement/Conversions) Hermiston Retire - Hydro Bepire - Wand PPA Bepire - Solar PPA Separation Resources CCCT - Juneary SCCT - Foreigne - J 1st SCCT Foreigne - W Total SCCT Ultity Solar - PV - Vakina Ultity Solar - PV - Parktger Ultity Solar - PV - Dridger Ultity Solar - Solar - PV - Dridger Ultity Solar - Solar - PV - Dridger			- (169)		- (1) - (4 - -	(353)	- (1) - - - -	-	(2)	- - (75) - - - 443	- 487 487	-	- (20) (49)	- - - - - (20) - - - - - - - - - - - - - - - - - - -	- (75)	(1)	(10)	(10)		(356) (349) (353) - (179) (216) (2) 487 487 - -
Junkhalgar 4 (Coal Early Retirement/Conversions) Hermiston Retire - Hydro Bepire - Wind PPA Bepire - Solar PPA Express - Roslar PPA Expression Resources CCCT - Junkliger - J 1st Trand - CCCT Using Solar - PV - Walting Using Solar - PV - Stringer Using Solar - PV - Stringer Utility Solar - PV - Walting Utility Solar - PV - Sorage - PV - Walting Utility Solar - PV - Walting Utility Solar - PV - Sorage - PV - Sorage - PV - Walting Utility Solar - PV - Sorage - PV - P		-	- (169)	(175)	(1) - (4	(353)	(1) - (1) -	-	(2)	- (75) - - - 443 443	- 487 487	-	- (20) (49)	-	- - - (75)	- - - (1)	(10)	- (10) (175)		(356) (349) (353) - (179) (216) (2) 487 487 - - - 436
Junifieliger 4 (Coal Early Retirement/Conversions) Hermiston Retire - Hydro Retire - Hydro Retire - Ward PPA Expension Ward PPA Expension Hermiston Expension Hermis		-		(175)	(1) - (4) 34	(353)	(1) - (1) -	-	(2)	- (75) - - - 443 443	- 487 487	(67)	- (20) (49)	-	- - - (75) - - - - - - - - - - -	- - - (1)	(10)	(10)	- -	(356) (349) (353) - (179) (216) (2) 487 - - - - - - - - -
Jundhalque 4 (Coal Early Retirement/Conversions) Hermiston Reities - Hydro Espine - Word PPA Espine - Solar PPA Espine - Solar PPA Espine - Solar PPA CCT - Juring - July Total CCT SCCT - Juring - July Total CCT Ultility Solar - PV - Yukima Ultility Solar - PV - Juring Ultility Solar - PV - Bridger Ultility Solar - Solar - PV - Bridger Ultility Solar - Solar - PV - Solar - PV - Ultility Solar - Solar - PV - Solar - PV - Ultility Solar - Solar - PV - Solar - PV - Ultility Solar - Solar - PV - Solar - PV - Solar - PV - Ultility Solar - Solar - PV - Solar - Solar - PV - Solar - PV - Solar - PV - Solar - Solar - PV - Solar - PV - Solar - Solar - PV - P		-	(169)	(175)	(1) - (4 3 34 50 40	(353)	(1) - (1) -	- - - - - - - - - - - - - - - - - - -	(2)	- (75) - (43) 443 443 - 6	- 487 487	(67)	- (20) (49)		(75)	- - - (1)	(10)	- (10) (175) 	- -	(356) (349) (345) (216) (216) (216) (487) 487
Justificiage 4 (Coal Early Retirement/Conversions) Hermitson Retire - Hydro Retir			- (169)	- (175)	(1) - (4 3 34 50 40	(353)	(1)		(2)	- (75) - (443 443 443 - 6 6	- 487 487	(67)	- (20) (49)		- - - (75)	(1)	(10)	- (10) (175) 	- -	(356) (349) (353)
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Justificiage 4 (Coal Early Retirement/Conversions) Hermation Retires - Hydro Hermation Retires - Hydro Hermation Retires - Hydro Hyd				(175)	(1) - (4 3 34 50 40	(353)	(1)		(2)	- (75) - (75) - 443 443 - 6 6	487 487 	(67)	- (20) (49)			(1)	(10)	(175) (175)		(356) (349) (353) - (179) (216) (2) (2) 487 - - - - - - - - - - - - - - - - - - -
Jinshidager 4 (Coal Early Retirement/Conversions) Hermiton Retire - Hydro Hermiton Hermiton Retire - Hydro Hermiton Herm				- (175)	- (1) - (4)	(353)	(1)		(2)	- (75) - (443 443 443 - 6 6	487 487 	(67)	- (20) (49)		(75)	(1)	(10)	- (10) (175) (175) 2 		(356) (349) (353) - (179) (216) (2) (2) 487 - - - - - - - - - - - - - - - - - - -
Justificiator 4 (Cont Early Retirement/Conversions) Hermiston Reities - Hydro Expire - Solar PPA Expire - So				(175)	- (1) - (4)	(353)	(1)		(2)	- (75) - 443 443 443 - 6 - 6 	487 487 	(67)	- (20) (49) (49)			(1)	(10)	10 (10) (175		(356) (349) (353) - (179) (216) (2) 487 - - - - - - - - - - - - - - - - - - -
Justificiage 4 (Coal Early Retirement/Conversions) Hermation Retires - Hydro Reprise - Solie PPA Fapuncian Res merces CCCT - Bridge - Jisli Total CCCT Total SCCT Unity Solie - PY-Parking Unity Solie - PY-Wallia Walla Unity Solie - PY-Wallia Walla Unity Solie - PY-Wallia Walla Demond Response, OR-Ancillary Services Demond Response, Wa-Ancillary Services Demond Response, OR-ColoryWill Demond Response, Wa-Arberty Contracts Demond Response, Wa-Arberty Contracts Demond Response, Wa-Arberty Contracts Demond Response, Wa-Arberty Contracts				(175)	- (1) - (4)	(353)	(1)		(2)		487 487 	(67)	- (20) (49) (49)		(75)	(1)	(10)	0 - 0 (10) (175) ()	(356) (349) (353) (210) (20) (20) (20) (20) (20) (20) (20) (2
Justificiage 4 (Coal Early Retirement/Conversions) Hermitson Retire - Hydro Retir				(175)	- (1) - (4)	(353)	(1)		(2)		487 487 	(67)	- (20) (49) (49)			(1)	(10)	- (175) (175) (175) - (175) -		(350) (349) (349) (353) (216) (216) (216) 487
Jushbalger 4 (Coal Early Retirement/Conversions) Hermiton Retire - Hydro Retire -				(175)	- (1) - (4)	(333) (333)			(2)		487 487	(67)	- (20) (49) (49)		(75)	(1)	(10)	0 - 0 (10) (175) ((11)	(356) (349) (353) (210) (20) (20) (20) (20) (20) (20) (20) (2
Junishidager 4 (Coal Early Retirement/Conversions) Hermitson Retires - Hydro R				(175)	(1) - (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(353)			(2) 487 487 	- (75) - (443) - 4443 - 443 6	487 487 	(67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(10) (115) ((1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(350) (349) (349) (353) (353) (219) (216) (216) (32) 487
Jundhalquer 4 (Coal Tanly Retirement/Conversions) Hermiston Reities - Hydro Espine - Wond PPA Lopine - Solar PPA Lopine - Lopin	40			(175)	- (1) - (1)	(353)			- (2) 487 487		487 487 	- (67)	- (20) (49) (49) - (49) (49) - (49) (49) - (49) (49) (49) - (49) (49) (49) (49) (49) (49) (49) (49)		1 266	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(19)	- 1 (175) - 1 (175) - 2 - 2		(350) (349) (349) (353) (353) (353) (219) (219) (219) (219) (32) (487 (47) (47) (487 (487 (487 (487 (487 (487 (487 (487
Jushbalger 4 (Coal Early Retirement/Conversions) Hermiston Reitze - Hydro Hermiston Reitze - Hydro Hermiston Reitze - Hydro Hy	40			(175)	(1)	(353)			(2) 487 487 		487 487 	(67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(10) (115) ((1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(350) (349) (349) (353) (353) (353) (229) (219) (229) (487
Justificiator 4 (Coal Early Retirement/Conversions) Hermiston Retire - Hydro Ret	40			(175)	10)	(333 	- (1) - (1)		(2) 487 487 	- (75) - (443) 443) 443 - (6) - (75)	487 487 	(67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(10) (115) ((1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(350) (349) (349) (345) (353) (216) (216) (216) (3487
Jushbalger 4 (Coal Early Retirement/Conversions) Hermation Retire - Hydro Retire	40 11 52			(175)	10)	(353)	- (1) - (1)			- (75)	487 	(67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(10) (115) (10 (10) (175		(350) (349) (349) (353) (353) (353) (219) (219) (219) (219) (32) (487 (487 (487 (487 (487 (487 (487 (487
Jushbalger 4 (Coal Early Retirement/Conversions) Hermitson Retire - Hydro Retire	40 11 52 - - - 726			(175)	(1) (1) (2) (3) (4	(353)	(1) (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4				487 487 	(67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	(10) (115) (10 (10) (175		(350) (349) (345) (353) (353) (210)
Justificiator 4 (Cont Early Retirement/Conversions) Hermiston Reites - Hydro Rei	40 11 52			(175)	10)	(353)	- (1) (1) (2) (3) (4) (46) (4) (46) (5) (1) (2) (1) (2) (4) (46) (4) (46) (5) (2) (2) (4) (46) (46) (46) (46) (46) (46) (46)			- (75)	487 487 	(67)				(1) (1) (2) (3) (3) (3) (3) (3) (3)	(10) (115) (10 (175) 10 (175) 11 (175) 12 (175) 13 (175) 14 (175) 15 (175) 16 (175) 17 (175) 17 (175) 18 (175) 18 (175) 19 (175) 19 (175) 10 (175) 10 (175) 10 (175)		(350) (349) (349) (353) (353) (353) (219) (219) (219) (219) (32) (487 (487 (487 (487 (487 (487 (487 (487

										Capacity	y (MW)		1								Resource	Totals 1
P-16	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-yea
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)	- 1	- 1	-	-	- 1	-	-	(82)	_	-	-	-	-	-	- 1	-	- 1		- 1	-	(82)	0 0
Cmig 2 Hayden 1	-	-	-	-	-	-	-		-	-	-	-	- (44)	-	-	-	(82)	-	-	-		(
Hayden 2	-	-		-	-		-	-		-		-	(33)		-						-	(
Huntington 1 Huntington 2	-	-	-	-	-		-	-		-	-	-	-	-	-		-		(459) (450)	لــــــــا		(4
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	- (99)	-	-	-	-	-	-	-	-		-	(387)	(3
DaveJohnston 1 DaveJohnston 2	-	-	-	-	-		-	-		(106)	-	-	-	-	-		-				(99)	(1
DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-			(220)	(2)
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(156)	(1
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	(201)		-	-	-	-	-	-	-	-	-		-	-	 		(201) (280)	(2
Gads by 1-6 Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	(356)	-	-	-		-	(20)	(3
Retire - Wind	-	-	-	-	-	-	-	-		-	-	(40)	-	-	-	-	-	-		-	-	(
Expire - Wind PPA Expire - Solar PPA		(27)	(17)	(49)	(0)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)		(160)	(5
Retire - Other	-	-	-	-	- 1		-	-		-	-	-	-	-	-	(1)				(32)	-	
Expansion Resources CCCT - Utah-N - J 1x1	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-		189		-	1
Total CCCT SCCT Frame UTN	-	-	-	-	195		-	-	 -	-	-	-	-	-	389		-	-	189		195	
SCCT Frame UTS	-	-	-	-	-	-	-	-	-	370	-	-	-	-	-	-	-	-	389	-	370	3
SCCT Frame WYSW Total SCCT	-	-	-	-	195		-	-		370	-	-	-	-	389		-	-	389		564	1,3
Wind, Djohnston Wind, GO	-	-	-	-	-	-	-	-	-	-	157	436 85	27 782	233	-		-	-				1,1
Total Wind	-	-		-	-		-	-		-	157	521	809	233	-	-	-					1,7
Utility Solar - PV - Utah-S Utility Solar - PV - WYSW	-	-	146	- 59	-	95	-	-	-	-	-	-	-	-	-	-	-	400	100		300	1
Utility Solar+Stomge - PV - Utah-S Utility Solar - PV - Naughton	-	-	-	-	- 73	- 564	-	-		-	-	-	-	-	-	-	-	-	111		637	
Utility Solar - PV - Huntington	-	-		-	-	-						-		-						306	-	
Utility Solar+Storage - PV - Huntington Utility Solar - PV - Utah-N	-	-	-	-	-		-	-		-	-	-	106	- 22	-				 	603	-	1
Total Solar	-	-	146	59	73	659	-	-		-	-	-	106	22	-	-	-	400	211		937	2,5
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-		- 1					-											2.6 1.8	-	-	
Demand Response, ID-Inrigate Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-		-	-	-	-	-	5.2	-	-		3.7	1.8	-	1
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9		-	7.2		-	6.7		-	6.8	-		7.0		-	7.2	28.1	5:
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-		-	-	-		-			-		-	-		-	-			74.1	2.6 1.9		76
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH	-	-	-	-	45.8		-	-		59.8	11.0	-	-	-	-	8.2	8.3	_	3.4	5.1 1.8	105.6	13
Demand Response, WY-3rd Party Contracts	-	-		-	-		-	-		-		-		-	-				39.4	-		31
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-	-	-	-		-	-		-	-	-	-	-	-		-	-	1.8 18.7	1.2		19
Demand Response, UT-Ancillary Services	-	-	8.3	-	-	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5 3.0	16
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	15.3	-	55.7		8.2	7.2		59.8	17.7	-	-	6.8	5.2	8.2			157.1		150.2	382
Energy Efficiency, ID Energy Efficiency, UT	6 58	6 67	67 67	7 69		7 66	7 65	7 63	7 59	7 57	6 52	6 51	6 48	6 48	5 47	34		3 25	3 22	3 25	67 646	
Energy Efficiency, WY	10	10	13	14	16	14	14	1.5	17	16	14	14	12	11	11	8	8	7	5	5	138	2:
Energy Efficiency Total Battery Storage - Utah-N	74	- 83	- 86	90	98 90.0	87	- 86	- 84	83	- 80	- 73	71	- 66	- 65	- 63	- 46	- 42	35	30	(90)	851 90	1,3
Battery Storage - WYSW Battery Storage - Idaho	-	-	-	-	135.0	-	-	-	-	-	-	-	-	-	-	-	-	-	210.0 135.0	270.0	135.0	615 135
FOT East - Summer	-	-	-	-	290	115	209	187	250	284	300	277	198	217	256	256	300	300		300	134	
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)	-	- 1	-	-	(351)	-	-	-	-	-	-	-	-	-	- 1	-	- 1		- 1		(351)	(3
JimBridger 2 JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	(3
JimBridger 4	-	-	- :	-	-		-	-		-		-			-					(353)	-	(3
Hermiston Retire - Hydro	-	- (1)	(169)	-	(1)		-	- (1)		- (7)	-	-	- (6)	-	-	(75)	-	(1)	(237)		(179)	(2
Expire - Wind PPA	-	- '	-	(175)		(41)	-	- '	-		(75)	(10)	-	(20)	(20)	-	- (1)	(10)	(10)	- (11)	(216)	(3)
Expire - Solar PPA Expansion Resources	-	-				-			_	(2)		-	(67)	(49)			(1)	(115)	(175)	(11)	(2)	•
CCCT - Jbridger - J 1x1 Total CCCT	-		-	-	-		-	-	-	-	-	-	-	-	-		-			974 974		9
SCCT Frame SO	-	-	-	-	-	-	-	-		210	-	-	-	-	-	-	-		-		210	2
SCCT Frame WV SCCT Frame YK	-			-			-			-		-							443 233		 	2
Total SCCT Wind, YK	-	-	-	-	-	-	-	-		210	-	-		-		-			676 120		210	
Total Wind	-	-	-	-	-		-	-		-	-	-	-	-	-		-		120			
Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima	-	-	-	-		290 405	-	-		-	-	-	-	-	-		433		 		290 405	2
Utility Solar - PV - jbridger	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 42	-	-	82	- 1	
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	-											-	-		-		77			
Total Solar Demand Response, OR-Ancillary Services	-		-	-	-	695	-	-	-	- 8		-	-	-	-		475		77	82	695 8	
Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-		1.9	
Demand Response, CA-Irrigate Demand Response, CA-Thermostat	-		-	-			-	-	-	-		-			-				4.8 5.8		-	
Demand Response, OR-Cool/WH Demand Response, OR-Irrigate	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	3.0 13.3		-	1
Demand Response, WA-3rd Party Contracts	-	-	-	-	-	-		-		-		-	-	-	-	-			5.5	-		
Demand Response, WA-Irrigate Demand Response, WA-Thermostat										_ :	-	-	-				2.0		8.3 14.6	-		,
Demand Response Total	- 1	- 2		- 2	- 2			- 2		9.4	- 2		-	- 2		- 1	2.0	- 1	55.3	-	9.4	- 6
Enarry Efficiency CA	40	44	43	42	47	34		30		31	28	26	25	28	25	25	24	25	24	23	375	
Energy Efficiency, CA Energy Efficiency, OR	11	10 56	11 56	12 56	61	11 46		11 43				9 37	8 35	8 37	7 34	32		5 30		27	109 501	
Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA	52				135	-	-	-						-	-	-			150			
Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency Total Battery Storage - S-Oregon		-	-	_	10						-		-	-	-	-	-	-			45	
Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency Total Battery Storage - St-Oregon Battery Storage - Willamette Valley Battery Storage - Portland NC		-	-		45 45					-	-	-		-	-	-	-	1	45	60	45	
Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency Total Battery Storage - ScOregon Battery Storage - Wilamerte Valley Battery Storage - Wilamerte Valley Battery Storage - Wallamette Valley Battery Storage - Walla Walla				-	45 105	-		-		-	-	-	-	-	-	-	-	-	45 60	60 105	105	1
Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency Total Battery Storage - ScOregon Battery Storage - Wilamette Valley Battery Storage - Wilamette Valley Battery Storage - Wallamette Valley Battery Storage - Walla Walla Battery Storage - Vakima FOT West - Summer FOT West - Summer	52 - - - - - - - - 998	- - - - - 961	- - - - 621	682	45 105 105 1,075	1,075	1,075	1,075		1,075	1,075	1,075	1,075	1,075	1,075	1,075		1,013	- 1,075	105 - 1,054	105 105 971	1,0
Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency Total Battery Storage - ScOregon Battery Storage - Walmertte Valley Battery Storage - Walmertte Valley Battery Storage - Walmertte Valley Battery Storage - Walle Walla Battery Storage - Walkina FOT West - Summer FOT West - Summer FOT West - Summer FOT West - Walter Essisting Plant Retirements/Conversions	52 - - - - - - 998 151	- - - - - 961 131 (308)	269 (573)	307 (224)	45 105 105 1,075 318 0 (709)	268 (62)	275	279 (148)	331	135 (764)	159 (93)	160 (149)	190 (350)	208 (114)	225 (557)	242 (156)	243 (117)	404 (280)	1,075 230 (2,260)	105 - 1,054 240 (1,101)	105 105	1,0
Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency Total Battery Storage - Scorgon Battery Storage - Wilhowerte Valley Entergy Storage - Willew Walle Battery Storage - Walle Walle Battery Storage - Valle Walle Entergy Storage - Valle Walle FOT West - Summer FOT West - Summer FOT West - Summer	52 - - - - - - - - 998	- - - - 961 131 (308) 139	269	307	45 105 105 1,075 318 (709) 1,142	268	275 - 138	279 (148) 134	331 (3) 128	135 (764) 771	159 (93) 287	160 (149) 629	190	208	225 (557) 491	242	243 (117) 566	404	1,075 230 (2,260) 2,532	105 - 1,054 240 (1,101) 2,482	105 105 971	1,0

P-17	2019	2020	2021	2022	2023 2	024	2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year	
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	(82)	- 1	- 1	- 1	-	-	- 1	-	-	-	-	T -	-			(82)	
Craig 2 (Coal Early Retirement/Conversions) Hayden 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	(82)	-	- (44)	-	-		-	-		-	-	-	-	-		(82) (44)	L)
Hayden 2 (Coal Early Retirement/Conversions) Hunter 1 (Coal Early Retirement/Conversions)		-	-	-	-	-	(33)	-	-	-	(418)		-	-	-	-	-	-		-	(33))
Hunter 2 (Coal Early Retirement/Conversions) Hunter 3 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	-	-			(269)	(471)	-	-	-		-				Ŧ
Huntington 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(459)	(450)	-	-	-	-		-				#
Huntington 2 (Coal Early Retirement/Conversions) Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	(74)	-	-	(450)	-	-	-	-		-		-	(74)	
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	(74)	-			-	-	-	-	-	-			(74)	3
DaveJohnston 1 DaveJohnston 2	-	-	-	-	-	-	-	-	-	(99) (106)	-	-	-	-	-	-	-	-			(99) (106)	2
DaveJohnston 3		-			-	-	-	-		(220)		-	-	-	-	-		-			(220)))
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	(156)	-	-	-	(330)		-	-	-	-	-	-	-			(330)	3
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	- :	(201)	-	-	-	-		- :	-	-	-	- :		-				(201) (280)	2
Wyodak (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	-	-	(268)	-	-	-	-	-		-	-	\perp
Gads by 1-6 Retire - Hydro	-				-	(20)	-	-	-	-			-	-	(356)			-			(20)	0
Retire - Wind Espire - Wind PPA	-	(27)	(17)	(49)	- (0)	-	-	(65)	- (3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)		(160)	
Expire - Solar PPA	-				(1)	(1)	-	-	- (-7	-			- (200)	-	-	- (1)	(35)	(94)	(849)	(32)	(1)	0
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-		-	-	-	-			(247)	-	-	-	- (1)	-	-		- (32)	247	#
Expansion Resources CCCT - Utah-N - J 1xl	-	-	-	-		- 1	- 1	- 1	- 1	504	63		-	-	-	-	-	-			504	₹
Total CCCT	-	-	-	-	-	- 1		-	-	504	63	-	- 195		-	-	-	-			504	Ŧ
SCCT Frame DJ SCCT Frame NTN	-	-	-	-	195	-	-	-	-	-		370	-		-	-		-			195	#
SCCT Frame UTN SCCT Frame UTS		-	-		195						389					-		-			195	+
SCCT Frame WYSW Fotal SCCT	-	-	-	-	195	-	-	-	-	-	185 574	370	185 379		-	-	-	-	-		- 195	Ŧ
Wind, Djohnston	-	-	-	-	-	-	-	-	-	16	396	14	-	-	-	-	-	-			16	
Wind, GO Wind, WYAE					-	1,920						103									1,920	
Wind+Storage, GO Fotal Wind				-	-	1,920		-		16	396	195 311				-		-	+=		1,936	Ŧ
Utility Solar - PV - Utah-S	-	-	146	-	-	-	-	-	-		-	-	-	-	-	-	-	400	-	-	146	
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S		-		-	-	154		-	-	-	111	100	-		- :	-		-			154	#
Utility Solar+Storage - PV - GO Utility Solar - PV - Naughton		-	-	-	111	156	-	-		-		803	-	-		-	-	-			267	+
Utility Solar+Storage - PV - Huntington	-	-	-	-		-	-	-	-	-	459	256	-	-	-	-	-	-		-	-	#
Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N	-	- :	-	64		42	-		-	- :	33		-			- :				-	106	
Total Solar Demand Response, ID-Cool/WH	-	-	146	- 64	111	351		-	-	-	603	1,158	2.6	-	-	-	-	400			673	+
Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-	#
Demand Response, ID-Irrigate Demand Response, ID-Thermostat	-					-	-	-	-	-		-	8.3	5.2	-			3.7		1.8		\pm
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9	-		7.2	-	-	6.7		68.5	6.8	-	-	7.0 5.7	-		7.2 2.6	28.1	+
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	- 116.7	-	-	- 82	-	-	-	-	8.3	-		1.9 5.1	116.7	#
Denmind Response, UT-Thermostat Denmind Response, WY-Cool/WH	-	-		-	-	-	-	-	-	-			3.4	-	-	-	-	-		1.8	- 110.7	+
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	- :			-	37.3 1.8	-		-	2.1	-			-	+
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services			- :	- :	8.3	-	5.3	-	-	18.7	- :	-	-	-	- :		-		3.2	1.2	18.7 13.5	
Demand Response, WY-Ancillary Services	- 4.1	-	7.0	-	18.1	-	3.0 8.2	7.2	116.7	18.7	6.7	8.2	121.9	13.8	-	-	23.0	3.7	3.2	21.6	3.0 179.9	#
Demand Response Total Energy Efficiency, ID	6	7	7	7	7	- 8	7	7	7	7	7	6	6	6	- 6	- 4	4	4	3	3	70)
Energy Efficiency, UT Energy Efficiency, WY	58 10	69 10	69 11	69 12	75 15	72 16	71 16	72 17	65 18	62 17	57 15	56 15	52 13	50 12	49 11	38 9	35 8	28 7	20 5	22 5	682 143	+
Energy Efficiency Total	74	85	87	88	97	96	95	97 225.0	90 330.0	86	79	77	71	68	65	51	47	38	28 15	30	895 555	
Battery Storage - Utah-N Battery Storage - Utah-S	-	-	-	-		-		- 225.0	330.0	-			-		15.0	-		-	405.0			#
Battery Storage - WYSW Battery Storage - Idaho	-	-	-	-	-	-		-	-	-		30.0	45.0	-	195.0 165.0		15.0	105.0		15.0	-	+
FOT East - Summer FOT East - Winter	-	-	-	-	-	-	-	26	256	269	208	300	300	49 300	88 300	88 300	88 300	300	55 300	300	55	Ŧ
Existing Plant Retirements and PPA Termination					-									300	500	300			300			
SimBridger 1 (Coal Early Retirement/Conversions) SimBridger 2 (Coal Early Retirement/Conversions)		-		-	-	-	-	(356)	(351)	-						-		-			(351)	5)
limBridger 3 (Coal Early Retirement/Conversions) limBridger 4 (Coal Early Retirement/Conversions)		-	-	-	-	(349)	(353)		-	-			-		-	-	-	-	-		(349) (353)	2
Hermiston						-	-	-	-									-	(237)		-	
Retire - Hydro Expire - Wind PPA		(1)	(169)	(175)	(1)	(41)		(1)		(7)	(75)	(10)	(6) -	(20)	(20)	(75)	-	(10)	(10) (175)		(179) (216)	5)
Expire - Solar PPA Expansion Resources		_								(2)		- 1	(67)	(49)			(1)	(115)	(175)	(11)	(2)	
Fotal SCCT	-	-	-	-					-	-		- 1	221 221	-	-	-	_	-			-	Į
Utility Solar - PV - Yakima					-				-							-		-	42			土
Utility Solar - PV - jbridger Utility Solar+Storage - PV - Jbridger	-	-	-	-	-	349	-		66 51	949		-	-	-		-	-	-	 T		66 1,349	Ŧ
Utility Solar - PV - Walla Walla	-	-	-	-	-	500		-			-	206	248	- 21	100	-	-	-	=		500	
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima		-		-	-	405	-	-	-	-		-	-		-	-		-	388		405	5
Total Solar Demand Response, OR-Ancillary Services	-	-	-	-	-	1,254	-	-	117 8	949	-	206	248	- 21	100	-	-	-	430	-	2,320	3
Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH	-	-	-	-	-				1.9	-	-	-	1.5		-	-	-	-	-		1.9	Ŧ
Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-			1.1		-	-	-	-	-		-	#
Dennand Response, CA-Irrigate Dennand Response, CA-Thermostat		-			-		-		4.8 5.8	-				-		-		-			4.8 5.8	
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts				-		-		-	- 5.4	-			30.3					-	3.0		5.4	Ŧ
Demand Response, OR-Irrigate		-	-	-	-	-	-	-	13.3		-	-	- 7.7		-	-		-			13.3	#
Denmind Response, WA-Cool/WH Denmind Response, WA-3rd Party Contracts		-	-		-	-	-						7.7 9.9			-		-				土
Demand Response, WA-Irrigate Demand Response, WA-Thermostat		-		-				1	5.2 14.6	-			-		-	-		-	3.1 2.0	_=	5.2 14.6	
Demand Response Total	- ,								58.4				50.5				-		8.2		58.4	ı
Energy Efficiency, CA Energy Efficiency, OR	1 40			49	49	48	2 45	2 44	2 41	37	33	31	30	29	2 26	1 26		1 26	22	21	19 453	3
Energy Efficiency, WA Energy Efficiency Total	11 52			12 63	13 64	13 63	12 59	12 59	11 54	10 49	9 44	9 42	8 40	38	7 35	6 34		5 32	4 27	4 26	116 588	
Battery Storage - S-Oregon	-	-	-	-	-	-	75 30	90 45	-	-	-	-	-	-	-	-	-	-			165	5
Battery Storage - Willamette Valley Battery Storage - Walla Walla	- :	-			-	-	30 90	75	-				-				- :	-			165	5
Battery Storage - Yakima	726	715	492	501	617	273	737	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,052	979	1,075	1,073	105 729	
FOT West - Summer						23		141	659	430	227	154		344	412	368	333	308	324	419	229	/T
FOT West - Summer FOT West - Winter Existing Plant Retirements/Conversions	8	131 (61)				(730)	(386)	(466)		(764)			(1,013)		(557)							т

											Capacit	y (MW)										Resource	Totals 1/
	P-18	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	
East	Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023		2023	2020	2027	2020	2029	2030	2031	2032	2033	2034	2033	2030	2037	2038		
	Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	(82) (82)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(82) (82)	(82)
	Hayden 1 (Coal Early Retirement/Conversions)			- 1			- (82)		(44)						-	- 1						(44)	(44)
	Hayden 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	(33)	-	-	-	(418)	-	-	-	-	-	-	-	-	-	(33)	(33)
	Hunter 1 (Coal Early Retirement/Conversions) Hunter 2 (Coal Early Retirement/Conversions)								-			(418)	(269)	-	-	-	- 1	-					(269)
	Hunter 3 (Coal Early Retirement/Conversions) Huntington 1 (Coal Early Retirement/Conversions)	-	-	-	-	-		-	-	-	-	(459)	-	(471)	-		-	-	-	-	-	-	(471) (459)
	Huntington 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(439)	(450)	-	-	-		-	-	-	-	-	(450) (74)
	Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-		-		-	-	(74) (74)		-	-	-	-	-	-	-	-	-	-	(74) (74)	(74)
	Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-		-	-	-	- (74)		-	-	-	-	-	-	-	-	-	-	(387)	(387)
	DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)	(99
	DaveJohnston 2 DaveJohnston 3	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)	(106
	DaveJohnston 4	-	-	-	-	-	(156)	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)	(330)
	Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	(201)	(136)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(201)	(201)
	Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-		-	-	-	-	-		-	-	(268)	-	-	-	-	-	-	-	(280)	(280)
	Wyodak (Coal Early Retirement/Conversions) Gadsby 1-6	-	-		-		-	-	-	-	-	-	-	(268)	-	(356)	-	-	-	-	-	-	(356)
	Retire - Hydro		-	-		-	(20)	-	-	-		-	-	-	-	-	-	-	-	-	-	(20)	(20)
	Retire - Wind Expire - Wind PPA	-	(27)	(17)	(49)	- (0)	-	-	(65)	(3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	(40 (924
	Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-		-	-	-		-	-	(35)	(94)	(849)	-	(1)	(979 (33
	Retire - Other Coal Ret_WY - Cas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247	(33)
	Expansion Resources		= - /										,									=./	
	SCCT Frame NTN SCCT Frame WYSW	-		-	-	-	-	-	-	-	-	370	185	-	- :	- :	-	-		-	-	-	185 370
	Total SCCT	-	-	-	-	-	-	-	-	-	-	370	185	-	-	-	-	-	-	-	-	-	555
	Wind, Djohnston Wind, GO	-	-	-	-		-	-	-	-	620	-	1,100	-	-	-	-	-	-	-	-	620	620 1.100
	Wind, WYAE		-				1,920			-		-	-	-	-	-		-	-			1,920	1,100 1,920
	Total Wind Utility Solar - PV - Utah-S	-		-	-		1,920	-	-		620	-	1,100	-	-	-	-	-	400	-	-	2,540	3,640 400
	Utility Solar - PV - WYSW	-		-	-		100		-	-	-		- :	-	-		-	-	-		-	100	100
	Utility Solar+Storage - PV - Utah-S	-	-	300	-	201	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	300	310
	Utility Solar - PV - Naughton Utility Solar+Storage - PV - Huntington					201	156					459	393	12	45							357	357 909
	Utility Solar+Storage - PV - Utah-N Total Solar	_	-	300 600	_	201	600 856		_	-	_	- 469	393	-	- 45	-	-	-	400			900 1,657	900 2,976
	Demand Response, ID-Cool/WH			-		- 201	- 820					- 469	2.6	- 12	-	_			-			1,657	2,976 2.6 1.8
	Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	3.7	-	- 1.8	-	1.8
	Demand Response, ID-Irrigate Demand Response, ID-Thermostat	-	-		-		-	-	-	-	-	-	5.3	3.0	-	-	-	-	3.7	-	1.8	-	10.6 8.3
	Demand Response, UT-Cool/WH	4.1	-	7.0		9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1	8.3 55.9
	Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-		-	-	-	-	-	-		9.2	-	59.3			-		5.7	-	-	2.6 1.9	9.2	76.7 1.9
	Demand Response, UT-Thermostat	-	-	-		-	-	-	-	-	116.7	-	8.2 3.4	-	-	-	-	8.3	-	-	5.1	116.7	138.3 5.2
	Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-		-	-		-	-	-	-	-	-	3.4	-		-	-	2.1		-	1.8	-	394
	Demand Response, WY-Irrigate	-	-	-		-	-	-	-	-	18.7	-	1.8	-	-	-	-	-	-	-	-	-	1.8 19.9
	Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	8.3	-	-	-	5.3	-	-	18.7	-		-	-	-	-	-	-	3.2	1.2	18.7 13.5	19.9 16.7
	Demand Response, WY-Ancillary Services		-	-		- 99	-	3.0	-	-	144.5	-		3.0	13.8	-	-	-	-	3.2		3.0 189.1	3.0
	Demand Response Total Energy Efficiency, ID	4.1		15.3	- 8	9.9	- 8	8.2	7.2	- 8	144.5	6.7	118.0	3.0	13.8	- 6	- 5	23.0	3.7	3.2	21.6	189.1	382.2 128
	Energy Efficiency, UT	58	74 14	75 15	78	80	85	84	82 19	72 19	74 18	72 16	60 15	59	56	54 12	44	40	32	27	26	762	1,232 270
	Energy Efficiency, WY Energy Efficiency Total	10 74	95	97	16 102	106	19 112	19 111	108	98	100	95	82	13 79	75	72	59	53	43	6 35	35	1,003	1,630
	Battery Storage - Utah-N		-	-	-	-	-	-	-	390.0	-	-	300.0	-	-	345.0	-	- 15.0	-	645.0	-	390	390 1,860.0
	Battery Storage - Utah-S Battery Storage - WYSW		-	-	-	-	-	-	45.0	15.0	-	75.0	300.0 60.0	540.0 255.0	-	345.0 75.0	15.0	15.0	-	645.0 120.0	45.0	60.0	1,860.0
	Battery Storage - Idaho	-	-	-	-	-	-		-	-	-		60.0 255.0	255.0 135.0	-	-	-	-	-	120.0 180.0	45.0 15.0	-	690.0 585.0
	Geothermal, Greenfield - East FOT East - Summer	46	- 46	46	46	- 46	36	129	-	100	100	490 44	300	- 88	256	279	274	300	300	300	300	- 59	490 152
West	FOT East - Winter		-		-	-	-	-	-	-	-	-	-	300	-	-	-	-	-	-	-	-	15
West	Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)		- 1	-	-	-	-	-	-	(351)	-	-	-	-	- 1	- 1	-	-	-		-	(351)	(351)
	JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	(349)	-	(356)	-	-	-	-	-	-	-	-	-	-	-	-	(356)	(356)
	JimBridger 3 (Coal Early Retirement/Conversions) JimBridger 4 (Coal Early Retirement/Conversions)	-		-	-		(349)	(353)	-	-	-		-	-		-	-	-	-	-	-	(349) (353)	(349)
	Hermiston	-	-	-	-	-	-	-		-		-	-		-	-	-	-		(237)	-	-	(237)
	Retire - Hydro Expire - Wind PPA	-	(1)	(169)	(175)	(1)	(41)		(1)		(7)	(75)	(10)	(6)	(20)	(20)	(75) -		(1)	(10)	-	(179) (216)	(262)
	Expire - Solar PPA	_	-		-	-	/	-	-	-	(2)			(67)	(49)	-		(1)	(10) (115)	(10) (175)	(11)	(2)	(360) (420)
	Expansion Resources SCCT Frame WV	-	- 1	-	-	- 1	-	-	-	-	221		- 1	-	- 1	- 1	-		- 1	221	-	221	443
	Total SCCT	-	-	-	-	-	-	-	-	-	221	-		-	-	-	-	-	-	221	-	221	443
	Wind, YK Total Wind												333 333										333 333
	Utility Solar - PV - jbridger	-	-	-	-	-		353	147	-	-	-	_	-	-	-		-	-	-	-	500	500 915 975 502
	Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon	-		-	-		349 975		212	354	-		-		- :	- :	-		-	-	-	915 975	915 975
	Utility Solar+Storage - PV - Yakima	-	-	-	-	-	405	353	-	354	-	-	-	97 97	-	-	-	-	-	-	-	405	502
	Total Solar Demand Response, OR-Ancillary Services	-		-	-		1,729	353	359	354	- 8	-	-	- 97	- :	- :	-	-	-	-	-	2,795 8	2,893 8
	Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	1.9	1.9
	Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate	-	-	-	-	-	-	-	-	-	1.1 4.8		-	-	-	-	-	-	-	-	-	1.1 4.8	1.1 4.8
	Demand Response, CA-Thermostat	-	-	-	-	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	-	-	5.8	5.8
	Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts	-		-	-		-		-		35.7		-		- :	- :	-		-	3.0	-	35.7	3.0 35 7
	Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	13.3	-	-	-	-	-	-	-	-	-	-	13.3	35.7 13.3
	Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	9.9	-	7.7	-	- :	- :	-	-	-		-	9.9	7.7 9.9
	Demand Response, WA-Irrigate	-	-	-	-	-	-	-	-	-	5.2 14.6	-	-	-	-	-	-	-	-	3.1 2.0	-	5.2 14.6	8.3 16.6
	Demand Response, WA-Thermostat Demand Response Total	-		-	-	-	-	-	-	-	14.6 99.7	-	7.7	-	-	-	-	-	-	2.0 8.2	-	14.6 99.7	16.6 115.5
	Energy Efficiency, CA	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	21	36 743
	Energy Efficiency, OR Energy Efficiency, WA	40 11		53 12	52 12	49 13	48 13	45 13	43 12	41 12	38 11	35 10	32 10	31 9	30 8	27 8	27 6	26	26 5	24 4	24	461 122	743 193
	Energy Efficiency Total	52	67	67	66	64	64	60	58	54	52	47	44	42	40	37	35	34	32	29	29	604	972
	Battery Storage - S-Oregon Battery Storage - Willamette Valley	-	-	-	-		15	-	180 45	-	-	-		-	- :	- :	-	-	-		-	180	180
	Battery Storage - Portland NC	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	60	60
	Battery Storage - Walla Walla Battery Storage - Yakima	-	-	-	-		- 60	-	60 45	-	-	-	-	-	-	-	-	-	-	-	-	60 105	60 105
	FOT West - Summer	680 224	658	654	783	811	467	193	620	969 273	1,075	1,075	1,064	902	1,075	1,053	1,041	989	918	1,075	1,028	691	857 68
	FOT West - Winter Existing Plant Retirements/Conversions	-	(61)	(573)	(224)	(202)	(730)	(386)	(466)	273 (502)	(764)	(971)	(1,115)	(1,013)	(114)	169 (557)	499 (156)	91 (36)	(280)	(1,351)	(43)	61	68
	Annual Additions, Long Term Resources	130	162	779	168	381	4,755	533	968	912	1,237	1,553	2,877	1,164	173	529	108	125	479	1,242	145		
	Annual Additions, Short Term Resources	950	718	699	829	857	503	322	620	1,342	1,276	1,119	1,364	1,290	1,331	1,501	1,814	1,380	1,218	1,375	1,328		

P-19										Capacity	(MW)										Resource	Totals 1
The content of the	020	P-19	2021	2022	2023	2024	2025	2026	2027			2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	
The color of the	020		2021	LULL	2023	2024	2025		2027	2020	2027	2030	2001	2032	2033	2054	2000	2050	2037	2030		
Company Comp	-		-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	(82)		-		(82)	(
Company Comp	-		-	-		-	-	-	-	-	-		(44)	-	-	-	-	-	-	-	-	
Company			-	-		-	-		-	-		-	(33)	-	-	-	-	-	(459)		-	(4.
Section	-	Huntington 2	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	(450)	-	(387)	(4
Company	-		(387)	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-		(99)	(3
Section Sect	-	DaveJohnston 2	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	(106)	(1
Name	-		-	-	1 -	-	-	-	-		-	-	-	-	-	-	-	-	-		(220)	(2
Manual Clark Proposed Accordance 1	-	Naughton 1 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(156)	(1
Section Sect	(280)	Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		-	(201)	-	-	-	-	-	-	-	-	-	-	-	-		-		(201)	(2
March Marc	-	Gads by 1-6	(238)	-	-	-	-	-	-	-	-	-	-	-	(119)	-	-	-	-	-	(238)	(3
Eggs - San PEN	-		-	-		(20)	-		-	-		(40)	-	-	-	-	-		-		(20)	
Description	(27)	Expire - Wind PPA	(17)	(49)			-		(3)	-		(99)	(200)	(45)	(181)	(80)		(60)	(80)	-	(160)	(9
Control Control Control Control Control Control Control Control Co	-	Expire - Solar PPA Retire - Other	-	-	- (1)	- (1)	-		-	-		-	-	-	-	(1)	(35)	(94)	(849)	(32)	(1)	C
Teach CYT		Expansion Resources	-																			
Sect Property	-		-	-	-	-	-		-		-	-	-	-	-	-	-		-		567 567	5
MAX MAX	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195	-	-	
Sect Property Company	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-		-		185 195	
No. of Implement	-	SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370	-	-	
Value 10	- 1			-	379				-	-	-	529	- 91	-	-	-	-	-	564	-	379	
Word WORD	-	Wind, GO		-			-		-	-	-			1,062	-	-	-	-	-	-	-	1,
Description Company	- 1	Wind, WYAE		-	<u> </u>		-	-	-		-	529	- 91	1,062			-	-	-		1,920 1,920	1, 3,
Colly Policy House, Price 1	-	Utility Solar - PV - Utah-S	146	59			-		-		-		-	95	-		325	400	-		205	1,
Mag. Notesthemer, PV. 600	- 1		-	-	-	-	-	-	-	-	-	-	-	-	-	100	- 175	-	-	-	-	
Child Public PV Negation		Utility Solar+Storage - PV - GO											2	35			- 1/5					
Date Date Note State Principles - - - - - - - - -		Utility Solar - PV - Naughton	-	-		370	-		-	-	-	-	-	-	-	-	-	-	125	-	452	
Total Name		Utility Solar+Storage - PV - Huntington												-			-		589		-	
Demand Responses Default Demands Deman	-		- 146	-	- 92	- 270	-	-	-	-	-	-		139 269	-	100	- 500	400	- 714	-	657	2,
Demand Responses Demand Resp	-		- 146	-	- 82	- 370	-	-	-	-	-	-	- 2	-	-	-	- 500	- 400	- 714	2.6	- 657	2,
Demonal Responses (1) Conservation	-	Demand Response, ID-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.8	-	-	
Demond Reports T. CAMPH	-		-	-		-	-	-	-	-	-	-	-	5.2	-	-	-	-	3.7	1.8 8.3	-	
Demand Repropose	-	Demand Response, UT-Cool/WH	7.0	-		-	-		-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1	
Damad Responses CFT-Demonstrat - - - - - - - - -	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		74.1	2.6	-	
Demand Responses, W-Y-MP plany Connects	-	Demand Response, UT-Thermostat	-	-		-	-		37.3	-		-	8.2	-	-	-	8.3	-	-	5.1	116.7	13
Demand Represente W-Villements - - - - - - - - -	-	Demand Response, WY-Cool/WH Demand Response, WY-2rd Party Contracts	-	-		-	-		-	-		-	-	-	-	-	-		2.1	5.2 37.3	-	3
Domaid Response, UT-Ancillay Services	-	Demand Response, WY-Irrigate	-	-	-	-	-		-	-		-	-	-	-	-	-	-	1.8	-	-	
Demail Responses - - - - - - - - -	-		- 83	-	12.9	-	- 53	-	-	-	-	-	-	-	-	-	-		5.8 3.2	1.2	12.9 13.5	1
Theregy Efficiency, ID	-	Demand Response, WY-Ancillary Services	-	-		-	3.0	-	-	-		-			-	-	-	-	-		3.0	
Energy Efficiency, UT	- 6	Demand Response Total		- 7		- 6				- 6	6.7	- 6		12.0	- 5	- 4	15.3	- 3	92.5	73.3	174.1 65	
	67		67	68	69	60	60	63	59	53	52	51	48	46	44	32	31	23	20	22	623	
State Storage Unable	83		11 85											11 62	11 60	8 44	8 42	33	5 28	5 30	133 820	1
State Stat	-	Battery Storage - Utah-N	-	-	270.0	-	-	-	-	-		-	-	-	-		-	-	-	405	270	
FOT Flast - Summer - - 295 76 176 156 186 213 263 243 300 30 30 30 30 30 30			-	-	210.0	-		-	-		-	-	- :	-		-		-	30.0 135.0	360.0 150.0	210.0	2
Individence Cota Early Retinement/Conversions) - - - - - - - - -			-	-	295	76	176	156	186	213	263	243	300	300	268	271	300	300	300	300	110	-
Inhibitinger 2 (Coal Early Retirement/Conversions) - - - -	- 1				(351)				_		_		_			_		_		_	(351)	-
Indistriger	-	JimBridger 2 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	-	-			-	-	-	-	-	-		(356)	
Fermiston - - - - - - - - -	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	-	
Expire - Wind PPA	-	Hermiston	-	-	-		-	-	-	-			-	-	-	-	-	-	(237)	-	-	
Experts Solar PPA	(1)	Retire - Hydro	(169)	(175)		- (41)	-		-	(7)	(75)	- (10)	(6)	(20)	(20)	(75)	-	(1)	(10)	-	(179) (216)	
SCCT Frame WV	-	Expire - Solar PPA	-	-	-	-	-	-	-	(2)	-	-	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)	
SCCT Frame WY				_		_			_	210	_			- 1	210	_			419		210	
Total State	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	221	221	-	
Utility Solar - PV Schregon Utility Solar - PV Schregon Utility Solar - PV. Schregon Utility Solar - PV. Jahima	-		-	-	-	-	-	-	-	- 210	-	-	-	-	210	-	-	-	233 874	221	210	1
Utility Solar FV - jbridger	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	136	-	-	
Utility Solar-Storage - - - - - - - - - -	-		-	-	- 712	-	-		-	-	-	-	-	-	-	-	-	-	-	172 48	713	
Demand Response, OR-Ancillary Services - - - - - - - - -	-		-	-	-		-		-	-	-	-		-	-	-	-		-	295	-	
Demand Response, W.A.Ancillary Services	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	136	515	713	1
Demand Response, OR-Irrigate	-	Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-	-	-	-		1.9	-	-	-	-	-	-	-	-		-		8 1.9	
Demand Response, WA7-Thermostat	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.2	
Demand Response Total	-	Demand Response, WA-Irrigate Demand Response, WA-Thermostat	-	-	11.3	-	-	-	-	-	-	-	-	-	-	-	-		-		5.2 11.3	
Energy Efficiency, OR		Demand Response Total		-	25.7				7.7							-		-		-	35.1	
Energy Efficiency, WA				30			26			2 23	20		19	21	2 19	1 19	1 18	21	1 22	23	16 292	
Battery Storage - S-Oregon - - - - - - - - -	9	Energy Efficiency, WA	9	10	10	9	9	9	9	8	8	8	8	7	7	5	6	4	4	4	95	
Battery Storage - Wilmorste Nolley	43	Energy Efficiency Total Battery Stomage - ScOregon	42	42			37	36	35	33	30	29	28	30	28	26	25	26	27	(15)	402 15	
Battery Stonge - Porlland NC		Battery Storage - Willamette Valley			90	-	-		-	-		-	-	-	-	-	-		-	-	90	
Battery Storage - Yakima		Battery Storage - Portland NC Pattery Storage - Walla Walla	-	-		-	-		-					-	-	-	-	-	-	135	90 135	
FOT West - Summer 998 961 826 878 1,075 1,	-	Battery Storage - Yakima	-		90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	
Existing Plant Retirements/Conversions - (308) (810) (224) (1,065) (62) - (148) (3) (764) (93) (140) (350) (1	961	FOT West - Summer	826	878 30°	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,014	1,075	1,061	1,011 224	1
	(308)	Existing Plant Retirements/Conversions	(810)	(224)	(1,065)	(62)	-	(148)	(3)			(149)	(350)	(114)	(320)	(156)					224	
															297 1,343	170 1,346						
								1,627							1,343							

P-20	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	- 1	-	-	-	-	-	-	-	(82
Craig 2 (Coal Early Retirement/Conversions) Hayden 1	-	-	-	-	-			(82)	-	-	-		(44)	-		-	-	-	-	-	(82
Hayden 2 Huntington 1		-	-		-	-	-	-		-	-		(33)		-	-	-	-	(459)	-	
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	-		(74)	-	-	-		-			-	(450)	-	- (74
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-		-		-	(74
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1		-	(387)		-	-	-	-		(99)	-	-	-		-	-	-	-		-	(387
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106
DaveJohnston 3 DaveJohnston 4			-		-					(220)	-							-			(220)
Naughton I Naughton 2		-	-		-	-				-	-	(156) (201)	- :			-	-	-		-	-
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	- (201)	-	-		-	-	-	-	-	(280)
Gads by 1-6 Retire - Hydro		-	(238)		-	(20)	-	-		-	-	-	-	-	(119)	-	-	-		-	(238)
Retire - Wind	-	- (27)	- (17)	- (49)	- (0)	-	-	- (65)	- (3)	-	- (19)	(40)	(200)	- (45)	(181)	- (80)	-	(60)	- (80)	-	(160)
Espire - Wind PPA Espire - Solar PPA		- (27)	- (17)	- (49)	(1)	(1)		- (63)	- (3)		- (19)	- (99)	- (200)	- (43)	(181)	- (80)	(35)	(94)	(849)		(160)
Retire - Other Coal Ret WY - Gas RePower		247	-		-	-				-	-	(247)	- :			(1)	-	-		(32)	247
Expansion Resources		247																			2-47
SCCT Frame NTN SCCT Frame WYSW		-	-		-	-	-	-		-	185	555	-	185	-	-	-	-		-	
Total SCCT	-	-	-	-	-	-	-	-	-		185	555	-	185		-	-	-	-	-	- 620
Wind, Djohnston Wind, GO		-	-		-	-	-	-		620	-	1,100			-	-	-	-			-
Wind, WYAE Total Wind		-	-		-	1,920 1,920		-		620	-	1,100	-		-			-		-	1,920 2,540
Utility Solar - PV - Utah-S		-	146	- 59	-	95				-			-					400	-	-	300
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S		-	-		-	100	-	-		-	-		- 500		-	-	-	-		-	100
Utility Solar+Storage - PV - Huntington		-			-					-	-	-	-						909	-	
Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N			_		-	605					295					_		_			605
Total Solar Demand Response, ID-Cool/WH		-	146	59	-	801	-	-		-	295		500	-		-		400	909 2.6	-	1,006
Demand Response, ID-3rd Party Contracts			-		-	-							-			-	-		1.8	-	
Demand Response, ID-Irrigate Demand Response, ID-Thermostat		-	-		-	-	-	-		-	-		- :	5.2	-	-	-	-	3.7 8.3	1.8	
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	74.1	7.2	28.1
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate		-	-	_	-	-	-	-		-	-	-	-		-	-	-	-	74.1	1.9	-
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	116.7	8.2	-	-			8.3	-	- 3.4	5.1 1.8	_
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts			-								-		-					-	39.4		
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-		-	-	-	-		-	-	-	-	-	-		-	-		1.8 18.7	1.2	-
Demand Response, UT-Ancillary Services	- :	-	8.3	- :		-	5.3				-			- :					3.2	- 1.2	13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	15.3	_	9.9	-	3.0 8.2	7.2		-	123.3	8.2	-	12.0	-	-	15.3	-	157.1	21.6	3.0 44.6
Energy Efficiency, ID	- 6 - 58	6	7		8 75	7	7	7	7	8	7	6	6 52	6	6	5		4 28	3	3	71 683
Energy Efficiency, UT Energy Efficiency, WY	10	12	67 13	69 14			71 19	68 19	68 19		57 16		13	50 12	50 11	38 9	8	7	28 6	5	155
Energy Efficiency Total Battery Stomge - Utah-N	74	85	87	90	98	96	97	94	94	93 360.0	80	77	72	68	67	51	47	39	37 210	38 390	909 360
Battery Storage - WYSW		-	-		-	-				30.0	-	-	-	-					165.0	195.0	30.0
Battery Storage - Idaho FOT East - Summer		-	-		-	-	-			205	300	300	300	172	292	293	300	300	195.0 300	90.0	21
Existing Plant Retirements and PPA Termination					(351)						1										(351)
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)		-			- (331)	-	-				(356)	-									- (331)
JimBridger 3 JimBridger 4		-	-		-	-	-	-		-	-	-	-		-	-	-	-		(349)	
Hermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-
Retire - Hydro Expire - Wind PPA		(1)	(169)	(175)	(1)	(41)	-	(1)		(7)	(75)	(10)	(6)	(20)	(20)	(75)		(1)	(10)	-	(179) (216)
Expire - Solar PPA	-	-	-		-	-	-	-	-	(2)	-	-	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)
Expansion Resources SCCT Frame WV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-
Total SCCT Wind, YK		-	-		-	-	-	-		-	-	-	-	- 48	-	-	-	-	443	-	
Total Wind	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-	
Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima		-			-	500 405		_ :				280		282		_				-	500 405
Utility Solar - PV - jbridger	-	-	-		354	-	-	-	-	-	359	-	-	-	-	-	-	-		122 579	354
Utility Solar+Storage - PV - Jbridger Utility Solar - PV - Walla Walla	- 1		-		-					-		100	-			-	-				
Utility Solar+Stomge - PV - S-Oregon Utility Solar+Stomge - PV - Yakima		-	-		-	-	-	-		-	-	195	-		100	-	-	-		-	
Total Solar	-	-	-	-	354	905	-	-	-	-	359		-	282	100	-	-	-	-	702	1,259
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services		-	-	-	-	-	-	-	-	-	1.9		-	-	-	-	-	-	-	-	
Demand Response, CA-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate			-		-						4.8	-	-			-			1.1	-	
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH		-	-		-	-	-	-		-	-	-		5.8	-	-	-	-	23.3	-	
Demand Response, OR-3rd Party Contracts					-	-					-		-						35.7	2.0	
Demand Response, OR-Irrigate Demand Response, WA-Cool/WH		-	-		-	-	-	-		-	13.3	-	-		-	-	-	-	7.7	-	
Demand Response, WA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	-	-	-	9.9	-	-
Demand Response, WA-Irrigate Demand Response, WA-Thermostat											11.3	-							5.3	-	
Demand Response Total	- 1	- 2	- 2		-			-	-		43.9		- 3	5.8			-	- 1	87.7 1		- 19
Energy Efficiency, CA Energy Efficiency, OR	40	43	43	49		46		2 41	41	38	33		31	30	27	1 27		27	25	24	430
Energy Efficiency, WA Energy Efficiency Total	11 52			12 63		12 60		12 55	11 54				9 42	8 40	8 37	6 35		5 34	30		114 563
Battery Storage - S-Oregon	-	-	-	-	225	-	-	-	-	15	-	-	-		-	-	-	-	150	135	240
Battery Storage - Willamette Valley Battery Storage - Portland NC		-			150 30		-		-	-	-		- : T			-	-			60 150	150 30
Battery Storage - Walla Walla	-	-	-	-	-	-	-	-	-	120	-	-	-	-	-	-	-	-	45		120
Battery Storage - Yakima FOT West - Summer	998	717	600	654		351	440	427	483	1,075	1,075		1,075	1,074	1,075	1,075	1,066	1,000	1,075	1,075	105 677
FOT West - Winter Existing Plant Retirements/Conversions	151	127 (61)	261	295 (224)	303 (352)	228	230	(230)	276	407	427	364	393 (350)	376 (114)	357 (320)	278 (156)	309	267 (280)	(2,260)		251
Annual Additions, Long Term Resources Annual Additions, Short Term Resources	130	141	304	211	1,033	3,782	162	156	148	1,289	1,131	2,357	613	640	204	86	96	472	2,428	1,828	i
	1,149			949	1,331	579	670	656	759		1,802		1,768	1,622		1,645	1,675	1,566	1,375		i .

P-28										Capacity											Resource	
Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	_
Craig 1 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	-	(82)	
Craig 2 (Coal Early Retirement/Conversions) Hayden 1	-	-	-	-	-	-		-	(82)	-	-	-	(44)	-	-		-	-	-	-	(82)	+
Hayden 2	-	-	-	-	-		-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-	Ŧ
Huntington 1 Huntington 2	-			-	-	-		-	-	-	-		-	-	-		-	-	(459)		-	\pm
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-			(74) (74)	-	-	-	-	-	-	-	-	-	-	-		(74) (74)	1
Cholla 4 (Coal Early Retirement/Conversions)			(387)					- (74)							-		-				(387)	
DaveJohnston 1 DaveJohnston 2	-	-	-	-	-	-	-	-	-	(99) (106)	-	-	-	-	-	-	-	-	-	-	(99) (106)	4
DaveJohnston 3						- 1		-		(220)					-						(220))
DaveJohnston 4	-	-	-	-	-			-	-	(330)	-	(156)	-		-	-	-	-	-	-	(330)	1
Naughton 1 Naughton 2			-					-		-		(201)			-		-			-	-	\pm
Naughton 3 (Coal Early Retirement/Conversions) Gadsby 1-6	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(280)	4
Retire - Hydro						(20)		-							(336)		-				(20)	5
Retire - Wind Expire - Wind PPA	-	(27)	- (17)	(49)	- (0)	-	-	(65)	- (3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	
Expire - Wind PPA Expire - Solar PPA		- (27)	- (17)	-	(1)	(1)		-	- (3)	-	- (19)	- (99)	(200)	-	(181)	- (80)	(35)	(94)	(849)		(100)	
Retire - Other Coal Ret WY - Gas RePower		247	-	-	-	-	-		-		-	(247)	-	-		(1)	-	-	-	(32)	247	+
Expansion Resources		247								_		(247)	-								247	_
SCCT Frame NTN SCCT Frame WYSW	-	-	-	-	-	-	-	-	-		-	370	-	-	185 370		-	-	-	-	-	+
Total SCCT	-		-	-				-		-		370	-		555		-			-	-	t
Wind, Djohnston Wind, GO	_	-	-	-	-	-	-	-	-		620	1,083	-	-	-	-		-	-	-		+
Wind, WYAE	-	-	-	-	-	1,920					-	-		-	-					-	1,920	
Total Wind Utility Solar - PV - Utah-S	-	-	146	- 59	- 67	1,920 28	-	-	-		620	1,083			-		-	400	-	-	1,920 300	
Utility Solar - PV - WYSW	-	-	-	-	-	100					-	-		-	-	-				-	100	
Utility Solar+Storage - PV - Utah-S Utility Solar+Storage - PV - GO	-	-	-	-			-	-	-	- T	-	-	500 17	-			-	-	-			+
Utility Solar - PV - Huntington					-						-		-	-	-			-	44	-		t
Utility Solar+Storage - PV - Huntington Utility Solar - PV - Utah-N	-	-		-			-	-	-	37		729					-	-	865	-	- 37	+
Utility Solar+Storage - PV - Utah-N						135				-		-		- :					-		135	т
Total Solar Demand Response, ID-Cool/WH	-	-	146	59	67	263		-	-	37		729	517		-		-	400	909 2.6		571	Ŧ
Demand Response, ID-3rd Party Contracts	-		-	-		-						-		-	1.8	-	-	-	-	-	-	1
Demand Response, ID-Irrigate Demand Response, ID-Thermostat	-	-	-	-	-	-	-		-	-	-	-	-	5.2			-	-	3.7 8.3	1.8		┿
Demand Response, UT-Cool/WH	4.1		7.0	-	9.9			7.2		-	6.7	-	-	6.8	-		7.0			7.2	28.1	土
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	74.1	2.6 1.9	-	+
Demand Response, UT-Thermostat	-		-	-				-		-		124.9	-		-		8.3			5.1	-	t
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-		-	-	-	-	-				-	-	3.4 39.4	1.8		┿
Demand Response, WY-Irrigate			-	-						-			-	- :	1.8				39.4	-		1
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	- 5 3		-	-	-	-	-		18.7		<u> </u>	-	3.2	1.2	13.5	┿
Demand Response, WY-Ancillary Services				-	-		5.3 3.0	-		-				- :	-				-	-	3.0	
Demand Response Total Energy Efficiency, ID	4.1		7.0	- 7	18.1	- 7	8.2	7.2	- 7	- 7	6.7	124.9	- 6	12.0	22.3	- 4	15.3	- 3	134.8	21.6	44.6 69	
Energy Efficiency, UT	58	67	67	68	69		67	68		62	54	53	52	50	49	36	32	26 7	25	26	659	
Energy Efficiency, WY Energy Efficiency Total	10 74	10 83		14 88	15 91	16 92	17 92	18 94	19 91	18 87	15 76		13 71	12 68	11 65	49	45	37	33	35	149 876	+
Battery Storage - Utah-N	-	-	-	-	-	-	-	-	-	345.0	-	-	-	-	-	-	-	-	1.5		345	
Battery Storage - WYSW Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	105.0	-	-	-	-	-	-	-	-	195.0	210.0	105.0	+
FOT East - Summer	-	-	-	-	-		-	-	-	-	74	237	243	300	298	300	300	300	300	300	-	工
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	- 1	(351)	-	- 1	-	-		-	-	-	-	- 1	ᆕ
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-		-		-	-		-	-	(356)	-	-	-	-		-	1
JimBridger 3 JimBridger 4	-	-	-	-	-	-	-		-		-	-			-		-	-	-	(349)	-	+
Hermiston	-	-	-	-	-	-		-		-	-		-	-	-	-	-	-	(237)	-	-	1
Retire - Hydro Expire - Wind PPA	-	(1)	(169)	(175)	(1)	(41)	-	(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)	-	(1) (10)	(10)	-	(179) (216)	4
Expire - Solar PPA	-	_		- '	-		_	-	-	(2)	/		(67)	(49)	- ~		(1)	(115)	(175)	(11)	(2)	ı
Expansion Resources SCCT Frame WV	-	-	- 1	- 1	- 1	-	-	1 -	-	- 1	-	-	- 1	-		-	-	1 -	443		- 1	f
Total SCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-	Ŧ
Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima	-	-	-	-	-	228 405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	228 405	+
Utility Solar - PV - jbridger	-	-	-	-	-		-	-	-	-	354	-	-	-	123	-	-	-	-	48 654	- "	Ŧ
Utility Solar+Storage - PV - Jbridger Utility Solar - PV - Walla Walla				-	-	-		-			-	_	100	-	236		-		-	654	-	
Utility Solar+Storage - PV - S-Oregon	-	-	-	-	-	272	-	-	-		-	-	- "	-	475	-	-	-	430	-	272	Ŧ
Utility Solar+Storage - PV - Yakima Total Solar	-	-		-	-	905	-	-	-	 	354	-	100		834		-	-	430		905	+
Demand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	Ŧ
Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	1.5	-	-	+
Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 4.8	-	-	-	1.1	-	-	#
Demand Response, CA-Irrigate Demand Response, CA-Thermostat		-												_	4.8 5.8		-		_	_	-	+
Demand Response, OR-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	-	-	23.3	-	-	Ŧ
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4 13.3	-	-	-	30.3	-	-	+
Demand Response, WA-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	-	-	Ŧ
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	9.9 3.1	-	-	+
Demand Response, WA-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.6	-	-	-	-	-	-	Ŧ
Demand Response Total Energy Efficiency, CA	- 1		- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	9.4	2	- 2	51.1	- 1	- 1	- 1	76.9 1	1	18	+
Energy Efficiency, OR	40	37		42	39	39	43	41	39	37	33		30	29	26	27		26 5	25	24	392	1
Energy Efficiency, WA Energy Efficiency Total	11 52			11 55	12 53	12 52	12 56	11 54	11 52	11 49	44		40	8 38	8 35	6 34		32	30		110 520	+
Battery Storage - S-Oregon	-		- 1	-	-		-		-	165	-	-	- 1					-	375		165	
Battery Storage - Willamette Valley Battery Storage - Portland NC	-	-	-	-	-	-	-	-	-	120 75	-	-	-	-	-	-	-	-	- 30	-	120 75	+
Battery Storage - Walla Walla	-	-	-	-	-	-	-	-	-	120	-	-	-	-	-	-	-	-	45	-	120	
	-			-	497	136	131	234	279	105 874	1,075	1,075	1,075	1,075	1,075	1,075	1,074	1,010	1,075	1,075	105 486	Ŧ
Battery Storage - Yakima FOT West - Summer	998	719																				
FOT West - Summer FOT West - Winter	998 151	131	265	501 300	311	175	182	303	350	362	354	318	370	316	216	135	152	152	-	-	253	L
FOT West - Summer	998 151 - 130	131 (61)	265 (573)	300 (224) 201	311 (1) 229	175 (62)	182	303 (296)	350 (85)	362 (764)	354 (444)	318 (753)	370 (350) 728	316 (114) 118	216 (913) 1,563	135 (156) 83	152	152 (280) 469	(2,260)	(745)	253	ı

											Capacit	y (MW)										Resource Te	otals 1/
	P-30	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038		20-year
East	Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)				_	_	-		(82)				_	_		_			- 1	_		(82)	(82)
	Craig 2 (Coal Early Retirement/Conversions)								- (82)	(82)	-		-		-				-	-		(82)	(82)
	Hayden 1 Hayden 2		-	-		-	-	-	-	-		-	-	(44)	-	-	-	-	-	-	-		(33)
	Huntington 1	-	-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	(459)	-	-	(459)
	Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)		-	-		-	-	-	-		(74)	-	-	-			-	-	-	(450)	-	(74)	(74)
	Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)	(387)
	DaveJohnston 1		-	-	-	-	-	-	-	-	(99) (106)	-	-	-	-	-	-	-	-	-	-	(99) (106)	(106)
	DaveJohnston 2 DaveJohnston 3		-	-		-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)	(220)
	DaveJohnston 4	-	-		-	-	-	-	-	-	(330)	-	-	-	-	-		-	-	-	-	(330)	(330)
	Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)		-	-	-	(156) (201)	-	-	-			-	-	-			-	-	-		-	(156) (201)	(156 (201
	Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6	-	(280)	-	-	-	-	-	-	-		-	-	-	-	(356)	-	-	-		-	(280)	(280)
	Retire - Hydro		-	-		-	(20)	-	-	-		-	-		-	-	-		-	-		(20)	(20)
	Retire - Wind Expire - Wind PPA		(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	(40 (924
	Expire - Solar PPA		-	-		(1)	(1)	-	-	-	-			-	-	-	-	(35)	(94)	(849)	-	(1)	(979
	Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247	(33
	Expansion Resources												185										106
	SCCT Frame NTN SCCT Frame WYSW						-	-	-	-		185	-	-	-	185			-			-	185 370
	Total SCCT Wind, Djohnston		-		-	-	-	-	-	-		185 620	185	-	-	185		-	-		-	-	555 620
	Wind, GO										- :	-	1,100		- :					- :			1,100
	Wind, WYAE Total Wind		-	-	-	-	1,920 1,920	-	-	-		620	1,100	-	-	-	-	-	-	-	-	1,920 1,920	1,920 3,640
	Utility Solar - PV - Utah-S	-	-	146	59	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-	205	605
	Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S				-		100 95		-				-	500		-			-			100 95	100 595
	Utility Solar - PV - Naughton Utility Solar - PV - Huntington					357		-	-					-				-	-	- 10		357	357
	Utility Solar+Storage - PV - Huntington	-							-	-	-		-	-	-			-	-	899			899
	Utility Solar - PV - Utah-N Utility Solar+Stomge - PV - Utah-N	-	-	-	-	-	- 1			-		-	899	- :	-	- :	-	-		-	-	- 1	899
	Total Solar		-	146	59	357	196		-				899	500			-		400	909		758	3,466
	Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	2.6	-		2.6 1.8
	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	- 1	-	-	-	3.7 8.3	1.8	-	10.6
	Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1		7.0		9.9	-		7.2			6.7	-		6.8			7.0		-	7.2	28.1	8.3 55.9
	Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.5	-	-	-	5.7	2.6 1.9	-	76.7 1.9
	Demand Response, UT-Irrigate Demand Response, UT-Thermostat		-			-	-	-		-		116.7	8.2		- :			8.3		-	5.1		138.3
	Demand Response, WY-Cool/WH		-	-	-	-	-	-	-	-		-	-	-		-	-	-	-	3.4 39.4	1.8		5.2 39.4
	Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate		-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	1.8
	Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	18.7	-	-	-	3.2	1.2	13.5	19.9 16.7
	Demand Response, WY-Ancillary Services		-			-	-	3.0	-	-	-	-	-	-	-		-	-	-	-	-	3.0	3.0
				7.0		10.1		0.0	7.3			122.2	0.2		12.0	00.0		16.3		77.3			
	Demand Response Total Energy Efficiency, ID	4.1 6	- 6	7.0	- 7	18.1 8	- 7	8.2 7	7.2 7	- 7	- 7	123.3 6	6	- 6	12.0 6	90.8	- 4	15.3 4	- 3	66.3 3	21.6	44.6 70	382.2 117
	Demand Response Total	58	67	6 67	- 7 69	8 75	7 68	8.2 7 67	7.2 7 68	- 7 65	- 7 62	6 54	6 53	- 6 52	6 50	6 49	- 4 36	4	3 26	66.3 3 21	3 25	70 667	117 1,065
	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency WY	4.1 6 58 10 74	6 67 12	6	- 7 69 14 90	8 75 17	7 68 16	7 67	7.2 7 68 18 94	- 7 65 19 91	18 87	54 15 76	53 14	52	6	6	- 4 36 9 49	32 8		3 21 5 29	3 25 5 33	70 667 154 890	117 1,065 255 1,437
	Domand Response Total Lacray Efficiency. ID Lacray Efficiency. UT Lacray Efficiency. UT Lacray Efficiency. WY Lacray Efficiency Total Lattery Stronge - Utah-N	58 10	6 67 12	6 67 13	14	8 75 17	7 68 16	7 67 17	18	19	18	54 15 76	53 14	52 13	50 12	6 49 11	9	32 8	7	3 21 5 29 615	3 25 5 33 465	70 667 154 890 45	117 1,065 255 1,437 1,125
	Demand Response Total Inergy Efficiency, ID Inergy Efficiency, UT Inergy Efficiency, WY Deergy Efficiency, WY Inergy Efficiency, WY Inergy Efficiency Total Battery Storage, Utals-N Battery Storage, - WySW Idattery Storage, - Habro	58 10	6 67 12	6 67 13	14	8 75 17	7 68 16	7 67 17	18	19	18 87 45.0 525.0	6 54 15 76	6 53 14 74 - -	52 13 72 - -	6 50 12 68 -	6 49 11 66 - -	9 49 - -	4 32 8 45	7 37 - -	3 21 5 29 615 15.0 360.0	3 25 5 33 465 15.0 150.0	70 667 154 890 45 525.0	117 1,065 255 1,437 1,125 555.0 510.0
West	Demand Response Total Inergy Efficiency, ID Inergy Efficiency, UT Inergy Efficiency, UT Inergy Efficiency, WY Inergy Efficiency, WY Inergy Efficiency Total Battery Storage, Utals-N Battery Storage, Utals-N Battery Storage, Habno IOOT East - Summer INSISTING Plant Referements and PPA Termination	58 10	6 67 12	6 67 13	14	8 75 17	7 68 16	7 67 17	18	19	18 87 45.0	6 54 15 76 - - 231	6 53 14 74 - - 290	52 13	50 12	6 49 11	9	32 8	7	3 21 5 29 615	3 25 5 33 465 15.0 150.0	70 667 154 890 45	117 1,065 255 1,437 1,125 555.0 510.0
West	Demand Response Total Harry Biffscheer, ID Faneys Hillscheer, UT Faneys Hillscheer, UT Faneys Hillscheer, WY Faneys Hillscheer, WY Faneys Hillscheer, Votal Hattery Storage - Utah-N. Hattery Storage - Utah-N. Hattery Storage - WY-W LOT Bast - Storage EXISTED - LOG	58 10	6 67 12	6 67 13	14	8 75 17	7 68 16	7 67 17	18	19	18 87 45.0 525.0	6 54 15 76	6 53 14 74 - - 290	52 13 72 - -	6 50 12 68 -	6 49 11 66 - - 298	9 49 - -	4 32 8 45	7 37 - -	3 21 5 29 615 15.0 360.0	3 25 5 33 465 15.0 150.0	70 667 154 890 45 525.0	117 1,065 255 1,437 1,125 555.0 510.0 156
West	Demand Response Total Inergy Hillscheep, UD Inergy Hillscheep, UT Energy Hillscheep, WY Energy Hillscheep, WY Energy Hillscheep, WAY Energy Hillscheep, WAY Energy Hillscheep, WAY Energy Hillscheep, Undah. N Hattery Normage. Undah. N Hattery Normage. WAYN Hattery Normage. WAYN Hattery Normage. WAYN Interface Normage. WAYN Interface Normage. WAYN Interface Control of the Control o	58 10	6 67 12	6 67 13	14	8 75 17	7 68 16	7 67 17	18	19	18 87 45.0 525.0	6 54 15 76 - - 231	6 53 14 74 - - 290	52 13 72 - -	6 50 12 68 -	6 49 11 66 - -	9 49 - -	4 32 8 45	7 37 - -	3 21 5 29 615 15.0 360.0	3 25 5 33 465 15.0 300	70 667 154 890 45 525.0	117 1,065 255 1,437 1,125 555.0 510.0 156 (351 (356 (349
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency Total Battery Storage, - Utals. N Existing Plane, - Ediabo (EXIST) Existing Plane, - Ediabo (EXIST) Existing Plane Retirements and PPA Termination Jimbridger 1 (Coal Early Retirement/Conversions) Jimbridger 3 (Coal Early Retirement/Conversions) Jimbridger 3	58 10	6 67 12	6 67 13	14	8 75 17	7 68 16	7 67 17	18	19	18 87 45.0 525.0	6 54 15 76 - - 231	6 53 14 74 - - 290	52 13 72 - -	6 50 12 68 -	6 49 11 66 - - 298	9 49 - -	4 32 8 45	7 37 - -	3 21 5 29 615 15.0 360.0	3 25 5 33 465 15.0 150.0 300	70 667 154 890 45 525.0	117 1,065 255 1,437 1,125 555.0 510.0 156 (351 (356 (349 (353 (353 (353 (353 (353 (353 (353 (35
West	Demand Response Total Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency Total Entery Storage, WYSW Hattery Storage, WYSW Hattery Storage, WYSW Entery Storage, Edisho FOT East - Summer Existing Plant Retirements and PFA Termination Junificial Cosul Early Retirement/Conventions) Junificial Cosul Early Retirement/Conventions) Junificial Cosul Early Retirement/Conventions) Junificial Cosul Early Enterment Conventions) Junificial Cosul Early Enterment Conventions) Junificial Cosul Early Enterment Conventions) Junificial Early Efficiency Experiment Conventions) Junificial Experiment Conventions) Entermined Cosul Early Enterment Conventions) Entermined Cosul Enterm	58 10	6 67 12	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	7 68 16 92 	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 212	6 54 15 76	6 53 14 74 - - - 290	52 13 72 - - 300	6 50 12 68 - - - 289	6 49 11 66 - - 298 - (356)	9 49 300 (75)	4 32 8 45	7 37 - - 300	3 21 5 29 615 15.0 360.0 300	3 25 5 33 465 15.0 150.0 300	70 667 1154 890 45 525.0 	117 1,065 255 1,437 1,125 555.0 510.0 156 (351 (356 (349 (353 (353 (353 (353 (353 (353 (353 (35
West	Demand Response Total Benery Hillseney, ID Benery Hillseney, UT Benery Hillseney, WY Barery Hillseney, WY Barery Hillseney, WY Barery Kindeney Total Battery Storage, UtahaN Battery Storage, UtahaN Battery Storage, WYSW Battery Storage, Maho FOT Batt- Summer Existing Plant Referements and PPA Termination Junifolder 1 (Coal Tarly Referement Conversions) Junifolder 2 (Coal Tarly Referement Conversions) Junifolder 3 (Coal Tarly Referement Conversions) Junifolder 4 Hermaton Refere - Hydro Refere - Hydro Beyer - Wand PPA	58 10	6 67 12 85	6 67 13 86 - - - - -	14	8 75 17 99	7 68 16 92 	7 67 17 92 - - - - -	18 94 - - - - - - -	19	18 87 45.0 525.0 - 212	6 54 15 76	6 53 14 74 - - 290	52 13 72 - - 300	6 50 12 68 -	6 49 11 66 - - 298	9 49	4 32 8 45	7 37 - - - 300	3 21 5 29 615 15.0 360.0 300	3 25 5 33 465 15.0 150.0 300 - (349) (353)	70 667 154 890 45 525.0 - 21	117 1,065 255 1,437 1,125 555.0 510.0 156 (351 (356 (349 (353 (237 (262 (360
West	Demand Response Total Barryy Hillseiney, ID Barryy Hillseiney, UT Barryy Hillseiney, WY Barryy Hillseiney, WY Barryy Hillseiney, Total Battery Stonge, UtahN Battery Stonge, UtahN Battery Stonge, WySW Battery Stonge, Halno FOT Bat - Summer Existing Plant Referencetts and PPA Termination Jindhodge I (Coal Tadly Retirement/Convensions)	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	7 68 16 92 	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 212	6 54 15 76	6 53 14 74 - - - 290	52 13 72 - - 300	6 50 12 68 	6 49 11 66 - - 298 - (356)	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - 300	3 21 5 29 615 15.0 360.0 300	3 25 5 33 465 15.0 150.0 300 - (349) (353)	70 667 154 890 45 525.0 21 - - - - (179) (216)	117 1,065 255 1,437 1,125 555.0 510.0 156 (351 (356 (349 (353 (237 (262 (360 (420
West	Demand Response Total Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WA Energy Efficiency Total Energy Efficiency Efficiency Energy Efficiency English Energy Efficiency English Energy Efficiency English Energy	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	7 688 16 16 92	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 54 15 76	6 53 14 74 - - - 290	52 13 72 - - 300	6 50 12 68 (20) (49)	6 49 11 66 - - 298 (356) - - - (20)	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 29 615 15.0 360.0 300	3 25 5 33 465 15.0 150.0 300 - (349) (353)	70 667 154 890 45 525.0 - - - - - - (179) (216) (2)	117 1,065 255 1,437 1,125 555,0 510,0 156 (351 (356 (349 (353 (360 (420 (420
West	Demand Response Total Harry Biffestory, ID Fangy Biffestory, UT Fangy Biffestory, WY Fangy Efficiency, WY Fangy Efficiency, WY Fangy Efficiency, Total Hattery Stoingse, Utah-N, Hattery Stoingse, Utah-N, Hattery Stoingse, WYSW FOT East - Stoiner Existing Plant Retirements and PPA Termination Institute of Coal fastly Retirement/Convenions) Jinshindger 2 (Coal fastly Retirement/Convenions) Jinshindger 2 (Coal fastly Retirement/Convenions) Jinshindger 3 J Jinshindger 4 Hermation Retire, London Biffestory Retire	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	7 68 16 92 	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 54 15 76 76 76 76 76 76 76 76 76 76 76 76 76	6 53 14 74 - - - 290	52 13 72 - - 300	6 50 12 68 	6 49 11 66 - - 298 - (356) - - (20) - - 443 443	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 29 615 15.0 360.0 300	3 25 5 5 33 3465 15.0 300 300	70 667 154 890 45 525.0 21 - - - - (179) (216)	117 1,065 255 1,437 1,125 555,0 510,0 (351 (356 (349) (237 (262 (360) (420) (420) 443 905
West	Demand Response Total Interpy Hillscheep, UP Interpy Hillscheep, UT Interpy Hillscheep, UT Interpy Hillscheep, WY Energy Hillscheep, WY Energy Hillscheep, WAY Interpy Hillscheep, WAY Interpy Hillscheep, Undah, N Hattery Noringe - Undah, N Hattery Noringe - WayN Hattery - Way	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	7 668 16 92 	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 54 15 76	6 53 14 74 - - - 290	52 13 72 - - 300	6 50 12 68 (20) (49)	6 49 11 66 - - 298 (356) - (20) - 443	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 29 615 15.0 360.0 300	3 25 5 5 33 3465 5 15.0 0 150.	70 667 154 890 45 525.0 	117 1,065 255 1,437 1,125 555.0 510.0 156 (351 (353 (353 (353 (353 (353 (353 (353
West	Demand Response Total Ibernyt Ifficiency, ID Inergy Ifficiency, UT Inergy Ifficiency, WY Barryt Ifficiency, WY Barryt Ifficiency, Total Battery Storage, UtahaN Battery Storage, UtahaN Battery Storage, WYSW Battery Storage, WYSW Battery Storage, Wish FOT Fast, Summer FOT	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	7 668 16 92 	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 54 15 76 76 76 76 76 76 76 76 76 76 76 76 76	6 53 14 74 - - - 290	52 13 72 - - 300	6 50 0 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 11 66 - - 298 - (356) - - (20) - - 443 443	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 29 615 15.0 360.0 300	3 25 5 5 33 3465 15.0 300 300	70 667 154 890 45 525.0 	117 1,0655 2,555 1,437 1,125 555.0.0 156 (351 (353 (353) (353) (237 (262) (420) 443 443 4905 405 761 654
West	Demand Response Total Henry Biffestency, ID Farency Efficiency, UT Farency Efficiency, UT Farency Efficiency, WY Farency Efficiency, WY Farency Efficiency, WY Farency Efficiency Total Hattery Nomes - Units For Fast - Units For	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	7 668 16 92 	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 54 15 76 76 76 76 76 76 76 76 76 76 76 76 76	6 53 14 74 - - - 290	52 13 72 - - 300 - - - (6) - (67)	6 50 12 68 (20) (49)	6 49 11 66 - - 298 - (356) - - (20) - - 443 443	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 5 99 615 15.0 360.0 300 - - - - (237) (175)	3 25 5 5 33 3 465 15.0 0 150.0	70 667 154 890 45 525.0 	117 1,0655 2,555 1,437 1,125 555.0.0 156 (351 (353 (353) (353) (237 (262) (420) 443 443 4905 405 761 654
West	Demand Response Total Henry Biffscheer, ID Fangy Biffscheer, UT Fangy Biffscheer, UT Fangy Biffscheer, WY Fangy Schar PV Fangy Sc	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	7 668 16 92 	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 54 4 15 5 15 15 15 15 15 15 15 15 15 15 15 1	6 53 14 74 	52 13 72 - - 300 - - - (6) - (67)	6 50 0 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 11 66 - - 298 - (356) - - (20) - - 443 443	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 29 615 15.0 360.0 300	3 25 5 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6	70 667 154 890 45 525.0 	1177 1,065 2,55 2,55 2,55 2,55 2,55 2,55 2,55 2,
West	Demand Response Total Hensyn Efficiency, UT Brengy Efficiency, UT Brengy Efficiency, UT Brengy Efficiency, WY Loregy Efficiency, WA Loregy Efficiency Total Loregy Efficiency Loregy Loregy Efficiency Loregy Loregy Efficiency Loregy Loregy Efficiency Loregy Sodar - PV - Strengen Loregy Sodar - PV - Variation Loregy Loregy Efficiency Loregy Loregy Efficiency Loregy Loregy Efficiency Loregy Loregy Efficiency Loregy Sodar - PV - Variation Loregy Sodar - PV - Variation Loregy Loregy Loregy - PV - Variation Loregy Loregy - PV - Variation Loregy Loregy Loregy - PV - Schopton Loregy Sodar - PV - Workson Loregy Loregy - PV - Schopton Loregy Sodar - PV - Schopton Loregy Loregy Loregy - PV - Schopton Loregy Loregy - PV - PV - Loregy - PV - PV - Loregy - PV - PV - Loregy - PV -	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	77 688 16 922	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 544 15 15 15 15 15 15 15 15 15 15 15 15 15	6 53 14 74 	52 13 72 - - - - - - - - - - - - - - - - - -	6 50 50 50 50 50 50 50 50 50 50 50 50 50	6 49 111 1666	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 615 15.0 360.0 3600 (237) (175)	3 25 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	70 667 154 890 45 525.0 21	1177 1,0655 2555 1,4377 1,1255 555.0 156 (3516 (3516 (349) (352) (420) 443 443 443 443 443 443 443 443 443 44
West	Demand Response Total Henry Biffscheer, UD Farety Efficiency, UT Farety Efficiency, UT Farety Efficiency, WY Farety Efficiency Total Buttery Minings - Under N Buttery Minings - Under Minings - Under N Buttery Minings - Under Minings -	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	77 688 16 922	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 544 15 15 15 15 15 15 15 15 15 15 15 15 15	6 53 14 74 	52 13 72 - - - - - - - - - - - - - - - - - -	6 50 50 50 50 50 50 50 50 50 50 50 50 50	6 49 111 666	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 29 615 15.0 360.0 360.0 	3 25 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	70 667 154 890 45 525.0 21	117 1.065 2.55 2.55 2.55 2.55 2.55 2.55 2.55 2.
West	Demand Response Total Ibernyt Iffickency, ID Faregy Effickency, UT Faregy Effickency, WY Faregy Effickency, WY Faregy Effickency, WY Faregy Effickency, WY Battery Storage - Unda. N Battery Storage - Unda. N Battery Storage - Was W Kasting Plant Retirements and PPA Termination Institution of Coal Early Retirement/Convenions) Institution of Coal Early Retirement/Convenions In	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	77 688 16 922	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 544 15 15 15 15 15 15 15 15 15 15 15 15 15	6 53 14 74 	52 13 72 - - - - - - - - - - - - - - - - - -	6 50 50 50 50 50 50 50 50 50 50 50 50 50	6 49 111 66	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 5 615 15.0 360.0 3600 (237) (175)	3 25 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	70 667 154 890 45 525.0 21	117 1,065 255 1,437 1,125 555.0 510.0 (351 (351 (352 (360 (420 (420 (420 (420 (420 (420 (420 (42
West	Demand Response Total Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency Total Energy Efficiency Effic	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 	8 75 17 99	77 688 16 922	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 544 15 15 15 15 15 15 15 15 15 15 15 15 15	6 53 14 74 	52 13 72 - - - - - - - - - - - - - - - - - -	6 50 50 50 50 50 50 50 50 50 50 50 50 50	6 49 111 66 6 6 7 12 12 12 12 12 12 12 12 12 12 12 12 12	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 15 20 20 20 30 300 3000 3000	3 25 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	70 667 154 890 45 525.0 21	117 1.0655 2.55 .0.0 1.0656 2.55 .0.0 510.
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West	Demand Response Total Henry Biffscheer, ID Farety Efficiency, UT Farety Efficiency, UT Farety Efficiency, WY Farety Efficiency Total Battery Monages - Under My Battery Monages - Under My Battery Storage - Under My Battery Storage - Malao FOF Tast - Storages - Malao For Tast - My FOF Tast - My FO	58 10	6 67 12 85	6 67 13 86 - - - - - - - - - - (169)	14 90 - - - - - -	8 75 17 99	77 688 16 922	7 67 17 92 - - - - -	18 94 - - - - - - - - - - - - - - - - - -	19	18 87 45.0 525.0 - 212	6 544 544 544 544 544 544 544 544 544 54	6 53 14 14 74 14 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	52 133 72 - - - - - - - - - - - - - - - - - -	6 50 50 50 50 50 50 50 50 50 50 50 50 50	6 49 116 16 16 16 16 16 16 16 16 16 16 16 16	9 49 300 (75)	4 32 8 45 - - 300	7 37 - - - 300	3 21 1 5 9 1 1 5 9 1 1 1 5 9 1 1 1 1 1 1 1	3 25 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	70 667 154 800 525 21 21	117172 1.06567 1.06567 1.1252 1.06567 1.06567 1.1252 1.1252 1.0657 1.065
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West	Demand Response Total Hensyn Efficiency, UT Brengy Efficiency, UT Brengy Efficiency, WY Loregy Efficiency, WY Loregy Efficiency, WA Loregy Efficiency Total Linking Storage - Under Management of the Comment of the Com	6 588 10 10 744	6 677 12 12 12 12 12 12 12 12 12 12 12 12 12	6 6 67 13 86 6 67 13 86 6 67 13 86 6 6 7 13 86 6 8 14 11 11 11 11 11 11 11 11 11 11 11 11	14 900	8 755 755 177 177 177 177 177 177 177 177	7 688 16 16 92 2	7 67 17 17 17 17 17 17 1	18 944	19 91	18 87 45.0 525.0	6 544 15 54 15 15 15 15 15 15 15 15 15 15 15 15 15	6 53 14 74 74 74 75 75 75 75 75 75 75 75 75 75 75 75 75	52 133 72 - - - - - - - - - - - - - - - - - -	6 50 50 50 50 50 50 50 50 50 50 50 50 50	6 49 9111 666 67 68 5.8 8 5.8 8 5.8 8 5.8 5.8 5.9 9.2 2.7 7.7 9.9.8 2.2 2.2 2.2	9 499	4 32 8 8 45 5	7 37 300	3 21 15 5 15.0 360.0 360.0 360.0 360.0 175)	3 25 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	70 607 154 890 415 45 525.0 21	111.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.
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West	Demond Response Total Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency, WA Entersy Storage - WY Entersy Efficiency Efficiency Entersy Enter	6 588 10 10 10 10 10 10 10 10 10 10 10 10 10	6 677 12 12 12 13 13 13 13 13 13 13 13 13 13 15 6 6 7 7 7 19 12 12 12 12 12 12 12 12 12 12 12 12 12	66 67 13 86 6	14 900	8 8 755 755 177 178 178 178 178 178 178 178 178 178	77 688 16 16 92	7 677 177 177 177 177 177 177 177 177 17	18 94	19 91	18 87 45.0 45.0 18.1 18.1 18.1 18.1 18.1 18.1 18.1 18	6 544 15 15 15 15 15 15 15 15 15 15 15 15 15	6 53 14 74 74 75 75 75 75 75 75 75 75 75 75 75 75 75	52 133 72 - - - - - - - - - - - - - - - - - -	6 50 50 50 50 50 50 50 50 50 50 50 50 50	6 49 9111 66 6 6 7 111 6 7 11 11 11 11 11 11 11 11 11 11 11 11 1	9 499	4 32 2 8 8 45 45 45 45 45 45 45 45 45 45 45 45 45	7 37 300	3 21 1 5 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	3 25 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	70 667 154 800 525.0 21	117 1,065 255 1,105 255 1,
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Transference Control and Performent Conversions - - - - - - - - -	xisting Plant Retirements and PPA Te mBridger 1 (Coal Early Retirement/Con-	mination (ersions)	- 1	-	- 1	-	- 1	-	-	-	-	-	(351)	- 1	- 1	-	- 1	-	-	-	- 1	-	_	Ŧ
Transfered	mBridger 2 (Coal Early Retirement/Con-	/ersions)	-	-	-		-	-	-	-		-		-	-	-	(356)	-	-		-	-	-	#
Temple	mBridger 3 mBridger 4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)		+
Page	ermiston		-	-	-		-		-	- 240			-	-	-	-	-	-	-		(237)	-		I
Segret Stage	mire - Wind PPA			(1)	(169)	(175)	- (1)	- (41)		(1)		-	(75)	(10)	-	(20)	(20)	(75)		(10)	(10)		(179) (216)	0
SCT Fram WY 1	spire - Solar PPA		-		-	-	-	-		-		(2)		-	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)	Σ
Clairy Solder: PV-S-Grogon	CCT Frame WV		-	-	-	-	-	-		-	-		-	-		-	-	-		-	443	-		Í
Clairy Solar-FV- Values	otal SCCT		-		-	-	-	374	-	-		-	-	-	-	230	-	-	-	-	443		374	Ŧ
Clinity Solar Storage - PV - Thridger - - - - - - - - -	tility Solar - PV - Yakima		-	-			-				-		-		-	-	-	-					405	
Citing Solar-Processing	tility Solar - PV - jbridger tility Solar+Storage - PV - Ibridger		-	-		-	-	-	-	-		-		-	-		359	-	-	-	-	702	-	+
Utility Solar-Storage Pr. Vyakima	tility Solar - PV - Walla Walla		-	-	-	-		-	-	-	-	-	-		-		-	-	-	-	-		-	#
Treat Scalar Command Response, ORA-neillary Services	tility Solar+Storage - PV - S-Oregon tility Solar+Storage - PV - Yakims		-	-		-	-	-	-	-	-	-	-	-	-	236	-	-	-	-	430		126	- 1
Demark Response, WA Ashellary Services	otal Solar		-	-	-	-	-	905	-	-	-	-		-	-	575	359	-	-	-	430	702	905	#
Demark Response, CA-Cod-WH Demark Response, CA-Impate Demark Response, CA-I	emand Response, OR-Ancillary Service emand Response, WA-Ancillary Service	s es	-	-		-	-	- :	-	-	-	-		-		-	-	-	-	-		-		+
Demand Response, CA.Thigate	emand Response, CA-Cool/WH		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	#
Demark Response, CAC-fremostat	emand Response, CA-3rd Party Contra- emand Response, CA-Irrigate	ets	-	-		-	-	- :	-	-	-	-	-	-		-	4.8	-	-	-	1.1	-	-	+
Demand Response, ORL-lingtate	emand Response, CA-Thermostat		-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	-	-	-	- 23.3	-		Ŧ
Demmal Response, OR-Chingate - - - - - - - - -	emand Response, OR-Cool/WH emand Response, OR-3rd Party Contrac	ts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	-	-	23.3 30.3		-	+
Demand Response, WA-Indragate	emand Response, OR-Irrigate		-	-	-	-	-	-		-	-	-	4.1	-	-	-	9.2	-	-	-	7.7	-		Ŧ
Demark Response, W.A. Thirpast Commit Response, W.A. Thirpast	emand Response, WA-3rd Party Contri	ets																			9.9			t
Demont Response Total - - - - - - - - -	emand Response, WA-Irrigate		-	-	-	-	-	-		-	-	-	5.2	-	-	-	16.6	-	-	-	3.1	-		Ŧ
Tarengy Efficiency. CA	emand Response Total												18.6								76.9			±
Theory Hilling No. 11 9 10 10 12 12 12 11 11 10 9 9 9 8 8 6 6 5	nergy Efficiency, CA			2	2	2	20	20	2		2		2	2 21		20	2	1	1		1 25	1 24	18 384	
Energy Efficiency Total 52 45 48 49 53 52 56 54 52 49 44 42 40 38 36 34 33 32 Entitive Storage - Schregon	nergy Efficiency, WA		11	9	10	10	12	12	12	11	11	10	9	9	9	8	8	6	6	5	4	4	108	
Battery Storage - Portland NC	nergy Efficiency Total		52	45	48	49	53	52	56	54	52		44	42	40	38		34	33	32	30 360		510 120	
Hatrey Stonge - Valia Walls	attery Storage - Portland NC		-		-					-		150			-	-			-		-		150	,
998 719 492 501 496 154 150 151 203 1,075	attery Storage - Walla Walla		-	-	-	-	-	-		-	-		-	-		-	-	-	-	-	45		120 105	
	OT West - Summer											1,075									1,075	1,075	494	ı
FOT West - Winter 151 131 265 300 310 209 215 217 264 396 391 352 361 377 310 226 243 243	OT West - Winter	ements/Conversions	151						215													(745)	246	1
Annual Additions, Long Term Resources 130 128 286 195 229 3,790 155 339 182 998 1,236 1,520 629 693 1,260 83 93 468	Annual Additions, L	ong Term Resources		128	286	195	229	3,790		339	182	998	1,236	1,520	629	693	1,260	83	93	468	2,688	1,399	i	

											Capacity	(MW)										Resource Totals 1/
	P-32	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year 20-year
East	Existing Plant Retirements and PPA Termination	2.019	2020	2021		2023	2024	2020		2021	2020	2027	2000	2001	2032	2033	2034		2030	2031	2030	
	Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-		(82) (82)	-	-	-		-	-	-	-	-	-	-	-	(82) (82) (82) (82)
	Hayden 1	-	-	-	-	-	-	-		-	-	-	-	(44)	-	-	-	-	-	-	-	- (44)
	Hayden 2 Huntington 1	-	-	-	-	-	-		-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	- (33) - (459)
	Huntington 2	-	-	-	-	-	-	-	-	-	- (74)	-	-	-	-		-	-	-	(450)	-	- (450)
	Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-		-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74) (74) (74) (74)
	Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-		-	-	-	(99)		-		-	-		-	-	-	-	(387) (387) (99) (99)
	DaveJohnston 1 DaveJohnston 2	-			-						(106)			- 1	- 1		- :				-	(106) (106)
	DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-		-	-	(220)	-	-	-		-	-	-		-	-	(220) (220) (330) (330)
	Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-		-		-	-	-	-	-	(156) (156)
	Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	_	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201) (201) (280) (280)
	Gads by 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	- (356)
	Retire - Hydro Retire - Wind	-	-	-	-	-	(20)		-	-	-	-	(40)	-	-	-	-	-	-	-	-	(20) (20) - (40)
	Expire - Wind PPA	-	(27)	(17)	(49)	(0)	- (1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)		(160) (924)
	Expire - Solar PPA Retire - Other	-	-		-	- (1)	- (1)					-	-	-	- :	-	(1)	(33)	- (94)	(849)	(32)	- (33)
	Coal Ret_WY - Cas RePower Expansion Resources	-	247		-	-	-		-	_	-	-	(247)	-	-	-	-	-	-		-	247 -
	SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	185	-	-	185	-	-	-	-	-	185 555
	SCCT Frame WYSW Total SCCT	-	-	-	-	-	-		185		-	370 370	185	-		185	-	-	-	-	-	- 370 185 925
	Wind, Djohnston	-	-	-	-	-	-	-	-	-	126	494	-	-	-	-	-	-	-	-	-	126 620
	Wind, GO Wind, WYAE	-	-	-	-	-	1,920		-	-	-	-	984	-	-	-	-	-	-	-	-	- 984 1,920 1,920
	Total Wind Utility Solar - PV - Utah-S	-	-	-	- 59	-	1,920	-	-	-	126	494	984	-	-	-	-	-	-	-	-	2,046 3,524
	Utility Solar - PV - Utah-S Utility Solar - PV - WYSW		-	146	- 59		100											_	400			205 605 100 100
	Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	95		-	-		-	- 53	500 63		-	-	-	-	-	-	100 100 95 595
	Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington												-	- 63						909		- 116 - 909
	Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N	-	-	-	-	-	- 98		-	-	-	-	802	-	-	-	-	-	-	-	-	- 802 98 98
	Total Solar	-	-	146	59	-	293	-	-	-	-	-	855	563	-	-	-	-	400	909	-	498 3,225
	Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	2.6 1.8	-	- 2.6 - 1.8
	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-		-	-	-	-	5.2		-	-	-	3.7 8.3	1.8	- 10.6 - 8.3
	Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-		7.2	-	-	6.7	-	-	6.8	-	-	7.0		-	7.2	28.1 55.9
	Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-		-		-			-	-	74.1	2.6 1.9	- 76.7
	Demand Response, UT-Thermostat	-			-	-	-				116.7		8.2		- :		- :	8.3			5.1	- 1.9 116.7 138.3
	Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	3.4 39.4	1.8	- 5.2 - 39.4
	Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	2.1	_	- 1.8
	Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	16.7	-	-	-	3.2	1.2	- 19.9 13.5 16.7
	Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	4.1	-	7.0	-	18.1	-	3.0 8.2	7.2	-	- 116.7	6.7	8.2	-	12.0	18.4	-	15.3	-	138.7	21.6	3.0 3.0
	Demand Response Total Energy Efficiency, ID	6	6	6	7	8	7	7	7	7	7	6	6	- 6	6	6	4	4	3	3	3	70 118
	Energy Efficiency, UT Energy Efficiency, WY	58 10	67 12		69 14		68 16	67 17	68 18	65 19	62 18	54 15	53 14	52 13	50 12	49 11	36 9	32	26 7	23		667 1,070 154 256
	Energy Efficiency Total	74	85	86	90	100	92	92	94	91	87	76	74	72	68	66	49	45	37	32 15	35	891 1,443 270 765
	Battery Storage - Utah-N Battery Storage - WYSW	-	-	-	-	-	-		-	-	270.0 150.0	-	-	-	-	-	-	-	-	-	480 240.0	150.0 390.0
	Battery Storage - Idaho FOT East - Summer	-	-	-		-		-	-	-	300	246	300	300	252	60.0 284	286	300	300	150.0 300	300	- 210.0 30 158
West	Existing Plant Retirements and PPA Termination										300	240	300	300	232	204	280	300	300	300	300	
	JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	(351)	-		-		-	(356)	-	-	-	-	-	-	-	-	-	(351) (351)
	JimBridger 3	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-		(349)	- (349)
	JimBridger 4 Hermiston	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	(237)	(353)	- (353) - (237)
	Retire - Hydro Expire - Wind PPA	-	(1)	(169)	(175)	(1)	(41)		(1)		(7)	(75)	(10)	(6)	(20)	(20)	(75)	-	(1)	(10)	-	(179) (262) (216) (360)
	Expire - Solar PPA				- (.,3)		- (1)				(2)		-	(67)	(49)	-		(1)		(175)		(2) (420)
	Expansion Resources SCCT Frame WV	-	-	-	-	- 1	- 1	-	-	-	- 1	-	- 1	-	-		-	-		443	-	- 443
	Total SCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	- 92	-	-	-	-	443	-	- 443
	Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima						405								- 92							- 92 405 405
	Utility Solar - PV - jbridger Utility Solar+Storage - PV - Jbridger	-	-	-	-	354			-	-		359	-	-	-		-	-		-	343	354 713 - 343
	Utility Solar+Storage - PV - S-Oregon	-	-		-	-	500		-		-	-	-	-	383		-	-			-	500 883
	Utility Solar+Storage - PV - Yakima Total Solar	-	-	-	-	354	905		-	-	-	359		-	475	-	-	-	-	430 430		- 430 1,259 2,866
	Demand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	8 8
	Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH		-		_						1.9			_		_	-	_		1.5		- 1.5
	Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	- 4.0	-	-	-	-	-	-	-	1.1		- 1.1
	Demand Response, CA-Irrigate Demand Response, CA-Thermostat	-	-						-			4.8 5.8						-			-	- 4.8 - 5.8
	Demand Response, OR-Cool/WH	-	-	-	-	-			-	-		-				5.4	-	-	-	23.3 30.3	-	- 23.3
	Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-		-		-		-	-	-	13.3		-	-	3.4 -	-	-	-	-		- 35.7 - 13.3
	Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts	-	-	-	-				-	-						-	-	-	-	7.7 9.9	-	- 7.7
	Demand Response, WA-Irrigate	-	-		-				-			5.2						-		3.1	-	- 8.3
	Demand Response, WA-Thermostat Demand Response Total	-	-	-	-	-	-	-	-	-	9.4	11.3 40.4	-	-	-	5.3 10.7	-	-	-	76.9	-	- 16.6 9.4 137.4
	Energy Efficiency, CA	1 40		2 43	2 42	2 47	2 39	2 43	2 41	2	2	2 33	2 31	2 30	2	2 27	1 26	1 26	1 26	1 24	1	18 33
	Energy Efficiency, OR Energy Efficiency, WA	11	11	11	12	12	12	12	11	11	11	9	9	9	29	8	6	6	5	4	4	113 180
	Energy Efficiency Total Battery Stomge - S-Oregon	52	56	55	55	61	52	56	54	52	49	- 44	42	40	38	36 15	34	33	32	29 315	29 45	543 900 180 555
	Battery Storage - Willamette Valley	-	-		-	30	-		-	-	120 75	-		-	-	-	-	-	-	-	-	105 105
	Battery Storage - Portland NC Battery Storage - Walla Walla	-	-	-	-	75			-	-	- 60	-		-	-	45 60	-	-	-	15	45 105	60 150 75 255
	Battery Storage - Yakima	- 998	719	100	-	105	- 99	100	-	584	1.076	1.075	1.076	1.075	1.075	-	1.075	1.000	- 996	-	-	105 105
	FOT West - Summer FOT West - Winter	998 151	131	265	501 300	808 310	119	190 123	526 125	172	1,075 303	1,075 300	1,075 261	1,075 270	1,075 246	1,075 160	1,075 97	1,060 106	114	1,075	1,061	599 832 200 178
	Existing Plant Retirements/Conversions Annual Additions, Long Term Resources	130	(61) 141	(573)	(224) 204		(62) 3,262	- 156	(587)	(3) 142	(912)	(449) 1,391	(396)	(350) 674	(114) 593	(557) 497	(156)	(36)	(280) 469	(2,260)	(745) 1,343	i
	Annual Additions, Long Term Resources Annual Additions, Short Term Resources	1,149	850		801	1,118	218	313	651	755	1,678	1,621		1,645	1,573	1,518	1,458	1,466	1,410	1,375	1,361	1

1/ Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average

colating a (Coal Early Retirement/Conversions) cholds of (Coal Early Retirement/Conversions) cholds of (Coal Early Retirement/Conversions) cholds of (Coal Early Retirement/Conversions) chove-choluston 1 choluston 1 cholu		2020	7) (17)					2026 (82)	- (82) 	- - - - - - (74) (74)	2029		- (44) (33) - -			2034		2036	- - - (459) (450)	2038	(82) (82)
mag 2 (Coal Early Retirement/Conversions) system 1 system 2 system 2 system 1 system			- - - - - - - - - - - - - - - - - - -	-		-	-		(82) 	- - - - (74) (74)	-	-	- (44) (33) - -	-	-	-	-	-	- - (459)	-	(82)
awyden 2 Iuntington 1 Iuntingto			- - - - - - - - - - - - - - - - - - -	-		-		-	- - - - -	- - - (74) (74)	-	-	(33)	-	-	-	-	-	(459)	-	-
Januarityston 1 Johnstagton 2 Johnst J. (Coal Early Retirement/Conversions) Johnst J. (Coal Early Retirement/Conve			- - - - - - - - - - - - - - - - - - -	-		-		-	-	- (74) (74)	-		-	-	-	-	-		(459) (450)	-	-
Demand Response, UT-14 Party Contracts Demand Response, UT-15 Party Contracts Demand Response, UT-15 Party Demand Response, WY-15 Party Demand Response, WY-16 Party Demand Response Total Demand Response Total Demand Response Total Demand Response, WY-16 Party Demand Response, WY-16 Party Demand Response, WY-16 Party Demand Response, WY-16 Party Demand Response, UT-16 Party Demand Response, OR-16 Party Demand			- - - - - - - - - - - - - - - - - - -	-	1	-		-		(74) (74)	-	-	-		-		-	-	(450)	-	
Colsting A (Coal Early Retriement/Conversions) Challed A (Coal Early Retriement/Conversions) DaveJohnston 1 Dav			- - - - - - - - - - - - - - - - - - -	-		-	-	-	-	(74)			- 1	-					(420)		
Cholle 4 (Coal Early Retiement/Conversions) Develohnston 1 Develohnston 2 Develohnston 3 Develohnston 3 Develohnston 3 Develohnston 4 Develoh			- - - - - - - - - - - - - - - - - - -	-	1	-	-	-	-	· · · · · · · · · · · · · · · · · · ·	-	-	-	-	-		-	-	-	-	(74 (74
DaveJohnston 3 DaveJohnston 4 DaveJohnston 4 DaveJohnston 4 DaveJohnston 1 DaveJo		- (280 - (280 - (27 - 247 	7) (17)	-		-	-	-	!		-	-			-	-	-	-	-	-	(387)
Daves Johnston 1 Daves Johnston 4 Naughton 1 Naughton 1 Naughton 1 Naughton 2 Coal Early Retirement/Conversions) Carl by 1. Carl by		- (280 - (280 - (27) - (280) - (7) (17)	-	-	-		-		(99) (106)	-	-	-	-	-	-	-	-	-	-	(106
Daveshorston 4 Saughtton 1 Saughtton 2 Saughtton 3 Saughtton 3 Saughtton 3 Saughtton 3 Saughtton 3 Saughtton 4 Sa		- (280 - (270 - (270 (270 (270) - (270) - (270	7) (17)	- - - - - - (49)	1 1 1 1	-				(220)	-	-	-	-	-		-	-	-	-	(220
Naughton 2 Naughton 2 Naughton 3 Naughton 3 Naughton 4 Naughton 1 Naughton 4 Naughton 1		(280 	7) (17)	- - - - - (49)		-	-	-		(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 3 (Coal Early Retirement/Conversions) Cadeby 1-6 Retires - Hydro Retires - Hydro Retires - Wind PA Retires - Coal Ret - Wind PA Retires - Coal Retires - Retire		247	7) (17)	- - - - (49)				-			-	(156) (201)		-	-		-	-	-	-	
Resine - 1 Mydro Resine - 1 Mydro Resine - Wind PIA Repine - No International Control of the Piant Piant Coal Ref. WY, Can RePower SCCT Frame WTN Word, Diphinston Wind, Diphinston Wind, Diphinston Wind, Diphinston Wind, WYAE Total Wind Gillay Solar - PY- Utah-S Citility, Solar - PY- Utah-S Citility, Solar - Storage - PY - CO Solar - Storage - PY - Storage - PY - CO Solar - Storage - PY - Storage - PY - CO Solar - Storage - PY - Storage - PY - CO Solar - Storage - PY - Storage		- (27 	-	- - - (49)							-	- (201)		-	-	_	-	-	-	-	(280)
Resine - Wind PPA Deprie - Solar PPA Deprie - Dep		- (27 247 	-	(49)		-	-	-			-	-	-	-	(356)	-	-	-	-	-	-
Espace - Wand PPA Refries - Other PPA Refries - O		- 247	-	(49)	-	(20)	-				-	(40)	-	-	-		-	-	-	-	(20)
Retire - Other Coal Ref - WY- Cas RePower Espansian Resources KCT Franch Trivia KCT Franch Trivia KCT Franch Trivia Mark CO Ward, Wy-AR Total Wind Chilay Solar- FV- Utala-S Chilay Solar- FV- Utala-S Chilay Solar- FV- Wy-SW Chilay Solar- FV- Wy-SW Chilay Solar- Solar- FV- Wy-SW Chilay Solar- Solar- FV- Utala-S Chilay Solar- Solar- FV- Wy-SW Chilay Solar- Solar- FV- Wy-SW Chilay Solar- FV- Wy-SW Chilay Solar- FV- Wy-SW Chilay Solar- Solar- FV- Wy-SW Chilay			7 -			-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60)	(80)	-	(160)
Coal Bet WY- Can RePower Expansion Resources SCCT Frame NTN SCCT Frame NTN SCCT Frame NTN SCCT Frame NTN Ward, Dishaston Wand, WARE Total Wind Dishaston Domand Response, D. CoolWH Domand Response, D. Total Warten Domand Response, D. Total Warten Domand Response, D. Total Warten Domand Response, UT-Intigate Domand Response, WARTEN District States States District States States District States States			7 -	-	(1)	(1)	-	-			-	-	-	-	-	(1)	(35)	(94)	(849)	(32)	(1)
Examine Resources SCCT Frame WYSW Food SCCT	- - - - - - - - - - - - - - - - - - -			-	-	-	-	-	-	-	-	(247)	-	-	-	- (1)	-	-	-	-	247
SCCT Fame WYSW TOTAL SCCT Word, Opionation Word, Cox Wo																					
Total SCCT Wind, GO Wind, GO Wind, GO Wind, GO Wind, GO Wind, GO Wind, Wind Wind Wind, Wind Wind Wind Wind Wind Wind Wind Wind		-	-	-	-	-	-				-	555	-	-	370		-	-	-	-	
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Citility Solar-Storage - PV- CO Citility Solar-Storage - PV- Huntington Citility Solar-Storage - PV- Unah-N Common - Com		+	1 :-			100 95		+		 +	- :		500	- :						- :	100 95
Citility Solar-Storage - PV - Hantington Childry Solar-Storage - PV - Unah-N Charles Solar-Storage - PV - Unah-N Common - C			-					-			-		4	- :	-				-	-	
Citility Solar-Storage - PV- Unah-N Demand Response, ID-CooPWH Demand Response, ID-CooPWH Demand Response, ID-Mary Contracts Demand Response, ID-Mary Contracts Demand Response, ID-Mary Contracts Demand Response, ID-Mary Contracts Demand Response, ID-CooPWH Demand Response, ID-CooPWH Demand Response, UT-Universe Demand Response, UT-Universe Demand Response, W-V-Golfware Demand Response, W-V-W-W-W-W-W-W-W-W-W-W-W-W-W-W-W-W-W-W	=		_	-	-		-	-			-	-	-	-	-		-	-	909	-	
Total Solar Demmad Response, ID-Cool/WH Demmad Response, IT-Me Party Contracts Demmad Response, IT-Me Party Contracts Demmad Response, WY-Cool/WH Demmad Response, UT-Ancillary Services Demmad Response, ON-Ancillary Services Demmad Services Demmad Services Demmad Response, ON-Ancillary Ser		+	+ :	-	-	695	-	+ = +		 +	-	205		-	-	-		-	-	-	695
Demand Response, ID-3rd Party Contracts Demand Response, ID-Higher Demand Response, ID-18 Party Contracts Demand Response, UT-18 Party Contracts Demand Response, UT-18 Party Contracts Demand Response, WY-18 Party Contracts Demand Response, UT-18 Party Contracts Demand Response, UT-18 Party Contracts Demand Response, UT-18 Party Contracts Demand Response, WY-18 Party Contracts			146	59		890	-	-			-	205	504	-	-		_	400			1,095
Demand Response, ID-Inigate Demand Response, ID-Thomposist Demand Response, IT-Cool/WH Demand Response, IT-Cool/WH Demand Response, IT-Cool/WH Demand Response, IT-Cool/WH Demand Response, W-Y-Cool/WH Demand Response, W-Y-Thermostat Demand Response, W-Y-Thermostat Demand Response, W-Y-Thermostat Demand Response, W-Y-Arcillary Services Demand Response, UT-Arcillary Services Demand Response, Demand Benand Demand Response, W-Y-Arcillary Services Demand Response, OR-Arcillary Services Demand Response, OR-Arcillary Services Demand Response, OR-Cool/WH Demand Response, OR-Cool/WH				-	-	-	-			_ - T	-	-	- 1	-	-	-	-	-	2.6	-	-
Demand Response, IJF. Thermostat Demand Response, UT-CoaVYM Demand Response, UT-Informostat Demand Response, WT-Informostat Demand Response, WY-Informostat Demand Response, UT-Informostat Demand Response, UT-Informostat Demand Response, UT-Informostat Demand Response, OR-Informostat Demand Response, OR-Info	-	+	+ :					+			- :			5.2					1.8	1.8	
Demand Response, UT-14 Party Contracts Demand Response, UT-15 Party Contracts Demand Response, UT-15 Party Demand Response, WY-15 Party Demand Response, WY-16 Party Demand Response Total Demand Response Total Demand Response Total Demand Response, WY-16 Party Demand Response, WY-16 Party Demand Response, WY-16 Party Demand Response, WY-16 Party Demand Response, UT-16 Party Demand Response, OR-16 Party Demand	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	3.7 8.3	-	-
Demmal Response, UT-Intraste Demmal Response, UT-Thermostat Demmal Response, W-Y-God/WH Demmal Response, W-Y-God/WH Demmal Response, W-Y-God/WH Demmal Response, W-Y-Hermostat Demmal Response, UT-Ancillary Services Demmal Services Demmal Response, UT-Ancillary Services Demmal Response, UN-Ancillary Services Demmal R	4.1		7.0	-	9.9	-		7.2			6.7	-	-	6.8	-	-	7.0	-	74.1	7.2 2.6	28.1
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Demand Response, W-Yard Party Contracts Demand Response, W-Yardigate Demand Response, UT-Annelliny Services Demand Response, Turkent Bartist	_		-	-	-	-	-	-	-	116.7	-	8.2	-	-	-	-	8.3	-	-	5.1	116.7
Demand Response, W-Y-Irrigate Demand Response, W-Y-Irrigate Demand Response, U-Y-Ancillary Services Demand Response, U-Y-Ancillary Services Demand Response, U-Y-Ancillary Services Demand Response, W-Y-Ancillary Services Demand Response, W-Y-Ancillary Response W-Y-Ancillary Response W-Y-Ancillary Response W-Y-W-Y-Y-Y-Y-Y-Y-Y-Y-Y-Y-Y-Y-Y-Y-Y-Y-Y			-	-	-	-	_	-			-	-	-	-	-	-	-	-	3.4 39.4	1.8	
Domand Response, W-Y-thermostar Domand Response, UT-Ancillary Services Domand Response, UT-Ancillary Services Domand Response, UT-Ancillary Services Domand Response, W-Y-Ancillary Services Domand Response, Train Comment of the	-		-	-	-	-	-	 		 +	-	-	-		1.8		-	-	39.4	-	
Domand Response, W.Y.Ancillary Services Domand Response Total Energy Efficiency, ID Energy Efficiency, ID Energy Efficiency, ID Energy Efficiency, IT Energy Efficiency Entry Storage - VySW Intertory Normage - Ushan N Entry Storage - Ushan N Entry Efficiency Efficiency Extra Figure Effi	-		-	-	-	-	-	-	-		-	-	-	-	18.7	-	-	-	-	1.2	-
Demand Response Total Interpy Hillschery, ID Faregy Hillschery, UT Baregy Hillschery, UT Baregy Hillschery, WY Baregy Hard Retirement and PPA Termination Brindhidger 2 (Coal Farly Retirement/Conversions) Brindhidger 3 (Coal Farly Retirement/Conversions) Brindhidger 3 (Coal Farly Retirement/Conversions) Brindhidger 4 (Coal Farly Retirement/Conversions) Brindh			-	-	8.3	-	5.3 3.0				-		-	-	-		-	-	3.2	-	13.5 3.0
Rinergy Hillickency, ID Intergy Hillickency, WT Intergy Hillickency Intergy House, I Intergrated Hillickency Intergrated Hillickency Intergrated Hillickency Intergrated Hillickency Interfered Hillick	4.1		7.0		18.1	-	8.2	7.2		116.7	6.7	8.2	-	12.0	20.5		15.3	-	136.6	21.6	161.2
Rineagy Efficiency, WY Rineagy Efficiency Total Battery Storage - Unda-N Battery Storage - WYSW Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Idaho Battery - Idaho Battery Retirement/Convensions) Battery - Idaho Battery Retirement/Convensions) Battery - Idaho Battery	6			73	8 75	7	7	7	7	7	6	6	6	6	6	4	4	3	3 25	3	70
Interry Efficiency Total Intertry Storing - Units N. Interry Storing - Unit	58 10					68 16	67 17	68 18	65 19	62 18	54 15	53 14	52 13	50 12	49 11	36 9	32 8	26 7	25 5	26 5	672 155
Rattery Stronge - WYSW Hattery Stronge - Maho FOT Tast - Summer Korling Faint Research Korling Faint Research Korling Faint Research Korling Faint Research Institute of the Research Research Research Research Research Korling Faint Institute of the Research Korling Faint Institute of the Research Korling Faint Institute of the Research Korling Stoker - PV - Strongon Unitery Sooker - PV - Strongon Unitery Sooker - PV - Walma Instituty Sooker - PV - Strongon Unitery Sooker Stronge - PV - Strongon Demmad Responne, OR-Ancellary Services Demmad Responne, WA - Ancellary Services Demmad Responne, CA - Lepton Demmad Responne, CA - Lepton Demmad Responne, CA - Lepton Demmad Responne, CA - Tripming Demma	74	8.5		95	100	92	92		91	87	76	74	71	68	65	49	45	37	33		897
Rattery Storage - Idaho SEX Ting Plant Referement and PPA Termination Individual - (Coul Taily Referement Conversions) Individual - (Coul Taily Referement Coul Taily Referement Coul Taily Referement Coul Taily Referement Response, PV - Notes (Coul Taily Solar - Storage - PV - Valians Individual - (Coul Taily Referement Coul Taily Referement Response, W. A. Ancellary Services Demmand Response, C. A. Irrigate Demma			-	-	45.0	-	-			75.0 345.0	-	-	-	-	-	-	-	-	285	540 60.0	120 345.0
ROT Fast - Suroner Kitsting Plant Referement and PPA Termination Individual 1 (Coal Tarly Referement Conversions) Individual 2 (Coal Tarly Referement Conversions) Individual 3 (Coal Tarly Referement Conversions) Individual 3 (Coal Tarly Referement Conversions) Individual 3 (Coal Tarly Referement Conversions) Individual 4 (Coal Tarly Referement Coal Tarly Refereme		-	-	-		-				-								-	210.0	165.0	343.0
Infilhidger I (Coal Barly Retirement/Conventions) Infilhidger I (Coal Barly Retirement/Coal Barly Retireme	-		-	-	58	-	-	-		247	182	285	300	262	269	271	300	300	300	300	31
institution of the content of the co				1	(351)					$\overline{}$	1				1		1	1			(351)
Intellidager 3 Intellidager 3 Intellidager 4 Idermistion Review 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,		-	-	-	(356)	-												-	-	-	(356)
Hermiston		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	(349)	-
Retire - I I Vidro Esprie - Wolf PPA Esprie - Solar - PV Fordis S CCT Total S CCT Demand Response, OR-Ancillary Services Demand Response, OR-Co-VII H Demand Response, OR-Total S Dema	-	_	-	-	-	-	-	-			-	-	-	-	-		-	-	(237)	(353)	
Lisque - Solar PPA Separation Resources SCCT Frame WV Total SCCT Utility Solar - PV. S-Oregon Utility Solar - PV. S-Oregon Utility Solar - PV. Solar - PV. Solar Utility Solar -	_	(1	1) (169)	-	(1)		-	(1)	- 1	(7)	-	-	(6)	-	-	(75)	-	(1)	-	-	(179)
Examation Resources			-	(175)	-	(41)	-	-			(75)	(10)	(67)	(20)	(20)	-	-	(10)	(10)	-	(216)
SCCT Fanne WV Total SCCT Utility Solar - PV. SOregon Utility Solar - PV SOregon Utility Solar - PV SOregon Utility Solar - Solar - PV Solar - PV Solar - PV Solar - PV Bridger Utility Solar - Solar - PV Bridger Utility Solar - Solar - PV Walla Walla Demmad Response, CA Ancillary Services Demmad Response, CA Irigate Demmad Response, CA Irigate Demmad Response, CA Triemsviat Demmad Response, CM CollyWH Demmad Response, CM CollyWH	Ė									(2)	-		(67)	(49)	-		(1)	(115)	(175)	(11)	(2)
Utility Solar - PV - St. Cregoro Utility Solar - PV - Vakima Utility Solar - PV - Printiger Utility Solar - Stronge - PV - Printiger Utility Solar - Stronge - PV - Printiger Utility Solar - Stronge - PV - Stronger Utility Solar - Stronge - PV - Stronger Utility Solar - Stronge - PV - Stronger Utility Solar - Stronge - PV - Vakima Total Solar Total Solar Demanda Geograms - UK-Astellary Services Demand Geograms - UK-Astellary Services Demand Geograms - CA - Stronger Demand Geograms - CA - Stronger Demand Geograms - CA - Stronger Demand Geograms - CA - Tringer	_		-	-	-	-					-	-	- 1	-	-			-	443	-	
Utility Solar - PV Valiuma Utility Solar - PV Puritiger Utility Solar - PV Puritiger Utility Solar - PV Puritiger Utility Solar - PV Walla Walla Utility Solar - Storage - PV - S- Oregon Utility Solar - Storage - PV - Valium Total Solar Demmad Response, OR-Ancillary Services Demmad Response, OR-Ancillary Services Demmad Response, CA-Co-OVH Demmad Response, CA-Co-OVH Demmad Response, CA-Ca-OVH Demmad Response, CA-Triemwortat Demmad Response, CA-Triemwortat Demmad Response, CA-Triemwortat Demmad Response, CR-Triemwortat		+==			-	407		↓ = □	_=	_==	-	-	-	165	-	-			443	-	407
Utility Solar's PV-, Privilger Utility Solar's Pvonge - PV - Privilger Utility Solar's Stonge - PV - Privilger Utility Solar's Stonge - PV - Scregon Utility Solar's Stonge - PV - Scregon Utility Solar's Stonge - PV - Scregon Utility Solar's Stonge - PV - Vakinn Total Solar Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Stonger Demand Response, CA-Stonger Demand Response, CA-Irrigate Demand Response, CA-Irrigate Demand Response, CA-Irrigate Demand Response, CA-Irrigate Demand Response, OR-CoalVH	-	+	1	-	-	407	-	+		 +	-	-	-	- 165				-		-	407
Utility Solars' SOLAR - PV - Walla Walla Utility Solars' Solars' Storage - PV - S. Cregon Utility Solars' Storage - PV - Vakinn Total Solar Demand Response, Olk-Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, C.A. All Party Contracts Demand Response, C.A. Hargier Demand Response, C.A. Triprite Demand Response, C.A. Triprite Demand Response, Olk-Coal VIII	_		-	-	713	-	-	1 - 1			-	-	-	-	-	-	-	-	-	128	713
Utility Solari-Storage - PV - S. Cregon Utility Solari-Storage - PV - Yakima Total Solar Demmad Response, OR-Ancillary Services Demmad Response, CM-Ancillary Services Demmad Response, CA-Cool/WH Demmad Response, CA-Cool/WH Demmad Response, CA-Arighte Demmad Response, CA-Triengue and Demmad Response, CA-Triengue Demmad Response, CA-Triengue and Demmad Response, CM-Triengue and Demmad Response, OR-Cool/WH		-		-		-	-	-			-	-	-	100	-	-	-	-	-	215	-
Citity Solar-Storage - PV - Vakima Demand Response, OB-Ancillary Services Demand Response, WA - Ancillary Services Demand Response, WA - Ancillary Services Demand Response, CA - Could'VII I Demand Response, CA - Tripate I contents Demand Response, CA - Tripate Demand Response, CA - Tripate Demand Response, CA - Tripate Demand Response, OB-CoulVVII		-	1 -		-	93	-	-		 	-	-		310	- 1		-	-		-	93
Demand Response, O.R. Ancillary Services Demand Response, C.A. Ancillary Services Demand Response, C.A. Cool'WH Demand Response, C.A. And Party Contracts Demand Response, C.A. Tracter Demand Response, O.R. CoolWH	-	_	-	-	-		-				-	-	-		-	-	-	-	430		-
Demand Response, W.AAncillary Services Demand Response, C.ACou'VH Demand Response, C.ASald Party Contracts Demand Response, C.ASald Party Contracts Demand Response, C.AThermostat Demand Response, C.AThermostat Demand Response, ORCou'VH Demand Response, ORCou'VH	<u> </u>	+		-	713	905	-	 	ت	- 8		-	-	575	-	-	-	-	430	343	1,618
Demand Response, CA-Cool/WH Demand Response, CA-Jid Party Contracts Demand Response, CA-Inigate Demand Response, CA-Thermostat Demand Response, OR-Cool/WH								-		1.9				-		:				:	1.9
Demand Response, CA-Irrigate Demand Response, CA-Thermostat Demand Response, OR-Cool/WH		-	-			-	-	-			-		-	-	-		-	-	1.5	-	
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH		-	+	-	-	-	-	-			-	-	-		4.8	-	-	-	1.1	-	_
Demand Response, OR-Cool/WH															5.8	:				:	
		-	-		-	-	-	-			-		-		-			-	23.3	-	
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate		-	1 -		-		-	-		 +	4.1			-	5.4 9.2		-	-	30.3	-	
Demand Response, OR-Irrigate Demand Response, WA-Cool/WH	_							-			-								7.7	-	
Demand Response, WA-3rd Party Contracts	-	-	-	-		-	-	-			-		-	-	-		-	-	9.9	-	
Demand Response, WA-Irrigate Demand Response, WA-Thermostat	-	+	+				-	+		+	5.2			- :	16.6		-	-	3.1	- :	
Demand Response Total		_				_				9.4	9.2				41.8				76.9	_	9.4
Energy Efficiency, CA	Ξ			2			2	2	2	2	2	2	2	2	2	1		1	1	1	19
Energy Efficiency, OR Energy Efficiency, WA	- 1			49 12		39 12	43 12			37 11	33	31	30	29	26 8	26	26	26	25	24	419 113
Energy Efficiency Total	40				61	52	56			49	44	42	40	38	35	33	33	32	30		551
Battery Storage - S-Oregon		_	-	-	105	-	-	$lue{}$		45	-	-	-	-	-	-	-	-	75	45	150
Battery Storage - Willamette Valley Battery Storage - Portland NC	40	-	+	-	90 60	-	-	-		30	-		-	-	-		-	-	-	15 135	120 60
Battery Storage - Portland NC Battery Storage - Walla Walla	40				120	-		-								:			15	150	120
Battery Storage - Yakima	40	-	-	-	105	-		-			-		-		-		-	-		-	105
FOT West - Summer FOT West - Winter	40	719	9 492	501 300	1,075 310	372 216	463 221	437 222	510 269	1,075	1,075 397	1,075 358	1,075 367	1,075 376	1,075 298	1,075 215	1,046 232	981 231	1,075	1,075	637 249
Existing Plant Retirements/Conversions Annual Additions, Long Term Resources	40		(573) 1 297		(708)	(62)	156	(148)	(85)	(912)	(93) 756	(753) 1,980	(350)	(114) 693	(557) 533	(156) 82	(36)	(280) 469	(2,260)		

											Capacity	(MW)										Resource Totals 1.
East	P-34 Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year 20-yea
	Craig 1 (Coal Early Retirement/Conversions)	-	-	-	-	- 1	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	-	(82) (8
	Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	(82)	-	-	-	(44)	-	-	-	-	-	-	-	(82) (8
	Hayden 1 Hayden 2	-	-	-	-	-	-		-		_	-		(33)	-	-		-	-	-	-	- (3
	Huntington 1	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	(459) (450)	-	- (45 - (45
	Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-		-	-	-			-		(74)	- :		-		-	-	-	-	- (430)	-	(74) (7
	Colstrip 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74) (7 (387) (38
	Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	-	-	(387)	-	-		-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99) (9
	DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106) (10
	DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-	-	-	-	(220)	-	-	-		-	-	-	-	-	-	(220) (22 (330) (33
	Naughton 1	-	-	-	-	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	- (15
	Naughton 2 Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	- (20 (280) (28
	Gads by 1-6	-	-	(238)	-	-	-	-	-	-	-	-	-	-	-	(119)	-	-	-	-	-	(238) (35
	Retire - Hydro Retire - Wind	-	-	-	-		(20)	-		-	-	-	(40)	-	-	-	-	-			-	(20) (2
	Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	- (4 (160) (92
	Expire - Solar PPA Retire - Other	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	- (1)	(35)	(94)	(849)	(32)	(1) (97 - (3
	Coal Ret_WY - Gas RePower	-	247		-	-	-		-		-	-	(247)			-	- (1)	-	-	-	-	247 -
	Expansion Resources SCCT Frame NTN		1		1				T				555		1			ı	1 1			
	SCCT Frame WYSW								-		370		-			-			-			- 55 370 37
	Total SCCT	-	-	-	-	-	-	-	-	-	370 345	275	555	-	-	-	-	-	-	-	-	370 92 345 62
	Wind, Djohnston Wind, GO										343	- 2/3	1,100									- 1.10
	Wind, WYAE Total Wind	-	_		-	-	1,920	-	-		345	275	1,100	-	-	-		-	-	-	-	1,920 1,92 2,265 3,64
	Utility Solar - PV - Utah-S			146	- 59		63				- 343		1,100						400			268 70
	Utility Solar - PV - WYSW	-	-	-	-	-	100 32	-	-	-	-	-	407	- 52	-	-	-	-	-	-	-	100 10 32 49
	Utility Solar+Storage - PV - Utah-S Utility Solar - PV - Huntington		_ ÷				- 32	_					- 407	- 52						23		- 1
	Utility Solar+Storage - PV - Huntington							-	-	-	-	-	300	-	-		-		-	886		- 88 - 30
	Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N						600						-									600 60
	Total Solar Demand Response, ID-Cool/WH	-	-	146	59	-	795	-	-	-	-	-	748	52	-	-	-	-	400	909 2.6	-	1,000 3,10
	Demand Response, ID-Cool WH Demand Response, ID-3rd Party Contracts	-		-	-	-	-		-		-		-			-	-	-	-	1.8		- 1.
	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	3.7 8.3	1.8	- 10
	Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	- 8. 28.1 55
	Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6 1.9	- 76. - 1
	Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	116.7		8.2	-	-	-	-	8.3	-	-	5.1	116.7 138
	Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	1.8	- 5. - 39
	Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-		-	-	-	1.8	-	-	-	39.4	-	- 39. - 1
	Demand Response, WY-Thermostat	-	-	-	-	-	-		-		-	-	-		-	-		-	-	18.7	1.2	- 19
	Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	8.3	-	-	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	3.0
	Demand Response Total	4.1		15.3	-	9.9		8.2	7.2		116.7	6.7	8.2		12.0	1.8		15.3	- 2	155.3	21.6	161.2 382
	Energy Efficiency, ID Energy Efficiency, UT	58 10	67	67	69	72 16	66	66	65	65	62 17	56 15	56 15	52	50	49	36	32	26	25	26	69 11 657 1,06 149 25
	Energy Efficiency, WY Energy Efficiency Total	10 74		13 86	14 90		16 89	16 90	17 88	18 89	17 87	15 77	15	13	12 68	11 65	9 49	8 45	7	5 33		149 25 875 1.43
	Battery Storage - Utah-N		-	-	-	135.0	-	-	-	-	45.0	- '	-		-	-		-	-	315	405	180 90
	Battery Storage - WYSW Battery Storage - Idaho	-	-	-	-	120.0	-	-	-	-		-		180.0	-	-	-	-		105.0 15.0	315.0 135.0	120.0 540
			_				_			_	300	300	300	257		298	300					59 17
	FOT East - Summer	-	-	-	-	290	-	-	-	-	300	300	500	237	162	270	300	300	300	300	300	
West	FOT East - Summer Existing Plant Retirements and PPA Termination	-	-		-		-	-	-	-	300	300	- 1	237	162		300	300	300	300	300	(351) (35
	FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	290 (351) (356)	-	-	-	-						-			300		-	(351) (35 (356) (35
	FOT East - Summer Kisting Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3	-	-	-	-	(351)	-	-		-					- - - -				300	300	- (349)	(356) (35
	FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 JimBridger 3 JimBridger 4 Hermiston	-		-	-	(351) (356) - -		-	-	- - - -	- - - -							- - - -		- - - - (237)	-	(356) (35 - (34 - (35 - (23
	FOT Fast - Summer Existing Plant Retirements and PPA Termination Jundfridger 1 (Coal Early Retirement/Conversions) Jundfridger 2 (Coal Early Retirement/Conversions) Jundfridger 3 Jundfridger 4 Hermiston Retire - Hydro	-		- - - - - (169)		(351) (356) - - - - (1)		-		-	- - - - (7)	-	-		-	-	- - - - (75)		(1)	- - - (237)	(349)	(356) (35 - (34 - (35 - (23 (179) (26
	FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 JimBridger 4 Hermiston Retire - Hydro Depier - Wind PPA Depier - Wind PPA Depier - Wind PPA	-		- - - - - 0) (169)	- - - - - (175)	(351) (356) - - - - (1)	(41)	-	(1)	-	- - - -	(75)	- - - - - (10)		(20) (49)	(20)		300 - - - - - (1)		-	(349)	(356) (35 - (34 - (35 - (23
	FOT Teat - Summer Existing Plant Referencests and PPA Termination Jindfudger (Coal Tarly Reference Conversions) Jindfudger (Coal Tarly Reference Conversions) Jindfudger (Coal Tarly Reference Conversions) Jindfudger (Jindf	-		- - - - - - 0 (169)		(351) (356) - - - - (1)		-		-	- - - - (7)	-	-		-	-			- - - - (1)	- - (237) - (10) (175)	(349) (353) - - (11)	(356) (35 - (34) - (35) - (23) (179) (26) (216) (36) (2) (42)
	POT East - Summer Existing Plant Retirements and PPA Termination Juddisdger! (Cost Early Retirement/Conversions) Juddisdger 2 (Cost Early Retirement/Conversions) Juddisdger 3 Juddisdger 4 Hermitton Retire. Hold Retire. Find Experies Scott PPA Experies Scott PP	-				(351) (356) - - - - (1)	-	-	(1)	-	- - - - (7)	-	-		- - - (20) (49)	-			- - - - (1)	- - (237) - (10) (175)	(349) (353) - - (11)	(356) (35 - (34 - (35) - (25) (179) (26) (216) (36) (2) (42) - (44)
	FOT Fast - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Farly Retirement/Conversions) JimBridger 2 (Coal Farly Retirement/Conversions) JimBridger 3 JimBridger 4 Hermiston Retire - Hydro Espire - Wind PPA Espire - Solar PPA Expansion Resources SCCT Frame W-V	-	- - - - - - (1)	- - - - - 0) (169)		(351) (356) - - (1) - - - - - -	- - - - - - (41) - - 500 405	-	(1)	-	- - - - (7)	-	-		-	-			- - - - (1)	- - (237) - (10) (175)	(349) (353) - - (11)	(356) (35 - (34 - (35 - (23 (179) (2c (216) (33 (2) (42 - 44 500 55 405 425
	FOT Teat - Summer Existing Plant Referencest and PPA Termination Jindfudger 1 (Coal Tarly Reference) Jindfudger 2 (Coal Tarly Reference) Jindfudger 3 (Coal Tarly Reference) Jindfudger 4		- - - - - (1)			(351) (356) - - - - (1)	- - 500		(1)		- - - - (7)	-	-		- - - (20) (49)	-			- - - - (1)	- - (237) - (10) (175)	(349) (353) (353) - (11) - - 19	(356) (32 - (33 - (33 - (22) (179) (22 (216) (33 (2) (44 - 44 - 44 500 59 405 42 713 77
	POT Teat - Summer Existing Plant Referements and PPA Termination Jindfudger (Coul Tarly Referement Conversions) Jindfudger (Coul Tarly Referement Conversions) Jindfudger (Coul Tarly Referement Conversions) Jindfudger (Jindfudger) Jindfudger (- - - - - - - - - - - - - - - - - - -			(351) (356) - - (1) - - - - - -	- - 500		(1)		- - - - (7)	-	-			-			- - - - (1)	- - (237) - (10) (175)	(349) (353) - - (11)	(356) (32 - (34) - (34) - (22) (179) (22 (216) (30 (2) (44) - 44 - 44 - 500 50 405 405 405 - 42 - 33 - 44
	POT Isat - Summer Existing Plant Retirements and PPA Termination Juddisdger 1 (Coal Tarly Retirement/Conversions) Juddisdger 2 (Coal Tarly Retirement/Conversions) Juddisdger 3 Juddisdger 3 Juddisdger 4 Hermitton Extre: - Hydro Lopice - Wind PPA L		- - - - - - - - - - - - - - - - - - -	(169)		(351) (356) - - (1) - - - - - -	- - 500		- (1)		- - - - (7)	-	-	- - - - (6) - (67)	- - - (20) (49)	-			- - - - (1)	- - (237) - (10) (175)	(349) (353) - (11) - 19 12 331	(356) (3356) (3356) (3356) (34
	FOT Teat - Summer Existing Plant Referencets and PPA Termination Institution of Country Reference (Conversions) Institution of Country Reference (Conversions) Institution of Country Reference (Conversions) Institution (Country of Country of					(351) (356) - - (1) - - - - - -	- - 500		- (1)		- - - - (7)	-	-	- - - - (6) - (67)		-			- - - - (1)	- - (237) - (10) (175)	(349) (353) (353) - (11) - - 19	(356) (335) - (334) - (34) - (35) - (27) (179) (26) (2) (44) - (2) (44) - (44)
	POT Teat - Summer Existing Plant Referencests and PPA Termination Jindfudger 1 (Coal Tarly Referencest/Conversions) Jindfudger 2 (Coal Tarly Referencest/Conversions) Jindfudger 3 Jindfud		(1)	(169)		(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -	-	(1)		(7) (2) (2)	-	-	(67)		-			- - - - (1)	- - (237) - (10) (175)	- (349) (353) - - (11) - - - 19 12 331 - - - - - - - - - - - - - - - - - -	(356) (33.56) (33.56) (33.56) (34.56) (35.56)
	POT Teat - Summer Existing Plant Referencest and PPA Termination Jindbudger 1 (Coal Tarly Referencest Conversions) Jindbudger 2 (Coal Tarly Referencest Conversions) Jindbudger 3 (Coal Tarly Referencest Conversions) Jindbudger 4 (Jindbudger 4) Hermiston Refire - Hydro Bepire - Wind PPA Depire - Solar PPA Experion References Experion FPA Experion References July Solar PPA Little Solar PPA Little Solar PPA - Schegon Utility Solar - PV - Walla Walla Utility Solar - Storage - PV - Judger Utility Solar - Storage - PV - Schegon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services			(169)		(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -		(1)		(7)	-	-	(67)		-			- - - - (1)	- - (237) - (10) (175)	- (349) (353) - (11) - (11) - 19 12 331 - 411 773	(350) (33.50) (33.50) (33.50) (33.50) (34.50) (35.50)
	FOT Teat - Summer Existing Plant Referencest and PPA Termination Jindfudger 1 (Coal Tarly Referencest Conversions) Jindfudger 2 (Coal Tarly Referencest Conversions) Jindfudger 3 (Coal Tarly Referencest Conversions) Jindfudger 4 Jindfudger					(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -		- (1)		- (7) - (2) - (2) (3) (4) - (4) - (5) - (7) - (7) - (8) - (8) - (8) - (9) - (1) -	-	-	(67)		-			- - - - (1)	- (237) - (10) (175) 443 443 	- (349) (353) (11) (11) 12 331 411 7773	(356) (336) (336) (336) (346)
	POT Teat - Summer Existing Plant Retirements and PPA Termination Jimbidger 1 (Coal Tarly Retirement/Conversions) Jimbidger 2 (Coal Tarly Retirement/Conversions) Jimbidger 3 (Jimbidger 4 Jimbidger 5 Jimbidger 4 Jimbidger 6 Jimbidger 7 Jimbidger					(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -			-	(7) (2) (2)	-	-	(67)		-		(1)	- - - - (1)	- (237) (237) (10) (175) 443 443 	- (349) (353) (353) - (11) 	(356) (33: - (33: - (33: - (22: (179) (24: (216) (33: (2) (44: - (44:
	FOT East - Summer Existing Plant Referencents and PPA Termination Institution 1 (Coal Early Referencent Conversions) Institution 1 (Coal Early					(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -				- (7) (2) (2) 8 (1.9) - 4.8	-	-	(67)		(20)		(1)	- - - - (1)	- (237) - (10) (175) 443 443 	- (349) (353) (353) - (11) 	(356) (337) - (347) -
	FOT East - Summer Existing Plant Referencent and PPA Termination Individue: 1 (Coal Tarly Referencent/Conversions) Existing Plant (Coal Tarly Referencent/Conversions) Individue: 1 (Coal Tarly Referencent/Conversions) Individue: 4 Indi				(175)	(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -				- (7) (2) (2) 8 (1.9) - 4.8	-	-	(67)		-		(1)	- - - - (1)	- (237) - (237) - (10) (175) 443 443 	- (349) (353) (353) - (11) 	(356) (336) (336) (336) (336) (346)
	FOT East - Summer Existing Plant Refreements and PPA Termination Jindfudger 1 (Coal Tarly Refreement/Conversions) Jindfudger 2 (Coal Tarly Refreement/Conversions) Jindfudger 3 (Coal Tarly Refreement/Conversions) Jindfudger 3			- (160)	(175)	(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -				(7) (2) (2) (2) (3) (4) (4) (4) (5) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	-	-	(67)		(20)		(1)	- - - - (1)	- (237) (10) (175) (175) (175) 443 443 	- (349) (353) - (11) (11) (12) - (13) - (13) - (14) - (14) - (14) - (15) - (15) - (15) - (16) - (16)	(350) (33:3) - (34) - (34) - (34) - (35) -
	FOT East - Summer Exciting Plant Referencents and PPA Termination Individue: 1 (Coal Early Retirement Conviewins) Individue: 1 (Coal Early Retirement Conviewins) Individue: 3 Individue: 4 Indi				- (175)	(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -					-	-	(67)		(20)		(1)	- - - - (1)	- (237) - (237) - (10) (175) 443 443 	- (349) (353) (11) (11) (11) (12) (12) - (13) - (13) - (14) - (1	(350) (3:3 - (34) - (35) - (34
	FOT East - Summer Existing Plant Referencent and PPA Termination Jindfoldger 1 (Coal Tarly Referencent Conversions) Jindfoldger 2 (Coal Tarly Referencent Conversions) Jindfoldger 3 (Coal Tarly Referencent Conversions) Jindfoldger 4 Hermiston Refire - Hydro Bepire - Wind PPA Espire - Solar PPA Experion Recovers ECCT Prome WW ECCT From WW JURIUS Solar - PY - Schegon Litting Solar - Storage - PY - Juridger Unitary Solar - Storage - PY - Juridger Litting Solar - Storage - PY - Schegon Litting Solar - Storage - PY - Schegon Demand Response, OR - Annellary Services Demand Response, OR - Annellary Services Demand Response, Charlegate Demand Response, CA - Arrigate Demand Response, CA - Arrigate Demand Response, CA - Cool-WH Demand Response, CA - Arrigate Demand					(351) (356) - - (1) - - - - - - - - - - - - - - - - - - -	- 500 405 - -					-	-	(67)				(1)	- - - - (1)	- (237) - (10) (175) (175) (175) (175) (175) 		(350) (3:3 - (34) - (34) - (34) - (34) - (32) (179) (22) (216) (33(16) - (44) - (44) - (44) - (45) - (45) - (46) -
	FOT East - Summer Existing Plant Referements and PPA Termination Jindfudger 1 (Coal Tarly Referement/Conversions) Jindfudger 2 (Coal Tarly Referement/Conversions) Jindfudger 3 (Coal Tarly Referement/Conversions) Jindfudger 4				(175)	(351) (350)						(75)				(20)						(350) (3:3 - (34) - (34) - (34) - (34) - (32) - (22) (179) (24) - (34) -
	FOT East - Summer Existing Plant Referencents and PPA Termination Individue 1 (Coal Early Referencent Conversions) Individue 1 (Coal Early Referencent Conversions) Individue 2 (Coal Early Referencent Conversions) Individue 3 (Individue 1	40			(175)	(351) (350)								(67)				(1)	- - - - (1)	(19) (175) (- (349) (353) - (11) - (11) (12) (13) - (13) - (13)	(350) (33 -
	FOT East - Summer Existing Plant Referements and PPA Termination Institution of Coal Early Reticement Conversions) Existing Plant Referement Conversions) Institution of Coal Early Reticement Conversions) Institution Retire - Hydro Engine - Wind PPA Espire - Solar PPA Espire - Solar PPA Expired				(175)	(351) (356)				11		(75)	(10)	(6) (67) (67) (67) (7) (7) (7) (7) (7) (7) (7) (7) (7) ((20)						(356) (337) - (34) - (34) - (34) - (34) - (37) - (34) - (3
	FOT East - Summer Existing Plant Refreements and PPA Termination Jindfudger 1 (Coal Tarly Refreement/Conversions) Jindfudger 2 (Coal Tarly Refreement/Conversions) Jindfudger 3 (Coal Tarly Refreement/Conversions) Jindfudger 4	40 11			(175)	(351) (350)		11		11		(75)	(10)	(6) (67) (67) (67) (7) (7) (7) (7) (7) (7) (7) (7) (7) ((20)			- (1) (115)	10) (175) (1		(350) (3:2) - (34) - (3
	FOT East - Summer Skriting Plant Referencents and PPA Termination Instruction of the Control o	40 11			(175)	(351) (356)		11		11		(75)	(10)	(6) (67) (67) (67) (7) (7) (7) (7) (7) (7) (7) (7) (7) ((20)			- (1) (115)			(350) (353) (354)
	FOT East - Summer Skriting Plant Referencent and PPA Termination Jindfudger 1 (Coal Tarly Referencent Conversions) Jindfudger 2 (Coal Tarly Referencent Conversions) Jindfudger 3 (Coal Tarly Referencent Conversions) Jindfudger 4 (Jindfudger 4)	40 11			(175)	(351) (356)		11		11		(75)	(10)	(6) (67) (67) (67) (7) (7) (7) (7) (7) (7) (7) (7) (7) ((20)			- (1) (115)			(350) (3:3 - (34) - (34
	FOT East - Summer Existing Plant Referencent and PPA Termination Jindfudger 1 (Coal Tarly Referencent/Conversions) Jindfudger 2 (Coal Tarly Referencent/Conversions) Jindfudger 3 (Coal Tarly Referencent/Conversions) Jindfudger 4 Jindfudger	40 11 52 - - - - - 726			(175)	(351) (350)		11 49 - - - - - - 766		11 52 - - - - 813		(75)										(350) (35) (35) (35) (35) (35) (35) (35) (35
	FOT East - Summer Existing Plant Referencent and PPA Termination Institution of the Control of	40 11 52 - -			(175)	(351) (356)		11 49 - - -		11 52 - - - - - - 813 291		75) (75) (75) (75) (75) (75) (75) (75) ((1) (1) (1) (1) (1) (1) (1) (1) (1) (1)				(350) (35) (35) (35) (35) (35) (35) (35) (35
	FOT East - Summer Existing Plant Referencent and PPA Termination Jindfudger 1 (Coal Tarly Referencent/Conversions) Jindfudger 2 (Coal Tarly Referencent/Conversions) Jindfudger 3 (Coal Tarly Referencent/Conversions) Jindfudger 4 Jindfudger	40 11 52 - - - - - 726			(175)	(351) (356)		11 49 - - - 766 243 - 147		11 52 - - - 813 291 (85)								(1)	- (1) (115)			(350) (35) (35) (35) (35) (35) (35) (35) (35

1/ Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average

P-35 Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
Craig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-		-	(82)
Craig 2 (Coal Early Retirement/Conversions) Hayden 1	-	-	-	-	-	-	-	-	(82)	-	-	-	(44)	-	-		-		 		(82)
Hayden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	-	-	-
Huntington 1	-	-	-	-	i	-	-	-	-	-		-	-	-	-	-	-	-	(459)		-
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-		-		-	-	(450)		(74)
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-		-		-	-	 	-	(74)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(387)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99) (106)	-	-	-		-	-	-	-		-	(99) (106)
DaveJohnston 2 DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-		-		-	-			(220)
DaveJohnston 4	-	-	-	-	-	-		-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton I	-	-	-	-	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-		-	-
Naughton 2 Naughton 3 (Coal Early Retirement/Conversions)	-	(280)		-			-	-	-		-	(201)	-		-			-			(280)
Gads by 1-6	-	-	´ -	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-		-	(20)
Retire - Wind	-	(27)	(17)	(49)	- (0)	-	-	(65)	- (3)	-	- (10)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Wind PPA Expire - Solar PPA	-	- (27)	- (1/)	- (49)	(1)	(1)		(65)	- (3)	-	(19)	- (22)	- (200)	(45)	- (181)	- (80)	(35)	(94)			(100)
Retire - Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	-
Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-			-	-			247
Expansion Resources SCCT Frame NTN		_		-	-		-	-	_		-	555					-	-			
SCCT Frame WYSW	-	-	-	-	-	-		-	-	-	370	-	-	-	-	-	-	-	-	-	-
Total SCCT	-			-	-	-	-	-	-		370	555		-			-	-			
Wind, Djohnston Wind, GO		-	 	-	-	-	-	-	-	141	479	1.017	-	-	-	-	-	-		 	141
Wind, GO Wind, WYAE	-	-	-	-	-	1,920	-	-	-		-	1,017	-	-			-	-			1,920
Total Wind	-	-	-	-	-	1,920	-	-	-	141	479	1,017	-	-	-	-	-	-			2,061
Utility Solar - PV - Utah-S	-	-	146	59	-	95	-	-	-	- T	-	-	-	223	-	-	-	400		-	300
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S	-	-	 -	-	-	100	-	-	-			-		277	-		-	-		 	100
Utility Solar+Storage - PV - GO						-						74	9								
Utility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	-	-	-	-	909	-	-
Utility Solar - PV - Utah-N	-	-	⊢ - ∃	-	-	- 679	-	-	-	- T	-	221	-	-	-	-		-		├	679
Utility Solar+Storage - PV - Utah-N Total Solar	-	-	146	- 59	-	679 874	-	-	-		-	295	- 9	500	-	-	-	400	909		1,079
Demand Response, ID-Cool/WH			-	-		-						-		-	2.6			-	-		-,0,7
Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-		-	-
Demand Response, ID-Irrigate	-		-	-	-	-	-	-	-	-	-	-	-	5.2	-	-		3.7	8.3	1.8	-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1		7.0	-	9.9	-	-	7.2	-		6.7	-	-	6.8	-		7.0	-		7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.5	-	-	-	5.7	2.6	-
Demand Response, UT-Irrigate	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-		1.9	-
Demand Response, UT-Thermostat	-	-	-	-	45.8	-	-	-	-	70.8	-	8.2	-	-	3.4	-	8.3	-		5.1	116.7
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-		-	-	-	-	-	-		-	-	-	-	37.3		-	-	2.1	1.8	
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	-	-	-		1.2	-
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-		-	8.3	-	5.3 3.0	-	-		-	-	-		-		-	-	3.2	-	13.5
Demand Response Total	4.1	-	7.0	-	64.0	-	8.2		-	70.8	6.7	8.2	-	12.0	134.2	-	15.3	3.7	19.2	21.6	161.2
Energy Efficiency, ID	6	6		7	8	7	7	7	7	7	7	6	6	6	6	4	4	3	22	22	70
Energy Efficiency, UT Energy Efficiency, WY	58 10			70 14	75 16		67 16	68 18		62 17	56 15	56 14	52 13	50 12	49 11	38		25	22		668 149
Energy Efficiency Total	74			91	98	91	91	93	90	86	78	76	71	68	65	51		35	30		887
Battery Storage - Utah-N	-	-	-	-	ı	-	-	-	-	135.0		-	-	-	-	-	-	-		135	135
Battery Storage - WYSW	-	-	-	-	105.0	-	-	-	-	210.0	-	-	-	-	90.0	30.0	-	15.0	360.0 645.0	30.0	315.0
Battery Storage - Idaho FOT East - Summer		-		-	17	-		-	-	227	169	255	300	239	296	298	300	297	300	300	24
Existing Plant Retirements and PPA Termination																					
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-		-	-	-	-	-	(351)	-	-	-	-	-	-	-		-	-
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	(349)	-	-	-	-	-	-	-	-	-	(356)		-	-		-	(349)
JimBridger 3 (Coal Early Retirement/Conversions) JimBridger 4 (Coal Early Retirement/Conversions)	-	-		-	(353)	-		-	-	-					-				 	-	(353)
Hermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-
Retire - Hydro	-	(1)	(169)	(175	(1)	7475	-	(1)	-	(7)	-		(6)	- (30)	- (20)	(75)	-	(1)	- 7100	├ ───	(179)
Expire - Wind PPA Expire - Solar PPA	-	-	1 - 1	(175)	-	(41)	-	-		(2)	(75)	(10)	(67)	(20)	(20)		- (1)	(10)	(10)	(11)	(216)
Expansion Resources								•					(57)	(,,,				(-25)	(2,2)	(1.1)	(E)
SCCT Frame WV	-	-	-	-	-	-	-	-	-		-	-	-	-	443	-	-	-		-	
Total SCCT Utility Solar - PV - S-Oregon	-	-	 	-		349		-	-	 		-	16	-	443		-	-		-	349
Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima		-		-	-	405	-	-			-	-	-	-	-			-	-	-	405
Utility Solar - PV - jbridger	-	-	-	-	702		-	-	-	-	354	-	-	-	-	-	-	-	-	-	702
Utility Solar - PV - Walla Walla	-	-		-	-	-	-	-	-		-	-	100	-	-	-	-	-			151
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	 	-		151	-	-	-		-		288	171	430		-	-		 	151
Total Solar		-	-	-	702	905		-		-	354		404	171	430						1,607
Demand Response, OR-Ancillary Services	-			-	-	-	-	-	-	8	-	-	- 1	-		-	-	-			8
Demand Response, WA-Ancillary Services Demand Response, CA-3rd Party Contracts		-	 - 	-	-	-	-	-	-	1.9	-	-	-	-	1.1	-	-	-			1.9
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate	-	-	 	-	-		-				4.8	-		-	1.1			-		 +	
Demand Response, CA-Thermostat	-	_		-		-	-	-	-		5.8		-		-		-	-			
Demand Response, OR-Cool/WH	-	-		-		-	-	-	-			-	-	-			-		3.0	-	
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-	 	-	-	-	-	-	-	-	13.3	-		-	35.7		-	-		-	
Demand Response, WA-Cool/WH				-							-			_	7.7						
Demand Response, WA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.9	-	-	-	-		-
Demand Response, WA-Irrigate	-	-	⊢ - ∃	- 1	-	-	-		-	- T	5.2	-	-	-	- 20	-		-	3.1	├	
Demand Response, WA-Thermostat Demand Response Total	-	-	+ -	-	-		-	-	-	9.4	14.6 43.6	-			2.0 56.4		-	-	6.1		9.4
Energy Efficiency, CA	1		2	2	2		2	2	2	2	2	2	2	2	2	1		1	1	1	18
Energy Efficiency, OR	40	43		42	47	39	43	41		37	33		30	29	26	26		26	24		412
Energy Efficiency, WA Energy Efficiency Total	11 52			12 55	12 61		11 56			11 49	9		9 40	38	8 35	33		5 32	29		112 542
Energy Efficiency Total Battery Storage - S-Oregon	- 32	- 56	- 33	- 33	105		- 26	- 54	- 32	30	- 44	- 42	-40	- 36	- 33	- 33	- 33	- 32	255		135
Battery Storage - Willamette Valley	_	-		-	75	-				-	_							-	-	-	75
Battery Storage - Portland NC	-		-	-	-	-		-		60	-	-	-	-	-		-	-	30		60
Battery Storage - Walla Walla	-	-		-	90 105	-	-	-	-		-	-	-	-	-	-	-	-	60	105	90 105
Battery Storage - Yakima FOT West - Summer	726	719	492	501	1,075	346	436	411	482	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,072	1,006	1,075	1,072	105 626
	151	131	265	299	310	203	206	208	255	387	594	553	566	529	324	244	225	208	-	-	242
FOT West - Winter												(753)	(350)	(114)	(913)	(156)	(36)	(280)	(2,260)	(43)	
Existing Plant Retirements/Conversion	-	(61)		(224)	(703)			(148)			(444)		(330)			(150)	(30)		2.200)	(43)	
	130	141	297	(224) 205 800	(703) 1,405 1,402	3,842	155	154	141	792	1,374 1,838	1,993	525	788 1.843	1,254	113	95	485 1,512	2,343	482	ļ!

P-45																					
xisting Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
raig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	-	(82)
raig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	(82)	-	-	-	(44)	-	-	-	-	-	-	-	(82)
layden 1 layden 2	-	-	-	-	-	-	-	-	-	-		-	(33)	-	-	-	-	-	-	-	-
Juntington 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459)		-
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74) (74)	-	-	-	-	-	-	-	-	-	-	(74)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-		-	-	- (/4)	-	-	-	-	-	-	-	-	-	-	(387)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-		-	-	(156)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)
Gadsby 1-6	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(20)
Retire - Hydro Retire - Wind	-	-	-			(20)						(40)		-							(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1)
Retire - Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	-
Coal Ret_WY - Cas RePower Expansion Resources	-	247		-	-	-	-		-		-	(247)	-	-		-	-	-	-	_	247
SCCT Frame NTN	-	T -	I -	-	- 1	- 1	-	185	-	- 1	-	185	-	-	185	-	-		-	Г -	185
SCCT Frame WYSW	_							-	-		370	-			-				_		-
Total SCCT	-			-	-	-	-	185	-		370	185	-	-	185	-	-	-	-	_	185
Wind, Djohnston	-	-	-	-	-	-	-	-	-	102	518	1,079	-	-	-	-	-	-	-	-	102
Wind, GO Wind, WYAE	1			-		1.920	-	1	-	 	-	1,079	-	-		-	-		-		1.920
Total Wind						1,920				102	518	1,079							_	<u> </u>	2,022
Utility Solar - PV - Utah-S	_	-	146	59	4		-	-	-	-	-	-	-	-	-	-	-	400	-		209
Utility Solar - PV - WYSW	-	-	-	-	-	100	-		-	-	-	-	-	-	-	-	-	-	-	-	100
Utility Solari-Storage - PV - Utah-S	-	-	-	-		91	-	-	-	-	-	- 21	500	-	-	-	-		-	-	91
Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington		-	-	-			-	-	-		-	- 21	-	-		-	-		897	12	
Utility Solar - PV - Utah-N	-	-	-	-		-	-	-	-		-	805	-	-	-	-	-	-	-		-
Utility Solar+Storage - PV - Utah-N	-	-	-	-	68	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95
Total Solar	-	-	146	59	72	218	-	-	-	-	-	826	500	-		-	-	400	897	12	495
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6 1.8	-	-
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	-	1	-	-			-	-	-		-		-	5.2		-	-		3.7	1.8	-
Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6 1.9	-
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-							116.7		8.2		-			8.3			5.1	116.7
Demand Response, WY-Cool/WH	-	_	_	-	-	-		-	-		-	- 0.2		-	-	_	-	-	3.4		
Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	ı	-	-	-	ı	-	ı	-	-	-	-	-	39.4	-	-
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	18.7	-	-	-	3.2	1.2	13.5
Demand Response, U1-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	8.3	-	3.0		-	-	-	-	-	-	-	-	-	-	3.2	-	3.0
Demand Response Total	4.1	-	7.0	-	18.1	-	8.2		-	116.7	6.7	8.2	-	12.0	20.5	-	15.3	-	136.6	21.6	161.2
Energy Efficiency, ID	6	6	6	7	7	7	7	7		7	6	6	6	6	6	4	4	3	3	3	69
Energy Efficiency, UT	58	67	67	68		67	67 17	68 18		62	54 15	55	52 13	50 12	51 11	36	32	26	25 5	26	658
Energy Efficiency, WY Energy Efficiency Total	10 74	10 83	11 85	14 88	15 91	16 91	92	94	19 91	18 87	76	14 76	72	68	68	49	45	37	33	35	149 875
Battery Storage - Utah-N		-	-	-					-	195.0	-	-	-	-	-	-	-	-	300	315	195
Battery Storage - WYSW	-	-	-	-	-	-		-	-	285.0	ı	-	-	-	-	-	-	-	-	120.0	285.0
Battery Storage - Idaho	-	-	-	-	-		-	-	-	-	-	-	-	-	60.0	-	-	-	135.0	180.0	-
FOT East - Summer	-	-	-	-	-	-	-	-	-	300	242	300	300	267	298	300	300	300	300	300	30
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)			T -	-		(351)		_	_		_	_	_	_		_		_	_	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)	-			-	-	- (331)		-	-		(356)	-			_		-	-	_	-	- (331)
JimBridger 3	-	-	-	-	-	-	ı	-	-	-		-	ı	-	-	-	-	-	-	(349)	-
JimBridger 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(353)	-
Hermiston Basics Header	-	(1)	(169)	-	(1)	-	-	- (1)	-	- (7)	-	-	- (6)	-	-	(75)	-	- (1)	(237)	-	(179)
Retire - Hydro Expire - Wind PPA	1	- (1)	(169)	(175)	- (1)	(41)	-	- (1)			(75)	(10)	_	(20)	(20)	(/5)		(10)	(10)	-	(216)
Expire - Solar PPA		-	_	-		- (71)	-		-	(2)			(67)	(49)	- (20)	-	(1)	(115)	(10) (175)	(11)	(2)
Expansion Resources					,																
SCCT Frame WV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	-	443 443		-
Total SCCT Utility Solar - PV - S-Oregon	1			-			-	1	-	 	-		116	-		-	-		443		
Utility Solar - PV - S-Oregon Utility Solar - PV - Yakima	1	-	-		-	376		1 -	-	-	-		-			-			7		376
Utility Solar - PV - jbridger	-			-	-	354	-	-	-	-	359	-	-	-	-	-	-	-	-	702	354
Utility Solar+Storage - PV - Jbridger	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	702	-
Utility Solar - PV - Walla Walla Utility Solar+Storage - PV - S-Oregon	-	-	-	-		500	-	-	-	-	-	-	36	100 323	-	-	-		-	-	500
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	1	1	-	-		29	-	-	-		-		- 36	-		-	-		423	-	29
Total Solar						1,259			-		359		152	423			_		430		1,259
Demand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	8
Demand Response, WA-Ancillary Services	-	-	-	-		-	-	-		1.9	-		-	-	- 1	-				-	1.9
Demand Response, CA-3rd Party Contracts	-	-	-	-		-	-	-	-		4.8	-	-	-		-	-	-	1.1	-	-
Demand Response, CA-Irrigate Demand Response, CA-Thermostat	1	1	-	-			-	-	-		4.8 5.8		-	-		-	-		-	-	-
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH											-								3.0		
Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	-	-	30.3	-	-
Demand Response, OR-Irrigate		-	-	-	-	-	-	<u> </u>	-		13.3	-	-	-	-	-	-		9.9		
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-	-	H :-	H :			-	-	-		5.2		-	-		-	-	H :	9.9 3.1	 	
Demand Response, WA-Irrigate Demand Response, WA-Thermostat		-	-	-			-	-	-	 	11.3		-	-	5.3	-	-	-			
Demand Response Total	1	-	-	-	-	-	-	-	-	9.4	40.4	-	-	-	10.7	-	-		47.4	-	9.4
Energy Efficiency, CA	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	18
Energy Efficiency, OR	40 11	32	37 10	42 11	39 12	39 12	43 12	41 11	39 11	37 10	33 9	31 9	30	29 8	27 8	27 6	26	26	24 4	21	387 109
Energy Efficiency, WA	11 52	9	10 48	11 54	12 53	12 52	12	11 54	11 52	10	9			38	8 36	34	33	5 32	29		109 513
Energy Efficiency Total Battery Storage - S-Oregon	52	43	48	- 54	53	52	- 56	54	52	150	- 44	42	- 40	- 38	36 60	- 34	- 33	32	30		513 150
Battery Storage - S-Oregon Battery Storage - Portland NC	1	1	-	-		-	-	1		195	-		-	-	-	-	-		-	-	195
Battery Storage - Walla Walla	-	-	-	-		_		-	-	60	_	_	_	-	60	_	-	_	60	-	60
Battery Storage - Yakima	_	_	_	-	-	_		-	_	105	-	-	_	_	-		_		-	_	105
	998	719		501 300		95 112	186 116	507 117	580 164	1,075 296	1,075	1,075 253	1,075 325	1,075 259	1,075 189	1,075	1,074 116	1,010 115	1,075	1,075	565 196
FOT West - Summer	121																				
FOT West - Winter	151							(505)		(912)	(449)	(396)	(350)		(557)	(156)	(36)	(280)	(2.260)	(745)	1
	151	(61)	(573)	(224)	(1)	(412) 3,540	156	(505)	(85) 142	(912) 1,354	(449) 1,415		(350) 764	(114) 541	(557) 500	(156) 83	(36) 93	(280) 469	(2,260) 2,540	(745) 1,411	

D 46										Capacity											Resource	
P-46 ing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	2
g 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	-	(82)	2)
aig 2 (Coal Early Retirement/Conversions) syden 1	-	-	-	-	-	-	-	-	(82)	-	-		(44)	-	-	-	-	-	-	-	(82)	2)
ayden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	-	-	-	
untington 1 untington 2	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	(459) (450)		-	+
olstrip 3 (Coal Early Retirement/Conversions)		-		-		-	-	-		(74)	-	-	-	-	-	-	-		-	-	(74)	1)
olstrip 4 (Coal Early Retirement/Conversions) holla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-		-	-	-	-	-	-	-	-	(387)	7)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)	2)
DaveJohnston 2 DaveJohnston 3	-	-		-	-	-		-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)	
DaveJohnston 4			-	-			-			(330)	-					- :	-				(330)))
Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(201)	
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	- (201)	-	-	-	-	-	-	-	-	-	-	-	-	(280)	
ands by 1-6	-	-	-	-	-	- (20)	-	-	-	-	-	-	-	-	(356)		-		-	-	-	
Retire - Hydro Retire - Wind	-		-	-	-	(20)	-	-	-	-	-	(40)	-	-	-	-	-		-	-	(20)	"
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)		(160)	
Expire - Solar PPA Retire - Other	-		-	-	(1)	(1)	-	-	- :	-	-	-	-			(1)	(35)	(94)	(849)	(32)	(1)	
Coal Ret_WY - Gas RePower		247	-	-		-	-	-	-	-	-	(247)	-	-	-	- '	-	-	-		247	7
Expansion Resources SCCT Frame NTN	-	-	- 1	-	-	- 1	- 1	185	- 1	- 1	- 1	370	- 1	- 1	-	-	-	-	-	-	185	5
SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	1
Fotal SCCT Wind, Djohnston	-	-	-	-	-	-	-	185	-	544	370 76	370	-	-		-	-	-	-	-	185 544	
Wind, GO				-		-	-	-		-	-	1,100	-	-	-	-			-		-	
Wind, WYAE Fotal Wind	-	-	<u> </u>	-	-	1,920 1,920				- 544	- 76	1,100	7			-		-	-	-	1,920 2,464	
Jtility Solar - PV - Utah-S	-	-	146	59	67	28	-	-	-	-	-	-	169	-	-	-	-	400	-		300	
Jtility Solar - PV - WYSW Jtility Solar+Storage - PV - Utah-S	-	-	-	-	-	-	-	-	-	-	-	-	100 331	-	-	-	-	-	-	-	-	Ŧ
Jtility Solar+Storage - PV - Utah-S Jtility Solar+Storage - PV - Huntington													- 331						909		-	ᆂ
Jtility Solar - PV - Utah-N Jtility Solar+Stomge - PV - Utah-N	-	-	-	-	-	- 698	-	-	-	-	-	202	-	-	-	-	-		-	-	698	
Jtility Solar+Storage - PV - Utah-N Total Solar	-	-	146	- 59	- 67	726	-	-	-	-	-	202	600	-	-	-	-	400	909		698 998	3
Demand Response, ID-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	2.6		-	1
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate		-	:	-		-	-	-	- :					5.2	1.8	-	-	3.7		1.8	-	+
Demand Response, ID-Thermostat	-	-		-		-	-		-	-		-	-	-	-	-		-	8.3	-	-	1
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9	-	-	7.2	- :	-	6.7			6.8	68.5	-	7.0	-	5.7	7.2	28.1	+
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9		#
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH	-	-	-	-	-		-	-		116.7	-	8.2	-	-	3.4	-	8.3		-	5.1	116.7	7
Demand Response, WY-3rd Party Contracts	-	-	-	-	-		-	-		-	-		-	-	37.3	-	-	-	2.1	-	-	$^{+}$
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	18.7	-	-	-	1.8	-	-	-	-	1.2	-	+
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3 3.0	-	-	-	- 18.7	-	-	-	-	-	-	-	3.2		13.5	5
Demand Response, WY-Ancillary Services	4.1	-	7.0	-	18.1	-	3.0 8.2	7.2	-	- 116.7	25.4	8.2	-	12.0	112.8	-	15.3	3.7	21.9	-	3.0	
Demand Response Total Energy Efficiency, ID	6	6	6	7	7	7	7	7	7	7	7	6	- 6	6	6	- 5	4	3.7	3	3	68	3
Energy Efficiency, UT Energy Efficiency, WY	58 10			68 12	69 13	66 16	67 16	65 17	65 17	62 17	57 15	54 14	52 13	50 12	49 11	38 9	32 8	26	25 5	26	654 139	1
Georgy Efficiency Total	74			86	89	90	91	88	89	86	79	74	71	67	65	51	45	37	33		861	
Battery Storage - Utah-N	-	-	-	-	-	-	-	-	-	240.0	-	-	-	-	-	-	-	-	495.0	-	240)
Battery Storage - Utah-S Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	240.0	-	-	-	-	-	-	-	-	135.0		240.0)
Battery Storage - Idaho FOT East - Summer	-	-	-	-	-	-	-	-	-	227	241	159	208	135	285	286	300	15.0 286	210.0	60.0	- 23	I
Existing Plant Retirements and PPA Termination					-		-			221	241	139	208	133	283	280	300	280	300	300	23	<u>, </u>
imBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	T
imBridger 2 (Coal Early Retirement/Conversions) imBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(349)	-	-	-	-	-	-	(356)	-	-	-	-	-	(349)	27
imBridger 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(353)	-	-	-	-	-	-	-	-	-	-	-	-	(353)	9)
Hermiston Retire - Hydro	-	(1)	(169)	-	(1)	-	-	(1)	-	- (7)	-		- (6)	-	-	(75)	-	(1)	(237)	-	(179)	27
Expire - Wind PPA	-	- (.,)	-	(175)	- (-7	(41)	-	-	-	-	(75)	(10)	-	(20)	(20)	-	-	(10)	(10)	-	(216)	6)
				_		-	-	-	-	(2)		_		(49)	_		(1)	(115)		(11)	(2)	1/1
										(2)			(67)	(42)			(1)	()	(175)	(11)		- /1
Espire - Solar PPA Expansion Resources SCCT Frame W.V		-	-	-	-	- 1	- [- 1	- 1	-	-	- 1	- (67)	-	443	-	-	-	- (175)	-	-	-)
Expansion Resources SCCT Frame WV Fotal SCCT		-	-	-					-		-				443 443	-				-	289	Ŧ
Spansion Resources ICCT Frame WV ond SCCT Utility Solar - PV - Yakima Itility Solar - PV - jbridger		-			-	- - 289	- - -	- - - 713	- - - -	- - - -	- - - 349			- - - -	443 - 251		- - - -			- - 407	- - 289 713	,
Spansion Resources	-	-	-	-	-	- - 289 -		- - - 713	- - - -		- - - 349	-			443	-		-		-		,
Spansion Resources CCT Frame WV otal SCCT Mility Solar - PV - Yakima Mility Solar - PV - Parkinger Mility Solar - PV - Parkinger Mility Solar - PV - Walla Walla Mility Solar - PV - Walla Walla Mility Solar - PV - Walla Walla Mility Solar - PV - S-Orogon	-	-		-		- - - 500			-	- - - - - - -			- - - - - - - -	- - - - - 100 475	443 - 251	-		-		- - 407 - - -	713 - - 500)
Xyanton Resources CCT Frame WV orld SCCT Trilling Solar - PV- Yakima Tality Solar - PV- Printiger Tality Solar - PV- Printiger Tality Solar - PV- Willa Wall Tality Solar - PV- Willa Wall Tality Solar - Storage - PV - Storage Tality Solar - Storage - PV - Yakima		-			-	- - - 500 116		-	- - - - -		-		- - - - - - - -	- - - - 100 475	251 102	-		-		- 407 - - - - 23	713 - - 500 116	3
Spansion Resources CCT Frame WV votal SCCT WWV littly Solar - PV - Yakima littly Solar - PV - Juridger littly Solar - PV - Juridger littly Solar - PV - Walla Walla littly Solar - Solar - PV - Walla Walla littly Solar - Solar - PV - S-Oregon littly Solar - Storage - PV - S-Oregon littly Solar - Storage - PV - Yakima orat Solar		-			-	- - - 500		-	- - - - - - -	8	-			- - - - - 100	251 102	-		-		- - 407 - - -	713 - - 500 116	0 6 8
yanston Resources CCT Frame WV otal SCCT trillity Solar - PV- Yakima tillity Solar - PV- Yakima tillity Solar - PV- Pridager tillity Solar - PV- Walla Walla tillity Solar - PV- Walla Walla tillity Solar - Solar - PV - Vakima tillity Solar - Solar - PV - Vakima tillity Solar - Solar - PV - Yakima total Solar temant Response, OR-Ancellary Services temant Response, OR-Ancellary Services		-			-	- - - 500 116		-			-			- - - - 100 475	251 102 - - - 353	-		-		- 407 - - - - 23	713 - - 500 116 1,618	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Xpantion Resources CCT Frame WV oral SCCT Thillipy Solar - PV - Yakima tilipy Solar - PV - Paridger tilipy Solar - PV - Paridger tilipy Solar - PV - Wallin Walla Tilipy Solar - PV - Wallin Tilipy Solar - PV - Wallin Total Solar Total		-	-		-	- - - 500 116		-	-	- - - - - - - - - - - - - - - - - - -	-			- - - - 100 475	251 102			-		- 407 - - - - 23	713 - - 500 116 1,618 8 1.9	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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CCT Frame WV Total SCCT Tribing WV Total SCCT Tribing Solar - PV - yakima Tility Solar - PV - yakima Tility Solar - PV - phridger Tility Solar - PV - phridger Tility Solar - PV - Walla Walla Total Solar PV - PV - Walla Walla Total Solar PV - Walla Walla Total Solar Permand Response, OR-Ancillary Services Permand Response, OR-Ancillary Services Permand Response, CA-Indiparty Contracts Permand Response, CA-Indiparty Contracts Permand Response, CA-Indiparty Permand Response, CA-Indiparty Permand Response, OR-Ind Party Contracts Permand Response, WA-Cool-Will Permand Response, WA-Cool-Will Permand Response, WA-Indigate Permand Response, WA-Temporate Permand Response Total Permand Response Total						- - 500 116 905 - - - - - - - - - - - - - - - - - - -		- - - 713 - - - - - - - - - - - - - - - - - - -			- - - 349 - - - - - 5.4 - - - 3.3 8.7				443 		-	-			713	3 3 3 3 3 3 3 7 7
Common Resources CCT Frame WV Total SCCT Thilly Sodar - PV - Parking Ality Sodar - PV - Parking Thilly Sodar - PV - State - PV - Parking Total Sodar - PV - State - PV - State - PV - P	40		- - - - - - - 2 37			- - - - - 500 116 905 - - - - - - - - - - - - - - - - - - -					- - - 349 - - - - - - - - - - - - - - - - - - -	31			443 	- - - - - - - - - - - - - - - - - - -		-		- 407 - 23 430 	713	33 33 33 33 33 33 33 33 33 33 33 33 33
Cymuton Resources CCCT Frame WV Fordal SCCT Tribing Solar - PV - Yakima Jility Solar - PV - Parkiger Jility Solar - PV - Parkiger Jility Solar - Solar - PV - Parkiger Jility Solar - Solar - PV - Bridger Jility Solar - PV - Walla Walla Jornand Response, OR-Aneillary Services Permand Response, CA - Alrigate Jermand Response, CA - Alrigate Jermand Response, CA - Thermostat Jermand Response, CA - Thermostat Jermand Response, OR-Ard Party Contracts Jermand Response, OR-Ard Party Contracts Jermand Response, OR-Ard Party Contracts Jermand Response, WA - Cool-Will Jermand Response, WA - Cool-Will Jermand Response, WA - Cool-Will Jermand Response, WA - Total Jermand Response - Total			- - - - - - 2 37			- - 500 116 905 - - - - - - - - - - - - - - - - - - -		- - - 713 - - - - - - - - - - - - - - - - - - -			- - - 349 - - - - - 5.4 - - - 3.3 8.7				443 						713	33 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
CCT Frame WV Total SCCT Tribity Solar - PV - Yakima Tility Solar - PV - Walia Walia Tility Solar - Solar - PV - Walia Walia Tility Solar - Solar - PV - Walia Walia Tility Solar - Solar - PV - Walia Walia Tility Solar - Solar - PV - Walia Walia Tility Solar - Solar - PV - Walia Total - Solar - Solar - PV - Walia Total - Solar -	40 11		- - - - - - 2 37	11			12	- - - - - - - - - - - - - - - - - - -	11			31 9			443 	- - - - - - - - - 1 27 6					713	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
Control Resources CCT Frame WV ond SCCT Villay Solar - PV - Pavidger Villay Solar - PV - Pavidger Villay Solar - PV - Pavidger Villay Solar - Solar - PV - Pavidger Villay Solar - Solar - PV - Solar - PV - Pavidger Villay Solar - Solar - PV - Solar - PV - Pavidger Villay Solar - Solar - PV - P	40 11		- - - - - - 2 37	11			12	- - - - - - - - - - - - - - - - - - -	11			31 9			443 	- - - - - - - - - 1 27 6					713	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
younton Nes ources CCCT Frame WV ontal SCCCT thing Solar - PV- Valsims tilly Solar - Solar - PV- Valsims total Solar tennal Response, CR-Anollary Services tennal Response, CR-Anollary Contracts tennal Response, WA-Anollary tennal Response, WA-Anollary tennal Response, WA-Anollary tennal Response, WA-Thermostat tennal Response, WA-Thermostat tennal Response, WA-Thermostat tennal Response, VA-Anollary tennal Response, WA-Thermostat tennal Response, VA-Thermostat tennal Response, VA-Many tennal Response, VA-Many tennal Response, VA-Many tennal Response, WA-Many	40 11		- - - - - - 2 37	11			12	- - - - - - - - - - - - - - - - - - -	11			31 9			443 	- - - - - - - - - 1 27 6				- 407 - 23 - 430	713 713 714 715 715 715 715 715 715 715 715 715 715	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
CCT Frame WV total SCCT Trans WV total SCCT total Scan total Scan total Scan tilly Solar-PV-yakima tilly Solar-Storage - PV-yakima tilly Solar-Storage - PV-yakima tilly Solar-Storage - PV-yakima total Solar- tennal Response, GR-Ancillary Services tennal Response, GR-Ancillary Services tennal Response, CA-Nd Party Contracts tennal Response, CA-Nd Party Contracts tennal Response, GR-Ancillary Services tennal Response, GR-Ancillary Services tennal Response, GR-Ancillary Services tennal Response, GR-Ancillary Services tennal Response, GR-Ancillary tennal Response, WA-3nd Party Contracts tennal Response Total tennal Response Total tennal Response Total tenny Efficiency, GR tennal Response Total tenny Efficiency, GR tennal Response Total tenny Efficiency, GR tennal Response Total tennal	40 11		- - - - - 2 37 10 48 - - -	11			12	- - - - - - - - - - - - - - - - - - -	11 52 - - - -			31 9			443 					- 407 	713 713 713 713 713 713 713 713 713 713	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
CCT Frame WV total NCCT that with WV total NCCT thing Solar-PV-y-Valsima thilly Solar-PV-y-Parlinger thing Solar-PV-y-Parlinger thing Solar-PV-y-Parlinger thing Solar-PV-y-Parlinger thing Solar-PV-y-Parlinger thing Solar-Storage - PV-y- S-Gregon total Solar-Storage - PV-y- S-Gregon tot	40 11 52 - - -		- - - - - - - 2 37 10 48 - - - - - - 492 265	11 54 - - - - - 501 299			12 56 - - - -		11 52 - - - - - 610 143			31 9 42 - - - - - 1,075 441			443						713 713 713 713 713 713 713 713 713 713	3 3 3 3 3 3 3 3 3 3 7 7 7 7 9 9 9 9 9 9
CCT Frame WV otal SCCT Tribity Solar - PV Parlidger Itility Solar - PV Walin Waffa Itility Solar - PV Printing PV Poly - Pv	40 11 52 - - - - - 998		- - - - - - 2 37 10 48 - - - - - - 10 48 - - - - - - - - - - - - - - - - - -	11 54 - - - - - 501 299			12 56 - - - - - - 47		11 52 - - - - - 610			31 9 42 - - - - 1,075			443					- 407 	713 713 716 716 717 718 718 718 718 718 718 718 718 718	3 3 3 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5

										Capacity	(MW)										Resource Tot
P-53	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year 20
Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2023		2027	2028	2029	2030	2031	2032	2033	2034	2033	2030	2037	2038	
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82) (82)
Hayden 1		-	-	-		_	-	-	- (02)	-		-	(44)	-	-	-	_	-		-	-
Hayden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-
Huntington 1 Huntington 2		+ -	-						-	-				-	-				(459)		
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-		_	-	-	-	(74)		-		-	-	-	_	-	-	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1			(387)	-				_	-	(99)				-		-					(387) (99)
DaveJohnston 2			-	-	-		-	-		(106)	-		-	-	-	-	-	-		-	(106)
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)
DaveJohnston 4	-	-	-	-	-	-	-	- (166)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)			-	-	-		-	(156) (201)	-		-		-	-	-	-	-	-		-	(156) (201)
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)
Gadsby 1-6	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(20)
Retire - Hydro Retire - Wind	-	-	-	-	-	- (20)	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	- (20)
Expire - Wind PPA	-	(27)) (17)	(49)		-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)		(160)
Expire - Solar PPA Retire - Other	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	- (1)	(35)	(94)	(849)	(32)	(1)
Coal Ret_WY - Gas RePower	-	247	-	-	-		-	-	-	-	-	(247)	-	-	-	- (1)	-	-	-	(32)	247
Expansion Resources																					
SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	370	370	-	-	-	-	-	-	-	-	185
SCCT Frame WYSW Total SCCT	-	-	1 -		-		-	185	-	-	370 370	370	-	-		-	-		-	-	185
Wind, Djohnston	_	-			-		-	-	-	544	76	-	-	-	-	-	-	-	-		544
Wind, GO	-	_	_	_	-	1.920	_	_	_	-	-	1,100	-	-	-	-	-	-	-	_	1.920
Wind, WYAE Total Wind	-	-	-	-	-	1,920	-	-	-	544	76	1,100	-	-	-	-	-	-	-	-	1,920 2,464
Utility Solar - PV - Utah-S		_	146	59	67	28			-	-	-		169	-	-	-	-	400	-	-	300
Utility Solar - PV - WYSW	-	-	-	-	-		-	-	-	-	-	-	100		-	-	-	-		-	-
Utility Solar+Storage - PV - Utah-S Utility Solar+Storage - PV - Huntington	+ -	-	-	 -	-		-		-	-	-		331	-		-	-		909	-	-
Utility Solar+Storage - PV - Huntington Utility Solar - PV - Utah-N						:						202							-		
Utility Solar+Storage - PV - Utah-N	-	-	-	-	-	698	-	-	-	-	-		-	-	-	-	-	-	-	-	698
Total Solar Demand Response ID-Cool/WH	+		146	59	67	726		- -	-	-	-	202	600	-	-	-	-	400	909		998
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	1	1	1		-		-	-	-	-	-	-	-	-	1.8	-	-		∠.6	-	-
Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	-	1.8	-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	8.3	7.2	28.1
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9			- 1.2	-	-	- 6.7	-	-	- 6.8	68.5	-	7.0	-	5.7		28.1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat	-	-	-	-	-		-	-	-	116.7	-	8.2	-	-	3.4	-	8.3	-	-	5.1	116.7
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-	-	37.3	-	-	-	2.1	-	
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-		-		-	1.8	-		-		-	-
Demand Response, WY-Thermostat	-	-	-	-	8.3			-	-	-	18.7	-	-	-	-	-	-	-	3.2	1.2	12.5
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	-		5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	-		13.5 3.0
Demand Response Total	4.1		7.0		18.1		8.2	7.2	-	116.7	25.4	8.2	-	12.0	112.8	-	15.3	3.7	21.9		161.2
Energy Efficiency, ID Energy Efficiency, UT	6 58			68	69	66	67	65	65	62	57	6 54	52	50	6 49	38	32	26	3 25		68 654
Energy Efficiency, WY	10	10				16	16	17	17	17	15	14		12	11	9	8	7	5	5	139
Energy Efficiency Total	74	83		86	89	90	91	- 88	89	86 240.0	79	74	71	67	65	51	45	37	33 495		861 240
Battery Storage - Utah-N Battery Storage - WYSW	-	-	-	-	-			-	-	240.0	-	-	-	-	-	-	-	-	135.0	-	240.0
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.0	210.0	60.0	
FOT East - Summer Existing Plant Retirements and PPA Termination	-	-	-	-	-	-	-	-	-	227	241	159	208	135	285	286	300	286	300	300	23
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	- 1	-	-	(351)	-	-	-	-	-	-	-	-	-	- 1	-	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	-	-	-	(356)
JimBridger 3 (Coal Early Retirement/Conversions) JimBridger 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(349)	-	-	-	(353)	-	-	-	-	-	-
Hermiston	-		-	-	-		-	-			-		-	-	(333)	-	-	-	(237)	-	
Retire - Hydro	-	(1)	(169)		(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)		-	(179)
Expire - Wind PPA Expire - Solar PPA	-	-	-	(175)) -	(41)	-	- -	-	- (2)	(75)	(10)	(67)	(20) (49)	(20)	-	- (1)	(10)	(10) (175)	(11)	(216)
Expire - Solar PPA Expansion Resources		-	<u> </u>	<u> </u>	1			<u> </u>		(2)			(67)	(49)		-	(1)	(113)	(1/5)	ų (11)	(2)
SCCT Frame WV	-	-	-	-	- 1	-	-	-	-	-	-		-	-	443	-	-	-	-	-	
Total SCCT Utility Solar - PV - Yakima	+		+		-	289		- -	-	-	-		-	-	443	-	-	-	-	407	289
Utility Solar - PV - Yakima Utility Solar - PV - jbridger	1	1	1		-	- 289	-	713	-	-	349	-	-	-	251	-	-		-	- 407	713
Utility Solar+Storage - PV - Jbridger	-	-	-	-	-	-	-	-	-	-		-	-	-	102	-	-	-	-	-	-
Utility Solar - PV - Walla Walla	-	-	-	-		500	-	-	-	-	-		-	100 475	-	-	-	-	-	-	500
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	1	-		-	116		-	-	-	-	-	-	-	-		-		-	23	116
Total Solar	-	-	-	-	-	905		713	-	-	349	-	-	575	353	-	-	-	_	430	1,618
Demand Response, OR-Ancillary Services	-	_	_		-	-		-	-	1.9	-	-	-	-	-	-	-	-	-	-	8
Demand Response, WA-Ancillary Services Demand Response, CA-3rd Party Contracts	1 -	1	-		1 -		-	-	-	-	-	-	-		1.1		-		-		-
Demand Response, CA-Irrigate	-	-	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-	-	-	4.8
Demand Response, CA-Thermostat	-	-	-	-	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	3.0	-	5.8
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts	-	1 - 1	-	-			-		-	-	5.4	-	-	-	30.3	-	-		3.0	-	-
Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	13.3	-	-	-	-	-	-	-	-	-	-	13.3
Demand Response, WA-Cool/WH	-	-	-	-	- 1		-	-	-	-					7.7	-	-	-	-	-	-
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	1	-	1		1 -		-	-	-	5.2	-		-				-		3.1		5.2
Demand Response, WA-Thermostat			-	-	-		-	-		11.3	3.3			-	2.0	-		-	-	-	11.3
Demand Response Total	-	-			-			-		49.7	8.7	-		-	51.0	-	-	-	6.1		49.7
Energy Efficiency, CA Energy Efficiency, OR	40		37	42		46	43	41	39	37	33	31	30	30	27	1 27	1 26	1 26	1 25		17 399
Energy Efficiency, OR Energy Efficiency, WA	11	9	10	11	12	12	12	11	11	11	9	9	9	8	8	6	6	5	4	4	109
Energy Efficiency Total	52					59	56			49		42	40	40		34		32	30		525
Battery Storage - S-Oregon	-	-	-	-	-		-	-	-	45	-		-		-	-	-		555 90		45
Battery Storage - Willamette Valley Battery Storage - Portland NC	1 -	-		-	1 -			-	-	120	-	-	-	-	-		-		30	-	120
Battery Storage - Walla Walla	-	-	-	-	-	-	-	-	-	105	-	-	-	-	-	-	-	-	30	30	105
Battery Storage - Yakima	- 000	719	492	501	- 400		47	538	610	105 1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,061	1,007	1,075	1,075	105 553
FOT West - Summer FOT West - Winter	151			299	310	54 91	95	96	143	275	482	1,075	450	432	231	1,075	1,061	1,007	- 1,075	- 1,075	186
Existing Plant Retirements/Conversion	s -	(61)				(62)	-	(1,212)		(912)	(442)	(396)	(350)	(114)	(911)		(36)	(280)	(2,260)		
Annual Additions, Long Term Resource	s 130	131	286	199	227	3,700	155		753	1,701	952	1,796	711	694	1,061	1.520	93	488	2,545	631	
Annual Additions, Short Term Resource Total Annual Addition	s 1,149 s 1,279	850 982	757 1,043	800 999	806 1,033	145 3,844	142 297	634 1,683	753 893	1,577 3,278	1,797 2,749	1,675 3,471	1,733 2,444	1,642 2,336	1,591 2,652	1,520 1,605	1,537 1,630	1,452 1,940	1,375 3,920	1,375 2,006	

P-54	2019	2020	2021	2022 202	23 2	2024	2025 203	6 2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)		_		- 1	- 1		- 1	(82) -		_	_		_		_			_		(82)
Craig 2 (Coal Early Retirement/Conversions)	-	-	-			-	-	- (82	-	-		-	-			-		-	-	(82)
Hayden 1 Hayden 2	-	-			-	-	-	-		-	-	(44)	-	-			-	-		
Huntington 1	-	-	-		-	-	-		-	-	-	-	-		-	-		(459)		
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-		(74)	-	-	-		-		-	-	(450)	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-		(74)	-	-	-	-	-	-	-	-	-	-	(74)
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	-	-	(387)	-	-	-	-		(99)	-	-		-	-		-	-	-	-	(387)
DaveJohnston 2	-	-	-	-	-	-	-		(106)	-	-	-	-			-		-	-	(106)
DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-		-	-	-	-	(220)
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-		156) -	-	-	-	-	-	-	-	-	-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	- '	201) -	-	-		-				-			-	(201)
Gadsby 1-6	-	-	´ -	-	-	-	-		-	-	-	-	-	(356)		-		-	-	-
Retire - Hydro Retire - Wind	-	-		-	-	(20)	-			-	(40)		-	-		-	-	-	-	(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65) (3	-	(19)		(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA Retire - Other	-	-	-	-	(1)	(1)	-	-		-	-	-		-	(1)	(35)	(94)	(849)	(32)	(1)
Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-		-	-	(247)	-	-	-	- (-)	-	-	-	-	247
Expansion Resources SCCT Frame NTN		-	- 1	-	-	- 1	- 1	185 -		-	185		-	185		- 1	-	-	_	185
SCCT Frame WYSW	-	-	-	-	-	-	-		-	370	-	-	-		-	-	-	-	-	-
Total SCCT Wind, Djohnston	-	-	-	-	-	-	-	185 -	-	370 620	185	-		185		-	-	-	-	185
Wind, GO	-	-		-	-	-	-			-	1,078	-	-	-				-	-	-
Wind, WYAE Total Wind	-	-			-	1,920 1,920			 	620	1,078	1		-	-		-	-		1,920 1,920
Utility Solar - PV - Utah-S		-	146	59	67	-	-		-	-	-	-	-	-		-	400	-	-	272
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S	-	-			-	100 28			T		-	500	- :	-		-	-	-	-	100 28
Utility Solar+Storage - PV - GO					-	- 20				- :		22								
Utility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-		-	205	-	-	-	-	-	-	909	-	
Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N		-			-	695				-	205		-			-		-	-	695
Total Solar	-	-	146	59	67	823	-	-		-	205	522	-	-	-	-	400	909		1,095
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts																		2.6 1.8	-	
Demand Response, ID-Irrigate	-	-	-	-	-	-	-		-	-	-	-	5.2	-	-	-	-	3.7 8.3	1.8	-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2 -	-	6.7		-	6.8			7.0		8.3	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6	
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	116.7	-	8.2	-		-		8.3	-	-	1.9 5.1	116.7
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-		-	-	3.4	-	-	-	-	-	-	-	1.8	-
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-		-	-	-	-			-	-		-	1.8		-	-	39.4		
Demand Response, WY-Thermostat	-	-		-	-	-	-			-	-	-		-	_	-		18.7	1.2	-
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	8.3	-	5.3 3.0			-	-	-	-	-	-	-	-	3.2	-	13.5 3.0
Demand Response Total	4.1	-	7.0	- 1	18.1	-	8.2	7.2 -	116.7	6.7	11.7	-	12.0	1.8		15.3		151.9	21.6	161.2
Energy Efficiency, ID Energy Efficiency, UT	58			7 68	7 69	7 66	7 67	7 7 65 65	7 62	55		52 52	52	52	36	32	3 26	23	3 22	68 654
Energy Efficiency, WY	10	10	11	14	1.5	16	16	18 18	18	1.5	1.5	13	12	11	9	8	7	5	5	147
Energy Efficiency Total Battery Storage - Utah-N	74	83	85	88	91	89	91	90 90	87 345.0	77	77	72	70	70	49	45	37	31		868
Battery Storage - WYSW																			375	345
	-	-	-	-	-	-	-		60.0	-	-	-	- :		-				375 165.0	345 60.0
Battery Storage - Idaho		-	-	-					60.0	- 219	- 298	- - 300	262	30.0	300			150.0	165.0 90.0	60.0
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination		-	-	-	-		-			219		300	262	30.0 299	300	300	300	150.0 300	165.0 90.0	
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-			60.0	219		300	262	30.0	300	300	300	150.0	165.0 90.0	29
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination	-	-	-		-	-	(356)		60.0			300	262	30.0	300	300	300	- 150.0 300	165.0 90.0 300	60.0
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Juddiedger 1 (Coal Early Retirement/Conversions) Juddiedger 2 (Coal Early Retirement/Conversions) Juddiedger 3 (Juddiedger 3 (Juddiedger 4 (Judiedger 4 (Judiedge	-	-	-		-	-	(356)		60.0	(351)		300	-	30.0 299	300	-	300	- - - -	165.0 90.0 300 - - (349) (353)	29
Battery Storage - Idaho FOT East - Sourmer Existing Plant Retirements and PPA Termination Indulgidge 1 (Coal Early Retirement Conversions) Judicingle 2 (Coal Early Retirement Conversions) Judicingle 3 (London Early Retirement Conversions) Judicingle 4 (London Early E	-		- - - - - - 0 (169)	-	- - - - - - (1)	-	(356)		60.0	(351)		- - 300			300	-	(1)	- - - (237)	165.0 90.0 300 - - (349) (353)	60.0 - 29 (356) - - (179)
Battery Storage - Idaho FOT East - Summer Kisting Plant Retirements and PPA Termination Jundridger 1 (Coal Early Retirement/Conversions) Jundridger 2 (Coal Early Retirement/Conversions) Jundridger 3 (Jundridger 3 (Jundridger 4) Hermiston Retire - Hydro Retire - Hydro Eapine - Wind PPA	-	(1)		(175)	- (1) -	- - - - - - - - - - - - - - - - - - -	-	(1) -		(351)		- - - - (6)	(20)	- 30.0 299	-	-	- - - - (1)	300 - - - (237) - (10)	165.0 90.0 300 - (349) (353) -	60.0 - 29 - (356) - (179) (216)
Battery Storage - Idaho FOT East - Summer Kisting Plant Retirements and PPA Termination Jundridger 1 (Coal Early Retirement/Conversions) Jundridger 2 (Coal Early Retirement/Conversions) Jundridger 3 Jundridger 4 Hermiston Retire - Hydro Eapire - Wind PPA Eapire - Solar PPA Expires - Solar PPA Expansion Resources	-		- - - - - - 0 (169)	(175)	(1)			(1) - 		(351)		-			-	-	(1)	300 - - - (237) - (10) (175)	165.0 90.0 300 - (349) (353) - (11)	60.0 - 29 (356) - - (179)
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Jindividge 1 (Coal Early Retirement/Conversions) Jindividge 2 (Coal Early Retirement/Conversions) Jindividge 3 (Jonation Plantividge 4 (Jonation Plantividge		(1)		(175)	- (1) -			(1) -		(351)		- - - - (6)	(20)		-	-	- - - - (1)	300 - - - (237) - (10)	165.0 90.0 300 - (349) (353) - - (11)	60.0 - 29 - (356) - (179) (216)
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Jindividge 1 (Coal Early Retirement/Conversions) Jindividge 2 (Coal Early Retirement/Conversions) Jindividge 3 (Joseph 1997) Jindividge 3 (Joseph 1997) Remission Retire - 19 day Retire - 19 day Lipenston PPA Lipenston Resources SCCT Frame WV Total SCCT Ultily Solar - PV - S-Oregon	-	(1)		(175)	- (1) -	- 500		(1) - 		(351)		- - - - (6)	(20)		-	-	- - - - (1)	300 - - - (237) - (10) (175)	165.0 90.0 300 - (349) (353) - - (11)	60.0 -29 -(356)
Battery Storage - Idaho FOT East - Sourmer Existing Plant Retirements and PPA Termination Individual - I Coal Early Retirement/Conversions) Individual - I Coal Early Retirement/Conversions) Individual - I Coal Early Retirement/Conversions) Individual - I I I I I I I I I I I I I I I I I I		(1)		(175)	- (1) -		-	(1) - 		(351)		- - - - (6)	- - - - (20) (49)		-	-	- - - - (1)	300 - - - (237) - (10) (175)	165.0 90.0 300 - (349) (353) - - (11)	60.0 29 (356) - - (179) (216) (2) - - - - - - - - - - - - -
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Individual - (Coal Early Retirement Conversions) Judicity - (Coal Early Ea		(1)		(175)	- (1) -	- 500		(1) - 		(351)		- - - - (6)	- - - - (20) (49)	299	-	-	- - - - (1)	300 - - - (237) - (10) (175)	165.0 90.0 300 - (349) (353) - - (11)	60.0 -29 -(356)
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Jundwidger 1 (Coal Early Retirement/Conversions) Jundwidger 2 (Coal Early Retirement/Conversions) Jundwidger 3 Jundwidger 3 Jundwidger 4 Hermiston Retire - Ividro Dapine - Wand PPA Earlies - Solar PPA Earlies - Solar PPA Earlies - Solar PPA URITY SOLAR - SOLAR		(1)		(175)	- (1) -	- 500	-	(1) - 		(351)		- - - - (6)			-	-	- - - - (1)	300 - - - (237) - (10) (175)	165.0 90.0 300 - (349) (353) - - (11)	60.0 29 (356) - - (179) (216) (2) - - - - - - - - - - - - -
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Juddingler 1 (Coal Early Retirement Conversions) Judindingler 1 (Coal Early Retirement Conversions) Judindingler 3 Homiston Retire - Hydro Bepres - Wind PPA Teprice - Sold PPA Teprice - Sold PPA Teprice - Sold PPA Total SCCT Unity Solar - PV - S-Oregon Unity Solar - PV - S-Oregon Unity Solar - PV - Juding Unity Solar - PV - Juding Unity Solar - PV - Juding Unity Solar - PV - S-Oregon Unity Solar - Solar - PV - S-Oregon Unity Solar - Solar - PV - S-Oregon Unity Solar - Storage - PV - S-Oregon		(1)		(175)	- (1) -	- 500 405 - -		(1) - 		(351)		- - - - (6)	- - - - (20) (49) - - 142 - - - 333	299	-	-	- - - - (1)	300	165.0 90.0 300 	60.0
Battery Storage - Idaho FOT East - Summer Existing Plant Retirement and PPA Termination Junkingley 1 (Coal Early Retirement/Conversions) Junkingley 2 (Coal Early Retirement/Conversions) Junkingley 2 (Coal Early Retirement/Conversions) Junkingley 2 (Coal Early Retirement/Conversions) Junkingley 2 (Coal Early Retirement/Conversions) Junkingley 2 (Coal Early Retirement/Convers		(1)		(175)	- (1) -	- 500	-	(1) - 		(351)		- - - - (6)		299	-	-	- - - - (1)	300	165.0 90.0 300 	60.0 29 (356) - - (179) (216) (2) - - - - - - - - - - - - -
Battery Storage - Idaho FOT Bat - Summer Falsting Plant Retirement and PPA Termination Judwidge 1 (Coal Early Retirement/Conversions) Judwidge 2 (Coal Early Retirement/Conversions) Judwidge 3 Judwidge 4 Judwidge 5 Judwidge 6 Judwidge 7 Judwid				- (175)	- (1) 	- 500 405 - -	359	(1)		(351) 		- - - - (6)		299	(75)	(1)	- - - - (1)	300	165.0 90.0 300 300 (349) (353) 	60.0
Battery Storage - Idaho FOT East - Sourmer Existing Plant Retirements and PPA Termination Individual - (Coal Early Retirement/Conversions) Judichtigles - (Coal Early Early Retirement/Conversions) Judichtigles - (Coal Early Retirement/Conversions) Judichtigles - (Coal Early Retirement/Conversions) Judichtigles - (Coal Early Retirement/Coal				- (175)	- (1) -	- 500 405 - -	359	(1) - 	60.0 - 295	(351)		- - - - (6)		299	-	(1)	- - - - (1)	300	165.0 99.0 300 	60.0 - 29 (356) - (179) (216) (2) - (279) (2) - (350) - (
Battery Storage - Idaho FOT East - Summer Falsting Plant Retirements and PPA Termination Judwidge 1 (Coal Early Retirement/Conversions) Judwidge 2 (Coal Early Retirement/Conversions) Judwidge 3 Judwidge 3 Judwidge 4 Judwidge 4 Judwidge 4 Judwidge 4 Judwidge 5 Judwidge 6 Judwidge 7 Judwidge 7 Judwidge 7 Judwidge 7 Judwidge 8 Judwidge 8 Judwidge 8 Judwidge 8 Judwidge 9 Judw			1 (169)	- (175)	- (1) 	- 500 405 - -	359	(1)	60.0 - 295	(351)		- - - - (6)		299	(75)	(1)	- - - - (1)	300	165.0 90.0 300 300 (349) (353) 	60.0 - 29 (356) - (179) (216) (2) - (279) (2) - (350) - (
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Juddingler 1 (Load Early Retirement Conversions) Judindingler 1 (Load Early Retirement Conversions) Judindingler 3 Judindingler 3 Judindingler 3 Judindingler 4 Hemiston Retire - Hydro Expres - Wind PPA Expres - Wind PPA Expres - Wind PPA Expres - Wind PPA Total SCCT Utility Solar - PV - S-Oregon Utility Solar - PV - S-Oregon Utility Solar - PV - Juding Utility Solar - PV - Juding Utility Solar - Storage - PV - S-Oregon Utility Solar		(1) 	(169)	- (175)	- (1) 	- 500 405 - -	359		60.0 - 295	(351)				299	(75)	(1)	- - - - (1)	300	165.0 90.0 300(349) (353)(111)	60.0 - 29 (356) - (179) (216) (2) - (279) (2) - (350) - (
Battery Storage - Idaho FOT East - Summer Existing Plant Retirement and PPA Termination Individual - (Coal Early Retirement Conversions) Judicity (Coal Early Retirement Coal Early Retirement Coal Early Coal Early PPA Expression Resources SCCT Frame W Voter Frame W		(1) 		- (175)	- (1) 	- 500 405 - -	359		60.0 - 295	(351)				299	(75)	(1)	- - - - (1)	300	165.0 99.0 300 	60.0 - 29 (356) - (179) (216) (2) - (279) (2) - (350) - (
Battery Storage - Idaho FOT East - Summer Existing Plant Retirement and PPA Termination Individued - (Coal Early Retirement Conversions) Jundvidued - (Coal Early Retirement Conversions) Jundvidued - 3				(175) 		- 500 405 - -	359		60.0 - 295	(351)				299	(75)	(1)	- - - - (1)	300	165.0 90.0 300 300 300 (349) (353)	60.0 - 29 (356) - (179) (216) (2) - (279) (2) - (350) - (
Battery Storage - Idaho FOT East - Sourmer Existing Plant Retirements and PPA Termination Jordholge 1 (Coad Early Retirement Conversions) Jordholge 1 (Coad Early Retirement Conversions) Jordholge 3		(1) 	(169)	- (175) - (175)	- (1) 	- 500 405 - -	359		60.0 - 295	(351)				299	(75)	(1)	- - - - (1)	300	165.0 99.0 300 300 (349) (353)	60.0 - 29 (356) - (179) (216) (2) - (279) (2) - (350) - (
Battery Storage - Idaho FOT East - Sourmer Existing Plant Retirements and PPA Termination Jundividge 1 (Coal Early Retirement/Conversions) Jundividge 2 (Coal Early Retirement/Conversions) Jundividge 2 (Coal Early Retirement/Conversions) Jundividge 3 (Coal Early Retirement/Conversions) Jundividge 4 (Jundividge 2) Hermiston Retire - Hydro Expire - Solar PPA Utility Solar - PV - Solar PPA Utility Solar - Solar PPA Demand Response, CA-Acad Party Contracts Demand Response, CA-Acad Party Contracts Demand Response, CA-Code PPA Demand		(1)		- (175) - (175)	- (1)	- 500 405 - -	359		60.0 - 295	(351)				299	(75)	(1)	- - - - (1)	300	165.0 99.0 300 300 (349) (353) (11) 	60.0 - 29 - (356) - (179) (216) (2) - (279) - (279
Battery Storage - Idaho FOT Bat - Summer Falsting Plant Retirement and PPA Termination Judwidge 1 (Coal Early Retirement/Conversions) Judwidge 2 (Coal Early Retirement/Conversions) Judwidge 2 (Coal Early Retirement/Conversions) Judwidge 3 Judwidge 4 Judwidge 3 Judwidge 4 Jud		(1)		- (175) - (175)	- (1)	- 500 405 - -	359		60.0 295	(351)	(10)			299			- - - - (1)	300	165.0 90.0 300 300 (349) (353)	60.0
Battery Storage - Idaho FOT East - Sourmer Existing Plant Retirements and PPA Termination Jordholge 1 (Coad Early Retirement Conversions) Jordholge 1 (Coad Early Retirement Conversions) Jordholge 3		(1)	(169)	- (175) - (175)	- (1)	- 500 405 - -	359		60.0 - 295	(351)	(10)			299	(75)		- - - - (1)	300	165.0 90.0 300 300 (349) (353)	60.0
Battery Storage - Idaho FOT East - Summer Existing Plant Retirement and PPA Termination Individual - (Coal Early Retirement Conversions) Junifiedge 2 (Coal Early Retirement Conversions) Junifiedge 3 (Coal Early Retirement Conversions) Junifiedge 4 (Long Early E		(1)		- (175) - (175	- (1)			- (1) - (1)	60.0 -0	(351)	- (19) -			299		(1)	- (10) (10) (115)	300	165.0 90.0 300 300 300 300 3133 3	60.0
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Juddingler 1 (Coal Early Retirement Conversions) Judindingler 1 (Coal Early Retirement Conversions) Judindingler 3 Judindingler 3 Judindingler 3 Judindingler 4 Hemiston Retire - Hydro Engine - Such PPA Termination Express - Wind PPA Termination Express - Wind PPA Termination Express - Such PPA Termination Express - Such PPA Termination Express - Such PPA Termination Express - Wind PPA Termination Utility Solar - PV - Storagen Utility Solar - PV - Storagen Utility Solar - Express - Wind PPA Termination Utility Solar - Storage - PV - Storagen Utility Solar - Storagen Utili		(1)		- (175)	- (1) (1) - (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			- (1) - (1)	60.0 -0	(351)	(10) (10) (10) (10) (10) (10) (10) (10)			299		(1)		300	165.0 90.0 300 300 (349) (353) (353) (11)	60.0
Battery Storage - Idaho FOT East - Sourmer Existing Plant Retirements and PPA Termination Jundividge 1 (Coal Early Retirement/Conversions) Jundividge 2 (Coal Early Retirement/Conversions) Jundividge 3 (Coal Early Retirement/Conversions) Jundividge 4 (Josa Early Retirement/Conversions) Jundividge 4 (Josa Early Retirement/Conversions) Jundividge 4 (Josa Early Retirement/Conversions) Jundividge 4 (Josa Early Retirement/Conversions) Jundividge 4 (Josa Early Retirement/Conversions) Jundividge 4 (Josa Early Retirement/Conversions) Jundividge 4 (Josa Early Retirement/Conversions) Jundivide 4 (Josa Early Retirement/Conversions) Jundivide 4 (Josa Early Retirement/Con		(1)		- (175) - (175	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	- 500 405 		- (1) - (1)	60.0 60.0 7.0	(351)	(10) (10) (10) (10) (10) (10) (10) (10)			299		(1)		300	165.0 99.0 99.0 99.0 (349) (353)	60.0
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Juddingle - I (Coal Harly Retirement Conversions) Judingle - I (Coal Harly Retirement Coal Harly Retirement C	11	(1)		- (175) - (175	(1)			- (1) - (1)	60.0 -0	(351)	(10) (10) (10) (10) (10) (10) (10) (10)			299		(1)		300	165.0 99.0 99.0 99.0 300 300 3300 3353	60.0
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Juddidge 1 (Coad Early Retirement Conversions) Juddidge 1 (Coad Early Retirement Conversions) Juddidge 2 (Coad Early Retirement Conversions) Juddidge 3 (Load Early Retirement Conversions) Judit Storage 1 (Load Early Retirement Conversion Retirement	11	(1)		- (175) - (175	(1) 			- (1) - (1)	60.0 60.0 7.0	(351)	(10) (10) (10) (10) (10) (10) (10) (10)			299		(1)		300	165.0 99.0 300 300 300 (349) (353) (11)	60.0
Battery Storage - Idaho FOT East - Sourmer Existing Plant Retirements and PPA Termination Individual - I Coal Early Retirement/Conversions) Individual - I Coal Early Retirement/Conversions Eagure - Wind PPA Eagure - Man PPA Eagure -	11 52 - - -	(1)		- (175) - (175	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	- 500 405 		- (1) - (1)	60.0 60.0 7.0	(351)	(10) (10) (10) (10) (10) (10) (10) (10)	- (60) - (67) -		299		(1)	- (1) (115)	300	165.0 99.0 99.0 99.0 (3499) (353)	60.0
Battery Storage - Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Juddingler 1 (Load Early Retirement Conversions) Judindingler 1 (Load Early Retirement Conversions) Judindingler 3 Judindingler 4 Hemiston Retire - Hydro Engine - Wind PPA Expres - Wind PPA Exp	11 52 - - - - - 998	(1)		- (175) - (175	(I)	- 500 405 		- (1) - (1)	60.0 -0	(351)	(10) (10) (10) (10) (10) (10) (10) (10)			299		(1)		300	165.0 99.0 99.0 99.0 (3499) (353)	60.0
Battery Storage - Idaho FOT Bart - Surger Bisting Plant Retirements and PPA Termination Bisting Plant Retirements and PPA Termination Bindisdigat (Coul Barty Retirement/Conventions) Bindisdigat (Coul Barty Retirement/Conventions) Bindisdigat 2 (Coul Barty Retirement/Conventions) Bindisdigat 4 (Bindisdigat 4 (Bindisdig	11 52 - - -	(1)		- (175) - (175	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	- 500 405 		- (1) - (1)	60.0 60.0 7.0	(351)	(10) (10) (10) (10) (10) (10) (10) (10)			299			- (1) (115)	300	165.0 99.0 99.0 99.0 10 10 10 10 10 10 10 10 10 10 10 10 10	60.0

Table K.13 - C-Cases, Detailed Capacity Expansion Portfolio

										Capacity	(,										Resource '
P-31C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
xisting Plant Retirements and PPA Termination								(82)													(82)
mig 1 (Coal Early Retirement/Conversions) mig 2 (Coal Early Retirement/Conversions)		-			-	-		- (82)	(82)		-	-	-		-	-		-	-	-	(82)
Jayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	
Jayden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	-	-	-
Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459)		-
Huntington 2		-			-	-		-	-	(74)	-	-	-		-	-	-	-	(450)	-	(74)
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)					-	-		-		(74)			-		-	-	-	-	-	-	(74)
Cholla 4 (Coal Early Retirement/Conversions)			(387)		-	-		-	-	- (74)	-	-	-		-	-	-	-	-	-	(387)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-		-	-	(106)
DaveJohnston 3	-	-	-	-	-	-	-	-		(220)	-	-	-	-		-	-	-	-	-	(220)
DaveJohnston 4	-		-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 1 (Coal Early Retirement/Conversions)		-		-	-	-		(156)	-	-	-	-	-		-	-	-	-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		(280)	 - 		-			(201)			-						-		-	-	(201)
Gadsby 1-6		- (200)	1 -	_	-	-		-	_	-	-	-	-		(356)	-	-	-	-	-	(200)
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	1	-	-	-	-	-	-	-	-	(20)
Retire - Wind	-	-	-	-	-	-	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	-
Expire - Wind PPA		(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA		-	-	-	(1)	(1)		-	-	-	-	-	-		-	- (1)	(35)	(94)	(849)	- (22)	(1)
Retire - Other Coal Ret WY - Gas RePower		247			-	-		-	-		-	(247)	-		-	(1)) -	-	-	(32)	247
Expansion Resources		247						_				(247)				_		_	_	_	247
SCCT Frame NTN				-	- 1	- 1		185	-	- 1	- 1	370	- 1		-	-	- 1	-	-	-	185
SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370	-	
Total SCCT			-	-	-	-	-	185	_	-	-	370	-	-	-	-	-	-	370	-	185
Wind, Djohnston		-	├ - □					-		- T	620	===	- 1	-	-	-		-	-		-
Wind, GO		₩-		-	-	1,920	-	-	-	-	-	883		-	-	-		-	-		1,920
Wind, WYAE Total Wind		+-	+			1,920					620	883	-	_			-		_		1,920
Utility Solar+Stomge - PV - Utah-S						300		-			- 020	-	-	500		-	 	-	-		300
Utility Solar+Storage - PV - GO		1	-	-	-	-	-	-	-		-	149	68	-	-	-		-	-		-
Utility Solar+Storage - PV - Huntington	-				-		-	-	-	-	-	-		-	-	-		-	909	-	-
Utility Solar+Storage - PV - Utah-N			159	64	73	604	-	-	-	-	-	-	-	-	_	-	-	-	_	_	900
Total Solar			159	64	73	904		-	-	-	-	149	68	500	_	-			909		1,200
Demand Response, ID-Cool/WH		₩-		-	-	-	-	-	-	-	-	-	-	-	-	-		-	2.6		-
Demand Response, ID-3rd Party Contracts			-	-	-	-		-	-		-	-	-	5.2	-	-		3.7	1.8	1.8	-
Demand Response, ID-Irrigate Demand Response, ID-Thermostat		-	 		-			-			-	-		- 5.2		-		3./	8.3	1.6	
Demand Response, UT-Cool/WH	4.1		7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6	-
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	-	54.9	70.0	-	-	-	-	8.3	-	5.1	-
Demand Response, WY-Cool/WH		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	1.8	-
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate		-			-	-		-	-			-	-		-	-	-	-	39.4 1.8	-	-
Demand Response, WY-Imgate Demand Response, WY-Thermostat						-		-				-			-	-			18.7	1.2	
Demand Response, UT-Ancillary Services			-		8.3	-	5.3	_					-			_		-	3.2		13.5
Demand Response, WY-Ancillary Services	-	-	-	-	-	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	-	- 1	13.5 3.0
Demand Response Total	4.1		7.0	-	18.1	-	8.2	7.2	-	-	6.7	54.9	70.0	12.0	-	-	7.0	12.0		21.6	44.6
Energy Efficiency, ID	58			- 7 - 68	69	7 68	67	7 68	7	7 62	7 62	56	52	52	6	4 36		3	3 25	3	69 659
Energy Efficiency, UT Energy Efficiency, WY	10			14	15	16	17	18	65 19	18	16	15	13	12	52 11	36		26	25	26	149
Energy Efficiency Total	74			88	91	92	92			87	84	77	72	70	70	49		37	33		876
Battery Storage - Utah-N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105.0	-	-	-	165	300	-
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90.0	-	-	-	75.0	165.0	-
Battery Storage - Idaho		-	-	-	-	-	-	-		-	-	-	-	-	195.0	-	-		-	150.0	-
FOT East - Summer				-	-	-		-	-		46	236	300	230	258	260	300	300	300	300	-
Existing Plant Retirements and PPA Termination											(261)										
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)		-	-		-	-		-			(351)		-		(356)	-	-	-	-	-	-
JimBridger 3			-	-	-	-		-		-	-		-	-	- (330)	_	-	_	-	(349)	-
JimBridger 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(353)	-
Hermiston			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	,	(237)	-	
Retire - Hydro		(1)	(169)	-	(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)		-	(179)
Expire - Wind PPA		-	⊢ - ↓	(175)	-	(41)	-	-	-	-	(75)	(10)	(67)	(20)	(20)	-		(10)	(10)	(11)	(216)
Expire - Solar PPA Expansion Resources						- 1				(2)			(67)	(49)	<u> </u>		(1)	(115)	(175)	(11)	(2)
SCCT Frame WV		T -	- 1	-	- 1	- 1	-	-		- T	- 1	-	- 1	-	- 1	-	- 1	-	443		- T
Total SCCT			-		-	-		-	-	-		-	-		-	-		-	443	-	-
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		-				1.00					354	-	2.2					-	-	400	467
Utility Solar+Stomge - PV - S-Oregon	-		-		-	467 405		-	-		-		33	-	475	-		-			
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	-	-	-	467 405 872	-	-			- - 354	1	33 - 33	-	475 - 834	-	-	-	-	1,102	405 872
Utility Solar+Stomge - PV - Jbridger Utility Solar+Stomge - PV - S-Oregon Utility Solar+Stomge - PV - Yakima Total Solar Demand Response, OR-Ancillary Services	-	-	-		-	405	-	-	-	-	-	-	-	- 8	-	-	-	-	-		
Utility Solar+Storage - PV - S-Orogon Utility Solar+Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	- - - -	-	- - - - -	-	- - - -	405	-	- - -	-	- - - -	354		-	- 8	-	-	-	-	-	1,102	
Utility Solar*Stonge - PV S.Ovegon Utility Solar*Stonge - PV Yalima Total Solar Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, CACOUWH	-		-	-	-	405	-	-	-	-	354	-	33	- 8	-	-	-	- - - -	- - - - 1.5	1,102 - -	
Utility Solart-Storage - PV - St.Oregon Utility Solart-Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-CooUWH Demand Response, CA-Arb Party Contracts	- - - - -		-	-	- - - - - -	405	-	- - - - - -	-	-	354		33	8	-	-			1.1	1,102	872 - -
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Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Airgate Demand Response, CA-Airgate Demand Response, CA-Irrigate Demand Response, CA-Irrigate	-		-	-	-	405			-		354		33	8	-	-	-	-	1.1 4.8 5.8	1,102 - - - - - -	872 - -
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, OR-Cod/WH	-		-	-	-	405			-		354		33	8 -	-		-		1.1 4.8	1,102 - - - - - - -	872 - -
Utility Solari-Stonge - PV - ScOregon Utility Solari-Stonge - PV - Swimm Total Solar Demund Response, OR-Ancillary Services Demund Response, CA-Ancillary Services Demund Response, CA-Ancillary Services Demund Response, CA-And Party Contracts Demund Response, CA-And Party Contracts Demund Response, CA-Anthermostat Demund Response, CA-Anthermostat Demund Response, OR-GodVH Demund Response, OR-GrodVH Demund Response, OR-GrodV			-		- - - - - - - - - - - - - - - - - - -	405			-		354	-	33	8	-		-		1.1 4.8 5.8 3.0	1,102 - - - - - - -	872 - -
Utility Solar-Storage - PV - St.Oregon Utility Solar-Storage - PV - St.Oregon Utility Solar-Storage - PV - St.Oregon Domand Response, ORAncillary Services Domand Response, ORAncillary Services Domand Response, CACold WH Domand Response, CASolar Darry Contracts Domand Response, CASolar Darry Contracts Domand Response, CACold WH Domand Response, ORCold WH Domand Response, WACold WH	- - - - - - - - - - - - - - - - - - -	-	-	-	-	405	-	- - - - - -	-		354		33		-			-	1.1 4.8 5.8 3.0 35.7 13.3 7.7	1,102	872 - -
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, CA-Thermostat Demand Response, OR-Cod/WH Demand Response, OR-Grout Services Demand Response, OR-Cod/WH Demand Response, WA-God/WH			-	-		405	-		-		354	-	33	8	-	-	-	-	1.1 4.8 5.8 3.0 35.7 13.3 7.7 9.9	1,102	872 - -
Utility Solar-Storage - PV - St.Ovegon Utility Solar-Storage - PV - St. Staima Total Solar Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, CA - CodVWI Demand Response, CA - Thermont Demand Response, CA - Thermont Demand Response, CA - Thermont Demand Response, ORIn Party Contracts Demand Response, ORIn Party Contracts Demand Response, ORIn Party Contracts Demand Response, WA - Cod/WI Demand Response, WA - Cod/WI Demand Response, WA - Staip St		-		-	-	405		- - - - - -	-		354		33		-			-	1.1 4.8 5.8 3.0 35.7 13.3 7.7 9.9 8.3	1,102	872 - -
Utility Solar-Stonge - PV - S-Ovegon Utility Solar-Stonge - PV - S-Ovegon Utility Solar-Stonge - PV - S-Ovegon Demand Response, OR-Ancillary Services Demand Response, CA-Co-OVH Demand Response, CA-Ancillary Services Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, OR-Co-OVH Demand Response, OR-And Party Contracts Demand Response, OR-And Party Contracts Demand Response, OR-And Party Contracts Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response, WA-Thermostat		-	-	-	-	405		- - - - - -	-		354		- 33 - 1.9 	- - - - - - - -	-			-	1.1 4.8 5.8 3.0 35.7 13.3 7.7 9.9 8.3 16.6	1,102	872 - -
Utility Solar-Stonge - PV - S.Chegon Utility Solar-Stonge - PV - S.Chegon Utility Solar-Stonge - PV - S.Chegon Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, CACheVII Demand Response, CAAnd Party Contracts Demand Response, CAAnd Party Contracts Demand Response, CAThermostat Demand Response, ORChewy Contracts Demand Response, ORChewy Contracts Demand Response, ORChewy Contracts Demand Response, ORChewy Contracts Demand Response, WAGrid WH Demand Response, WAStonger Demand Response, WAStonger Demand Response, WAThermostat Demand Response, Total		-		-	-	405	-	- - - - - -	-		354	-	33		-			-	1.1 4.8 5.8 3.0 35.7 13.3 7.7 9.9 8.3	1,102	872
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Wisims Demand Response, OR-Ancillary Services Demand Response, CA-CodVH Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, OR-CodVH Demand Response, OR-Group Contracts Demand Response, OR-Group Contracts Demand Response, WA-And Party Contracts Demand Response, WA-God/WH Demand Response, WA-God/WH Demand Response, WA-God-WH Demand Response, WA-Thereats Demand Response, WA-Thereats Demand Response Total Energy Efficiency, CA	- - - - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -			405 872 					354		-333 -1.9 -1.9 	- - - - - - - - - - - - - - - - - - -			- - - - - - - - - - 1	- - - - - - - - - - - - - - - - - - -	1.1 4.8 5.8 3.0 35.7 13.3 7.7 9.9 8.3 16.6 107.7	1,102 	872 - - - - - - - - - - - - - - - - - - -
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Utility Solar-Stonge - PV - S-Ovegon Utility Solar-Stonge - PV - S-Ovegon Utility Solar-Stonge - PV - S-Ovegon Domand Response, OR-Ancillary Services Domand Response, OR-Ancillary Services Domand Response, CA-And Party Contracts Domand Response, CA-And Party Contracts Domand Response, CA-Internactat Domand Response, CA-Internactat Domand Response, OR-And Party Contracts Domand Response, OR-And Party Contracts Domand Response, OR-And Party Contracts Domand Response, OR-And Party Dom		- - - - - - - - - - 2 37 10	10		- - - - - - - - - - - - - - - - - - -	405 872 		- - - - - - - - - - - - - - - - - - -	11				-333 -199 	- - - - - - - - - - - - - - - - - - -	- 834 		- - - - - - - - - - 1 1 25 6	26	1.1 4.8 5.8 3.0 35.7 13.3 7.7 9.9 8.3 16.6 107.7 1	1,102	872 - - - - - - - - - - - - - - - - - - -
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Utility Solar-Storage - PV - S.Chegon Utility Solar-Storage - PV - Stabina Total Solar Domind Response, OR.Ancillary Services Domind Response, OR.Ancillary Services Domind Response, OR.Ancillary Services Domind Response, CA.CholWH Domind Response, OR.CholWH Domind Response, OR.CholWH Domind Response, OR.And Party Contracts Domind Response, OR.And Party Contracts Domind Response, WA.CholWH Domind Response, WA.Arigate Domind Response, WA.Arigate Domind Response, WA.Thermostat Domind Response, VA.Thermostat Do	11	- - - - - - - - - - - - - - - - - - -	10	11		405 872 	12	- - - - - - - - - - 2 41 11 54	11	10		9	-333 -1.9 	- - - - - - - - - - - - 2 30 8	- 834 	6	- - - - - - - - - - - - - - - - - - -	26 5	1.1 4.8 5.8 3.0 35.7 9.9 8.3 16.6 107.7 1 24 4 29	1,102	872 - - - - - - - - - - - - - - - - - - -
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Utility Solar-Storage - PV - S-Ovegon Utility Solar-Storage - PV - S-Ovegon Utility Solar-Storage - PV - S-Ovegon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-CodVII Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Intermostat Demand Response, OR-S-Orby VI Contracts Demand Response, VA-And Party Contracts Demand Response, VA-And Party Contracts Demand Response, VA-And Party Contracts Demand Response, VA-Thermostat	11 52 - - -		10 48 - - - - - - 493 268	11 52 - - - - - 503 303		405 872 - - - - - - - - - - - - - - - - - - -	12 56 - - - -	- - - - - - - - - - - - - - - - - - -	11 52 - - - - - 204 112	10 49 - - 45 - 922 244		9 42 - - - - 1,075 184				6 33 - - - - 1,075	- - - - - - - - - - - - - - - - - - -	26 5 32 - - - - 1,044 5	1.1 4.8 5.8 3.0 35.7 13.3 7.7 9.9 8.3 16.6 107.7 1 24 4 29 -	1,102	872
Littly Solar-Storage - IV- S-Oregon Littly Solar-Storage - IV- V- S-Oregon Littly Solar-Storage - IV- V- Storage Permand Response, CR-Ancillary Services Demmad Response, CR-Ancillary Services Demmad Response, CA-Ancillary Services Demmad Response, CA-CoolWH Demmad Response, CA-CoolWH Demmad Response, CA-Intermostat Demmad Response, CA-Intermostat Demmad Response, CR-CoolWH Demmad Response, CR-CoolWH Demmad Response, CR-CoolWH Demmad Response, CR-Intermostat Demmad Response, CR-Intermostat Demmad Response, WA-And Party Contracts Demmad Response, WA-And Party Contracts Demmad Response, WA-And Party Contracts Demmad Response, WA-Andragate Demmad Response, WA-Andragate Demmad Response, WA-Thermostat Demmad Response, WA-Thermostat Demmad Response, VA-Thermostat Demmad R	11 52 - - - - - - - 998		10 48 - - - - - - 493 268 (573)	11 52 - - - - - - 503		405 872 - - - - - - - - - - - - - - - - - - -	12 56 - - - - - 156		11 52 - - - - - 204 112	10 49 - - 45 - 922		9 42 - - - - - 1,075				6 33 - - - - 1,075 - (156)		26 5 32 	1.1 4.8 5.8 3.0 3.5.7 7.7 13.3 7.7 9.9 8.3 16.6 107.7 1 24 4 29 - - - - - - - - - - - - -	1,102	872

										Capacity	(MW)										Resource
P-36C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)								(82)													(82)
Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	- (62)	(82)	-	-	-	-	-	-	-	-		-	-	(82)
Hayden 1 Hayden 2	-	-	-	-		-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
Hayden 2 Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	- (33)	-	-		-	-	(459)	-	-
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	(450)	-	
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-		-	-	-	-	(74)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	- 1	-	-	-	-	-	-	-	1	-	-	(387)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)		-	-	-	-	-	-		-	-	(99)
DaveJohnston 2 DaveJohnston 3	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106) (220)
DaveJohnston 4	-	-	-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156) (201)	-	-	-	-	-	-	-	-	-	-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	-	-	-	-	- (201)	-	-	-	-	-	-	-	-	-	-	-	-	(280)
Gads by 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-		-	-	-
Retire - Hydro Retire - Wind		-	-	-	-	(20)	-					(40)	-		-	-	-		-	-	(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-		(35)	(94)	(849)		(1)
Retire - Other Coal Ret WY - Gas RePower		247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247
Expansion Resources		2-47																			
SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-		370	-	-	-			,	-	-	185
SCCT Frame WYSW Total SCCT	-	-		-	-			185			185 185	370	-		185 185			-	-	-	185
Wind, Djohnston			-	-	-			-			280	321	20		-						-
Wind, GO	-	-	-	-	-	-	_=_	-	-		-	1,097	-	-	-		-	-	-	-	-
Wind, UT Wind, WYAE	-	-		-	151	1,920	-	-	- :		-	-	-			-	-	-	-	-	1,920
Total Wind	-	-	-	-	151	1,920	-	-	-	-	280	1,417	20	-	-	-	-	-	-	-	2,071
Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	149	-]	-	-		-	-	- ,	500	- 1	-	-	-	-	-	149
Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington	-	-	-	-	-			-			-		- 3				-	-	909	-	-
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N		-	159	64		677	-	-	-	-	-	-	-	-	-	-	-	-	-	_	900
Total Solar	-	-	159	64	-	826	- 1	-	-		-	-	3	500	-		-	-	909		1,049
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-		-	-			-	- :	-			-		-		-		2.6 1.8		-
Demand Response, ID-Irrigate		-		-	-	-	-	-			-		-	5.2					3.7	1.8	-
Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-	-	-		-	-	-	-	_	-	-	8.3		-
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9		-	7.2		-	6.7	-		6.8			7.0		74.1	7.2	28.1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		1.9	-
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	46.7	70.0	-	8.2	-	-	-	-	-	-	8.3		
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts		-	-	-	-	-	-	-	-	-	-	-	-	-	-		-		3.4 39.4		-
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-		-	-	-	-			,	18.7	1.2	
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	8.3	-	5.3 3.0	-		-	-	-	-	-	-	-	-		3.2	-	13.5 3.0
Demand Response Total	4.1	-	7.0	-	18.1	-	8.2	7.2	46.7	70.0	6.7	8.2	-	12.0	1.8	-	7.0	-	163.7		161.2
Energy Efficiency, ID	6 58		6 67	7 68	71	7 68	71	7 68	7 63	7 59	7 57	53	50	6 48	6 49	4 36	32	3 26	3 25		
Energy Efficiency, UT Energy Efficiency, WY	10	10	11	14	15	16	17	18	17	16	15	14	12	12	11	9	8	7	5	5	144
Energy Efficiency Total	74		85	88	94	92	95	93	86	82	79	73	68	65	65	49	45	37	33	31	873
Battery Storage - Utah-N	-	-	-	-		-	-	15.0	105.0	-	-	-		-	-	-	-	-	750.0	-	120
Battery Storage - Utah-S Battery Storage - WYSW		-	-	-	-	-	-	30.0	75.0	-	-	-	-	-	-	-	-	-	300.0	60.0	105.0
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	435.0	-	-
FOT East - Summer Existing Plant Retirements and PPA Termination	-	-	-	-		- 1		77	117	196	195	197	300	197	217	220	225	295	300	300	39
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	- 1	-	(351)	- 1	-	-		- 1	-	- 1	-	-	-	-	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	-	-	-	(356)
JimBridger 3 (Coal Early Retirement/Conversions) JimBridger 4 (Coal Early Retirement/Conversions)	-	-		-	-	-:-		(349)			-						-	-	-	-	(349)
Hermiston	-	-		-			-	-	-		_				_			_			
											-			-	-				(237)	-	-
Retire - Hydro	-	(1)	(169)	-	(1)		-	(1)	-	(7)	-	-	- (6)	-	-	- (75)	-	(1)	-	-	(179)
Retire - Hydro Expire - Wind PPA	-	(1)	(169)	- (175) -	(1) -	- (41) -	-	(1) - -	-	(7) - (2)	- (75)	(10)	- (6) - (67)	- (20) (49)	- (20)	- (75) -	- (1)	(1) (10) (115)	(237) - (10) (175)	-	(179) (216)
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Expansion Resources	-			- (175) -		- (41) -		-		(2)	(75)	(10)	-	(20)	-		- - (1)	(10)	(10)	-	(179) (216) (2)
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Expansion Resources SCCT Frame SO	- - -			- (175) -		- (41)		-	- - -	-	(75)	- (10) -	-	(20)	- (20) -		(1)	(10)	(10)	-	(179) (216)
Retire - Hydro Spire - Wind PPA Spire - Solar PPA Expansion Resources SCCT Frame SO SCCT Frame WV	- - - -			- (175) - - - -		- (41)		-	- - - -	(2)	(75)	- (10) - - -	-	(20)	-		- (1)	(10)	(10)	-	(179) (216) (2)
Reite - Hydro Diprie - Wand PPA Diprie - Solar PPA Diprie	-			- (175) - - - - -			- - - - - -	-	- - - - -	210	(75)	- (10) - - - - - 124	- (67)	- (20) (49) - - - -	- (20) - - 221		(1)	(10)	(10)	-	(179) (216) (2) (2) 210 - 210 932
Reirie - Hydro Eppire - Wind PPA Eppire - Solar PPA Expansion Resources SCCT Frame SO SCCT Frame WO Lithy Solar-Stomge - PV - Jbridger Lithy Solar-Stomge - PV - Sorogon	-			- (175) - - - - - -		- - - - 500	- - - - - - -	- - - - -	- - - - - - -	210 - 210 - 210	(75)		-	(20)	- (20) - - 221 221		- - (1)	(10)	- (10) (175)	- (11)	(179) (216) (2) (2) 210 - 210 932 500
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Solar PPA Espire - Solar PPA Expusion Res ources SCCT Frame SO SCCT Frame WV Total SCCT Littlity Solar-Storage - PV - Bridger Littlity Solar-Storage - PV - S-Oregon Littlity Solar-Storage - PV - - P				- (175) - - - - - - - -	- - - - -		- - - - - - - - -	- - - - -	- - - - - - - -	210 - 210 - 210	(75)		- (67)	- (20) (49) - - - -	- (20) - - 221 221		- - (1)	(10)	(10)	- (11)	(179) (216) (2) (2) 210 - 210 932
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - PV - Bridger Espire - PV - Soragion Fotal Solar - Storage - PV - Soragion Fotal Solar - Storage - PV - Solar - Storagion Fotal Solar - Demand Response, OR-Ancillary Services	-			- (175) - - - - - - - -	- - - - -	- - - - 500 405	- - - - - - - - - -	- - - - -		- (2) 210 - 210 932 - - 932 8	(75)	- - - 124 -	- (67) - - - - - 116	- (20) (49) - - - - 150	- (20) - - 221 221		- (1)	(10)	- (10) (175) - - - - - - 430	- (11)	(179) (216) (2) 210 - 210 932 500 405 1,837 8
Reirie - Hydro Eppire - Wind PPA Eppire - Solar PPA Eppire - Solar PPA Expansion Resource SCCT Frams 60 SCCT Frams 60 SCCT Frams WV Total SCCT Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - Vakims Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-			- (175)	- - - - -	- - - - 500 405		- - - - -		- (2) 210 - 210 932 932 8 1.9	(75)	- - - 124 -	- (67) - - - - - 116	- (20) (49) - - - - 150	- (20) - - 221 221		- (1)	(10)	- (10) (175) - - - - - - 430	- (11)	(179) (216) (2) 210 - 210 932 500 405 1,837 8 8
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - PV - Bridger Espire - PV - Sorgion Espire - PV - Sorgion Espire - PV - Solar PPA Espire - PV - Sol	-			- (175)	- - - - -	- - - - 500 405	-	- - - - -	-	- (2) 210 - 210 932 - - 932 8	(75)	- - - 124 -	- (67) - - - - - 116	- (20) (49) - - - - 150	- (20) - - 221 221		- (1)	(10)	- (10) (175) 430 430 	- (11)	(179) (216) (2) 210 - 210 932 500 405 1,837 8
Retire - Hydro Espire - Wand PPA Espire - Solar PPA Espire - PV - Phridger Espire - PV - Solar PPA Espire - PV - PV - Solar PPA Espire - PV - P	-			- (175)	- - - - -	- - - - 500 405		- - - - -		- (2) 210 - 210 932 932 8 1.9 4.8	(75)	- - - 124 -	- (67) - - - - - 116	- (20) (49) - - - - 150	- (20) - - 221 221		- (1)	(10)	- (10) (175) - - - - - - 430	- (11)	(179) (216) (216) (210)
Retire - Hydro Spire - Solar PPA SCCT Frame SO SCCT Frame SO SCCT Frame WV Folal SCCT Littly Solar-Storage - PV - Bridger Littly Solar-Storage - PV - Scoregon Littly Solar-Storage - PV - Scoregon Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, OR-Ancillary Services	-			- (175)	- - - - -	- - - - 500 405	-	- - - - -		- (2) 210 - 210 932 932 8 1.9 4.8 13.3	(75)	- - - 124 -	- (67) - - - - - 116	- (20) (49) - - - - 150	- (20) - - 221 221		- (1)	(10)	- (10) (175) 430 430 3.0 26.8	- (11)	(179) (216) (210) 210 210 932 500 405 1,837 8 1.9 4.8
Reiter - Hydro Bepire - Wand PPA Bepire - Solar PPA Bepire - Solar PPA Bepire - Solar PPA Bepire - Solar PPA Beparsion Resources SCCT Frame SO SCCT Frame SO SCCT Frame WV Total SCCT Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Socgon Utility Solar-Storage - PV - Solar-				-	- - - - - - - - - - - - - - - - - - -	- - - - 500 405				- (2) 210 - 210 932 932 8 1.9 4.8	- (75)	- - - 124 - - 124 - - - -	- (67) - - - - - 116	- (20) (49) 	- (20) - 221 221 2			(10)	- (10) (175) 	- (11)	(179) (216) (216) (210)
Reiter - Hydro Espire - Wand PPA Espire - Solar PPA Espire - PV - Bridger Utility Solar - Storage - PV - Pridger Utility Solar - Storage - PV - Sorogon Demmad Response, (A - Ancillary Services Demmad Response, (M - Arrigate Demmad Response, (M - Arrigate) Demmad Response, (M - Arrigate) Demmad Response, (M - Arrigate)				-		- - - 500 405 905 - - - - -				- (2) 210 932	- (75)	- 124 - 124 	- (67)	- (20) (49) 	- (20) - 221 221 221 			(10) (115)	- (10) (175)	- (11)	(179) (216) (210) - 210 932 500 405 1,837 8 1.9 4.8 - - - 13.3 5.2 11.3
Reitie - Hydro Bepire - Wand PPA Bepire - Solar Solar Storage - PV - Bridger Unitly Solar Storage - PV - Solregon Denmand Response, OR-Ancillary Services Denmand Response, OR-Ancillary Services Denmand Response, OR-And Party Contracts Denmand Response, OR-Indigate Denmand Response, WA-Thermostat Denmand Response, VA-Thermostat	- - - - - - - - - - - - - - - - - - -			-						- (2) 210 210 932	- (75)		- (67)	- (20) (49) (49)	- (20) - 221 221 221 	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	(10) (115)	- (10) (175)	- (11) - (11)	(179) (216) (2) (2) (2) (2) (2) (2) (2) (3) (405
Reitie - Hydro Bapire - Wand PPA Bapire - Solar PPA Bapire - Solar PPA Bapire - Solar PPA Banasian Resources SCCT Frame SO SCCT Frame SO SCCT Frame WV Total SCCT Utility Solar-Stomge - PV - Bridger Utility Solar-Stomge - PV - Soregon Utility Solar-Stomge - PV - Soregon Utility Solar-Stomge - PV - Solar-Stomge -		- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	-		- - - - 500 405 905 - - - - - - - -	43		39	- (2) 210 210 932 932 8 1.9 4.8 13.3 5.2 11.3 43.9 2 37	- (75)	- 124 - 124 	- (67)	- (20) (49) 	- (20) - 221 221 221 			(10) (115)	- (10) (175)	- (11)	(179) (216) (2) (2) (2) (2) (2) (2) (2) (2) (3) (4) (5) (6) (405)
Reities - Hydro Eppire - Wind PPA Eppire - Solar PPA Expusion Resources SCCT Frame SO SCCT Frame SO SCCT Frame WV Total SCCT Utility Solar-Stonge - PV - Bridger Utility Solar-Stonge - PV - Stongen Demmad Response, CA-Ingiate Demmad Response, OR-And Party Contracts Demmad Response, WA - Ingiate Demmad Response, WA - Thermostat Demmad Response - Utal Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, VA Energy Efficiency Total	- - - - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -						- (2) 210 210 932		- 124 - 124 	- (67)	- (20) (49) - (4	- (20) - 221 221 221 	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	(10) (115)	-0 (109) (175) (17	- (11) (11)	(179) (216) (216) (2) (2) (2) (2) (2) (2) (2) (3) (3) (4) (5) (4) (5) (4) (5) (4) (6) (7) (8) (1) (8) (1) (8) (1) (8) (1) (8) (1) (8) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1
Reitie - Hydro Espire - Wain PPA Espire - Solar PPA Espire - Solar PPA Espiration Resources SCCT Frame SO SCCT Frame SO SCCT Frame SO SCCT Frame WV Total SCCT Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Sorregon Utility Solar-Storage - PV - Wakim Total Solar Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA drigate Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, OR-Arrigate Demand Response, OR-Irrigate Demand Response, OR-Ir			- - - - - - - - - - - - - - - - - - -			- - - - - - - - - - - - - - - - - - -	43 12		39 11	- (2) 210 - 210 210 932 932 8 1.9 94.8 11.3 13.3 43.9 2 37	- (75) 	- 124 - 124	- (67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49	- (20) - 221 221 		- - - - - - - - - - - - - - - - - - -	(10) (115)	- (10) (175) (175) 	- (11) (11)	(179) (179)
Reitie - Hydro Beprie - Wand PPA Beprie - Solar			- - - - - - - - - - - - - - - - - - -				43 12		39 11	- (2) 210 - 210 210 932 932 8 1.9 94.8 11.3 13.3 43.9 2 37	- (75) 		- (67)	- (20) (49) - (4	- (20) - (20) - (22) -			(10) (115) 	- (10) (175) (175) 	- (11) (11)	(179) (2) (2) (2) (2) (2) (3) (4) (2) (2) (4) (2) (2) (2) (2) (2) (2) (2) (2) (2) (3) (4) (4) (5) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4
Reitie - Hydro Beprie - Wand PPA Beprie - Solar PPA Sepries - Solar PPA Sepries - Solar PPA Sepries - Solar PPA Sepries - Solar PPA SCCT Frame SO SCCT Frame SO SCCT Frame SO SCCT Frame SO SCCT Frame WV Total SCCT Unitly Solar-Storage - PV - Bridger Unitly Solar-Storage - PV - Sorregon Unitly Solar-Storage - PV - Sorregon Unitly Solar-Storage - PV - Solar-Storage						- - - - - - - - - - - - - - - - - - -	43 12		39 11	- (2) 210 - 210 210 932 932 8 1.9 94.8 11.3 13.3 43.9 2 37	- (75) 	- 124 - 124	- (67)	- (20) (49) (49) (49) (49) (49) (49) (49) (49	- (20) - 221 221 		- - - - - - - - - - - - - - - - - - -	(10) (115)	- (10) (175) -	- (11)	(179) (179)
Reitie - Hydro Beprie - Wand PPA Esprie - Solar PPA Esprie - Solar PPA Espransian Resources SCCT Frams SO SCCT Frams SO SCCT Frams WV Total SCCT Citility Solar-Storage - PV - Bridger Citility Solar-Storage - PV - Sorgon Demand Response, QR-Ancillary Services Demand Response, QR-Ancillary Services Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, QR-Arigate Demand Response, QR							43 12 56 - - - - 98		39 11 52 - - - 1,075	- (2) 210 210 210 932 - (2) 932 8 1.9 932 8 1.9 1.9 1.9 1.9 1.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	- (75) 		- (67) - (67) - 116 - 116	- (20) (49) - (4	- (20) - (20) - (22) -			(10) (115) 	- (10) (175) (175) 	- (11)	(179) (179)
Retire - Hydro Repire - Wand PPA Eppire - Solar So							43 12 56 - - -		39 11 52 - - - 1,075 630	- (2) 210 - (2) 210 - (2) 210 - (2) 210 - (2) 210 - (2) 210 - (2) 21 - (2)			- (67) - (67) - 116 - 116 - 116	(20) (49) (49) (49) (49) (49) (49) (49) (49	-(20) -(20) -(20) -(20) -(21)			(10) (115) (- (10) (175)	- (11)	(179) (210)
Retire - Hydro Sprire - Solar PPA SCCT Frams SO SCCT Frams SO SCCT Frams WV Total SCCT Littly Solar-Storage - PV - Bridger Littly Solar-Storage - PV - Sorgeon Littly Solar-Storage - PV - Sorgeon Littly Solar-Storage - PV - Sorgeon Demand Response, OR-Ancillary Services Demand Response, OR-Ancil							43 12 56 - - - - 98		39 11 52 - - - 1,075	- 2 - 210 - 210 - 210 - 932 	- (75) 		- (67) - (67) - 116 - 116	- (20) (49) - (4	- (20) -			(10) (115) (- (10) (175)	- (11) - (12) - (13) - (14) - (15) -	(179) (179)

										Capacity	(MW)											Resource
P-45C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2035	2036	2037	2038	10-year
disting Plant Retirements and PPA Termination								(82)														(82
raig 1 (Coal Early Retirement/Conversions) raig 2 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	- (82)	(82)	-	-	-	-		-	-	-		-		-	(82
ayden 1 ayden 2		-		-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	-
untington 1			-	-		-	-	-	-	-		-	- (33)		-		-	-	-	(459)	-	
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	-	-	(74)	-	-	-		-	-	-		-	(450)	-	- (74
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	-	(74
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1		-	(387)	-	-	-	-	-	-	(99)	-	-	-		-	-	-		-	-	-	(387
DaveJohnston 2	-		-	-		-	-		-	(106)	-	-	-	-	-	-			-		-	(106
DaveJohnston 3 DaveJohnston 4		-	-	-	-	-	-	-	-	(220)	-	-	-		-	-	-		-	-	-	(330
Naughton 1 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	-	(156
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	-	-	-	-	(201)	-	-	-	-	-		-	-	-		-	-	-	(201
Gads by 1-6		- (280)	-	-		-	-	-	-	-	-		-		(356)	-	-	-	-		-	-
Retire - Hydro Retire - Wind	-		-	-	-	(20)	-	-	-	-	-	(40)	-		-	-	-		-	-	-	(20
Expire - Wind PPA		(27)	(17)	(49)	(0)			(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80) -		(60)	(80)	-	(160
Expire - Solar PPA Retire - Other	─		-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	- (1	(35	(3:) (94)	(849)	(32)	(1
Coal Ret_WY - Gas RePower		247	-	-		-	-	-	-	-	-	(247)	-	_	-	- (1	-		-	-	(32)	247
Expansion Resources								106							10#							
SCCT Frame NTN SCCT Frame WYSW	-	+	-	-	-	-	-	185	-	-	-	185	-		185	-	-		-	370	-	185
Total SCCT			-	-	-	-	-	185	-		-	185	-	-	185	-	-	-	-	370	-	185
Wind, Djohnston Wind, GO		-		-	-	-	-	-	-		620	1,045		-	-	-	1	-	-	-	-	-
Wind, UT Wind, WYAE			-	-	18	1 920	-	-	-	-	-		-	-	-	-	-	-	-	-	-	1 920
Wind, WYAE Total Wind				-	18	1,920	-	-	-		620	1,045		-	-	-	-	-	-	-	-	1,920
Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	282	-	-	-	-	-	-,0.0	500	-	-	-	-	-	-	-	-	282
Utility Solar+Storage - PV - WYSW Utility Solar+Storage - PV - GO	-	-	-	-		-	-	-	-	-	-	- 55			38	-	-	-	-	-	-	-
Utility Solar+Storage - PV - Huntington					-							-							-	899	10	-
Utility Solar+Storage - PV - Utah-N Total Solar		+	159 159	64	54 54	623 904	-	-	-	<u> </u>		- 55	500		- 38	-	1		-	- 899	- 10	900
Demand Response, ID-Cool/WH			-	-		-						-	-		-	-				2.6	-	- 1,182
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	-		-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	-	1.8	1.8	-
Demand Response, ID-Irrigate Demand Response, ID-Thermostat			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	3.7 8.3	1.8	-
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	7.0	-	74.1	7.2 2.6	28.1
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate		+	-	-	-	-		-	-	-	-	-	-		-	-	-		-	74.1	1.9	-
Demand Response, UT-Thermostat			-	-	-	-	-	-	-	-	116.7	8.2	-	-	-	-	8.3	8.3	-		5.1	-
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts				-	-	-	-	-	-	-	-	-	-		-	-	-		-	3.4 39.4	1.8	-
Demand Response, WY-Irrigate		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8 18.7	-	-
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services		-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	-	-	-		-	18.7 3.2	1.2	13.5
Demand Response, WY-Ancillary Services		-	-	-	-	-	3.0	-	-	-	-		-	-	-	-			_	-		3.0
Demand Response Total Energy Efficiency, ID	4.1	- 6	7.0	- 7	18.1 7	- 7	8.2	7.2	- 7	- 7	123.3	8.2	- 6	12.0	- 6	- 4	15.3	15.3	- 2	157.1	21.6	44.6
Energy Efficiency, UT	58	65	67	68	69	66	67	65	63	62	57	56	52	50	49	36		32	25	20		650
Energy Efficiency, WY Energy Efficiency Total	10 74			12 86	15 91	16 89	16 91	18 90	18 88	18 87	16 80	15 77	13 71	12	11 66	9 49	9 45	44	7	5 28	5	145 863
Battery Storage - Utah-N		- 02	-	-		-	- '	-	-	-	-	- '		-	30.0	-	-	-	-	225	330	-
Battery Stomge - WYSW Battery Stomge - Idaho	-	-	-	-		-	-	-	-	-	240.0	45.0	-	-	135.0	-	-	-	-	-	90.0 180.0	-
FOT East - Summer	-	-	-	-	-	-	-	-	-	109	225	300	300	252	289	292	300	300	300	300	300	11
Existing Plant Retirements and PPA Termination						(351)																
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	+	+		-	-	(351)	-	-	-	-	(356)	-	-		-	-	-			-	-	(351
JimBridger 3	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	(349)	-
JimBridger 4 Hermiston		+	-	-		-	-	-	-	-	-	-	-	-	-	-	-		-	(237)	(353)	-
Retire - Hydro		(1)	(169)		(1)	1	-	(1)	-	(7)	-	-	(6)	-	-	(75) -	-	(1)	-	-	(179
Expire - Wind PPA Expire - Solar PPA				(175)	-	(41)	-	-	-	- (2)	(75)	(10)	(67)	(20) (49)	(20)	-	- 0	- 0	(10)) (115)	(10) (175)	(11)	(216
Expansion Resources																		,				,
SCCT Frame WV Total SCCT	-	-		-	-	-	-	-	-		-	-			-	-	-		-	443 443		-
Utility Solar+Stomge - PV - Jbridger		-	-	-	-	354	-	-	-	-	359	-	-	-	-	-	-	-	-	-	702	354
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-		-		500 405	-	-	-		-	-	- 66	409	-	-	-	-	430	-	-	500 405
Total Solar				-		1,259					359		66	409	_				430		702	1,259
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services		-		-		-	-		-	<u> </u>	1.9	-	<u> </u>	-	-	-	-		-	-		
Demand Response, CA-Cool/WH		-	-	-	-			-	-		-				-	-	-			1.5	-	
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate		-		-		-		-	-		-	-		-	-					1.1	-	-
Demand Response, CA-Thermostat				-				-												5.8		
Demand Response, OR-Cool/WH	├	-		-	-	-	-	-	-		-	-		-	-	-	-		-	3.0 35.7	-	-
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate		-			-			-			-			-						13.3		
				-		-	-		-	-					-	-	-		-	7.7 9.9		-
Demand Response, WA-Cool/WH	-	+		-	-	-	-	-	-	 - 	-	-			-	-	+ -		-	9.9 8.3	-	-
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-		-	-	-	-	-	-	-	-	9.4	-	-	-	-	-	-	-	-	16.6	-	-
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate Demand Response, WA-Thermostat	=	-			-		- 2	- 2	- 2	- 2 37	9.4 2 33	- 2	2 30	- 2	- 2	- 1	1	-	- 1	107.7		- 18
Demand Response, WA-Gool/WH Demand Response, WA-Jid Party Contracts Demand Response, WA-Irrigate Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA	- 1	- 2	- 2	2	2	2.1																
Demand Response, W.AGol/WH Demand Response, W.Adr Party Contracts Demand Response, W.Adrigate Demand Response, W.ATriemostat Demand Response Total Energy Efficiency, CA Energy Efficiency, OR	- - 1 40	34	37	2 36	39	39	43	41				31		29	26	26	24			22	21	383
Demand Response, W.ACool/WH Demand Response, W.AStraper Demand Response, W.AStraper Demand Response, W.AThermostat Demand Response, W.AThermostat Demand Response Total Inengy Efficiency, C.A. Inengy Efficiency, C.A. Inengy Efficiency, C.A. Inengy Efficiency, C.A.	40 11	34 9	37 10	36 11	39 12	12	12	41 11	11	10	9	9	8	29 8 38	8	6	24		. 5	22 4	21	109
Demand Response, W.ACool/WH Demand Response, W.Adriparty Demand Response, W.Adriparte Demand Response, W.AThermostat Demand Response, W.AThermostat Demand Response Total Bengy Efficiency, C.A. Energy Efficiency, C.A. Energy Efficiency, W.A. English Efficiency, W.A. English Efficiency	40	34 9	37 10	36	39			41	11	10 49 75	9 44	9 42		29 8 38	20	20	24		. 5	22	21	109 509 75
Demand Response, W.A. Cool/WH Demand Response, W.A. September Sept	40 11	34 9	37 10	36 11	39 12	12	12	41 11	11	10 49	9 44 30 75	9 42	8	29 8 38 - -	8 35 -	6	24		. 5	22 4	21 4 26	109 509 75
Demand Response, W.A. Cool/WH Demand Response, W.A. Star Party Contracts Demand Response, W.A. Star Party Contracts Demand Response, W.A. Thermostat Demand Response, W.A. Demand Dem	40 11	34 9	37 10	36 11	39 12	12	12	41 11	11	10 49 75 15	9 44	9 42	8	29 8 38 - - -	8	6	24		. 5	22 4	21 4 26	109 509 75 15
Demand Response, W.ACool/WH Demand Response, W.AIrigate Demand Response, W.AIrigate Demand Response, W.AIrigate Demand Response, W.AThermostat Demand Response, W.AThermostat Demand Response Total Bengy Efficiency, CA Energy Efficiency, CA Energy Efficiency, W.A Entry Stonage - Willamette Valley Battery Stonage - Vallamette Valley Battery Stonage - Vallamette Battery Stonage	40 11 52 - -	34 9 45	37 10 48 - - -	36 11 48 - - -	39 12 53 - - -	12 52 - - -	12 56 - - - -	41 11 54 - -	11 52 - - -	10 49 75 15 - - 90	9 44 30 75 60 120	9 42 - - - -	8 40 - - - -	-	35	6 33 - -	32 32	32	32	22 4 27 - - -	21 4 26 45 - - 60	109 509 75 15 - - 90
Demand Response, W.ACool/WH Demand Response, W.Adriparty Demand Response, W.Adriparts Demand Response, W.Adriparts Demand Response, W.AThermostat Demand Response, W.AThermostat Demand Response Total Beneyl Efficiency, C.A. Energy Efficiency, C.A. Energy Efficiency, V.A. Energy Efficiency, W.A. Energy Effi	40 11	34 9 45 - - - - 719 131	37 10 48 - - - - - - 493 268	36 11 48 - - - - - - - 503 303	39 12 53 - - - - - 498 314	12 52 - - - - - 158 47	12	41 11 54 - - - 209 58	111 52 - - - - 283 107	10 49 75 15 - - 90 1,075 239	9 44 30 75 60 120 - 1,075 232	9 42 - - - - 1,075 193	8 40 - - - - 1,075 218	1,075	8 35 - 15 - 1,075 81	- - - - 1,075	24 6 6 6 7 32 	1,066	5 32 - - - - - - - - - -	22 4 27 - - - - 1,075	21 4 26 45 - 60 - 1,075	109 509 75 15 - - 90 509
Demund Response, W.ACool/WH Demund Response, W.AInd Purty Contracts Demund Response, W.AInd Purty Contracts Demund Response, W.AInfiguate Demund Response, W.AInfiguate Demund Response Total Bernard Response Total Battery Stonage - SClipson Battery Stonage - SClipson Battery Stonage - SClipson Battery Stonage - Portland DC Battery Stonage - Valiaw Mulla Battery Stonage -	40 11 52 - - - - - 998 151	34 9 45 - - - 719 131 (61)	37 10 48 - - - - - 493 268 (573)	36 11 48 - - - - - - 503	39 12 53 - - - - - 498	12 52 - - - - 158 47 (412)	12 56 - - - - - 153	41 11 54 - - - 209 58 (505)	111 52 - - - 283 107 (85)	10 49 75 15 - - 90 1,075 239 (912)	9 44 30 75 60 120 - 1,075 232 (449)	9 42 - - - 1,075 193 (396)	8 40 - - - - 1,075 218 (350)	1,075	8 35 - 15 - 1,075	- - - 1,075 4 (156	1,066 1 1,066 1 1,066	1,066	5 32 - - - - - - - 967 - (280)	22 4 27 - - - 1,075 - (2,260)	21 4 26 45 - - 60 - 1,075 - (745)	383 109 509 75 15 - - 90 509 167

Annual Additions, Short Term Resources | 1,49 | 850 | 761 | 806 | 812 | 205 | 207 | 267 | 391 | 1,425 | 1,532 | 1,508 | 1,593 | 1,485 | 1,446 | 1,371 | 1,584 | 1,267 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375

P-46C										Capacity											Resourc
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
risting Plant Retirements and PPA Termination raig 1 (Coal Early Retirement/Conversions)	+	-	- 1	-	- 1	- 1		(82)	- 1	- 1	-	- 1	- 1	-	-	-	- 1	-	- 1	-	(82
mig 2 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	-	(82)	-	-	-	-		-	-	-	-	-	-	(82
ayden 1		-	-	-	-	-	-	-	-	-	-	-	(34)	-	-	-	-	-	-	-	-
ayden 2 untington 1	+	-			-	-		-	-		-	-	(33)	-	-	-		-	(459)	-	
untington 2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-
olstrip 3 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74
olstrip 4 (Coal Early Retirement/Conversions) holla 4 (Coal Early Retirement/Conversions)	+	-	(387)		-	-		-	-	(74)	-	-	-	-	-	-	-		-	-	(74
aveJohnston 1		-	- (387)		-			-	-	(99)	-	-	-		-		-		-	-	(99
aveJohnston 2		-	-	-	-		-	-	-	(106)	-	1	-	_	-	-	-		-	-	(106
aveJohnston 3		-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220
aveJohnston 4 aughton 1 (Coal Early Retirement/Conversions)		-	-		-	-		(156)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330
aughton 2 (Coal Early Retirement/Conversions)	+ -	-	-		-			(201)	-		-	-			-		-	-		-	(201
aughton 3 (Coal Early Retirement/Conversions)	<u> </u>	(280)	-	-	-	-	-	- 1	-	-	-	1	-	-	-	-	-	-	-	-	(280
adsby 1-6		-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-
etire - Hydro etire - Wind	+ -		-			(20)		-				(40)			-		-			-	(20
pire - Wind PPA		(27)	(17)	(49)	(0)	-		(65)	(3)	_	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160
pire - Solar PPA		-	- 1	-	(1)	(1)	-	-	-	-	-	-	-		-	-	(35)	(94)	(849)	-	(1
etire - Other			-	-	-	-	-	-	-	-		-	-	-	-	(1)			-	(32)	247
oal Ret_WY - Gas RePower		247	- 1			-		-	-		-	(247)		-	-	-		-	-		247
epansion Resources CCT Frame NTN		-			- 1	- 1		185	- 1	- 1	-	370	- 1	-		-	- 1	-	- 1	-	185
CCT Frame WYSW		-	-	-	-	-	-	-	-	185	185	-	-	-	-	-	-	-	-	-	185
otal SCCT					-	-	-	185	-	185	185	370		-	-	-	-	-	-		370
7ind, Djohnston 7ind, GO	+	-		-	-	-	-	-	-	127	493	1,091	-	-	-	-	-	-	-	-	127
md, GO /ind, UT	+==	-	 		294				-		-	1,091		-		-		-		-	294
ind, WYAE	1				-	1,920	_		-		_		_	_			-	-	-	-	1,920
otal Wind			-	-	294	1,920	-	-	-	127	493	1,091	-	-	-	-	-	-	-		2,341
tility Solar+Storage - PV - Utah-S	+	-	├ - ⊤		-	6	-			- 1	-	- 1	500	-	100			-	-	-	6
tility Solar+Storage - PV - WYSW tility Solar+Storage - PV - GO	+	 	 	-							-		- 9		- 100	-	-	-		-	1
tility Solar+Storage - PV - Huntington	+ =		-	-		-					-	-	- 1	-	-	-	-	-	909		
tility Solar+Storage - PV - Utah-N	-	-	159	64	-	677	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900
otal Solar		-	159	64	-	683	-	-	-	-	-	-	509	-	100	-	-	-	909		906
emand Response, ID-Cool/WH emand Response, ID-3rd Party Contracts	-	-	-		-	-		-	-	-	-	-	-	-	-	-	-	-	2.6 1.8		-
emand Response, ID-Irrigate	+ -		_		-			-			-	-		5.2	-			-	3.7		-
emand Response, ID-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-
emand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	1	-	6.8	_	-	7.0	-	-	7.2	28.1
emand Response, UT-3rd Party Contracts	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6 1.9	-
emand Response, UT-Irrigate emand Response, UT-Thermostat	+	-			-	-		-	-	116.7	-	8.2		-	-	-		-	8.3	5.1	116.7
emand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4		-
emand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.4	-	-
emand Response, WY-Irrigate		-	-	-	-	-	-	-	-	-	-	-	-		1.8	-	-	-	18.7	-	-
emand Response, WY-Thermostat emand Response, UT-Ancillary Services	+		-		8.3		5.3		-		-		-	-	-		-	_	3.2	-	13.5
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mbiddger 1 (Coal Early Retirement/Conversions) mbiddger 2 (Coal Early Retirement/Conversions) mbiddger 3 (Coal Early Retirement/Conversions) mbiddger 4 (Coal Early Retirement/Conversions) mbiddger 4 (Coal Early Retirement/Conversions) emistion give - Molary Coal Early Retirement/Conversions) emistion give - Molary Coal Early Retirement/Conversions) emistion give - Molary Coal give - Molary	11 52 - - - - - - 998 151	- (1) - (1)			(1)	(41) -1 -2 -3 -3 -405 -3 -3 -4 -4 -4 -4 -4 -4 -5 -6 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7	12 56 - - - -	- (349) (3430) (3533) - (11) - (1) -	11 52 - 30 - - - - 650 85		(351)		(6) (67) (67) (67) (67) (67) (67) (67) (-(356) -(20) -(20) -(443) -(44	7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	- (10) (115)	- (237) - (10) (175) - (10) (175) - (10) (175) - (10) - (1		
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## 1-4-1											Capacity	(MW)										Resource Tot
Same from the content of the content	P-46J23C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	
STATE AND ALL		2019	2020	2021	LULL	2025	2024	2023		2027	2020	2023	2030	2051	2032	2000	2034	2000	2030	2037	2030	
Margin M	Craig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	- (92)	-	-	-	-	-	-	-	-	-	-	-	
Second		-	-	-	-	-	-	-	-	- (62)	-		-	(44)	-	-	-	-	-	-	-	- (82)
Campaign		-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	-	-	-
Color Colo	Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459)	-	-
Scheller Anderscheiner Scheller (1985)	Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-		-	-	-	(74)		-			-		-	-	(430)	-	(74)
CAMARDAM 1	Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	_	-	-	-		_	-	_	-	-	-	-	-	-	-	(74)
Column C		-	-	(387)	-	-	-	-	-	-	- (00)	-	-	-	-	-	-	-	-	-	-	(387)
Company		-	-	-	-	-		-	-	-			-			-		-	-		-	
Control of Control o		-	-	-	-	-	-	-	-	-	(220)	-	-	-		-	-	-	-	-	-	(220)
School February 1 - 1	DaveJohnston 4	-	-	-	-	-	-	-	- (150)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Scheller Sch	Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-		-	-		-	-	-	-	-	-	-	-		(201)
Care	Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)
Care No.	Gads by 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-
All Part of March 1		-	-	-	-	-	(20)	-	-	-	-		(40)	-	-	-	-	-	-	-	-	(20)
Color Colo	Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)		(200)	(45)	(181)	(80)	-				(160)
Series Control of the Control of Series Control of Cont	Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1)
Control Cont	Retire - Other	-	247	-	-	-	-	-	-	-	-	-	(2.47)	-	-	-	(1)	-	-	-	(32	247
CATAMAN IN A SALE OF THE SALE		-	247				-			-			(247)	-	_	-	-			-		247
Control	SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	185
Column		-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Section		-	-	-	-	-	-	-		-	620		-	-	-	-	-	-	-	-	-	
Series Control	Wind, GO										-		1,096									-
Column C	Wind, UT	-	-	-	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Description Company		-	-	-	-	204		-	-	-		-	1.006	-	-	-	-	-	-	-	-	
Column C		-	-	-	-	- 294		-	-	-	620	-	1,096	-	500	-	-	-	-	-	-	
College Principage Princi	Utility Solar+Storage - PV - WYSW	-	-		-	-		-	-	-	-						-	-	-			- "
Column C	Utility Solar+Storage - PV - GO	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-
Table		-	 -	150	- 64		677	-	-	-				-	-	-	-	-	-	909	-	- 900
Section Control Cont		<u> </u>						-	-	-	-			- 4	500	100	-	-	-	909	-	
Second Expenses (March Personance)	Demand Response, ID-Cool/WH	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	2.6		-
Second Expenses of Personants	Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Common Agriculture 4	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-			-
Same Integrated with Proceedings 1		4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-		6.8	-	-	7.0	-		7.2	28.1
Demail Agency And Processing	Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1		-
Second Margines W. Verder William Second	Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	1.9	
Second Registry Commons		-	-	-	-	-	-	-	-	-	- 116.7		8.2	-	-	-	-	-	-	3.4	5.1	- 116.7
Command Expresses No. 4	Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.4	-	-
Common Response (1)	Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-		-	-	-	1.8	-	-	-	-	-	-
Company Department	Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	83	-	- 53		-	-	-	-	-	-	-	-	-	-	3.2	1.2	13.5
The Design of Control The	Demand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0		-	-	-	-	-	-	-	-	-	-	-	-	3.0
Congress					-	18.1	-	8.2	7.2	-	116.7	6.7		-	12.0		-	7.0	-			
Company No. 10 10 11 12 15 16 16 17 18 17 15 15 14 13 13 13 13 15 15 16 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 18	Energy Efficiency, ID	6	67		7	7	7	67	7	7	62	7		52	6	52	30	36	32			68
Description 196 183 185 186 191 190 191 185 190 187 177 177 172 190 195 190 185 190 185 190 185 190 185 190 185 190 185 190 185 190 185 190 185 180 18	Energy Efficiency, WY						16		17	18	17		14			11			7	5	5	
Change Warm Change War		74	83	85	86	91	90	91	88	90	87	77	77	72	69	70	53	48	43	34	35	865
Charles Char		-	-	-	-	-	-	-	-	-	- 20.0	-	-	-	-	- 20.0	-	-	-	420.0	-	- 20.0
Total Survey - - - - - - - - -	Battery Stomge - Idaho	-	-	-	-	-	-	-	-	-	30.0	45.0	-	-	-	60.0	-	-	-	285.0	45.0	30.0
Indicated Continue		-	-	-	-	-	-	-	-	-	226	239	164	300	203	247	250	267	300	300	300	23
Indicating A Continue Retirement Conversion - - - - - - - - -	Existing Plant Retirements and PPA Termination					, ,				_	, ,								, ,			
Indicating A Coal fair Retinement Conversion - - - - - - - - -		_	-	-		-	-	-	-	_	-	(351)	-	-		(356)		-	-		-	
Definition Color	JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	(349)	-	-	-	-		-		-	(330)	-	-	-		-	(349)
Enter: Mysles	JimBridger 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	(353)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(353)
Depart Synch PMA	Hermiston	-	- /**		-	- /**	-	-	- /**	-	- /**	-	-	-	-	-	7975	-	- /**	(237)	-	(170)
Express Solor PPA. - - - - - - - - -	Expire - Wind PPA	<u> </u>	- (1)	(169)	(175)	(1)	(41)	-	- (1)	-		(75)	(10)	-	(20)	(20)	(/5)	-	(1)	- (10)	-	(216)
Sector S	Expire - Solar PPA	_	<u> </u>		-		- (-1)		<u> </u>		(2)	- (, 3)	- (10)	(67)	(49)			(1)	(115)	(175)	(11	(2)
Total Section Color Colo	Expansion Resources																					
Unity Schort Storage - PV - Schogen		-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-
Unity Solar-Storage = N - S. Cregors		-	-		-	-	620	-	-	-	-		-	-	-				-	-	-	620
Total State	Utility Solar+Storage - PV - S-Oregon	-	-		_	-	500	_		-	-		-	3	127						-	500
Demand Response, WA Ancellary Services - - - - - - - - -			-	_	-			_	-	_	-	-	-		- 107	- 425	-		-			
Demand Response, W.A. Ansellary Services - - - - - - - - -		-	-	-	-		-,	-	-	-	- 8			3			-	-			-	
Demand Response, CA-Air Party Continues																				-		
Demand Response, OR. Conditions, OR. Conditi	Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-
Demand Response, ORA-Demand	Demand Response, CA-Irrigate	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	
Demand Response, ORA-Bright Common Response, ORA-Bright Common Response, ORA-Bright Common Response, ORA-Bright Common Response, WA-A-Bright Common Response, WA-Bright Common R	Demand Response, CA-Inermostat Demand Response, OR-Cool/WH	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-		3.0	-	1 - 1
Demand Response, WA-Infragate - - - - - - - - -	Demand Response, OR-3rd Party Contracts	-	-	-	-	-		-	-	-	-				-	-	-	-	-	35.7	-	
Demand Response, WA-Thermostal Commitment Value Commitme	Demand Response, OR-Irrigate	-	_	-	-	-	-	-	-	-	-	13.3	-	-	-	-	-	-	-	-	_	-
Demand Response, Val. Thermostart	Demand Response, WA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-			
Demand Response Total - - - - - - - - -		-	-		-	-	-	-	-		-	11.3		-		5.3	-		-	-	-	-
Energy Efficiency, CAR	Demand Response Total	-	-	-	_	-		_	-	-	9.4	40.4	-			0.10		-	-			
Energy Efficiency, VA	Energy Efficiency, CA	1	2	2	2	2	2	2	2	2	2	2	2	2	2				1			
Energy Finder	Energy Efficiency, OR Energy Efficiency, WA																		25			
Eatery Stonge - S-Cregon	Energy Efficiency Total	52	49	55	62	61	60			51	49					35	32		30			551
State Strong For Strong Fo	Battery Storage - S-Oregon	-		-	-		-	-	30	-				_	-	-	-	-	-	30	90	120
Hattery Stonge - Walla Walla		-	<u> </u>	-	-		-	-	15		- ,	-	-	-	-	-	-	-	-	15	-,-	15
Second Column Second Colum		-	 -	-	-		-	-	-	30	60 45			-	-	-	-	-		150	15	90
FOT West - Summer 998 719 492 501 496 259 350 518 589 1.075 1.075 1.075 1.075 1.075 1.075 1.075 1.063 1.042 1.075 1.073 600	Battery Storage - Yakima																			-		
Existing Plant Retirements/Conversions - (61) (573) (224) (1) (764) - (505) (85) (912) (444) (396) (350) (114) (913) (156) (36) (280) (2,260) (43) Annual Additions, Long Term Resources 1,149 850 757 800 806 292 387 556 675 1,518 1,465 1,390 1,553 1,432 1,391 1,332 1,347 1,351 1,375 1,373	FOT West - Summer	998	719	492	501	496	259	350	518	589	1,075		1,075			1,075	1,075	1,063	1,042	1,075	1,073	600
Annual Additions, Long TemBesources 130 132 306 212 464 4.278 156 382 261 1.122 1.277 1.593 118 746 1.190 85 87 73 2.818 231 Annual Additions, Short TemBesources 1,149 850 757 800 806 292 387 556 675 1.518 1.465 1.390 1.553 1.432 1.391 1.332 1.347 1.351 1.375 1.373	FOT West - Winter	151	131	265	299	310	33	37	38	85	217	151	(200)		155	69	7		(280)	(2.260)	- (42	157
Annual Additions, Short Tem Resources 1,149 850 757 800 806 292 387 556 675 1,518 1,465 1,390 1,553 1,432 1,391 1,332 1,347 1,351 1,375 1,373	Annual Additions Long Term Persusses		132										1,593		746	1.190	85	87	73	2.818		f
	Annual Additions, Short Term Resources			757	800	806		387	556	675	1,518		1,390	1,553		1,391	1,332	1,347		1,375	1,373	

201

										Capacity	(MW)										Resource	Totals 1/
P-47C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)		-		-	- 1		-	(82)	-	-	-	- 1		- 1	-	-	-	-	-	-	(82)	
Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	(82)	(8
Hayden 1 Hayden 2	-	-	-	-	-	_	-	-		-		-	(33)	-	-		-	-	-	-	-	(4
Huntington 1 Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	·		-	-	(459) (450)	-	-	(45 (45
Colstrip 3 (Coal Early Retirement/Conversions)	-			-	-			-		(74)		-			-		-		- (430)	-	(74)	(7
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-		-	-		(74)		-		-	-		-	-	-	-	(74)	(38
DaveJohnston 1	-	-			-	-	-		-	(99)	-	-	-	-	-	-	-	-	-	-	(99)	(9
DaveJohnston 2 DaveJohnston 3	-	-	-	-	-		-	-		(106) (220)		-		-	-		-	-	-	-	(220)	(22
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-		-	-	-		-	(156)		(330)	-	-		-			-				(330)	(33
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)	(20
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6	-	(280)		-	-		-	-		-		-		-	(356)		-	-	-	-	(280)	
Retire - Hydro Retire - Wind	-	-	-	-	-	(20)	-	-	-	-	-	- (40)	-	-	·		-	-	-	-	(20)	
Expire - Wind PPA	-	(27)	(17)	(49)	(0)		-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60)	(80)	-		(92
Expire - Solar PPA Retire - Other	-	-	-	-	- (1)	- (1)	-	-		-		-		-		(1)	(35)	(94)	(849)	(32)	(1)	(97
Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-		-	-	-	-	-	247	
Expansion Resources SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	185	5:
SCCT Frame WYSW Total SCCT	-	-	-	-	-		-	185		-		370		-	-		-	370 370	-	-	185	3'
Wind, Djohnston	-	-	-	-	-	-	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-	62
Wind, GO Wind, UT	1																					
Wind, WYAE Total Wind	-				-	1,920		-			620	- 968					-			-	1,920	1,9
Utility Solar+Storage - PV - Utah-S		<u> </u>		-	-		-	-		-	-	-	500	-	-			-	-	-	227	73
Utility Solar+Storage - PV - WYSW Utility Solar+Storage - PV - GO	-	-	-	-	-		-	-		-		-	132	-	100		-	-	-	-	-	
Utility Solar+Storage - PV - Huntington	-	-	150	- 64	-	- 677	-	-	-	-	-	-	-	-	-	-	-	-	909	-	- 000	90
Utility Solar+Storage - PV - Utah-N Total Solar		-			-		-	-		-		-	632		100		-			-		2,76
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	1																					
Demand Response, ID-Irrigate	-	-	-	-	-	-	-		-	-		-	-	-	5.2	-	-	3.7	-	1.8		10
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2		-	6.7	-	-	6.8	-		7.0	-		7.2	28.1	
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-		- 1.0		
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-		-	-	_	-	116.7	8.2			-		8.3	-	-	5.1		138
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-		-	-		-		-	-	-	-	-	-	-	3.4 39.4	-	-	39
Demand Response, WY-Irrigate	-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	1.8	-	-	1.
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-		8.3					-		-			-	-	-			- 1.2		16
Demand Response, WY-Ancillary Services Demand Response Total	- 41	-	7.0	-	18.1	-		7.2	-	-	123.3	- 82	-	- 6.8	5.2	-	15.3	3.7	153.4	17.3		
Energy Efficiency, ID	6	6	6	7	7	7	7	7	7	7	7	6		6	6		4	3	3	3		11
Energy Efficiency, UT Energy Efficiency, WY	10	10	11	12	15	16	16	18	18	18	16	1.5	13	12	11	9	8	7	5	5	144	24
Energy Efficiency Total Battery Storage - Utah-S	74	78	85	86	91	89	91	89	90	87	80	77	72	68	69	49	45	37	32 465.0		860	1,4
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	165.0	-	-	-	-	-	-	-	135.0		-	300
Battery Storage - Idaho FOT East - Summer	-	-	-	-	-	-	-	-		143	261	191	175	226	15.0 270	273	300	300	270.0 300	300	14	285
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)						(351)															(351)	
JimBridger 2 (Coal Early Retirement/Conversions)	_	-	-		-	- (331)			-	-	(356)	-			-		-		-	-	-	(3:
JimBridger 3 (Coal Early Retirement/Conversions) JimBridger 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-		-		-	-	-	-		-	(349)	-	-	-	(3:
Hermiston Retire - Hydro	-	- (1)	(169)	-	- (1)	-	-	- (1)	-	- (7)	-	-	- (6)	-	-	- (75)	-	- (1)	(237)	-	(179)	(23
Expire - Wind PPA	-	- (1)	- (169)	(175)	- (1)	(41)	-	- (1)		-	(75)	(10)	-	(20)	(20)	- (73)	-	(10)	(10)		(216)	(36
Expire - Solar PPA Expansion Resources	-	-	-		-		-	-		(2)		-	(67)	(49)	-		(1)	(115)	(175)	(11)	(2)	(42
SCCT Frame WV Total SCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	221 221	221 221		-	4
Utility Solar+Stomge - PV - Jbridger				-	-	354	-	-		-	359	-	-	-	-	-	-	702		-	354	1,4
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	-	-	-	460 405	-	-	-	-	-	-	-	- 40	475	-	-	430	-	-	460 405	9
Total Solar	-	-	-	-	-	1,219	-	-	-	-	359 8	-	-	40	475	-	-	1,132	-	-	1,219	3,2
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services					-					-	1.9	-					-			-		1
Demand Response, CA-Cool/WH Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	1.5		-	
Demand Response, CA-Irrigate		-		-	-		-	-		-	-	-		-	-		-	4.8	-	-	-	4
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH	-	-	-	-	-		-	-		-		-		-	-		-	-	5.8 3.0	-	-	3
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-		-	-	-	-	-					-					13.3	35.7	-	-	35 13
Demand Response, WA-Cool/WH		-		-	-	-	-	-	-	-	-		-	-	-	-	-		7.7	-	-	7
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-	-	-	-	-	-	-	-		-		-		-	-	-	-	8.3	9.9	-	-	8
Demand Response, WA-Thermostat	-	-	-	-	-	-	-	-	-	-	9.4	-	-	-	-	-	-	26.3	16.6 81.4	-	-	16
Demand Response Total Energy Efficiency, CA	1		2	- 2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	17	
Energy Efficiency, OR Energy Efficiency, WA	40 11	35 9	10	36 10	39 12	39 12	43 12	41 11		37 10	33 10	9	30 9	30 8	27 8	26 6	6	26 5	25 4	21	108	1
Energy Efficiency Total	52			48	53	52	56	54	52	49	45	42	40		37			32	30	26	509	8
Battery Storage - S-Oregon Battery Storage - Willamette Valley					-			-		60 15	165 45						-		- 30	-	60 15	2
Battery Storage - Portland NC Battery Storage - Walla Walla		-		-	-		-	-			60 15		-	-	105		-		- 30	45		1
Battery Storage - Yakima		-			-			-		105	-				-				-	-	105	1
FOT West - Summer FOT West - Winter	998 151	719 131	493 268	503 303	498 314	170 58	166 64	244 68	318 118	1,075 250	1,075 224	1,075 185	1,075 193	1,075 140	1,075 71	1,075 5		1,075	1,045	-	518 173	79
Existing Plant Retirements/Conversio		(61)	(573)		(1)	(412) 4,185	- 155	(505)	(85) 141	(912)	(449)	(396)	(350) 744		(557) 806		(36)		(2,260)			
Annual Additions, Long Term Resource Annual Additions, Short Term Resource	es 1,149	850	761	806	812	228	230	312	436	1,468	1,560	1,451	1,443	1,440	1,417	1,352	1,365	1,375	1,345	1,346		
Total Annual Additio	ns 1,279	974	1,060	1,004	1,047	4,413	385	648	577	1,784	3,246	2,915	2,187	1,595	2,223	1,434	1,458	3,197	3,702	1,569		

											Capacity	(MW)										Resource Total
	P-48C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year 20-y
	Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)	_		-					(82)									_	-			(82)
-	Cmig 2 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	- (82)	(82)	-		-	-		-	-	-	-	-	-	(82)
	Hayden 1 Hayden 2	-	-	-	-	-	-	-	-		-		-	(44)		-	-	-	-	-	-	-
1	Huntington 1	-	_	-	-	-	-	-	-		-	-	-	-		-	-	-	-	(459)	-	-
	Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-		(74)		-	-		-	-	-	-	(450)	-	(74)
-	Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
	Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	-	-	(387)	-	-	-	-	-		(99)	-	-	-		-	-	-	-	-	-	(387)
1	DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-		-	-	-	(106)
	DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-	-	-		(220)		-	-		-	-	-	-	-	-	(220)
1	Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	- '	-	-	-	-	-	-	-	-	-	-	(156)
P	Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	(201)		-	-	-	-		-	-	-	-	-	-	(201) (280)
	Gads by 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	- 1
	Retire - Hydro Retire - Wind	-	-	-	-	-	(20)	-	-		-	-	(40)	-		-	-	-	-	-	-	(20)
1	Espire - Wind PPA	-	(27	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60)	(80)		(160)
2	Expire - Solar PPA Retire - Other	-	-	-	-	(1)	(1)	-	-			-	-			-	- (1)	(35)	(94)	(849)	(32)	(1)
	Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-		_	-	(247)	-		-	- (1)		-	-	- (32)	247
	Expansion Resources		<u> </u>						185				370						ı	1		185
ľ	SCCT Frame NTN SCCT Frame WYSW	-	-	-	-	-	-	-	-		-	-	-			-	370	-	-	-	-	-
	Total SCCT	-	-	-	-	-	-	-	185	-	-		370	-	-	-	370	-	-	-	-	185
	Wind, Djohnston Wind, GO	-	-	-	-	-	-	-	-		-	620	1,100	-		-	-	-	-	-	-	- 1
	Wind, UT	-	-	-	-	73	1.920	-	-	-	-	-	- 1	-	-	-	-	-	-	-	-	73
	Wind, WYAE Total Wind	-	-	-	-	73	1,920	-	-		-	620	1,100	-		-	-	-	-	-	-	1,920 1 1,993 3
	Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	227	-	-	-	-	-	195	305	-	-	-	-	-	-	-	227
	Utility Solar+Storage - PV - WYSW Utility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-		-	-	-	-	-	100	-	-	-	909	-	-
1	Utility Solar+Storage - PV - Utah-N			159		-	677		-								-	-		_	-	900
-	Total Solar Demand Response, ID-Cool/WH	-	-	159	64	-	904	-		-	-	-	195	305	-	100	-	-	-	909 2.6	1	1,127 2
	Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts																			1.8		
	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	8.3	1.8	-
	Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2		-	6.7	-	-	6.8	-	-	7.0	-	8.3	7.2	28.1
1	Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	-	-
	Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-		-	116.7	8.2	-		-	-	8.3	-	-	1.9 5.1	- 1
1	Demand Response, WY-Cool/WH	-	-	-	-		-	-	-		-	-	-	-		-	-	-	-	3.4	1.8	- '
1	Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	39.4	-	-
1	Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-		-		-	-		-	- 1.8	-	-	18.7	1.2	-
1	Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	8.3	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5
	Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	7.0	-	18.1		8.2			-	123.3	8.2		12.0	-	1.8	15.3	3.7	151.7	19.1	44.6 3
	Energy Efficiency, ID	6	6	6	7	7	7	7	7	7	7	7	6	6	6	6	4	4	3	3	3	68
-	Energy Efficiency, UT Energy Efficiency, WY	58 10			68 12	69 15	66 16	67 16	65 18	65 18	62 18	57 16	56 15	54 13	52 12	52 11	36 9	32 8	26 7	25 5	26 5	654 1 145
1	Energy Efficiency Total	74	83	85	86	91	89	91	90	90	87	80	77	74	70	70	49	45	37	33		
	Battery Storage - Utah-S Battery Storage - WYSW	-	-	-	-	-	-	-	-		-	165.0	-	-		-	-	-	-	420.0 210.0	45	- 4
	Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	- 144	- 261	300	120.0	250	60.0	300	300		150.0	-	- 3
	FOT East - Summer Existing Plant Retirements and PPA Termination	-	-	-	-	-	-	-	-		144	261	300	203	250	299	300	300	300	300	300	14
	JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351)
	JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-		-	(356)	-	-		-	(349)	-	-	-	-	-
	JimBridger 4 (Coal Early Retirement/Conversions)	-	-	-	-		-	-	-		-	-	-	-		-	(353)		-	-	-	-
1	Hermiston Retire - Hydro	-	- (1)	(169)	-	- (1)	-	-	- (1)	-	- (7)	-	-	- (6)	-	-	- (75)	-	- (1)	(237)	-	(179)
1	Expire - Wind PPA	-	- (1	- (109)	(175)	- (1)	(41)	-	- (1)		-	(75)	(10)	-	(20)	(20)	- (73)	-	(10)	(10)		(216)
2	Expire - Solar PPA	-		-	_	-	-	_	_		(2)	-		(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)
	Expansion Resources SCCT Frame WV						-						- 1	-	-	- 1	221	-		221		-
	Total SCCT			1				-														-
							261				-	260	-	-	-	-	221	-		221		254
	Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon	-	-	-	-	-	354 462	-	-	-	-	359	-		- 38	- - 475	221 519 -		3	221 174		354 1 462
	Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	-	-	-	462 405	-	-	-		-	-		-	-	519 - -	1	- 3 - 430	221 174 -	-	462 405
	Utility Solar+Storage - PV - S-Oregon	-	-	-	-	- - - -	462	-	-	-	- - - -	359 - - 359 8	-	-	38	- - 475 - 475			3 - 430 433	221	-	462
	Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services		-	-	- - - - -	-	462 405	- - - -	-	- - - - - -	- - - - -	- - 359	- - - - - -	- - - - - -	-	-	519 - -	-		221 174 - - 174 -	6 - 6	462 405
1	Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - Yakima Total Solar Domand Response, OR-Ancillary Services Domand Response, OW-Ancillary Services Domand Response, CA-CoOWH Domand Response, CA-COOWH	-	-	- - - - - -	-	- - - - - -	462 405	-	- - - - - -	-	-	- 359 8	-	-	-	-	519 - -			221 174 -	6	462 405
1	Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-AcolVH Demand Response, CA-Aid Party Contracts Demand Response, CA-Aid Party Demand Response, CA-Aid Party Demand Response, CA-Irigate	- - - - - - - -					462 405				-	- 359 8	-	-	-	-	519 - - 519 - - - - - 4.8			221 174 - - 174 - - 1.5	6	462 405
1	Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-Co-UVH Demand Response, CA-Jar Party Contracts Demand Response, CA-Jarigate Demand Response, CA-Jarigate Demand Response, CA-Termostat	- - - - - - - -		-			462 405		- - - - - -		-	- - 359 8 1.9 - -		-	38	-	519 - - 519 - - -			221 174 - - 174 - - 1.5 1.1	6	462 405
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Utility Solar-Stonge - PV - S-Ovegon Utility Solar-Stonge - PV - S-Ovegon Total Solar Dominal Response, OR-Ancillary Services Dominal Response, CA-Irrigate Dominal Response, CA-Irrigate Dominal Response, OR-Ancillary Services Dominal Response, OR-Ancillary Contracts	- - - - - - - - - - - -	-		-		462 405	-			- - - - - - - - - - - - - - - - - - -	359 8 1.9	-	-	38	-	519 - - 519 - - - - 4.8 5.8	-		221 174 - - 174 - - 1.5	6 - - 6 - - - - -	462 405 1,221 3
	Utility Solar-Stronge - PV - S-Oregon Utility Solar-Stronge - PV - S-Wisims Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, CA-Thermostat Demand Response, OR-Cool/WH Demand Response, OR-Sid Party Contracts		-	-	-		462 405	-				359 8 1.9		-	38	-	519 - - 519 - - - - - 4.8	-		221 174 - 174 - - 1.5 1.1 - - 3.0 35.7	6	462 405 1,221 3
	Utility Solar-Stronge - PV - S-Oregon Utility Solar-Stronge - PV - S-Wisims Total Solar Demand Response, OR-Ancillary Services Demand Response, W-A-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, CA-Thermostat Demand Response, OR-Cool/WH Demand Response, OR-Sal Party Contracts Demand Response, OR-M-Sal Party Contracts Demand Response, W-A-Sal Party Contracts					-	462 405			- - - - - - - - - - - - - - - - - - -		359 8 1.9 - - - -		-	38	-	519	-		221 174 - - 174 - 1.5 1.1	6	462 405 1,221 3
	Utility Solar-Storage - PV - St-Oregon Utility Solar-Storage - PV - St-Wisima Total Solar Domand Response, OR-Ancillary Services Domand Response, OR-Ancillary Services Domand Response, OA-Cool/WH Domand Response, CA-And Party Contracts Permand Response, CA-And Party Contracts Domand Response, CA-And Party Contracts Domand Response, OR-Cool/WH Domand Response, WA-Grigate Domand Response, WA-Grigate Domand Response, WA-Grigate Domand Response, WA-Story WH Domand Response, WA-Story WH Domand Response, WA-Story WH Domand Response, WA-Story WH Domand Response, WA-Grigate					-	462 405			- - - - - - - - - - - - - - - - - - -		- - 359 8 1.9 - - -	-	-	38	-	519			221 174 174 1.5 1.1 3.0 35.7 7.7	6	462 405 1,221 3
	Utility Solar-Stronge - PV - S-Oregon Utility Solar-Stronge - PV - S-Wisims Total Solar Demand Response, OR-Ancillary Services Demand Response, W-A-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, CA-Thermostat Demand Response, OR-Cool/WH Demand Response, OR-Sal Party Contracts Demand Response, OR-M-Sal Party Contracts Demand Response, W-A-Sal Party Contracts						462 405			- - - - - - - - - - - - - - - - - - -		359 8 1.9 - - - -		-	38	-	519			221 174 174 1.5 1.1 3.0 35.7 7.7 9.9	6	462 463 1,221 3
	Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Infermostat Demand Response, CA-Infermostat Demand Response, OR-Infermostat Demand Response, OR-Infermostat Demand Response, OR-Infermostat Demand Response, OR-Infermostat Demand Response, WA-Infermostat Demand Response Total Energy Efficiency, CA					- 2	462 405 1,221 					- 359 8 1.9 - - - - - - - - - - - - - - - - - - -	2		38	475	519		433 	221 174 174 1.5 1.1 3.0 35.7 7.7 9.9 58.9 1	6	462 462 463 1,221 3
	Utility Nolare-Storage - PV - St. Oregon Utility Solare-Storage - PV - St. Naima Total Solar Domand Response, OR. Ancillary Services Domand Response, OR. Ancillary Services Domand Response, CA - Co. VIII Domand Response, CA - Co. VIII Domand Response, CA - Co. VIII Domand Response, CA - Side Party Contracts Domand Response, CA - Thermostat Domand Response, CA - Thermostat Domand Response, OR. Co. VIII Domand Response, OR. Co. VIII Domand Response, OR. Thermostat Domand Response, OR. Thermostat Domand Response, OR. Thermostat Domand Response, OR. Thermostat Domand Response, W. A. Higgs Domand Response, W. A. Thermostat Domand Response of tal Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, CA						462 405 1,221 				- - - - - - - - - - - - - - - - - - -	359 8 1.9 			38	-	519		433 	221 174 174 1.5 1.1 3.0 35.7 7.7 9.9 58.9 1	6	462 462 1,221 - - - - - - - - - - - - - - - - - -
	Utility Solar-Stonage - PV - Sc. Oregon Utility Solar-Stonage - PV - St. Strim Total Solar Domand Response, OR. Ancillary Services Domand Response, OR. Ancillary Services Domand Response, CA. Co. O'W II Domand Response, CA. And Party Contracts Domand Response, OR. Co. O'W II Domand Response, OR. Co. O'W II Domand Response, OR. Co. O'W II Domand Response, WA. And Party Contracts Domand Response, WA. And Party Contracts Domand Response, WA. And Party Contracts Domand Response, WA. Thermostat Domand Response, WA. Thermostat Domand Response, WA. Thermostat Domand Response Total Bonegy Efficiency, CA Bonegy Efficiency, CA Bonegy Efficiency, OR Boregy Efficiency, UAI Boreg		9	10	10	- - 2 39	462 405 1,221 		- - - - - - - - - - - - - - - - - - -	11	- - - - - - - - - - - - - - - - - - -	- 359 8 1.9 - - - - - - - - - - - - - - - - - - -	31	9	38 	475 	519 519		433 	221 174 1774 1.5 1.1 3.0 35.7 7.7 9.9 58.9 1 24	6 6	462 462 463 1,221
	Littiny Stolar-Storage - PV - S-Ovegon Littiny Stolar-Storage - PV - S-Ovegon Total Solar Domand Response, OR-Ancillary Services Domand Response, OR-Ancillary Services Domand Response, OR-Ancillary Services Domand Response, CA-Cheritary Domand Response, CA-Irrigate Domand Response, CA-Irrigate Domand Response, CA-Irrigate Domand Response, CA-Irrigate Domand Response, OR-Ancillary Services Domand Response, OR-Ancillary Services Domand Response, OR-Ancillary Domand Response, OR-Ancillary Domand Response, WA-GoolWH Domand Response, WA-GoolWH Domand Response, WA-And Party Contracts Domand Response, WA-Irrigate Domand Resp	11	9	10	10	- - 2 39 12	462 405 1,221 	12	- - - - - - - - - - - - - - - - - - -	11	10 49	-359 8 1.9 	2 31 9	9	38 	475 	519 519		433 	221 174 - - 174 - 1.5 1.1 - - 3.0 35.7 - 7.7 9.9 - - - - - - - - - - - - - - - - - -	6	462 405 1,221
	Utility Solar-Stonage - PV - Sc. Oregon Utility Solar-Stonage - PV - St. Asima Total Solar Domand Response, OR. Ancillary Services Domand Response, OR. Ancillary Services Domand Response, CA. Co. Over St. Oregon Domand Response, CA. Ancillary Services Domand Response, CA. And Party Contracts Domand Response, CA. And Party Contracts Domand Response, CA. Thermostat Domand Response, OR. Co. Over St. Oregon Domand Response, OR. And Party Contracts Domand Response, OR. And Party Contracts Domand Response, OR. And Party Contracts Domand Response, W. A. Thermostat Domand Response, W. A. Thermostat Domand Response, Total Interpy Efficiency, CA Interpy Efficiency, CA Interpy Efficiency, CA Interpy Efficiency, OR Interpy Efficiency, UR Interpy Efficiency, UR Interpy Stonage - S. Oregon Battery Stonage - Willamette Valley	11	9	10	10	- - 2 39 12	462 405 1,221 	12	- - - - - - - - - - - - - - - - - - -	11	10		2 31 9	9	38 		519 519		433 	221 174 - - 174 - 1.5 1.1 - - 3.0 35.7 - 7.7 9.9 - - - - - - - - - - - - - - - - - -	6 6	462 462 463 1,221
	Utility Solar-Stonage - PV - Sc. Oregon Utility Solar-Stonage - PV - St. Strim Total Solar Domand Response, OR. Ancillary Services Domand Response, OR. Ancillary Services Domand Response, CA. Cod. VIII Domand Response, CA. Ancillary Services Domand Response, CA. And Party Contracts Domand Response, CA. And Party Contracts Domand Response, CA. Thermostat Domand Response, OR. Cod. VIII Domand Response, OR. Cod. VIII Domand Response, OR. And Party Contracts Domand Response, OR.	11	9	10	10	- - 2 39 12	462 405 1,221 	12	- - - - - - - - - - - - - - - - - - -	11	10 49 - 75 -		2 31 9	9	38 	475 	519 519		433 	221 174 - - 174 - 1.5 1.1 - - 3.0 35.7 - 7.7 9.9 - - - - - - - - - - - - - - - - - -	6 6	462 462 405 1,221 3 - - - - - - - - - - - - - - - - - -
	Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Oregon Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, OR-And Par	11 52 - - -	9 48 - - - -	10 48 - - - -	10 48 - - - -	- 2 39 12 53 	462 405 1,221 	12 56 - - - -		111 52 - - - -	10 49 - 75 - - 105		2 31 9 42 - - -	9 42 - - - - -	38 38 	2 2 27 8 3 36 45 5	\$19		433 	221 174 	6 6 6 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	462 462 3 1,221 3 3 1,221 3 3 1 2 1 2 1 2 1 3 1 2 1 2 1 2 1 2
	Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Total Solar Domand Response, OR-Ancillary Services Domand Response, OR-Ancillary Services Domand Response, OR-Ancillary Services Domand Response, CA-Sal Purty Contracts Domand Response, CA-Sal Purty Contracts Domand Response, CA-Sal Purty Contracts Domand Response, OR-Sal Purty Contracts Domand Response, WA-Grigate Domand Response, WA-Grigate Domand Response, WA-Thermostat Domand Response, WA-Thermostat Domand Response, Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, CR Energy Efficiency, CR Energy Efficiency, Total Buttery Storage - Softendte Valley Buttery Storage - Softendte Valley Buttery Storage - Fortland NC Buttery Storage - Fortland NC Buttery Storage - Walley Malla Buttery Storage - Walley Buttery Storag	11 52 -	9 48 - - - - 719 131	10 48 - - - - - - 493 268	10 48 - - - - 503 303	- 2 39 12 53 - - - - - 498 314	462 462 462 462 1,221	12		111 52 - - - - - - 318 117	10 49 - 75 - - 105 1,075 249		2 31 9 42 - - - - 1,075 185	9 42 - - - - 1,075 193	38 	2 277 8 3 36 45 5 105 105 105 105 105 105 105 105 105	519		433 433 433 433 433 433 433 433 433 433	221 174 1.55 1.1 3.0 35.7 7.7 7.7 9.9 9.9 9.9 1.2 4.4 4.9 -	60	462 463 1,221 3 462 463 1,221 3 463 1,221
	Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Oregon Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, OR-And Par	11 52 - - - - - - 726	9 48 - - - - 719 131 (61)	10 48 - - - - - 493 268 (573)	10 48 - - - - 503 303 (224)	- 2 39 12 53 - - - - - 498 314 (1)	462 462 462 1,221 	12 56 - - - - - - 165		11 52 - - - - - 318	10 49 - 75 - - 105 1,075		2 31 9 42 - - - - 1,075	9 42 - - - - 1,075 193 (350)	- 38 		519		433	221 174 175 1.5 3.0 35.7	6 6 60 1.073	462 405 1,221 3 - - - - - - - - - - - - -

										Capacity	(MW)										Resource	Totals 1/
P-53C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-year
Existing Plant Retirements and PPA Termination								(02)														
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82)	(82
Hayden 1	-	-	-	-	-	-	-	-	- 1	-	-	-	(44)	-	-	-	-	-	-	-	-	(44
Hayden 2 Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-		(33
Huntington 2	-	-	-	-	-		-	-	-	-	-	-	-	_	-	-	-	_	(450)	-	-	(450)
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	-	-	(74) (74)	-	-		-	-	-	-	-	-	-	(74) (74)	(74 (74
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	- (74)	-	-	-	-	-	-	-	-	-	-	(387)	(387)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)	(99)
DaveJohnston 2 DaveJohnston 3	-	-		-	-	-	-	-	-	(106) (220)	-	-	-	-	-	-	-	-	-	-	(106)	(220)
DaveJohnston 4	-	-	-	-	-		-	_	-	(330)	-	-	-	-	-	-	-		-		(330)	(330)
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-		-	-	-	-	-	-	-	(156)	(156)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	-		-	-	(201)		-	-	-	-	-		-		-	-	-	(201)	(201)
Gadsby 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	(356)
Retire - Hydro Retire - Wind	-	-	-	-	-	(20)	-	-	-	-		(40)	-	-	-	-		-	-	-	(20)	(20)
Expire - Wind PPA		(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	(924)
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-		-	-	- (4.)	(35)	(94)	(849)	-	(1)	(979)
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247	(33)
Expansion Resources		,																				
SCCT Frame NTN SCCT Frame WYSW		-	-	-		-	-	185	-	185	185	370	-	-		-	-	-	-	-	185 185	555 370
Total SCCT								185		185	185	370									370	925
Wind, Djohnston	-	-	-	-	-	-	-	-	-	127	493		-	-	-	-	-	-	-	-	127	620
Wind, GO Wind, UT	-	-	 	-	294	-	-	-	-	-	-	1,091	-	-	-	-	-	-	-		294	1,091 294
Wind, WYAE					-	1,920					-	-			-	-					1,920	1,920
Total Wind	_	-		-	294	1,920			-	127	493	1,091	-	-	-	-	-	-	-	-	2,341	3,925
Utility Solar+Storage - PV - Utah-S Utility Solar+Storage - PV - WYSW	-	-	 	-	-	- 6	-	-	-	-	-		500	-	100	-	-	-	-		- 6	506 100
Utility Solar+Storage - PV - W 15W Utility Solar+Storage - PV - GO	-	-	-	-	-		-	-	-	-	-	-	- 9	-	-	-	-	-	-	-		9
Utility Solar+Storage - PV - Huntington	-	-	- 159	- 64	-	677	-	-	-	-	-	-	-	-	-	-	-	-	909	-	900	909 900
Utility Solar+Storage - PV - Utah-N Total Solar	-	-	159	64	-	683	-	-	-	-	-	-	509	-	100	-	-	-	909	-	900	2,424
Demand Response, ID-Cool/WH	-	-			-	-	-	-	-	-	-	-		-		-	-	-	2.6	-	-	2.6
Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	1.8	1.8	-	1.8 10.6
Demand Response, ID-Irrigate Demand Response, ID-Thermostat	-	-	-	-	-		-	-	-	-	-	-	-	5.2	-	-		-	8.3	1.8		8.3
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1	55.9
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6 1.9	-	76.7 1.9
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	116.7	-	8.2	-	-	-	-	-	-	8.3	5.1	116.7	138.3
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	3.4	-	-	3.4
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	39.4	-		39.4 1.8
Demand Response, WY-Thermostat	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	18.7	-		18.7
Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5	16.7
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	7.0	_	18.1		3.0 8.2		-	116.7	6.7	8.2	-	12.0	1.8	-	7.0	-	163.7	18.6	3.0 161.2	3.0 379.2
Energy Efficiency, ID	6	6	6	7	7	7	7	7	7	7	7	6	6	6	6	4	4	3	3	3	68	116
Energy Efficiency, UT	58 10	61 10	67 11	68 12	69 13	66 16	67 16	65 17	64 18	62 17	57 16	53 14	50 12	48 11	47 11	36 9	32 8	25	22	22 5	646 140	1,037 238
Energy Efficiency, WY Energy Efficiency Total	74	77	85	86	89	89	91	88	88	86	80	73	68	65	63	49	44	35	30		854	1,391
Battery Storage - Utah-N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	435	60	-	495
Battery Storage - WYSW Battery Storage - Idaho	-	-		-	-	-	-	-	-	-	105.0	-	-	-	-	-	-	-	660.0	-		105.0 660.0
FOT East - Summer	-	-	-	-	_	-	-	_	-	205	239	164	178	235	247	250	267	300	300	300	20	134
Existing Plant Retirements and PPA Termination		1																				
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	(351)	(351)
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(349)	-	-	-	-	-	-	-	-	-	-	(349)
JimBridger 4 (Coal Early Retirement/Conversions)	-	-	├ - च	-	-	-	-	-	-	-		-	-	-	(353)			-	(237)	-	-	(353) (237)
Hermiston Retire - Hydro	-	(1)	(169)	-	(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	(237)	-	(179)	(262)
Expire - Wind PPA	-	-	- 1	(175)	-	(41)	-	- 1	-	-	(75)	(10)	-	(20)	(20)	-	-	(10)	(10)	-	(216)	(360)
Expire - Solar PPA Expansion Resources	-	-			-			-	- 1	(2)			(67)	(49)			(1)	(115)	(175)	(11)	(2)	(420)
SCCT Frame WV	-	-		-	-	-	-		<u> </u>	-	-	-	-	-	443	-	-	-	-	-	-	443
Total SCCT		_		-	-			-	-	-	- 349	-	-	-	443	-	-	-	-	-	-	443
Utility Solar+Stomge - PV - Jbridger Utility Solar+Stomge - PV - S-Oregon		-		-	-	500	-	384	-		349	-	-	-	682 475	-		-	-	-	384 500	1,415 975
Utility Solar+Storage - PV - Yakima				-	-	405	-			-	-	-	-	-	-	-	-	-	430		405	835
Total Solar Demand Response, OR-A noillant Services	-	-	├ - ┐	-	-	905	-	384	-	- 8	349	-	-	-	1,157	-		-	430	-	1,289	3,225
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-			-		-		-	-	1.9											1.9	1.9
Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	- 1	-	-	-	-	-	-	-	-	1.1	-	-	1.1
Demand Response, CA-Irrigate Demand Response, CA-Thermostat	-	-		-	-	-	-	-	-	-	4.8	-	-	-	5.8	-	-	-	-	-	-	4.8 5.8
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH								-	-				-		J.6 -				3.0			3.0
Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	35.7	-	-	35.7
Demand Response, OR-Irrigate Demand Response, WA-3rd Party Contracts	-	-	 	-	-	-	-	-	-	-	13.3		-	-	-	-	-	-	9.9			13.3 9.9
Demand Response, WA-Irrigate					-						5.2				-	-			3.1			8.3
Demand Response, WA-Thermostat		-			-				-	- 9.4	23.2	-	-	-	16.6	-		-	52.8	-	9.4	16.6
Demand Response Total Energy Efficiency, CA	- 1	- 2	- 2	- 2	- 2	- 2	- ,	- 2	- 2	9.4	23.2	- 2	- 2	- 2	22.4	- 1	- 1	- 1	52.8	- 1	9.4	107.9 32
Energy Efficiency, OR	40	37		42	47	46	43	41	39	37	33	31	30	29	26	26	26	26	24	21	410	680
Energy Efficiency, WA	11	10	10	11	12	12 59	12	12		10	10	9	8	8 38	8 35	6	6	5	4	4	111	178
Energy Efficiency Total Battery Storage - S-Oregon	52	- 49	52	- 55	- 61	- 59	56	55 15	52	49 -	45 150	41	40	- 38	- 35	33	33	32	29	26 60	539 15	890 225
Battery Storage - Willamette Valley	-	-			-	-		30	30	-	-	-	-	-	-	-	-	-	-	-	60	60
Battery Storage - Portland NC	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	45	- 30		105
Battery Storage - Walla Walla Battery Storage - Yakima	-	-	 	-	-	-	-	105	-	-	120	-	-	-	-	-	-	-	15	-	105	165 105
FOT West - Summer	998	719		501	496	92		578	650	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,063	1,042	1,075	1,075	569	820
FOT West - Winter Existing Plant Retirements/Conversions	151	(61)		300 (224)	310	(62)		(1,212)	85 (85)	(912)	254 (442)	(396)	(350)	170 (114)	69 (911)	(156)	(36)	(280)	(2,260)	(43)	157	126
Existing Plant Retirements/Conversions Annual Additions, Long Term Resources	130	125		205	462	3,657			170	573	1,616	1,584	617	115	1,822	(156)	(36)	(280)	2,769			
Annual Additions, Short Term Resources	1,149	850	757	801	806	125	123	616	735	1,497	1,568	1,452	1,475	1,479	1,391	1,332	1,347	1,351	1,375	1,375		
Total Annual Additions	1,279	976	1,060	1,005	1,268	3,782	278	1,486	905	2,070	3,184	3,036	2,091	1,594	3,214	1,413	1,431	1,418	4,144	1,599		

P-53J23C	2019	2020	2021	2022	2023	2024	2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	Totals 1/ 20-year
Existing Plant Retirements and PPA Termination								(82)													(82)	(8
Cmig 1 (Coal Early Retirement/Conversions) Cmig 2 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	- (82)	(82)	-	-	-	-	-	-	-		-			(82)	(8
Hayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	(4
Hayden 2 Huntington 1	-	-			-	-	-		-	-	-	-	(33)	-	-	-	-	-	(459)	-		(3 (45
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-	(45
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	-	-	(74) (74)	-	-	-	-	-	-	-	-	-	-	(74) (74)	(7
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)		-	-	-	-	-	- (74)	-	-	-	-	-	-		-		-	(387)	(38
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)	(S
DaveJohnston 2	-	-	-		-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(220)	(10
DaveJohnston 3 DaveJohnston 4	-	-	-		-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)	(3:
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(156)	(1:
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)	(2)
Gadsby 1-6	-	(280)	-		-	-	-	-	-			-			(356)	-		-			(280)	(3:
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)	(:
Retire - Wind Expire - Wind PPA	-	(27)	(17)	(49)	- (0)	-	-	(65)	(3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	- (60)	(80)	-	(160)	(4
Expire - Solar PPA	-	- (27)	- (17)	- (42)	(1)	(1)	-	-	- (3)	-	- (19)	-	- (200)	- (43)	- (101)	-	(35)	(60) (94)	(849)	-	(1)	(9)
Retire - Other	-		-	-	-	-	-	-	-	-	-	-		-	í	(1)	-	-	-	(32)	247	- C
Coal Ret_WY - Gas RePower Expansion Resources	-	247			-	-	_	-	-		-	(247)	-	-	-	-	-		-	-	247	_
SCCT Frame NTN		_	- 1		-			185	- 1			370	-		-	- 1		-			185	5:
SCCT Frame WYSW			-		_			-	-	-	370	- 200	-			-		_			-	3
Fotal SCCT Wind, Djohnston	-	-	 		-	-	-	185	-	620	370	370	-	-	-	-		-	-	-	185 620	9: 6:
Wind, GO	_		-		-	-			_	-		1,096		-		-		-	-	-	-	1,0
Wind, UT	-	-	-	-	294	1,920	-	-	-	-	-	-	-	-	-	-		-		-	294 1,920	1,9
Wind, WYAE Total Wind		-			294	1,920	-			620	-	1,096	-	-	-	-	-	-	-	-	2,834	3,9
Utility Solar+Storage - PV - Utah-S					-	6			-	-		- ,020		500							6	50
Utility Solar+Storage - PV - WYSW		-	-		-	-		-	-	-		-	-		100	-		-				1
Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington	-	-	 		-	-	-		-			-	- 4	-	-	-	-	-	909	-		91
Utility Solar+Storage - PV - Utah-N			159	64		677			-										-		900	90
Total Solar	-	_	159	64	-	683	-	-	-	-	-	-	4	500	100	-	-	-	909	-	906	2,4
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-		-		-	-	-	-	-	-	-	-	-		-	-	-	-	2.6 1.8			2
Demand Response, ID-Irrigate	-	-			-	-	-	-	-		-	-		5.2	-	-		-	3.7	1.8		10
Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-	8
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	74.1	7.2 2.6	28.1	55 76
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	/·+.1 -	1.9		1
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	116.7	-	8.2	-	-	-	-	-	-	8.3	5.1	116.7	138
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4	-		39
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-	-		-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	- 39.4	-		1.
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	1.2	-	19.
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-		8.3	-	5.3 3.0		-	-	-	-	-	-	-	-	-	-	3.2	-	13.5 3.0	16.
Demand Response Total	4.1	-	7.0	-	18.1	-	8.2	7.2	-	116.7	6.7	8.2	-	12.0	1.8	-	7.0	-	163.7	19.8	161.2	380
Energy Efficiency, ID	6			7	7	7	7	7	7	7	7	6	6	6	6	5	4	4	3	3	68	1.1
Energy Efficiency, UT Energy Efficiency, WY	58 10	67 10		68 12		66 16	67 16		65 18	62 17	55 15	56 14	52 13	51 12	52 11	39	36 8	32 7	26	27	653 143	1,08
Energy Efficiency Total	74			86		90	91		90	87	77	77	72	69	70	53	48	43	34	35	865	1,44
Battery Storage - Utah-S	-	-	-	-	-	-	-	-	-	30.0	45.0	-		-	30.0	-	-	-	420.0	-	30.0	420
Battery Storage - WYSW Battery Storage - Idaho	-	-	-		-	-	-	-	-	_	45.0	-	-		60.0	-	-	-	300.0 285.0	45.0	30.0	405 390
FOT East - Summer	-	-	-	-	-	-	-	-	-	226	239	164	300	203	247	250	267	300	300	300	23	14
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)						(351)															(351)	(35
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-		-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351)	(35
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(349)	-	-	-	-	-	-	-	-	-	-	(34
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston	-	-	├ - Ţ		-	-	-	-	-		-		-	-	(353)			-	(237)	-	-	(35
Retire - Hydro	-	(1)	(169)		(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	-	-	(179)	(26
Expire - Wind PPA	-	- '-		(175)	- '-	(41)	-	- ` '	-	-	(75)	(10)	-	(20)	(20)	-	-	(10)	(10)	-	(216)	(36
Expire - Solar PPA Expansion Resources	-					-			-	(2)			(67)	(49)	-		(1)	(115)	(175)	(11)	(2)	(42
SCCT Frame WV		-	<u> </u>	-	-			1	- 1	- 1		- 1	-		443	- 1	-	-	-	-	-	44
Total SCCT	-	-	-		-	- 620	-	-	-	-	- 349	-	-	-	443	-	-	-	-	-		. 44
Utility Solar+Stomge - PV - Jbridger Utility Solar+Stomge - PV - S-Oregon	-	-	 		-	620 500	-		-		349 345	-	- 2	127	446	-	-	-	-	-	620 500	1,41
Utility Solar+Storage - PV - Yakima			 		-	405			-		-		-	-		-			430		405	83
Total Solar			-		-	1,525	-	-	-	- 8	694		3	127	446	-		-	430		1,525	3,22
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-	 		-	-		-		1.9			-	-	-			-	-	-	1.9	1
Demand Response, CA-3rd Party Contracts					-				-			-				-		-	1.1			1
Demand Response, CA-Irrigate	-	_	-	-	-	-	-	-	-	-	4.8 5.8	-	-	-	-	-	-	-	-	-		4
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH		-	 		-	-		-			5.8		-	-	-			-	3.0	-		5
Demand Response, OR-3rd Party Contracts			_		-	-			-			-				-		-	35.7	-		35
Demand Response, OR-Irrigate	-	-	- 1	-	-	-	-	-	-		13.3	-	-	-	-	-	-	-	- 9 9	-		13
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-	-	 		-	-		-			5.2		-	-	-	-		-	9.9	-		9
Demand Response, WA-Thermostat											11.3				5.3				-			16
Demand Response Total			-							9.4	40.4				5.3			- 1	52.8		9.4 17	107
Energy Efficiency, CA Energy Efficiency, OR	40	37	43	49	2 47	2 46	43	43	39	37	33	31	30	29	26	1 26	24	1 25	24	1 21	422	68
Energy Efficiency, WA	11	10	11	11	12	12	12	12	11	10	9	9	8	8	8	6	6	5	4	4	112	11
Energy Efficiency Total	52	49	55	62	61	60	57	57	51	49	44	41	40	38	35	32	32	30	29	26	551	89
Battery Storage - S-Oregon Battery Storage - Willamette Valley	-	-	 		-	-	-	30 15	-	90		-	-	-	-	-	-	-	30 15	90	120 15	2
Battery Storage - Williamette Valley Battery Storage - Portland NC			 : 					-	30	60									-	15	90	10
Battery Storage - Walla Walla	-	-	-	-	-	-	-	-	-	45	-	-	-	-	-	-	-	-	150	-	45	19
Battery Storage - Yakima FOT West - Summer	998	719	492	501	496	259	350	518	90 589	1.075	1.075	1.075	1.075	1.075	1.075	1.075	1.063	1.042	1.075	1.073	105 600	8:
FOT West - Winter	151	131	265	299	310	33	37	38	85	217	151	150	178	155	69	7	16	9	-	-	157	
Existing Plant Retirements/Conversions	-	(61)	(573)	(224)	(1)	(768)	-	(505)	(85)	(912)	(442)	(396)	(350)	(114)	(911)	(156)	(36)	(280)	(2,260)	(43)		
Annual Additions, Long Term Resources Annual Additions, Short Term Resources	1.149			212 800		4,278 292			261 675	1,122	1,277	1,593	1.553	746 1,432	1,190	1,332	1.347	73 1,351	2,818 1,375			
Annual Additions, Short Term Resources	1,149	850	/5/	800	806	292	387	226	675	1,518	1,465	1,390	1,553	1,432	1,391	1,332	1,347	1,351	1,3/5	1,3/3		

P-54C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
Existing Plant Retirements and PPA Termination Omig 1 (Coal Early Retirement/Conversions)	-	-	-	-		. 1	- 1	(82)	. 1	. 1				. 1	. 1	-		-	-	-	(82)
Craig 2 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-		-	(82)
Hayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
Hayden 2 Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	- (33)	-	-	-	-	-	(459)	-	-
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)		-
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74) (74)	-	-	-	-	-	-	-	-	-	-	(74) (74)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(387)
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	_	-	-	-	(99)
DaveJohnston 2 DaveJohnston 3		-	-	-	-		-	-		(106) (220)	-	-	-		-		-	-	-	-	(106)
DaveJohnston 4	-	-	-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-		-	-	-	-	-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	(201)	-	-	-	-		-	-	-	-	-	-	-	(201)
Gads by 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	- (40)		-	-	-	-	-	-	-	(20)
Retire - Wind Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	- (3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1)
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247
Expansion Resources	-	247		-	-					-		(247)				-	-			_	247
SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	185
SCCT Frame WYSW Total SCCT	-		-	-	-		-	185			-	370		-	-	-	-	-	370 370		185
Wind, Djohnston		_		-	_	-	-	-		-	620	-		-	-				-		-
Wind, GO	-	-	-	-	-	-	-	-	-	-	-	823		-	-	-	-	-	-	-	
Wind, WYAE Total Wind	-		-	-	-	1,920	-	-	-	-	620	823	-	-		-	-	-	-	-	1,920 1,920
Utility Solar+Storage - PV - Utah-S		_	_	-	-	300		-			-	-	500			-		-		_	300
Utility Solar+Storage - PV - WYSW	-	_	-	-	-	-	-	-		-	-			100	-	-	-	-	-	_	-
Utility Solar+Stomge - PV - GO Utility Solar+Stomge - PV - Huntington		-	-	-	-	-	-	-		-	-	175	102	-		-	-	-	899	10	-
Utility Solar+Storage - PV - Utah-N	-		159	64	73	604	-	-			-	_		-	-	-	-	-	-	-	900
Total Solar			159	64	73	904	-	-	-	-	-	175	602	100	-	-	-	-	899		1,200
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts		-	-	-	-	-	-	-		-	-		-	-		-	-	-	2.6 1.8		-
Demand Response, ID-Irrigate	_		-	-	-	-	-	-	-	-	-	-		-	5.2	-	-	3.7	-	1.8	
Demand Response, ID-Thermostat	4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	8.3	7.2	-
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9	-	-	- 7.2	-	-	6.7	-		6.8	-	-	7.0	-	74.1	2.6	28.1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	116.7	8.2		-	-	-	8.3	-	3.4	5.1	
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-		-	-		-		-	-		-	-		-	-	-	3.4		-
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-
Demand Response, WY-Thermostat	-	-	-	-	- 0.2	-		-	-	-	-	-	-	-	-	-	-	-	18.7		13.5
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	8.3	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	3.0
Demand Response Total	4.1		7.0	-	18.1		8.2	7.2		-	123.3	8.2		6.8	5.2	-	15.3	3.7	153.4	21.6	44.6
Energy Efficiency, ID Energy Efficiency, UT	58		67	68	7 69	66	67	65	65	62	58	6 56	52	50	6 51	4 36	32	26	3 25	26	68 654
Energy Efficiency, WY	10		11	14		16	16	18	18	18	4.7		13		11						1.10
											16	15		12		9	8	7			147
Energy Efficiency Total Battery Stomac - Utah-N	74			88	91	89	91	90	90	87	80	77	72	68	69	49	45	37	33	35	
Battery Storage - Utah-N	74 -																	37			868
Battery Stomge - Utah-N Battery Stomge - WYSW Battery Stomge - Idaho	74 - -				91 - -			90		87 - - -	90.0 90.0	77 - -	72 - -		69 - - 135.0	49 - -	- - -	-	33 - - 45.0	35 450 165.0 15.0	868 - - -
Battery Stomge - Utah-N Battery Stomge - WYSW Battery Stomge - Idaho FOT East - Summer	74 - - -										90.0	77 - -			69 - -	49 - -	- - -	-	33 - - 45.0	35 450 165.0 15.0	868 - - -
Battery Storage - Utah-N Battery Storage - WYSW Battery Storage - Idaho PCT East - Summer Kisting Plant Retirements and PPA Termination	74				91 - -		91	90		87 - - -	90.0 90.0	77 - -	72 - -		69 - - 135.0	49 - -	- - -	-	33 - - 45.0	35 450 165.0 15.0	- 13
Battery Stonage - Utah-N Battery Stonage - WYSW Battery Storage - Idaho FOT East - Summer EXISTING PLATE TERMINATION JUNESTIC - SUMMER - SUMER - SUMMER - SUMER - SUMMER - SUMER - SUMMER - SUMMER - SUMMER - SUMMER - SUMMER - SUMM	74				91			90		87 - - -	90.0 90.0 - 245	77 - - 300	72 - -		69 - - 135.0 226	49 - -	- - -	300	33 - - 45.0 300	35 450 165.0 15.0 300	868 - - -
Battery Sronge - Urah-N Battery Sronge - WySW Battery Sronge - Idaho FOT Fast - Summer Kiksting Plant Rettrements and PPA Termination Bindbidget [Coal Farly Retirement/Conversions) Findbidget 2 (Coal Farly Retirement/Conversions) Bindbidget 3 (Boal Farly Retirement/Conversions)	74				91		91	90		87 - - -	80 90.0 90.0 - 245 (351)	77 - - 300	72 - -		69 - - 135.0 226	49 - -	- - -	300	45.0 300	35 450 165.0 15.0 300	868 - - - 13
Battery Stonage - Utah-N Battery Stonage - WYSW Battery Storage - Idaho FOT East - Summer EXISTING PLATE TERMINATION JUNESTIC - SUMMER - SUMER - SUMMER - SUMER - SUMMER - SUMER - SUMMER - SUMMER - SUMMER - SUMMER - SUMMER - SUMM	74 - - - - - - - -				91		91	90		87 - - 133	90.0 90.0 - 245	77 - - 300	72 - - 290 - - - -		69 - - 135.0 226	49 - - - 228 - - - -	- - -	300	33 - - 45.0 300	35 450 165.0 15.0 300	868 - - - 13 - (356) - -
Islatery Storage - Urah-N Battery Storage - MyNW Battery Storage - Islaho SCOT East - Stume - Startery Starting Plant Retirements and PPA Termination Individued - (Coul Early Retirement/Conversions) Individued - (Individued - Individued - Individue	74 - - - - - - - - -				91		91	90		87 - - -	80 90.0 90.0 - 245 (351) - - -	77 - - 300	72 - -	68 - - - 300	69 - - 135.0 226	49 - - 228 - - - - (75)	- - -	- - 300	33 - - 45.0 300 - - - - (237)	35 450 165.0 15.0 300 - - (349) (353)	868
Battery Stronge - Urah-N Battery Stronge - WYSW Battery Stronge - Idaho POT Tast - Summer Existing Plant Retirements and PPA Termination Buildidget Cool Tarty Retirement/Conversions) Buildidget Cool Tarty Retirement/Conversions) Buildidget Good Tarty Retirement/Conversions) Buildidget 3 Buildidget 4 Bermiston Bermiston Bermiston Bermiston	74				91		91	90		87 - - 133	80 90.0 90.0 - 245 (351)	77 - - 300	72 - - 290 - - - -		69 - - 135.0 226	49 - - 228 - - - - (75)	- - -	300	33 - - 45.0 300 - - - - (237)	35 450 165.0 300 - - (349) (353) -	868 - - - 13 - (356) - -
Battery Strongs - Urah-N Battery Strongs - WYSW Battery Strongs - Idaho FOT Tast - Summer Ekisting Plant Retirements and PPA Termination Bindbidget (Cool Tarty Retirement/Conversions) Bindbidget 2 (Cool Tarty Retirement/Conversions) Bindbidget 3 (Bool Tarty Retirement/Conversions) Bindbidget 3 (Bool Tarty Retirement/Conversions) Bindbidget 4 (Bermitton) Berlies - Hydro Ekpire - Solar PPA Ekpire - Solar PPA Ekpire - Solar PPA Ekpires - Solar PPA Ekparsion Resources	74				91		91	90		87 - - 133 - - - - (7)	80 90.0 90.0 - 245 (351) - - -	77 - - 300	72	68 - - - 300 - - - - - - - - - - - - - - -	69 - - 135.0 226	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 - - 45.0 300 - - - - (237) (10) (175)	35 450 165.0 15.0 300 - - (349) (353) - - (11)	868
Islation Storage - Utah-N Battery Storage - WNSW Battery Storage - Islaho SCOT East - Sturrer Existing Plant Retirements and PPA Termination Individued - (Coul Early Retirement/Conversions) Individued - (Coul Early Retirement/Conversions) Individued - 3 Individued - 3 Individued - 3 Individued - 4 Individ	74				91		91	90		87 - - 133 - - - - (7)	80 90.0 90.0 - 245 (351) - - -	77 - - 300	72	68 - - - 300 - - - - - - - - - - - - - - -	69 - - 135.0 226	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 - - 45.0 300 - - - (237) - (10) (175)	35 450 165.0 15.0 300 - - (349) (353) - - (11)	868
Battery Strongs - Urah-N Battery Strongs - WYSW Battery Strongs - Idaho FOT Tast - Summer Ekisting Plant Retirements and PPA Termination Bindbidget (Cool Tarty Retirement/Conversions) Bindbidget 2 (Cool Tarty Retirement/Conversions) Bindbidget 3 (Bool Tarty Retirement/Conversions) Bindbidget 3 (Bool Tarty Retirement/Conversions) Bindbidget 4 (Bermitton) Berlies - Hydro Ekpire - Solar PPA Ekpire - Solar PPA Ekpire - Solar PPA Ekpires - Solar PPA Ekparsion Resources	74				91		91	90		87 - - 133 - - - - (7)	80 90.0 90.0 - 245 (351) - - -	77 - - 300	72	68 - - - 300 - - - - - - - - - - - - - - -	69 - - 135.0 226	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 - 45.0 300 - - - (237) - (10) (175) 443 443 214	35 450 165.0 15.0 300 (349) (353) - - (11)	868
Battery Sronge - Urah-N Battery Sronge - WYSW Battery Sronge - Idaho FOT Fast - Summer Riksting Plant Rettrements and PPA Termination Bindbidget (Coal Farly Retirement/Conversions) Findbidget 2 (Coal Farly Retirement/Conversions) Findbidget 3 (Boal Farly Retirement/Conversions) Findbidget 3 (Farly Retirement/Conversions) Findbidget 4 (Fermitted) Retire - Hydro Begive - Wind PPA Expire - Solar PPA Expire - Solar PPA SCCT Farne WV Total SCCT Wind, YK Total Wind	74				91		91	90		87 - - 133 - - - - (7)	80 90.0 90.0 - 245 (351) - - - - (75) - -	77 - - 300	72	68 - - - 300 - - - - - - - - - - - - - - -	69 - - 135.0 226	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 	35 450 165.0 15.0 300 - - (349) (353) - - - (11)	868
Islatery Storage - Urah-N Battery Storage - WNSW Battery Storage - Islaho FOT East - Summer Kixting Plant Referencest and PPA Termination Individued - (Coul Early Retirement/Conversions) Individued - (Coul Early Retirement/Conversions) Individued - 3 Individued - 4 Individued	74				91		91	90		87 - - 133 - - - - (7)	80 90.0 90.0 - 245 (351) - - -	77 - - 300	72	68 - - - 300 - - - - - - - - - - - - - - -	69 - 135.0 226 - - - - - (20) - -	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 - 45.0 300 - - - (237) - (10) (175) 443 443 214	35 450 165.0 15.0 300 (349) (353) - - (11)	868
Islatery Storage - WNSW Battery Storage - MNSW Battery Storage - Islaho SCOT East - Summer Ekixting Plant Referements and PPA Termination Imhibidaget 1 (Coal Early Retirement/Conversions) Imhibidaget 2 (Coal Early Retirement/Conversions) Imhibidaget 3 (Inhibiting Coal Early Retirement/Conversions) Imhibidaget 3 (Inhibidaget 4 (Inhibid	74				91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 - - 245 - - - - - - - - - - - - - - - - - - -	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 	35 450 165.0 15.0 300 - - (349) (353) - - (11)	868 (356) (179) (216) (2) 359 467 405
Ratery Stronge - Urah-N Ratery Stronge - MYNW Ratery Stronge - Idaho SOFT East - Stume - Idaho SOFT East - Stume - Idaho Robert -	74				91	89	91	90		87 - - 133 - - - - (7)	80 90.0 90.0 -1 245 (351) -1 - - - - - - - - - - - - - - - -	77 - - 300	72	68	69 - 135.0 226 - - - - - (20) - -	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 	35 450 165.0 15.0 300 - - (349) (353) - - (11)	868
Battery Storage - WySW Battery Storage - MySW Battery Storage - Idaho FOT East - Summer Ekirting Plant Retirements and PPA Termination Findfidded r (Coul Early Retirement/Conversions) Formation	74				91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 245 (351) - - - (75) - - - - - - - - - - - - - - - - - - -	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 	35 450 165.0 15.0 300 - - (349) (353) - - (11)	868
Battery Sronge - WySW Battery Sronge - WySW Battery Stonge - Idaho FOFT East - Summer BiAtting Plant Retirements and PPA Termination Bindbidget Coul Early Retirement/Conversions Bindbidget Coul Early Retirement/Conversions Bindbidget Coul Early Retirement/Conversions Bindbidget Coul Early Retirement/Conversions Bindbidget A Bindbidget A Bindbidget Bermitton Bermitton Coul Early Retirement/Conversions Bindbidget A Bindbidget Bindbidget Bindbidget A Bindbidget Bindbidget	74				91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 -1 245 (351) -1 - - - - - - - - - - - - - - - -	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 33 45.0 45.0 300 2- (237) (10) (175) (1	35 450 165.0 165.0 15.0 300 	868 (356) (179) (216) (2) 359 467 405
Ratery Stronge - Urah-N Battery Stronge - WYSW Battery Stronge - Idaho SCOT Fast - Summer Korting Plant Retirements and PPA Termination Individual - (Coul Farty Retirement/Conversions)	74				91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 245 (351) 	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45	- - - 300 - - - - - (1) (10)	33 -45.0 300 	35 450 165.0 300 300 (349) (353) 	868
Battery Sronge - WySW Battery Sronge - WySW Battery Stonge - Idaho FOFT East - Summer BiAtting Plant Retirements and PPA Termination Bindbidget Coul Early Retirement/Conversions Bindbidget Coul Early Retirement/Conversions Bindbidget Coul Early Retirement/Conversions Bindbidget Coul Early Retirement/Conversions Bindbidget A Bindbidget A Bindbidget Bermitton Bermitton Coul Early Retirement/Conversions Bindbidget A Bindbidget Bindbidget Bindbidget A Bindbidget Bindbidget	74				91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 245 (351) - - - (75) - - - - - - - - - - - - - - - - - - -	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45 - - 300	- - - 300 - - - - - (1) (10)	33 33 45.0 45.0 300 2- (237) (10) (175) (1	35 450 165.0 165.0 300 300 330 (349) (349) (310) 	868
Rattery Storage - Urah-N Rattery Storage - WYSW Rattery Storage - Idaho VOT Bart - Storage - Idaho Rattery Britan - Idaho Rattery - Id	74	83			91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 245 (351) 	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45	- - - 300 - - - - - (1) (10)	33 45.0 300 300	35 450 165.0 15.0 300	868
Ratery Stronge - Urah-N Ratery Stronge - MyNW Ratery Stronge - Maho Stronge - Maho Storner Riving Plant Retirements and PPA Termination Individual Cool Harty Retirement/Conversions) Individual Cool Harty Retirement/Conversions Individual Cool Harty Retirement Individual Cool Harty Retirement Individual Retirement Cool Harty Retirement Individual Reti	74				91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 245 (351) 	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45	- - - 300 - - - - - (1) (10)	33 45.0 300 300 300 1 1 1 1 1	35 450 165.0 15.0 300	868
Ratery Storage - Urah-N Ratery Storage - WYSW Ratery Storage - Idaho STOFT East - Storage Ratery Storage - Idaho STOFT East - Storage Ratery Storage - Idaho STOFT East - Storage Ratery	74	83			91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 245 (351) 	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45	- - - 300 - - - - - (1) (10)	33 45.0 300 300	35 450 165.0 15.0 300	868
Ratery Stronge - Urah-N Ratery Stronge - MYNW Ratery Stronge - Idaho SOFT Eart - Stumer Karting Plant Retirements and PPA Termination Individual - (Coul Early Retirement/Conventions) Individual - (Coul Early Coul Early C		83	85	88	91	89	91	90		87 	80 90.0 90.0 - 245 (351) - - - - - - - - - - - - - - - - - - -	77 - - 300	72	68	69	49	45 	(115)	33 45.0 300 300	35 450 165.0 15.0 300	868
Islation y Nornge - Urah-N Battery Storage - MySW Battery Storage - Islaho SCT East - Summer Kixting Plant References and PPA Termination Individual (Coul Early Retirement/Conversions) Individual (Coul Early Retirement/Conversions) Individual - Coul Early Retirement/Conversions) Individual - A Individual	74	83			91	89	91 	90		87 - - 133 - - - - (7)	80 90.0 90.0 245 (351) 	77 - - 300	72	68	69 	49 - - 228 - - - - (75)	45	- - - 300 - - - - - (1) (10)	33 45.0 300 300	35 450 165.0 15.0 300	868
Ratery Stronge - Urah-N Ratery Stronge - MYNW Ratery Stronge - Idaho SOFT Eart - Stumer Karting Plant Retirements and PPA Termination Individual - (Coul Early Retirement/Conventions) Individual - (Coul Early Coul Early C		83	85	88	91	89	91	90		87 	80 90.0 90.0 - 245 (351) - - - - - - - - - - - - - - - - - - -	77	72	68	69	49 49	45 	(115)	33 45.0 300 300	35 450 165.0 15.0 300	868
Ratery Stronge - Urah-N Ratery Stronge - MyNW Ratery Stronge - Idaho SCOT Fast - Summer Rivering Plant Retirements and PPA Termination Individual - (Coul Farty Retirement/Conversions) Individual - (Coul Farty Coul Farty		83	85	88	91	89	91 91	90	90	87 	80 90.0 90.0 	77	72	68	69	499	45		33 45.0 300 300 300	35 450 165.0 300 300 (349) (349) (319) (11) 	868
Rattery Storage - Uraha-N Rattery Storage - MyNW Rattery Storage - Idaho (SOT Bart -		83	85	88	91	89	91	90	90	87 	80 90.0 90.0 90.0 - 245 (351)	77	72 	68	69	49 49	45 	(115)	33	35 450 165.0 15.0 300	868
Ratery Stronge - Urah-N Ratery Stronge - MyNW Ratery Stronge - Idaho SCOT Fast - Summer Rivering Plant Retirements and PPA Termination Individual - (Coul Farty Retirement/Conversions) Individual - (Coul Farty Coul Farty		83	85	88	91	89	91 91	90	90	87 	80 90.0 90.0 	77	72	68	69	499	45		33 45.0 300 300 300	35 450 165.0 15.0 300	868
Ratery Stronge - Urah-N Ratery Stronge - Marko Ratery Stronge - Marko Stronge - Marko Stronge - Marko Stronge - Marko Ratery Stronge - Marko Ratery Stronge - Marko Ratery		83	85	88	91 	89	91	90	90	87 	80 90.0 90.0 90.0 245 (351) 354 8 1.9	77	72	68	69	49 49	45		33	35 450 165.0 15.0 300	868
Ratery Storage - Urah-N Ratery Storage - WYSW Ratery Storage - Idaho STOFT East - Storage Ratery Storage - Idaho STOFT East - Storage Ratery Storage - Idaho STOFT East - Storage Ratery		83	85	88	91 	89	91	90	90	87	80 90.0 90.0 90.0 245 (351)	77	72	68	69	49 49	45		33	35 450 165.0 15.0 300	868
Ratery Stronge - Urah-N Ratery Stronge - Marko Ratery Stronge - Marko Stronge - Marko Stronge - Marko Stronge - Marko Ratery Stronge - Marko Ratery Stronge - Marko Ratery		83	85	88	91 	89	91	90	90	87 	80 90.0 90.0 90.0 245 (351) 354 8 1.9	77	72	68	69	49 49	45		33	35 450 165.0 15.0 300 	868
Rattery Storage - Uraha-N Rattery Storage - MyNW Rattery Storage - Idaho Kokting Phint Retirements and PPA Termination Kokting Phint Retirement Conversions) Institution Retire - Inspired		83	85	88	91 	89	91	90	90	87	80 90.0 90.0 	77	72	68	69	499	45		33 45.0 300 300	35 450 165.0 15.0 300	868
Ratery Storage - Uraha-N Ratery Storage - MyNW Ratery Storage - Idaho SOFT Eart - Summer Kaving Plant Retirements and PPA Termination Individual - (Coul Early Retirement/Conventions) Individual - (Coul Early Retirement/Coul Early Retire		83	85	88	91 	89	91	90	90	87 	80 90.0 90.0 	77	72	68	69	49 49	45		33	35 450 165.0 15.0 300	868
Rattery Storage - Uraha-N Rattery Storage - MyNW Rattery Storage - Idaho Kokting Phint Retirements and PPA Termination Kokting Phint Retirement Conversions) Institution Retire - Inspired		83	85	88	91	89	91	90	90	87	80 90.0 90.0 90.0 245 (351)	77	72	68	69	49 49 49 49 49 49 49 49 49 49 49 49 49 4	45 		33 45.0 300 300	35 450 165.0 300 300 (349) (349) (353) (11) 	868

Table K.14 – CP-Cases, Detailed Capacity Expansion Portfolio

P-36CP	2019	2020							2027	Capacity						2034				2038	Resource	
Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-		(82)	
Hayden 1 Hayden 2		-	-	-	-	-	-	-	-	-	-		(44)	-	-	-	-	-	-			Ŧ
Huntington 1										-		- 1	- (33)	-		- 1			(459)	-		\pm
Huntington 2		-	-	-	-	-	-	-	-	(74)	-	-	-	-		-	-	-	(450)		(74)	15
Colstrip 4 (Coal Early Retirement/Conversions)		-		-	-	-			-	(74)		_		-	-		-		-	-	(74)	4)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	- (00)	-	-	-	-	-	-	-	-	-			
DaveJohnston 1 DaveJohnston 2			-				-			(106)				-			-				(106)	5)
DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-		(220)	0
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	(156)	-	- (330)	-	-	-	-	-		-	-	-	 	(156)	5)
Naughton 2 (Coal Early Retirement/Conversions)	-	- (200)	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201))
Naughton 3 (Coal Early Retirement/Conversions) Gadsby 1-6		(280)	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-		- (280)	2
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-		-	-	-	-	-	-	-	-	(20)	n
Retire - Wind Expire - Wind PPA	- - - - - - - - - -																					
Expire - Solar PPA																						
Retire - Other Coal Ret WY - Gas RePower	Control Cont																					
Expansion Resources	1 1 1 1 1 1 1 1 1 1																					
SCCT Frame NTN SCCT Frame WYSW	Control Cont																					
Total SCCT	-	-	-	-	-	-	-	185	-	-	185		185	-	-	-	-	-	-	-	185	5
Wind, Djohnston Wind, CO																						
Wind, UT						-	-		-		-				-		-				151	ᆂ
Wind, WYAE Fotal Wind		-	-	-	151	1,920			-	-	280	1.417	- 20	- : -		-	-	-	-		1,920 2,071	
			-		-	149	-		-	-	-	-	-	500		-	-				149	
Utility Solar+Storage - PV - GO		_					-		-				3	-			-		- 900			+
Utility Solar+Storage - PV - Utah-N				64	-									-					-			
Total Solar	-	-	159	64	-	826	-	-	-	-	-		3	500		-	-	-		-	1,049	_
		-	-	-	-	-		-	-		-	-	-	-	-		-		1.8	-		+
Demand Response, ID-Irrigate	-	-	-	-	-	-	-		-	-		-	-	5.2		-	-	-	3.7	1.8		4
	4.1	-	7.0	-	9.9	-	-	7.2	-		6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1	_
Demand Response, UT-3rd Party Contracts	-	-	-			-	-	-		-	-		-	-		-	-	-	74.1	-		Ŧ
Demand Response, UT-Irrigate Demand Response, UT-Thermostat		-	-	-			-	-	46.7	70.0	-	8.2	-	-	-		-	-	8.3	5.1	116.7	,
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	3.4	1.8	-	I
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate		-	-				-	-		-	-	-	-	-	1.8		-	-	-	-		+
Demand Response, WY-Thermostat	-	-	-		- 0.2	-	-	-		-	-		-	-		-	-		18.7	1.2	- 13.6	ፗ
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services		-	-		-	-	3.0		-		-	-	-	-	-	-	-	-	-	 	3.0)
Demand Response Total			7.0				8.2	7.2	46.7	70.0	6.7		-									
Energy Efficiency, ID Energy Efficiency, UT	58	67	67	69	71	71	71	68	63	62	57	53	52	50	49	37	34	25	22	23	668	š
Energy Efficiency, WY				14		16	17	18	17	17	16	14	13	12	11	9	8	7	5	5	146	
Battery Storage - Utah-N	- 74	- 83	- 83	-	- 94	- 93	-	-	180.0	-	- 80	- /3	- /1	-	- 65	-	- 47	- 33	-	-	180	
Battery Storage - Utah-S	-	-	-		-	-	-			-	-		-	-	-	-	-		210.0		-	
Battery Storage - WYSW Battery Storage - Idaho		-	-	-	-	-	-	-	-	-	-		60.0	-	-	-	135.0	-	180.0	30.0		
FOT East - Summer	-	-	-	-	-	-	-	77	117	196	195	197	300	197	217	220	225	295	300	300	39	
Existing Plant Retirements and PPA Termination SimBridger 1 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	(351)	-		- 1		-	- 1	-		- 1	-	-		(351)	δĪ
limBridger 2 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	(356)	-	-	-	-	-	-	-	-	-	-	-		(356)	5)
limBridger 3 (Coal Early Retirement/Conversions)					- :	- :	- : -		-		-	-		- :	-	- :		-	-			
Hermiston		-	-		-	-	-	-		-	-	-	-	-	-	-	-		(237)	-	-	
Retire - Hydro Expire - Wind PPA	_	(1)	(169)	(175)	(1)	(41)		(1)	-		(75)	(10)		(20)	(20)	(75)	-	(1)	(10)	 		
Expire - Solar PPA				- (1/3)	-	-	-		-	(2)	- (/3)	- (.0)	(67)	(49)	- (20)		(1)	(115)	(175)	(11)	(210)	5
Expansion Resources SCCT Frame SO		_						. 1		210	. 1										210	
SCCT Frame WV	-			-	-	-	-	-	-		-	-	-	-	-	-		-				
See Selection																						
Utility Solar+Storage - PV - S-Oregon						500						124	116	150							500)
Utility Solar+Storage - PV - Yakima Fotal Solar		-	-	-	-	405	-	-	-	- 022	-	124		-	-		-			\vdash		
Demand Response, OR-Ancillary Services	Selection of the control of the cont																					
Demand Response, WA-Ancillary Services	-	-	-	-	-	-		-	-	1.9	-	-	-	-	-	-	-	-	-		1.9	,
Demand Response, CA-Irrigate Demand Response, OR-Cool/WH		-			-		-		-	4.8		-		-	-	-		-	3.0	 +	- 4.8	+
Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	13.3	-	-	-	-	-	-	-	-	26.8	-	13.3	Ŧ
Demand Response, OR-Irrigate Demand Response, WA-Irrigate		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	3.1	 +	5.2	2
Demand Response, WA-Thermostat	-	-	-	-	-	-	-	-	-	5.2 11.3	-		-	-	-	-	-	-	2.0		11.3	3
Demand Response Total Energy Efficiency, CA	- 1	- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	43.9	- 2	- 2	- 2	- 2	- 2	- 1	- 1	- 1	35.0	- 1	43.9 18	
Energy Efficiency, OR	40	43	43	49	47	46	45	43	39	37	33	31	30	29	26	26	26	25	22		430)
Energy Efficiency, WA Energy Efficiency Total	11 52		11 55	12 62	12 61	13 60	12	12 57	11 52	10 49	9 44	9 41	8	8	8 35	6 33	6 33	5 30	4 27	27	113 562	,+-
Battery Storage - S-Oregon	- 32				-	-	-	150	- 32	-	- 44	- 41	-	-	-	- 33		-			150)
Battery Storage - Willamette Valley		-	-	-	-	-	-	60 60	-	-	-	-	-	-	-	-	-	-	-		60 60	
D Cr B 4 N/C	-	-	-		-		-	120	-		-	-	-	-	-		-		-	-	120)
Battery Storage - Portland NC Battery Storage - Walla Walla	-																					
Battery Storage - Portland NC Battery Storage - Walla Walla Battery Storage - Yakima			102	-	100	-	-	105	1.075	1.075	1.076	1.070	1.076	-	1.076	1.075	1.075	1.01-	1.07	-	105	5
Battery Storage - Portland NC Battery Storage - Walla Walla	998 151		265	501 299	310	- 104 34	- 98 38	105 1,075 583	1,075 630	1,075 337	1,075 334	1,075 261	1,075 293	1,075 272	- 1,075 -	1,075	-	1,017	1,075	1,075	105 663 278	3
Battery Storage - Portland NC Battery Storage - Walla Walla Battery Storage - Yakima FOT West - Summer		131 (61)	265 (573)		310 (1)	34 (62)		105 1,075		337				272 (114)	1,075 - (557) 102	1,075 - (156) 83	(36)	1,017 - (280) 65	-	1,075 - (43)	105 663	3

										Capacity	(MW)										D	Table 1
P-45CP	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource	
Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-yea
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82)	(
Hayden 1	-	-	-	-	-	-	-	-	- (82)	-	-	-	(44)	-	-		-	-	-	-	- (82)	(
Hayden 2 Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-	(4.
Huntington 2	-			-	-	-	-	-	-	-	-	-			-		-	-	(450)		-	(4
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74) (74)	-	-		-	-		-	-	-	-	(74) (74)	(
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	-	-	-			-		-	-	-	-	(387)	(3
DaveJohnston 1 DaveJohnston 2	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)	(1
DaveJohnston 3	-	-	-	-	-		-	-		(220)		-		-	-		-	-	-	-	(220)	(2
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)	(3
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-		-	-		-	-	-	-	(201)	(2
Naughton 3 (Coal Early Retirement/Conversions) Gadsby 1-6	-	(280)	-	-	-	-	-	-	-	-	-	-		-	(356)		-	-	-	-	(280)	(2
Retire - Hydro	-				-	(20)	-			-	-	-			-		-	_	_	-	(20)	(
Retire - Wind Expire - Wind PPA	-	(27)	(17)	(49)	- (0)	-	-	(65)	- (3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	(9
Expire - Solar PPA	-	-	- (1/)	- (42)	(1)		-	-	-	-	- (12)	-	-	-	-	-	(35)	(94)	(849)	-	(1)	(9
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247	-
Expansion Resources		247					_	•	-						-				_			
SCCT Frame NTN SCCT Frame WYSW	-	-	-	-	-	-	-	185	-	-	-	370		-	-		-	-	370	-	185	5
Total SCCT								185		_		370							370		185	9
Wind, Djohnston	-	-	-	-	- 1	-	-	-	-	-	620	1,045	-	- 1	-	-	-	-	-		-	1,0
Wind, GO Wind, UT		_=			18			-				- 1,043							-		18	
Wind, WYAE Total Wind	-	-		-	- 18	1,920 1,920	-		-		620	1,045			-			-	-	-	1,920 1,938	1,9
Total Wind Utility Solar+Storage - PV - Utah-S			-		- 18	1,920	_	_		_	- 620	1,045	500				_				1,938	
Utility Solar+Storage - PV - WYSW	-	-	-	-		-	-	-	-	-	-	-	-		38	-	-	-	-	-	-	
Utility Solar+Stomge - PV - GO Utility Solar+Stomge - PV - Huntington	-	-	-	-	-	-	-	-	-	-	-	- 55	-	-	-		-	-	899	- 10	-	ç
Utility Solar+Storage - PV - Utah-N	-	-	159	64	54		-	-	-	-	-	-	-	-	- 38	-	-	-	- 899	-	900	9
Total Solar Demand Response, ID-Cool/WH	-	-	159	- 64	- 54	904	-	-	-	-	-	- 55	500	-	- 38		-	-	899 2.6		1,182	2,6
Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	1.8	-	-	
Demand Response, ID-Irrigate Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-		5.2	-		-	-	3.7 8.3	1.8	-	1
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-	-	6.8	-		7.0	-	-	7.2	28.1	5
Demand Response, UT-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-	-			-		74.1	2.6	-	7
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-		-	116.7	8.2	-	-	-	-	8.3	-	-	5.1	-	13
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4		-	31
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	1.8		-	
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	8.3		5.3	-	-	-	-	-	-	-	-		-	-	18.7 3.2		13.5	1:
Demand Response, WY-Ancillary Services	-	-	-		-	-	3.0	-		-	-	-		-	-	-	-	-	-	-	3.0	
Demand Response Total Energy Efficiency, ID	4.1	- 6	7.0	- 7	18.1	- 7	8.2	7.2	- 7	- 7	123.3	8.2	- 6	12.0	- 6	- 4	15.3		157.1		44.6 68	38:
Energy Efficiency, UT	58	67	67	68	69	66	67	65	65	62	57	56	52	52	49	36	34	25	22	26	654	1,0
Energy Efficiency, WY Energy Efficiency Total	10 74	10 83		12 86	15 91	16 90	16 91	18 90	18 90	18 87	16 80	14 77	13	12 70	11 65	9 49		7 35	5 30		144 866	1,4
Battery Storage - Utah-S	- '-	-	-	-	-	-	-	-	-	-	120.0	- ' '	- /2	-	-	-	-	-	165.0		-	52
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	15.0	-	-	15.0	-	-	-	-	120.0 150.0		-	36 39
Battery Storage - Idaho FOT East - Summer	-	-	-	-	-	-	-	-	-	109	225	300	300	252	289	292	300	300	300		11	39
Existing Plant Retirements and PPA Termination		_				(251)															(351)	
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	(351)	-	-	-	-	(356)	-		-	-		-	-	-	-	- (331)	(3
JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	-	(3
JimBridger 4 Hermiston	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	(237)	(353)	-	(.
Retire - Hydro	-	(1)	(169)	- (122)	(1)	-	-	(1)	-	(7)	-	- (1.0)	(6)	- (20)	- (20)	(75)	-	(1)	-	-	(179)	(2
Expire - Wind PPA Expire - Solar PPA				(175)		(41)				(2)	(75)	(10)	(67)	(20) (49)	(20)		(1)	(10) (115)	(10)		(216)	(-
Expansion Resources SCCT Frame WV																			443	1		
Total SCCT																			443	-		
Utility Solar+Storage - PV - Jbridger	-	-	-	-	-	354 500	-	-	-	-	359	-	- 66	- 409	-	-	-	-	-	702	354 500	1,
Utility Solar+Stomge - PV - S-Oregon Utility Solar+Stomge - PV - Yakima			<u> </u>			405	-	_	-	-			-	-				430			405	
Total Solar	-	-	-	-	-	1,259	-	-	-	-	359	-	66	409	-	-	-	430	-	702	1,259	3,
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	-	1.9	-		-	-		-	-	-	-	-	
Demand Response, CA-Cool/WH	-	-	-	-	-	-	-	-	-	-	- 1	-	-	-	-	-	-	-	1.5	-	-	
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	1.1 4.8	-	-	
Demand Response, CA-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	-	-	
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-		3.0 35.7		-	
Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	13.3		-	
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts		-	-	-	-	-	-	-	-	-	-	-			-		-	-	7.7	-	-	
Demand Response, WA-Irrigate	-		-	-	-		-	-	-	-		-		-	-		-	-	8.3	-	-	
Demand Response, WA-Thermostat Demand Response Total	-	-	1	-	-	-	-	-	-	-	9.4	-	-		-	-	-	-	16.6 107.7		-	1
Energy Efficiency, CA	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	17	
Energy Efficiency, OR Energy Efficiency, WA	40 11	37		36 11	39 12	39 12	43 12	41		37 11	34 10	31	31	30	26 7	26	24	25	22		387 109	
Energy Efficiency Total	52	48		48	53		56			49	46	42	41		35	33		30	27		513	
Battery Storage - S-Oregon Battery Storage - Portland NC	-		1	-		-	-			75	105 150	<u> </u>		1			- 45	-	-	-	75	
Battery Storage - Walla Walla	-			-	-	-	-	-	-	-	30	-	-	-	-		90		-		-	
Battery Stomge - Yakima FOT West - Summer	- 998	- 719	493	503	- 498	158	153	-	283	105 1,075	1.075	1,075	1,075	1,075	1,075	1,075	1,066	967	1,075	1,075	105 509	
FOT West - Winter	151	131	268	303	314	47	54	58	107	239	232	193	218	156	81	4	17	-	-	-	167	
Existing Plant Retirements/Conversions Annual Additions, Long Term Resources	130	(61) 131						(505) 336	(85) 141	(912) 316		(396)	(350) 679	(114) 546	(557) 138				(2,260)			
Annual Additions, Long Term Resources Annual Additions, Short Term Resources		850	761		812	205	207	267	391		1,658	1,568	1,593	1,483	1,446		1,384	1,267	1,375	1,484	L	

TACIFICORF = 2017 IKI											0.000										ULISD	
P-46CP	2019	2020	2021	2022	2023	2024	2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year	Totals 1/ 20-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)								(82)														
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-		-	-	(82)	(82)	-	-	-		-	-	-		-	-	-	(82)	(82)
Hayden 1	-	-	-	-	,	-	-	-		-	-	-	(44)	-	-	-	-	-	-	-	-	(44)
Hayden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-	(33)
Huntington 1 Huntington 2	-	-	-	-		-	-	-	-	-	-	-		-	-	-		-	(459)	-	-	(459) (450)
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	1	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)	(74)
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)	(74)
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	_		(387)		-	-		-		(99)						-		-			(387)	(387)
DaveJohnston 2	-	-	- 1	-	-	-	-	-	-	(106)	-	-		-	-	-	-	-	-	-	(106)	(106)
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	(220)
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-	-	- 1	-	-	-	-	(156)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)	(330)
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-		(201)	-	-	-	-				-		-	-	-	(201)	(201)
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)	(280)
Gadsby 1-6	-	-	-	-	-	(20)	-	-	-	-	-	-		_	(356)	-	-	-	-	-	- (20)	(356)
Retire - Hydro Retire - Wind	-	-	-	-		(20)	-	-	-	-	-	(40)		-	-	-	-	-	-	-	(20)	(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-		(65)	(3)	_	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	(924)
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)		(1)	(979)
Retire - Other Coal Ret WY - Gas RePower	-	247	- 1	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247	(33)
Expansion Resources	-	247				_	_	_	-	_	-	(247)		_	_	_	_	_	_	_	247	_
SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	185	555
SCCT Frame WYSW	-	-	<u>-</u> − T			-	-	185	-	185 185	185 185	370	-	-	-		-			-	185 370	370 925
Total SCCT Wind, Djohnston			H - 1			-	-	- 185	-	127	493					- -	-	-		-	127	620
Wind, GO	-			-				-		-	-	1,091								-	1	1,091
Wind, UT	-		- 1	-	294	- 1.000	-	-	-	-	-	-		-	-		-	-	-	-	294	294
Wind, WYAE Total Wind	-	-	-		294	1,920 1,920	-	1 - 1	-	127	- 493	1,091		-	-	-	-	-	-	-	1,920 2,341	1,920 3,925
Utility Solar+Storage - PV - Utah-S						6				-			500								2,341	506
Utility Solar+Storage - PV - WYSW	-	-	-	-	-	- 1	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	100
Utility Solar+Storage - PV - GO	-	_		-	-	-	-		-	-	-	-	9	-	-	-	-	-	- 909	-	-	909
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N	-	-	159	- 64	-	677	-	1	-	-	-	-		-	-	-	-	-		-	900	909
Total Solar	-	-	159	64	-	683		-		-	-	-	509	-	100	-	-	-	909		906	2,424
Demand Response, ID-Cool/WH	-	-	-	-	í	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6		-	2.6
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate			-	-		-		-		-		-		5.2		-		-	1.8 3.7		-	1.8
Demand Response, ID-Thermostat	-	-	- 1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	8.3	-	-	8.3
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1	55.9
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6 1.9	-	76.7 1.9
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	116.7	-	8.2			-	-	-	-	8.3	5.1	116.7	138.3
Demand Response, WY-Cool/WH	-	-	-	-	-	-		-	-	-	-	-	-	_		-	-	-	3.4	-	-	3.4
Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.4	-	-	39.4
Demand Response, WY-Irrigate Demand Response, WY-Thermostat			-			-		-	-	-					1.8	-		-	18.7		-	1.8 18.7
Demand Response, UT-Ancillary Services	-	-	- 1	-	8.3	-	5.3	-	-	-	-	-		-	-	-	-	-	3.2	-	13.5	16.7
Demand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	3.0
Demand Response Total Energy Efficiency, ID	4.1		7.0	- 7	18.1	- 7	8.2	7.2	- 7	116.7	6.7	8.2	- 6	12.0	1.8	- 4	7.0	- 3	163.7	18.6	161.2 68	379.2 116
Energy Efficiency, UT	58		67	68	69	66	67	65	65	62	57	56	52	50	49	36	36	25	20	22	647	1,049
Energy Efficiency, WY	10		11	12	13	16	16	17	17	17	16	14	13	12	11	9	8	7	5	5	139	238
Energy Efficiency Total	74	77	85	86	89	90	91	88	89	86	79	76	71	67	65	49	48	35	28 360.0	30 135	855	1,403 495.0
Battery Storage - Utah-S Battery Storage - WYSW	-	-			-	-	-		-	-	-	-		-	-	-	210.0	-	180.0		-	390.0
Battery Storage - Idaho	-	-	-	-	-	-		-	_	_	-	-	-	195.0	-	-	15.0	_	105.0		1	360.0
FOT East - Summer	-	-	-	-	-	-	-	-	-	205	239	164	178	235	247	250	267	300	300	300	20	134
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)	_				. 1	_ 1					(351)	_ 1							_	_	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	- 1	-	-	-	-	-	-	-	-	-		-	(356)	-	-	-	-	-	-	(356)
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(349)	-	-	-	-	-	-	-	-	-	-	-	-	(349)	(349)
JimBridger 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(353)	-	-	-	-		_	-	-	_	-	(227)	-	(353)	(353)
Hermiston Retire - Hydro	 	(1)	(169)		(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	(237)	-	(179)	(237)
Expire - Wind PPA	-	-	-	(175)	- ` ^	(41)	1	- ` '	-	-	(75)	(10)		(20)	(20)	-	-	(10)	(10)		(216)	(360)
Expire - Solar PPA	-						-		-	(2)	-	-	(67)	(49)			(1)	(115)	(175)	(11)	(2)	(420)
Expansion Resources SCCT Frame WV	-	-	- 1	- T	- 1	- 1	-		- 1	- 1	- 1	- 1	-	- 1	-	- 1	221		221	-	-	443
Total SCCT	-	-	-	-	-		-	-	-	-	-		-	-	-	-	221	-	221	-	-	443
Utility Solar+Storage - PV - Jbridger	-	_	-	-	-	-		384	-	-	349	-	-		682	-		-	-	-	384	1,415
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-		H : 1			500 405	-	1 -	-		-				475	-	-		430	-	500 405	975 835
Total Solar						905		384	-	-	349			-	1,157	-	_	-	430	-	1,289	3,225
Demand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	8	8
Demand Response, WA-Ancillary Services	-	-			-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	1.1	-	1.9	1.9 1.1
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate	1 -					-	-		-	-	4.8	-		-	-		-		- 1.1	-	-	4.8
Demand Response, CA-Thermostat	-	-	-	-		-	-	-		-	- "				5.8	-	-	-	-	-		5.8
Demand Response, OR-Cool/WH	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	3.0	-	-	3.0
Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	13.3	-	-	-	-	-	-	-	35.7	-	-	35.7 13.3
Demand Response, OR-Irrigate Demand Response, WA-3rd Party Contracts					-	-		1 - 1	-	-	-			-	-	-	-	-	9.9	-		9.9
Demand Response, WA-Irrigate	-	-	- 1	-	-	-	-	-	-	-	5.2	-	-	-	-	-	-	-	3.1	-	-	8.3
Demand Response, WA-Thermostat	-	-				-	-		-	9.4	23.2	-		-	16.6 22.4	-	-	-	52.8	-	9.4	16.6 107.9
Demand Response Total Energy Efficiency, CA	1	2	2	- 2	- 2	- 2	- 2	- 2	- 2	2	23.2	- 2	- 2	- 2	22.4	1	1	1	32.8		18	33
Energy Efficiency, OR	40			42	47	46	43	41	39	37	33	31	30	30	26	26	26	25	22	21	410	678
Energy Efficiency, WA	11			11	12	12	12	12	11	10	10		9	8	8	6	- 6		4			178
Energy Efficiency Total	52	48	52	55	61	59	56	55 30	52	49	45 210	42	40	40	35	33	33 15	30	27	26	539 30	889 255
Battery Storage - S-Oregon Battery Storage - Willamette Valley	-			-		-		-	-	-	75	-		-		-	-	-	-		-	75
Battery Storage - Portland NC	-	-	-	-	-	-	-	30	-	-	30	-	-	-	-	-	30	-	-	-	30	90
Battery Storage - Walla Walla	-	-		-	-	-	-	90	30	-	105 15	-	-	-	-	-	-	-	15	-	30 90	150 105
Battery Storage - Yakima FOT West - Summer	998	719	492	501	496	92	- 86	578	650	1.075	1.075	1.075	1.075	1.075	1.075	1.075	1.063	1.042	1.075	1.075	569	820
FOT West - Winter	151	131	265	300	310	33	37	38	85	217	254	213	222	170	69	7	16	9			157	
Existing Plant Retirements/Conversions		(61)	(573)	(224)	(1)	(62)	-	(1,207)	(85)	(912)	(444)		(350)		(913)	(156)	(36)	(280)				
Annual Additions, Long Term Resources Annual Additions, Short Term Resources	130 1,149			205 801	462 806	3,657 125	155		170 735	573 1.497	1,616 1,568	1,587 1,452	620 1.475	314 1.480	1,382	82 1.332	580 1.347	65 1,351				
Annual Additions, Short Term Resources Total Annual Additions					1,268	3,782	278		905				2,094		2,773			1,416			ł	

										Capacity	(MW)										Resource T	Cotole 1/
P-46J23CP	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038		
East Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025		2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038		20-year
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82) (82)	(82
Hayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	(44
Hayden 2 Huntington 1		-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-	(33
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-	(450
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-		(74)		-	-	-	-		-		-	-	(74)	(74 (74
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	_	-	- 1	-	-	-	-	-	-	-	-	-	_	(387)	(387
DaveJohnston 1 DaveJohnston 2	 -	-	-	-	-	-	-	-		(99) (106)		-	-	-	-		-		-	-	(99)	(99
DaveJohnston 3	-	-			-	-	-	_		(220)		-		-	-			-		-	(220)	(220
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)		(330)		-	-	-	-	-	-	-	-	-	(330)	(330
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)	(201
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6		(280)	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(280)	(280
Retire - Hydro	-	-	-	-	-	(20)	-	-		-	-	-	-	-	-	-	-	-	-	-	(20)	(20
Retire - Wind Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	(40 (924
Expire - Solar PPA	_	-	- (1/)	- (->)	(1)	(1)		-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1)	(979
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247	(33
Expansion Resources		247	-		-	-		-		-			-	-	-		_		-	_		
SCCT Frame NTN SCCT Frame WYSW	_		-		-	-		185		-	370	370		-	-		-	-		-	185	555 370
Total SCCT	-	-	-	-	-	-		185		-	370	370	-	-	-	-	-	-	-	-	185	92:
Wind, Djohnston	_	-	-	-	-	-	-	-	-	620	-	1,096	-	-	-	-		-		-	620	1,096
Wind, GO Wind, UT	-	-	-	-	294	-	-	-	-	-	-	1,096	-	-	-	-	-	-	-	-	294	29
Wind, WYAE	-	-	-	-	- 20.1	1,920	-	-	-	- 620	-	1.006	-	-	-	-	-	-	-	-	1,920	1,920
Total Wind Utility Solar+Storage - PV - Utah-S	-	 -	 -	-	294	1,920	-	-		620		1,096	-	500	-			-	-	-	2,834	3,930
Utility Solar+Storage - PV - WYSW	-	-	-	-	-	- 1	-	-	-	-	-	-	-		100	-	-		-	-		100
Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-		-		-	- 4	-	-		-	-	909	-	-	909
Utility Solar+Storage - PV - Utah-N	-	-	159	64		677	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900	900
Total Solar Demand Response, ID-Cool/WH	-	-	159	- 64	-	683	-	-		-		-	- 4	500	100		-	-	909 2.6		906	2,419
Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	1.8
Demand Response, ID-Irrigate Demand Response, ID-Thermostat	1	-	-	-	-	-	-	-		-		-	-	5.2	-		-	-	3.7 8.3			10.6
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2		-	6.7	-	-	6.8	-		7.0	-	-	7.2	28.1	55.9
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6	-	76.7 1.9
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-		116.7		8.2	-	-	-		-	-	8.3	5.1	116.7	138.3
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4	-	-	3.4 39.4
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-		-	-	-	1.8		-	-	-	-	-	1.8
Demand Response, WY-Thermostat	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-		-	-	-	-	18.7 3.2	1.2	13.5	19.9 16.7
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-		- 6.3	-	3.0	-	-	-		-	1	-	-		-	-	-	-	3.0	3.0
Demand Response Total	4.1		7.0		18.1		8.2	7.2		116.7	6.7	8.2	- ,	12.0	1.8	-	7.0	- 3	163.7	19.8	161.2 69	380.4 118
Energy Efficiency, ID Energy Efficiency, UT	58	67		68	69	68	67	68	65	62	57	6 56	54	52	6 51	38	36	26	22	26	659	1,076
Energy Efficiency, WY	10 74			12 86	14 90		16 91	17 92	18 90		16 80	15 77	13 73	12 70	11 67	9 51	8 48	7 37	5 30	5 35	141 869	243 1,437
Energy Efficiency Total Battery Storage - Utah-S		-	-	-	-	-		-	-	-	-		- 73	-	-	-	-	-	360.0		-	480.0
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	75.0	-	15.0	-	120.0 45.0	-	-	240.0 135.0	-	375.0 375.0
Battery Storage - Idaho FOT East - Summer		-	-	-	-	-	-	-	-	226	239	164	300	120.0 203	247	250	267	300	300		23	3/5.0
West Existing Plant Retirements and PPA Termination	_	1				-				-	(351)				1							(35)
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-		-	(331)	-	-	-	(356)		-	-	-	-	-	(350
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	(349)	-	-	-	_	-	-	-	-	-	-	-	-	-	-	(349)	(349
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston	-	-	-	-	-	(353)	-	-		-		-	-	-	-		-	-	(237)	-	(353)	(353
Retire - Hydro	-	(1)	(169)		(1)	-	-	(1)	-	(7)			(6)	-	-	(75)	-	(1)		-	(179)	(262
Expire - Wind PPA Expire - Solar PPA	-	-	-	(175)	-	(41)	-	-		(2)	(75)	(10)	(67)	(20) (49)	(20)		(1)	(10)	(10) (175)		(216)	(36)
Expansion Resources		_															443					443
SCCT Frame WV Total SCCT					-	_		_		_							443	-			-	443
Utility Solar+Storage - PV - Jbridger	-	-	-	-	-	620	-	-	-	-	349	-	-	-	446	-	-	-	-	-	620	1,41:
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	-	-	-	500 405	-	-		-	345	-	- 3	127	-		-	-	430	-	500 405	97: 83:
Total Solar	-	-	-	-	-	1,525	-	-	-	-	694	-	3	127	446	-	-	-	430	-	1,525	3,225
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-		1.9		-	-	-	-		-	-	-	-	1.9	1.9
Demand Response, CA-3rd Party Contracts	-	-			-	-	-	_		-		-		-	-			-	1.1	-	-	1.1
Demand Response, CA-Irrigate Demand Response, CA-Thermostat	-	-	-	-	-	-	-	-			4.8 5.8	-	-				-	-	-	-	-	4.8
Demand Response, OR-Cool/WH	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	3.0	-	-	5.8 3.0
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	-	13.3	-	-	-	-	-	-	-	35.7	-	-	35.7 13.3
Demand Response, OR-Irrigate Demand Response, WA-3rd Party Contracts	-	-	-	-	-	-	-	-		-	-	-	-		-		-		9.9	-		9.9
Demand Response, WA-Irrigate Demand Response, WA-Thermostat	-	-	-	-	-	-	-	-	-	-	5.2 11.3	-	-	-	- 5.3	-	-	-	3.1	-	-	8.3 16.6
Demand Response Total										9.4	40.4	_			5.3				52.8		9.4	107.9
Energy Efficiency, CA	1	2 37	2 43	2 49	2 47		2 43	2 43	2 41	2 38	2 35	2	2	2 30	2	1	1	1	1		18	33
Energy Efficiency, OR Energy Efficiency, WA	40 11	37 10	11	11			12	12	11	11	10	32 9	9	8	27 8	27 6	6	26 5	24	4	425 113	70 18:
Energy Efficiency Total	52			62			57	57	54	51	46	44		40	36	34		32	29	29	556	92
Battery Storage - S-Oregon Battery Storage - Willamette Valley	1 -	-	-	-	-	-	-	-	15 45	105		-	-	-	-		-	-	135	-	120 45	25 4
Battery Storage - Portland NC	-	-	-		-	-		-	-	45	-	-	15	-	-	-	-	-	45	-	45	10
Battery Storage - Walla Walla Battery Storage - Yakima	-	-	-	-	-	-	-	45	- 60	90	30	-	15	-	-	-	-	-	-	-	90 105	13 10
FOT West - Summer	998	719		501			350	518	589	1,075	1,075	1,075		1,075	1,075	1,075		1,042	1,075	1,073	600	83:
FOT West - Winter Existing Plant Retirements/Conversion	151	131 (61)		299 (224)			37	(505)	85 (85)		(444)	(396)	(350)	155 (114)	69 (913)	(156)		(280)	(2.260)	(43)	157	115
Annual Additions, Long Term Resource		132	306	212	463	4,279		386	263	1,123	1,267	1,595	227	869	672	85	697	69	2,154	578		
Annual Additions, Short Term Resource Total Annual Addition				1,012			387 543				1,465 2,732			1,432 2,302					1,375 3,529			

P-47C										Capacity											Resourc
Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
raig 1 (Coal Early Retirement/Conversions) raig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82
ayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
layden 2 luntington 1		-	-	-	-		-	-			-	-	-	-	-			-	(459)	-	
luntington 2 olstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-		-	-	-	(74)	-	-	-	-	-		-	-	(450)	-	- (74
olstrip 4 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	-	-	(74)	-	-	-	_	_	-	-	-	_		(74
holla 4 (Coal Early Retirement/Conversions) aveJohnston 1	-	-	(387)	-	-		-	-	-	(99)	-	-	-	-	-		-	-	-	-	(387
aveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106
aveJohnston 3 aveJohnston 4	-	-	-	-	-		-	-	-	(220)	-	-	-	-	-		-	-	-	-	(330
aughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156) (201)	-	-	-	-	-	-	-	-	-	-	-	-	(156
aughton 2 (Coal Early Retirement/Conversions) aughton 3 (Coal Early Retirement/Conversions)		(280)		-	-		-	- (201)	-		-	-	-	-	-		-	-	-		(280
ads by 1-6 etire - Hydro	-	-	-	-	-	(20)	-	-	-		-	-	-	-	(356)	-	-	-	-	-	(20
etire - Wind	_	-	-	-	-	-	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	-
spire - Wind PPA spire - Solar PPA	-	(27)	(17)	(49)	(0)	- (D)	-	(65)	(3)		(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160
etire - Other			-	-	- '	- '	-	-	-	-	-		-	-	-	(1)	-	- 1	-	(32)	
oal Ret_WY - Gas RePower xpansion Resources	_	247	-	-	- 1	-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247
CCT Frame NTN CCT Frame WYSW	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	370	-	-	185
otal SCCT	-	-	-	-	-		-	185	-		-	370	-	-	-		-	370	-	-	185
/ind, Djohnston	-	-	-	-	-	-	-	-	-	-	620	- 968	-	-	-	-	-	-	-	-	-
/ind, GO /ind, UT	-			-	73		-	-	-		-	- 908		-	-			-	-		73
vind, WYAE	-	-	-	-	- 73	1,920 1,920	-	-	-		620	968	-	-	-	-	-	-	-	-	1,920
tility Solar+Storage - PV - Utah-S	-	-		-	-	227	-	-	-		-	-	500	-	-			-	-		227
Itility Solar+Storage - PV - WYSW Itility Solar+Storage - PV - GO		-	-	-		-	-	-		-	-		132		100	-	-	-	-	-	-
tility Solar+Storage - PV - Huntington	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	909	-	-
tility Solar+Storage - PV - Utah-N otal Solar	-	-	159 159	64 64		677 904	-	-	-		-	-	632	-	100	-	-	-	909	-	900 1,127
emand Response, ID-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6		
emand Response, ID-3rd Party Contracts emand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-		-	-	-	-	5.2		-	3.7	1.8	1.8	-
emand Response, ID-Thermostat	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	- 6.8	-	-	7.0	-	8.3	7.2	28.1
emand Response, UT-Cool/WH emand Response, UT-3rd Party Contracts	- 4.1	-	- 7.0	-	-		-	- 7.2	-		-	-	-	-	-		- 7.0	-	74.1	-	- 28.1
emand Response, UT-Irrigate emand Response, UT-Thermostat		-		-	-	-	-	-	·	-	116.7	- 8.2		-	-	-	- 8.3	-	-	1.9 5.1	-
emand Response, WY-Cool/WH	-	-	-	-	-		-	-	-		-	-		-	-		-	-	3.4	-	
emand Response, WY-3rd Party Contracts emand Response, WY-Irrigate	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	39.4 1.8	-	-
emand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	1.2	-
emand Response, UT-Ancillary Services emand Response, WY-Ancillary Services	-	-	-	-	8.3		5.3 3.0	-			-	-	-	-	-		-	-	3.2	-	13.5
emand Response Total	4.1		7.0		18.1		8.2	7.2			123.3	8.2		6.8	5.2		15.3	3.7	153.4	17.3	44.6
nergy Efficiency, ID nergy Efficiency, UT	58	61	62	68		66	65	65	62	62	57	53	52	50	49	36	32	26	22	26	637
nergy Efficiency, WY nergy Efficiency Total	10 74		11 78	12 86		16 89	16 89	17 88	17 85	17 86	16 79	14 74	13 71	12 68	11 65	9		7 36	5 30		139 841
lattery Storage - Utah-S		-	-	-	-	-	-	-	-	-		-	-	-	-		-	-	435.0	105	-
lattery Storage - WYSW lattery Storage - Idaho	-	-	-	-	-		-	-	-		105.0	-	-	15.0 90.0	-		-	-	150.0 210.0	15.0	-
OT East - Summer	-	-	-	-	-	-	-	-	-	143	261	191	175	226	270	273	300	300	300	300	14
xisting Plant Retirements and PPA Termination mBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	- 1	(351)	-	-	-	-	-	- 1	-	- 1	- 1	-	-	-	-	-	(351
mBridger 2 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	-	-	-	(356)	-		-	-	-	-	(349)	-	-	-
mBridger 3 (Coal Early Retirement/Conversions) mBridger 4 (Coal Early Retirement/Conversions)		-	-	-	-		-	-	-		-	-	-	-	-		-	(353)	-	-	
fermiston etire - Hydro	-	- (1)	(169)	-	- (1)	-	-	- (1)	-	- (7)	-	-	- (6)	-	-	- (75)	-	- (1)	(237)	-	(179
etire - Hydro spire - Wind PPA	-	- (1)	(169)	(175)	- (1)	(41)	-	- (1)	-	-	(75)	(10)	-	(20)	(20)	- (73)	-	(10)	(10)		(216
opire - Solar PPA Oxpansion Resources	-	-	-	-	-	-	-	-	-	(2)	-	-	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2
CCT Frame WV		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-
otal SCCT Itility Solar+Storage - PV - Jbridger	-	-	-	-	-	354	-	-	-		359	-	-	-	-		-	702	443	-	354
tility Solar+Storage - PV - S-Oregon			-	-		460	-	-	-		-	-	-	40	475		-	-		-	460
tility Solar+Storage - PV - Yakima otal Solar	-	-	-	-	-	1,219	-	-	-	-	359	-	-	40	475	-	-	430 1,132	-	-	1,219
Demand Response, OR-Ancillary Services		-	-	-	-		-	-	-	-	- 8	-	-	-	-	-	-	-	-	-	_
Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	1.5	-	-
Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	1.1	-	-
Demand Response, CA-Irrigate Demand Response, CA-Thermostat		-		-	-		-	-	-		-	-	-	-	-		-	-	5.8		-
emand Response, OR-Cool/WH		,	-	-	-	-	-	-		-	-	-		-	-	-	-	-	3.0 35.7	-	-
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emand Response, WA-Cool/WH emand Response, WA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7 9.9	-	-
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emand Response, WA-Thermostat	-	-	-	-	-	-	-	-	-	-	9.4	-	-	-	-	-	-	26.3	16.6 81.4		-
nergy Efficiency, CA	1		2	2		2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	17
nergy Efficiency, OR nergy Efficiency, WA	40 11	37 9	37 10	36 10		39 12	43 11	41 11	39 11	37 11	33 10	31 9	31 9	30 8	26 7	26 6		26 5	4	23	385
nergy Efficiency Total	52		48	48		52	56	54	51	49	45	42		40	35	33		31	27		509
lattery Storage - S-Oregon lattery Storage - Willamette Valley	-	-	-	-			-	-		- 60	105 60			- T			-	-	75	15	- 60
Battery Storage - Portland NC	-	-	-	-	-	-	-	-	-	-	120	-	-	-	-	-	-	-	-	-	-
Battery Storage - Walla Walla Battery Storage - Yakima	-	-	-	-	-	-	-	-	-	105	75	-	-	-	-	-	- 15	15	- 30	30	15
FOT West - Summer	998	719	493	503	498	170	166	244	318	1,075	1,075		1,075	1,075	1,075	1,075	1,047	1,075	1,045	1,046	518
FOT West - Winter Existing Plant Retirements/Conversions	151	(61)	268 (573)	303 (224)		58 (412)		68 (505)	118	250 (912)	224 (449)	185 (396)	193 (350)	140 (114)	71 (557)	(156)	18 (36)	(982)	(2,260)	(43)	173
Annual Additions, Long Term Resources	130	124		198	230	4,185 228		335	137 436	315 1,468	1,701		745 1,443	259 1,440	680 1,417	81 1,352	107		2,544	244	1
Annual Additions, Long Term Resources Annual Additions, Short Term Resources	1.149																			1.346	4

P-48C										Сарасіту	(MW)										Resource	ce T
F-46C	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	
Existing Plant Retirements and PPA Termination																						
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-			-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82	2)
Hayden I	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-		-/
Hayden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	,	-	-	-	-	
Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	+
	-	-	-		-			-		(74)	-				-		-		(430)	-	(74	4)
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-		
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(387)	7)
DaveJohnston 1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-		
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	-	-								(330)			-	-						-	(330	0)
	-	-	-			-	-	(156)	-	-	-	-	-	-	-	-	-	_	-	-		
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-		-	-	(201)	1)
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)	0)
Gads by 1-6	-	-	-	-	-	- (20)	-		-	-	-	-	-	-	(356)	-	-	-		-	- (20)	0)
						(20)						(40)									(20)	0)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)		(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160	0)
Expire - Solar PPA	-	_	-		(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)			
Retire - Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	-	_
	-	247		-	- 1	- 1	- 1	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247	7
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Wind, Djohnston	-	-	-	-	-	-	-	-	-	-	620			-	-	-	-	-	-	-		$\perp \Gamma$
Wind, GO Wind, UT	-			-	- 72		-		-								-		_	-		3 H
Wind, UT Wind, WYAE	-				- /3	1.920	-	-				-	-		-				 	 		
Total Wind					73	1,920					620	1,100										
Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	227	-	-	-	-	-	195	305	-	-	-	-		-	-	227	
Utility Solar+Storage - PV - WYSW	-	-	-	-	-	-	-	-	-	-	-	-		-	100	-	-	-	-	_	-	\perp
Utility Solar+Storage - PV - Huntington	-	-	120		-		-	-	-	-	-		-	-	-	-	-	-	909	-	- 000	_
Utility Solar+Storage - PV - Utah-N Fotal Solar	-	-			-			-			-	195	305		100			-	900	-		
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Demand Response, ID-Thermostat		-		-		-	-		-	-		-	-	-	-	-		-	8.3			_
	4.1		7.0		9.9			7.2			6.7		-	6.8			7.0		74.1		28.1	1
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Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4		-	
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	-	-			8.3	-	5.3		_	-	-		-		-					- 1.2		5
Demand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	0
Demand Response Total		-		-	18.1	-	8.2	7.2	-	-	123.3		-		-	1.8	15.3	3.7		19.1		
Energy Efficiency, ID		5		7	7	7	7	7	7	7	7					5	4	3		3		
Energy Efficiency, UT Energy Efficiency WY																9	8	7	5			
				86	91	90	91	88	90	87	80	77	72	68	65	51	48	37	33	35		
Battery Storage - Utah-S	_	-	-	_	-	-	-	-	-	-	-	-	-	-	-	-	-	-	375.0	105		
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	150.0	-	-	-	-	-	-	-			-	_
Battery Storage - Idaho			-			-	-		-	- 144	261	200	202		- 200	- 200	- 200	200	120.0			4
	-	_								144	261	300	203	230	299	300	300	300	300	300	14	4
	-	-	-	-	-	(351)	-	-	-	-	-	-	- 1	-	-	-	-	-	-	-	(351	1)
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	-	
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	_
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			^ ^l	(175)	- `	(41)		-		(7) -	(75)	(10)	- 1	(20)	- (20)	- (75)	-	(10)	(10)		(216)	6)
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Expansion Resources	-	-	-	(175)		(41) -	-	-	-	-	(75)		- 1	(20)		- (75)	(1)	(10)	(10)		(216)	6)
Expansion Resources SCCT Frame WV	-	-	-	(175)		(41) - - -	-	-	-	-	(75)		- 1	(20)		- (75)	-	(10)	(10)		(216)	6)
Expansion Resources SCCT Frame WV Fotal SCCT	- - -		-	(175) - - - -		- - - 354		-	-	-	(75)		- 1	(20) (49)	(20) - - - -	- (75)	- (1)	(10)	(10)		(216) (2) - - 354	6) 2) 4
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Espansion Resources SCCT Frame WV Total SCCT Liftily Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	- - - - -			(175) - - - - - -	-	- - 354 462 405	- - - - - -	-	- - - - - -	-	(75) - - - - 359 -		- 1	(20) (49) - - - - 38	(20) - - - - - 475 -	- (75) - - - - 519	- (1)	(10) (115) - - - 3 - 430	- (10) (175) - - 174 - -	(11) - - - 6	(216) (2) - - 354 462 405	6) 2) 4 2 5
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Spansion Resources SCCT Frame WV Total SCCT Liftly Solari-Storage - PV - Bridger Liftly Solari-Storage - PV - Sorgon Liftly Solari-Storage - PV - Sorgon Liftly Solari-Storage - PV - Storagen Folal Solari Demmand Response, OR-Aneillary Services Demmand Response, OR-Aneillary Services Demmand Response, OR-Aneillary Services Demmand Response, CA-Aneillary Services Demmand Response, CA-Aneillary Services Demmand Response, CA-Aneillary Services Demmand Response, CA-Infraite Demmand Response, CA-Infraite Demmand Response, OR-Sola Pistr Contracts Demmand Response, WA-Coul-WH Demmand Response, WA-Sola Party Contracts Demmand Response, WA-Sola Party Contracts Demmand Response, WA-Sid Party Contracts		-		(175)		- - 354 462 405				-	(75) 359 359		- 1	(20) (49) 	(20) - - - - - 475 -		- (1)	(10) (115) - - - 3 - 430	- (10) (175)	(11)	(216) (2) 	6) 2) 4 2 5
Spansion Resources SCCT Prame WV Total SCCT Litting Solar-Storage - PV - Bridger Litting Solar-Storage - PV - Soregon Litting Solar-Storage - PV - Soregon Litting Solar-Storage - PV - Stakima Total Solar Demand Response, OR-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Intermostat Demand Response, OR-Cod/WH Demand Response, OR-Cod/WH Demand Response, OR-Cod/WH Demand Response, OR-Mignate Demand Response, WA-Sud Party Contracts Demand Response, WA-Sud-Party Contracts Demand Response, WA-Sud-Party Contracts Demand Response, WA-Sud-Party Contracts Demand Response, WA-Sud-Party Contracts		-		-		- - 354 462 405 1,21 - - - - - -				- (2)	(75) - - - - 359 - - - 359 8 1.9 - - - - - - - - - - - - - - - - - - -	(10)	- (67)	(20) (49) 	(20)	- (75) 	- (1) 443 443	(10) (115)	- (175) - (175) - (175) - (175) - (174) - (174) - (174) - (174) - (175) - (175	(11) 	(216) (2 - - 354 462 405 1,221 - - - - - -	6) 2) 4 2 5
IS jamasian Resources SCCT Frame WV Total SCCT Ultilay Solari-Storage - PV - Bridger Ultilay Solari-Storage - PV - S-Oregon Demand Response, OR-Aneillary Services Demand Response, OR-Aneillary Services Demand Response, CA-CoUW H Demand Response, CA-CoUW H Demand Response, CA-CoUW H Demand Response, CA-CoUW H Demand Response, OR-Aneillary Services Demand Response, WA-CouW H Demand Response, WA-CouW H Demand Response, WA-CouW H Demand Response, WA-Craylingte Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response, Va-Thermostat Demand Response, Va-Thermostat Demand Response, Va-Thermostat Demand Response Total		-		-		- - 354 462 405 1,21 - - - - - -				- (2)	(75) - - 359 - - 359 8 1.9 - - - -	(10)	- (67)	(20) (49) 	(20)		- (1) 443 443	(10) (115) 	- (175) - (175) - (175) - (175) - (174) - (174) - (174) - (174) - (175) - (175	(11) 	(216) (2 - - 354 462 405 1,221 - - - - - -	4 2 5 1 1
Espansion Resources SCCT Frame WV Total SCCT Liftily Solari-Storage - PV - Bridger Liftily Solari-Storage - PV - Sorgon Liftily Solari-Storage - PV - Sorgon Liftily Solari-Storage - PV - Sorgon Liftily Solari-Storage - PV - Stakim Fotal Solar Demmad Response, OR-Aneillary Services Demmad Response, OR-Aneillary Services Demmad Response, OR-Aneillary Services Demmad Response, OR-And Party Contracts Demmad Response, CA-Irigate Demmad Response, CA-Irigate Demmad Response, OR-And Party Contracts Demmad Response, OR-Aneillary Demmad Response, OR-Aneillary Demmad Response, OR-Aneillary Demmad Response, OR-Aneillary Demmad Response, WA-Cou-UWH Demmad Response, WA-Sol-WH Demmad Response, WA-Sol-WH Demmad Response, WA-Sol-WH Demmad Response, WA-Sol-WH Demmad Response, WA-Thermostat Demmad Response, WA-Thermostat Demmad Response, WA-Thermostat Demmad Response, WA-Thermostat Demmad Response Total Bangy Efficiency, CA Bongy Efficiency, CA Bongy Efficiency, CA	- - 1 40	- - 2 37				354 462 405 1,221 	- - 2 43			-(2)	(75)	(10) 	(67)	(20) (49) (49) (49) (49) (49) (49) (49) (49	(20)	- (75) - (75) 	- (413) 443 443	(10) (115) 	. (175) . (175) . (175) 	6	(216) (210) (2) (2) (2) (2) (2) (3) (4) (2) (4) (2) (4) (4) (5) (4) (4) (5) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	6) 2) 4 2 5 5 1 1
Demand Response, WA-Irrigate Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA	- - 1 40	2 37 9					- 2 43			-(2)	(75)	(10) (10) (10) (10) (10) (10) (10) (10)	(67)	(20) (49) (49) (49) (49) (49) (49) (49) (49	(20) 	(75) (75) (75) (75) (75) (75) (75) (75)	- () () () () () () () () () ((10) (115) (115) 3 		(11) (11) (11) (11) (12) (13) (13) (14) (14) (14) (15) (15) (16) (17) (17) (17) (17) (17) (17) (17) (17	(216 (216) (216	6) 2) 4 4 22 5 1 1 7 7 9 9
Kapansion Resources SCCT Frame WV Total SCCT Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Scregon Utility Solar-Storage - PV - Scregon Utility Solar-Storage - PV - Stakima Total Solar Demand Response, OR-Aneillary Services Demand Response, OR-Aneillary Services Demand Response, CA - Code WH Demand Response, OR - Code WH Demand Response, OR - Code WH Demand Response, OR - Code WH Demand Response, WA - And Party Contracts Demand Response, WA - Thermostat Demand Response, WA - Thermostat Demand Response, WA - Thermostat Demand Response, Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, UR Energy Efficiency, UR Energy Efficiency, UR Energy Efficiency, Total	- - 1 40	- - 2 37 9 48				354 462 405 1,221 	- - 2 43			-(2)	(75) - - - - - - - - - - - - - - - - - - -	(10) 	(67)	(20) (49) (49) (49) (49) (49) (49) (49) (49	(20)	- (75) - (75) 	- (413) 443 443	(10) (115) 	- (175) - (175) - (175) - (175) - (174) - (175) - (174) - (175	(11) - 6 	(216) (2) (2) (2) (2) (3) (4) (4) (5) (4) (5) (4) (5) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	7 9 9 5 5
Knamsion Resources SCCT Frame WV Total SCCT Utility Solar-Stomge - PV - Bridger Utility Solar-Stomge - PV - Storegon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Marty Contracts Demand Response, OR-Cod/WH Demand Response, OR-Cod/WH Demand Response, OR-Cod/WH Demand Response, WA-Arigate Demand Response, WA-Trigate Demand Response, WA	- - 1 40 11 52	- - 2 37 9 48					- 2 43 12 56			-(2)	75) 75) 75) 75) 75) 75) 75) 75) 75) 75)	(10) (10) (10) (10) (10) (10) (10) (10)		2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	(20) 	- (75) -	(43) 443 443	(10) (115) ((11) (11) (11) (12) (13) (14) (14) (14) (15) (16) (17) (17) (17) (17) (17) (17) (17) (17	(216 (216) (216	6) 44 22 55 11 77 99 99 55
Espansian Resources SCCT Frame WV Total SCCT Ultility Solar-Storage - PV - Bridger Ultility Solar-Storage - PV - S-Oregon Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, ORAnd Party Contracts Demand Response, WAScale WH Demand Response, WAScale WH Demand Response, WAScale WH Demand Response, WAAnd Party Contracts Demand Response, WAThermostat Demand Response, WAThermostat Demand Response, VAThermostat Demand Response Total Energy Efficiency, OR Energy Efficiency, OR Energy Efficiency, OR Energy Efficiency, Total Battery Storage - Soragon Battery Storage - Portland NC	- - 1 40	- - 2 37 9 48					- 2 43			-(2)	(75) - - - - - - - - - - - - - - - - - - -	(10) (10) (10) (10) (10) (10) (10) (10)	(67)	(20) (49) (49) (49) (49) (49) (49) (49) (49	(20) 	(75) (75) (75) (75) (75) (75) (75) (75)	- () () () () () () () () () ((10) (115) (115) 3 	- (175) - (175) - (175) - (175) - (174) - (175) - (174) - (175		(216) (2) (2) (2) (2) (3) (4) (4) (5) (4) (5) (4) (5) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	6) 2) 4 2 5 1 1 7 9 9 5 5
Espansian Resources SCCT Frame WV Total SCCT Ultilay Solar-Storage - PV - Bridger Ultilay Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA - Colvert Demand Response, OR-Colvert Demand Response, WA-Irrigate Demand Response, WA-Irrigate Demand Response, VA-Irrigate Demand Response Total Demand Re	- 1 40 11 52 -	- 2 37 9 48 -					- 2 43 12 56			- (2)	75)	(10) (10) (10) (10) (10) (10) (10) (10)	(67)	(20) (20) (20) (20) (20) (20) (20) (20)		- (75)	- (1) 443 443 443	(10) (115)			(216 (216) (216	7 9 9 5 5 5 5
Espansion Resources CCT Prame WV Total SCCT Thilly Solar-Storage - PV - Bridger Jility Solar-Storage - PV - Sorgon Jility Sorgon - PV - Sorgon Jility Solar-Storage - PV - Sorgon Jility Sorgon - P	- - 1 40 11 52 - - - - 998	- 2 37 9 48 - - - 719					- 2 43 12 56 - - - 165			- (2)	359 359 359 359 359 359 359 1.9 	(10) (10) (10) (10) (10) (10) (10) (10)	(67)	22 38 40 40 1,075	(20) (20) (20) (20) (20) (20) (20) (20)	- (75)	- (1) 443 443 443	(10) (115)	- 174 - 174 - 175 - 174 - 175 - 174 - 175 - 174 - 175 - 174 - 175 - 175 - 177	- (11) - (12) - (14) - (15) -	(216) (2) (2) (2) (2) (3) (4) (4) (5) (4) (5) (4) (5) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	7 9 9 5 5 5 5 8
Spansion Resources SCCT Frame WV Total SCCT Lifting Solari-Storage - PV - Bridger Lifting Solari-Storage - PV - Sorgon Lifting Solari-Storage - PV - Sorgon Lifting Solari-Storage - PV - Stakima Total Solari Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, CACoulWH Demand Response, CACoulWH Demand Response, CACoulWH Demand Response, CAInternostat Demand Response, CAInternostat Demand Response, CAInternostat Demand Response, ORCoulWH Demand Response, ORCoulWH Demand Response, ORCoulWH Demand Response, ORAnd Party Contracts Demand Response, WAAndregate Demand Response, WAAndregate Demand Response, WAAndregate Demand Response, WAHorgate Demand Response, WAHorgate Demand Response, WAHorgate Demand Response, WABremostat Demand Response, WA	- 1 40 11 52 -	- 2 37 9 48 - - - - 719					- 2 43 12 56			- (2)	(75)	(10)	(67)	(20) (20) (20) (4) (4) (5) (4) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	(20) - - - - - - - - - - - - -	- (75)	- (1) 443 443 443	(10) (115)		(11)	(216) (216)	6) 44 42 22 55 11 7 9 9 9 5 5 5 5 8
Spanish Resources CCT Frame WV Total SCCT Thilly Solar-Storage - PV - Jbridger Jility Solar-Storage - PV - S-Oregon Jility Solar-Storage - PV - Solar-Storage John Solar - Solar-Storage - PV - Solar-Storage John Solar-Storage - Solar-St	- - 1 40 11 52 - - - - - 998 151	- 2 37 9 48 - - - - 719 131 (61)					- 2 43 12 56 - - - 165			- (2)	359 359 359 359 359 359 359 1.9 	(10) (10) (10) (10) (10) (10) (10) (10)	(67)	22 38 38 38 38 38 38 38 38 38 38 38 38 38	(20) (20) (20) (20) (20) (20) (20) (20)	- (75)	- (1) 443 443 443	(10) (115)		- (11) - (12) - (13) - (14) - (15) -	(216 (216) (216	6) 44 42 22 55 11 77 99 95 55 55 58

P-53CP	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
xisting Plant Retirements and PPA Termination (mig 1 (Coal Early Retirement/Conversions)								(82)													(82
raig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-		-	- (82)	(82)	-	-	-	-	-	-	-	-	-	-		(82
Hayden 1	-	-	-	-	-	-	-	-	-		-	-	(44)	-	-			-	-	-	
Hayden 2 Huntington 1	-		-	-	-		-	-	-	-	-	-	(33)	-	-	-	-	-	(459)		-
Huntington 2	_	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-		-		-	(74)	-	-	-	-	-	-	-	-	-		(74
DaveJohnston 1	-		- (387)		-				-	(99)	-		-	-	-	-		-			(99
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)		-			-			(156)	-	(330)	-	-	-			-					(330
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280
Gadsby 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-
Retire - Hydro Retire - Wind	1 - 1					(20)	1 -					(40)									(20
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1
Retire - Other	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	(1)	-	-	-	(32)	247
Coal Ret_WY - Gas RePower Expansion Resources	-	247			- 1	_		-	-	-	-	(247)			-	-		-			247
SCCT Frame NTN	-	- 1	-	-	- 1	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	185
SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	185	185	-	-	-	-	-	-	-	-	-	185
Total SCCT					- 7			185	- 7	185	185	370						- 1			370
Wind, Djohnston Wind, GO	+ -		-	-	-		-	-		127	493	1,091			-		-	-	-		127
Wind, UT			-	-	294			_										-			294
Wind, WYAE			-	-	294	1,920		-	-	- 127	493	1,091	-	-	-	-		-	-	-	1,920 2,341
Total Wind Utility Solar+Storage - PV - Utah-S	 				294	1,920			- :	127	493	1,091	500				-				2,341
Utility Solar+Storage - PV - Utan-S Utility Solar+Storage - PV - WYSW	1 -		-	-	-	-				-	-	-	-	-	100			-	-		-
Utility Solar+Storage - PV - GO	-	-	-	-	-	-	-	-	-	-	-	-	9	-		-	-	-	-	-	-
Utility Solar+Storage - PV - Huntington	-		- 159	- 64		677	-	-			-	-		-			-	-	909	-	-
Utility Solar+Storage - PV - Utah-N Total Solar	+ -		159 159	64	-	677 683	-			-	-		509	-	100		-	-	909		900 906
Demand Response, ID-Cool/WH	1 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6		-
Demand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-
Demand Response, ID-Irrigate	-		-	-	- 1		-	-	- 7	-				5.2				-	3.7	1.8	-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	1 -	7.0	-	9.9		-	7.2	- : -	-	6.7			- 6.8			7.0	-	8.3	7.2	28.1
Demand Response, UT-3rd Party Contracts				-			-			-		-	-	-	-			-	74.1	2.6	- 20.1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat	-		-	-	- 1	-		-	- 7	116.7	- 1	8.2	- 1	- 7	- 1	-		- 1	8.3	5.1	116.7
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	1 -	H :-	-	-	-				- :	-	-	-			-		-	-	3.4 39.4	-	-
Demand Response, WY-Irrigate	1 -	-	-	-			-	-		-	-	-		-	1.8	-	-	-	-		-
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	-	-
Demand Response, UT-Ancillary Services	-			-	8.3		5.3	-	- 1	-		-	-					-	3.2	-	13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1		7.0	-	18.1		3.0 8.2	7.2		116.7	6.7	8.2	-	12.0	1.8		7.0	-	163.7	18.6	3.0 161.2
Energy Efficiency, ID	6		6	7	7	7	7	7.2	7	7	7	6	6	6	6	4	4	3	3	3	68
Energy Efficiency, UT	58	61	67	68	69	66	67	65	65	62	57	56	52	50	49	36	36	25	20	22	647
Energy Efficiency, WY	10 74		11 85	12 86	13 89	16 90		17 88	17 89	17 86	16 79	14 76		12 67	11 65	9 49	8 48	7 35	5 28	5 30	139 855
Energy Efficiency Total Battery Storage - Utah-S	- /4	- '	-	-	-	-	-	-	-	-	-	-	- '1	-	-		-	-	360.0	135	-
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210.0	-	180.0	-	-
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	195.0	-	-	15.0	-	105.0	45.0	-
FOT East - Summer	-	-	-	-	-		-	-	-	205	239	164	178	235	247	250	267	300	300	300	20
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	- 1	-	-	(351)	-	-	-	-	- 1	- 1	-	-	-	-	- 1	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	1	-	-	-	-	(356)		-	-	-	-	-	-	-	-	-	-	-	(356
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(349)	-	-	-	-	-	-	-	-	-	-
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston	1 -		-	-			-	-		-					(353)		-	-	(237)		-
Hermiston Retire - Hydro	-	(1)	(169)	-	(1)		-	(1)		(7)	-	-	(6)	-	-	(75)	-	(1)	-		(179
Expire - Wind PPA	-	- '	-	(175)	- 1	(41)	-	- 11	-	-	(75)	(10)	- ` `	(20)	(20)	-	-	(10)	(10)	-	(216)
Expire - Solar PPA	-			-				-		(2)			(67)	(49)			(1)	(115)	(175)	(11)	(2)
Expansion Resources SCCT Frame WV	_			-			_		- 1		- 1	- 1	. 1	- 1	- 1		221		221		
Total SCCT	1 -		-	-	-				-	-	-	-	-	-	-	-	221	-	221	-	-
Utility Solar+Storage - PV - Jbridger	-	-	-	-	-	-	-	384	-	-	349	-	-	-	682	-	-	-	-	-	384
Utility Solar+Storage - PV - S-Oregon	-	-	-	-	- 1	500	-	-	-	-	-	-	-	-	475	-	-	-	-	-	500
Utility Solar+Storage - PV - Yakima Total Solar	+ -		-	-	-	405 905	-	384		-	349			-	1,157		-	-	430 430		405 1.289
Demand Response, OR-Ancillary Services	1 -		-	-	-	-		-	-	- 8	-	-	-	-	-,107		-	-	-		8
Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	1.9
Demand Response, CA-3rd Party Contracts	-		-	-	- 1			-	- 7		-							-	1.1	-	-
Demand Response, CA-Irrigate Demand Response, CA-Thermostat	1 -	 	-	-	-		-			-	4.8	-			5.8		-	-	-	-	-
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH	-		-	-	-					-	-	-	-	-	-			-	3.0		-
Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35.7	-	-
Demand Response, OR-Irrigate	-		-	-	- 1			-			13.3			-			-	-	-	-	-
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	+ -	1 -	-	-			-	H :- H	- : -	-	5.2						-	-	9.9 3.1		-
Demand Response, WA-Irrigate Demand Response, WA-Thermostat	1 -		-	-	-		-		-	-	- 3.2	-	-	-	16.6	-	-	-	-		-
Demand Response Total	-	-	-	-	-	-	-		-	9.4	23.2	-	-	-	22.4	-	-	-	52.8	-	9.4
Energy Efficiency, CA	1		2	2	2	.2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	18
Energy Efficiency, OR Energy Efficiency, WA	40 11		40 10			46 12		41 12	39 11	37 10	33 10	31 9		30 8	26 8	26 6	26 6	25 5	22 4	21	410 111
Energy Efficiency, WA Energy Efficiency Total	52		52	55	61	59		55	52	49	45	42		40	35	33	33	30		26	539
Battery Storage - S-Oregon				-				30	-	-	210	-	-		-	-	15	-			30
Battery Storage - Willamette Valley	-	-	-	-	-	-	-	-	-	-	75	-	-	-	-	-	-	-	-	-	-
Battery Storage - Portland NC	-		-	-	-	-	-	30	30	-	30 105	-	-	-	-	-	30	-	- 15	-	30 30
Battery Storage - Walla Walla Battery Storage - Yakima	-		-	-			-	90		-	105	-			-	-	-	-	- 13		90
FOT West - Summer	998		492	501		92		578	650	1,075	1,075	1,075		1,075	1,075	1,075	1,063	1,042	1,075	1,075	569
FOT West - Winter	151		265	300	310	33		38	85	217	254	213	222	170	69	7	16	9		-	157
Existing Plant Retirements/Conversion	s - s 130	(61) 125		(224)		(62) 3,657		(1,212)	(85) 170	(912) 573	(442) 1,616	(396) 1,587	(350) 620	(114)	(911) 1,382	(156) 82	(36) 580	(280)	(2,260)	(43) 254	
A manual A delitiona I ama m		123	303	205	462	3,03/															1
Annual Additions, Long Term Resource Annual Additions, Short Term Resource	s 1,149	850	757	801	806	125	123	616	735	1,497	1,568	1,452	1,475	1,479	1,391	1,332	1,347	1,351	1,375	1,375	

Table K.15 – Preferred Portfolio, Detailed Capacity Expansion Portfolio

P-45CNW										Capacity											Resource
r-43CN VV	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
raig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	-	(82)
mig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-		(82)	-	-	-	- (44)	-		-	-	-	-	-	(82)
ayden 1 ayden 2	-	-	-	-	-	-	-	-		-		-	(33)	-	-		-	-	-	-	-
untington 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459)	-	-
untington 2	-	-	-	-	-	-	-	-		(74)		-	-	-	-		-	-	(450)	-	(74)
olstrip 3 (Coal Early Retirement/Conversions) olstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-			(74)		-	-	-	-		-	-	-	-	(74)
holla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(387)
aveJohnston 1	-	-	-	-	-	-	-		-	(99)	-	-	-	-	-	-	-	-	-	-	(99)
aveJohnston 2 aveJohnston 3	-	-	-							(106) (220)		-		-							(106) (220)
aveJohnston 4	-	-	-	-	-	-	-	-		(330)			-	-			-	-	-	-	(330)
aughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-		-	-	-	-	-	-	-	-	-	-	(156)
aughton 2 (Coal Early Retirement/Conversions) aughton 3 (Coal Early Retirement/Conversions)		(280)	-	-		-	-	(201)					-	-			-		-		(201)
adsby 1-6	-	- (200)	-	-	-	-	-	-		-		-	-	-	(356)		-	-	-	-	-
etire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)
etire - Wind	-	- (27)	(17)	(49)	- (0)	-	-	-	- (3)	-	(19)	(40)	(200)	(45)	(181)	(80)	-	(60)	- (80)	-	(160)
spire - Wind PPA spire - Solar PPA	-	(27)	- (17)	(49)	(0)	(1)	-	(65)	- (3)	-	- (19)	(99)	(200)	- (43)	(181)	- (80)	(35)	(94)	(80) (849)	-	(100)
etire - Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	_
oal Ret_WY - Gas RePower	-	247	-	_	-	-	-	-		-		(247)	-	-	-		-	-	-	-	247
xpansion Resources CCT - DJohns - J 1x1	-	-	- 1	-	-	-	- 1	-	-	- 1	-	- 1	- 1	- 1	-	-	-	-	505	-	-
otal CCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	505	-	-
CCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	370	-	185
CCT Frame WYSW otal SCCT	-	-		-	-	-	-	185		-		370	-	-	-		-	-	370 370	-	185
/ind, GO	-	-	-		-		-	-		-	-	1,040	-	-	-	-	-	-	-	-	-
/ind, UT	-	-	-	-	69	-	-	-	-	-	-	- 1	-	-	-	-	-	-	-	-	69
/ind, WYAE	-	-	-	-	-	1,920	- 1		-	-	-	- 1	- 7	- 60			-	-	-	-	1,920
/ind+Storage, GO otal Wind	<u> </u>	-	-	-	- 69	1,920	-	-		-		1,040	-	60			-	-	-	-	1,989
tility Solar+Storage - PV - Utah-S	_	_	-	-		231	-			-		500	-	-			-	-	-	-	231
tility Solar+Storage - PV - Huntington	-	-	159	- 64	-	674	-	-	-	-	-	-	-	-	-	-	-	_	909	-	900
tility Solar+Stomge - PV - Utah-N	-	-	159 159	64	3	674 904	-			-		500	-	-	-		-		909	-	900 1.131
emand Response, ID-Irrigate	-	-	-	-	-		-	_		-	_	-	-	5.2	-	_		3.7	-	1.8	-
emand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1
emand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76.7	-
emand Response, UT-Irrigate emand Response, UT-Thermostat	-	-					-				116.7	8.2		-			8.3	-		1.9 5.1	
emand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	5.2	-
emand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	37.3	-
emand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-	1.8	-	-
emand Response, WY-Thermostat emand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3					-	-	-			-	-	5.5 3.2	1.2	13.5
emand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0
emand Response Total	4.1		7.0	-	18.1	-	8.2	7.2	-	-	123.3	8.2	-	12.0	-	-	15.3		10.5	136.5	44.6
nergy Efficiency, ID nergy Efficiency, UT	- 6 - 58		67	68	69	68	67	7 65	65	62	57	56	52	52	5 48	36	32		3	3	69
nergy Efficiency, WY	58 10	67 10	67 11	68 14	69 15	68 16	67 16	65 18	65 18	62 17	16	56 15	52 13	52 12	48 11	36 9	32 8	7	22 5	23 5	656 146
nergy Efficiency Total	74	83	85	88	92	92	91	90	90	87	80	77	72	70	65	49	45	35	30	32	870
attery Storage - Utah-S attery Storage - WYSW	-	-					-					-		-			-	-		195 15.0	
attery Storage - Idaho	-	-	-	-	-	-	-	-		-		-	30.0	-	-		-	-	-	150.0	-
OT East - Summer	-	-	-	-	-	-	-	-	-	88	300	199	30.0 174	206	298	300	300	300	300	300	9
xisting Plant Retirements and PPA Termination mBridger 1 (Coal Early Retirement/Conversions)		1				(351)							-				1	1			(351)
mBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	(331)	-			-	(356)	-	-	-			-	-	-	-	(331)
mBridger 3	-	-	-	_	-	-	-	-	-	_	-	-	-	-	-	-	-	-	-	(349)	
mBridger 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	(353)	-
emiston etire - Hydro	-	(1)	(169)	-	(1)	-	-	- (1)		(7)	-	-	(6)	-		(75)	_	(1)	(237)	-	(179)
spire - Wind PPA			- (133)	(175)	- (1)	(41)		- '-'	-	-	(75)	(10)	-	(20)	(20)	- (,5)	-	(10)	(10)	-	(216)
spire - Solar PPA	-									(2)		- 1	(67)	(49)			(1)	(115)	(175)	(11)	(2)
xpansion Resources CCT Frame WV	_	-		-		-							. 1	. 1			-	-	443		
otal SCCT																			443		
/ind+Storage, YK	-			-		-	-	-	-	-	10	-	-	-			-	-	11	-	
otal Wind	-	-	-	- -		354	- +			-	10 359	-		-				-	11	702	354
tility Solar+Storage - PV - Jbridger tility Solar+Storage - PV - S-Oregon	-	-	<u> </u>	-	-	500		-			- 339		-	-	475			-	-	- 702	500
tility Solar+Storage - PV - Yakima	-	-	-	-	-	395	-	-	-	-	-	-	-	-	-	-	-	419	-	-	395
otal Solar	-				-	1,249	- 7			-	359	- 1			475		-	419		702	1,249
emand Response, OR-Ancillary Services emand Response, WA-Ancillary Services	+ -	-	1 - 1	-	1 - 1 -	-	-				1.9		-	-				-	H :-	-	-
emand Response, WA-Ancillary Services emand Response, CA-Cool/WH									:											1.5	
emand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-
emand Response, CA-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8 5.8	-	-
emand Response, CA-Thermostat emand Response, OR-3rd Party Contracts	1 -	-	-	-	-		-	- :		-			- :		- :		-	-	-	10.9	-
emand Response, OR-Irrigate		_										-		-			_		13.3	-	
emand Response, WA-Cool/WH	-	-	-	-		-	-			-		-	-	-		-	-	-		7.7	-
emand Response, WA-3rd Party Contracts	-	-		-	-	-		-	-	-	-	-	-	-	-	-	-	-	8.3	10.9	-
emand Response, WA-Irrigate emand Response, WA-Thermostat	-	-			-	-		-		-			-					-	16.6	-	-
emand Response Total	_			-		-				-	9.4	-					_	_	48.8	32.1	
nergy Efficiency, CA	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1		18
nergy Efficiency, OR nergy Efficiency, WA	40 11			42 11	41 12	46 12	43 12	41 11	41 11	38 11	35 10	32	31	30 8	26	26	25 6	25	24	23	405 111
nergy Efficiency, WA nergy Efficiency Total	52					59	56	54			46	43	42	40	35	33				28	533
attery Storage - S-Oregon	<u> </u>		-	-	-	-	-	-		-	210		-	60	-	-	-	-	-	180	-
attery Storage - Willamette Valley	-	-	-	-	-	-	-	-	-	75	45	-	-	-	-	-	-	-	-	-	75
	-	-	-	-	-	-	-	-	-	-	105	-	-	- 60	-	-	-	-	-	- 60	-
attery Storage - Portland NC		-		<u> </u>	-	-	-	-		105	/5			- 60		_	-	-	-	- 60	105
attery Storage - Walla Walla	_																				
attery Storage - Walla Walla attery Storage - Yakima OT West - Summer	998	719	493	503	498	131	126	191	264	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,074	977	1,074	1,075	500
attery Storage - Walla Walla attery Storage - Yakima OT West - Summer OT West - Winter	998 151	131	268	303	314	44	126 51	53	100	1,075 232	222	173	192	128	63	-	35	-	-	-	500 165
attery Storage - Walla Walla attery Storage - Yakima OT West - Summer	151	131 (61)	268 (573)	303 (224)	314	44 (412)	51	191 53 (505)	100 (85)	1,075 232 (912)	222 (449)	173 (396)	1,075 192 (350)	128 (114)		(156)	35 (36)	(280)	(2,260)	(745)	

Table K.16 – FOT Risk Assessment Cases, Detailed Capacity Expansion Portfolio

Table K.16 – FOT Risk										Capacity	(MW)										Resource T	Totals 1/
P-45CP-FOT	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038		20-year
xisting Plant Retirements and PPA Termination (mig 1 (Coal Early Retirement/Conversions)		_			_	_	_	(82)			_	_		_	_			_		_	(82)	
raig 2 (Coal Early Retirement/Conversions)		-	-		-			- (82)	(82)	-	-		- :	-	-	-	-	-			(82)	G
Hayden 1 Hayden 2	-	-			-	-	-	-			-	-	(44)	-	-	-	-	-		-	-	(-
Juntington 1	-	-		-	-	-	-	-		-	-	-	-	-	-	-	-	-	(459)	-	-	(4:
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-		-	(450)	-	(74)	(4.
Colstrip 4 (Coal Early Retirement/Conversions)	-	-			-	-	-	-		(74)	-	-	-	-	-	-	-	-	-	-	(74)	(
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(387)	(3:
DaveJohnston 1 DaveJohnston 2	-	-		_	-		-			(99) (106)				-	-		-		-	-	(99) (106)	(1
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	(2:
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	(156)		(330)	-	-		-	-	-	-	-	-	-	(330)	(1:
Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	(201)		-	-	-	-	-	-	-	-	-	-	-	(201)	(2)
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)	(2:
Gadsby 1-6 Retire - Hydro		-	-		-	(20)	_	-		-			_	-	(356)				_	-	(20)	(3.
Retire - Wind		-	-	-	-	-	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	-	(9:
Expire - Wind PPA Expire - Solar PPA	-	(27)	(17)	(49)	(0)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160)	(9
Retire - Other	-	-		-	- (1)	- (1)	-	-		-	-	-	-	-	-	(1)	-	-	- (043)	(32)		(
Coal Ret_WY - Gas RePower	-	247	-		-	-	-	-		-	-	(247)	-	-	-	-	-	-	-	-	247	-
Expansion Resources SCCT Frame NTN	-	-	- 1	-	-	-	-	185	-	- 1	- 1	185	185	- 1	-	- 1	- 1	- 1	-	-	185	5
SCCT Frame WYSW	-	-		-	-	-	-	-	-	-	-	-	185	-	-	-	-	-	185	-	-	3
Fotal SCCT Wind, Djohnston	-	-			-	-	-	185			620	185	370	-	-	-	-	-	185	-	185	9
Wind, GO	-	-	-	-	-	-	-	-	-	-	-	839	-	-	-	-	-	-	-	-	-	8
Wind, UT		-	T		130	1 920	-			<u> </u>								-			130	1.9
Total Wind	-				130	1,920					620	839						_ = =			2,050	3,5
Utility Solar+Storage - PV - Utah-S	-	-	-		-	170	-	-		-		-		500	-	-	-	-		-	170	6
Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington	-	-	1 - 1		-		-			 	-	261	-	-	-	-	-	-	715	-		7
Utility Solar+Storage - PV - Utah-N	-	-	159	64	-	677 847	-	-	-		-		-	500	-	-	-	-	715	-	900	7
Total Solar Demand Response, ID-Cool/WH	_	-	159	64	-	847	_	-		-	-	261		500	-	-	-	-	715 2.6	-	1,070	2,5
Demand Response, ID-3rd Party Contracts		-		-	-		-	-		-	-	-	-	-	-	-	-	-	1.8	-	-	1
Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	- 83	1.8	-	10
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0		9.9		-	7.2		-	6.7	-		6.8		-	7.0		-	7.2	28.1	5.5
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6	-	76
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-		_	-		-	33.5	45.8	37.3	-	8.2		-			8.3			1.9 5.1	116.7	138
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	1.8	-	5
Demand Response, WY-3rd Party Contracts	-	-	-		-	-	-	-		-	-	1.8		-		-			39.4		-	39 1
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	-	-	-	-	1.2	-	19
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	-	-	13.5		-	-	-		-	-	-	-	-	-	3.2	-	13.5	16
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	7.0		9.9	-	16.5	40.7	45.8	37.3	6.7	10.0		12.0	18.7		15.3	3.7	133.0	21.6	161.2	382
Energy Efficiency, ID	6	6	6	7	7	7	7	7	7	7	7	6	6	6	5	4	4	3	3	3	68	13
Energy Efficiency, UT Energy Efficiency, WY	58 10	67 10	67 11	68 12	69 15	67 16	67 16	65 18	65 18	62 17	56 15	56 15	50 13	50 12	47 11	35 9	32 8	25 7	20 5	23	655 144	1,04 24
Energy Efficiency Total	74	83	85	87	91	91	91	90	90	86	78	77	69	67	63	48	45	35	28	31	868	1,40
Battery Storage - Utah-N Battery Storage - Utah-S	-	-			-	-	-	-	15.0	-	210.0	-	-	-	-	-	-	-	15 120.0	420	15.0	765
Battery Storage - WYSW	-	-		-	-	-	-	-	-	45.0	75.0	-	-	-	-	-	-	-	60.0	165.0	45.0	345
Battery Storage - Idaho FOT East - Summer	42	42	-		-	-	-	- 70	- 67	150	180	15.0 150	15.0 150	150	150	150	150	150	255.0 300	90.0 260	37	375 10
FOT East - Summer Existing Plant Retirements and PPA Termination	42	42				-		701	67	150	180	150	150	150	150	150	150	150	300	260	3/	10
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	(351)	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	(351)	(3:
JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3	-	-			-		-	-		-	(356)		-	-	-	-	-	-		(349)		(34
JimBridger 4	_	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	(353)	-	(3:
Hermiston Retire - Hydro	-	- (1)	(169)		(1)	-	-	(1)		- (7)			(6)	-		(75)		(1)	(237)		(179)	(2)
Expire - Wind PPA	-	-	-	(175)	-	(41)	-	-	-	-	(75)	(10)	-	(20)	(20)	-	-	(10)	(10)	-	(216)	(3)
Expire - Solar PPA	_	_			-					(2)			(67)	(49)	_	-	(1)	(115)	(175)	(11)	(2)	(4:
Expansion Resources SCCT Frame WV	-	-	- 1	-	- 1	-	-	- 1		- 1	- 1	-	-	- 1	- 1	- 1	- 1	- 1	443	-	- 1	4
Total SCCT	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	443		-	. 4
Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon	-	-	 		-	354 500	-			 	359	-	-	475	-		-	-	-	702	354 500	1,4 9
Utility Solar+Storage - PV - Yakima	-	-	-	-	-	391	-	-	-	-	-	-	-		-	-	-	-	444	-	391	8
Fotal Solar Demand Response, OR-Ancillary Services	_	-	 		-	1,245 8	-		-		359	-	-	475	-				444	702	1,245	3,2
Demand Response, WA-Ancillary Services						- 8	1.9														1.9	1
Demand Response, CA-Cool/WH	-	-	-		-	-		-		-				-	-	-		-	1.5	-	-	1
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate	-	-	-		-	-	-	-			4.8	-	-	-	-	-	-	-	1.1	-	-	4
Demand Response, CA-Thermostat	-	-	-	-	-	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	-	-	
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts		-			-	-	-	-					5.4	-	-				23.3 30.3	2.0		23
Demand Response, OR-Irrigate	_							-	4.1	-	9.2		-			-			-	-	4.1	13
Demand Response, WA-Cool/WH	-	-	_ = 1	-	-	-	-	-	-		-	-	-	-	-	- 1	-	-	7.7 9.9	1.1		10
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-									5.2	-	-	-			-	3.1		- 9.9	1.1	5.2	10
Demand Response, WA-Thermostat	-	-		-	-	- 7.5	- 19	-	4.1	5.2	14.6 34.4	-	5.4	-	2.0	-	- 3.1	-	73.8	- 3.0	18.6	. 10
Demand Response Total Energy Efficiency, CA	- 1	- 2	- 2	- 2	- 2							- 2		- 2		- 1	1	- 1	1	1		140
Energy Efficiency, CA	40	37	37	36	39	2 45	43	41	2 39	37	33	31	30	30	2 26	26	26	1 26	24	23	17 393	6
Energy Efficiency, WA	11 52	9 48	9	11 48	11 52	12 59	12 56	11	11 52	11 49	9 44	9 43	9 40	8	7	6 33	6 33	5 32	4 29	27	107 518	
Energy Efficiency Total Battery Storage - S-Oregon	- 52	- 48	- 47	- 48	- 52	- 39	- 56	- 54	- 52	105	60	- 43	- 40	- 40	- 35	- 33	- 33	- 32	90	- 27	105	1 8 2
Battery Storage - Portland NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	
Battery Storage - Walla Walla Battery Storage - Yakima	-	-			-	-	-			30 30	30	-	-	-	-		-		-	-	30	
FOT West - Summer	956	678	492	500	496	107	99	100	141	927	1,075	812	620	432	795	797	794	804	1,075	1,075	449	<u>6</u>
FOT West - Winter Existing Plant Retirements/Conversions	151	131 (61)	265	300 (224)	311	39 (412)		44 (505)	91 (85)	223	244 (449)	(396)	271 (350)	169		(156)	(36)	(280)	(2,260)	100 (745)	160	1
Existing Plant Retirements/Conversions Annual Additions, Long Term Resources	130	131		198	283	4,169	165	369	207	388	1,518	1,430	499	1,094	118	81	96	71	2,650	1,460		
Annual Additions, Short Term Resources	1,149	850	757	800	807	145	142	214	299	1,300	1,499	1,205	1,041	751	1,132	1,151	1,163	1,248	1,375	1,435		
Total Annual Additions	1 279	982	1.055	998	1.090	4 3 1 5	307	583	506	1.688	3.017	2 635	1 540	1.846	1 250	1 232	1 259	1 3 1 8	4 025	2 895		

Part											Capacity	(MW)										Resource	Totals 1/
Column C	P-46CP-FOT	2019	2020	2021	2022	2023	2024	2025	2026	2027			2030	2031	2032	2033	2034	2035	2036	2037	2038		
See	Existing Plant Retirements and PPA Termination																						
March Marc		-	-	-	-	-	-	-	(82)	(82)	-	-	-		-	-	-	-	-	-			(8
Margin M	Hayden 1	-	-	-	-	-	-	-	-		-		-		-	-	-	-	-	-	-		(4
Margin Section Secti	Hayden 2	-	-	-	-		-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)		-	(45
THE PARTY OF THE P	Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-			-	(4:
The section of the se		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-		-	(74)	(
Section 1. Control 1.	Cholla 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	- (74)	-	-	-	-	-	-	-	-	-			(3:
Section 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	DaveJohnston 1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	(99)	
Section of the control of the contro	DaveJohnston 2 DaveJohnston 3	-	-	-	-		-	-	-	-	(220)	-		-	-	-	-	-	-			(220)	(2
STANDS AND COLOR OF THE PARTY O	DaveJohnston 4	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	(330)	(3:
Target Print	Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-			
The state of the s	Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-		-		-	-	(280)	(2
See	Gads by 1-6	-	-	-	-	-	- (20)	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	- (20)	(3
The section of the control of the co	Retire - Wind	-	-	-	-	-	- (20)	-		-	-	-	(40)	-	-	-	-	-		-			-
The section of the se	Expire - Wind PPA	-	(27)	(17)	(49)			-		(3)	-	(19)	(99)	(200)	(45)		(80)	- (2.5)			-		(9
Search Services 1	Expire - Solar PPA Retire - Other	-	-	-	-		- (1)	-		-	-	-	-	-	-	-	- (1)		(94)		(32)	- (1)	(9
120 A. M.	Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	- '	-	-	-		247	
Extra property of the property	Expansion Resources		т	Т	г	Т		ı .	104	Ι	T		370			1		1		т т		105	5
See No. 19	SCCT Frame WYSW	-			-	-		-	-	-	-		-	-	-	-		-		-		-	3
SAME AND ALL A	Total SCCT		<u> </u>			-	-	-	185	-	- 22		370	-	-	-	-	-		-			9
STATES OF THE PROPERTY OF THE	Wind, Djohnston Wind, GO	-	 -	 -	-		-	-	-	-	- 33	- 587	1,010	-	-	-	-	-	-			-	1,0
TRAY MARCHARD	Wind, UT	-	-	-	-	145		-		-	-	-		-	-	-	-	-	-	-	-		
Teacher Management of Landers (1997) 1997 1998 1999	Wind, WYAE Total Wind		 -		-	145		-	-	-	- 32	587	1.010		-	-	-	-	-				
No. Continue Con	Utility Solar+Storage - PV - Utah-S					-						-	-		500								
Seed Septimes Per Chandles	Utility Solar+Storage - PV - GO	-			-	-	-	-	-	-	-	-	90			-	-	-	-	-		-	
Treatment of the property of t	Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N	-	 -	159	- 64	-	677	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900	
Name Control 1	Total Solar	-	-			-		-	-	-	-	-	90	-	500	-	-	-	-		-		2,:
Name Content		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	
Second Execution 1	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	-	1.8		1
Second Second Order Common	Demand Response, ID-Thermostat		-	-	-			-	-	-	-	-	-	-		-	-	-	-	8.3		-	
Name Agreement Manger Changer				7.0	-			-		-	-		-				-			74.1			7
Name Content	Demand Response, UT-Irrigate		-	-	-		-	-		-	-		-	-		-	1	-		-	1.9	-	
Transformer Variable (1) 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Demand Response, UT-Thermostat	-	-	-	-	-	-	-		-	-		8.2	-		-	-	8.3	-			116.7	
Decompt Normal	Demand Response, WY-Cool WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-		-	-		-	-		-		-			-	-	3
The content of Acade Process. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-		-	
The Actual Program Wilson Services 1 1 7 7 7 7 7 7 7 7	Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	-	-	13.5	-	-	-	-	-	-	-		-	-	-	3.2	1.2	13.5	
Programment Column Colum	Demand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	
The Property of Control of Contro	Demand Response Total				- 7		- 7	16.5		- 7	- 7	6.7		- 6			- 4		3.7				
The Program of Program	Energy Efficiency, UT	58	67	67	68	71	68		68	65			56	52	52	53	36	32	25	22	24	665	1,0
Minor Stanger, MANN 1. 1. 1. 1. 1. 1. 1. 1.	Energy Efficiency, WY																		7				
Hancey Sources		- /4	- 63	- 63		-	- 92	- 93	- 92	- 69	- 63	- 78		- /1	-	-	-	-	-			- 6/3	
From the content and PAC Procession and PAC Process	Battery Storage - WYSW	-	-	-	-	-	-	-	15.0	-	-	30.0	-	-	-	-	-	120.0	-		-	15.0	
Name Part Meterone was PA Trendmen Mindelpar College Meterone Control College College		42	42	-	-	-	-	-	144	150	150	150	150	105.0		216	218	214	223	135.0	30.0 295	- 53	31
Find Section Control	Existing Plant Retirements and PPA Termination																						
Company Control Cont		-	-	-	-	-	-	-	-	-	-	(351)	-	-	-	(356)	-	-	-	-	-	-	
Homestorn	JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-		-	-	(349)	-	-	-	-	-	-	- (330)	-	-		-		(349)	
Rates: Liphone - (1) (169) - (1) - - (1) - - (1) - - (1) - - (1) - - (1) - - (1) - - (1) - - (1) - - (1) - - - (1) - - - (1) - - - (1) - - - (1) - - - (1) - - - - - - - - -	JimBridger 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-	-		
Depart D		-	- (1)	(169)	-	- (1)		-		-	- (7)	-	-	- (6)	-	-	(75)	-	- (I)	(237)			-
Same Resources Same	Expire - Wind PPA	-	-	-	(175)		(41)	-		-	-	(75)	(10)	-	(20)	(20)	-	-	(10)		-		(
SCCF Prises WV Finds - - - - - - - - -		-	-		-	ا ــــــــــــــــــــــــــــــــــــ	-		-	-	(2)	-	- 1	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)	
Using Subart-Stonges PV - S. Prograge	SCCT Frame WV	-	-	-	-	- 1	-	-	-	-	-	-	-	-	- 1	-	-		-	- 1	-	- 1	
1.000 1.00		-	-	-	-	-	-	-		-	-	- 240	-		-	- 622	-	443	-	-	-		
Liking Sadar-Storage - PV - Salar-Storage - PV - P	Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon	-	-	-	-		500	-	-	-	-	- 349	-	-	-		-	-	-				
Demand Report Part	Utility Solar+Storage - PV - Yakima	-	-	-	-	-	401	-		-	-	-	-	-	-		-	-	-		-		
Demand Response, W.AAncillary Services	Total Solar	-		-	-	-		-		-	-		-	-	-			-	-				3
Demaid Response, CA-Inflate	Demand Response, WA-Ancillary Services	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-		
Demaid Response, CA-lingate		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
Demand Response, CALCOLAVII		-	-	-	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-			-	
Demmad Response, ORL-Inglate	Demand Response, CA-Thermostat	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	
Demaid Response, WA-Cod/WH		-	-	-	-		-	-	-	-	-	-	-	- 5.4	-	-	-	-	-		2.0	-	
Demaid Response, W.A. And Party Contracts		-	-	-	-		-	4.1		-	-	9.2	-		-	-		-		-	-	4.1	
Demaid Response, WA-Throatest	Demand Response, WA-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	
Demmad Response, W.A.Thermostart		-	-	-	-	-		-	5.2	-	-	-	-	-	-	-	-	3.1	-			5.2	
Energy Efficiency, CR	Demand Response, WA-Thermostat	-	-	-	-	-	-	-	-	-	-		- 1	-	-		-	-	-	-	-	-	
Energy Hillicenty OR								5.9				34.4	- ,		- 7								1
Energy Efficiency, WAR	Energy Efficiency, OR	40				47	46		43	39			32	31		28	26	24	26	24	24	417	
Battery Storage - S-Oregon	Energy Efficiency, WA												9						5				
Hattery Storage - Wilmeret Valley		52		49	- 60		59	57					44	42	42		32	32		29			
Batery Storage - Walk Walk	Battery Storage - Willamette Valley	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	-	-	-	-	-	15	
Battery Storage - Vakims	Battery Storage - Portland NC				-						-	-	- 1		-		-	-	-		-		
FOT West-Summer 956 678 491 500 496 100 88 100 166 1,000 1,075 817 949 885 1,075 1,0	Battery Storage - Walla Walla Battery Storage - Yakima																			- 13			
Existing Plant Retirements/Conversions - (61) (573) (224) (1) (62) - (1,207) (85) (912) (444) (396) (350) (114) (913) (156) (36) (280) (2,260) (43) Annual Additions, Long Term Resources 130 131 300 211 309 3,812 174 1,146 215 394 1,516 1,599 223 668 1,139 81 657 70 2,523 251	FOT West - Summer																						
Annual Additions, Long Term Resources 130 131 300 211 309 3,812 174 1,146 215 394 1,516 1,599 223 668 1,139 81 657 70 2,523 251		151						- 40														158	
Annual Additions, Short Term Resources 1,149 850 757 800 807 136 128 285 404 1,430 1,467 1,207 1,367 1,330 1,491 1,510 1,521 1,604 1,474 1,469	Annual Additions, Long Term Resources		131	300	211	309	3,812	174 128	1,146	215	394	1,516	1,599		668	1,139	81	657	70	2,523			

										Capacit	y (MW)										Resource	ce T
P-47CP-FOT Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	. 2
Cmig 1 (Coal Early Retirement/Conversions) Cmig 2 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	(82)	- (82)	-	-		-	-	-	-	-	-	-	-	(82) (82)	
Hayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	1
Hayden 2 Huntington 1		-		-	-		-	-	-		-	-	(33)	-	-		-	-	(459)	-	-	+
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-	_
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)		-		-	-	-	-	-	-	(74) (74)	-	-	-	-	-	-	-	-	-	-	(74) (74)	4)
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	-	-	(387)	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(387)	7)
DaveJohnston 2		-		-	-		-	-	-	(106)	-	-	-	-	-		-	-	-	-	(106)	
DaveJohnston 3 DaveJohnston 4		-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(156)	6)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		(280)		-	-		-	(201)	-		-	-	-	-	-		-	-	-	-	(201)	
Gads by 1-6	-	- '	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	
Retire - Hydro Retire - Wind		-	-	-	-	(20)	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	(20)	"
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	- (1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160)	
Espire - Solar PPA Retire - Other				-	- (1)	- (1)	-	-	-		-	-	-	-	-	(1)		- (94)	- (849)	(32)		
Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247	<u>7</u>
Expansion Resources SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	185	5
SCCT Frame WYSW Total SCCT	-	-	-	-	-	-	-	185	-	-	-	370	370 370	-	-	-	-	-	-	-	185	5
Wind, Djohnston	-	-	-	-	-	-	-	-	-	-	620	-	-	-	-	-	-	_	-	-	-	1
Wind, GO Wind, UT	-	<u> </u>	-	-	73	-	-	-	-			1,009	- -				-	-	-	-	73	3
Wind, WYAE	-	-	-	-	-	1,920	-	-	-	-	-	-	- , .	-	-	-	-	-	-	-	1,920	
Total Wind Utility Solar+Storage - PV - Utah-S		-		-	73	1,920 227	-	-	-		620	1,009	- 66	500	-		-	-	-	-	1,993 227	
Utility Solar+Storage - PV - GO	-	-	-	-	-		-	-	-	-	-	25	-		-	-	-	-	-	-	-	#
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N			159	- 64		677		-			-								909		900	5
Total Solar	-	-	159	64		904	-	-	-	-	-	25	-	500	-	-	-	-	909 2.6	-	1,127	
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts				_	-			-	-		-	-	-	-	-			-	1.8	-	-	\pm
Demand Response, ID-Irrigate Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-		-	-	-	-	5.2	-	-	-	3.7	- 83	1.8	-	7
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9		-	7.2	-		6.7		-	6.8	-		7.0	-	-	7.2	28.1	ı
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate				-	-		-	-	-		-			-	-		-	-	74.1	2.6 1.9	-	+
Demand Response, UT-Thermostat		-		-				33.5	59.0	24.1	-	8.2		_	-		8.3	_		5.1	116.7	7
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts		-		-	-		-	-			-	-	-	-	-		-	-	3.4 39.4	1.8	-	+
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	#
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services		-		-	-		13.5	-	-		-	-	-	-	18.7		-	-	3.2	1.2	13.5	5
Demand Response, WY-Ancillary Services	4.1	-	7.0	-	- 99	-	3.0 16.5	- 40.7	- 59.0	24.1	- 6.7	- 10.0	-	- 12.0	- 18.7	-	- 15.3	3.7	133.0	21.6	3.0 161.2	
Demand Response Total Energy Efficiency, ID	6	6	6	7	7	7	7	7	7	7	6	6	6	6	5	4	4	3	3	3	68	8
Energy Efficiency, UT Energy Efficiency, WY	58 10	65 10	67 11	68 12	69 15	66 16	65 16	65 17	62 17	62 17	54 15	53 14	50 12	48 12	47 11	36 9	32 8	26 7	22 5	22 5	646 141	; 1
Energy Efficiency Total	74		85	86		89	89	88	85	86	76	73	68	65	63	49		36	30	30	855	
Battery Storage - Utah-S Battery Storage - WYSW		-		-	-		-	-			255.0	-	-	-	-		-	-	330.0 315.0	120	-	+
Battery Storage - Idaho FOT East - Summer	- 42	- 42	-	-	-	-	-	- 48	- 37	150	173	- 150	- 150	- 150	150	150	150	45.0 173	240.0 300	60.0 292	- 32	_
Existing Plant Retirements and PPA Termination	42	42		_	-		_	40	37	130	1/3	130	130	130	130	130	130	1/3	300	292		
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	(351)	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	(351)	D
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	-	-	-	#
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston	-	-		-	-		-	-	-	-	-	-	-	-	-	-	-	(353)	(237)	-	-	+
Retire - Hydro	-	(1)	(169)	-	(1)		-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	-	-	(179)	
Expire - Wind PPA Expire - Solar PPA		-		(175)	-	(41)	-	-		(2)	(75)	(10)	(67)	(20) (49)	(20)		(1)	(10) (115)	(10) (175)	(11)	(216)	
Expansion Resources																			443			#
SCCT Frame WV SCCT Frame YK		-		-	-		-	-	-		-	-	-	-	-		-	233	-		-	+
Total SCCT	-	-	-	-	-	354	-	-		-	359	-	-	-	-	-	-	233 702	443	-	354	1
Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon		-		-	-	500	-	-	-			-	-	475	-		-	-	-	-	500	0
Utility Solar+Storage - PV - Yakima Total Solar	-		-	-	-	405 1,259	-	-	-		359	-	-	- 475			-	197 899	-	-	405 1,259	
Demand Response, OR-Ancillary Services	-		-	-	-	8		-	-		-	-	-		-			-	-	-	8	8
Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH	-	-		-	-		1.9	-	-		-		-	-	-		-	-	1.5	-	1.9	+
Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	#
Demand Response, CA-Irrigate Demand Response, CA-Thermostat				-	-		-	-	-		4.8 5.8	-	-		-		-	-	-		-	\pm
Demand Response, OR-Cool/WH	-	-	-	-	-	-	-	-	-	-	- 1	-	- 5.4	-	-	-	-	-	16.4 30.3	2.0		7
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-	-	-	-		-	-	4.1	-	9.2	-	-	-	-	-	-	-	-	-	4.1	1
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts		-		-	-		-	-			-	-	-	-	-		-		7.7 9.9	1.1	-	Ŧ
Demand Response, WA-Irrigate					-			-		5.2	-	-	-		-		3.1		-	- 1.1	5.2	2
Demand Response, WA-Thermostat Demand Response Total	-		-	-	-	7.5	1.9	-	4.1	5.2	14.6 34.4	-	- 5.4	1	2.0		3.1	-	66.9	3.0	18.6	5
Energy Efficiency, CA	1	2	2	2		2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	17	7
Energy Efficiency, OR Energy Efficiency, WA	40 11	32 9	37 9	36 10		39 11		41 11	39 11	37 10	33 9	31 9	30 8	29 8	26 7	26 6		26 5	24	23	378 105	5
Energy Efficiency Total	52		47			51		54	51		44	41		38	35			32			500	
Battery Storage - S-Oregon Battery Storage - Willamette Valley	-	-	-	-	-	-	-	-	-	75	135	-	-	-	-		-	-	-	-	75	5
Battery Storage - Portland NC	-	-	÷	-	·	-	-	-	-	- 60	-	÷	-	-	-	-	-	30	-	-	- 60	
Battery Storage - Walla Walla Battery Storage - Yakima	-		-	-		-	-	-	-	30		-	-		-	-		-	-		30	0
FOT West - Summer	956 151	678 131	492 265	500 300	497 311	120 39	112 43	113 44	154 91	920 223	1,075 244	857 243	662 271	474 169	837 187	839 203	836 218	1,075 251	1,070 100	1,046 100	454 160	4
FOT West - Winter	101		(573)			(412)		(505)		(912)			(350)		(557)	(156)				(43)	100	
FOT West - Winter Existing Plant Retirements/Conversions		(61)																				
FOT West - Winter	130 1,149	124			226					329	1,561		549 1,083	1,090 793	118 1,174			1,278 1,499	2,496	261		

										Capacity	(MW)										Resource	Totals 1
P-48CP-FOT	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-yea
Existing Plant Retirements and PPA Termination																						
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	1	+ -	_ -	-	-	-	(82)	(82)	-		-	-	-	-	-	-	-	-	-	(82) (82)	(3
Hayden 1	-	-	-		-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	(4
Hayden 2 Huntington 1	-	-	+ -	_ -	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-	(4:
Huntington 2	-	-	1 - 1	-	-	-	-	-	-		-	-	-	-	-	-	-	-	(450)	-	-	(4:
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74) (74)	
Cholla 4 (Coal Early Retirement/Conversions)	-		(387)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(387)	(38
DaveJohnston 1 DaveJohnston 2	-	-	+ -	-	-	-	-	-	-	(99) (106)	-	-	-	-	-	-	-	-	-	-	(99) (106)	(10
DaveJohnston 3	-	-	-		-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	(22
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	(330)		-	-	-	-	-	-	-	-	-	(330)	(3:
Naughton 2 (Coal Early Retirement/Conversions)	-	(280)	-		-	-	-	(201)	-	-	-	-	-		-	-	-	-	-	-	(201) (280)	(2)
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6	-	- (280)	1 -		-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	- (280)	(3:
Retire - Hydro Retire - Wind	-	<u> </u>	-		-	(20)	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	(20)	(:
Espire - Wind PPA	-	(27)) (17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	(9
Expire - Solar PPA Retire - Other	-	-	-	-	(1)	(1)	-	-	-	-	-	-		-	-	- (1)	(35)	(94)	(849)	(32)	(1)	(9
Coal Ret_WY - Gas RePower	-	247	1 -	-	-	-	-	-	-	-	-	(247)	-	-	-	- (1)	-	-	-	- (32)	247	-
Expansion Resources								105				270									105	5
SCCT Frame NTN SCCT Frame WYSW	-	+	+		-	-	-	185	-	-		370	370	-	-		-	-	-	-	185	3
Total SCCT	-		-		-	-	-	185	-	-	-	370	370	-	-	-	-	-	-	-	185	9
Wind, Djohnston Wind, GO			+ 					-			620	1,055	45		-					-	-	1,1
Wind, UT Wind, WYAE	-	-			261	1.920	-	-	-	-	-		-	·	-	-	·	-	-	·	261 1.920	1.9
Wind, WYAE Total Wind	-	-	+ -	-	261	1,920	-	-	-	-	620	1,055	45	-	-	-	-	-	-	-	2,181	3,9
Utility Solar+Storage - PV - Utah-S	-				-	39	-	-	-	-	-	-	500	-	-	-	-	-	- 909	-	39	5
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N	-	-	159	- 64	-	677	-	-	-	-		-	-	-	-	-	-	-	- 909	-	900	
Total Solar	-	<u> </u>	159	64	-	716	-	-	-	-	-	-	500	-	-	-	-	-	909	-	939	2,3
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-	-		-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	2.6	-	-	
Demand Response, ID-Irrigate	-			-	-	-	-	-	-	-	-	-	-	5.2	- 1	-	-	3.7	- 8.3	1.8	-	10
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1		7.0		9.9	-	-	7.2	-	-	6.7	-	-	6.8	-		7.0	-	8.3	7.2	28.1	5:
Demand Response, UT-3rd Party Contracts	-		-	-	-	-	-	-	-	-	-	-	-	-	-	55.2	-	-	18.9	2.6	-	70
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	+ -		-		-	33.5	59.0	24.1		8.2		-	-		8.3	-	-	1.9 5.1	116.7	138
Demand Response, WY-Cool/WH	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	1.8	-	5
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-	+ -		-	-	-	-	-	-	-	1.8		-	-		-	-	39.4	-	-	39
Demand Response, WY-Thermostat	-	-			-	-		-	-	-	-	-	-	_	18.7	-	-	-	-	1.2	-	19
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-		-	-	13.5 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5 3.0	16
Demand Response Total	4.1		7.0		9.9		16.5	40.7	59.0	24.1	6.7	10.0		12.0	20.5	55.2	15.3	3.7	75.9	21.6	161.2	382
Energy Efficiency, ID Energy Efficiency, UT	58		67	7 68	7 69	7 67	7 67	7 66	7 65	7 62	54	6 53	52	50	6 49	5 39	36	3 26	3 24	31	69 655	1,0
Energy Efficiency, WY	10 74	10		14 88	15 91	16	16 91	18	19	17 86	14 75	14	13 71	12 67	11	9 53	8 48	7	5	6 40	147	2
Energy Efficiency Total Battery Storage - Utah-S	- /4	- 83	- 85	- 88	- 91	90	- 91	92	91	- 86	- /5	74	- 1	- 67	- 66	- 53	75.0	37	765.0	60	871	1,4 90
Battery Storage - WYSW	-		-		-	-	-	-	-	-	-	-	-	-	-	60.0	255.0	-	-	120.0	-	25:
Battery Storage - Idaho FOT East - Summer	42	42	+ -	-	-	-	-	118	106	150	150	150	150	150	150		180.0 242	251	298		- 46	36
Existing Plant Retirements and PPA Termination						(351)															(351)	-
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	1 -		-	(331)	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	(331)	(3
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-		-	-	-		-	-		-	-	(349)	-	-	-	-	-	(3
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston					-			-							-	-		-	(237)		-	(2
Retire - Hydro	-	(1)		(175)	(1)	- (41)	-	(1)		(7)	- (75)	- (10)	(6)	(20)	- (20)	(75)	-	(1)	- (10)	-	(179) (216)	(2
Expire - Wind PPA Expire - Solar PPA		-	-	(1/5)	-	(41)		-		(2)	(/5)	(10)	(67)	(20)	(20)	-	(1)		(10)	(11)	(216)	
Expansion Resources SCCT Frame WV	-	-				_		-				-	-		-	_		-	221		-	2
SCCT Frame YK					-			-		233				-					-		233	2
Total SCCT Utility Salari-Storage - PV - Ibridger			$+$ = \exists			354		-		233	359	- 1	-		-	- 438	102		221 146	- 16	233 354	1,4
Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon					-	500		-					85	390		+38	- 102	-		- 16	500	9
Utility Solar+Storage - PV - Yakima Total Solar	-	\vdash	+ =	_=	-	172 1,026	-	-			359		- 85	390	-	- 438	- 102	-	430 576	- 16	172 1,026	2,9
Demand Response, OR-Ancillary Services						1,026							-	-	-	+36	- 102			- 10	8	
Demand Response, WA-Ancillary Services	-	-			-		1.9	-		-		-	-		-		-	-	-	-	1.9	
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate	-	-	+ -	_ -	-	-	-	-	-	-	4.8	-	-	-	-	1.1	-	-	-	-	-	
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH	-	 -			-	-	-	-	-	-	5.8	-			-		-	-	-	-	-	
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts	-	-	-		-	-	-	-	-	-	-	-	5.4	-	-	30.3	-	-	3.0	2.0	-	3
Demand Response, OR-Irrigate Demand Response, WA-3rd Party Contracts	-	-			-	-	-	4.1	-	-	9.2	-	-	-	-	9.9	-	-	-	-	4.1	1
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-	-	+ -		-	-	-	-	-	5.2	-	-	-	-	-	- 9.9	3.1	-	-	1.1	5.2	1
Demand Response, WA-Thermostat	-	₩	+ $=$ $+$		-	7.5	- 19	- 4.1		- 5.2	14.6 34.4		- 5.4		2.0 2.0	41.3	- 3.1		- 3.0	- 3.0	- 18.6	11
Demand Response Total Energy Efficiency, CA	1	- 2	- 2	2	- 2	7.5	2	4.1	- 2	3.2	34.4	- 2	2	2	2.0	41.3	3.1	- 1	3.0	3.0	18.6	
Energy Efficiency, OR	40 11				36 11		41 12	41 11	39 11	37 10	33	31	30 8	29 8	26 7	26 6	26	25	22 4	23 4	375 107	
Energy Efficiency, WA Energy Efficiency Total	11 52				11 48		12 54	11 54		49	44	9 41		38	7 35						107 499	8
Battery Storage - S-Oregon	-	-	\perp		-	-	-	-	-	90	180	-	-	-	-		-	-	-	-	90	- 1
Battery Storage - Willamette Valley	-	-	+ -		-	-	-	-	- 30	15	15	-	-	-	-	-	-	-	-	-	45	
Battery Storage - Portland NC			1	$\overline{}$	-	-	-	-	-	90	30	-	-	-	-	-	-	-	-	-	90	
Battery Storage - Portland NC Battery Storage - Walla Walla	-	-	+																1.0			
Battery Storage - Portland NC Battery Storage - Walla Walla Battery Storage - Yakima	956	-	492	500	-	125	- 117	-	15 158	-	-	731	394	349	- 710	1.075	1.075	1.075	1,031	-	15	
Battery Storage - Porland NC Battery Storage - Walla Walla Battery Storage - Yakima FOT West - Summer FOT West - Winter	956 151	- 678 131	265	500 300	- 496 311	125 88	- 117 93	- 115 94	158 141	- 790 38	968 58	731 57	394 64	349	710 1	18	1,075 33	1,075 109	1,031	1,006 100		ϵ
Battery Storage - Portland NC Battery Storage - Walla Walla Battery Storage - Yakima FOT West - Summer FOT West - Winter Existing Plant Retirements/Conversions	956 151 -	678 131 (61)	265) (573)	300 (224)	- 496 311	88 (412)		- 115	158	- 790	968 58 (449)		394 64 (350) 1,117	349 - (114) 507	710 1 (557) 123	18 (858)	33 (36)	109 (280)		1,006 100 (43)	15 443	64 10
Battery Storage - Porland NC Battery Storage - Walla Walla Battery Storage - Yakima FOT West - Summer FOT West - Winter	151 - 130 1,149	678 131 (61) 126 850	265) (573) 298 757	300 (224) 199 800	496 311 (1) 410 807	3,812 214	93	- 115 94 (505)	158 141 (85)	790 38 (912) 593 978	968 58 (449) 1,365 1,176	57 (396) 1,550 939	(350) 1,117 608	(114) 507 499	(557)	(858) 680 1,364	(36) 712 1,350	109 (280) 71 1,435	1,031 (2,260) 2,624 1,329	1,006 100 (43) 288 1,406	15 443	64

										Capacity	(MW)										Resource	Totals
P-53CP-FOT	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	
Existing Plant Retirements and PPA Termination	2017	2020	2021	2022	2025	2024	2023		2027	2020	2027	2030	2031	2032	2033	2034	2033	2030	2037	2030		
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-		-	-	-	(82)	
Hayden 1	-	-	-	-	_	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	
Hayden 2	-	-		-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	- (450)	-	-	
Huntington 1 Huntington 2	-	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	(459) (450)	-	-	(
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)	
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)	(
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1		-	(367)	-	-		-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)	-
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)	(
DaveJohnston 3 DaveJohnston 4		-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	(
Naughton 1 (Coal Early Retirement/Conversions)		-		-	-		-	(156)	-	- (330)	-	-	-	-	-	-	-	-	-	-	(156)	
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)	(
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6		(280)			-		-	-		-	-	-	-	-	(356)	-		-	-	-	(280)	
Retire - Hydro		-	-	,	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)	
Retire - Wind	-	-	-		-	-	-	-	-	-	-	(40)	-	-		-	-	-	-	-		
Expire - Wind PPA Expire - Solar PPA		(27)	(17)	(49)	(0)	(1)	-	(65)	(3)		(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160)	
Retire - Other	-	-	-		-	- (-)	-	-	-	-	-	-	-	-	-	(1)	-		-	(32)	-	
Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247	
Expansion Resources SCCT Frame NTN	-	- 1	-	-	- 1	-	-	185	- 1	-	- 1	370	- 1	- 1	- 1	- 1	- 1	- 1	-	-	185	Т
SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	
Total SCCT Wind, Diohnston	-	- 1		-		-	-	185	- 7	- 33	370 587	370	-	-	-	-	- 7			-	185 33	_
Wind, Djohnston Wind, GO		-	-	-	-		-	-	-	- 33	- 36/	1,010	-	-	-	-	-	-	-	-	- 33	
Wind, UT	-	-	-	-	145		-	-	-	-	-	-	-	-	-	-	-	-	-	-	145	
Wind, WYAE Total Wind			-	-	145	1,920 1,920	-	-	-	- 33	587	1,010		-	-		-		-	-	1,920 2,097	
Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	1,920	-	-	-	-	-		-	500	-	-	-	-	-	-	155	
Utility Solar+Storage - PV - GO	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-	-	-	
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N		-	- 159	- 64	-	677	-	-	-	-	-		-	-	-	-	-	-	909	-	900	-
Total Solar		-	159	64	-	832		-				90		500					909		1,055	
Demand Response, ID-Cool/WH		-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	2.6	-	-	
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate		-	-	-	-		-	-	-	-	-	-	-	5.2	-	-	-	3.7	1.8	1.8	-	
Demand Response, ID-Thermostat		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	8.3	_	-	
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	- 74.1	7.2 2.6	28.1	⊢
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate		-		-	-		-	-			-	-	-	-	-	-		-	/4.1 -	1.9	-	
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	116.7	-	-	-	8.2	-	-	-	-	8.3	-	-	5.1	116.7	
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4	1.8	-	
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate		-		-	-		-	-	-	-	-	1.8	-	-	-	-	-	-	39.4	-	-	
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	-	-	-	-	1.2	-	
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	-		13.5	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5	
Demand Response Total	4.1	-	7.0	-	9.9	-	16.5	123.8	-	-	6.7	10.0	-	12.0	18.7	-	15.3	3.7	133.0	21.6	161.2	3
Energy Efficiency, ID	58	67	67	7 68	71	7 68	71	7 68	7 65	7 62	7 57	6 56	6 52	6 52	53	4 36	4 32	3 25	3 22	3 24	69 665	1
Energy Efficiency, UT Energy Efficiency, WY	10	10	11	12	15	16	16	17	17	16	14	14	12	11	11	9	8	7	5	5	140	_
Energy Efficiency Total	74	83	85	86	94	92	95	92	89	85	78	76	71	69	69	49	44	35	30	33	875	
Battery Storage - Utah-S Battery Storage - WYSW	-	-	-	-	-		-	15.0	-	-	30.0	-	-	-	-	-	120.0	-	540.0 180.0	90	15.0	
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	105.0	45.0	-	-	-	-	135.0	30.0	-	
FOT East - Summer	42	42	-	-	-	-	-	144	150	150	150	150	150	150	216	218	214	223	299	295	53	
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(351)	-	-	-	-	- 1	-	-	- 1	-	-	-	-	(351)	1
JimBridger 2 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-
JimBridger 3 (Coal Early Retirement/Conversions) JimBridger 4 (Coal Early Retirement/Conversions)		-		-	-		-	-	-		(349)	-	-	-	(353)	-	-	-	-	-	-	
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-	
Retire - Hydro	-	(1)	(169)	(175)	(1)	-	-	(1)	-	(7)	-	- (10)	(6)	-	-	(75)	-	(1)	-		(179)	\vdash
Expire - Wind PPA Expire - Solar PPA		-	-	(175)	-	(41)	-	-	-	- (2)	(75)	(10)	(67)	(20)	(20)	-	(1)	(10)	(10) (175)	(11)	(216)	1
Expansion Resources										(-)			(7	()				(/	()	. (-1)	(2)	
SCCT Frame WV Total SCCT	-	- 1	-	-	-	-		-	-	-	-		-	-	-	-	443 443		-		-	\vdash
Total SCCT Utility Solar+Storage - PV - Jbridger		-	-	-	-		-	534	-	-	349			-	533	-	- 443	-			534	
						500	-	-				-	-	-	475	-	-	-	- 430	-	500	
Utility Solar+Storage - PV - S-Oregon	-	-	-	-									_								401 1,435	1
Utility Solar+Storage - PV - Yakima	-	-	-		-	401		534	-	-	- 340			-	1.011	-	-			-		
Utility Solar+Storage - PV - Yakima Total Solar	-		-	-		401 901 8	-	- 534 -	- - -	-	349			_	1,011	-		-	430	-	8	
Utility Solar+Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-		- - - -	-	-	401		534	- - -	-	349	- - -	-	-		- - -	- - -	-	430 - -	-	8 1.9	
Utility Solar+Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Cool/WH	- - - - -		-	-	-	401	-	534		-	349		- - - -	- - - -		- - - -	-	-	430 - - 1.5	-	8 1.9 -	
Utility Solari-Stonge - PV- Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-And Party Contracts Demand Response, CA-Aid Party Contracts Demand Response, CA-Aid Party Contracts	-	- - - - - -	- - - - - - -	1		401	-	- 534 - - - -	- - - - - -	-	- - - 4.8	- - - - -	- - - - -	- - - - -	1,011 - - -	- - - - -	- - - - -		430 - -	- - - -	8 1.9	
Utility Solar-Stronge - PV. Vakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Airigate Demand Response, CA-Airigate Demand Response, CA-Irigate Demand Response, CA-Irigate	-	- - - - - - -		1 1	-	401	-	- 534 - - - - -	- - - - - - -	- - - - - -		- - - - -			1,011 - - -	- - - - - - -	- - - - - -		430 - - 1.5 1.1 -	- - - - -	8 1.9 -	
Utility Solart-Stronge - PV. Vakima Total Solar Demand Response, OR.Ancillary Services Demand Response, WA.Ancillary Services Demand Response, CA.Cool WH Demand Response, CA.Sol Party Contracts Demand Response, CA.Higher Demand Response, CA.Thermostat Demand Response, CA.Thermostat Demand Response, OR.Cool WH	-	- - - - - - - - -	- - - - - - -		- - - - - - - - -	401	-	- 534 - - - - - - -	- - - - - - - - -		- - - 4.8 5.8	- - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - -	1,011 - - -	- - - - - - - - -	- - - - - - -	- - - - - - - -	- - 1.5	- - - - - - 2.0	8 1.9 - - - - -	
Utility Solart-Stronge - PV. Vakima Demand Response, OR-Ancillary Services Demand Response, W.AAncillary Services Demand Response, W.AAncillary Services Demand Response, CA-Sol Party Contracts Demand Response, CA-Inguate Demand Response, CA-Inguate Demand Response, CA-Internostant Demand Response, OR-Cool WH Demand Response, OR-Kool WH Demand Response, OR-Kool Party Contracts Demand Response, OR-Kool Party Contracts Demand Response, OR-Ringuate	-	- - - - - - - - - - - - - - - - - - -		1 1	- - - - - - - - - - - -	401	-	- 534 - - - - - - - - -	- - - - - - - - - - -		- - - 4.8	- - - - - - - - -	- - - - - - - - - - - - - - -	- - - - - - - - - -	1,011 - - -	- - - - - - - - - -	- - - - - - - - -	- - - - - - - - - - -	430 - 1.5 1.1 - 12.0 30.3		8 1.9 -	
Utility Solar-Stronge - PV - Vakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Andrilary Contracts Demand Response, CA-Inigate Demand Response, CA-Inigate Demand Response, CA-Thermostat Demand Response, OR-Andrilary Demand Response, WA-Cool/WH Demand Response, WA-Cool/WH	-	-	-	1 1		401	- - 1.9 - - - -	- 534			- - - 4.8 5.8	- - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	1,011 - - -		-	- - - - - - - - - - - - - - - - - - -	430 - 1.5 1.1 - 12.0 30.3 - 7.7	2.0	8 1.9 - - - - -	
Utility Solar-Stronge - PV - Vakima Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, CA-Thermostat Demand Response, OR-Gool/WH Demand Response, OR-Gool/WH Demand Response, OR-Gool/WH Demand Response, OR-Gool/WH	-		-	1 1		401	- - 1.9 - - - -	- 534 - - - - - - - - - - - - - - - - - - -	-		- - - 4.8 5.8 - - 9.2		5.4		1,011 - - -		- - - - - - - - - - - - - - - - - - -		430 - 1.5 1.1 - 12.0 30.3		8 1.9 - - - - -	
Total Solar Demand Response, OR.Ancillary Services Demand Response, CA.Cool/WH Demand Response, CA.Cool/WH Demand Response, CA.Ancillary Services Demand Response, CA.And Party Contracts Demand Response, CA.Arligate Demand Response, CA.Thermostat Demand Response, OR.Cool/WH Demand Response, OR.Cool/WH Demand Response, OR.Arligate Demand Response, WA.Arligate Demand Response, WA.Thermostat	-			1 1		401 901 8 	- 1.9 - - - - - 4.1				- - - 4.8 5.8 - - - 9.2 - - - 14.6		- - - -		1,011 		-		430 - 1.5 1.1 - 12.0 30.3 - 7.7 9.9	2.0	8 1.9	
Utility Solar-Stronge - PV - Vakima Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Irrigate Demand Response, CA-Irrigate Demand Response, CA-Irrigate Demand Response, CA-Irrigate Demand Response, OR-And Party Contracts Demand Response, OR-And Party Contracts Demand Response, OR-And Party Contracts Demand Response, WA-Gool/WH Demand Response, WA-Arigate Demand Response, WA-Arigate Demand Response, WA-Irrigate Demand Response, VA-Irrigate	-					401	- 1.9 - - - - - 4.1	- - - - - - - - - - - - - - - - - - -	-	-	- - 4.8 5.8 - - 9.2 - - - 14.6 34.4	- - - - - - - - - - - - - - - - - - -	- - - - 5.4		1,011		- - - - - - - - - - - - - - - - - - -		430 - 1.5 1.1 - 12.0 30.3 - 7.7	2.0	8 1.9 - - - - - - - - - - - - - - - - - - -	
Utility Solar-Stronge - PV - Vakima Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, OR-Cool/WH Demand Response, OR-Garligate Demand Response, OR-Garligate Demand Response, WA-Grigate Demand Response, WA-Grigate Demand Response, WA-Grigate Demand Response, WA-Irigate Demand Response, WA-Irigate Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response, Total	- - - - - - - - - - - 1 40	37	- - - - - - - - - - - - - - - - - - -	- - - - - - - - 2 48	- - - - - - - - - - - - - - - - - - -	401 901 8 - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	2 39		- - 4.8 5.8 - - 9.2 - - 14.6 34.4 2	- - - - - - - - - - - - - - - - - - -	- - - - 5.4 2		1,011	26	3.1	- - - - - - - - - - 1 26	430 - 1.5 1.1 - 12.0 30.3 - 7.7 9.9 - 62.5 1	2.0 - - 1.1 - - 3.0 1 24	8 1.9	
Unitry Solar-Storage - PV. Vakima Demand Response, OR. Ancillary Services Demand Response, W. A. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Ancillary Services Demand Response, CA. Horder Demand Response, CA. Hirgate Demand Response, CA. Hirgate Demand Response, CA. Hirgate Demand Response, OR. And Party Contracts Demand Response, OR. Horder Demand Response, OR. Horder Demand Response, OR. Horder Demand Response, OR. Horder Demand Response, W. A. Hirgate Demand Response, W. A. Horder Demand Respons	- - - - - - - - - - - 1 40 11	37 9	10	- - - - - - - - - 2 48 11	47 12	401 901 8 - - - - - - - - - - - - -	- 1.9 - - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	2 39 11	11	- - - 4.8 5.8 - - 9.2 - - - 14.6 34.4 2 34 10	9	- - - - 5.4 2 31	31 8	1,011	26 6	3.1 1 24 6	- - - - - - - - 1 26 5	430 - - 1.5 1.1 - - 12.0 30.3 - 7.7 9.9 - - 62.5 1 24	2.0 - - 1.1 - - 3.0 1 24 4	8 1.9	
Utility Solar-Storage - PV. Vakima Demand Response, ORAncillary Services Demand Response, WAAncillary Services Demand Response, WAAncillary Services Demand Response, CACool/WH Demand Response, CAIrigate Demand Response, CAIrigate Demand Response, CAIrigate Demand Response, CAIrigate Demand Response, ORCool/WH Demand Response, ORAnd Party Contracts Demand Response, ORAnd Party Contracts Demand Response, WAGragate Demand Response, WAArigate Demand Response, WAThermostat Demand Response, WAThermostat Demand Response, Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, UA Energy Efficiency Energ	- - - - - - - - - - - 1 40	37 9		- - - - - - - - 2 48	47 12	401 901 8 - - - - - - - - - - - - -	- 1.9 - - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	2 39 11 52	11 51			- - - - 5.4 2	31	1,011	26	3.1 1 24 6	- - - - - - - - - - 1 26	430 - - 1.5 1.1 - - 12.0 30.3 - 7.7 9.9 - - 62.5 1 24	2.0 - 1.1 - - 3.0 1 24 4 29	8 1.9	
Utility Solar-Stronge - PV. Vakima Demand Response, OR. Ancillary Services Demand Response, W. A. Ancillary Services Demand Response, W. A. Ancillary Services Demand Response, C. A. Demand Response, C. Demand Response, W. A. Cabol WH Demand Response, W. A. Demand Response, W. Demand	- - - - - - - - - - - 1 40 11	37 9	10	- - - - - - - - - 2 48 11	47 12	401 901 8 - - - - - - - - - - - - -	- 1.9 - - - - - - - - - - - - - - - - - - -		2 39 11 52 15	11	- - - 4.8 5.8 - - 9.2 - - - 14.6 34.4 2 34 10	9	- - - - 5.4 2 31	31 8	1,011	26 6	3.1 1 24 6	- - - - - - - - 1 26 5	430 - 1.5 1.1 - 12.0 30.3 - 7.7 9.9 - - 62.5 1 24 4 29	2.0 - 1.1 - - 3.0 1 24 4 4 29 45	8 1.9	
Unity Solar-Storage - PV - Vakima Demand Response, ORAncillary Services Demand Response, W.AAncillary Services Demand Response, C.AAncillary Services Demand Response, C.ADolWH Demand Response, C.AImpate Demand Response, ORAncillary Services Demand Response, ORAncillary Demand Response, W.ACood III Demand Response, W.ACood III Demand Response, W.AThermostat Demand Response, W.AThermostat Demand Response, W.AThermostat Demand Response, W.AThermostat Demand Response, V.AImpate Demand Response,	- - - - - - - - - - - - - - - - - - -	37 9	10 49 - -	- - - - - - - - 2 48 11 60	47 12	401 901 8 - - - - - - - - - - - - -	- 1.9 - 1.9 		2 39 11 52	11 51 225 -		9 44 - -	- - - - 5.4 2 31 9 42 -	31 8	1,011	26 6 32 -	3.1 1 24 6		430 1.5 1.1 12.0 30.3 7.7 9.9 9.9 62.5 1 24 4 29 60	2.0 - 1.1 - - 3.0 1 24 4 4 29 45	8 1.9	
Usility Solar-Stonge - PV Vakima Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, CAAncillary Services Demand Response, CACool/WH Demand Response, CAInigate Demand Response, ORAnd Party Contracts Demand Response, ORAnd Party Contracts Demand Response, ORAnd Party Contracts Demand Response, WAGrigate Demand Response, WAArighte Demand Response, WAThermostat Demand Response, WAThermostat Demand Response, WAThermostat Demand Response, VAThermostat De		37 9	10	- - - - - - - - - - - - - - - - - - -	47 12	401 901 8 - - - - - - - - - - - - -			2 39 11 52 15 - 15	11 51 225 - -		9 44 - - - -	- - - - 5.4 2 31 9 42 - -	31 8	1,011	26 6	3.1 1 24 6	- - - - - - - - 1 26 5	430 - 1.5 1.1 - 12.0 30.3 - 7.7 9.9 - - 62.5 1 24 4 29	2.0 - 1.1 - - 3.0 1 24 4 4 29 45	8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	
Unity Solar-Storage - PW- Vakima Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, W.AAncillary Services Demand Response, CAGod WH Demand Response, ORGreat WH Demand Response, WAGreat WH Demand Response, WAGreat WH Demand Response, WAFirigate Demand Response, WAFirigate Demand Response, WAFirigate Demand Response, WAThereostat Demand Response,		37 9 48 - - - - - - 678	10 49 - - - - - 491	- - - - - - - - 2 48 11 60 - - - - - - - - - - - - - - - - - -	47 12 61 - - - - - - 496	401 901 8 	1.9 1.9 1.9 1.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		2 39 11 52 15 - 15 - 45	11 51 225 - - - - 1,060		9 44 - - - - - - 817	- - - - 5.4 2 31 9 42 - - - - -	31 8 42 - - - - - - 885	1,011	26 6 32 - - - - - 1,075	3.1 1 24 6 32 - - - 1,075		430 	2.0 - - 1.1 - - 3.0 1 24 4 4 29 45 - - - - - - - - - - - - -	8 1.9	
Unity Solar-Stonge - PV - Vakima Demand Reaponse, ORAncillary Services Demand Reaponse, ORAncillary Services Demand Reaponse, W.AAncillary Services Demand Response, CAAncillary Services Demand Response, CAIngate Demand Response, CAIngate Demand Response, CAIngate Demand Response, CAIngate Demand Response, ORAnd Party Contracts Demand Response, W.ACroul-W.H Demand Response, W.ACroul-W.H Demand Response, W.AThermostat D		37 9 48 - - - - - 678 131	10 49 - - - - - 491 265	- - - - - - - - - - - - - - - - - - -	47 12 61 - - - - - 496 311	401 801 8	1.9 1.9 1.9 1.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		2 39 11 52 15 - 15 - 45 166 88	11 51 225 - - - 1,060 220		9 44 - - - - - 817 239	- - - - 5.4 2 31 9 42 - - - - - - - - - - - - - - - - - -	31 8 42 - - - - - - 885 295	1,011	26 6 32 - - - - 1,075 217	3.1 1 24 6 32 - - - 1,075 232		430 -1.5 1.5 1.1.1 -1.2.0 30.3 -7.7 9.9 -1.5 62.5 1.1 4 4 29 -1.5 60.1 15 -1.5	2.0 1.1 3.0 1 24 4 29 45 1,074 100	8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	
Unitiny Solar-Storage - PV. Vakima Demand Response, OR. Ancillary Services Demand Response, W. A. Ancillary Services Demand Response, W. A. Ancillary Services Demand Response, CA. Cool WH Demand Response, OR. A. Cool WH Demand Response, OR. A. Cool WH Demand Response, W. A. They are Cool WH Demand Response, W. They Cool WH Demand Respo		37 9 48 - - - - - 678 131 (61)	10 49 - - - - - 491 265 (573)		47 12 61 - - - - - 496 311 (1)	401 901 8 - - - - - - - - - - - - - - - - - -	1.9 1.9 2 - - - - - - - - - - - - - - - - - -		2 39 11 52 15 - 15 - 45 166 88 (85)	11 51 225 - - - 1,060 220 (912)		9 44 - - - - 817 239 (396)		31 8 42 - - - - - - 885 295 (114)	1,011	26 6 32 - - - - - 1,075 217 (156)	3.1 1 24 6 32 - - - 1,075 232 (36)		430 -1.5 1.1 1.1 -1.5 -1.2.0 30.3 -7.7 9.9 -1.5 62.5 1 24 4 4 29 -1.5 60 15 -1.5	2.0	8 1.9	
Utility Solar-Stronge, P.V. Vakima Total Solar Demand Response, OR. Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, W.A. Ancillary Services Demand Response, CA. Accol-WH Demand Response, CA. Arigate Demand Response, CA. Arigate Demand Response, CA. Thermostat Demand Response, OR. Arigate Demand Response, W.A. Carol-WH Demand Response, W.A. Arigate Demand Response, W.A. Brancher, C. A. Barty Brilician, W.A. Barty Stonge - S. Oregon Battery Stonge - Vakima Botty Stonge - Vakima FOT West - Summer FOT West - Summer FOT West - Swinner		37 9 48 - - - - 678 131 (61) 131 850	10 49 - - - - - 491 265		47 12 61 - - - - 496 311 (1) 309 807	401 901 8 - - - - - - - - - - - - - - - - - -	1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9		2 39 11 52 15 - 15 - 45 166 88 (85) 215	11 51 225 - - 1,060 220 (912) 394 1,430		9 44 - - - - - 817 239	- - - - 5.4 2 31 9 42 - - - - - - - - - - - - - - - - - -	31 8 42 - - - - - - 885 295	1.011	26 6 32 - - - - 1,075 217	3.1 1 24 6 32 - - - 1,075 232 (36) 657 1,521		430 -1.5 1.1.1 -1.5 -1.2.0 30.3 -7.7 9.9 -1.5 62.5 14 4 4 29 -1.5 -1.0 -1.	2.0	8 1.99	

	ſ										Capacity	(MW)										Resource	Totals 1/
	P-45CNW-FOT	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038		20-year
East	Existing Plant Retirements and PPA Termination																						
	Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)	-	-	-		-	-		(82)	(82)	-		-	-	-	-	-	-	-		-	(82)	(82)
	Hayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-	(44)
	Hayden 2 Huntington 1	-	-	-		-	-		-	-	-		-	(33)	-	-	-	-	-	(459)	-	-	(33)
	Huntington 2			-		-	-		-	-	-			-	-	-	-	-	-	(450)	-	-	(450)
	Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74) (74)	-	-	-	-	-	-	-	-	-	-	(74)	(74)
	Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)		-	-		-	-	- (/4)		-	-	-	-	-	-	-		-	(387)	(74)
	DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99) (106)	-	-	-	-	-	-	-	-	-	-	(99)	(99)
	DaveJohnston 2 DaveJohnston 3	_	-	-		-	-		-	-	(220)		-	-	-	-	-	-	-		-	(106) (220)	(106)
	DaveJohnston 4	-	-	-	-	-	-	-	(156)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)	(330)
	Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-		-	-		(201)	-	-		-	-	-	-	-	-	-		-	(156) (201)	(201)
	Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(280)	(280)
	Gads by 1-6 Retire - Hydro	-	-	-		-	(20)		-	-	-		-	-	-	(356)	-	-	-		-	(20)	(356) (20)
	Retire - Wind	-	-	-	-	-		-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	-	(40)
	Expire - Wind PPA Expire - Solar PPA	-	(27)	(17)	(49)	(0)	- (1)		(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80)	-	(160)	(924) (979)
	Retire - Other		-	-	-	- '	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	-	(33)
	Coal Ret_WY - Gas RePower Expansion Resources	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247	-
	CCCT - DJohns - J 1xl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	505	-	-	505
	Total CCCT SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	505	-	185	505 555
	SCCT Frame WYSW	-		-		-	-		-	-	-	370	-	-	-	-	-	-	-		-	-	370
	Total SCCT Wind, GO	-		H -		-	-		185		-	370	370 1,100		-	-	-	-	<u> </u>		-	185	925 1,100
	Wind, UT					150								-					-		-	150	150
	Wind, WYAE Total Wind	-	H -			150	1,920 1,920			-			1,100	-	-	-	-	-	- 1		-	1,920 2,070	1,920 3,170
	Utility Solar+Storage - PV - Utah-S					-	1,920		-	-	-			500		-			- 1		-	150	650
	Utility Solar+Stomge - PV - Huntington Utility Solar+Stomge - PV - Utah-N	-	-	- 159	- 64	-	- 677	-	-	-	-	-	-	-	-	-	-	-	-	909	-	- 900	909 900
	Total Solar			159	64		827							500						909		1,050	2,459
	Demand Response, ID-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	2.6	-	2.6 1.8
	Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	-	-	-		-	-		-	-	-		-	-	5.2	-	-	-	3.7	1.8	1.8	-	10.6
	Demand Response, ID-Thermostat		-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	8.3		8.3
	Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0		9.9	-		7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	74.1	7.2	28.1	55.9 76.7
	Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	1.9
	Demand Response, UT-Thermostat Demand Response, WY-Cool/WH	-	-	-		-	-		33.5	-	83.1		8.2	-	-	-	-	8.3	-		5.1 5.2	116.7	138.3 5.2
	Demand Response, WY-3rd Party Contracts		-	-	-	-	-		-		-		-	_		-	_		-	2.1	37.3	-	39.4
	Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-	-		-	-		-	-	-		1.8	-	-	18.7	-	-	-		1.2	-	1.8
	Demand Response, UT-Ancillary Services	-	-	-	-	-	-	13.5	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5	16.7
	Demand Response, WY-Ancillary Services	_	-		-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	- 1	3.0	3.0
		4.1		7.0		9.9		16.5	40.7						12.0	18.7	_	153	3.7	81.3	73.3		
	Demand Response Total Energy Efficiency, ID	4.1	6		- 7	9.9 7	8	16.5 7	40.7 7	- 7	83.1 7	6.7 7	10.0	6	12.0	18.7	- 4	15.3	3.7	81.3 3		161.2 69	117
	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT	6 58	6 67	6 67	- 7 68	7 71	8 70	7 71	7 64	- 7 62 18	7 61	7 57	6 56	6 52	6 50	6 49	38	4			3	69 658	117 1,066
	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency Total	6	67 10	67 13	- 7 68 14 88	7	8 70 18	7	7	7 62 18 86	7	7	6	6 52	6	6		4 36	4 29 7 40	3	3 22 5	69	117 1,066 253 1,436
	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, VV Energy Efficiency Total Battery Storage - Utah-S	58 10	67 10	6 67 13 86	14	7 71 15	8 70 18 96	7 71 19 97	7 64 17	18	7 61 17 85	7 57 16	56 15	52 13	50 12	6 49 11	38	4 36 8	4 29 7 40 765.0	3 20 5	3 22 5	69 658 150 877	117 1,066 253 1,436 765.0
	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency Total	6 58 10 74 -	6 67 10 83 -	6 67 13 86 - -	14	7 71 15	8 70 18	7 71 19	7 64 17 87 - -	18 86 - -	7 61 17 85 -	7 57 16 80 -	6 56 15 77 - - 75.0	6 52 13 72 - - 75.0	6 50 12 68 - -	6 49 11 66 - -	38 9 51 -	4 36 8 48	4 29 7 40 765.0 180.0 240.0	3 20 5 28	3 22 5 30 - -	69 658 150 877 - 15.0	117 1,066 253 1,436 765.0 195.0 390.0
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency Total Battery Storage - Utab-S Battery Storage - WYSW Battery Storage - WYSW Battery Storage - Idaho FOT East - Summer	58 10	6 67 10 83 -	6 67 13 86 - -	14	7 71 15	8 70 18 96	7 71 19 97	7 64 17	18	7 61 17 85	7 57 16	6 56 15 77 - - 75.0	6 52 13 72 - - 75.0	50 12	6 49 11 66 - -	38	4 36 8	4 29 7 40 765.0 180.0	3 20 5	3 22 5 30 - -	69 658 150 877	117 1,066 253 1,436 765.0 195.0
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Entery Storage, Utals-S Enterty Storage, Utals-S Enterty Storage, - WySW Entery Storage, - Idaho	6 58 10 74 -	6 67 10 83 -	6 67 13 86 - -	14	7 71 15 94 - -	8 70 18 96 - -	7 71 19 97 - 15.0	7 64 17 87 - -	18 86 - -	7 61 17 85 -	7 57 16 80 - - - 150	6 56 15 77 - - 75.0	6 52 13 72 - - 75.0	6 50 12 68 - -	6 49 11 66 - -	38 9 51 -	4 36 8 48	4 29 7 40 765.0 180.0 240.0	3 20 5 28	3 22 5 30 - -	69 658 150 877 - 15.0	117 1,066 253 1,436 765.0 195.0 390.0 98
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Entery Storage, Utah. S Hattery Storage, Utah. S Hattery Storage, WYSW Entery Storage, Idaho FOT Fast - Summer Existing Plant Referements and PPA Termination Jimithdage 1 (Coal Early Retirement/Conversions) Jimithdage 2 (Coal Early Retirement/Conversions)	6 58 10 74 - - - 42	6 67 10 83 - - - 42	6 67 13 86 - - - -	14 88 - - - - -	7 71 15 94 - - - -	8 70 18 96 - - - - - (351)	7 71 19 97 - 15.0 - -	7 64 17 87 - -	18 86 - -	7 61 17 85 - - - 150	7 57 16 80 - - - 150	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 68 - - - 150	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 - 150	4 29 7 40 765.0 180.0 240.0 150	3 20 5 28	3 22 5 30 - - - 150	69 658 150 877 - 15.0 - 42	117 1,066 253 1,436 765.0 195.0 390.0 98 (351) (356)
West	Demand Response Total Inengy Hillickney, LID Inengy Hillickney, UT Inengy Hillickney, WY Inergy Hillickney, WY	6 58 10 74 -	6 67 10 83 -	6 67 13 86 - -	14	7 71 15 94 - -	8 70 18 96 - - -	7 71 19 97 - 15.0	7 64 17 87 - -	18 86 - -	7 61 17 85 -	7 57 16 80 - - - 150	6 56 15 77 - - 75.0	6 52 13 72 - - 75.0	6 50 12 68 - -	6 49 11 66 - -	38 9 51 -	4 36 8 48	4 29 7 40 765.0 180.0 240.0	3 20 5 28 - - - 185	3 22 5 30 - -	69 658 150 877 - 15.0 - 42	117 1,066 253 1,436 765.0 195.0 390.0 98 (351) (356) (349) (353)
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WY Deergy Efficiency Total Battery Storage - Utah-S Battery Storage - WYAW Battery Storage - WYAW Battery Storage - WYAW EATHER STORAGE - WYAW Battery Storage - WYAW Ba	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88 - - - - -	771115	8 70 18 96 - - - - - - - - - - - -	7 71 19 97 - 15.0 - -	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - 150	7 57 16 80 - - - 150	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 68 - - - 150	6 49 11 66 - - - 150	38 9 51 - - - 150	4 36 8 48 - 150	4 29 7 40 765.0 180.0 240.0 150	3 20 5 28	3 22 5 30 - - 150	69 658 150 877 - 15.0 - 42 (351) - -	117 1,066 253 1,436 765.0 195.0 390.0 98 (351) (356) (349) (353) (237)
West	Demand Response Total Inengy Hillickney, LID Inengy Hillickney, UT Inengy Hillickney, WY Inergy Hillickney, WY	6 58 10 74 - - - 42	6 67 10 83 - - - 42	6 67 13 86 	14 88 - - - - -	7 71 15 94 - - - -	8 70 18 96 - - - - - - - - - - - -	7 71 19 97 - 15.0 - -	7 64 17 87 - -	18 86 - -	7 61 17 85 - - - 150	7 57 16 80 - - - 150	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 68 150 (20)	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 - 150	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 28 - - - 185 - - - (237)	3 22 5 30 - - - 150 - - (349) (353) -	69 658 150 877 - 15.0 - 42 (351) - - - - (179) (216)	117 1,066 2253 1,436 765.0 195.0 390.0 98 (351) (356) (349) (353) (237) (262) (360)
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency, Total Battery Storage, Utals.'S Battery Storage, Utals.'S Battery Storage, WYSW Battery Storage, Idaho FOT East - Summer Existing Plant Retirements and PPA Termination Jimbfidger 1 (Coal Early Retirement/Convensions) Jimbfidger 2 (Coal Early Retirement/Convensions) Jimbfidger 3 Hermiston Retire - Hydro Espire - Wind PPA Espire - Wind PPA Espire - Wind PPA Espire - Wind PPA	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 70 18 96	7 71 19 97 - 15.0 - -	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - 150	7 57 16 80 - - 150 - (356) - -	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 68 - - 150	6 49 11 66 - - - 150	38 9 51 - - - 150	4 36 8 48 - 150	4 29 7 40 180.0 180.0 240.0 150 (1) (10) (10)	3 20 5 28 - - - 185 - - - - - - - - - - - - - - - - - - -	3 22 5 30 - - - 150 - - (349) (353) -	69 658 150 877 - 15.0 - 42 (351) - - - (179)	117 1,066 253 1,436 765.0 195.0 390.0 98 (351) (356 (349) (353) (237 (262) (360)
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Storage, Utals.'S Battery Storage, Utals.'S Battery Storage, WYSW Battery Storage, Idaho FOT East - Summer Existing Plant Retirements, and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 Hermiston Retire - Hydro Espire - Wand PPA Espires - Wand PPA Espires - Solar PPA Expansion Resources Wand, YK	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 70 18 96	7 71 19 97 - 15.0 - -	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150	7 57 16 80 - - 150 - (356) - -	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 68 (20) (49)	6 49 11 66 - - - 150	38 9 51 - - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 28 - - - 185 - - - (237)	3 22 5 30 - - - 150 - - (349) (353) -	69 658 150 877 - 15.0 - 42 (351) - - - - (179) (216)	117 1,066 253 1,436 765.0 195.0 390.0 (351) (356) (349) (353) (262) (360) (420)
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WT Energy Efficiency, WT Energy Efficiency Total Battery Storage, Utals. Battery Storage,	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 70 70 18 96	7 71 19 97 - 15.0 - -	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	7 7 57 6 80	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 68 (20) (49)	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 28 - - - 185 - - - (237)	3 22 5 30 - - - 150 - - (349) (353) - - (11)	69 658 150 877 - 15.0 - 42 (351) - - - - (179) (216) (2)	117 1,066 253 1,436 765.0 390.0 98 (351) (356) (353) (237 (262) (360) (420)
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, UT Inengy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Idaho FOT East - Summer Efficiency Edition Efficiency Edition Efficiency Edition Efficiency Edition Entry Efficiency E	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 70 70 18 18 96	7 71 19 97 - 15.0 - -	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	7 57 16 80 - - 150 - (356) - -	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 68 (20) (49)	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 28 28 28 28 28 28 29 29 29 29 29 29 29 29 29 29 29 29 29	3 22 2 2 5 5 3 0 150	69 658 150 877 15.0 42 (351) - - (179) (216) (2) - 354 500	1177 1,066 253 1,436 765.0 195.0 195.0 390.0 390.0 390.0 351 (356 (349) (352) (360 (420 47 47 1,415 975
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Storage, Utalis Battery Storage, Utalis Battery Storage, Utalis Battery Storage, Idaho FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 Hermiston Retire - Hydro Espire - Wand PPA Espires - Solar PPA Expansion Resources Wind, YK Total Wind Utility Solar+Storage - PV - Bridger Utility Solar+Storage - PV - Bridger Utility Solar+Storage - PV - Bridger Utility Solar+Storage - PV - Lykins	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 708 96 96 97 97 97 97 97 97 97 97 97 97 97 97 97	7 71 19 97 - 15.0 - -	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	7 57 57 57 57 57 57 57 57 57 57 57 57 57	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 0 12 68 12 150 150 150 150 150 150 150 150 150 150	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 5 28 28 28 2 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	3 22 5 5 30 30	69 658 150 877 	117 1.066 253 1.436 253 39.0 195.0 1
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Storage, Utals.'S Battery Storage, Utals.'S Battery Storage, Idaho FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 (John Storage) JimBridger 4 Hermiston Retire: Hydro Espire: Solar PPA Espires: Solar PPA Expansion Resources Wind, YK Total Wind Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Rocegon Utility Solar-Storage - PV - Pakinn Total Solar Demand Response, OR-Ancillary Services	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 70 70 18 18 96	77 71 19 97 77 11 19 97	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	7 7 57 6 80	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 68	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 28 28 28 28 28 28 29 29 29 29 29 29 29 29 29 29 29 29 29	3 22 5 5 30 30	69 658 150 877 - - - - - - - - - - - - -	1177 1,436 253 1,436 765.0 195.0 195.0 390.0 98 (3516 (356) (356) (420) 47 1,415 975 788 3,178
West	Demand Response Total Ibrangy Efficiency, ID Ibrangy Efficiency, UT Ibrangy Efficiency, WY Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Stonge, Utah. S Battery Stonge, Utah. S Battery Stonge, Utah. S Battery Stonge, Utah. S Battery Stonge, WAN Description of Control	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 18 96	7 71 19 97 - 15.0 - -	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	7 57 57 57 57 57 57 57 57 57 57 57 57 57	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 0 12 68 12 150 150 150 150 150 150 150 150 150 150	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 5 28 28 28 2 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	3 22 2 2 5 5 3 3 0	69 658 150 877 	117 1.066 1.
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Storage, Utals.'S Battery Storage, Utals.'S Battery Storage, Idaho FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 (John Storage) JimBridger 4 Hermiston Retire: Hydro Espire: Solar PPA Espires: Solar PPA Expansion Resources Wind, YK Total Wind Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Rocegon Utility Solar-Storage - PV - Pakinn Total Solar Demand Response, OR-Ancillary Services	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 18 96	77 71 19 97 77 11 19 97	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	7	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 0 12 68 12 150 150 150 150 150 150 150 150 150 150	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 5 28 28 28 2 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	3 3 222 2 2 2 5 5 30	69 658 150 877 - - - - - - - - - - - - -	117 1.05 25 3 1.05 25 25 25 25 25 25 25 25 25 25 25 25 25
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, IV Inengy Efficiency, IV Inengy Efficiency, WY Inergy Efficiency, WY Inergy Efficiency Total Battery Storage, Utala.S Battery Storage, Utala.S Battery Storage, WySW Battery Storage, Idaho IOT Fast - Summer Extring Plane Referencests and PPA Termination Extring Plane Referencests and PPA Termination Instruction of the Interference of the Interferen	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 18 96	77 71 19 97 77 11 19 97	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	77	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 0 12 68 12 150 150 150 150 150 150 150 150 150 150	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 20 5 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 222 2 2 2 5 5 30	69 658 150 877 - - - - - - - - - - - - -	117 1.066 1.
West	Demand Response Total Ibrangy Efficiency, ID Ibrangy Efficiency, UT Ibrangy Efficiency, WY Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Storage, Utala-S Bornal Storage, Utala-S Bornal Storage, Utala-S Bornal Storage, Utala-S Bornal Response, OR-Ancillary Services Demand Response, WA AGOALING SP Bornal Storage, WA AGOALING SP Bornal Response, CA AGOALING BORNAL RESPONSE Bornal Response, CA AGOALING Bornal Response, CA AGOALING BORNAL RESPONSE BORNAL	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 18 96	77 71 19 97 77 11 19 97	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	7	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 20 5 5 28	3 22 2 5 3 30 0	69 658 150 877 - - - - - - - - - - - - -	117 1.066 253 253 253 253 253 253 253 253 253 253
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Entery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Idaho FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 (Coal Early Retirement/Conversions) JimBridger 4 Hermston Retire, 1-lipida Espire, Wand PPA Espires Solar PPA Espires	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 18 96	77 71 19 97 77 11 19 97	7 64 17 87 - - - 78	18 86 6	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	77 77 77 77 77 78 80 80 80 80 80 80 80 80 80 80 80 80 80	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 0 12 68 12 150 150 150 150 150 150 150 150 150 150	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 3 20 0 5 5 28 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	3 22 2 5 3 30 0	69 658 150 877 - 15.0 (351) - - - (179) (216) (2) - - - - - - - - - - - - - - - - - - -	117 1,066 1,
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, UT Inengy Efficiency, UT Inengy Efficiency, WY Energy Efficiency Total Battery Storage, Utala.S Battery Storage and Utala.S Bottomac Storage and Utal	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 18 96	77 71 19 97 77 11 19 97	7 64 17 87 - - - 78	18 86 - -	7 61 17 85 - - - 150 - - - - - - - - - - - - - - - - - - -	77	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 11 66 - - - 150	38 9 51 - - 150	4 36 8 48 48	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 5 5 28 8	3 22 5 5 30 0 150	69 658 150 877 - - - - - - - - - - - - -	117 1.066 2.53 1.436 765.0 390.0 390.0 390.0 (351) (356) (349) (357) (262) (420) 477 1.415 978 3.178 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, UT Inengy Efficiency, UT Inengy Efficiency, WY Energy Efficiency Total Battery Storage, Utals. Botton Battery Botton. Botto	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 18 96	77 71 19 97 77 11 19 97	7 64 17 87 - - - 78	18 86 6	7 61 17 85	77 77 77 77 77 78 80 80 80 80 80 80 80 80 80 80 80 80 80	6 56 15 77 - - 75.0 150	6 52 13 72 - - 75.0 150	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 11 66 - - - 150	38 9 51 - - 150	4 4 8 8 8 48 8	4 29 7 7 400 180.0 240.0 150 (1) (10)	3 20 20 5 5 28	3 22 5 5 30 0 150	69 658 150 877 - 15.0 - 42 (351) - - - (179) (216) (216) (217) - - - - - - - - - - - - - - - - - - -	117 1,066 253 1,436 765.0 195.0 390.0 390.0 (351) (356) (349) (353) (237,7 (262) (360) (420) 1,11 1,4115 1,15 1,15 1,15 1,11 1,415 1,15 1,
West	Demand Response Total Energy Efficiency, ID Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Hattery Storage, Utals, S Hattery Storage, Utals, S Hattery Storage, Utals, S Hattery Storage, Idaho FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 (Coal Early Retirement/Conversions) JimBridger 4 Hermiston Retire - Hydro Lopine - Word PPA Expansion Revources Expire - Solar PPA Expansion Revources Utality Solar-Storage - PV - Nordace Utality Solar-Storage - PV - Nordace Utality Solar-Storage - PV - Sorgeon Utality Solar	6 58 10 74 - - - 42	6 67 10 83 - 42	6 67 13 86 	14 88	771115	8 700 18 18 966	7 71 19 97 - 15.00	7 64 4 17 87	18 86 6	7 61 17 85	77 16 800	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 72 - - 75.0 150	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 66 6	38 9 51 - - 150	4 366 8 8 488	4 29 7 40 180.0 240.0 150.0 	3 20 5 5 28 8	3 22 2 5 3 30 0	69 658 150 877 - 15.0 - 42 (351) - - - (179) (216) (216) (2) - - - - - - - - - (218) 50 (218) 50 (218) - - - - - - - - - - - - - - - - - - -	117 1.066 2.53 1.436 765.0 1.95.0 390.0 390.0 (351) (356) (357) (262) (420) 47, 47, 47, 48, 3.178 3.178 3.178 3.178 3.178 3.178 3.178 3.188
West	Demand Response Total Energy Efficiency, UT Energy Efficiency, UT Energy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Entery Storage, Utah. S. Battery Storage, Utah. S. Battery Storage, Utah. S. Battery Storage, Idaho FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 (John Storage) Hermiston Retire - Hydro Lopine - Wand PPA Lopine - Solar Storage - PV - Bridger Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Bridger Lopine - Solar Storage - PV - Bridger Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Se	6 588 10 10 744	6 677 110 833	6 677 13 86	14 88	771115	8 70 18 18 96	77 71 19 97	7 64 17 87 78 7	18 86 6	7 61 17 85	77 16 80 80	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2	6 50 12 12 12 12 13 14 14 15 15 14 15 15 14 15 15 14 15 15 15 15 16 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	6 49 9 111 666	750	4 4 36 8 8 48 48	4 29 7 40 180.0 240.0 150 	3 20 5 5 28 8	3 22 5 5 30 0 150	69 688 150 877 -1 -1 -2 42 (351) -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	117 1,066 253 1,436 765.0 390.0 390.0 391.0 (351 (356 (3403 (3403 (3403 (351 (356 (360) (351 (356 (360) (360) (351 (356 (360)
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, UT Inengy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Idaho POT Tast - Summer Efficiency Efficiency Total Battery Storage, Idaho POT Tast - Summer Efficiency Efficiency Dindholder 1 (Coal Tarly Retirement Conversions) Jindholder 2 (Coal Tarly Retirement Conversions) Jindholder 3 (Coal Tarly Retirement Conversions) Jindholder 3 (Loal Tarly Retirement Conversions) Jindholder 4 (Loal Tarly Retirement Conversions) Jindholder 3 (Loal Tarly Retirement Conversions) Jindholder 4 (Loal Tarly Retirement Conversions) Jindholder 4 (Loal Tarly Retirement Conversions) Jindholder 5 (Loal Tarly Retirement Conversions) Jindholder 4 (Loal Tarly Retirement Conversions) Jindholder 5 (Loal Tarly Retirement Conversions) Jindholder 4 (Loal Tarly Retirement Conversions) Jindholder 5 (Loal Tarly Retirement Conversions) Jindholder 6 (Loal Tarly Retirement Conversions) Jindholder 7 (Loal Tarly Retiremen	6 58 10 74 - - - 42	6 677 100 100 100 100 100 100 100 100 100 1	6 677 13 86 6	14 88	77111594	8 700 18 18 966	7 71 19 97 - 15.00	7 64 4 17 87 7 87 7 87 7 8	18 86 6	7 61 17 85	77 16 800	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 66 6	38 9 51 - - 150	4 366 8 8 488	4 29 7 40 180.0 240.0 150 	3 20 5 5 28 8	3 22 2 5 3 30 0	69 658 150 877 - 15.0 - 42 (351) - - - (179) (216) (216) (2) - - - - - - - - - (218) 50 (218) 50 (218) - - - - - - - - - - - - - - - - - - -	117 1,066 253 1,436 765.0 390.0 390.0 390.0 (351, (356, (357, (257, (267, 47, 47, 47, 1,415, 97,5 1,14, 1,415, 1,14, 1,1
West	Demand Response Total Ibrongy Efficiency, ID Inengy Efficiency, UT Inengy Efficiency, WY Energy Efficiency, WY Energy Efficiency Total Battery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Utals, S Battery Storage, Idaho FOT East - Summer Efficiency Efficiency Total Battery Storage, Idaho FOT East - Summer Efficiency Efficiency Efficiency Dindholdger 1 (Coal Early Retirement/Conversions) Jindholdger 2 (Coal Early Retirement/Conversions) Jindholdger 3 (John Early Retirement/Conversions) Jindholdger 3 (John Efficiency Efficiency) Dindholdger 3 (John Efficiency Efficiency) Dindholdger 3 (John Efficiency Efficiency) Egipte: Wind PPA Egipte: Solar PPA Expansion Resources Wind, YK Total Wind Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Strönger Utility Solar-Storage - PV - Versiger Utility Solar-Storage - PV - Arringter Demand Response, CA-Cool/WH	6 588 100 100 100 100 100 100 100 100 100 1	6 6 67 7 10 8 33 3	6 677 13 86	14 888	771115944	8 700 18 966	77 71 19 97 7	7 644 117 87 78 78 78 78 78 78 78 78 78 78 78 78	18 86 6	7 61 17 85 5	77 16 80 150	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 66 6	51 	4 366 8 8 48 8	4 29 7 40 180,0 240,0 150 150 (10) (10) (115)	3 20 5 5 28 6 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2	3 22 2 5 3 30 0	69 658 150 877 - - 15.0 (351) - - - - (216) (216) (216) (217) (218) - - - - - - - - - - - - - - - - - - -	1177 1.066 2.53 1.4346 765.0 390.0 390.0 398.0 (351) (351) (351) (352) (340) (420) 477 47.1 1.415 8.8 8.8 8.8 1.5 1.1 1.1 1.3 1.5 1.5 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, IT Inengy Efficiency, IT Inengy Efficiency, WY Barray Efficiency Total Battery Storage, Utala. Battery Storage, WySW Battery Storage, WySW Battery Storage, Wish Battery Storage Battery Storag	6 588 10 10 744	6 677 110 833	6 677 13 86 6	14 88	7 71 15 94	8 70 18 18 96	7 71 19 97	7 64 4 17 87 78 87	18 86 6	7 61 17 85	7 16 80 80	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2 15 15 15 15 15 15 15 15 15 15 15 15 15	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 666	38 38 51 	4 4 36 8 8 48 8	4 29 7 40 180,0 240,0 150 150 150 150 150 150 150 150 150 15	3 20 5 5 28 8	3 22 2 5 3 30 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	69 658 150 877 - - 15.0 (351) - - - - (351) - - - - - (216) (2) - - - - - - - - - - - - - - - - - - -	117 1,066 2,53 1,436 765,0 390,0 390,0 390,0 (351 (356 (357 (420 (420 (420 (420 (420 (420 (420 (420
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, IT Inengy Efficiency, IT Inengy Efficiency, WY Energy Efficiency Total Battery Storage, Utala. Battery Storage, Idaho FOT Bast - Summer Extering Parameter Convenions) Jordander I Coral Early Retirement Convenions) Jordander I Homestor Jordander I Coral Early Retirement Convenions) Jordander I Homestor Retire - Hydro Retire - Hydro Retire - Hydro Retire - Solar PPA Eppire - Solar PPA Eppire - Solar PPA Eppire - Solar PPA Expansion Resources Word, VK Total Wind Utalay Solar-Storage - PV - Drindger Utalay Solar-Storage - PV - Schregen Demand Response, CA - And Party Contracts Demand Res	6 588 10 744	6 6 67 7 10 83 3	6 67 13 86 6	14 888	7 71 15 94	8 70 18 96	77 71 19 97 7	7 64 17 87 78 7	18 86 6	7 61 17 85 5	7 57 16 80 0	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 666		4 4 8 8 8 48 8	4 29 7 40 180,0 240,0 150 150 150 150 150 150 150 110 (113) 110 113 115 115 115 115 115 115 115 115 115	3 20 5 5 28 6 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2	3 22 5 5 300 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	69 688 150 877 -1 -2 42 (351) -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	117 1,066 253 1,436 765.0 390.0 390.0 390.0 (351 (356 (357 (420 (420 (420 (420 (420 (420 (420 (420
West	Demand Response Total Ibrangy Efficiency, ID Inengy Efficiency, UT Inengy Efficiency, WY Inergy Efficiency, WY Inergy Efficiency Total Battery Storage, Utals, S Battery Storage, and Storage Storage Storage Interfect Storage, Interfect Storage Storage Interfect Storage, Interfect Storage Interfect Storage Storage Storage Interfect Storage, Interfect Storage Interfect Storage, PV - Dridger Utility Solar-Storage - PV - Dridger Utility Solar-Storage - PV - Storage Interfect Storage - PV - Storage Interfect Storage - PV - Storage Interfect Storage - PV - Alary Interfect Storage - PV - P	6 588 10 744	6 6 67 7 10 83 3	6 6 67 13 86 6	148 88	771115944	8 70 18 18 18 96 6	77 71 19 97 7	7 644 117 87 78 78 78 78 78 78 78 78 78 78 78 78	18 86 6	7 61 17 85	77 577 16 800	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 666	51 	4 366 8 8 48 8	4 29 7 40 186,0 240,0 150 150 150 (115) (1	3 20 5 5 28 6 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2	3 22 2 5 3 30 0	69 688 150 877 - - 15.0 (351) - - - - - - - - - - - - -	117 1,066 253 1,436 765.0 390.0 390.0 390.0 391.0 331.0 331.0 349.0 349.0 349.0 349.0 349.0 353.3 353.3 353.3 37.7 37.7 31.3 31.6 31.6 31.6 31.6 31.6 31.6 31.6
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, UT Inengy Efficiency, WY Inergy Efficiency, WA Interp Storage - Utals. S Battery Storage - WYSW Battery Storage - WA Interp Storage - WA Interpretation	6 588 10 10 744	6 677 110 833	6 677 13 86	148 88	7 71 15 94 4	8 70 18 18 96	77 71 19 97 7 15.00	7 64 17 87 77 87	18 86 6	7 61 17 85	77 16 80 80	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2	6 50 12 12 150 150 150 150 150 150 150 150 150 150	6 499 111 666	750	4 4 3 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	4 29 7 40 186.0 240.0 150 150 150 150 150 150 150 150 150 15	3 20 20 5 5 28 8	3 22 5 5 300 1 500	69 688 150 877 - - 15.0 (351) - - - - - - - - - - - - -	117 1,066 253 1,436 765.0 390.0 390.0 390.0 390.0 390.0 391.0 351.3 323.7 349.0 351.3 317.8 31.8 3.18 3.18 3.18 3.18 3.18 3.18 3.
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, IT Inengy Efficiency, IT Inengy Efficiency, IT Inengy Efficiency, WY Energy Efficiency Total Battery Storage, Utala. Battery Storage, Idaho FOT Bast - Summer Extering Part Retirements and PPA Termination Judituder: I Coral Early Retirement Conversions) Judituder: Indeed Total Early Retirement Conversions Judituder: Indeed Total Early Retirement Conversions) Judituder: Indeed Total Early Retirement Conversions Judituder: Indeed Total Early Retirement Conversions Judituder: Indeed Total Early Retirement Conversions Judituder: Indeed Total Early Ea	6 588 10 744	6 677 110 833	6 677 13 86 6	148 88	7 7 11 15 94 4 496	8 700 18 966	77 71 19 97 7	7 64 17 87 77 87	18 86 6	7 61 17 85 5	77 577 16 800	6 56 6 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 666	51 	4 4 36 8 8 48 8	4 29 7 40 180,0 240,0 150 150 150 150 150 150 150 150 150 15	3 20 5 5 28 8	3 22 5 3 30 0 150 0 1	69 688 150 877 -1 -2 42 (351) -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	117 1,066 253 1,436 765.0 390.0 390.0 390.0 (351) (356) (352) (420) 47 47 47 47 47 47 47 1,415 975 1.1 1.4 8.8 1.9 1.5 1.1 1.8 5.8 5.8 5.8 6.8 6.8 8.8 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8
West	Demand Response Total Inengy Efficiency, ID Inengy Efficiency, IT Inengy Efficiency, IT Inengy Efficiency, WY Energy Efficiency Total Battery Storage - Utals. Battery Storage - Utals. Battery Storage - WySW Botton Battery Storage - Soragon Battery Storage - Soragon Battery Storage - WySW Battery Storage - WySW Battery Storage - Soragon Battery St	6 588 10 10 744	6 6 67 7 10 10 10 10 10 10 10 10 10 10 10 10 10	6 6 67 13 86 6	14 888	77 71 15 94	8 70 18 96	77 71 19 97	7 64 4 17 87 78 87	18 86 6	7 61 17 85 5	77 577 16 800	6 566 15 15 17 77	6 52 13 13 72 2	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 66 6	51 51 50 51 50 61 61 61 61 61 61 61 61 61 61 61 61 61	4 4 36 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	4 29 29 7 7 180 180 180 180 180 180 180 180 180 180	3 20 5 5 28 8 7	3 22 5 5 30 0 150 0 150 0 150 0 1 150	69 688 150 877 - - - - - - - - - - - - -	117 1,066 2,53 1,436 765.0 390.0 390.0 390.0 (351) (355) (352) (420) 47 47 47 47 47 47 47 1,415 975 11.1 4,8 8 8.1 9.8 1.5 1.1 1.8 5.8 5.8 5.8 5.8 6.8 6.8 8.8 8.9 8.9 8.9 8.0 8.9 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0
West	Demand Response Total Ibrangy Efficiency, ID Ibrangy Efficiency, UT Ibrangy Efficiency, WY Ibrangy Efficiency Ibrandy Efficiency Introduction Internation Internati	6 588 10 10 744	6 678 8 3 6 78 8 4 2	6 677 13 86	148 888	7 7 11 15 94 4 1 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	8 70 18 18 96	77 71 19 97	7 64 17 87 78 7	18 86 6	7 61 17 85	77 16 80 80 (356)	6 566 15 15 15 15 15 15 15 15 15 15 15 15 15	6 52 13 13 72 2 15 15 15 15 15 15 15 15 15 15 15 15 15	6 50 12 12 12 12 12 12 12 12 12 12 12 12 12	6 49 9 111 666	75)	4 4 36 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	4 29 29 7 40 180.0 240.0 150 150 150 150 150 150 150 150 150 15	3 20 5 5 28 8	3 22 2 5 3 30 0	69 688 150 877 - - - - - - - - - - - - -	1,066 253 1,436 765.0 195.0 198.0 399.0 399.0 (351) (351) (351) (352) (420) 47 47 1,415 975 788 8.8 8.8 8.3 3.178 1.9 1.5 1.1 1.1 1.1 1.8 1.8 2.3 3.7 7.7 1.0 9 8.3 1.7 1.0 9 8.3 1.7 1.0 9 8.3 1.7 1.0 9 8.3 1.7 1.0 9 8.3 1.7 1.0 9 8.3 1.7 1.0 9 8.3 1.7 1.0 8.3 1.0 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8

Table K.17 – Gateway & No Gas Cases, Detailed Capacity Expansion Portfolio

P-22										Capacity (Resource
F-22 Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	(82)	- (82)	-	-	-	-	-	-	-	-	-	-	-	(82) (82)
Hayden 1		-	-	-	-	-	-	-	- (82)	-	-	-	(44)	-	-	-	-			-	- (82
Hayden 2 Huntington 1	+ -	-	-	-	-	-	-	-	- :	-		- :	(33)	-	-		-		(459)	-	
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	-	-	- (74)	-	-	-	-	-	-	-	-	(450)	-	- (74)
Colstrip 4 (Coal Early Retirement/Conversions)			-	-	-	-	-	-	- :	(74)	-	-	-	-	-	- :	-		-	-	(74)
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	+	-	(387)		-	-	-	-	-	- (99)	-	-	-		-	_	-		<u> </u>		(387)
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)
DaveJohnston 3 DaveJohnston 4	+-	-	-	-		-	-	-	-	(220)	-	-	-	-	-		-			-	(330)
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	-	-	-	-	(201)	-	-	-	-	-	-	-	_	-		-	-	(201)
Cadxby 1-6 Retire - Hydro		-	-	-	-	(20)	-	-	-	-		-	-	-	(356)	-	-	-		-	(20)
Retire - Hydro Retire - Wind		-			-	- (20)	-	-	-	-		(40)	-		-						-
Expire - Wind PPA Expire - Solar PPA	+	(27)	(17)	(49)	(0)	(1)		(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60) (94)	(80)		(160)
Retire - Other		-	-	-	- (.)	- (.)	-	-	-	-			-	-	-	(1)	-		-	(32)	
Coal Ret_WY - Gas RePower		247	-	-		-	-	-	-	-		(247)	-		_		-				247
Expansion Resources CCCT - DJohns - J lxl Total CCCT		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	505 505	-	
SCCT Frame NTN	+	-	-	-	-	-	-	-	-	-	-	555	-	-	-		-		-		
SCCT Frame WYSW		-	-	-	-	-	-	-	-	-	-	- 555	-	-	-		-	185 185	185 185		
Total SCCT Wind, GO		-	-	-		-	-	-	-	-	-	1,033	-	-	-		-	-	-	-	
Wind, UT Wind, WYAE	+==		-	-	73	1,920		-=	-				-								73 1,920
Wind+Storage, GO	-	-	-		-	-	-	-	-	-	-	-	-	67	-	-	-	-			-
Total Wind Utility Solar+Storage - PV - Utah-S	+ '	-	-	-	73	1,920 227	-				- :	1,033 272	228	- 67			-				1,993 227
Utility Solar+Storage - PV - WYSW	_	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N	+	-	159	64	-	677	-	-	- :	-		- :	-	-	-		-		909	-	900
Total Solar		-	159	64	-	904	-	-	-	-	-	272	228	-	100	-	-	-	909		1,127
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	+-	-		-	-	-	-	-	-	-	-	-	-	-	-		-		1.8	2.6	
Demand Response, ID-Irrigate Demand Response, UT-Cool/WH	4.1	-	7.0	-	- 9.9	-	-	7.2	-	-	6.7	-	-	5.2 6.8	-	-	7.0	-	3.7	1.8 7.2	28.1
Demand Response, UT-3rd Party Contracts	4.1	-	- 7.0	-	-	-	-	- 1.2	-	-	- 6.7		-	-	-		- 7.0			76.7	28.1
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	+	-	-	-	-	-	-	-	-	-	116.7	8.2	-	-	-	_	8.3	-		1.9 5.1	
Demand Response, WY-Cool/WH	-	-	-	-		-	-		-	-	-	-	-	-	-	-	-		-	5.2	-
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	+	-	-		-	-	-	-	-	-	-	-	-		-	_	-		2.1 1.8	37.3	_
Demand Response, WY-Thermostat	_	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	-		-	-	18.7	1.2	13.5
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	+	-	-	-	- 8.3	-	3.0		-	-	-	-	-	-	-		-		3.2	-	3.0
Demand Response Total Energy Efficiency, ID	4.1		7.0	- 7	18.1	- 7	8.2	7.2	- 7	- 7	123.3	8.2	-	12.0	-		15.3	- 2	31.2	139.2	44.6 68
Energy Efficiency, UT	58 10	61		68 12	69	66	65 16	65	62 18	62 18	57	58 15	54 13	48	47 11	36	32	25	22	25	642 143
Energy Efficiency, WY Energy Efficiency Total	10 74	77	11 85	12 86	15 91	16 89	16 89	17 89	18 86	18 87	16 80	15 79	13 73	12 65	63	49	8	35	5 30	33	143 853
Battery Storage - WYSW		-	-	-	-	-	-	-	-	-	-	60.0	90.0 90.0	-	-	-	-	-	-	390.0 30.0	-
Battery Storage - Idaho FOT East - Summer		-	-	-	-	-	-	-	-	52	300	60.0 295	90.0	236	285	287	300	300	300	30.0	- 5
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)						(351)															(351)
JimBridger 2 (Coal Early Retirement/Conversions)		-	-	-		(331)	-	-	- :	-	(356)	-	-	-	-	- :	-				(331
JimBridger 3 JimBridger 4	+	-	-		-	-	-	-	-	-	-	-	-	-	-	_		_			_
Hermiston		-					_			_				-	-		- :			(349)	
				-	-	-	-	-			- :	-	-	-	-	- :	-	- :	(237)	(349)	- :
Retire - Hydro	-	(1)	(169)	(175)	- (1)	- - (41)		(1)	-	- (7)	-	- - (10)	(6)		- (20)	(75)	-	- (1)	-	(353)	(179)
Retire - Hydro Expire - Wind PPA Expire - Solar PPA		(1)	(169) - -	(175)	-	- - (41)	- - - -	-	-	(7)	-	- - (10)	- (6) - (67)	-	- - (20)	(75)	-	(1) (10) (115)	(237) (237) (10) (175)	(353)	(179) (216) (2
Retire - Hydro Expire - Wind PPA			(169)	(175)	-	(41)	-	-	-	-	-	(10)	-	- (20)	(20)	(75)	-	(10)	(10) (175)	(353)	(216)
Reitie - Hydro Eapire - Wind PPA Eapire - Solar PPA Eapire - Solar PPA Expansion Resources SCCT Finne WV Total SCCT	-		(169) - - -	(175)	-	- - (41) -	-	- (1) - -	-	-	- (75) -	- (10) -	-	- (20)	(20)	(75)	-	(10)	(10) (175) 443 443	(353)	(216)
Retire - Hydro Egpire - Wind PPA Espire - Solar PPA Espansion Res ources SCCT Fame WV Total SCCT Wind, Dividger Wind, VK	-		(169) - - - - - -	(175)	-	- (41) - - - -		- (1) - - - - 200	-	-	- (75) - - - 359	- (10) - - -	-	- (20)	(20)	(75)	-	(10)	(10) (175) 443 443 - 298	(353)	(216 (2)
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Solar PPA Espire - Solar PPA SCCT France W MCCT France W M	-			(175)	-	- (41) - - - - - - - 354	-	- (1) - - - 200 - 200	-	-	- (75) -	- (10) - - - - -	-	- (20)	(20)	(75)	-	(10)	(10) (175) 443 443	(353)	(216)
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Solar PPA Espiration Recourses SC-CT Frame W-V Total SC-CT Wind, Invideor Vend, Invideor Unity Stolar - Storage - PV - Invideor Unity Stolar - Storage - PV - Borah				(175)	-		-	- (1) - - - - 200	-	-	- (75) - - - 359	- (10) - - - - - - -	-	- (20) (49)	-	- (75)	-	(10)	(10) (175) 443 443 - 298	(353)	(216) (2) - - 200 - 200 354 300
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Solar PPA Espire - Solar PPA Espire - Mind PPA Espire - Solar PPA Espire - Es	-			(175)	-		-	- (1) - - - 200 - 200	-	-	- (75) - - - 359	- (10)	-	- (20)	- (20) 	- (75)	-	(10)	(10) (175) 443 443 - 298	(353)	(216' (2' - - 200 - 200 354
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Wind, Bridger Wind, Jirkinger Wind, Jirkinger Unidy Solar Storage - PV - Bridger Unidy Solar Storage - PV - Takina	-			- (175)	-	- - - - - - 354 - 463	-	- (1) - - - 200 - 200	-	-	- (75) - - - 359	- (10) 	-	- (20) (49)	-	- (75)	-	(10)	- (10) (175) 443 443 - 298 298	(353) - - (11) (11) - - - 702	(216) (2) - - 200 - 200 354 300 463
Retine - Hydro Espire - Wind PPA Espire - Stolar - Sto		(1)		- (175)	-	- - - - - 354 - 463 405		- (1) 		-	- (75) - - - 359	- (10) 	-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475	- (75)	-	(10)	- (10) (175) 443 443 - 298 298 132	(353)	(216) (2) - - 200 - 200 354 300 463 405
Retire - Hydro Expire - Wind PPA Expire - Solar PPA Expire - Solar PPA Expire - Solar PPA Expire - Solar PPA Solar PPA Word - Solar PPA Unity Solar - Solar PPA Unity Solar - Solar - Solar PPA Unity Solar - Solar		(1)		- (175)	-	- - - - - 354 - 463 405		- (1) 	-	-	- - (75) - - - 359 - - - - 8		-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475	- (75)	-	(10)	- (10) (175) 443 443 - 298 298 132	(353)	(216) (2) - - 200 - 200 354 300 463 405
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Total SCCT Wind, Jiridger Espire		(1)	(169)	(175) (175) 	-	- - - - - 354 - 463 405		- (1) 		-	- - (75) - - - 359 - - - - 8		-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475	- (75)	-	(10)	(10) (175) 443 443 298 298 	(353)	(216) (2) - - 200 - 200 354 300 463 405
Retire - Hydro Retire - Hydro Lapine - Nolar PPA Lapine - Nolar PPA Lapine - Nolar PPA Lapine - Nolar PPA Sector - Lapine Word - Lapine Liflay Solar - Storage - PV - Broads Liflay Solar - Storage - PV - Broads Liflay Solar - Storage - PV - Storage Liflay Solar - Storage - PV - Storage Liflay Solar - Storage - PV - Valoria Liflay Solar - Storage - PV - Storage Liflay - Solar - Storage Liflay		(1)	(169)	(175)	-	- - - - - 354 - 463 405		- (1) 		-	- - (75) - - - 359 - - - - 8		-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475	- (75)	-	(10)	(10) (175) 443 443 443 - 298 - - - 132 132 - - - - - - - - - - - - - - - - - - -	(353)	(216) (2) - - 200 - 200 354 300 463 405
Retire - Hydro Egwire - Solar PPA Word, Jividger Word, Jividger Word, Jividger Word, Jividger Word, Word Egwire - Solar PPA Egwire - Solar - Solar PPA Egwire - PV - Breath Utiley Solar - Storage - PV - So-begon Utiley Solar - Storage - PV - So-begon Utiley Solar - Storage - PV - Vakiora Egwire - Solar - Sol		(1)	(169)	- (175)	-	- - - - - 354 - 463 405		- (1) 		-	- - (75) - - - 359 - - - - 8		-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475	- (75) (75)	-	(10)	(10) (175) 443 443 4298 298 298 132 132 1	(353)	(216) (2) - - 200 - 200 354 300 463 405
Retire - Hydro Espire - Solar PPA Espire - Solar PSA Espire - Solar PS			(169)	- (175)	-	- - - - - 354 - 463 405		- (1) 		-	- - (75) - - - 359 - - - - 8		-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475	(75)	-	(10)	- (10) (175) 443 443 443 443 443 443 443 132 132 132	(353) (11)	(216) (2) - - 200 - 200 354 300 463 405
Retine - Hydro Retine - Hydro Layine - Solar PPA Layine - Solar PPA Layine - Solar PPA Layine - Solar PPA Sector - Layine -		(1)		(175)	-	- - - - - 354 - 463 405		- (1) 		-	- - (75) - - - 359 - - - - 8		-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475	(75)	-	(10)	(10) (175) 443 443 - 298 298 - 132 132 - - - - - - - - - - - - - - - - - - -	(353)	(216) (2) - - 200 - 200 354 300 463 405
Retire - Hydro Egwire - Wind PPA Egwire - Solar PPA Egwire - Egwir		(1)	(169)	- (175)	-	- - - - - 354 - 463 405		- (1) 		-	- (75) - (75) (75) 359 359 (75) - (75) - (7		-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475	- (75) (75) - (75) (75) (75) (75) (75) (75) (75) (75)	-	(10)	(10) (175) ((353) (11) (11) (12) (12) (13) (14) (15) (15) (16) (16) (17) (17) (17) (18) (18) (19)	(216) (2) - - 200 - 200 354 300 463 405
Retire - Hydro Espire - Solar PPA Espire - Espi		(1)	(169)	- (175)	-	- - - - - 354 - 463 405		- (1) 		-	- - (75) - - - 359 - - - - 8		-	- (20) (49) - - - - - - - - - - - - - -	- - - - - - - 475		-	(10)	(10) (175) 443 443 298 298 298 132	(353) (11) (11) (12) (12) (13) (14) (15) (15) (16) (16) (17) (17) (17) (18)	(216) (2) - - 200 - 200 354 300 463 405
Retire - Hydro Egwire - Wind PPA Egwire - Solar PPA Egwire - Egwir					- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			- (1) - (1)			" (75)	(10)	-	- (20) (49) - (4	- - - - - - - 475		(1)	(10)	(10) (175) ((353)	(216 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Espira	11				- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		12	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11		- (75) - (75) - 359 - 359 - 1			- (20) (49) - (4			(b) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	(10) (115) ((10) (175) (175) (175) (175) (443) (43) (298) (298) (298) (298) (132) (298) (132) (298) (132) (298) (132) (298) (132) (298) (132) (298) (132) (298) (132) (1	(353) (11) (11) (11) (12) (13) (14) (15) (15) (16) (16) (17)	(216 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2
Retire - Hydro Espire - Solar PPA Espire - Espire					- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			- (1) - (1)			" (75)		- (67)	- (20) (49) - (4			(b) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	(10) (10) (11) (11) (11) (11) (11) (11)	(10) (175) ((353) (11) (11) (11) (12) (13) (14) (15) (15) (16) (17)	(216 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Word, Jovidger Lilliay Solar Storage - PV - Storago Lilliay Solar Storage - PV - Wikina Total Solar Espirate Solar Storage - PV - Wikina Demmid Response, CA - Condition Espirate Solar Storage - PV - Wikina Demmid Response, CA - Condition Demmid Response, CA - Hornworld Demmid Response, CA - Hornworld Demmid Response, OR - Storage Demmid Response, WA - Coud-WH Demmid Response, WA - Frenches Espirate Fiftisensey, CA Energy Efficiency, CA	11				- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		12	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11		- (75) - (75) - 359 - 359 - 1			- (20) (49) - (4			(b) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	(10) (115) ((10) (175) (175) (175) (175) (443) (443) ((353)	(216 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2
Retire - Hydro Repire - Wind PPA Espire - Solar PPA Espire - Espire	11 52 -				- (1)		12 56 - -	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11 52 - -					- (20) (49) (49) (49) (49) (49) (49) (49) (49			(b) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	(10) (115) ((10) (175) (175) (175) (443) (43) (298) (298) (298) (298) (298) (398) (48) (48) (48) (48) (48) (48) (48) (4	(353) (11) (11) (12) (13) (14) (15) (15) (16) (17) (17) (17) (18)	(216 (22 (22 (22 (22 (22 (22 (22 (22 (22 (2
Retine - Hydro Retine - Hydro Repine - Wind PPA Lydree - Solar PPA Lydree - Lydree - Lydree - Lydree Lydree - Lydree - Lydree - Lydree Lydree - Lydree - Lydree - Lydree Lidley Solar Storage - PV - Solar Lidley Solar Storage - PV - Solar Lidley Solar Storage - PV - Solar Lidley Solar Storage - PV - Vakina Lydree - Lydree - Lydree Lydree Lydree - Lydree L	11 52 -				- (1)		12 56 - -	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11 52 - -					- (20) (49) (49) (49) (49) (49) (49) (49) (49			(b) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	(10) (115) ((10) (175) (175) (175) (175) (443) (443) ((353) (11) (11) (12) (13) (14) (15) (15) (16) (17) (17) (17) (18)	(216 (22 (22 (22 (22 (22 (22 (22 (22 (22 (2
Retire - Hydro Repire - Wind PPA Espire - Solar PPA Espire - Espire	998 151				- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		12	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	11		- (75) - (75) - 359 - 359 - 1			- (20) (40) (40) (40) (40) (40) (40) (40) (4			(b) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	(10) (115) ((10) (175) (175) 443 443 - 298 208 - 132 132 - 133 - 146.6 78.6 13.3 - 166.6 78.6 11.0 11.0 11.0 11.0 11.0 11.0 11.0 11	(353)	(216 (22 (22 (22 (22 (22 (22 (22 (22 (22 (2

P-23										Capacity											Resource
Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Craig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	-	(82)
Craig 2 (Coal Early Retirement/Conversions) Hayden 1	-	-	-	-	-			-	(82)	-	-	-	(44)	-	-	-	-	-	-	-	(82)
Hayden 2	-	-	-	-		-	-		-	-		-	(33)	-	-	-	-		-	-	-
Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459)	-	-
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-			-	-	-	-	(450)	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(387) (99)
DaveJohnston 1 DaveJohnston 2		-	-	-	-	-	-	-	-	(106)	-	-			-	-	-	-	-	-	(106)
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)
DaveJohnston 4	-	-	-	-	-	-	-	(156)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-			-	-	-	-	-	-	(156) (201)
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	- (201)	-	-	-	-	-	-	-	-	-	-	-	-	(280)
Gadsby 1-6	-	-	-	-		-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-
Retire - Hydro Retire - Wind	-	-	-	-	-	(20)	-			-	-	(40)	-		-		-	-	-	-	(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	i	-	-		-	-	-	-	-	(35)	(94)	(849)		(1)
Retire - Other Coal Ret WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-		-	(1)	-	-	-	(32)	247
Expansion Resources	-	247							_			(247)						_	_	_	247
SCCT Frame DJ	-	-	-	-	-	-	-	-	-	-	-	195	-	195	195	-	-	-	-	-	-
SCCT Frame NTN SCCT Frame WYSW	-		⊢ - ∃	- 1			- 7	185	-	370		370	- T	- 1	-	-			-		185 370
SCCT Frame WYSW Total SCCT	-	-		-	-		-	185	-	370	-	564	 	195	195	-		-	-	-	555
Wind, GO	-	-	-	-	-	-	-	-	-	-	-	1,100	-	-		-	-	-	-	-	-
Wind, UT Wind, WYAE	-	-		-	131	1.920			-	-	-	-	- 1	-	-	-	-	-	-	-	131 1.920
Wind, WYAE Total Wind	-	-		-	131		-		-	-	-	1,100		-	-	-	-	-	-	-	2,051
Utility Solar+Storage - PV - Utah-S		-			-	169									500						169
Utility Solar+Storage - PV - WYSW	-	-	-	-		-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N	-	-	159	- 64	-	677	-	-	-	-	-	-			-	-	-	-	909	-	900
Total Solar			159	64		846									600		_		909		1,069
Demand Response, ID-3rd Party Contracts	-	-		-	-	- 1	-	-	-	-	-	-	- 1	-		-	-	-	1.8	-	-
Demand Response, ID-Irrigate	4.1	-	7.0	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	3.7	1.8	- 20.1
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9		-	7.2	-		6.7			6.8	-	-	7.0	-	74.1	7.2	28.1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat	-	-	-	-		-	-	ı	-	116.7		-	8.2	-	-	1	-	-	8.3	5.1	116.7
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	3.4 39.4	-	-
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	39.4	-	-
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	1	-	2.1	-	ı	-	,	16.7	-	-
Demand Response, UT-Ancillary Services	-	-	8.3	-	-	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	15.3	-	9.9	-	8.2	7.2		116.7	6.7	_	8.2	14.0	1.8	-	7.0	-	150.7	16.1	161.2
Energy Efficiency, ID	6			7	7.7	7	7	7.2	7	7	7	7	6	6	5	4	4	3	3		70
Energy Efficiency, UT	58			68	71		71	68	65	62	57		52	50	47	34		25	20		665
Energy Efficiency, WY Energy Efficiency Total	10 74			14 88	15 94	16 92	17 96	19 94	18	18 87	16 80	15 81	13 71	12 68	11 63	9 47		35	5 28		150 885
Battery Storage - Utah-S		-	-	-			-		-		-	-	- 1	-	-		-	-	30.0		-
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	15.0	-	_	-		15.0	-	-
Battery Storage - Idaho FOT East - Summer				-	-																
	-	-				-	-	- 21	- 40	101	205	121	252	300	- 212	215	-	- 201	135.0	- 200	- 26
		-	-	-	-		-	21	49	191	205	121	252	300	213	215	-	291	135.0		26
FOT East - Summer Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)	-		-	-		-	-	(351)	49	191		121	252	300	213	215	-	291	135.0		(351)
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-		-	-	- - -	- - -	(351) (356)	- 49 - -	191	205	121	252	-	213	215	220	291	135.0	300	(351) (356)
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-			- - - - -		(351) (356) (349)	- - - -	- 191 - - -	205	-	252	-	-	215	- 220	-	135.0	300 - - -	(351) (356) (349)
Existing Plant Retirements and PPA Termination Imilitidger Coal Early Retirement/Conversions	-		- - - - -	- - - -	-	- - - - -	- - - -	(351) (356) (349) (353)	- - - - -		205	- - - - -		-	- 213	-	220		135.0	300	(351) (356) (349) (353)
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SASTING Plant Retrements and PPA. Itermination Inhibitiges 1 (Coal Early Retriement/Conversions) Inhibitiges 2 (Coal Early Retriement/Conversions) Inhibitiges 2 (Coal Early Retriement/Conversions) Inhibitiges 4 (Coal Early Retriement/Conversions) Inhibitiges 4 (Coal Early Retriement/Conversions) Inhibitiges 4 (Coal Early Retriement/Conversions) Remission Retries - Hydro Expire - Wind PPA			-		-	- - - - - - (41)	- - - - - - -	(351) (356) (349) (353)	- - - - - - -	- - - - (7)	205 - - - -	-	- - - - (6)	- - - - - (20)	-	-	- 220	- - - - (1) (10)	135.0 300	- - - - - -	(351) (356) (349) (353) (179) (216)
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Existing Plant Retirements and PPA Termination Junifidger 2 (Coal Early Retirement/Conversions) Junifidger 2 (Coal Early Retirement/Conversions) Junifidger 3 (Coal Early Retirement/Conversions) Junifidger 4 (Coal Early Retirement/Conversions) Junifidger 4 (Coal Early Retirement/Conversions) Junifidger 4 (Coal Early Retirement/Conversions) Hemiston Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espansion Resources SCCT Prame WV	-		-	- - - - - (175)	- - - - - (1)	- - - - - - (41)		(351) (356) (349) (353) - (1)	- 49	- - - - (7)	205		- - - - (6)	- - - - - (20)		-	- 220	- - - - (1) (10)	135.0 300 - - - - (237) - (10) (175)	300 (11)	(351) (356) (349) (353) (179) (216)
Existing Plant Retirements and PPA. Itermination Inhibiting 1: (One Early Retirement/Conversions) Inhibiting 2: (Cont Early Retirement/Conversions) Inhibiting 3: (Cont Early Retirement/Conversions) Inhibiting 3: (Cont Early Retirement/Conversions) Inhibiting 4: (Cont Early Retirement/Conversions) Inhibiting 5: (Cont Early Retirement/Conversions) Inhibiting 4: (Cont Early Retirement/Conversions) Inhibiting 5: (Cont Early Retirement/Conversions) Inhibiting 6: (Cont Early Retirement/Conversions	-		-		- - - - - (1)	- - - - - - (41)	-	(351) (356) (349) (353) - (1)	- 49 	(7)	205		- - - - (6)	- - - - (20) (49)		-	- 220 (1)	- - - - (1) (10)	135.0 300 - - - (237) - (10) (175)	300 (11)	(351) (356) (349) (353) - (179) (216) (2)
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Existing Plant Retirements and PPA Termination Inhibiting et al. Coal Early Retirement/Conversions) Imbiting et al. (Coal Early Retirement/Conversions) Earlier State et al. (Coal Early Retirement/Conv			-		- - - - - (1)	- - - - - - (41) - - -		21 (351) (356) (349) (353) - (1) - - - 200	- - - - - - - - - - - - - - - - - - -	- - - - (7) - (2)	205		- - - - (6)	- - - - (20) (49)		-	- 220 (1)	- - - - (1) (10)	135.0 300 - - - - (237) - (10) (175)	300 (11)	(351) (356) (349) (353) - (179) (216) (2) - - - 820 488
Existing Plant Retirements and PPA. Itermination Imbitidger 1 (Coal Early Retirement/Conversions) Imbitidger 2 (Coal Early Retirement/Conversions) Imbitidger 3 (Coal Early Retirement/Conversions) Imbitidger 4 (Coal Early Retirement/C		- - - - (1) - - - -	-		- (1)	- - - - -		21 (351) (356) (349) (353) - (1) - - - 200	- - - - - - - - - - - - - - - - - - -	- - - - - (7) - (2)	205		- - - - (6)	- - - - (20) (49)	- (20)	-	- 220 (1)	(1) (10) (115)	135.0 300 - - - - (237) - (10) (175)	300	(351) (356) (349) (353) - (179) (216) (2) - - - 820 488 - 1,308
Existing Plant Retrements and PPA Termination Inhibiting 1: 1 (Con Early Retriement/Convenions) Inhibiting 2: 2 (Con Early Retriement/Convenions) Inhibiting 3: 2 (Con Early Retriement/Convenions) Inhibiting 4: 2 (Con Early Retriement/Convenions) Retries - Hydro Exprise - Solar PPA Exprise - Mind PPA Exprise - Solar PPA Exprise - Mind PPA Exprise - Mind PPA Exprise - Retrieve - Solar PPA Wind, Bridger Wind, Bridger Wind, Bridger Wind, Wind Dilly Solar-Storage - PV - Bridger			-		- - - - - (1)	- - - - - - - (41)		21 (351) (356) (349) (353) - (1) - - - 200	- - - - - - - - - - - - - - - - - - -	- - - - (7) - (2)	205		- - - - (6)	- - - - (20) (49)		-	- 220 (1)	- - - - (1) (10)	135.0 300 - - - - (237) - (10) (175)	300 (11)	(351) (356) (349) (353) - (179) (216) (2) - - - 820 488
Existing Plant Retirements and PPA Termination Imbildiget 1 (Coal Early Retirement/Conversions) Imbildiget 2 (Coal Early Retirement/Conversions) Imbildiget 3 (Coal Early Retirement/Conversions) Imbildiget 4 (Coal Early Retirement/Con		- - - - (1) - - - -	-		- (1)	- - - - - - - - - - - - - - - - - - -		21 (351) (356) (349) (353) (353) - - - - - - 200 - - 200	- - - - - - - - - - - - - - - - - - -	- - - - - (7) - (2)	205		- - - - (6)	- - - - (20) (49)	- (20)	-	- 220 (1)	(1) (10) (115)	135.0 300 - - (237) (10) (175) 443 - - 5 5	300	(351) (356) (349) (353) - (179) (216) (2) - - - 820 488 - 1,308 2,54 412 500
Esisting Plant Retirements and PPA. Termination Jinkhidger 2 (Coal Early Retirement/Conversions) Jinkhidger 2 (Coal Early Retirement/Conversions) Jinkhidger 3 (Coal Early Retirement/Conversions) Jinkhidger 4 (Coal Early Retirement/Conversions) Jinkhidger 5 (Coal Early Retirement/Conversions) Jinkhidger 6 (Coal Early Retirement/Conversions) Jinkhidger 7 (Coal Early Retirement/Co		- (1)	-		- (1)	- - - - - - - - 500		21 (351) (356) (349) (353) - (1) - - 200 - 200 - 300	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)	(20) (49)	- - - (20) - - - - - - - - - - - - - - - - - - -	-	- 220 	(1) (10) (115)	135.0 300 - - (237) - (10) (175) 443 443 - - - - - - - - - - - - -	300	(351) (356) (349) (353) - (179) (216) (2) - - - 820 488 - 1,308 254 412 500 405
Existing Plant Retirements and PPA Termination Imbildiger 1 (Coal Early Retirement/Conversions) Imbildiger 2 (Coal Early Retirement/Conversions) Imbildiger 3 (Coal Early Retirement/Conversions) Imbildiger 4 (Coal Early Retirement/Conversions) Imbildiger 5 (Coal Early Retirement/Con		- (1) - (1)	-		- (1)	- - - - - - - - - - - - - - - - - - -		21 (351) (356) (349) (353) 	- - - - - - - - - - - - - - - - - - -		205		- - - - (6)	(20) (49)	- - - - (20) - - - - - - - - - - - - - - - - - - -	-	- 220	(1) (10) (115)	135.0 300 - - (237) (10) (175) 443 - - 5 5	300	(351) (356) (349) (353) - (179) (216) (2) - - 820 488 - 1,308 254 412 500 405 1,570
Existing Plant Retirements and PPA Termination Inhibitiges 1 (Coal Early Retirement/Conversions) Inhibitiges 2 (Coal Early Retirement/Conversions) Inhibitiges 2 (Coal Early Retirement/Conversions) Inhibitiges 4 (Coal Early Retirement/Conversions)		- (1)	-		- (1)	- - - - - - - - 500		21 (351) (356) (349) (353) - (1) - - 200 - 200 - 300	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)	(20) (49)	- - - (20) - - - - - - - - - - - - - - - - - - -	-	- 220 	(1) (10) (115)	135.0 300 - - (237) - (10) (175) 443 443 - - - - - - - - - - - - -	300	(351) (356) (349) (353) - (179) (216) (2) - - - 820 488 - 1,308 254 412 500 405
Existing Plant Retirements and PPA Termination Junkindger 1 (Coal Early Retirement/Conversions) Junkindger 2 (Coal Early Retirement/Conversions) Junkindger 3 (Coal Early Retirement/Conversions) Junkindger 4 (Coal Early Retirement/Conversions) Jepies - Solar PPA Espies - Solar PPA Espies - Solar PPA Espies - Solar PPA Total Solar - Storage - PV - Junkind Junkindger 4 (Coal Early Retirement/Conversions) Junkindger 5 (Coal Early Retirement/Conversions) Junkindger 5 (Coal Early Retirement/Conversions) Junkindger 5 (Coal Early Retirement/Conversions) Junkindger 6 (Coal Early Retirement/Conversions) Junkindger 7 (Coal Early Retirement/Conversions) Junkindger 7 (Coal Early Retirement/Conversions) Junkindger 7 (Coal Early Retirement/Conversions) Junkindger 7 (Coal Early Retirement/Conversions) Junkindger 7 (Coal Early Retirement/Conversions) Junkindger 7 (Coal Early Retirement/Conversions) Junkindger 7 (Coal Early Retirement/Conversions) Junkindger 7 (Co		- (1)	-		- (1)	- - - - - - - - 500		21 (351) (356) (349) (353) (1) 	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)		- - - - (20) - - - - - - - - - - - - - - - - - - -	-		(1) (10) (115)	135.0 3000 - - - (237) (100) (175) 443 443 - - - - - - - - - - - - - - - -	300	(351) (356) (349) (353) (353) (216) (22) - - - - 820 488 - - 1,308 254 412 500 405 1,570
Existing Plant Retirements and PPA Termination Imbildiget 1 (Coal Early Retirement/Convensions) Imbildiget 2 (Coal Early Retirement/Convensions) Imbildiget 2 (Coal Early Retirement/Convensions) Imbildiget 3 (Coal Early Retirement/Convensions) Imbildiget 4 (Coal Early Retirement/Con		- (1)	-	(175)	(I)	- - - - - - - - 500		21 (351)(356)(349)(349)(353) (353)(353) 	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)		- - - - (20) - - - - - - - - - - - - - - - - - - -	-		(1) (10) (115)	135.0 300	300	(351) (356) (349) (353) (353) (216) (22) - - - - 820 488 - - 1,308 254 412 500 405 1,570
Existing Plant Retirements and PPA Termination Inhibiting 1-1 (Con Early Retirement/Conversions) Inhibiting 2-1 (Con Early Retirement/Conversions) Inhibiting 2-1 (Con Early Retirement/Conversions) Inhibiting 3-1 (Con Early Retirement/Conversions) Inhibiting 4-1 (Con Early Retirement/Conversions) Inhibiting 5-1 (Con Early Retirement/Conversions)		- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	-		(1)	- - - - - - - - 500		21 (351)(350)(350)(350)(350)(350)(350)(350)(350	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)		- - - - (20) - - - - - - - - - - - - - - - - - - -	-		(1) (10) (115)	135.0 300 (237) - (10) (175) 443	300	(351) (356) (349) (353) (353) (216) (22) - - - - 820 488 - - 1,308 254 412 500 405 1,570
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Kasting Plant Retirements and PPA Termination Junkindger 1 (Cona Early Retirement/Conversions) Junkindger 2 (Cona Early Retirement/Conversions) Junkindger 3 (Cona Early Retirement/Conversions) Junkindger 4 (Cona Early Retirement/Conversions) Junkindger 5 (Cona Early Retirement/Conversions) Junkindger 5 (Cona Early Retirement/Conversions) Junkindger 6 (Cona Early Retirement/Conversions) Junkindger 7 (Cona Early Ear			-		(1)	- - - - - - - - 500		21 (351) (356) (359) (3493) (3	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)		- (20)	-	(1)	(1) (10) (115)	135.0 300	300	(351) (356) (349) (349) (333) - (179) (216) (2) - - - - - - - - - - - - - - - - - - -
Kasting Plant Retirements and PPA. Termination Imbidinger 1 (Coal Early Retirement/Conversions) Inshiridager 2 (Coal Early Retirement/Conversions) Inshiridager 3 (Coal Early Retirement/Conversions) Inshiridager 3 (Coal Early Retirement/Conversions) Inshiridager 4 (Coal Early Retirement/Conversions) Inshiridager 8 (Coal Early Retirement/Conversions) Inshiridager 8 (Coal Early Retirement/Conversions) Inshiridager 9 (Coal Early Retirement/Coal Early Coal Early Retirement/Coal Early Coal Early Coa			-		(1)	- - - - - - - - 500		21 (351) (356) (359) (3493) (3	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)		- - - - (20) - - - - - - - - - - - - - - - - - - -	-	(1)	(1) (10) (115)	135.0 300	300	(351) (356) (349) (349) (333) - (179) (216) (2) - - - - - - - - - - - - - - - - - - -
Existing Plant Retirements and PPA Termination Inhibiting 1. (Coal Early Retirement/Convenions) Inhibiting 2. (Coal Early Retirement/Convenions) Inhibiting 3. (Coal Early Retirement/Convenions) Inhibiting 4. (Coal Early Retirement/Convenions) Expire. Solar PPA Expire. No Early Expire. Solar PPA United Solar Sol			-		(1)	- - - - - - - - 500		21 (351) (356) (349) (353) (35	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)		- (20) - (30) - (47) -	-	- 220	(1) (10) (115)	135.0 300	3000	(351) (350) (349) (349) (353)
Kasting Plant Retirements and PPA. Termination Imbitidger 1 (Coal Early Retirement/Conversions) Imbitidger 2 (Coal Early Retirement/Conversions) Imbitidger 3 (Coal Early Retirement/Conversions) Imbitidger 4 (Coal Early Retirement/Conversions) Imbitidger 5 (Coal Early Retirement/Conversions) Imbitided 5 (Coal Early Retirement/Conversions) Imbitided 5 (Coal Early Retirement/Conve			-		(1)	- - - - - - - - 500		21 (351) (356) (349) (353) (35	- - - - - - - - - - - - - - - - - - -		205	- - - - (10) - - - - - - - - - - - - - - - - - - -	- - - - (6)		- (20) - (20) (20) (20) (20) - (20) - (-	- 220	(1) (10) (115)	135.0 3000	3000	(351) (350) (349) (349) (216)
Existing Plant Retirements and PPA Termination Imbildiger 1 (Con Early Retirement/Convenions) Imbildiger 2 (Con Early Retirement/Convenions) Imbildiger 3 (Con Early Retirement/Convenions) Imbildiger 4 (Con Early Retirement/Convenions) Expire - Nohr PPA Expire - Nohr		- (1)	- (169) - (169)		(1)			21 (351) (356) (349) (353) (35	- - - - - - - - - - - - - - - - - - -		205	- (10) -	- - - - (6)		- (20) - (20) (30) (47) (47) (47) (47) (47) - (4			(1) (10) (115)	135.0 300	300	(351) (350) (349) (349) (353) (216) (216) (2) (2) (2) (2) (2) (2) (3) (488) (2) (488) (488) (500) (405
Kisting Plant Retirements and PPA Termination Imbildiget 1 (Con Early Retirement/Convenions) Imbildiget 2 (Con Early Retirement/Convenions) Imbildiget 3 (Con Early Retirement/Convenions) Imbildiget 3 (Con Early Retirement/Convenions) Imbildiget 4 (Con Early Retirement/Convenions) Imbildiget 5 (Con Early Retirement/Con Ea	40 11	- (1) - (1)	- (169) (169) (169) -		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		12	21 (351) (356) (349) (353)			205		- (67) - (67)		- (20) - (20) (20) (20) (20) (20) (20) - (20)		- 220	- (1) (10) (115) (135.0 300	300	(351) (350) (349) (349) (216) (216) (216) (217) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Existing Plant Retirements and PPA Termination Inhibiting 1: 10 coll Early Retirement/Conversions) Inhibiting 2: 1 (Coal Early Retirement/Conversions) Inhibiting 3: 1 (Coal Early Retirement/Conversions) Inhibiting 4: 1 (Coal Early Retirement/Conversions) Inhibiting 5: 1 (Coal E	40	- (1) - (1)	- (169) (169) (169) -		(1)			21 (351) (356) (349) (353) (35			205		- (67) - (67)		- (20) - (20) - (30) - (475) -	(75)	- 220	- (1) (10) (115) (135.0 3000	3000	(351) (350) (340) (343) (216) (217) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Existing Plant Retirements and PPA. Termination Imbridge 1 (One Early Retirement/Conversions) Imbridge 2 (Con Early Retirement/Conversions) Imbridge 3 (Con Early Retirement/Conversions) Imbridge 3 (Con Early Retirement/Conversions) Imbridge 4 (Con Early Retirement/Conversions) Imbridge 5 (Con Early Retirement/Con Early	40 11	- (1) - (1)	- (169) (169) (169) -		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		12	21 (351) (356) (349) (353)			205		- (67) - (67)		- (20) - (20) (20) (20) (20) (20) (20) - (20)			- (1) (10) (115) (135.0 300	300	(351) (350) (349) (349) (216) (216) (216) (217) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Existing Plant Retirements and PPA Termination Inablidger 1 (Coal Early Retirement/Conversions) Inablidger 2 (Coal Early Retirement/Conversions) Inablidger 3 (Coal Early Retirement/Conversions) Inablidger 4 (Coal Early Retirement/Conversions) Inablidger 4 (Coal Early Retirement/Conversions) Inablidger 4 (Coal Early Retirement/Conversions) Itemiston Retire 1 (Poal Early Retirement/Conversions) Inablidger 4 (Coal Early Retirement/Conversions) Express of the Poal Early Retirement/Conversions) Express of the Poal Early Retirement/Conversions Valid Poal Early Reti	40 11	- (1) - (1)	- (169) (169) (169) -		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		12	21 (351) (356) (349) (353)			205		- (67) - (67)		- (20) - (20) (20) (20) (20) (20) (20) - (20)		- 220	- (1) (10) (115) (135.0 3000	3000	(351) (350) (340) (343) (216) (217) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Existing Plant Retirements and PPA Termination Inhibiting 1-1 (Coal Early Retirement/Conversions) Inhibiting 2-2 (Coal Early Retirement/Conversions) Inhibiting 3-2 (Coal Early Retirement/Conversions) Inhibiting 3-2 (Coal Early Retirement/Conversions) Inhibiting 4-2 (Coal Early Retirement/Conversions) Inhibiting	40 11 52 - -	- (1) - (1)	- (199) - (169		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		12	21 (351) (356) (349) (353) (35			205		- (6) - (67) - (67) (7) (7) (7) (7) - (7) -		- (20) - (20) - (30) - (475) -				135.0 300	3000	(351) (350) (349) (349) (353)
Existing Plant Retirements and PPA. Termination Imbridger 1 (Coal Early Retirement/Conversions) Imbridger 2 (Coal Early Retirement/Conversions) Imbridger 2 (Coal Early Retirement/Conversions) Imbridger 3 (Coal Early Retirement/Conversions) Imbridger 4 (Coal Early Retirement/Coal Early Re	40 11 52 - - - - 998	- (1) - (1)			(1)		12	21 (351) (356) (349) (353)			205		- (67) - (67)		- (20) - (20) (20) (20) (20) (20) (20) - (20)			- (1) (10) (115) (135.0 3000	3000	(351) (350) (349) (349) (333) (216)
Nisting Plant Retirements and P.P.A. Termination Imbildiger 1 (Coal Early Retirement/Convenions) Imbildiger 2 (Coal Early Retirement/Convenions) Imbildiger 3 (Coal Early Retirement/Convenions) Imbildiger 4 (Coal Early Retirement/Convenions) Retire - Hydro Retire -	40 11 52 - -	- (1) - (1)	- (169) - (169		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		12	21 (351) (356) (349) (353) (35			205		- (6) - (67) - (67) (7) (7) (7) (7) - (7) -		- (20) - (20) - (30) - (475) -				135.0 300	300	(351) (350) (349) (349) (353)

1/ Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average 1/ Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average.

P-25										Capacity	(MW)										Resource	Totals
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-уе
Existing Plant Retirements and PPA Termination								(82)													(82)	
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)		-		-	-	-	-	- (82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82))
Hayden 1 Hayden 2		+	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	-	-	-	
Huntington 1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459)	-	-	(
Huntington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	+		-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	(450)	-	(74))
Colstrip 4 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74))
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	-	+	(387)	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(387)) (
DaveJohnston 2	-		-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)) (
DaveJohnston 3 DaveJohnston 4		+	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	
Naughton 1 (Coal Early Retirement/Conversions)	-			-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(156)	(
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	_	(280)	-		-	-	-	(201)	-	-	-	-	-	-		-	-	-	-	-	(201) (280)	(
Gads by 1-6	-		-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	(
Retire - Hydro Retire - Wind	-	+	-	-	-	(20)	-	-		-	-	(40)	-	-	-		-	-		-	(20))
Expire - Wind PPA	-	(27)	(17)	(49)	(0)		-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)	
Expire - Solar PPA Retire - Other	-	+		-	(1)	(1)	-	-	-	-	-	-	-	-	-	- (1)	(35)	(94)	(849)	(32)	(1)	(
Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247	
Expansion Resources SCCT Frame DJ	-			-		-	-	-	-	-	-	584	- 1	- 1	- 1	-	- 1	- 1	-	-	-	
SCCT Frame NTN	-		-	-	-	-	-	-	-	-	-	555	-	-	-	-	-	-		-	-	
SCCT Frame WYSW Total SCCT	-	+		-	-	-	-	-	-	-	-	1,138	-	-	-	-	-	-	370 370	-	-	1,
Wind, GO	-		-	-	-	1,920	-	-	-	-	-	1,100	-	-	-	-	-	-	-	-	1,920	1.
Wind, WYAE Total Wind	-	+		-	-	1,920		-	-	-	-	1,100	-	-	-	-	-	-	-	-	1,920 1,920	
Utility Solar+Storage - PV - Utah-S	-		-	-	-	300	-	-	-	-	-	-	500	-		-	-	-	-	-	300	
Utility Solar+Storage - PV - WYSW Utility Solar+Storage - PV - Huntington	-	+ -		-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	715	-	-	
Utility Solar+Storage - PV - Utah-N	-		159 159	64	73	604 904	-	-	-	-	-	-	- 500	-	- 100	-	-	-	715	-	900 1,200	
Total Solar Demand Response, ID-3rd Party Contracts	-	+	- 159	- 64	- 73	- 904	-	-	-	-	-	-	-	-	-	-	-	-	715 1.8	-	1,200	
Demand Response, ID-Irrigate		1 - 1		-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	-	1.8	-	1
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	+ -	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2 76.7	28.1	3
Demand Response, UT-Irrigate	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH	-	+	-	-	-	-	-	-	-	-	116.7	8.2	-	-	-	-	8.3	-	3.4	5.1	-	13
Demand Response, WY-3rd Party Contracts	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1	37.3	-	3
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8 18.7	1.2	-	,
Demand Response, UT-Ancillary Services	-		8.3	-	-	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5	1
Demand Response, WY-Ancillary Services Demand Response Total	4.1	+ -	15.3	-	9.9	-	3.0 8.2	7.2	-	-	123.3	8.2	-	12.0	-	-	15.3	3.7	31.0	131.3	3.0 44.6	
Energy Efficiency, ID	6	5	6	7	7	7	7	7	7	7	7	6	6	6	6	4	4	3	3	3	67	
Energy Efficiency, UT Energy Efficiency, WY	58 10		67 11	68 12	69 15	66 16	67 16	65 17	62 18	62 17	57 16	56 15	52 13	50 12	51 11	36 9	32 8	26 7	23 5	26 6	644 143	1,
Energy Efficiency Total	74		85	86		89	91	88	86	87	80	77	72	68	68	49	45	37	31		853	1,
Battery Storage - Utah-S Battery Storage - Idaho	-	+ -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105.0	300 60.0	-	30
FOT East - Summer	-	-	-	-	-	-	-	-	-	52	300	224	242	266	298	300	299	88 300	300	300	5	
FOT East - Winter t Existing Plant Retirements and PPA Termination					-						-							300				
JimBridger 1 (Coal Early Retirement/Conversions)			-	-	-	(351)	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	(351)	(
JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3	-	 	==		-				-	-	(336)	-	-			-	_	-		(349)		(
JimBridger 4			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	(353)	-	(
Hermiston Retire - Hydro		(1)	(169)		(1)			(1)		(7)		:	(6)			(75)	-	(1)			(179)	(
Expire - Wind PPA	-			(175)															-	-		
Expire - Solar PPA Expansion Resources	-	- 1		. —	-	(41)	-			- /2	(75)	(10)	-	(20)	(20)	-	- 245	(10)	(10)	-	(216)	
CCCT P WV						(41)	-			(2)	(75)	(10)	- (67)	(20) (49)	(20)		- (1)		(10) (175)	-		
SCCT Frame WV	-		-	-	-	(41) - -	-	-	-	(2)	(75) - -		- (67)		(20)		- (1)	(10)	(10) (175) 443	-	(216)	
SCCT Frame WV Total SCCT Wind, Jbridger	-	-	- - -	- - -	- - - -		-	- 200	-	- (2) - - -	- - - 359	- - - -	- (67) - - -		- - - -		- (1)	(10)	(10) (175)	-	(216) (2) - - 200	
Total SCCT Wind, Jbridger Wind, Borah	-		- - - -				-	- - 200 76	- - - - 600	- (2)		- - - - -	- (67) - - - -		(20) - - - - - -		- (1)	(10)	(10) (175) 443	- (11)	(216)	
Total SCCT Wind, Birdiger Wind, Borah Wind, WK Total Wind Total Wind	-		- - - - - -	-	- - - - - - -				- - - - 600 - 600	- (2)			- (67)			-	- (1)	(10)	(10) (175) 443	- (11) - - - - 430 430	(216) (2) - - 200 676 - 876	1
Total SCCT Wind, Jbridger Wind, Borah Wind, Sorah Uind, YK Total Wind Utility Solar+Storage - PV - Jbridger	-	- - - - - -	- - - - -			(41) - - - - - - - 354		76 - 276 -	-	(2)	359	(10) - - - - - - - - -	- (67)		(20) -		- (1)	(10)	- (10) (175) 443 443 - - - -	- (11) - - - - 430	(216) (2) - - 200 676 - 876 354	1 1
Total S.C.T Wind, Bornh Wind, Bornh Wind, John Wind, W. Total Wind Utility Solar-Storage - PV - Brindger Utility Solar-Storage - PV - Bornh Utility Solar-Storage - PV - Bornh	-		- - - - - - - -	-		- - - - - - - 354	-	76	-	- (2)	359		- (67)		(20) - - - - - - - - - - - - - - - - - - -		- (1)	(10)	(10) (175) 443	- (11) - - - - 430 430	(216) (2) - - 200 676 - 876 354 224 309	1 1
Toral SCCT Wind, Bridger Wind, Borah Wind, Scan Toral Wind Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Borah Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - Vakima			- - - - - - - - - - -			- - - - - 354 - 309 405	-	76 - 276 - 224 -	-	(2)	359	(10)	- (67)	(49)	- - - - - - - - - - - - - - - - - - -	-	- (1)	(10)	- (10) (175) 443 443 - - - -	- (11) - - - - 430 430 702 -	(216) (2) 	1 1
Total SCCT Wind, Bridger Wind, Broath Wind, Jord Total Wind Urilay Solar-Stonge - PV - Jbridger Urilay Solar-Stonge - PV - Bonah Urilay Solar-Stonge - PV - S-Oregon Urilay Solar-Stonge - PV - Yakima Total Solar Demand Response, OR-Ancillary Services	-					- - - - - - - 354	-	76 - 276 -	-	- (2)	- - - 359 - - - - - - - - - 8		- (67)	(49)			- (1)	(10)	- (10) (175) 443 443 - - - -	- (11) - - - - 430 430	(216) (2) - - 200 676 - 876 354 224 309	1 1
Total SCCT Wind, Jbridger Wind, Jbridger Wind, Strain Wind, YK Total Wind Lrilly Solar-Storage - PV - Jbridger Lrilly Solar-Storage - PV - Borah Lrilly Solar-Storage - PV - Sorapon Lrilly Solar-Storage - PV - Sorapon Lrilly Solar-Storage - PV - Yakima Total Solar-Storage - PV - Yakima Dermand Response, CR-Ancillary Services Dermand Response, CR-Ancillary Services	-					- - - - - 354 - 309 405	-	76 - 276 - 224 -	-	- (2)	359	(10) -	- (67)	(49)	- - - - - - - - - - - - - - - - - - -		- (1)	(10)	- (10) (175) 443 443 - - - -	- (11) - - - - - 430 430 702 - - - - - - - - - - - - - - - - - - -	(216) (2) 	1 1
Total SCCT Wind, Bridger Wind, Broath Wind, Jord Total Wind Urilay Solar-Stonge - PV - Jbridger Urilay Solar-Stonge - PV - Bonah Urilay Solar-Stonge - PV - S-Oregon Urilay Solar-Stonge - PV - Yakima Total Solar Demand Response, OR-Ancillary Services						- - - - - 354 - 309 405	-	76 - 276 - 224 -	-	(2)	- - - 359 - - - - - - - - - 8	(10) -	- (67)	(49)	- - - - - - - - - - - - - - - - - - -		- (1)	(10)	- (10) (175) 443 443 	- (11) - - - - 430 430 702 -	(216) (2) 	1 1
Total SCCT Wind, Borah Wind, Josinger Wind, Borah Wind, YK Total Wind Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - Borah Utility Solar-Storage - PV - Borah Utility Solar-Storage - PV - Sorapon Utility Solar-Storage - PV - Valorin Total Solar-Storage - PV - Valorin Demand Response, CA-Antellary Services						- - - - - 354 - 309 405	-	76 - 276 - 224 -	-	- (2)	- - - 359 - - - - - - - - - 8	(10) -	- (67)	(49)	- - - - - - - - - - - - - - - - - - -		- (1)	(10)	- (10) (175) 443 443	- (11) - - - - - 430 430 702 - - - - - - - - - - - - - - - - - - -	(216) (2) 	1 1
Total SCCT Wind, Bornh Wind, Jividger Wind, Bornh Wind, YK Total Wind Liftlity Solar*Storage - PV - Ibridger Liftlity Solar*Storage - PV - Bornh Liftlity Solar*Storage - PV - Soragon Liftlity Solar*Storage - PV - Soragon Liftlity Solar*Storage - PV - Yakima Total Solar Dermand Response, CA-Ancillary Services Dermand Response, CA-Ancillary Services Dermand Response, CA-And Party Contracts Dermand Response, CA-And Party Contracts Dermand Response, CA-Irrigate Dermand Response, CA-Irrigate Dermand Response, CA-Irrigate						- - - - - 354 - 309 405	-	76 - 276 - 224 -	-	- (2)	- - - 359 - - - - - - - - - 8	(10)	- (67)	(49)	- - - - - - - - - - - - - - - - - - -		- (1)	(10)	- (10) (175) 443 443 443	- (11) -	(216) (2) 200 676 -7 876 -354 224 309 405 1,293	1 1 2
Total SCCT Wind, Borsh Wind, Jordiger Wind, Borsh Wind, YK Total Wind Liftility Solar-Storage - PV - Ibridger Liftility Solar-Storage - PV - Ibridger Liftility Solar-Storage - PV - Soragon Liftility Solar-Storage - PV - Soragon Liftility Solar-Storage - PV - Vakima Total Solar Dermand Response, CA-Ancillary Services Dermand Response, CA-Ancillary Services Dermand Response, CA-CoolWH Dermand Response, CA-CoolWH Dermand Response, CA-Irrigate Dermand Response, CR-CoolWH Dermand Response, CR	-					- - - - - 354 - 309 405	-	76 - 276 - 224 -	-	(2)	- - - 359 - - - - - - - - - 8	(10)	(67)	(49)	- - - - - - - - - - - - - - - - - - -		- (1)	(10)	(10) (175) (175) 443 443 	- (11) -	(216) (2) 200 676 -7 876 -354 224 309 405 1,293	1 1 1 2
Total SCCT Wind, Broath Wind, Joseph Wind, Joseph Wind, YK Total Wind Utility Solar-Stonge - PV - Bridger Utility Solar-Stonge - PV - Broah Utility Solar-Stonge - PV - Broah Utility Solar-Stonge - PV - Screpon Utility Solar-Stonge - PV - Screpon Utility Solar-Stonge - PV - Vickims Total Solar Total Solar Demma Response CA-Antillary Services Demma Response, CA-C-Brigate						- - - - - 354 - 309 405	-	76 - 276 - 224 -	-	(2)	- - - 359 - - - - - - - - - 8			(49)	- - - - - - - - - - - - - - - - - - -		- (1)	(10)	-1 (10) (175) 443 443 	- (11)	(216) (2) 200 676 -7 876 -354 224 309 405 1,293	1 1 2
Total SCCT Wind, Borah Wind, Jordiger Wind, Borah Wind, YK Total Wind Urilay Solar-Storage - PV - Borah Urilay Solar-Storage - PV - Borah Urilay Solar-Storage - PV - Borah Urilay Solar-Storage - PV - Sorapon Urilay Solar-Storage - PV - Sorapon Urilay Solar-Storage - PV - Valora Total Solar Dennand Response, OR-Ancillary Services Dennand Response, CA-Ancillary Services Dennand Response, CA-Cool WH Dennand Response, CA-Cool WH Dennand Response, CA-Thompsota Dennand Response, CA-Thompsota Dennand Response, CA-Thompsota Dennand Response, CA-Thompsota Dennand Response, CR-Thompsota Dennand Response, WA-Cool/WH	-			-		- - - - - 354 - 309 405		76 - 276 - 224 -	-		- - - 359 - - - - - - - - - 8	(10)		(49)	- - - - - - - - - - - - - - - - - - -		(1)	(10)	- (10) (175) (175) 443 443 	- (11)	(216) (2) (2) (3) (4) (5) (676) (676) (7) (876) (876) (876) (976)	1 1 2
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Total SCCT Wind, Borsh Wind, Jordiger Wind, Borsh Wind, YK Total Wind Utility Solar-Storage - PV - Ibridger Utility Solar-Storage - PV - Ibridger Utility Solar-Storage - PV - Ibrind Utility Solar-Storage - PV - So-Grepon Utility Solar-Storage - PV - So-Grepon Utility Solar-Storage - PV - Vakima Total Solar Dermand Response, CA-Ancillary Services Dermand Response, CA-GoolWH Dermand Response, CA-GoolWH Dermand Response, CR-GoolWH Dermand Response, CA-GoolWH Dermand Response, WA-Sid Party Contracts Dermand Response, WA-Ancillary Dermand Response, WA-Thermostat Dermand Response, WA-Thermostat Dermand Response, WA-Thermostat Dermand Response Total	-			-		- - - - - 354 - 309 405		76 - 276 - 224 -	-		- - - 359 - - - - - - - - - 8			(49)	- - - - - - - - - - - - - - - - - - -		(1)	(10)	- (10) (175) 443 443 	- (11)	(216) (2) (2) (2) (2) (3) (676) (676) (7) (876)	2.
Total SCCT Wind, Borah Wind, Borah Wind, Borah Wind, Serah Wind, Serah Wind, Serah Urilay Solar-Stonge - PV - Bridger Urilay Solar-Stonge - PV - Borah Urilay Solar-Stonge - PV - Sorapon Urilay Solar-Stonge - PV - Sorapon Urilay Solar-Stonge - PV - Yakim Total Solar Demand Response, O.R-Ancillay Services Demand Response, O.R-Ancillay Services Demand Response, C.AAnd Party Contracts Demand Response, C.AGood-WH Demand Response, C.AImpare Demand Response, W.ACool-WH Demand Response, W.ACool-WH Demand Response, W.ACorl-WH Demand Response, W.AImpare Demand Response, W.AImpare Demand Response, W.AImproved Impared Response, W.AImpared Demand Response, W.AImproved Impared Response, W.AImpared Demand Response, W.AImproved Impared Response, W.AImpared Response, W.AImpared Response, W.AImpared Response, W.AImpared Response, W.AImpared Response, W.AImpared Response, W.AImproved Response, W.AImpared Response, W.AImproved				- - - - - - - - - - - - - - - - - - -				76 - 276 - 224 -	- 600 		- 359 - 359			(49)			-(1)	(10) (115) (- (10) (175) 443 443 443 443	- (11) - (12) - (13) - (14) - (15) -	(216) (2) (2) (2) (2) (3) (4) (5) (6) (6) (7) (8) (7) (8) (8) (8) (8) (4) (8) (9) (1) (9) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	1 1 2
Total SCCT Wind, Borah Wind, Borah Wind, Borah Wind, Serah Wind, Serah Wind, Serah Wind, Serah Urilay Solar-Stonge - PV - Brindger Urilay Solar-Stonge - PV - Borah Urilay Solar-Stonge - PV - Sorapon Urilay Solar-Stonge - PV - Sorapon Urilay Solar-Stonge - PV - Yakim Total Solar Demand Response, O.RAncillary Services Demand Response, O.RAncillary Services Demand Response, C.AGodWH Demand Response, C.AGodWH Demand Response, C.AInframeata Demand Response, O.RGodWH Demand Response, W.ACoolWH Demand Response, W.ATorremotata		. 10	10	- - - - - - - - - - - - - - - - - - -				76			- 359 - 359 8 8 1.9 			(49)		- - - - - - - - - - - - - - - - - - -		(10) (115) (- (10) (175) 443 443 443 	- (11) - (13) - (14) - (15) -	(216) (2)	2
Total SCCT Wind, Borah Wind, Josinger Wind, Borah Wind, YK Total Wind Urilly Solar-Stonge - PV - Bridger Urilly Solar-Stonge - PV - Borah Urilly Solar-Stonge - PV - Borah Urilly Solar-Stonge - PV - Sorpen Urilly Solar-Stonge - PV - Sorpen Urilly Solar-Stonge - PV - Volkom Demand Response, CA-Gorah Deman		. 10		- - - - - - - - - - - - - - - - - - -				76	- 600 		- 359 - 359 8 8 1.9 			(49)		- - - - - - - - - - - - - - - - - - -		(10) (10) (15) (15) (15) (17) (17) (17) (17) (17) (17) (17) (17	- (10) (175) 443 443 443	- (11)	(216) (2)	2
Total SCCT Wind, Borah Wind, Joseph Wind, Joseph Wind, Joseph Wind, WK Total Wind Urility Solar-Stonge - PV - Bridger Urility Solar-Stonge - PV - Borah Urility Solar-Stonge - PV - Borah Urility Solar-Stonge - PV - Screpon Urility Solar-Stonge - PV - Volkens Total Solar Total Solar Total Solar Demand Response, CA-Anellary Services Demand Response, CA-Bridget Demand Response, WA-Cool-WH Demand Response, WA-Cool-WH Demand Response, WA-Cool-WH Demand Response, WA-Cool-WH Demand Response, WA-Bridgete Demand Res		. 10	10 48 -					76			- 359 - 359 8 8 1.9 			(49)				(10) (115) (- (10) (175) 443 443 443 443 443 443 443 443 443 44	- (11) - (11) - (12) - (13) - (14) - (15) - (15) - (15) - (15) - (15) - (15) - (17) -	(216) (2) (2) (2) (2) (3) (4) (5) (7) (8) (6) (8) (6) (8) (7) (8) (8) (8) (8) (9) (9) (9) (1) (9) (1) (1) (1) (1) (1) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (2) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	2
Total SCCT Wind, Borah Wind, Borah Wind, Borah Wind, Borah Wind, YK Total Wind Urilay Solar-Stonge - PV - Brindger Urilay Solar-Stonge - PV - Borah Urilay Solar-Stonge - PV - Sorapon Urilay Solar-Stonge - PV - Sorapon Urilay Solar-Stonge - PV - Vakima Total Solar Demand Response, CO-Ancillay Services Demand Response, CO-Ancillay Demand Response,		. 10	10 48 - -					76			- 359 - 359 8 8 1.9 			(49)		- - - - - - - - - - - - - - - - - - -		(10) (115) (- (10) (175) 443 443 443 443 	- (11) - (12) - (13) - (14) - (15) -	(216) (2)	2
Total SCCT Wind, Borah Wind, Borah Wind, Wind, WK Total Wind Urility Solar-Stonge - PV - Broidger Urility Solar-Stonge - PV - Bronh Urility Solar-Stonge - PV - Bronh Urility Solar-Stonge - PV - Sorepon Urility Solar-Stonge - PV - Vakim Total Solar Demand Response, CA-Ancillary Services Demand Response, CA-GOOWH Demand Response, CA-GOOWH Demand Response, CA-GOOWH Demand Response, CR-GOOWH Dema		10 2 49 	10 48 - - - - -					76			- 3599			(49)				(10) (15) (15) (15) (15) (15) (15) (15) (15	- (10) (175) 443 443 	- (11)	(216) (2) (2) (2) (2) (3) (676) (676) (676) (776	1.
Total SCCT Wind, Borah Wind, Wind, Borah Wind, Yik Total Wind Urilay Solar-Stonge - PV - Bridger Urilay Solar-Stonge - PV - Borah Urilay Solar-Stonge - PV - Borah Urilay Solar-Stonge - PV - Sorpon Urilay Solar-Stonge - PV - Sorpon Urilay Solar-Stonge - PV - Vakima Total Solar Demand Response, OLA-neellary Services Demand Response, OLA-neellary Services Demand Response, CA-Solar Pary Contracts Demand Response, CA-Solar Pary Contracts Demand Response, CA-Thermostat Demand Response, OR-Jar Pary Contracts Demand Response, OR-Jar Pary Contracts Demand Response, OR-Jar Pary Contracts Demand Response, WA-CoolWH Demand Response, WA-CoolWH Demand Response, WA-Thermostat Demand Response, WA-Total Battery Stonge - Storgon Battery Stonge - Wallanster Valley Battery Stonge - Wallanster Valley Battery Stonge - Wallanster Valley Battery Stonge - Wallanster		10 2 49 - - - - - - 3 720	10 48 - - - - - 318					76			- 359 - 359 8 8 1.9 			(49)				(10) (115) (- (10) (175) 443 443 443 443 	- (11) - (12) - (13) - (14) - (15) -	(216) (2)	2.
Total SCCT Wind, Borah Wind, Borah Wind, Strip Total Wind Vind, YK Total Wind Urilay Solar-Storage - PV - Borah Urilay Solar-Storage - PV - Sorapon Urilay Solar-Storage - PV - Sorapon Urilay Solar-Storage - PV - Valora Demand Response, CA-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-Cool WH Demand Response, CA-Cool WH Demand Response, CA-Thornostat Demand Response, WA-Cool/WH Demand Response, WA-Cool/WH Demand Response, WA-Thornostat Demand Resp		10 2 49 - - - - - - - - - - - - - - - - - - -	10 48 - - - - 318 107 (573)					76			- 359			(49)				(10) (15) (15) (15) (15) (15) (15) (15) (15	- (10) (175) 443 443 443 443 443 443 443 443 443 44	- (11) - (13) - (14) - (15) - (15) - (16) - (16) - (17) -	(216) (2) (2) (2) (2) (3) (676) (676) (676) (776	2, 2, 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

	P-26	2019	2020	2021	2022	2023	2024	2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
I	Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)			1	1		1		(82)								1			1		(82
	Oraig 2 (Coal Early Retirement/Conversions)	-		-	-		-	-	- (82)	(82)	-		-	-		-	-	-	-	-	-	(82
	Hayden 1	-		-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
	Hayden 2 Huntington 1	-	+	-	-		-	-	-	-	-		-	(33)		-	-	-	-	(459)	-	-
	Huntington 2	-	<u> </u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)		-
	Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-	_	-	-	-	-	-	-	-	(74) (74)	-	-	-	-	-	-	-	-	-	-	(7:
	Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	+	(387	-		-	-	-	-	- (74)		-				-	-		-	-	(38
	DaveJohnston 1	-	<u> </u>	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(9)
	DaveJohnston 2 DaveJohnston 3	-	-	-	-		-	-	-	-	(106)		-	-	-	-	-	-	-	-	-	(10
	DaveJohnston 3 DaveJohnston 4	-	+	-	-		-	-	-	-	(330)		-	-		-	-	-	-	-	-	(33
Į	Naughton 1 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(15)
	Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	0) -	-		-	-	(201)	-	-		-	-		-	-	-		-	-	(20
	Gads by 1-6	-	- (280)	-	-		-	-	-	-	-		-	-		(356)	-	-	-	-	-	- (28
ļ	Retire - Hydro	-		-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2
	Retire - Wind Expire - Wind PPA		(27)	7) (17	(49)	- (0)	-	-	(65)	- (3)		(19)	(40) (99)	(200)	(45)	(181)	(80)		(60)	(80)	-	(16
t	Expire - Solar PPA	-	/	-	/	(1)		-	-	- (5)	-	-		-	- (+2)	-	-	(35)	(94)			(10
L	Retire - Other	-		-	-	-	-	-	-	-	-	-	- (2.47)	-	-	,	(1)	-	-	-	(32)	-
	Coal Ret_WY - Gas RePower Expansion Resources	_	247	<u> </u>			-		_	-			(247)			-	-		-	-		24
	CCCT - DJohns - J 1xl	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	505		-
	Total CCCT SCCT Frame NTN	-			-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	505	-	18:
ŀ	SCCI Frame NTN SCCT Frame WYSW	-	+	-	-		-	-	- 163	-	-		-	-		-	-	-	-	370	-	- 10.
	Total SCCT	-	<u> </u>	-	-		-	-	185	-	-		370	-		-	-	-	-	370		18:
	Wind, GO Wind, UT	-	+	+ :	1 -	- 73	-		-	-			1,100		-	-	-		-	-		7.
	Wind, WYAE				<u> </u>		1,920			-	-											1,92
	Total Wind	-	\vdash	-	-	73	1,920	-	-	-	-	-	1,100	-	-	-	-	-	-	-	-	1,99
	Utility Solar+Storage - PV - Utah-S Utility Solar+Storage - PV - WYSW		+	+	+ - 1		227	-	-	-	-			500		100	-	 	-	-		22
	Utility Solar+Storage - PV - Huntington															-				898	11	
	Utility Solar+Storage - PV - Utah-N	-	\vdash	159			677	-	-	-	-		-	-			-	-	-	-	-	90
	Total Solar Demand Response, ID-3rd Party Contracts	-	+	159	64		904	-	-	-	-			500		100	-		-	898 1.8	- 11	1,12
	Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate			-			-		-	-				-	5.2		-		3.7	-	1.8	
L	Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-	-	6.8		-	7.0	-	-	7.2 76.7	28.
ŀ	Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	+	-	-		-	-	-	-	-		-	-		-	-	-	-	-	76.7	-
ı	Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	116.7	8.2	-	-	-	-	-	8.3	-	5.1	-
L	Demand Response, WY-3rd Party Contracts	-		-	-	-	-	-	-	-	-	-	-	-	-	,	-	-	-	2.1	-	-
ŀ	Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	+ -	-	-			-	-	-	-		-			-		-	-	1.8	1.2	-
ı	Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2		13.:
	Demand Response, WY-Ancillary Services	4.1	_ _	7.0	-	18.1	-	3.0 8.2	7.2	-	-	123.3	8.2	-	12.0	-	-	7.0	12.0	27.6	94.0	3. 44.
	Demand Response Total Energy Efficiency, ID	4.1				7		8.2	7.2	- 7	- 7	123.3	8.2	- 6	12.0	- 6	- 4		12.0		94.0	44.
	Energy Efficiency, UT	58		1 66	68	69	66	67	65	62	62	57	56	52	50	51	36		25	22	26	64
	Energy Efficiency, WY Energy Efficiency Total	10 74				13 89	16 89		17 88	18 86		16 79	15 77	13 72	12 68	11 68	9 49	8 45	7 35		35	14 84
	Battery Storage - Utah-S		-		-	-	-		-	-	-		- '		-	-	-	-	-	-	150	
	Battery Storage - WYSW	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.0	
	Battery Storage - Idaho FOT East - Summer	-		_	-	-	-	-	-	-	82	300	295	45.0 151	153	201	203	208	300	300	150.0 300	-
	Existing Plant Retirements and PPA Termination	-					-	_	_	-	62	300	293	131	133	201	203	208	300	300	300	
L	JimBridger 1 (Coal Early Retirement/Conversions)	-		-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(35
	JimBridger 2 (Coal Early Retirement/Conversions) JimBridger 3		+	+ -				-	-	-	-	(356)		-			-			-	(349)	<u> </u>
	JimBridger 4	-	1		-		-		-	-	-			-		-	-			-	(353)	-
	Hermiston	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-
	Retire - Hydro Expire - Wind PPA	-	(1)	1) (169	(175)	(1)	(41)	-	(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)		(1)		-	(21
ı	Expire - Solar PPA	-	-	-	- (1/3)	-	- (-1)	-	-	-	(2)	- (72)	- (10)	(67)	(49)	- (20)	-	(1)	(115)			
	Expansion Resources												, ,				_	, ,				
	SCCT Frame WV Total SCCT	-	+	+ -	1 -		-	-	-	-	-		-	-		-	-		-	443 443		-
	Wind, Borah									218										-		21
	Total Wind				1 - 1	-	-		_	218		-	-	-	-	-	-			-	-	21
	Utility Solar+Storage - PV - Ibridger Utility Solar+Storage - PV - Bornh	-	+	+ -	1 -		354	-	-	382	-	359	-	-		-	-		-	-	702	35 38
	Utility Solar+Storage - PV - Borah Utility Solar+Storage - PV - S-Oregon			-			288			-					212	475	_					28
	Utility Solar+Storage - PV - Yakima	-	↓	-	-	-	405	-	-	- 200	-	- 359	-	-	-	-	-	-	-	-	-	40
	Total Solar Demand Response, OR-Ancillary Services	-		-	+ : -		1,047	-	-	382		359			212	475	-		-	-	702	1,42
	Demand Response, WA-Ancillary Services						-		_	-	-	1.9	-	-		-	-	-	-	-	_	
	Demand Response, CA-Cool/WH			_			-		-	-	-		-	-		-	-		-	-	1.5	
	Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate	-	+	+ -	+ : +		-	-	-	-	-						-		-	4.8	1.1	-
	Demand Response, CA-Thermostat	-		-			-	-	_	-	-		-				-			5.8		
į	Demand Response, OR-Cool/WH	-			1 - 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0		L -
ŀ	Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate	-	-	-	-		-	-	-	-	-		-	-		-	-	-	-	5.4 13.3		-
	Demand Response, WA-Cool/WH																			-	7.7	
	Demand Response, WA-3rd Party Contracts					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.9	<u> </u>
		-	-	-	-		-	-	-	-	-		-	-		-	-	-	-	8.3 16.6	-	-
	Demand Response, WA-Irrigate	-		-	- 1	-	-	-	-	-	-	9.4	-	-	-	-	-	-	-	57.2		
	Demand Response, WA-Irrigate Demand Response, WA-Thermostat Demand Response Total		37	2 2 7 37		34	39	43	2	20	2 37	34	2	2 21	2	2	1 26	1	1 26			1'
	Demand Response, WA-Irrigate Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA					34 11		43	41 11			10	32 9	31 9	30 8	27 8	26 6	24	26 5	24		38 10
	Demand Response, WA-Irrigate Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA Energy Efficiency, OR	40				47		56	54		49	46	44	42	40	37	33		32		29	50
	Demand Response, WA-Irigate Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA	40 11 52	48	-	-	-	-	-	-	-	-	-	180	135	-	120	-	-	-	-	120	
	Demand Response, W.A. Arrigate Demand Response, W.A. Thermostat Demand Response Total Energy Efficiency, C.A Energy Efficiency, C.R Energy Efficiency, C.R Energy Efficiency, W.A Energy Efficiency, W.A Energy Efficiency, Total Battery Storage - S-Oregon	11	- 48			-	-	-	-	-	-	-	135 135	-	-	15	-	-	-	-	15 30	-
	Demand Response, W.A. Irrimostat Demand Response, W.A. Thermostat Demand Response Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency, Total Battery Stonge - S-Oregon Battery Stonge - Portland NC	11 52		-			I -					-		-				1	_			
	Demand Response, W.A. Arrigate Demand Response, W.A. Thermostat Demand Response Total Energy Efficiency, C.A Energy Efficiency, C.R Energy Efficiency, C.R Energy Efficiency, W.A Entry Stonge - S-Oregon Battery Stonge - S-Oregon Battery Stonge - Walla Walla	111 52 - -		-	-		-	-	-	-	-		105	-		-	-	-	-		-	
	Demand Response, W.A. Arrigate Demand Response, W.A. Thermostat Demand Response Total Energy Efficiency, C.A Energy Efficiency, C.R Energy Efficiency, W.A Energy Efficiency Energy Ene	111 52 - - - - - 998	- - - 720	- - 0 493		- 498	214	209	286	257	1,075	1,075	105 1,075	1,075	1,075	1,075	1,075	1,075	988	1,072	-	
	Demand Response, W.A. Irrigate Demand Response, W.A. Trigate Demand Response, W.A. Trigate Demand Response Total Energy Efficiency, C.A. Energy Efficiency, C.A. Energy Efficiency, W.A. Energy Efficiency, S. Origon Entry Storage - Portland NC Battery Storage - Portland NC Battery Storage - Valima FOT West - Summer FOT West - Summer	111 52 - -	- - - 720	- - 0 493 1 269	304	498 314	214 102	209 109	286 113	257	- 1,075 -	-	1,075	1,075	-	1,075	1,075	1,075	988	1,072	1,075	
	Demand Response, W.A. Arrigate Demand Response, W.A. Thermostat Demand Response Total Energy Efficiency, C.A Energy Efficiency, C.R Energy Efficiency, W.A Energy Efficiency Energy Ene	111 52 - - - - - 998	- - - 720 131 (61) 124	- 0 493 1 269 1) (573	304	- 498	214 102 (412)	209 109	286	- 257 - (85)	1,075 - (912) 135	1,075 - (449) 618 1,375		1,075 - (350) 794 1,226	1,075 (114) 333 1,228		1,075 - (156) 81 1,278	1,075 - (36) 83	988 - (280) 79	(2,260)	1,075 - (745) 1,419	525 149

											Capacity	y (MW)										Resource T
	P-29	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
t Exis	xisting Plant Retirements and PPA Termination																					
Crr	raig 1 (Coal Early Retirement/Conversions) raig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)		-	-	-	-	-		-	-	-	-	(82) (82)
Hay	layden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
	layden 2 luntington 1	-		-	-	-	-	-		-		-	-	(33)		-		-	-	(459)	-	-
	luntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	(450)	-	-
Col	olstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
Col	olstrip 4 (Coal Early Retirement/Conversions) holla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
	aveJohnston 1	-	-	- (387)	-	-		-	-	-	(99)	-	-	-		-		-	-		-	(99)
	aveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)
	aveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)
	aveJohnston 4 aughton 1 (Coal Early Retirement/Conversions)	-	-	-	-		-	-	(156)	-	(330)	-	-	-		-		-	-	-	-	(330)
Na	aughton 2 (Coal Early Retirement/Conversions)	_	-		-	-	-	_	(201)	-	-	-	_	-	-	-	-	-	_	-	-	(201)
Nat	aughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)
	adsby 1-6	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(20)
	etire - Hydro etire - Wind	-	-	-	-	-	- (20)	-	-			-	(40)	-		-		-	-	-	-	- (20)
	xpire - Wind PPA	-	(27)	(17)	(49)	(0)	-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60)	(80)		(160)
	xpire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)		(1)
	etire - Other onl Ret_WY - Gas RePower	-	247		-					-			(247)			-	(1)	-	-		(32)	247
	xpansion Resources		2-17										(247)									247
Win	/ind, GO	-	-	-	-	-	-	-	-	-	-	-	502	-	-	-	-	-	-	-	-	-
Wir	Vind, WYAE Vind+Storage, GO	-	-	-	-	-	1,920	-	-	-	-	-	572	- 6		-	-	-	-	-	-	1,920
	otal Wind	-	-		-		1,920	-	-			-	1,074	6		-			-	-		1,920
Util	tility Solar+Storage - PV - Utah-S	-	-	-	-		300	-			-	-		500		-	-		-		-	300
Util	tility Solar+Storage - PV - WYSW	-		-	-	-	-	-		-				27	-	73			- 1	-		
Util	tility Solar+Storage - PV - GO			-	-		-					-	21			-			-	909	-	
Uti	tility Solar+Storage - PV - Huntington tility Solar+Storage - PV - Utah-N	-	-	159	64	73	604		-	-		1 -				-		1 - 1	-		1	900
Tot	otal Solar	-	-	159	64	73	904	-	-	-	-	-	21	527	-	73	-	-	-	909	-	1,200
	Demand Response, ID-Cool/WH				-								- 1		- 1.8	2.6		<u> </u>			-	
	emand Response, ID-3rd Party Contracts emand Response, ID-Irrigate	1 -	-	-	-		-	-	-	-		-		-	5.2	-			3.7	-	1.8	1 -
	emand Response, ID-Imgate emand Response, ID-Thermostat															5.3			-		-	
Der	emand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	_	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1
	emand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-		68.5	-	-	5.7	-	2.6 1.9	-
	emand Response, U1-Irrigate emand Response, UT-Thermostat	-	-	-	-	-	-	-	-			116.7	8.2			-		8.3	-	-	5.1	-
Der	emand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	-	-	1.8	-
	emand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37.3	-	-	2.1	-	-	-
Der	emand Response, WY-Irrigate emand Response, WY-Thermostat		-	-								18.7		1.8		-					1.2	
Dei	emand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-		-	-	-		-	-	-	-	3.2		13.5
Der	emand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0
	emand Response Total nergy Efficiency, ID	4.1	- 6	7.0	- 7	18.1	- 7	8.2	7.2	- 7	- 7	142.1	8.2	1.8	13.8	117.1	- 4	15.3	11.4	3.2	21.6	44.6
	nergy Efficiency, ID	58	67	67	68	69	68	67	68	65	62	57	58	54	50	49	36	-	29	25	26	659
Enc	nergy Efficiency, WY	10	10	11	14	15	16	17	18	18	18	16	15	13	12	11	9	8	7	5	6	148
Enc	nergy Efficiency Total	74	83	85	88	92	92	92	93	90	87	80	79	74	68	65	49	47	40	33 645.0		876
	attery Storage - Utah-S attery Storage - WYSW	-	-	-	-	-	-	-	-	-		120.0	-	-		-		-	-	390.0	- 780	-
	attery Storage - Idaho	-	-	1	-	-	-	-	-	-	_	-	180.0	-	-	-	-	-	-	105.0	105.0	-
FO	OT East - Summer	-	-	-	-	-	-	-	-	-	108	272	300	300	231	300	300	300	300	300	300	11
	xisting Plant Retirements and PPA Termination mBridger 1 (Coal Early Retirement/Conversions)		_																			(2.51)
Jiml	mBridger 2 (Coal Early Retirement/Conversions)					-	(351)	-	-	-	-	-		-	-	-	-	- 1		-	I -	(351)
	mBridger 3	-	-	-	-	-	(351)	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	(351)
		-	-	-	-	-	-	-	- - -	-	-	(356)	-	-	-	-	-	-	-	-	- (349)	(351)
Jiml	mBridger 4	-	-	-	-	-	(351)	- - -	- - -	- - -	- - -	(356) - -	-	- - -	- - -	- - -	- - -	- - -		- - - - (237)	(353)	
Jiml	mBridger 4 Jermiston	-	- - - - (1)	ı	-	- - - - (1)	-	-	- - - - (1)	-	-	(356)	- - - -	-	- - - - -	-	-		-	- - - (237)	(353)	
Jimi Her Ret Exp	mBridger 4 lemiston etire - Hydro xpire - Wind PPA	-	- - - (1)	- - - (169)	- - - - - (175)	(1)	-	- - - - -	- - - - (1)	- - - - - -	(7)	- - - - (75)	- - - - (10)	- (6) -	- - - - - (20)	- - - - - (20)	- - - - - (75)	- - - - - - -	- (1) (10)	(10)	(353)	- - - (179) (216)
Jiml Her Ret Exp	mBridger 4 lermiston etire - Hydro spire - Wind PPA spire - Solar PPA	- - - - - -	- (1)	ı	- (175)	(1)			(1)	- - - - -	-	- - - - (75)	-	-	- - - - (20)	-	-	- - - - - 0 - (1)	- (1)	-	(353)	- - - (179)
Jiml Her Ret Exp Exp	mBridger 4 emiston tire - Hydro spire - Wind PPA spire - Solar PPA spansion Resources	-	-	- (169) -	- (175)	-	- - - - - (41)	- - - - - - -	(1)	-	(7)	- - - - (75)	- (10)	- (6) -		- (20)	- (75) -	- - - - - (1)	- (1) (10)	(10)	(353) - - - (11)	- - - (179) (216)
Jiml Her Ret Exp Exp Wir	mBridger d ermiston etive - 1 Pydro ppire - Wind PPA spire - Stolar PPA spire - Stolar PPA yapansion Resources 'ind+Storage, YK out Wind		-	- (169) -	(175)	-	- - - - (41)	- - - - - - - -	- - - (1) - -	-	(7)	- - - (75)	- (10)	- (6) -		- (20)	- (75) -	(1)	- (1) (10)	(10) (175)	(353) - - - (11)	- - (179) (216) (2)
Jimi Her Ret Exp Exp Wir Tot	mBridger 4 ermiston etire - Hydre spire - Wind PPA spire - Solar PPA spans for Resources ind-Stonge, VK otal Wind littly Solar-Stonge - PV - Jbridger		-	- (169) -	(175)	-	- - - - (41) - - 354		- - - (1) - -	-	(7)	- - - - (75)	- (10)	- (6) -	(49) - - -	- (20)	- (75) -	- - - - - - (1)	- (1) (10)	(10) (175)	(353)	- - - (179) (216) (2) - - - 354
Jimi Her Ret Exp Exp Win Tot Util	mBridger 4 ermiston etire - I-Pydro prie - Wind IPPA spire - Solar PPA spire - Solar		-	- (169) -	- (175)	-	- - - (41) - - 354 500		- (1)	-	(7)	- - - (75)	- (10)	- (6) -		- (20) - - -	- (75) -	- (1)	- (1) (10)	(10) (175)	(353) - - - (11)	- - (179) (216) (2) - - - 354
Jimi Her Ret Exp Exp Wir Tot Util	mBridger 4 ermiston etire - Hydre spire - Wind PPA spire - Solar PPA spans for Resources ind-Stonge, VK otal Wind littly Solar-Stonge - PV - Jbridger		-	- (169) -	- - - - (175)	-	- - - - (41) - - 354		- - - (1) - - - -	-	(7)	- - - (75)	- (10)	- (6) -	(49) - - -	- (20)	- (75) -	(1)	- (1) (10)	(10) (175)	(353) - - - (11)	- - - (179) (216) (2) - - - 354
Jimi Her Ret Exp Exp Wir Tot Util Util Util Tot Der	mBridger 4 ermiston stire - Hydro spire - Wind PPA spire - Solar PPA spire - Solar PPA spire - Solar PPA spire - Solar PPA standian Resources Ind - Storage - PV - Bridger tithy Solar-Storage - PV - Bridger tithy Solar-Storage - PV - ScOregon tithy Solar-Storage - PV - ScOregon tithy Solar-Storage - PV - Yakima total Solar ermand Response - OR-Ancillary Services		-	- (169) -	- - - - - (175) - - - - - - - - - - - - - - - - - - -	-	- - - - (41) - - 354 500 405		- - - (1) - - - - -	-	(7)	- - - - - - - - 359 - - - 359 - 8	- (10)	- (6) -	(49) - - - 475	- (20) - - - - - 425	- (75) -	- (1)	- (1) (10)	(10) (175)	(353) - - (11) - - 702	- (179) (216) (21) - (2) - 354 500 405
Jimil Her Rett Exp Exp Exp Util Util Util Tot Der Der	mBridger d ermiston etire - Hydro spire - Wind PPA spire - Solar PPA spire - PV - Solar Spire spire - Spire - Solar Spire spire - Spire - Spire spi		-	- (169) - - - - - - - - -	- - - - (175) - - - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - - -		- - - - (1) - - - - - - - - - - - - - - - - - - -	-	(7)	- - - - - - - - 359 - - - 359	- (10)	- (6) -	(49) - - - 475	- (20) - - - - 425 425	- (75) -	- (1)	- (1) (10)	(10) (175)	(353) - - (11) - - 702	- (179) (216) (21) - (2) - 354 500 405
Jimil Her Ret Exp Exp Win Tot Util Util Tot Der Der	mBridger 4 ermiston stire - Hydro spire - Wind PPA spire - Solar PPA standler - Storage - PV - Bridger titly Solar-Storage - PV - Bridger titly Solar-Storage - PV - So-Oregon titly Solar-Storage - PV - So-Oregon titly Solar-Storage - PV - Vakima total Solar temporal Response, OR-Ancillary Services ermand Response, WA-Ancillary Services ermand Response, CA-Cool-WH		-	- (169) - - - - - - - -		-	- - - (41) - - - 354 500 405 1,259		- - - (1) - - - - - - - - - - - - - - - - - - -	-	- (7)	- - - - - - - - 359 - - - 359 - 8	- (10)	- (6) -	(49) - - - 475	- (20) - - - - - - - - - - - - - - - - - - -	- (75) -	- - - - - (1)	- (1) (10)	(10) (175)	(353) - - (11) - - 702	- (179) (216) (21) - (2) - 354 500 405
Jimil Her Ret Exp Exp Win Tot Util Util Tot Der Der	mBridger d ermiston etire - Hydro pric - Wind PPA spire - Solar Solar - Storage - PV - Solar Solar spire - Solar - Storage - PV - Yukiam spire - Solar - Storage - PV - Yukiam spire - Solar - Storage - PV - Yukiam spire - Solar - Storage - PV - Solar - Storage spire - Solar - Storage - PV - Solar - Sol		-	- (169) - - - - - - - - -		-	- - - - - - - - - - - - - - - - - - -		- - - - (1) - - - - - - - - - - - - - - - - - - -	-	- (7)	- - - - - - - - 359 - - - 359 - 8	- (10)	- (6) -	(49) - - - 475	- (20) - - - - 425 425	- (75) -	- - - - (1)	- (1) (10)	(10) (175)	(353) - - (11) - - 702	- (179) (216) (21) - (2) - 354 500 405
Jimil Her Ret Exp Exp Wir Tot Util Util Util Tot Der Der Der Der Der	mBridger d ermiston etire - Hydro spire - Wind PPA spire - Solar PSA spire - Solar PSA spire - Solar Solar - Storage - PV - Solar Solar spire - Solar - Storage - PV - Solar Solar spire - Solar - Storage - PV - Solar Solar spire - Solar - Storage - PV - Solar Solar spire - Solar - Storage - PV - Solar Solar spire - Solar				- - - - - - - - - - - - - - - - - - -		- (41) - (41) - 354 350 405 1,259 				- (7) - (2)	- - - (75) - - - - 359 - - - - - 359 8 1.9	- (10)	- (67) - (67) 	(49)	- (20) - - - - 425 425 - - 1.5 1.1	- (75) 		- (1) (10) (115)	- (10) (175) 5 5 	(353) - - (11) - - 702	
Jimil Her Ret Exp Exp Wir Tot Util Util Tot Der Der Der Der Der	mblridger d semiston ettie - Hydro ettie - Hydro spire - Solar PPA		-	- (169) - - - - - - - - -		-	- (41) - (41) - 354 500 405 1,259		(1)	-	- (7)		- (10)	- (6) -	(49) - - - 475	- (20) - - - - 425 425 - - 1.5 1.1	- (75) -	- (1)	- (1) (10)	(10) (175)	(353)	- (179) (216) (21) - (2) - 354 500 405
Jimi Her Ret Esp Exp Wir Tot Util Util Tot Der Der Der Der	mBridger d ermiston etire - Hydro spire - Wind PPA spire - Solar PPA spire - PV - Solar Spire spire - PV - Solar Spire spire - Solar Spire spire - PV - Solar Spire spire - Spire spire spire - Spire spire				- - - - - - - - - - - - - - - - - - -		- (41) - (41) - 354 350 405 1,259 				- (7) - (2)	- - - - - - - - - - - - - - - - - - -	- (10)	- (67) - (67) 	(49)	- (20) - - - - 425 425 - - 1.5 1.1	- (75) 		- (1) (10) (115)	- (10) (175) 5 5 	(353) - - (11) - - 702	
Jimi Herr Reteless Exp Wir Tot Util Util Util Tot Der Der Der Der Der Der	mBridger d ermiston etire - I-Bydro spire - Wind IPPA spire - Solar IPPA spire - Solar PPA spire - Solar Sol			- (169)	- - - - - - - - - - - - - - - - - - -		- (41) - (41) - 354 350 405 1,259 				- (7) - (2)		- (10)	- (67) - (67) 	(49)	- (20)	- (75) 		- (1) (10) (115)	- (10) (175) 5 5 	(353)	
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Colstrip 3 (Coal Early Retirement/Conversions)	_	-	-	_	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(7-	4)
Colstrip 4 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	-	-	(74)	-	-	-	-	-		-	-	-	-	(7-	4)
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	- (99)	-	-		-	-	-	-	-	-	-	(38)	
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DaveJohnston 4	-	-	-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-	-	(33	
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Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(20	1)
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nergy Efficiency, UT	58	67	67	68	69	68	67	67	65	62	57	56	54	50	49	38	36	26	25	29	65	
nergy Efficiency, WY	10			14	15	16	16	18	18	17	16	15	13	12	11	9		7	5	6	14	
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emand Response, WA-3rd Party Contracts	-	-	-	-	-		-	-	-	-		-	-		-	-	-	-	9.9	1.1	-	4
emand Response, WA-Irrigate	-	-		-	-	-	-	-	-	-	-	-	- 1	-		-		-	3.1		-	4
emand Response, WA-Thermostat		-		-	-	-		-	-		-	-		-	9.4	-		-	16.6 166.2		-	+
emand Response Total	- 1	1 -	 							- ,					9.4				166.2		- 1	,
nergy Efficiency, CA nergy Efficiency, OR	40		37	42	46	46	43	41	41	38	34	32	31	29	27	27	26	26				
nergy Efficiency, WA	11			42 11	12	12	12		11	11	10	9	9	8	8	6	6	26 5	4	4	11	
nergy Efficiency Total	52			54	59		56			51	46		42	38	36	34			30		53	7
attery Storage - S-Oregon	-	-	-	-	-	-	-	-	-	285	-	45	30	-	-	-	90		30	-	28:	5
attery Storage - Willamette Valley	_	_	-	-		-	-		-		135	-	-	-	-	-	-		60		-	
attery Storage - Portland NC	-	_	_	-	-	-	-	-	_	- 1	75		15	-	-	-			15		-	I
attery Storage - Walla Walla	-	-		-			-		-		105	-	30		-	-		-	30	-	-	Ţ
attery Storage - Yakima	-	-	-		-	-	-	- 25-	-	105	1.055	1.05-	1.07	1.055	1.055	1.055	1.007	-	1.05	1.0=	10:	
OT West - Summer OT West - Winter	998 151	719 131	493 268	503 303	498 314	189	185 62	227 63	301 113	812 245	1,075 231	1,075 184	1,075 195	1,075	1,075	1,075	1,069	1,072	1,075	1,074	49: 17	
Of West - Winter Existing Plant Retirements/Conversions	- 131	(61)		(224)	(1)	(412)		(505)	(85)	(912)	(449)	(396)	(350)	(114)	(557)	(156)		(280)	(2,260)	(745)	1	- 1
Annual Additions, Long Term Resources	130	131		206			155	153		928	882	906	595	700	817	86				1,453		
Annual Additions, Short Term Resources	1,149	850		806	812	244	246	290	414	1,057	1,347	1.555	1.538	1,392	1.437	1.374	1.405	1.383	1,375	1,374	1	

Table 18 – Sensitivity Cases, Detailed Capacity Expansion Portfolio

S-01 Existing Plant Retirements and PPA Termination Cnig 1 (Coal Early Retirement/Conversions) Cnig 2 (Coal Early Retirement/Conversions) Hayden 1																					Resource	
mig 1 (Coal Early Retirement/Conversions) mig 2 (Coal Early Retirement/Conversions)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	2
nig 2 (Coal Early Retirement/Conversions)								(82)			-				1						(83)	221
				-	-	-	-	(82)	(82)		-	-	-		-	-	-	-	_	-	(82)	
		_		-	-	-		-	(82)	-		_	(44)					_		_	(82)	-)
avden 2		_	_	-	-	-		-		-	-	-	(33)		-	-		-	-	-	-	_
		-		-	-	-	-	-		-	-	-	(33)		-	-	-	-	(459)	_	-	+
untington 1	_			-		-				-		-	-	-		-		-				-
untington 2		-			-	-	-	-		(74)	-	-	-	-			-	-	(450)	-	(74)	45
Colstrip 3 (Coal Early Retirement/Conversions)		_	_	-	-	-		-		(74)	-	-	-		-	-		-	-	-	(74)	
Colstrip 4 (Coal Early Retirement/Conversions)	_		(387)	-	-	-		-		(74)		-	-	-	-	-	_	-	-	-	(387)	
holla 4 (Coal Early Retirement/Conversions)		-	(387)	-	-	-		-		(99)	-	-	-		-	-	-	-	-	-		
DaveJohnston 1	-	_	_	-	-	-	-	-				-	-		-		-	-	-	-	(99)	
DaveJohnston 2		-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)	
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	
DaveJohnston 4	-	-	-	-	-	-	-		-	(330)	-	-	-	-	-	-	-	-	-	-	(330)	
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(156)	
Naughton 2 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)	
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)	0)
adsby 1-6	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)	0)
Retire - Wind	-	-	-	-	-	-	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	-	
Expire - Wind PPA	-	(27)	(17)	(49)		-	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60)	(80)		(160)	
Expire - Solar PPA	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	-	(35)	(94)	(849)	-	(1)	1)
Retire - Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	-	
Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247	7
Expansion Resources																						
CCCT - DJohns - J 1x1				-	-	-	-	-	-	-	-	-	-	-	-	-		-	505		-	4
Total CCCT				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	505	-	-	4
SCCT Frame NTN		-		-	-	-	-	-	-	-	-	555	-	-	-	-	-	-	370	-	-	4
SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	4
Total SCCT		-				-	-	-	-	- 1]	555		- 1	- 7	-		-	370		_	4
Wind, GO	-	-	-	-	-	-	-	-	-	-	-	1,100	-	-	-	-	-	-	-	-	-	
Wind, UT	-	-	-	-	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	
Wind, WYAE				_		1,920	-	-	-	-	-	-	-	-	-		_	-	_	_	1,920	
Total Wind					70	1,920	-	-	_	-		1,100				_		_		_	1,990	0
Jtility Solar+Storage - PV - Utah-S	-	-	-	-	-	230	-	-	-	-	-	-	-	500	-	-	-	-	-	-	230	0
Jtility Solar+Storage - PV - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	
Jtility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	899	10	-	
Jtility Solar+Storage - PV - Utah-N	-	-	155	62	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900	0
otal Solar	-	-	155	62	-	913	-	-	-	-	-	-	-	500	100	-	-	-	899		1,130	0
Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2		-	3.7		-	
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1	1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.7	24.1	8.3	-	-	5.1	-	
Demand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5	
Demand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0	-	-		-	-	-	-	-	-	-	-	-	-	3.0	
Demand Response Total	4.1	-	7.0		18.1	-	8.2	7.2	-		6.7	-	-	6.8	100.7	29.3	15.3	-	6.9	16.1	44.6	6
Energy Efficiency, ID	6	5	5	6	7	7	7	7	7	7	6	6	6	6	5	4	4	3	3	3	64	4
Energy Efficiency, UT	58			60			65	63	59	59	54	56	50	48	49	36		26	22		620	
Energy Efficiency, WY	10			12			16	17	17	16	15	14	13	12	11	9		7	5		137	
Energy Efficiency Total	74	76	77	78	89	88	88	86	83	82	76	76	69	65	65	49	45	37	30		821	1
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	165.0		-	
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225.0		-	
FOT East - Summer	-	-	-	-	-	-	-	-	-	-	-	126	258	13	300	296	300	300	300	300	-	
Existing Plant Retirements and PPA Termination																						
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351)	1)
ImBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	-	
JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	-	
JimBridger 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(353)	-	
Hermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-	
Retire - Hydro	-	(1)	(169)	-	(1)	-	-	(1)	_	(7)	-	-	(6)	-	-	(75)	-	(1)	-	-	(179)	9)
Expire - Wind PPA	-	-	-	(175)	- 1	(41)	-	- 1	-	-	(75)	(10)	-	(20)	(20)	-	-	(10)	(10)	-	(216)	6)
Expire - Solar PPA	-	-	-	- 1	-	- 1	-	-	-	(2)	-	- 1	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)	2)
Expansion Resources																				,		
SCCT Frame WV	-	-			-	-	-	-	-		-	-	_	-	-	-		-		221	_	I
Total SCCT	-	-	_	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	221	-	
Wind, WallaW	_	-		-	-	-	-		_		-	-	-		-	-	-	-	100	-	-	I
Wind+Storage, PNC		-				_	-	-	-	-		_	_		_			-	-	466		I
Total Wind		-			-	-	-	-	-	-	-	-	-	-	_	-	-	-	100	466	_	I
Jtility Solar+Storage - PV - Jbridger	-	-	I -	-	-	354	-	-	-	-	359	-	-	-	-		-	-	-	702	354	4
Utility Solar+Storage - PV - S-Oregon		_		-	-	272								703							272	2
Utility Solar+Storage - PV - Yakima		-				405	-	-		-		-	-	-		-		-			405	
Total Solar	-	-				1,031					359			703					_	702	1,031	1
Demand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	Т
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	T
Demand Response, WA-Ancillary Services	-	-	-	-	-	-	- 1	- 1	-	-		-	-	- 1	- 1	-	-	-	-	4.8	-	\top
Demand Response, WA-Ancillary Services	_		-	-	-	_	_	_	_	_	_	_	_			_	_	_	-	5.8	-	
Demand Response, WA-Ancillary Services Demand Response, CA-Irrigate		-	-	-	-	-	_	-	-	_		_	_			-	_	_	-	9.2	-	\neg
Demand Response, WA-Ancillary Services Demand Response, CA-Irrigate Demand Response, CA-Thermostat	_	-	-	-	-	-		-	-	_	-	-	-	- +	-	-		-	-	11.3	-	+
Demand Response, WA-Ancillary Services Demand Response, CA-Irrigate Demand Response, CA-Thermostat Demand Response, OR-Irrigate				-	-		_	_	_		_	-	_			1.9		_	7.5	31.1	-	+
bemand Response, WA-Ancillary Services bemand Response, CA-Irrigate bemand Response, CA-Thermostat bemand Response, OR-Irrigate bemand Response, WA-Thermostat	-				- 2	2	2	- 2	2	2	2	2	2	- 2	2	1.9		- 1	7.3		17	7
Dermand Response, W.A.Ancillary Services Dermand Response, C.AIrrigate Dermand Response, C.AThermostat Dermand Response, C.AThermostat Dermand Response, W.AThermostat Dermand Response Total	- 1	,	2				43	41	39	37	34	32	31	30	26	26		26				
bermand Response, W.AAncillary Services bermand Response, C.AIrigate bermand Response, C.AThermostat bermand Response, O.BIrigate bermand Response, W.AThermostat bermand Response Total bermand Response Total bermand Response Total			2 27	26	20										20	20				22		n .
hermind Response, W.AAncillary Services bermind Response, C.AIrigate bermind Response, C.AThermostat bermind Response, C.AThermostat bermind Response, OR-Irigate bermind Response, W.AThermostat bermind Response, W.AThermostat bermind Response, W.AThermostat bermind Response Total incomp. Efficiency, C.A. incomp. Efficiency, C.A. incomp. Efficiency, C.A.	40	37		36				11	11	11				8 1					24		390	
Demand Response, W.AAncillary Services Demand Response, C.AIrigate Demand Response, C.AThemostat Demand Response, OR-Irigate Demand Response, W.AThemostat Demand Response, W.AThemostat Demand Response, W.AThemostat Demand Response, Total inergy Efficiency, C.A. inergy Efficiency, C.A. inergy Efficiency, W.A.	40 11	37	10	10	11	12	11	11 54	11	11	10 46		9	8 40	8	6	6	5	4	4	390 108	8
Demand Response, W.A.Ancillary Services Demand Response, C.A.Trigute Demand Response, C.A.Thermostat Demand Response, OR.Trigute Demand Response, W.A.Thermostat Demand Response, W.A.Thermostat Demand Response Total inergy Efficiency, C.A. inergy Efficiency, C.R. inergy Efficiency, C.R. inergy Efficiency, W.A. inergy Efficiency Total	40	37	10		11	12		11 54	11 52	11 49	10 46	44	42	40	8 35	6 33	6	5		4	390 108	8
Demand Response, WA Aneillary Services Demand Response, CA Arrigate Demand Response, CA Thermostat Demand Response, CA Thermostat Demand Response, WA Thermostat Demand Response, WA Thermostat Demand Response, WA Thermostat Demand Response, Total Thermost Total	40 11	37	10	10	11	12	11										6	5 32 -	4 29	28	390 108	8
Demand Response, W.A.Ancillary Services Demand Response, C.A.Trigute Demand Response, C.A.Triemostat Demand Response, O.R.Trigute Demand Response, W.A.Thermostat Demand Response, W.A.Thermostat Demand Response Total inergy Efficiency, C.A. inergy Efficiency, C.R. inergy Efficiency, C.R. inergy Efficiency, W.A. inergy Michael Control of the Control o	40 11	37 9 48	10	10	11 52 -	12	11	54 -				44 120		40			6	5	4	28	390 108	8
Demand Response, W.A. Ancillary Services Demand Response, C.A. Trigute Demand Response, C.A. Thermostat Demand Response, C.A. Thermostat Demand Response, W.A. Thermostat Demand Response, W.A. Thermostat Demand Response, W.A. Thermostat Demand Response, T.A. Demand Response, W.A. Demand Response, W.A. Demand Response, W.A. Demand Response Total Demand Response Dema	40 11	37	10	10	11	12	11					44 120 - 105		40 30 -			6	5 32 -	30	28	390 108	8
Demand Response, W.A.Ancillary Services Demand Response, C.A.Trigues Demand Response, C.A.Trigues Demand Response, O.R.Trigues Demand Response, W.A.Thermostat Demand Response, W.A.Thermostat Demand Response Total inergy Efficiency, C.A. inergy Efficiency, C.R. inergy Efficiency, C.R. inergy Efficiency, W.A. inergy Michael Company, W.A. inergy Michael Company, W.A. inergy Michael Company Interest Stonge - S.Oregon lattery Stonge - S.Oregon lattery Stonge - Willamette Valley lattery Stonge - Willamette Valley lattery Stonge - Walla Walla	40 11	37 9 48	10	10	11 52 -	12	11	54 -				120 - 105 15		40			6	5 32 -	4 29	28	390 108	8
hermand Response, W.A.Ancillary Services bermand Response, C.A.Trigate bermand Response, C.A.Triemestat bermand Response, C.A.Thermostat bermand Response, W.A.Thermostat bermand Response, W.A.Thermostat bermand Response, W.A.Thermostat bermand Response, Total mency Efficiency, C.A. mency Efficiency, C.A. mency Efficiency, C.A. mency Efficiency, W.A. datery Stonge - W. G. stonge	40 11 52 -	37 9 48	10 48	10 48 - - - -	111 52 - - -	12 56 - - - -	11 56 - - - -	54 - - - -	52	49 - - - -	- - - - -	44 120 - 105 15 105		40 30 - - 30	35		6 33 - - - - -	5 32 - 15 - -	30 - 105	4 28 - - -	390 108 515 - - - -	5
menand Response, W.A. Ancillary Services benand Response, C.A. Trigate benand Response, C.A. Thermostat benand Response, C.A. Thermostat benand Response, W.A. Thermostat benand Response, W.A. Thermostat benand Response Total nengy Efficiency, C.A nengy Efficiency, C.A nengy Efficiency, W.A nengy Efficiency, W.A nergy Efficiency, W.A nergy Kironge - S-Oregon attery Storage - Willamette Valley attery Storage - Willamette Valley attery Storage - Wallaw Malla attery Storage - Walla Walla	40 11 52 - - - - 434	377 9 48 - - - - 166	10 48 - - - - - 337	10 48 - - - - - 346	11 52 - - - - 341	12 56 - - - - - - 70	11 56 - - - - - - - 46	54 - - - - - 50	52 - - - - - - 97	49 - - - - - - - 654	46 - - - - - 959	120 - 105 15 105 1,075	42 - - - - - 1,075	40 30 - - 30 - 1,075			6 33 - - - - -	5 32 -	30 - 105 - 1,073	4 28 - - - - - - 967	390 108 515 - - - - 254	4
hermand Response, W.A.Ancillary Services bermand Response, C.A.Trigate bermand Response, C.A.Triemostat bermand Response, O.R.Trigate bermand Response, W.A.Thermostat bermand Response, W.A.Thermostat bermand Response, W.A.Thermostat bermand Response, V.A. mency Efficiency, C.A. mency Efficiency, C.A. mency Efficiency, W.A. bergy Efficiency, W.A. bergy Efficiency, W.A. bergy Efficiency, W.A. bergy Stronge - Schopgen bettery Storage - Pertinard NC. bettery Storage - Pertinard NC. bettery Storage - Wella Walla bettery Storage - Wella Walla bettery Storage - Walla Walla better - Walla - Walla	40 111 52 - - - - - - 434 60	37 9 48 - - - - 166 56	10 48 - - - - 337 156	10 48 - - - - - 346 191	11 52 - - - - 341 202	12 56 - - - - - 70	11 56 - - - -	54 - - - - - - 50 8	52 - - - - - - - - - - - - - - 7 57	49 - - - - - - - 654 193	46 - - - - - - 959 124	44 120 - 105 15 105 1,075 87	42 - - - - - - 1,075 96	40 30 - - 30 - 1,075 23	35 - - - - - 1,075	33 - - - - - 1,075	- - - - 1,066	5 32 - 15 - - 1,075	4 29 - 30 - 105 - 1,073 120	4 28 - - - - - - 967	390 108 515 - - - -	4
menand Response, W.A. Ancillary Services benand Response, C.A. Trigate benand Response, C.A. Thermostat benand Response, C.A. Thermostat benand Response, W.A. Thermostat benand Response, W.A. Thermostat benand Response Total nengy Efficiency, C.A nengy Efficiency, C.A nengy Efficiency, W.A nengy Efficiency, W.A nergy Efficiency, W.A nergy Kironge - S-Oregon attery Storage - Willamette Valley attery Storage - Willamette Valley attery Storage - Wallaw Malla attery Storage - Walla Walla	40 111 52 - - - - - 434 60	37 9 48 - - - - 166 56 (61	10 48 - - - - 337 156 (573)	10 48 - - - - - 346	11 52 - - - - 341 202 (1)	12 56 - - - - - - 70 - (412)	11 56 - - - - - - - 46	54 - - - - - 50	52 - - - - - - 97	49 - - - - - - - 654	46 - - - - - 959	120 - 105 15 105 1,075	42 - - - - - 1,075	40 30 - - 30 - 1,075 23 (114)	35		- - - 1,066	5 32 - 15 - -	30 - 105 - 1,073	4 28 - - - - - 967 - (745)	390 108 515 - - - - 254	4

S-02	2019	2020	2021	2022	2023	2024	2025	2026	2027	Capacity 2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Resource 10-year
xisting Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
raig 1 (Coal Early Retirement/Conversions) raig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82)
ayden 1	-	-	-	-	-	-	-	-	- (02)	-	-	-	(44)	_	-		-	-		-	- (02
ayden 2	-	-		-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-
funtington 1 funtington 2	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	(459)	-	
olstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74
Colstrip 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1	-	-	(367)	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106
DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-	-	-	-	(220)	-		-	-	-	-	-	-	-	-	(220
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(156
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-		-	-	(201)	-	-		-	-	-	·	-	-	-	-	-	(201
Naughton 3 (Coal Early Retirement/Conversions) Gadsby 1-6	-	(280)	-	-		-		-	-	-		-	-	-	(356)	-	-	-	-	-	(280
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20
Retire - Wind	-	- (27)	- (17)	- (40)	- (0)	-	-	- (66)	- (2)	-	- (10)	(40)	- (200)	- (4.6)	- (101)	- (80)	-	(60)	- (80)	-	- (1.00
Expire - Wind PPA Expire - Solar PPA	-	(27)	(17)	(49)	(0) (1)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(94)	(80) (849)	-	(160
Retire - Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	
Coal Ret_WY - Gas RePower	-	247		- 1	-		-	-	-	- 1	-	(247)		-	-	-		-	-	-	247
Expansion Resources SCCT Frame DJ	-	-	- 1	-	-	-	-	-	-	- 1	389	-	-	-	195	-	- 1	-	-	-	-
SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	185
SCCT Frame WYSW Total SCCT	-	-	+	-		-		185	-	370 370	389	370	-		195	-		-	-	-	370 555
Wind, GO		-	<u> </u>	-	-	-	-	-	-	-	-	1,096	-	-	-	-	-	-	-	-	-
Wind, UT	-	-		-	75	1.020	-	-	-	-	-	-	- 1	-	-	-	-	-	-	-	75
Wind, WYAE Wind+Storage, GO	-	-	1 -	-	-	1,920	-	-	-		-	-	- 4	-	-	-		-	-	-	1,920
Total Wind	-	-	-	-	75	1,920	-	-	-	-	-	1,096	4	-	-	-	-	-	-	-	1,995
Utility Solar+Storage - PV - Utah-S	-	_	├ -	-		225 100		-	-		-	500	-	-			-			-	225 100
Utility Solar+Storage - PV - WYSW Utility Solar+Storage - PV - Huntington	-	-	1 - 1	-		-	-	-	-		-	-	-	-		-		-	909	-	-
Utility Solar+Storage - PV - Utah-N	-	-	164	66	-	670	-	-	-	-	-	-	-	-	-	-	-	-		-	900
Total Solar Demand Response ID Cool/WH	-	-	164	66	-	995	-	-	-		-	500	-		-	-	-	-	909 2.6	-	1,225
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts										_ : +									1.8		
Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	3.7	1.8	-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-		6.7	-	-	6.8	-	-	7.0	-	8.3	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-		-		-	-		-	-	-		-	-	-	-			74.1	2.6	- 20.1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH		-		-	-	-	-		-	116.7	-	8.2	-		-	-	-		8.3 3.4	5.1 1.8	116.7
Demand Response, WY-3rd Party Contracts	-	-		-	-	-	-	-	-		-		-	-	-	-	-		39.4	-	
Demand Response, WY-Irrigate	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	8.3		-	-	5.3	-	-		-			-			-		18.7 3.2	1.2	13.5
Demand Response, WY-Ancillary Services	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0
Demand Response Total	4.1		15.3	- 6	9.9	- 7	8.2	7.2		116.7	6.7	8.2	- 6	12.0	- 6	- 4	7.0	- 3	165.4	21.6	161.2 64
Energy Efficiency, ID Energy Efficiency, UT	58		60	60	69	66	65	63	62	59	54		52	50	51	36	32	26	23	23	623
Energy Efficiency, WY	10			12	13	16	16	17		17	15	14	13	12	11	9	8	7	5	5	139
Energy Efficiency Total Battery Stomge - Utah-S	74	76	77	78	- 89	89	88	- 86	85	83	76	74	72	- 68	68	49	45	37	31	32 540	826
Battery Storage - Utan-S Battery Storage - WYSW	-	-		-	-	-	-	-	-		-		-	-	-	-	-		30.0	45.0	
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			105.0	45.0	-
FOT East - Summer Existing Plant Retirements and PPA Termination	295	186		-	-			-	-	300	275	164	300	237	299	297	284	300	300	300	78
JimBridger 1 (Coal Early Retirement/Conversions)	-	-	- 1	-	-	(351)	-	-	-	- 1	-	-	- 1	-	-	-	- 1	-	-	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	-	-	- (2.40)	-
JimBridger 3 JimBridger 4	-	-	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	(349)	
Hermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	-	-
Retire - Hydro Expire - Wind PPA	-	(1)	(169)	(175)	(1)	(41)	-	(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)		(1)	(10)		(179 (216
Expire - Wild PPA Expire - Solar PPA	-	-		- (173)	-	- (41)	-	-	-	(2)	- (73)	- (10)	(67)	(49)	- (20)	-	(1)	(115)	(175)	(11)	(210)
Expansion Resources																					
SCCT Frame WV Total SCCT	-	-	-	-	-	-	-		-		-	-	-	-	-	-	-	-	443 443	-	
Wind+Storage, YK				-						1								-	5		1
Total Wind	-	-	-	-	-	- 2.5.1	-	-	-	1		-	-	-	-	-	-	-	5		1
Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon	-	-	+ : - !	-	-	354 500	-	-	-	 	359	-	-	475	-	-	-	-	-	702	354 500
Utility Solar+Storage - PV - Yakima		-		-	-	404		-					-	-			-		425		404
Total Solar		_		-	-	1,258	-	-	-	-	359	-		475	-	-		-	425	702	1,258
Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-		-	- :	-		-	-	1.9	-			-	-	-	-		-	-	1.9
Demand Response, CA-Cool/WH		-		-	-			-	-				-	-			-		1.5	-	
Demand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	1.1	-	
Demand Response, CA-Irrigate Demand Response, OR-Cool/WH	-	-	1 - 1	-						4.8		-				-			3.0		4.8
Demand Response, OR-3rd Party Contracts		-		-				-		- 1	-		-	-			-		35.7	-	
Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	13.3	-	-	-	-		-	-	-	-	-	13.3
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts	-	-	1 - 1	-	-	-	-	-	-		-	-		-		-	-	-	7.7 9.9	-	
Demand Response, WA-Irrigate								-		5.2				-					3.1		5.2
Demand Response, WA-Thermostat	-			-				-	-	32.6				-	-		-		5.3 67.3	-	20.0
Demand Response Total Energy Efficiency, CA	- 1	- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	32.6	- 2	- 2	- 2	- 2	- 2	- 1	- 1	- 1	67.3	- 1	32.6 17
Energy Efficiency, OR	40	37	50	49	47	46	45	43		37	34		31	30	27	26		26	24	23	431
Energy Efficiency, WA	11 52			11 62	12 61	13	12 59	12 57		11 49	10 46		9 42	8 40	8	6	6 33	5	4 29		113
Energy Efficiency Total Battery Stomge - S-Oregon	- 52	- 49	- 62	- 62	- 61	- 60	- 59	57	52	- 49	- 46	- 44	42	135	37	33	- 33	32	29 360		561
Battery Storage - Willamette Valley	_	-		-		-		-	-				-	60	45	-	-		-	-	
Battery Storage - Portland NC		-		-	-	-	-	15	-	-	-	-	-	-	60	-	-	-	15	30	15
D-44 C4 W/-H- W/-H-	1 -	-	+ : 1	-	-	-		45 105			-	-	-	15	30	-	-	-	- 60	30	45 105
Battery Storage - Walla Walla Battery Storage - Yakima				966	1,001	405	505	831	912	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,071	1,074	1,074	1,075	902
Battery Storage - Yakima FOT West - Summer	1,276																				
Battery Storage - Yakima FOT West - Summer FOT West - Winter	1,276 37	234	372	408	421	157	162		215	349	285		252	216	168	93		90	(2.260)	(745)	252
Battery Storage - Yakima FOT West - Summer		234 (61)	372 (573)		421 (1)	157 (412)		(505)	215 (85)	349		(396)	252 (350) 118		168 (557) 434	93 (156) 82	(36)	90 (280) 69	(2,260)		252

										Capacity	(MW)										Resource
S-03	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Existing Plant Retirements and PPA Termination																					
Craig 1 (Coal Early Retirement/Conversions) Craig 2 (Coal Early Retirement/Conversions)			-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82)
Hayden 1		-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
Hayden 2 Huntington 1	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-
Huntington 2			-	-	-	-	-	-	-	-	-		-	-	-		-	-	(450)		
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
DaveJohnston 1			- (387)	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106)
DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)
Naughton 1 (Coal Early Retirement/Conversions)			-	-	-	-	-	(156)	-	- (330)	-	-	-	-	-	-	-	-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6		(280)	-	-	-	-		-		-	-		-	-	(356)	-	-	_	-	-	(280)
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)
Retire - Wind	-	-	- (100)	- (40)	- (0)	-	-	-	- (2)	-	- (10)	(40)	- (200)		- (101)	-	-	-	- (0.0)	-	- (1.60)
Espire - Wind PPA Espire - Solar PPA		(27)	(17)	(49)	(0)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)			(160)
Retire - Other	-	-	-	-	- (-)	-	-	-	-	-	-	-	-	-	-	(1)	-		-	(32)	-
Coal Ret_WY - Gas RePower		247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247
Expansion Resources CCCT - DJohns - J 1x1			- 1	- 1	- 1	- 1	_	-	-	- 1	- 1		- 1	-	- 1	_	- 1	-	505	-	- 1
Total CCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	505		-
SCCT Frame NTN	-	-	-	-	-	-	·	185	-	-	-	185	-	185	185	-	-	-	-	-	185
SCCT Frame WYSW Total SCCT	-			-	-	-	-	185	-	-	185 185	185		185	185 185	-		-	-	-	185
Wind, GO				-	-			-		-	-	1,070		-	-		-	-	-	-	-
Wind, WYAE		-		- 1	-	1,920	-	-	-	- 1	-	-	- 30	-	-	-	-	-	-	-	1,920
Wind+Storage, GO Total Wind			 	-	-	1,920	-	-	-	-	-	1,070	30	-	-	-	-	-	-	-	1,920
Utility Solar+Storage - PV - Utah-S				-	-	300		_			-	-,	-	500	-		-	_	-	-	300
Utility Solar+Storage - PV - WYSW		-	-	-	-	-	-	-	-	-	-	-	52	-	5	-	-	-	907		- T
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N			159	- 64	73	604	-		-	-	-			-		-		-	907	- 2	900
Total Solar	-		159	64	73	904		-	-	-	-		52	500	5		-	-	907		1,200
Demand Response, ID-Cool/WH	-	-		-	-	-	-	-	-	-	-	-	- 1	-	-	-	-	-	1.8	2.6	- T
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate			 	-	-		-		-	-	-			5.2		-		-	3.7	1.8	
Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	-
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	74.1	7.2 2.6	28.1
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate			-	-	-	-	-	-	-	-	-	-	-	-	-		-	-		1.9	-
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	116.7	-	8.2	-	-	-	-	-	8.3	-	5.1	116.7
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1	5.2 37.3	-
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate			-	-	-	-	-	-	-	-	-		-		-		-	-	1.8		
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	1.2	-
Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services			8.3	-	-	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5 3.0
Demand Response Total	4.1	-	15.3	-	9.9	-	8.2	7.2	-	116.7	6.7	8.2	-	12.0	-	-	7.0	8.3	105.4	70.3	161.2
Energy Efficiency, ID	6 58	5 66	67	7 68	7 69	7 66	7 67	7 65	7 65	7 62	6 54	6 56	52	6 50	6 51	4 36	32	3 25	3	3 26	67 652
Energy Efficiency, UT Energy Efficiency, WY	10		11	12	15	16	16	18	18	17	15	14	13	12	11	9	8	7	5	5	144
Energy Efficiency Total	74		85	86	91	90	91	90	89	87	76	77	72	68	68	49		35	30		863
Battery Stomge - Utah-S Battery Stomge - WYSW			-	-	-	-	-	-	-	-	-		-			-	-	-	-	285 15.0	-
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240.0	-
FOT East - Summer	133	-	-	-	-	-	-	-	-	300	263	267	300	245	300	294	297	300	300	300	43
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)			- 1	- 1	- 1	(351)	-	-	-	- 1	- 1	-	- T	-	- 1	-		-	T -	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)		-	-	-	-	- (331)	-	-		-	(356)	-	-	-	-	-	-	-	-		-
JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	-
JimBridger 4 Hermiston			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	(353)	-
Retire - Hydro	-	(1)	(169)	-	(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	-	-	(179)
Expire - Wind PPA		_		(175)	-	(41)	-	-	-	- (2)	(75)	(10)	- (67)	(20)	(20)	-	- (1)	(10)		(11)	(216)
Expire - Solar PPA Expansion Resources					-		-		-	(2)	-		(67)	(49)		-	(1)	(115)	д (1/5)	ų (11)	(2)
SCCT Frame SO	-	-	-	-	-	-	-	-	-	-	210	-	-	-	-	-	-	-	-		-
SCCT Frame WV Total SCCT	-	-	-	-	-	-	-	-	-	-	210	-	-	-	-	-		-	-	443 443	
Utility Solar+Storage - PV - Jbridger				-	-	354				_	359									702	354
		-	-	-	-	500 405	-	-	-	-	-		265	-	-	-	-	430	-	-	500
Utility Solar+Storage - PV - S-Oregon		-		-	-	405 1,259	-	-	-		359	-	265	-	-	-	-	430 430	-	702	1,259
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima		_		-	-		-	-	-	8	-	-	-		-		-	-	-	-	8
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services	-					-	-	-	-	1.9	-	-	-	-	-	-		-		-	1.9
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-	-	-	-						-	-	-	-	-	-	-	-	4.8		-
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Wisims Total Solar Demand Response, OR-Ancillary Services Demand Response, CM-Ancillary Services Demand Response, CA-Irrigate Demand Response, CA-Irrigate	- - - -	-	-	-	-	-	-	_	_	_ 1	-						_	-	5.8	-	!
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Wism Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Internate Demand Response, CA-Internate Demand Response, CA-Internate Demand Response, CA-Internate	- - - - - -	- - - - -	-		-	-	-	-	1.1	-	-	-	-	-	-	-	-	-	5.8 3.0	-	-
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Wisim Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services Demand Response, CA-Irigate Demand Response, CA-Tirigate Demand Response, CA-Tirigate Demand Response, OR-Ard Patry Contracts Demand Response, OR-Ard Patry Contracts		- - - - - - -	-	- - - -	- - - -		-	-	1 1 1	-	- - -	-	- - -	-	-	-	-	-	3.0 35.7	2.0	-
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Wixim Total Solar Demand Response, OR-Ancillary Services Demand Response, W.A-Ancillary Services Demand Response, C.A-Ingitate Demand Response, C.A-Infigute Demand Response, C.A-Infigute Demand Response, OR-Coal/WH Demand Response, OR-Coal/WH Demand Response, OR-Coal/WH Demand Response, OR-Migute Demand Response, OR-Migute Demand Response, OR-Migute	- - - - - - - -		-		- - - - -	- - - -	-	-	-	-	- - - -	-	-	-	-	- - - -	- - - -	-	3.0	2.0	-
Utility Solar's Storage - PV - S-Oregon Utility Solar's Storage - PV - Vikima Total Solar Demmad Response, OR-Ancillary Services Demmad Response, WA-Ancillary Services Demmad Response, CA-Irigate Demmad Response, CA-Triente Demmad Response, OR-Total Pury Demmad Response, OR-Cool/WH Demmad Response, OR-Cool/WH Demmad Response, OR-Cool/WH Demmad Response, OR-Wall Pury Demmad Response, OR-Wall Pury Demmad Response, OR-Wall Pury Demmad Response, WA-Wall Pury Demmad Response of Wall Pury Demmad Response of Wal	- - - - - - - - -	- - - -	-		- - - -	- - - - -	-		1 1 1 1 1	-	- - - -	-	- - - -		-		-	- - - - -	3.0 35.7 13.3 5.5 8.3	1.1	-
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, CA-Irigate Demand Response, CR-Irigate Demand Response, OR-Irigate Demand Response, OR-Irigate Demand Response, OR-Irigate Demand Response, WA-Irigate	- - - - - - - - - - - -	-	-		- - - -	- - - - - -	-			- - - - - - 94	-		- - - - -					- - - - -	3.0 35.7 13.3 5.5 8.3 16.6	1.1	
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Wisim Total Solar Domind Response, OR-Ancillary Services Domind Response, OR-Ancillary Services Domind Response, CA-Irigate Domind Response, OR-Irigate Domind Response, OR-Irigate Domind Response, OR-Irigate Domind Response, WA-Irigate	- 1	2	- 2	- 2	- - - - - - - 2	- 2	- 2	- - - - - - - 2	- - - - - - - 2	9.4	- - - - - - - 2	- 2	- 2	2	- - - - - - - 2	- 1	- - - - - - - 1	- - - - - - - 1	3.0 35.7 13.3 5.5 8.3 16.6 93.1	- 1.1 - - 3.0	- - - - - - 9.4
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Wixim Total Solar Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Internostat Demand Response, CA-Internostat Demand Response, OR-Coal/WH Demand Response, OR-Coal/WH Demand Response, OR-Oregon OR-ORGAN DESTRUCTION OF THE ORGAN	- 1 40	- - - - - - 2 37	- 2 43	- 2 49	- - - - - - - 2 47	- 2 46	- 2 44	- - - - - - - 2 43		9.4 2 38	- - - - - - - 2 34	- 2 32	- 2 31	- - - - - - 2 30	- - - - - - - 2 27	- 1 26	- - - - - - 1 24		3.0 35.7 13.3 5.5 8.3 16.6 93.1 1	- 1.1 - - 3.0 1 24	- - - - - - - 9.4 18 427
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Internate Demand Response, CA-Internate Demand Response, OR-Andrew Demand Response, OR-ColorVI Demand Response, OR-Oregon Demand Response, OR-Oregon Demand Response, OR-Arrigate Demand Response, OR-Arrigate Demand Response, WA-Internase Demand Response Deman	- 1 40 11	- - - - - - 2 37 10	2 43 10	- 2 49 11	- - - - - - - 2 47 12	- 2 46 13	- 2 44 12	- - - - - - 2 43	11	9.4 2 38 11	- - - - - - - 2 34 10	- 2 32 9	2 31 9	- - - - - - 2 30 8	8	- 1 26 6	- - - - - - 1 24	5	3.0 35.7 13.3 5.5 8.3 16.6 93.1 1 24	- 1.1 - - 3.0 1 24 4	- - - - - - 9.4 18 427 113
Utility Solar-Stonage - PV - S-Oregon Utility Solar-Stonage - PV - S-Oregon Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, CA-Ancillary Services Demand Response, CA-Internate Demand Response, CA-Internate Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Demand Response, OR-And Party Contracts Demand Response, OR-And Party Demand Response, OR-And Party Brilierey, CA Descript Efficiency, CA Descript Principles of Contracts Demand Response, OR-Demand Response Demand Response Dem	- 1 40	- - - - - - 2 37 10	2 43 10	- 2 49	- - - - - - - 2 47	- 2 46 13	- 2 44	- - - - - - 2 43	11	9.4 2 38	- - - - - - - 2 34	- 2 32 9	2 31 9	- - - - - - 2 30		- 1 26	- - - - - - 1 24		3.0 35.7 13.3 5.5 8.3 16.6 93.1 1 24	- 1.1 - - 3.0 1 24 4	- - - - - 9.4 18 427 113 558
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Internate Demand Response, CA-Internate Demand Response, OR-Ancillary Services Demand Response, OR-And Party Contracts Demand Response, WA-And Party Contracts Demand Response, WA-Internated Demand Response, WA-Internated Demand Response, WA-Internated Demand Response, WA-Internated Demand Response, Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, VA Energy Efficiency, Total Battery Storage - Wilansette Valley	- 1 40 11	- - - - - 2 37 10 49	2 43 10	- 2 49 11	- - - - - - 2 47 12 61	- 2 46 13	- 2 44 12	- - - - - 2 43 12 57	11	9.4 2 38 11 51 105 45	- - - - - 2 34 10 46	2 32 9 44	2 31 9	- - - - 2 30 8 40	8 37 -	- 1 26 6	- - - - 1 24 6 32	32	3.0 35.7 13.3 5.5 8.3 16.6 93.1 1 24	- 1.1 - 3.0 1 24 4 29 120	
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Injuste Demand Response, CA-Injuste Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Demand Response, OR-Ancillary Demand Response, OR-And Party Contracts Demand Response, OR	- 1 40 11	- - - - - - - 2 37 10 49	2 43 10	- 2 49 11	- - - - - - - 2 47 12 61	- 2 46 13	- 2 44 12	- - - - - - - 2 43 12 57	11	9.4 2 38 11 51 105 45 30	- - - - - - 2 34 10 46	2 32 9 44	2 31 9	- - - - 2 30 8 40	8 37 - - 30	- 1 26 6	- - - - - 1 1 24 6 32 - -	5 32 -	3.0 35.7 13.3 5.5 8.3 16.6 93.1 1 24	- 1.1 - 3.0 1 24 4 29 120	
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, CA-Indigate Demand Response, CA-Indigate Demand Response, CA-Indigate Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, ORAncillary Services Demand Response, ORAnd Party Contracts Demand Response, ORAnd Party Contracts Demand Response, ORIndigate Demand Response, WA-Indigate Deman	- 1 40 11 52 - - -	- - - - - - 2 37 10 49 - -	2 43 10 55 -	- 2 49 11 62 - -	- - - - - - 2 47 12 61 - -	- 2 46 13 60 - - -	- 2 44 12 58 - -	- - - - - - - - - - - - - - - - - - -	- - - - - -	9.4 2 38 11 51 105 45 30 15	- - - - - 2 34 10 46 - -	- 2 32 9 44 - - -	- 2 31 9 42 - - -	- - - - 2 30 8 40 - - - 30	8 37 - - 30 60	- 1 26 6 33 - - -	- - - - - 1 24 6 32 - - -	5 32 - - - -	3.0 35.7 13.3 5.5 8.3 16.6 93.1 1 24 4 29	- 1.1 - - 3.0 1 24 4 4 29 120 - 15 45	
Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Utility Solar-Storage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Iriquat Demand Response, CA-Iriquat Demand Response, OR-Ancillary Services Demand Response, WA-Iriquate Demand R	- 1 40 11 52 - - - - - 1,125	- - - - - - 2 37 10 49 - - - -	- 2 43 10 55 - - - - - 584	- 2 49 11 62 - - - - - 618	- - - - - - 2 47 12 61 - - - - - - - - - - - - - - - - - -	- 2 46 13 60 - - - - 219	- 2 44 12 58 - - - - 197	- - - - - - - 2 43 12 57 - - - - - - - - - - - - - - - - - -	- - - - - 561	9.4 2 38 11 51 105 45 30 15	- - - - - 2 34 10 46 - - - - - 1,075	- 2 32 9 44 - - - - 1,075	- 2 31 9 42 - - - - 1,075	- - - - - - 2 30 8 40 - - - - - - 30 - - - - - - - - - - - -	8 37 - - 30 60 - 1,075	- 1 26 6 33 - - - - 1,075	- - - - - 1 24 6 32 - - - - 1	5 32 - - - - - - - 970	3.0 35.7 13.3 5.5 8.3 16.6 93.1 1 24 4 29 -	-1.1 	
Utility Solar-Storage - PV-V-S-Oregon Utility Solar-Storage - PV-V-S-Oregon Utility Solar-Storage - PV-V-S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, OR-Oregon Oregon	- 1 40 11 52 - - -	- - - - - - - 2 37 10 49 - - - - - - - - - - - - - - - - - -	- 2 43 10 55 - - - - - - 584 630	- 2 49 11 62 - - - - 618 661	- - - - - - 2 47 12 61 - - - - - - - - - - - - - - - - - -	- 2 46 13 60 - - - - 219 404	- 2 44 12 58 - - - - - 197 962	- - - - - - - - - 2 43 12 57 - - - - - - - - - - - - - - - - - -	11 54 - - - - - 561 1,016	9.4 2 38 11 51 105 45 30 15 - 1,075 591	- - - - - - 2 34 10 46 - - - - - - - 10 46 - - - - - - - - - - - - - - - - - -	- 2 32 9 44 - - - - 1,075 327	- 2 31 9 42 - - - - - 1,075 921	- - - - - - 2 30 8 40 - - - - - - - - - - - - - - - - - -	8 37 - - 30 60 - 1,075 849	- 1 26 6 33 - - - - - 1,075 772	- - - - - - 1 24 6 32 - - - - - - - - - - - - - - - - - -	5 32 - - - - - - - 970 108	3.0 35.7 13.3 5.5 8.3 16.6 93.1 1 24 4 4 29 - - - - 1,075 386	- 1.1 - - 3.0 1 24 4 4 29 120 - 15 45 - 1,075	
Utility Solar-Storage - PV-S-Gregon Utility Solar-Storage - PV-S-Gregon Utility Solar-Storage - PV-S-Kim Total Solar Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-Injuste Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary	- 1 40 11 52 - - - - - 1,125	- - - - - - 2 337 10 49 - - - - - - - - - - 10 49 - - - - - - - - - - - - - - - - - - -	- 2 43 10 55 584 630 (573) 314	- 2 49 11 62 - - - - - 618	- - - - - - 2 47 12 61 - - - - - - - (1) 2 47 61 - - - - (1) - - - - - - - - - - - - - - - - - - -	- 2 46 13 60 	- 2 44 12 58 - - - - 197 962	- - - - - - - 2 43 12 57 - - - - - - - - - - - - - - - - - -	11 54 - - - - 561 1,016 (85) 143	9.4 2 38 11 51 105 45 30 15 - 1,075 591 (912)	- - - - - 2 34 10 46 - - - - - 1,075	- 2 32 9 44 - - - - 1,075 327 (396) 1,383	- 2 31 9 42 	- - - - - - 2 30 8 40 - - - - - - 30 - - - - - - - - - - - -	8 37 - - 30 60 - 1,075	- 1 26 6 33 - - - - 1,075 772 (156)	- - - - - - 1 24 6 32 - - - - 1,075 781 (36)	5 32 - - - - - 970 108 (280) 505	3.0 35.7 13.3 5.5 8.3 16.6 93.1 1 24 4 29 - - - 1,075 386 (2,260) 1,670	- 1.1 - 3.0 1 24 4 29 120 - 15 45 - 1,075 315 (745) 2,003	

										Capacity	y (MW)										Resource
S-04	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)			-	-	_	_	_	(82)	_	_	-	-	-	- 1	- 1		-			_	(82)
Craig 2 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	(82)
Hayden I	-		-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
Hayden 2 Huntington 1	-	+	-	-	-	-	-	-	-	-	-		(33)	-	-		-	-	(459)	-	
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-
Colstrip 3 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	+ -	+	(387)	-	-	-	-		-	(74)	-		-	-			-	-		-	(74)
DaveJohnston 1	-		-	-	-	-	-		-	(99)	-	-		-	-	-	-	-	-	-	(99)
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-		-	-	-	-	-	-	-	-	(106)
DaveJohnston 3 DaveJohnston 4	-	+	-	-	-	-	-	-	-	(220)	-		-	-			-	-		-	(220)
Naughton 1 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	(156)	-	- (330)	-	-	-	-	-		-	-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)
Naughton 3 (Coal Early Retirement/Conversions) Gadsby 1-6	+ -	(280)	-	-	-	-	-	-	-	-	-	-	-	-	(356)		-	-		-	(280)
Retire - Hydro	-	1 - 1	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)
Retire - Wind	-		-	-	-	-	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	
Expire - Wind PPA Expire - Solar PPA	-	(27)	(17)	(49)	(0)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160)
Retire - Other	-	1 - 1	-	-	-	- (1)	-	-	-	-	-	-	-	-	-	(1)		-	-	(32)	-
Coal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247
Expansion Resources CCCT - DJohns - J 1xl	_		_	_	_	_	_	_	_	_		_	_				_		505	_	
Total CCCT								_											505		
SCCT Frame NTN	-		-	-	-	-	-	-	-	-	-	555	-	-	-	-	-	-	-	-	-
SCCT Frame WYSW Total SCCT	-	+	-	-	-	-	-	-	-	-	185 185	185 740	-	-	-	-	-	-	-	-	-
Total SCCT Wind, GO	+ -	+	-		-	-		-	-	-	- 103	1,058	-	-			-	-		-	
Wind, UT	-	1 -	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
Wind, WYAE	-	+ - 7	-	-	-	1,920		-	-	-	-			- 22		-	-		-	-	1,920
Wind+Storage, GO Total Wind	-	-	-	-	20	1,920	-	-	-	-	-	1,058	-	22	-	-	-	-	-	-	1,940
Utility Solar+Storage - PV - Utah-S			-		-	280	-		-		-	-	-	500	-		_	-		-	280
Utility Solar+Storage - PV - WYSW	-		-	-	-	-	-	-	-		-	- 20	-	_ = _	100	-	-	-	-	-	-
Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington	-	+	-	-	-	-	-	-	-	-	-	20	-	-		-	-	-	909	-	
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N			160			623													-	-	900
Total Solar	-	-	160	64	53	903	-	-	-	-	-	20	-	500	100	-	-	-	909		1,180
Demand Response, ID-Cool/WH Demand Response, ID-Irrigate	-		-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	3.7	-	2.6 1.8	
Demand Response, ID-Thermostat	-	+	-	-	-	-	-	-	-	-	-		_	-	-		-	-		8.3	-
Demand Response, UT-Cool/WH	4.1		7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1
Demand Response, UT-3rd Party Contracts	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	+	-	-	-	-	-	-	-	11.0	105.6	8.2	-	-	-		8.3	-	-	1.9 5.1	11.0
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-
Demand Response, WY-3rd Party Contracts	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37.3	-
Demand Response, WY-Irrigate Demand Response, WY-Thermostat	+	+			-	-	-				-				-			-	1.8 18.7	1.2	
Demand Response, UT-Ancillary Services	-		-	-	8.3	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5
Demand Response, WY-Ancillary Services	4.1		7.0	-	18.1	-	3.0 8.2	7.2	-	11.0	112.3	8.2	-	6.8	5.2	-	15.3	3.7	23.7	73.3	3.0 55.6
Demand Response Total Energy Efficiency, ID	4.1		7.0	- 7		- 7	7	7.2	- 7	711.0	112.3	6.2	- 6	6.8	5.2	- 4	13.3	3.7	23.7	73.3	68
Energy Efficiency, UT	58	67	67	68	69	68	67	68	65	62	54	56	52	50	51	36		25	22	26	659
Energy Efficiency, WY	74		11 85	14 88		16 92	17 92	18	18 90	18 87	15 76	14 76		12 68	11 68	9 49	8 45	7	5 30		148 875
Energy Efficiency Total Battery Storage - Utah-S	- /4	- 63	- 63	- 00	- 91	- 92	- 92	- 93	- 90	- 67	-	- 76	- /2	-	30.0	- 49	- 43	-	- 30	210	- 6/3
Battery Storage - WYSW	-		-	-	-	-	-	-	-	-	-	-	-	-	30.0	-	-	-	-	-	-
Battery Storage - Idaho	-		-	-	-	-	-	-	-	220	- 207	300	297	-	150.0	265	- 200	-	300	90.0	-
FOT East - Summer Existing Plant Retirements and PPA Termination	_		_		-	-	-	-	-	220	287	300	297	140	204	265	300	300	300	300	22
JimBridger 1 (Coal Early Retirement/Conversions)	-	_ '	-	-	-	(351)	- 1	-	-	-	-	-	-	-	-	-	-	- 1	-	-	(351)
JimBridger 2 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-	-
JimBridger 3 JimBridger 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		(349)	
Hermiston		-	-	-		-	-	-	-	1			1	-		-	-	-	(237)	- (333)	-
Retire - Hydro	-	(1)	(169)	- (175)	(1)	-	-	(1)	-	(7)	-	-	(6)			(75)	-	(1)	-	-	(179)
Expire - Wind PPA Expire - Solar PPA	-	+	-	(175)	-	(41)	-	-	-	- (2)	(75)	(10)	(67)	(20)	(20)	-	- (1)	(10)	(175)	(11)	(216)
Expansion Resources										(2)			(07)	(/)			(1)	(113)	(474)	(11)	(2)
SCCT Frame WV			-			-	-	-	-		-		-			-		-	664		
Total SCCT Wind+Storage, YK	-	+		-	-	-	-	-	-	-	-	-	-	-			-	-	664 25	221	
Wind+Storage, YK Total Wind	+	+=	-	-	-	-	-		-		-	-	-	-	-		-	-	25	-	-
Utility Solar+Storage - PV - Jbridger	-		-	-	-	354	-	-	-	-	359	-	-	-	-	-	-	-	-	702	354
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima		+	-	-	-	500 405	-	-	-	-	-	-	-	475	-	-	-	405	-	-	500 405
Utility Solar+Storage - PV - Yakıma Total Solar	+	+=	-		-	1,259	-		-	_	359	-	-	475	-	_	-	405		702	1,259
Demand Response, OR-Ancillary Services	_	-	-	-	-				-	-	8	-				-	-			-	
Demand Response, WA-Ancillary Services					-	-	-	-	-	-	1.9	-	-	- 1	-	-		-	4.8	-	-
Demand Response, CA-Irrigate Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	2.0	-
	-										4.1		-	-				-	9.2	-	
Demand Response, OR-Irrigate		+	-	-	-	-	_	-	-	-	-	-	-	-	-	-	- 8.3	-	-	1.1	-
Demand Response, WA-3rd Party Contracts		+	-	-	-	-	-	-	-	-	13.4		-	-	-		8.3 8.3	-	14.0	3.0	
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-		2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	17
Demand Response, WA-3rd Party Contracts	- 1				39	46	43	41 11	39 11	37	33	31	31	30	27 8	26		25 5	22 4	23 4	395
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate Demand Response Total Energy Efficiency, CA Energy Efficiency, OR	40	37	37	37						11	10	9	9	8							
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate Demand Response Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA	40 11	37	10	11		12						43	43	40		6					110
Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate Demand Response Total Energy Efficiency, CA Energy Efficiency, OR	40	37		11		12 59		54	52	49 75		42	42 15	40	37	32		30			522 75
Demand Response, W.A. and Parry Contracts Demand Response, W.A. friging Demand Response Total Energy Efficiency, CA Linegy Efficiency, CR Linegy Efficiency, WA Linegy Efficiency, WA Linegy Efficiency, WA Linegy Efficiency Total Battery Storage - & Oregon Battery Storage - Williamett Valley	40 11 52 -	37 10 2 49	10 48 -	11 50 -	53	59 - -	56 - -	54 - -	52 -	49 75 30	- - -	-	15 60	40 - -	37 - -	32		30 - -	27 - -		522 75 30
Demand Response, W.A. and Party Contracts Demand Response, W.A. and Party Demand Response Total Energy Efficiency, C.A Energy Efficiency, C.R Energy Efficiency, C.R Energy Efficiency, W.A Engy Efficiency, W.A Engy Efficiency, W.A Engy Efficiency, W.A E	40 11 52 -	37 10 2 49 -	10 48 - -	11 50 - -	53 - -	- - -	- - -		52	49 75 30 15	- - -	1 1	15 60 -	40 - - -		32			27 - -	27 - -	522 75 30 15
Demand Response, W.A. and Party Contracts Demand Response, W.A. frigate Demand Response Total Energy Efficiency, C.A. Energy Efficiency, C.R. Energy Efficiency, C.R. Energy Efficiency, W.R. Energy Efficiency, Total Energy Efficiency Total Entrey Storage - St-Oregon Entrey Storage - Wallamette Valley Entrey Storage - Wallamette Entrey Storage - Wallamete Ent	40 11 52 - - -	37 10 2 49 - - -	10 48 - - -	11 50 - - -	53	- - - -	56 - - -	54 - -	52 - - -	49 75 30 15	- - -	1 1 1	15 60 - 105	40 - - - -	37 - - 45	32		30 - - - -	27 - - - -	- - - -	522 75 30 15
Demand Response, W.AInd Party Contracts Demand Response, W.AIndgate Demand Response Total Energy Efficiency, C.A. Energy Efficiency, C.R. Energy Efficiency, C.R. Energy Efficiency, W.A. English Efficiency, W.A. English Efficiency, W.A. Englis	40 11 52 -	37 10 49	10 48 - -	11 50 - -	53 - - - -	- - -	- - -		52	49 75 30 15	- - -	1 1	15 60 -	40 - - - - - 1,075	37 - -	32			27 - -	- - - - -	522 75 30 15
Demand Response, W.A. 3rd Party Contracts Demand Response, W.A. 1rdigate Demand Response Total Inergy Efficiency, C.A Inergy Efficiency, C.R Inergy Efficiency, C.R Inergy Efficiency, W.A Facrey Efficiency, W.A Facrey Efficiency, W.A Facrey Efficiency, W.A Intergy Stonge - S-Oregon Battery Stonge - S-Oregon Battery Stonge - Wolkmorte Valley Battery Stonge - Portland NC Battery Stonge - Portland NC Battery Stonge - Vakima FOT West - Summer FOT West - Summer	40 111 52 - -	37 10 49 - - - - - 5 753 131	10 48 - - - - - 473 265	11 50 - - - - - - 488 300	53 - - - - - - 484 311	59 - - - - - 182 48	56 - - - - - 161 54	54 - - - - - 317 56	52 - - - - - 397 103	49 75 30 15 - 105 1,075 235	- - - - 1,075 223	- - - - - 1,075	15 60 - 105 - 1,075 186	- - - - - - 1,075	37 - - 45 - - 1,075 67	32 - - - - - 1,075 5	31 - - - - 1,075 28	30 - - - - - 1,019	27 - - - - 1,069	27 - - - - 1,075	522 75 30 15 - 105
Demand Response, W.A. 3rd Party Contracts Demand Response, W.A. 3rd Party Demand Response Total Energy Efficiency, C.A Energy Efficiency, C.R Energy Efficiency, W.A Energy Storage - Schregon Battery Storage - Wallanstet Valley Battery Storage - Wallanstet Valley Battery Storage - Wallan Walla Battery Storage - Wallan Wallan Battery Storage - Wallan Wallan	40 111 52 - - - - - - - - - - - - - - - - - -	37 10 49 - - - - - - - - - - - - - - - - - -	10 48 - - - - - 473 265 (573)	11 50 - - - - - - 488 300 (224)	53 - - - - - 484 311 (1)	59 - - - - - 182 48 (412)	56 	54 - - - - 317 56 (505)	52 - - - - - 397 103 (85)	49 75 30 15 - 105 1,075 235 (912)	44 - - - - 1,075 223 (449)	- - - 1,075 174 (396)	15 60 - 105 - 1,075 186 (350)	- - - - - 1,075 117 (114)	37 - - 45 - - 1,075 67 (557)	32 - - - - 1,075 5 (156)	31 	30 - - - - - 1,019 - (280)	27 - - - - 1,069 - (2,260)	27 - - - - 1,075 - (745)	522 75 30 15 - 105 533
Demmad Response, W.Adright Demmad Response, W.Adright Demmad Response Total Energy Efficiency, C.A Energy Efficiency, C.R Energy Efficiency, W.A Energy Efficiency Total Battery Stonge - S-Oregon Battery Stonge - S-Oregon Battery Stonge - Portland NC Battery Stonge - Waliaw EOT West - Summer FOT West - Summer	40 111 52 - - - - - - 996	37 10 2 49 - - - - - 5 753 131 (61) 0 132	10 48 - - - - - 473 265 (573) 299	11 50 - - - - - - - 488 300 (224) 202	53 	59 - - - - - 182 48 (412)	56 	54 - - - - - 317 56	52 - - - - - 397 103 (85)	49 75 30 15 - 105 1,075 235 (912) 372	44 - - - - 1,075 223 (449) 791	- - - 1,075 174 (396)	15 60 - 105 - 1,075 186 (350) 293	1,075 117 (114)	37 - - 45 - - 1,075 67	32 - - - - - 1,075 5	31 - - - 1,075 28 (36) 100	30 - - - - - 1,019	27 - - - 1,069 - (2,260) 2,199	27 - - - - 1,075 - (745) 1,361	522 75 30 15 - 105 533

S-05										Capacity			2031								Resourc
xisting Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
raig 1 (Coal Early Retirement/Conversions) raig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-		-	-	-	-	(82
ayden I	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
ayden 2 untington 1	-	-	-	-	-	-	-	-	-	-	-	-	(33)	-	-	-	-	-	(459)	-	-
untington 1 untington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	(450)	-	
olstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	1	(74)		-	-	-	-	-	-	-	-	ï	(74
olstrip 4 (Coal Early Retirement/Conversions) holla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(387
aveJohnston 1	-	-	- (387)		-	-	-	-	-	(99)	-	-	-	-	-	-		-		-	(99
aveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(106
aveJohnston 3 aveJohnston 4	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220
aughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	(330)	-	-	-	-	-	-	-	-		-	(156
aughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)		-	-	-	-	-	-	-	-	-	-		(201
aughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(280
ads by 1-6 etire - Hydro	-	-	-		-	(20)	-	-	-			-	-		- (330)		-	-		-	(20
etire - Wind	-	-	-	-	-	-	-	-	-	-	-	(40)	-	-	-	=	-	-	-	=	-
spire - Wind PPA spire - Solar PPA	-	(27)	(17)	(49)	(0)	- (1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160
etire - Other	-	-	-	-	- (1)	- (1)	-	-	-	-	-	-	-	-	-	(1)		- (94)	- (049)	(32)	- (
oal Ret_WY - Gas RePower	-	247	-	-	-	-	-	-	-	-	-	(247)	-	-	-	- '	-	-	-	- 1	247
xpansion Resources																			505		
CCT - DJohns - J 1xl otal CCCT		-	-	-	-	<u> </u>	- -	-	-	-	-		-	-	-	-	-	-	505	-	
CCT Frame NTN	-	-	-	-	-	-	-	-	-	-	-	555	-	-	-	-	-	-	-	-	-
CCT Frame WYSW	-			-	-	-				-	-	- 555	- 1			-		-	370		-
otal SCCT /ind, GO	1 -	-	-	-	-	-		-	-	-	-	994	-	-	-			-	370	-	
/ind, WYAE	-	-	-	-	-	1,920	-	-	-	-	-	-	-	-	-	-	-	-	=	-	1,920
/ind+Storage, GO	-	-	-	-	-	1.920	-		-	-	-	30 1.024	-	76 76	-	-		-	-	-	1.920
otal Wind tility Solar+Storage - PV - Utah-S	-	-	-	-	-	300	-	-	-	-	-	1,024	500	- /6	-			-	-	-	300
tility Solar+Storage - PV - WYSW	-	-	-	-	-	-	-	-		-	-	-	-	-	100	-	-	-	-		-
tility Solar+Storage - PV - Huntington	-	-	159	- 64	- 73	604	-	,	-	-	,	,	-	,	-	-	-	,	904	5	900
tility Solar+Storage = PV = Utah=N	-	-	159	64			-	-	-	-	-	-	500	-	100		-	-	904	- 5	1,200
emand Response, ID-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	
emand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	3.7	1.8	
emand Response, UT-Cool/WH emand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2 48.4	28.1
emand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		1.9	
emand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	92.5	32.4	-	-	-	=	-	-	8.3	5.1	-
emand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1	-
emand Response, WY-Irrigate emand Response, WY-Thermostat	-	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-		19.9	-
emand Response, UT-Ancillary Services	-	-	-	-	8.3	-	5.3	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5
emand Response, WY-Ancillary Services	4.1	-	7.0	-	18.1	-	3.0 8.2		-	-	99.2	32.4	-	12.0	-	-	7.0	-	15.2	90.0	3.0 44.6
emand Response Total nergy Efficiency, ID	6		6	7		7	7	7.2	7	7	7	6	- 6	6	- 6	- 4		3	3	30.0	67
nergy Efficiency, UT	58	67	67	68		66	67	65	65	62	57	58	52	50	51	36	32	26	23	26	654
nergy Efficiency, WY	10 74		11 85	12 86				18 90	18 89	17 87	16 80		13 72	12 68	11 68	9 49		7 37	5 31	5 35	144 865
nergy Efficiency Total attery Storage - Utah-S	- /4		- 0.3			- 90	- 91	-	- 09	- 07		- /9	- 12	-	-	- 49	- 43		- 31	420	
attery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.0	-
attery Storage - Idaho	-	-	-	-	-	-	-	-	-	- 21	- 224	90.0	-	45.0	-	- 201	-	- 200	-	30.0	_
OT East - Summer xisting Plant Retirements and PPA Termination	_	-	-	-		-			-	31	224	300	280	145	300	281	300	300	300	300	
mBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	(351)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351
mBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(356)		-	-	-	-	-	-		-	-
mBridger 3 mBridger 4	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	(349)	-
ermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	(237)	- (333)	
etire - Hydro	-	(1)	(169)	-	(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	-	=	(179
spire - Wind PPA	-	-	-	(175)	-	(41)	-	-	-	- (2)	(75)	(10)	(67)	(20)	(20)	-	(1)	(10)	(10)	(11)	(216
xpire - Solar PPA xpansion Resources										(2)		-	(07)	(49)			(1)	(113)		(11)	
CCT Frame WV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	
otal SCCT	-	-	-	-	-	354	-	-	-	-	359	-	-	-	-	-	-	-	443	702	354
tility Solar+Storage = PV = Jbridger tility Solar+Storage = PV = S=Oregon	-	-	-		-	500	-	-	-	-	- 339			475	-				-	- 702	500
tility Solar+Storage - PV - Yakima	-	-	-	-	-	405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	405
otal Solar	-	-	-	-	-	1,259	-	-		-	359	-	-	475	-		-	-		702	1,259
emand Response, OR-Ancillary Services emand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	-	-	1.9		- 8			-	-		-	-
emand Response, OR-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-
emand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	7.4	-
emand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	13.3	-	-
emand Response, WA-Irrigate emand Response, WA-Thermostat	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-		5.3	
emand Response Total	-	-	-	-	-	-	-	-	-	-	-	1.9	-	7.5	-	-	-	-	21.6	15.7	-
nergy Efficiency, CA	1 40		2 37	2 40		2 46	43	2 41	39	38	35	32	31	30	28	1 26		1 26	1 25	1 24	399
nergy Efficiency, OR nergy Efficiency, WA	11		10								10			8	8			26 5			
nergy Efficiency Total	52		48	52						51		44		40	38			32	30		525
attery Storage - S-Oregon	-	-	-	-	-	-	_	-	-	15	-	120	-	-	150	-	-	-	60	-	15
attery Storage - Willamette Valley attery Storage - Portland NC	-	-	-	-	-	-	-	-	-	-	-	75 45		-	30	-	-	-	-	-	-
attery Storage - Portland NC attery Storage - Walla Walla	-	-	-		-	-	-	-	-	120	-	-	-	-	15	-	-	-	60	-	120
attery Storage - Yakima	-	-	-	-	-	-	-	-	-	105	-	-	-	-	-	-	-	-		-	105
OT West - Summer OT West - Winter	998 151		494 268	504 303				198	243 110	1,075	1,075	1,075	1,075	1,075	1,075 75	1,075	1,051	1,063	1,075	1,062	507 169
Of West - Winter Existing Plant Retirements/Conversion.	- 131	(61)	-00					(505)		(912)			(350)	(114)					(2,260)	(745)	105
Annual Additions, Long Term Resource	130	130	299	202	235	4,232	155	151	141	378	585	2,066	614	724	401	82	85	69	2,440	1,341	i
	1,149		762	807										1,347	1,450	1,363					i

S-06											(MW)										Resourc
xisting Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
raig 1 (Coal Early Retirement/Conversions)	-	-		-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	- 1	-	-	(82
raig 2 (Coal Early Retirement/Conversions)	-	-	-	-		-	-		(82)	-	-	-	(44)	-	-	-	-	-			(82
layden 1 layden 2	-	-		-	-	-	-	-	-	-	-	-	(33)	-		-	-		-		+
funtington 1	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459)		
Juntington 2	-	-		-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	(450)		(74
Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-		-	-	-	-	-	-	-	(74)	-		-	-	-	-	-	-		-	(74
Cholla 4 (Coal Early Retirement/Conversions)	-		-	-	-	-	(387)	-	-		-	-	-	-	-	-	-	-	-		(387
DaveJohnston 1	-		-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99
DaveJohnston 2 DaveJohnston 3				-		-	-	-	-	(106) (220)	-	-	-	-		-	-		-		(106
DaveJohnston 4	-		-	-	-	-	-	-	-	(330)	-	-	-	-	-	-	-	-	-		(330
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(156
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)		-	-	-	-	(201)		-	-		-	-	-	-				-	(201
Sads by 1-6	-	- (280)	-	-	-	-	-	-			-	-	-	-	(356)	-	-		-		- (280
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20
Retire - Wind Expire - Wind PPA	-	- (27)	(17)	- (40)	- (0)	-	-	- (66)	- (2)	-	- (10)	(40)	(200)	- (46)	- (191)	-	-	(60)	(80)	- '	(160
expire - Wind PPA Expire - Solar PPA	-	(27)	- (17)	(49)	(1)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(94)	(849)		(160
Retire - Other	-	-	-	-	- `	- ` ^	-	-	-	-	-	-	-	-	-	(1)	-	- 1	-	(32)	<u>-</u>
Expansion Resources																		, ,	505		
CCCT - DJohns - J 1xl Fotal CCCT				-	-	-	-	-	-	-	-	-	-	-	-	-	-		505 505		+
SCCT Frame NTN	 	-	 	-	-	-	-	-		185	370	-	-	-		-			-	-	185
SCCT Frame WYSW	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370		-
Total SCCT						- 7	- 7			185	370	1,100						<u> </u>	370		185
Wind, GO Wind, WYAE	-	-	 		-	1,920	-			-		- 1,100	-	-	-	-		-	-		1,920
Total Wind	-			-	-	1,920		-	-	-	-	1,100		-	-	-	-		-		1,920
Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	300	-	-	-	-	-	-	500	-	-	-	-	-	-		300
Utility Solar+Storage - PV - WYSW Utility Solar+Storage - PV - Huntington		-	 	-		-	-	-	-	-	-	-	-	-	100	-	-		909	-	-
Utility Solar+Storage - PV - Hantington			159	64	73	604													-	-	900
Total Solar			159	64	73		-	-	-	-	-	-	500	-	100	-	-	-	909		1,200
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-		1.8	2.6	-
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	T -			-		-	-	-		-	-		-	5.2	-	-	-	3.7	- 1.6	1.8	-
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	-	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76.7	
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-		-	-	-		116.7			8.2	-	-	-	8.3		-	1.9 5.1	116.7
Demand Response, WY-Cool/WH	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	- 1	-	5.2	-
Demand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	39.4	
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	1.8		
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-		8.3	-	-	-	5.3	-		-	-	-	-	-		-	-		3.2		13.5
Demand Response, WY-Ancillary Services	-		-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-		3.0
Demand Response Total	4.1		15.3	- 7	9.9		8.2	7.2		116.7	6.7	- 6	8.2	12.0	-		15.3	3.7	25.5	141.2	161.2
Energy Efficiency, ID Energy Efficiency, UT	66		67	68	69	68	67	68	65	62	57	56	50	48	49	36	32	25	22	26	664
Energy Efficiency, WY	11	11	11	14	15	16	16	18	18	17	16	15	13	12	11	9	8	7	5	5	149
Energy Efficiency Total	84	82	85	88	91	92	91	93	90	87	79	77	69	65	65	49	45	35	30	34 225	883
Battery Storage - Utah-S Battery Storage - WYSW	-		 	-	-	-	-	-	-	-	-	-	-	-		-	-			15.0	+
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	105.0	-	45.0	-	-	-	-	-	45.0	
FOT East - Summer	-	-	-	-	-	-	-	-		282	263	194	206	252	300	300	88 300	88	300	300	28
FOT East - Winter Existing Plant Retirements and PPA Termination	-			-		-	-	-		-	-	-	-	-	-	300	300	300	-		
SimBridger 1 (Coal Early Retirement/Conversions)	-	-	- 1	-	-	(351)	-	-	-	-	- 1	-	-	-	-	-	-	- 1	-	-	(351
JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(356)	_	-	-	-	-	-	-	-	-	
JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	1 -
limBridger 4 Hermiston	-		-	-													-		_		4
Retire - Hydro	-				- 1	-	-	-	-	-	-	-	-	-	-		-	-	(237)	- (555)	ý - -
Expire - Wind PPA		(1)	(169)	-	(1)		-	- - (1)	-	- - (7)	-		- (6)	-	-	- (75)	-	- (1)	(237)		(179
	-	- (1)	(169)	(175)	- (1) -	- - (41)	-	- (1)	-	-	- (75)	- - (10)	-	(20)	- (20)	- (75) -	-	(10)	- (10)) - -	(216
Expire - Solar PPA		(1) - -	(169)	(175)	- (1) -		- - - -	- (1) -	-	(7)	(75)	(10)	(6) - (67)	- (20) (49)	(20)	- (75) - -	- - (1)	(10)	(10) (175)) - -) -) (11)	(216
Expire - Solar PPA Expansion Resources SCCT Frame WV	-	(1) - -	(169) - -	(175)	- (1)		- - - -	(1)	-	-	(75)	(10)	-	(20)	(20)	- (75) - -	- (1)	(10)	(10) (175)	- (11)	(216
Espire - Solar PPA Expansion Resources SCCT Frame W V Fotal SCCT	-	-	(169) - - -	- (175) - -	- (1) - - -			- (1) - -		-	- - (75) -	- (10) -	-	- (20) (49)	- (20) - -	- (75) - - -	- - (1)	(10)	(10) (175)) - -) -) (11)	(216
Espire - Solar PPA Espansion Resources SCCT Frame WV Total SCCT Wind, WallaW	-	(1) - - - -	(169) - - - - - -	- (175)	- (1)		- - - - - -	- (1)		-	- (75) - - -	(10)	-	- (20) (49)	- (20)	- (75) - - - -	(1)	(10)	(10) (175)) - -) -) (11) - - 58	(216
Espire - Solar PPA Expansion Resources SCCT Frame W V Total SCCT Wind, WallaW Wind, VK		- - - - - -		- (175)	- (1) - - - - -	(41) - - - - - -	- - - - - - -	- (1) - - - -		-	- - - -	- (10) -	-	- (20) (49)	- (20)	- (75) - - - - -	- (1)	(10)	(10) (175) 443 443	-) -) (11) - - 58	(216) (2
Espire - Solar PPA Expansion Resources SCCT Frams WV Total SCCT Wind, WallaW Wind, YK Total Wind Lifty Solar-Storage - PV - Jbridger	-	- - - - - - - -		- (175)	- (1) - - - - - -	- - - - - - - 354	- - - - - - - - -	- (1) - - - - - -	-	-	- (75) - - - - - - - 359	- (10)	-		-	- (75) - - - - - -	- - (1)	(10)	- (10) (175) 443 443 - 92) - -) (11) - - 58	(216) (2 - - - - - 354
Espire - Solar PPA Expansion Resources SCCT Frame WV Fotal SCCT Wind, WallaW Wind, JW Grout Wind Utility Solar-Storage - PV - Bridger Utility Solar-Storage - PV - S-Cregon	-		- - - - - - - -		- (1)	(41) - - - - - -		- (1)	-	- (2)	- - - -	- (10)	-	- (20) (49)	- (20) - - - - - - - - - 475		- - (1)	(10) (115)	- (10) (175) 443 443 - 92 92	-) (11) (11) - - 58 - 58 702	(216) (2 - - - - - 354 455
Espire - Solar PPA Expansion Resources SCCT Frams WV Total SCCT Wind, WallaW Wind, YK Total Wind Lifty Solar-Storage - PV - Bridger Liftity Solar-Storage - PV - S. Chegon Liftity Solar-Storage - PV - Storagen Liftity Solar-Storage - PV - Storagen	- - - - - - - - -		(169) 	- (175)	- (1) - - - - - - - - - -	(41) - - - - - - - 354 455		- (1) - - - - - - - - -	-	-	- - - -	- (10)	- (67)		- - - - - - 475	- (75)	- (1)	(10)	- (10) (175) 443 443 - 92		(216) (2 - - - - - - 354 455 405
Espire - Solar PPA Espansion Resources SCCT Frams WV Total SCCT Wind, WallaW Wind, YK Total Wind, YK Total Wind Solar Storage - PV - Dridger Utility Solar Storage - PV - S-Cregion Total Solar Storage - PV - Valviana Total Solar Storage - PV - S-Cregion Total Solar Stora	- - - - - - - - - -		- - - - - - - -		- (1) - - - - - - - - - - -	(41) - - - - - - - 354 455 405		- (1)	-	- (2)	359	- (10) - - - - - - - - - -	- (67)	(49) - - - - - - - 45	- - - - - 475		- (1)	(10) (115)	- (10) (175) 443 443 - 92 92 - - 338		(216) (2
Espire - Solar PPA Espansion Revources SCCT Frame WV Total SCCT Wind, WallaW Wind, YR Total Winder Wind, YR United States of Solar States United Solar Storage - PV - Shedger Demmand Response, OH-Ancillary Services	-	- - - - - - - - -	- - - - - - - - - - -		- (1) 	(41) - - - - - - 354 455 405 1,214		- (1) - - - - - - - - - - - - -	-	- (2)	- - - - - - 359 - - 359	- (10) - - - - - - - - - -	- (67)	(49) 	- - - - - 475 - 475		- (1)	(10) (115)	- (10) (175) 443 443 - 92 92 338 338	58 	(216) (2
Espire - Solar PPA Expansion Resources SCCT Fams W V Total SCCT Wind, W allaW Wind, YK Total Wind Liftiny Solar-Storage - PV - Jbridger Liftiny Solar-Storage - PV - S-Oregon Liftiny Solar-Storage - PV - S-Oregon Total Solar-Storage - PV - Solar-Storag	-				- (1) 	(41) - - - - 354 455 405 1,214 - -	- - -	- (1) - - - - - - - - - - - - - - - - - - -	-	- (2) 	- - - - - - 359 - - 359	- (10)	- (67) 	(49)	- - - - - 475 - 475	-	- (1)	(10) (115)	- (10) (175) 443 443 - 92 92 338 338		(216) (2
Espire - Solar PPA Expansion Resources SCCT Frame WV Fordal SCCT Wind, WallaW Wind, YR Fordal Wind Wind, Wallaw W		- - - - - - - - -	- - - - - - - - - - -		- (1) 	(41) - - - - - - 354 455 405 1,214		- (1)	-	- (2)	- - - - - - 359 - - 359	- (10)	- (67)	(49) 	- - - - - 475 - 475		- (1)	(10) (115)	- (10) (175) 443 443 - 92 92 338 338)	(216) (2
Espire - Solar PPA Kapanston Revources SCCT Frame WV Total SCCT Wind, WallaW Word, YK Total Wind Childy Solar-Storage - PV - Bridger Childy Solar-Storage - PV - Bridger Childy Solar-Storage - PV - Socregion Childy Solar-Storage - PV - Andrew Demand Response, PV - Andrew Demand Response, OR - Ancillary Services Demand Response, WA - Ancillary Services Demand Response, CA - Solar Will Demand Response, CA - Thempostat	-				(1)	(41) 354 455 405 1,214	- - -	- (I)	-	- (2)	- - - - - - 359 - - 359		- (67)	(49)	- - - - - - 475 - - - - - - - - - - - - - - - - - - -	-	(1)	(10) (115)	- (10) (175) 443 443 - 92 92 - - 338 338 - - - - 4.8 5.8)	(216) (2
Espire - Solar PPA Expansion Resources SCCT Frame W V Total SCCT Wind, WallaW Wind, YK Total Wind Ulitity Solar-Stonge - PV - Jbridger Ulitity Solar-Stonge - PV - Schegon Uli						(41) - - - - - - - 354 455 1,214 - - - -	- - - - - -		-	- (2)	- - - - - 359 - - 359 - - - - - - - - - - - - - - - - - - -	-	- (67)	(49)	- - - - - 475 - 475 - - - - - - - - - - - - - - - - - - -			(10) (115)	- (10) (175) 443 443 443 - 92 92 3338 338 4.8 5.8 3.0)	(216) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Spire - Solar PPA Squartion Resources CCT Frame WV Total SCCT Wind, WallaW Wind, YK Fotal Wind Jilliny Solar-Stonge - PV - Jbridger Jilliny Solar-Stonge - PV - S. Cregon Fotal Solar	-				(1)	(41) 354 455 405 1,214	- - -	- (1)	-	- (2)	- - - - - - 359 - - 359	(10)	- (67)	(49)	- - - - - - 475 - - - - - - - - - - - - - - - - - - -	-	(1)	(10) (115)	- (10) (175) 443 443 - 92 92 - - 338 338 - - - - 4.8 5.8)	(216) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Spire - Solar PPA Squartion Resources CCT Frame WV Total SCCT Wind, WallaW Wind, YK Fotal Wind Jilliny Solar-Stonge - PV - Jbridger Jilliny Solar-Stonge - PV - S. Cregon Fotal Solar						(41) - - - - - - - 354 455 1,214 - - - -	- - - - - - -		-	- (2)	- - - - - 359 - - 359 - - - - - - - - - - - - - - - - - - -	-	- (67)	(49)	- - - - - 475 - 475 - - - - - - - - - - - - - - - - - - -			(10) (115)	-(10) (175) 443 443 -92 92 -3338 338 -4.8 5.8 3.0 5.4)	(216) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Spire - Solar PPA Squarion Recourses SCCT Frame WV Total SCCT Vind, WallaW Wind, YK Fotal Wind, Wind, YK Fotal Wind, Jility Solar-Storage - PV - Jbridger Jility Solar-Storage - PV - Scregon Jility Solar-Storage - PV - Scregon Jility Solar-Storage - PV - Scregon Jility Solar-Storage - PV - Valima Fotal Solar Fotal		-				(41)	- - - - - - -		-	(2)	- - - - - 359 - - 359 - - - - - - - - - - - - - - - - - - -	-	- (67)	(49)	- - - - - 475 - 475 - - - - - - - - - - - - - - - - - - -			(10) (115)	-(10) (175) (175) 443 443 -92 92 -3 338 338 - - 4.8 5.8 3.0 0 5.4 13.3		(216) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Espire « Solar PPA Expansion Resources SCCT Fame WV Fordal SCCT Wind, WallaW Wind, YK Fordal Wind Wind, YK Fordal Wind Littiny Solar-Storage - PV - Bridger Littiny Solar-Storage - PV - Solar-Storage						(41) - - - - - - - 354 455 1,214 - - - -	- - - - - - -		-	- (2)	- - - - - 359 - - 359 - - - - - - - - - - - - - - - - - - -	-	- (67)	(49)	- - - - - 475 - 475 - - - - - - - - - - - - - - - - - - -			(10) (115)	-(10) (175) 443 443 -92 92 -3338 338 -4.8 5.8 3.0 5.4		(216) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
Spire - Solar PPA Spansion Resources KCCT Fame WV Fordal SCCT Vind, WallaW Ward, YK Fordal Wind Jihiy Solar-Storage - PV - Jbridger Jihiy Solar-Storage - PV - S-Chegon Jihiy		-				(41)	- - - - - - -		-	(2)	- - - - - 359 - - 359 - - - - - - - - - - - - - - - - - - -	-	- (67)	(49)	- - - - - 475 - 475 - - - - - - - - - - - - - - - - - - -			(10) (115)	-(10) (175) (175) 443 443 	58 702	(216) (216)
Espire - Solar PPA Expansion Resources SCCT Frame WV Fordal SCCT Wind, WallaW Wind, VR Fordal SCCT Wind, WallaW Wind, VR Fordal SCCT Wind, Wallaw Wind, VR Fordal Wind Wind, VR Fordal Wind Wind, VR Fordal Wind Wind Wind, VR Fordal Wind Wind Wind Wind Wind Wind Wind Wind						(41) 			-	-(2)			- (67)	(49)				(10) (115)	-(10) (175) 443 443 -92 92 92 	58 702	(216) (216)
Espire « Solar PPA Espansion Resources SCCT Fame WV Fordal SCCT Wind, WallaW Wind, YK Fordal Wind Littley Solar-Storage - PV - Bridger Littley Solar-Storage - PV - ScNegorn Fordal Solar Fordal						(41) 	- - - - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	(2)		-	- (67)	(49) 				(10) (115) (-(10) (175) 443 443 -9 92 92 92 -338 338 -4.8 3.0 5.4 13.3 - - - - - - - - - - - - - - - - -		(216) (216)
Espire s Solar PPA Expansion Resources SCCT Fame WV Fordal SCCT Wind, WallaW Word, YR Fordal SCCT Wind, WallaW Word, YR Fordal Wind Fordal School Sch						(41) 			-	(2)				(49)				(10) (115)	-(10) (175) 443 443 -92 92 92 	58 702	(216) (216)
Espite - Solar PPA Espitation Revources SCCT Fame WV Total SCCT Wind, WallaW Word, YK Total Wind Lifty Solar-Storage - PV - Bridger Lifty Solar-Storage - PV - Bridger Lifty Solar-Storage - PV - Solar-Storage -						(41) - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	(2)				(49)				(10) (115)	-(10) (175) 443 443 -92 92 92 	58 702	(216) (216)
Espire - Solar PPA Espansion Resources SCCT Fame WV Total SCCT Wind, WallaW Wind, YK Total Wind Citility Solar-Storage - PV - Bridger Citility Solar-Storage - PV - Scregon Demma Response, CR-Ancillary Services Demma Response, CR-Ancillary Services Demma Response, CA-Ancillary Services Demma Response, CA-Color WI Demma Response, CA-Color WI Demma Response, CA-Color WI Demma Response, CA-Color WI Demma Response, CR-Color WI Demma Response, CR-Color WI Demma Response, CR-Color WI Demma Response, CR-Color WI Demma Response, WA-Color WI Demma Response, WA-Color WI Demma Response, WA-Color WI Demma Response, WA-Color WI Demma Response, WA-Thernostat Demma Response, WA-Thernost						(41) 				- (2)			- (67)	(49)				(10) (115)	- (10) (175) 443 443 443 - 92 92	58 702	(216) (216)
Espire s Solar PPA Expansion Resources SCCT Farms WV Fordal SCCT Wind, WallaW Wind, YK Fordal SCCT Wind, WallaW Wind, YK Fordal Wind Lifety Solar-Stioninge - PV - Bridger Lifety Solar-Stioninge - PV - Schegion Lifety Solar-Stioninge - PV - Schegion Lifety Solar-Stioninge - PV - Schegion Lifety Solar-Stioninge - PV - Value Demmand Response, PV - Auditor Demmand Response, PV - Auditor Demmand Response, WA - Ancillary Services Demmand Response, WA - Ancillary Services Demmand Response, CA - Linguite Demmand Response, WA - Coal-WH Demmand Response, WA - Linguite Demmand Response Demmand Response Demmand Response Demmand Response Demmand Response Demmand Response Dem						(41) 				-(2)				(49)				(10) (115)	- (10) (175) 443 443 443 - 92 92	58 702	(216) (216)
Espire s. Solar PPA Expansion Resources SCCT Fams WV Foul SCCT Wind, WallaW Wind, YK Foul SCCT Wind, WallaW Wind, YK Foul SCCT Liftly Solar-Storage - PV - Bridger Liftly Solar-Storage - PV - S-Chegon Foul Solar-Storage - PV - S-Chegon Liftly Solar-Storage - PV - S-Chegon Foul Solar-Storage - PV - S-Chegon Foul Solar-Storage - PV - S-Chegon Foul Solar-Storage - PV - S-Chegon Found Response, CA-Cool PV Demmid Response, CA-Cool PV Demmid Response, CA-Chemostat Demmid Response, CR-Cool PV Demmid Response, CR-Cool PV Demmid Response, WA-Cool PV Demmid R						(41) 				- (2)				(49)				(10) (115) (- (10) (175)	1.5 1.5 1.5 1.5 1.5 1.1 1.1 1.1 1.1 1.1	(216) (216)
Espite - Solar PPA Espiantion Revources SCCT Frame WV Total SCCT Wind. WallaW Wand. YW. Wand. Wand						(41) -1 -2 -3 -3 -4 -4 -4 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1				- (2)			- (67)	(49)				(10) (115)	- (10) (175) 443 443 443 - 92 92	1.5 1.5 1.5 1.5 1.5 1.1 1.1 1.1 1.1 1.1	(216) (216)
Spire - Solar PPA Spiration Resources CCT Frame WV ords WallaW Vind, VK ords Wind Vind, VK Vi						(41)				- (2)				(49)				(10) (115) (- (10) (175) 443 443 443 - 92 92		(216) (216)
Spire - Solar PPA Spansion Resources CCCT Frame WV Torda SCCT Vind, WallaW Wald, YK Torda Wind, YK Torda Wind Titlity Solar-Storage - PV - Jbridger Jility Solar-Storage - PV - Solar-Storage -						(41) -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1				- (2)			- (67)	(49)				(10) (115)	- (10) (175)	0	(216) (216)

	S-07	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	
	disting Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2023	2026	2027	2028	2029	2030	2031	2032	2033	2034	2055	2036	2037	2038	10-year	Ė
	mig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	-	(82	
	raig 2 (Coal Early Retirement/Conversions) ayden 1	-	-		-	-		-	-	(82)	-	-	-	(44)	-	-	-		-	-	-	(82	_
	layden 2	-	-	-	-	-	-	-	-	-		-	-	(33)	-	-	-	-	-	-	-	-	
	luntington 1	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	(459)	-	-	
	Iuntington 2	-	-		-	-		-	-	-	(74)	-	-	-	-	-	-	_	-	(450)	-	- (74	
	Colstrip 3 (Coal Early Retirement/Conversions) Colstrip 4 (Coal Early Retirement/Conversions)	-			-	-		-	-	-	(74)	-		-	-	-	-	-	-	-	-	(74	
3	Cholla 4 (Coal Early Retirement/Conversions)	-	_	(387)	_	-	-	-	-	-		_	-		-	-	_	-	-	-	-	(38	
)	DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99	9
	DaveJohnston 2 DaveJohnston 3	-	-	_	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(220	6
	DaveJohnston 4	-	-		-	-		-	_		(330)	-	-	-	-	-		-	-	-	_	(330	i
Z	Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	(156	
N	Naughton 2 (Coal Early Retirement/Conversions)	-	- (200)	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201	1
	Naughton 3 (Coal Early Retirement/Conversions)	-	(280)		-	-		-	-			-	-	-	-	(356)	-	-	-	-	-	(280	-
	Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20	ō
	Retire - Wind	-	-	-	-	-	-	-	-	-	-	-	(40)	-	-	-		-	-	-	-	-	_
	Expire - Wind PPA Expire - Solar PPA	-	(27)	(17)	(49)	(0)	- (1)	-	(65)	(3)		(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160	
	Retire - Other	-	-		-	- (.)	- (.)	-	-	-	_	-	-	_	-	-	(1)	-	-	-	(32)	-	
C	Coal Ret_WY - Gas RePower	-	247	_	-	-	-	-	_	_	-	-	(247)	-	-	-		_	-	-	_	247	7
E	Expansion Resources ECCT - DJohns - J Ixl							,												505			4
	CCCT - DJohns - J 1x1 Total CCCT	-			-			-	-			-		-		-	-	-	-	505	-	-	-
S	SCCT Frame NTN	-	1		-	-		-	-			-	555	-						-		_	-
S	SCCT Frame WYSW	-		-	-	-		-	-	-		-	-		-	-	-		-	370	-	-	_
	Fotal SCCT Wind, GO	-			-			-	-			-	555 947	-		-	-	-	-	370	-	-	_
	Vind, WYAE	-			-		1,920	-	-			-	-	-	-	-	-	-	-	-	-	1,920	ō
	Vind+Storage, GO	-	-	-	-	-	-	-	-	-	-	-	66	-	83	-	-	-	-	-	-	-	
T	Total Wind	-	-	-	-	-	1,920 300	-	-	-	-	-	1,013 500	-	83	-	-	-	-	-	-	1,920 300	
	Jtility Solar+Storage - PV - Utah-S Jtility Solar+Storage - PV - GO	-			-	1 - 1	- 300	-	-	-		-	4	-		-	-		-	-	-	- 300	
U	Jtility Solar+Storage - PV - Huntington	-	-	-	-	-	_	-	-	-	-	_	- 1	-	-	-	-	-	-	909	-	1	Ξ
U	Jtility Solar+Storage - PV - Utah-N	-	-			-	900	-	-			-	-	-		-		-	-	-		900	
	Fotal Solar Demand Response, ID-Cool/WH	-			-		1,200	-	-			-	504	-				-	-	909	2.6	1,200	0
D	Demand Response, ID-Cool WH Demand Response, ID-3rd Party Contracts								-					-		-			-		1.8		-
D	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	-	1.8	-	Ξ
	Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9	-	-	7.2	-		6.7	-	_	6.8	-	-	7.0	-	-	7.2 76.7	28.1	1
	Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-			-	-		-	-	-		-		-	-	-	-	-	-	-	1.9	-	-
	Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	116.7	8.2	-	-	-	-	8.3	-	-	5.1	-	-
D	Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	_	-	-	-	-	-	-		-	-	-	5.2	-	Ξ
D	Demand Response, WY-3rd Party Contracts	-	-		-	-		-	-			-	-	-	-	-		-	-	1.8	39.4	-	_
D	Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-		-	-		-	-	-	_	-	-	_	-	-	_	-	-	18.7	1.2	-	_
D	Demand Response, UT-Ancillary Services	-	-	-	8.3	-	-	5.3	-	-	-	-	-	-	-	-	-	_	-	3.2	-	13.5	
	Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	7.0	8.3	9.9	-	3.0 8.2	7.2	-		123.3	8.2	-	12.0	-	-	15.3	3.7	23.7	143.1	3.0 44.6	0
	energy Efficiency, ID	6	6	6	7		7	7	7.2	7	7	7	6.2	- 6	6	5	- 4	4	3.7	3	3	68	
E	energy Efficiency, UT	58		67	68		66	67	65	65	62	57	58	53	50	48	36	32	25	22	26	654	
	energy Efficiency, WY	10 74		11 85	14 88	15 91	16 90	16 91	18 90	18 90	18 87	16 79	15 79	13 73	12 68	11 64	9 49	8 45	7 35	5 30	5 35	147 869	
	Parergy Efficiency Total Battery Storage - Utah-S		- 83	-	-	-	-	-	-	-				- 73	-	-		-	-	-	270		_
	Battery Storage - WYSW	-	_	_	_	-	-	-	-	-	-	_	-		15.0	-	_	-	-	-	-	-	Ξ
	Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	120.0	75.0	-	-	-	-	-	-	-	_
	OT East - Summer	-						-	-	-	46	263	300	277	300	230	232	300	300	300	300	5	5
	Existing Plant Retirements and PPA Termination imBridger 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	(351)	-	-	-	-	-	-	-	- 1	-	-	-	-	-	-	(351	ī
Jii	imBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	-	-	-		Ξ
Jis	imBridger 3	-		-			-		-		-	-		-			-	-	-		(349)	-	_
	imBridger 4 Hermiston	-	1 1		-			-						-				-		(237)	(353)	-	-
R	Retire - Hydro	_	(1)	(169)		(1)		_	(1)		(7)			(6)			(75)		(1)	-		(179	
E	Expire - Wind PPA	-	- 1	-	(175)	- 1	(41)	-	-	-		(75)	(10)	-	(20)	(20)	-		(10)	(10)	-	(216	
	Expire - Solar PPA Expansion Resources	-		-			-			-	(2)			(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)	ź
S	SCCT Frame WV	-				1				- 1			1		1		- 1		- 1	221	221		_
	Fotal SCCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	221	221	-	Ξ
	Vind, YK Total Wind	-			-			-	-	-		-		-			-	-	-	430 430	-	-	_
	Jtility Solar+Storage - PV - Jbridger	-		-	-	-	354	-	-	-	-	359	-	-	-	-	-	-	-	-	702	354	4
U	Jtility Solar+Storage - PV - S-Oregon	-	-	-	-	-	500	-	-	-	-	-	-	-	-	475	-	-	-	-	-	500	О
U	Jtility Solar+Storage - PV - Yakima	-	- 1				405 1,259					359				475	-	-			702	405 1,259	5
	Fotal Solar Demand Response, OR-Ancillary Services	-					1,259	-	-			339		-		- 4/5		-	-		- 702	1,239	_
	Demand Response, WA-Ancillary Services	-										1.9											_
D	Demand Response, CA-3rd Party Contracts	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	Ξ
	Demand Response, CA-Irrigate	-	1			- 7		-	-			-	- 1	-	- 7	- 1		-	-	4.8 5.8		-	_
10	Demand Response, CA-Thermostat Demand Response, OR-Cool/WH	-			-			-		-				-			-	-	-	3.0	-	-	-
D	Demand Response, OR-3rd Party Contracts	-			-		-	-	-			-		-	-	-		-	-	5.4	32.3		Ξ
D	Demand Response, OR-Irrigate	-		-	-		-	-	-		-	-	-	-				-	-	13.3	-	-	_
D	Demand Response, WA-3rd Party Contracts	-	 		-			-	-	-				-				-	-	- 83	10.9	-	_
D	Demand Response, WA-Irrigate Demand Response, WA-Thermostat	-			-			-	-			-		-		-			-	16.6	-	-	-
D	Demand Response Total	-	-	-	-	-	-	-	-	-	-	9.4	-	-	-	-	-	-	-	57.2	44.3	-	_
E	energy Efficiency, CA	1		2	2		2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	17	
E ₁	energy Efficiency, OR energy Efficiency, WA	40 11		37 10	42 11		45 12	43 12	41 11	39 11	37 11	33 10	32 9	31 9	29 8	26 8	26 6	24	26 5	24	24	398 109	
E	energy Efficiency Total	52		48	54		58		54	52	49	45	43	42	38	35	33	32	32	29	29	524	4
В	Battery Storage - S-Oregon	-	-	-	-	-	-	-	-	-	45	-	90			270	-	-	-	-	-	45	
B	Battery Storage - Willamette Valley	-	├ - ⊤	-	-	- 7	-	-	-		15 30	-	60	15	30 15	- 15	-	-	-	-		15	
B.	Battery Stomge - Portland NC Battery Stomge - Walla Walla	-			-			-		-	30 15		45	-	- 15	105	-	-	-	-	-	15	
	Battery Storage - Yakima					_					105		-			-						105	5
	OT West - Summer	998	719	493	503	498	54	49	147	221	1,075	1,075	1,075	1,075	1,075	1,074	1,075	1,006	1,016	1,065	1,059	476	6
F	OT West - Winter Existing Plant Retirements/Conversions	151	131 (61)	(573)	303 (224)		32 (412)		40 (505)	90 (85)	(912)	(449)	(396)	(350)	(114)	(557)	(156)	(36)	(280)	(2.260)	(745)	159	9
	Existing Plant Retirements/Conversions Annual Additions, Long Term Resources	130		140	150		4,527	155	151	142	346		2,412	295		964	(156)	92	70	2,575	1,444		
			850				86									1,357					1,359	1	

										Capacity	(MW)										Resource
S-08	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)		1	1					(82)				1	1		1		ı				(82)
Craig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	- (62)	(82)	-	-	-	-	-	-		-	-	-	-	(82)
Hayden 1	-	-	-	-	-	-	-	-	-	-	-	-	(44)	-	-	-	-	-	-	-	-
Hayden 2 Huntington 1	-	-	-			-			-	-	-	-	(33)		-		-	-	(459)	-	-
Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	-
Colstrip 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	=	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	(74)	-		-	-	-		-	-	-	-	(74)
DaveJohnston 1	-	-	- (367)	-		-		-	-	(99)	-	-		-	-		-	-		-	(99)
DaveJohnston 2	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	=	-	-	-	(106)
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)
DaveJohnston 4 Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	(330)	-	-	-	-	-	-	-	-	-	-	(330)
Naughton 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201)
Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(280)
Gads by 1-6 Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	(356)		-	-	-	-	(20)
Retire - Hydro Retire - Wind	-	-	-	-		- (20)		-	-	-	-	(40)		-	-		-	-		-	(20)
Expire - Wind PPA	-	(27)	(17)	(49)	(0)		-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(160)
Expire - Solar PPA	-	-	-	-	(1)			-	-	-	-	-	-	-	-	- 43	(35)	(94)	(849)		(1)
Retire - Other Coal Ret_WY - Gas RePower	-	247	-			-			-	-		(247)			-	(1)	-	-		(32)	247
Expansion Resources		217										(217)					_				217
CCCT - DJohns - J lxl	-	-	-	-	-	-	=	-	-	-	-	-	-	-	-	-	-	-	505	-	=
Total CCCT SCCT Frame NTN	-	-	-	-	-	-	-	-	-	-	-	- 555	-	-	-	-	-	-	505	-	-
SCCI Frame NTN SCCT Frame WYSW	<u> </u>	<u> </u>	<u> </u>	-	-	-	-	-	-		-	-		-		-	<u> </u>	-	185	185	-
Total SCCT	-	-	-	-	-	-	-	-	-	-	-	555	-	-	-	-	-	-	185	185	-
Wind, GO	-			- 1	-	1,920	-	- 1	-	-	-	1,100	- 1	- 1	-	-		-	-	-	1,920
Wind, WYAE Total Wind	-	-	-	-	-	1,920	-	-	-	-	-	1,100	-	-	-		-	-	-		1,920
Utility Solar+Storage - PV - Utah-S	1	1 -	206	90	4	-	-	29	233	216	-	22	-	-	-		-	-	-	-	778
Utility Solar+Storage - PV - WYSW	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N	-	-	-	-	- 69	831	-	-	-	-	-	-	-	-	-	-	-		909	-	900
Total Solar	<u> </u>	 -	206	90	72		-	29	233	216	-	- 22	-		-		-		909		1,778
Demand Response, ID-3rd Party Contracts	-	-	-	- 1	-	-	-	-		- 1	-	-	-	-	-	-	-	-	-	1.8	-
Demand Response, ID-Irrigate	-	-			-		-	-	-						5.2		-	3.7	-	1.8	-
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	+ -	7.0	-	9.9			7.2	-		6.7			6.8	-		7.0	-	-	7.2 76.7	28.1
Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
Demand Response, UT-Thermostat	-	-	-	-		-		-	-	-	-	124.9	-	-	-	-	-	8.3	-	5.1	
Demand Response, WY-3rd Party Contracts Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	39.4 1.2	-
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	-	-	8.3		5.3	-	-								-	-	3.2	1.2	13.5
Demand Response, WY-Ancillary Services	-	-	-	-	=	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0
Demand Response Total	4.1		7.0	- 6	18.1		8.2	7.2			6.7	124.9	-	6.8	5.2	- 4	7.0	12.0	3.2		44.6
Energy Efficiency, ID Energy Efficiency, UT	58		_	68	69	66	7 67	65	62	62	57	56	6 54	52	47	36		3 25	22	26	644
Energy Efficiency, WY	10	10	11	12	15	16	16	17	18	17	16	15	13	12	11	9	8	7	5	5	142
Energy Efficiency Total	74	76		86	91		91	88	86	86	79	77	74	70	64	49		35	30		852
Battery Storage - Utah-S Battery Storage - WYSW	-	-	-	-		-	-		-	-	-	-		-	-		-	-		270 15.0	
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	105.0	15.0	15.0	-	-	-	-	45.0	-
FOT East - Summer	-	-	-	-	-	-	-	-	-	-	235	300	277	215	265	268	300	300	300	300	-
Existing Plant Retirements and PPA Termination			_			(351)	ı				1	ı		1	ı						(351)
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	_	-	-		(331)	-				(356)		-	-			-		-	-	(331)
JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	-
JimBridger 4	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	- (227)	(353)	-
Hermiston Retire - Hydro	-	- (1)	(169)	-	- (1)	-	-	- (1)	-	- (7)	-	-	- (6)	-	-	(75)	-	- (1)	(237)	-	(179)
Expire - Wind PPA		- (1)	- (109)	(175)	- (1)	(41)		- (-)		- ' '	(75)	(10)	- ` ^	(20)	(20)	- (,3)		(10)	(10)	-	(216)
Expire - Solar PPA	-	I -	-				-	-		(2)	-		(67)	(49)		-	(1)	(115)	(175)	(11)	(2)
Expansion Resources SCCT Frame WV							-				-	1		-	-				443		-
Total SCCT	<u> </u>	-			-		-	-	-		-		-				-		443		
Wind, YK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-
Total Wind	-	-	-		-	-	-	-	-	-	-	-			-	-	-	14	-	-	-
Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon	-	-	-	-	-	354 500	-	-	-	-	359	-	-	475	-		-	-	-	702	354 500
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	1	-	-	405	-	-	-	-	-		-	-	-		-	416	-		405
Total Solar	-	-	-	-	=	1,259	-	-	-	-	359		-	475	-	=	-	416	-	702	1,259
Demand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	-	-	8 1.9	-	-	-	-	-	-	-	-	-
Demand Response, WA-Ancillary Services Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	- 1.9	-	-	-	-	-	-	-	32.3	-
Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.3	-	-
Demand Response, WA-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	- 22.2	-
Demand Response Total Energy Efficiency, CA	- 1			- 2	- 2	- 2	- 2	- 2	- 2		- 2	9.4	- 2	- 2	- 2	- 1	- 1	- 1	17.6	32.3	17
Energy Efficiency, CA Energy Efficiency, OR	40	37		36	39		43	41	41	38	35	32		31	26	26	24	25	24	24	397
Energy Efficiency, WA	11	9	10	10	11		11	12	11	11	10	10	9	8	8	6	6	5	4	4	109
Energy Efficiency Total	52		48	48	52	59	56	55	54		46	165		42	35	33	32	31	29	29	522
Battery Storage - S-Oregon Battery Storage - Willamette Valley	-	-	1 -	-	-		-	-	-	30	-	165 105	75	-	150		-	-	-		30
Battery Storage - Portland NC	-	-	-	-	-	-	-	-	-	-	-	15	-	-	90		-	-	-	-	-
Battery Storage - Walla Walla	-	-	-	-	-	-	-	-	-	15	-	-	-	-	135	-	-	-	-	-	15
, ,	-	719	493	503	498	111	107	165	159	1,005	1,075	1,075	1,075	1,075	1,074	1,075	1,048	944	1,075	1,072	105 476
Battery Storage - Yakima					498	111	107	100				1,075	1,075	1,075	1,074	1,075	1,048	944	1,075	1,072	476
Battery Storage - Yakima FOT West - Summer FOT West - Winter	998 151			303	314	39	45	47	96	228	222	172	192	110	61	-	36	-	-	-	162
Battery Storage - Yakima FOT West - Summer FOT West - Winter Existing Plant Retirements/Conversions	151	131 (61)	268 (573)	303 (224)	(1)	(412)	-	(505)	96 (85)	228 (912)	222 (449)	172 (396)	(350)	(114)	(557)	(156)	(36)	(280)	(2,260)	(745)	162
Battery Storage - Yakima FOT West - Summer FOT West - Winter	151 - 130	131 (61) 124	268) (573) 345	303 (224) 223		(412) 4,259	45 - 155 152	(505) 179	96	228 (912) 504	222	172	(350) 296		(557) 494		(36)	(280)		(745) 1,447	162

Table K.19 – DSM Bundled Cases, Detailed Capacity Expansion Portfolio

										Capacity											Resourc
-45DP xisting Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
raig 1 (Coal Early Retirement/Conversions) raig 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	(82)	-	-	-	-	-	-	-	-	-	-	-	(82 (82
ıyden 1	-	-	-	-	-	-		-	- (82)				(44) (33)	-							- (82
yden 2 Intington 1	-	-	-	-	-	-	-	-	-	-		-	(33)	-		-	-	-	(459)	-	
intington 2	-	-	-	-	-	-	-	-	-	(74)	-	-	-	-	-		-	-	(450)	-	(74
olstrip 3 (Coal Early Retirement/Conversions) olstrip 4 (Coal Early Retirement/Conversions)		-	-	-	-	-	-	-	-	(74)		-	-	-			-	-		-	(74
nolla 4 (Coal Early Retirement/Conversions) aveJohnston 1	-	-	(387)	-	-	-	-		-	- (99)	-	-	-	-	-		-	-	-	-	(387
aveJohnston 2			-	-	-	-	-		-	(106)		-	-	-			-		-	-	(106
aveJohnston 3 aveJohnston 4	-	-	- :	-	-	-		-	-	(220)		-	-			-	-	-	-	-	(220
aughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(156)	-	-		-	-	-	-		-	-	-	-	(156
aughton 2 (Coal Early Retirement/Conversions) aughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	(201)	-	-		-	-	-		-	-	-	-	-	(201 (280
idsby 1-6	-	-	-		-	- (20)	-	-		-	-	-	-	-	(356)		-	-	-	-	- (20
etire - Hydro	-	-	-	-	-	- (20)	-	-	-	-		(40)	-	-		-	-	-	-	-	-
pire - Wind PPA	-	(27)	(17)	(49)	(0)	- (1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60)	(80) (849)	-	(160
pire - Solar PPA etire - Other			-		- (1)	- (1)	-	-					-	-		(1)		(94)	(849)	(32)	- (1
oal Ret_WY - Cas RePower cpansion Resources	_	247	-	-	-	-			-			(247)		-				-	-	-	247
CCT Frame NTN	-	-	-	-	-	-	-	185	-	- 1	-	370	-	-	-	-	-	-	-	-	185
OCT Frame WYSW otal SCCT	-	-	-	-	-	-		185	-			370	-			-	-	-	370 370	-	185
ind, Djohnston	-	-	-	-	-	-	-		-	-	620	-	-	-	-		-	-	-	-	-
ind, GO ind, UT	-	-		-	- 64	-	-	-	-	-		1,088	-	-		-	-	-	-	-	- 64
ind, GYAE otal Wind	-	-	-	-	- 64	1,920 1,920	-	-	-	-	-	1.088	-		-	-	-	-	-	-	1,920 1,984
tility Solar+Storage - PV - Utah-S	-			-	- 64	236	-	-	-		620	1,088		-		500					1,984
tility Solar+Storage - PV - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	12	-	100		-	-	-	-	
tility Solar+Storage - PV - GO tility Solar+Storage - PV - Huntington								-			- :		- 12	-	- 1				909		
ility Solar+Storage - PV - Utah-N otal Solar	-	-	159 159	64 64	9	668 904	-	-	-	-		-	12	-	100	500	-	-	909	-	900 1,136
emand Response, ID-Cool/WH	-	-	-	-	- ^	-	-	-	-	-		-		-	-	-	-	-	2.6	-	- 1,130
emand Response, ID-3rd Party Contracts emand Response, ID-Irrigate	-	-	-	-	-	-		-	-			-	-	-	5.2	-	-	-	1.8 3.7	1.8	
emand Response, ID-Thermostat	-	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	8.3	-	
emand Response, UT-Cool/WH emand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8			7.0	-	74.1	7.2 2.6	28.1
emand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	116.7	8.2	-	-	-		8.3	-	-	1.9 5.1	
emand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	- 116.7	8.2	-	-		-	8.3	-	3.4	1.8	
emand Response, WY-3rd Party Contracts	-	-	-	-	-	-	-		-	-	-	-	-	-	-		-	-	39.4 1.8	-	
emand Response, WY-Irrigate emand Response, WY-Thermostat					-														18.7	1.2	
emand Response, UT-Ancillary Services emand Response, WY-Ancillary Services	-	-	- :	-	8.3	-	5.3 3.0	-	-			-	-			-	-	-	3.2	-	13.5
emand Response Total	4.1		7.0	-	18.1	-	8.2	7.2	-	-	123.3	8.2	-	6.8	5.2		15.3		157.1	21.6	44.6
nergy Efficiency, ID nergy Efficiency, UT	58			77		78	8 79	8 77	74		70	64	7 62	62	53	38	34		26	28	76 745
nergy Efficiency, WY	10 74	11	12	77 13 98		17 103	17 104	18 103	18 99	17	16 94	15 87	62 14 83	12 81	11 70	9	8 47	7	5 35	5 36	745 149 970
nergy Efficiency Total attery Storage - Utah-S	- 74	- 93	- 96	- 98	- 103	-	-	- 103	-	-		-	- 83	- 81	- 70	- 52	- 47	-	135.0	360	-
attery Storage - WYSW	-	-	-	-	-	-	-		-	-	75.0		90.0	105.0	-		-	-	15.0	240.0 135.0	
attery Storage - Idaho OT East - Summer					-		-			173	293	220	196	249	297	182	281	300	300	300	17
xisting Plant Retirements and PPA Termination mBridger 1 (Coal Early Retirement/Conversions)			_		_	(351)		_					_				_		_	_	(351
nBridger 2 (Coal Early Retirement/Conversions)	-	-	-		-	-	-	-	-	-	(356)	-	-	-	-		-	-	-	-	- (551
mBridger 3 mBridger 4	-	-	-	-	-	-	-	-	-			-	-	-	_	-	-	-	-	(349)	
ermiston	-	-	-	-	-	-	-	-	-	-	-		-	-	-		-	-	(237)	-	
etire - Hydro pire - Wind PPA	-	(1)	(169)	(175)	(1)	(41)		(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)	-	(10)	(10)		(179 (216
pire - Solar PPA	-	-	- 1	-	-		- 1	-	-	(2)	-		(67)	(49)	-		(1)	(115)	(175)	(11)	(2
spansion Resources CCT Frame WV	-	-	- 1	-	-	-	- 1	-	-	- 1	-	-	- 1	- 1	-	-	-	-	443	-	
otal SCCT ility Solar+Storage - PV - Ibridger	-	-	-		-	354	-		-	-	359	-	-	-			-	-	443	702	354
tility Solar+Storage - PV - S-Oregon	-	-	-		-	454	-		-	-	-	-	-	46	475		-	-	-		454
ility Solar+Storage - PV - Yakima dal Solar		-	-		-	405 1,213	-			-	359		-	- 46	475	-	-	-		430 1,132	405 1,213
emand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-		-	-	-		- 1,210
emand Response, WA-Ancillary Services	-	- :			-		- :	-		- :	1.9	- :				-	-	-	1.5	- :	-
emand Response, CA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-	1.1	-	
emand Response, CA-Irrigate emand Response, CA-Thermostat	-		-	-	-	-	-	-	-	-		-	-	-		-	-	-	4.8 5.8	-	
emand Response, OR-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	5.8 3.0 35.7	-	
emand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-		-	-	-		-	-	-	13.3	-	
emand Response, WA-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	-	
rmand Response, WA-3rd Party Contracts rmand Response, WA-Irrigate rmand Response, WA-Thermostat						-								-					9.9 8.3 16.6		==
emand Response, WA-Thermostat		-		-		-		-	-		9.4	-		-	-	-		-	16.6 107.7	-	
emand Response Total nergy Efficiency, CA	1	- 2	- 2	- 2	- 2	2	- 2	- 2	- 2	2	2	- 2	2	2	- 2	1	1	1	1	1	20
nergy Efficiency, OR nergy Efficiency, WA	40	35 10	36 10	36 11	38 12	44 12	42 12	41 12	39 11	39	35 10	35 10	35	34	27	27	6	5	26 4	25 4	388
nergy Efficiency, WA nergy Efficiency Total	52			48		59	56	55	52	52	48	47	47	45	37	35	34	34	32	30	518
attery Storage - S-Oregon attery Storage - Willamette Valley	-	-		-		-		- :	-	45	120 105	-	-		-	-	-	-	60		45
attery Storage - Portland NC										30	45		30								30
attery Storage - Walla Walla					-	-			-	105	105			15					45		105
attery Storage - Yakima OT West - Summer	998	725	500	515	516	198	199	270	347	1,075	1,075	1,075	1,075	1,075	1,075	1,075	979	976	1,074	1,075	534 199
OT West - Winter Existing Plant Retirements/Conversions	151	135 (61)		(224)		89 (412)	102	(505)	167 (85)		272 (449)	(396)	(350)	198	(557)	(156)	86		-	-	199
Annual Additions, Long Term Resources	130	139	310	210	245	4,199	169 301 470	350	152	328	1,704	1,599	262 1,518 1,780	299	687 1,518 2,204	587 1,322 1,910	96	73	2,308 1,374 3,682	1.955	
Annual Additions, Short Term Resources	1,149 1,279	861	776	833	852	287		382	514	1,552	1,640	1,532		1,522			1,346	1,350		1,375 3,330	

P-46DP										Capacity											Resource
Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Craig 1 (Coal Early Retirement/Conversions)	_		-	-	-	-	-	(82)	- (82)	-	-	-	-	-		-	-	-	-	-	(82) (82)
Cmig 2 (Coal Early Retirement/Conversions) Hayden 1		-	-		-		-		- (82)	-		-	(44)	-		- :	-	-			- (82)
Hayden 2	-	-		-	-		-				-	-	(33)			-	-	-	(459)	-	-
Huntington 1 Huntington 2	-	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	(450)		-
Colstrip 3 (Coal Early Retirement/Conversions)			-	-	-	-	-	-	-	(74)	-	-	-	-	-	-	-	-	-	-	(74)
Colstrip 4 (Coal Early Retirement/Conversions) Cholla 4 (Coal Early Retirement/Conversions)	-		(387)	-	-	-	-	-	-	(74)	-	-	-	-	-		-	-	-	-	(74)
DaveJohnston 1		-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)
DaveJohnston 2 DaveJohnston 3			-	-		-	-	-	-	(106) (220)	-	-	-	-	-		-	-	-	-	(106) (220)
DaveJohnston 4	-	-	-		-	-	-	(156)	-	(330)	-	-	-	-	-	-	-	-	-		(330)
Naughton 1 (Coal Early Retirement/Conversions) Naughton 2 (Coal Early Retirement/Conversions)			-	-	-	-		(201)	-	-	-		-	-	-		-	-	-	-	(156)
Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	-	-	-	-	- '	-	-	-	-	-	-	-	-	-	-	-	-	(280)
Ciads by 1-6 Retire - Hydro	-		-	-	-	(20)	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	(20)
Retire - Wind	-	-	-	-	-	-	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	-
Expire - Wind PPA Expire - Solar PPA	-	(27)	(17)	(49)	(0)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160)
Retire - Other	-	-	-	-	- (-)	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	-
Coal Ret_WY - Gas RePower		247	-	-		-	-	-	-	-	-	(247)	-	-	-	-	-	-	-	-	247
Expansion Resources SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	185
SCCT Frame WYSW Total SCCT			-	-	-	-	-	185	-	-	370 370	370	-	-	-		-	-	-	-	185
Wind, Djohnston	-	-	-	-	-	-	-	-	-	620	-	-	-	-	-		-	-	-	-	620
Wind, GO		-	-	-	300	-	-	-	-	-	-	923	- ,	- ,	-	-	-	-	-	-	300
Wind, UT Wind, WYAE		<u> </u>			-	1,920							- 4	- 4	- 23	:	-				1,920
Total Wind		\vdash	-	-	300	1,920	-	-	-	620	-	923	4 469	4	23	-	-	-	-	-	2,840
Utility Solar+Storage - PV - Utah-S Utility Solar+Storage - PV - WYSW			-	-	-	-	-	-	-	-	-		-	-	100		-	-	-	-	-
Utility Solar+Storage - PV - GO	_	-	-	-	-	-	-	-	-	-	-	49	129	-	-	-	-	-	-	-	-
Utility Solar+Storage - PV - Huntington Utility Solar+Storage - PV - Utah-N	-	 	159	- 64	-	677	-	-	-	-	-	-		-	-		-	-	909	-	900
Total Solar			159	64	-	677	-		-	-	-	49	598	-	100		-	-	909	-	900
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts			-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	2.6 1.8	-	-
Demand Response, ID-Irrigate			-	-	-	-		-	-	-	-	-		5.2	-		-	-	3.7	1.8	-
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1		7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	8.3	7.2	28.1
Demand Response, UT-3rd Party Contracts	-	-	-	-		- 1		- 1.2		-	-	-	-	-	- 1		- 7.0	-	74.1	2.6	- 28.1
Demand Response, UT-Irrigate Demand Response, UT-Thermostat				-	-		-			116.7	-	8.2	-			-	-	-	8.3	1.9 5.1	116.7
Demand Response, U1-Thermostat Demand Response, WY-Cool/WH	-		-	-	-	-	-	-	-	- 116.7	-	- 0.2	-	-	-		-	-	3.4	1.8	- 116.7
Demand Response, WY-3rd Party Contracts		-		-	-							-			-	-	-	-	39.4	-	-
Demand Response, WY-Irrigate Demand Response, WY-Thermostat			-	-		-	-	-	-	-	-	-	-	-	1.8		-	-	18.7	1.2	
Demand Response, UT-Ancillary Services	-		-		8.3	-	5.3	-	-	-	-	-	-	-		-	-	-	3.2		13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1		7.0	-	18.1	-	3.0 8.2	7.2	-	116.7	6.7	8.2	-	12.0	1.8		7.0	-	163.7	21.6	3.0 161.2
Energy Efficiency, ID	6	7	7	7	8	8	8	8	8	8	7	7	7	7	6	5	5	4	3	3	77
Energy Efficiency, UT Energy Efficiency, WY	58 10	74 11	77 12	77 13	79 14	79 17	77 17	77 18	73 18	70 17	63 15	62 15	58 13	54 12	53 11	39 9	35 8	27 7	23 5	26 5	741 146
Energy Efficiency Total	74	91	96	98	102	104	103	103	100	95	86	83	78	73	70	52	48	37	31	34	964
Battery Stomge - Utah-N Battery Stomge - Utah-S	-		-	-	-	-	-	-	-	-	15.0		-	-	-		-	-	420.0	90	-
Battery Storage - WYSW			-	-	-	-	-	-	-	-	15.0	-	15.0	30.0		-	60.0	-	300.0	-	-
Battery Storage - Idaho FOT East - Summer	-	-	-		-	-	-	-	-	227	171	254	15.0 87	105.0 148	255	261	60.0 275	300	75.0 300	45.0 300	23
Existing Plant Retirements and PPA Termination																					
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)			-	-	-	-	-	-	-	-	(351)	-	-	-	(356)		-	-	-	-	-
JimBridger 3 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(349)	-	-	-	-	-	-	-	-	-	-	-		(349)
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston	-		-	-	-	-	-	(353)	-	-	-	-	-	-	-		-	-	(237)	-	(353)
Retire - Hydro	-	(1)	(169)	-	(1)	-	-	(1)	-	(7)	-	-	(6)	-	-	(75)	-	(1)	-		(179)
Expire - Wind PPA Expire - Solar PPA			-	(175)	-	(41)	-	-	-	- (2)	(75)	(10)	(67)	(20) (49)	(20)		- (1)	(10) (115)	(10) (175)	(11)	(216)
Expansion Resources			-			-	-	-	-	(2)	-		(07)	(49)				(113)	(1/3)	(11)	(2)
SCCT Frame WV Total SCCT					-		-										443 443	-			-
Wind, YK											-						-		206		
Total Wind		$\perp = =$	-	-	-	-	-	-		-	- 349		-	-	2.62	_	-	-	206		712
Utility Solar+Storage - PV - Jbridger													-	-	353	-	-	-	-	-	713 500
Utility Solar+Storage - PV - S-Oregon				-	-	500	-	713	-	-	-	-	-	-	475	-					405
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	-	-	-	405	-	-	-	-	-	-	-	-			-	-	224		403
Utility Solar+Storage - PV - S-Oregon	-	-		-	-	500 405 905	-	713 - - 713	-	- - - 8	349	-	-	-	475 - 828	-	-	-	224 224	-	1,618
Utility Solari-Storage - PV - S-Oregon Utility Solari-Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	- - - -	- - - -	-	-	-	405	-	-	-	- - - 8 1.9	-	- - - -	- - - -	- - - -		-	-	-	224	-	1,618
Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Vakima Total Solar Demand Response, OR-Ancillary Services Demand Response, OA-Ancillary Services Demand Response, CA-Cool/WH Demand Response, CA-Cool/WH	- - - - -	-	-	-	- - - - - -	405 905 - - -	-	-	-		-	- - - - -	-	-	- 828 - - -	-	-	-	224 - - 1.5	-	1,618 8 1.9
Utility Solari-Storage - PV - S-Oregon Utility Solari-Storage - PV - Yakima Total Solar Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services		- - - - - - -	-			405	-	-	-		- 349 - - - - - 4.8	- - - - - - -	- - - - - -			- - - - - - - -	-	- - - - - -	224	-	1,618 8 1.9
Utility Solar-Stonge - P.V. S. Oregon Utility Solar-Stonge - P.V. Vakimm Total Solar Demand Response, OR. Ancillary Services Demand Response, CA. Coof WH Demand Response, CA. Arighte Demand Response, CA. Arighte Demand Response, CA. Arighte Demand Response, CA. Hrigate Demand Response, CA. Hrigate	-	-	-		-	405 905 - - -	-	-	-		- 349 - - -		- - - - - - -	-	- 828 - - -		-		224 - - 1.5 1.1	-	1,618 8 1.9 - -
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-And Parry Contracts Demand Response, CA-Srd Parry Contracts Demand Response, CA-Srd Parry Contracts	-	-	-		-	405 905 - - -	-	-	-		- - 349 - - - - - 4.8 5.8	- - - - - - - - -	- - - - - - - - - -	-	- 828 - - -				224 - - 1.5 1.1	-	1,618 8 1.9
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Cao'UVII Demand Response, CA-Cao'UVII Demand Response, CA-3rd Party Contracts Demand Response, CA-3rd Party Contracts Demand Response, CA-Thermostat Demand Response, OR-Cao'UVII Demand Response, OR-Groud-VIII Demand Response, OR-Groud-VIII Demand Response, OR-S-Oregonse, OR-Cao'UVIII Demand Response, OR-S-Oregonse, OR-S-OREGNSE, O	-	-	-	1 1 1	- - - - - - - - - - - - - - - - - - -	405 905 - - - - - -	-	-	-		- 349 - - - - - 4.8		-	-	- 828 - - - - - - -	-			224 - - 1.5 1.1 - - 3.0 35.7		1,618 8 1.9 - - - -
Utility Solar-Stongge - PV. S-Cregon Utility Solar-Stongge - PV. S-Cregon Utility Solar-Stonge - PV. S-Cregon Demand Response, OR-Ancillary Services Demand Response, CA-Cabu WH Demand Response, CA-Cabu WH Demand Response, CA-Sid Party Contracts Demand Response, CA-Sid Party Contracts Demand Response, CA-Temonated Demand Response, CA-Temonated Demand Response, CA-Temonated Demand Response, OR-Gab Party Contracts Demand Response, OR-Gab Party Contracts Demand Response, OR-Gab Demand Response, OR-Gab Demand Response, OR-Gab Demand Response, OR-Gab Demand Response, WA-CaoUr WH	-	-	-	1.1.1.1	-	405 905 - - - - - -		713	-		- - 349 - - - - - 4.8 5.8			-	- 828 - - - - - - -		-	-	224 - - 1.5 1.1 - - 3.0	-	1,618 8 1.9 - - - -
Utility Solar-Stongg - PV - S-Oregon Utility Solar-Stongg - PV - S-Oregon Utility Solar-Stongg - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Cade Solar	-	-	-		-	405 905 		713	-	1.9 - - - - - - - -	- 349 - - - - 4.8 5.8 - - - - - - - - - - - - - - - - - - -		-		- 828 	-	-	-	224 - 1.5 1.1 - - 3.0 35.7 - 7.7 9.9 3.1		1,618 8 1.9 - - - -
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Coo'DWH Demand Response, CA-Coo'DWH Demand Response, CA-3rd Party Contracts Demand Response, CA-3rd Party Contracts Demand Response, CA-Thermostat Demand Response, CA-Thermostat Demand Response, OR-Srd Party Contracts Demand Response, OR-Srd Party Contracts Demand Response, WA-Coo'DWH Demand Response, WA-Coo'DWH Demand Response, WA-Coo'DWH Demand Response, WA-Srd Party Contracts Demand Response, WA-Arlystate Demand Response, WA-Arlystate Demand Response, WA-Thremostat	-	-		1.1.1.1	-	405 905 - - - - - -		713		1.9	- - 349 - - - - - 4.8 5.8 - - - 13.3 - - - - - - - - - - - - - - - - - -				- 828 		-	-	224 - - 1.5 1.1 - - 3.0 35.7 - 7.7 9.9 3.1		1,618 8 1.9
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Cool-WH Demand Response, CA-God-WH Demand Response, CA-3rd Party Contracts Demand Response, CA-3rd Party Contracts Demand Response, CA-Thermostat Demand Response, CA-Thermostat Demand Response, OR-Srd Party Contracts Demand Response, OR-Srd Party Contracts Demand Response, OR-Indigate Demand Response, WA-Cool-WH Demand Response, WA-Thermostat Demand Response Total Respy Efficiency, CA	- - - - - - - - 1	- - - - - 2	2	2	- - - - 2	405 905 	- - - - - 2	713	- 2	1.9 	- 349 - - - - - - 4.8 5.8 - - - - - - - - - - - - - - - - - - -	- 2	2	- - - - - 2	- 828 	- - - - - - 1	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - 1	224 - - 1.5 1.1 - 3.0 35.7 - 7.7 9.9 3.1 - 62.0	- - - - - - - - - 1	1,618 8 1.9
Utility Solar-Stongg - PV - S-Oregon Utility Solar-Stongg - PV - S-Oregon Utility Solar-Stongg - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Cabellary Services Demand Response, CA-Ancillary Services Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Arthermostat Demand Response, CA-Thermostat Demand Response, OR-Cabellary Contracts Demand Response, OR-Cabellary Contracts Demand Response, OR-Cabellary Demand Response, Wa-Arthermostat Demand Response, Wa-And Party Contracts Demand Response, Wa-And Party Contracts Demand Response, Wa-Arthermostat Demand Response, Wa-Thermostat Demand Response Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, CR	- - - - - - - - 1 40	- - - - - 2 35	- - - - - - - - - 2 37	- - - - - - - 2 42	- - - - - 2 45	405 905 	- - - - - - 2 42	713 	- 2 39	1.9 - - - - - - - - - - - - - - - - - - -	- 349 	- 2 33	- - - - - 2 32	- - - - - 2 31	- 828 	- - - - - 1 27		- - - - - - - - - - - - - - - - - - -	224 1.5 1.1 3.0 35.7 - 7.7 9.9 3.1 62.0 1 23	- - - - - - - - 1 24	1,618 8 1.9
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, CA-Cool-WH Demand Response, CA-God-WH Demand Response, CA-3rd Party Contracts Demand Response, CA-3rd Party Contracts Demand Response, CA-Thermostat Demand Response, CA-Thermostat Demand Response, OR-Srd Party Contracts Demand Response, OR-Srd Party Contracts Demand Response, OR-Indigate Demand Response, WA-Cool-WH Demand Response, WA-Thermostat Demand Response Total Respy Efficiency, CA	- - - - - - - - 1	- - - - - 2 35	2	- - - - - - - 2 42	- - - - - 2 45 12	405 905 	- - - - - - 2 42	713	- 2	1.9 - - - - - - - - - - - - - - - - - - -	- 349 - - - - - - 4.8 5.8 - - - - - - - - - - - - - - - - - - -	- 2	2	- - - - - 2	- 828 	- - - - - 1 27 6		- - - - - - - - - 1	224 - - 1.5 1.1 - 3.0 35.7 - 7.7 9.9 3.1 - 62.0	- - - - - - - 1 24 4	1,618 8 1.9
Usilary Solar-Stongge - PV. S-Cregon Utility Solar-Stongge - PV. S-Cregon Utility Solar-Stonge - PV. S-Cregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-CodVWH Demand Response, CA-CodVWH Demand Response, CA-CodVWH Demand Response, CA-CodVWH Demand Response, CA-Cregonse, CA-CodVWH Demand Response, OR-God Party Contracts Demand Response, WA-And Party Contracts Demand Response, WA-And Party Contracts Demand Response, WA-Artigate Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response, VA-Thermostat Demand Response	- - - - - - - - - 1 40	- - - - - 2 35	- - - - - - - - - - - 10	- - - - - - - - - - 2 42 11	- - - - - 2 45 12	405 905 	- - - - - - 2 42 12	713 	- 2 39 11	1.9	- 349 349 4.8 5.8 5.8 13.3 5.2 11.3 40.4 2 35 10	2 33 10	- - - - - - 2 32 9	- - - - 2 31	- 828 	- - - - - 1 27 6	6	- - - - - - - - - - 26 5	224 - - 1.5 1.1 - - 3.0 35.7 - - 7.7 9.9 3.1 - - - 2.3 - - - 2.4 - - - - - - - - - - - - - - - - - - -	- - - - - - - 1 24 4	1,618 8 1.9
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-GovDVH Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, OR-Solar Party Contracts Demand Response, OR-Sid Party Contracts Demand Response, VA-Arigne Demand Response, VA-Thermostat D	- - - - - - - - - - - - - - - - - - -	- - - - - 2 35	- - - - - - - - - - - 10	- - - - - - - - - - 2 42 11 55	- - - - - 2 45 12	405 905 	- - - - - - 2 42 12	713 	2 39 11 53 15	1.9 		2 33 10	- - - - - - 2 32 9	- - - - 2 31	- 828 	- - - - - 1 27 6	6 34 -	- - - - - - - - - - 26 5	224	- - - - - - - 1 24 4	1,618 8 1.9
Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Utility Solar-Stonge - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-GovVH Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-And Party Contracts Demand Response, CA-Thermostat Demand Response, OR-Solar Party Contracts Demand Response, OR-Sid Party Contract	- - - - - - - - - 1 40	- - - - - 2 35	- - - - - - - - - - - 10	- - - - - - - - - - 2 42 11	- - - - - 2 45 12	405 905 	- - - - - 2 42 12 57	713 713 	- 2 39 11 53 15 - 45	1.9	- 349 349 	2 33 10	- - - - - 2 32 9 43	- - - - 2 31	- 828 	- - - - 1 27 6 35	6	- - - - - - - - - - 26 5	224 1.5 1.1 - 3.0 35.7 - 7.7 9.9 3.1 - 62.0 1 23 4 29	- - - - - - - 1 24 4	1,618 8 8 8 8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9
Utility Solar-Stongge - PV. S-Cregon Utility Solar-Stongge - PV. S-Cregon Utility Solar-Stonge - PV. S-Cregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-CodWH Demand Response, CA-Sol Party Contracts Demand Response, CA-Sid Party Contracts Demand Response, CA-Green CodWH Demand Response, CA-Green CodWH Demand Response, CA-Green CodWH Demand Response, OR-Green CodWH Demand Response, OR-Green CodWH Demand Response, OR-Green CodWH Demand Response, WA-CodWH Demand Response, WA-CodWH Demand Response, WA-Ard Party Contracts Demand Response, WA-Thermoxiat Demand Response, VA-Thermoxiat Demand Resp		- - - - 2 35 10 46 - - -	- - - - - - - 2 37 10 49	- - - - - - - - 2 42 11 55	- - - - 2 45 12 59 - -	405 905 	- - - - 2 42 12 57		- 2 39 11 53 15 - 45 -	1.9		- 2 33 10 45 - -	- - - 2 32 9 43	- - - 2 31 9 42 - - - - -		- - - - 1 27 6 35	6 34 - - 45 -		224 	- - - - - - - - - - - - - - - - - - -	1,618 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
Usilay Solar-Stongge - PV - S-Cregon Usility Solar-Stongge - PV - S-Cregon Usility Solar-Stongge - PV - S-Cregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Carde Will Demand Response, CA-S-dreamen Demand Response, CA-S-dreamen Demand Response, CA-S-dreamen Demand Response, CA-S-dreamen Demand Response, CA-Hremont Demand Response, CA-Hremont Demand Response, OR-Hrigate Demand Response, OR-Hrigate Demand Response, WA-Greamen Demand Response, WA-John Party Contracts Demand Response, WA-John Party Contracts Demand Response, WA-John Party Contracts Demand Response, WA-Thermostat Demand Response	- - - - - - - - - - - - - - - - - - -	- - - 2 35 10 46 - - - - 724			2 45 12 59 	405 905 	- - - - 2 42 12 57 - - -	713 713 713 713 713 713 713 713 714 715 715 715 715 715 715 715 715 715 715	- 2 39 11 53 15 - 45 - 15 589 133	1.9		- 2 33 10 45 - - - - 1,075 228	- - - - 2 32 9 43 - - - - - - - - - - - - - - - - - -	- - - 2 31 9 42 - - 15 - 1,075		- - - - - 1 27 6 35 - - - - 1,075 68	6 34 - - 45 - 1,070 86		224 	- - - - - - - - - - - - - - - - - - -	1,618 8 8 8 8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9
Usilary Solar-Stonage - PV - S-Oregon Utility Solar-Stonage - PV - S-Oregon Utility Solar-Stonage - PV - S-Oregon Demand Response, OR-Ancillary Services Demand Response, OR-Ancillary Services Demand Response, CA-Ancillary Services Demand Response, CA-Arigate Demand Response, CA-Arigate Demand Response, CA-Arigate Demand Response, CA-Arigate Demand Response, CA-Brigate Demand Response, CA-Brigate Demand Response, CA-Brigate Demand Response, CA-Brigate Demand Response, CA-Arigate Demand Response, CA-Arigate Demand Response, WA-Cool-WH Demand Response, WA-Marian Demand Respons		2 3.5 10 46 	- - - - - - - 2 317 49 - - - -	- - - - - - - - - 2 42 11 55 - - - - - - - - - - - - - - - - -	2 45 12 59 (1)	405 905 	- - - - 2 42 12 57 - - -		- 2 39 11 53 15 - 45 - 15 589 133	1.9		- 2 33 10 45 - - - - 1,075	- - - - - 2 32 9 43 - - - - 1,075	- - - - 2 31 9 42 - - - 15	828 	- - - - 1 27 6 35 - - - - 1,075	6 34 - - 45 - 1,070 86 (36)		224 		1,618 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8

										Capacity	(MW)										Resource
P-53DP	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Existing Plant Retirements and PPA Termination Cmig 1 (Coal Early Retirement/Conversions)								(82)									_		_		(82)
rig 2 (Coal Early Retirement/Conversions)	-	-	-	-			-	-	(82)		-	-	-	-	-	-		-	-		(82)
yden 1 yden 2	-	-		-	-		-	-	-	-	-	-	(44)		-		-	-	-	-	
ntington 1	-	-		-	-		-	-	-	-	-		- (33)	-	-			-	(459)	-	
funtington 2 Colstrip 3 (Coal Early Retirement/Conversions)	-	-		-	-		-	-	-	(74)		-	-		-		-	-	(450)		(74)
olstrip 4 (Coal Early Retirement/Conversions)	-	-		-	-		-	-	-	(74)	-	-	-	-	-			-	-	-	(74)
Cholla 4 (Coal Early Retirement/Conversions)	_	-	(387)	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(387)
DaveJohnston 2	-	-	-	-	-	-	-	-		(106)	-	-	-	-	-	-	-	-	-		(106)
DaveJohnston 3 DaveJohnston 4	-	-		-	-		-	-	-	(220)		-	-		-		-	-	-		(220)
Naughton 1 (Coal Early Retirement/Conversions)	-	-		-	-		-	(156)	-	- (550)	-	-	-	-	-			-	-	-	(156)
Naughton 2 (Coal Early Retirement/Conversions) Naughton 3 (Coal Early Retirement/Conversions)	-	(280)		-	-		-	(201)	-	-	-	-	-	-	-	-	-	-	-	-	(201) (280)
Gads by 1-6	-	(280)		-	-		-	-		-	-			-	(356)			-		-	-
Retire - Hydro Retire - Wind	-	-		-	-	(20)	-	-	-	-	-	(40)	-	-	-		-	-	-	-	(20)
Expire - Wind PPA		(27)	(17)	(49)	(0)		-	(65)	(3)		(19)	(99)	(200)	(45)	(181)	(80)	-	(60)	(80)		(160)
Expire - Solar PPA Retire - Other	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	- (1)	(35)	(94)	(849)	(32)	(1)
Coal Ret_WY - Gas RePower	-	247		-	-		-	-		-	-	(247)		-	-	- (1)	-	-		- (32)	247
Expansion Resources SCCT Frame NTN		1 1		ı				185		1		370		ı	Т		Г				185
SCCT Frame WYSW	+ -	-		-	-		-	-	-	-	370	-	-	-	-		-	-	-	-	-
Total SCCT	-	-		-	-		-	185		620	370	370	-	-	-		_	-	-		185
Wind, Djohnston Wind, GO	-	-		-	-		-	-	-	- 620	-	923	-	-	-		-	-		-	620
Wind, UT Wind, WYAE	-	-		-	300	1.920	-	-	-	-	-		4	4	23		-	-		-	300 1,920
Total Wind					300	1,920				620		923	- 4	- 4	23						2,840
Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	-	-	-	-	-	-	-	469	-	100	-	-	-	-	-	
Utility Solar+Stomge - PV - WYSW Utility Solar+Stomge - PV - GO	-			-	-		-	-	-	-	-	49	129	-	-		-	-	-	-	-
Utility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	909	-	-
Utility Solar+Storage - PV - Utah-N Total Solar	-	-	159 159	64 64		677 677	1 -	-	-	-	-	49	598	-	100		-		909	-	900 900
Demand Response, ID-Cool/WH	-	-	-	-	-	_	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	-	-		-	-		-	-	-		-	-	-	5.2	-		-	-	1.8 3.7	1.8	-
Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-		-			-	-	-	-	-	-	8.3	-	-
Demand Response, UT-Cool/WH Demand Response, UT-3rd Party Contracts	4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-	-	6.8	-		7.0	-	74.1	7.2	28.1
Demand Response, UT-Irrigate	-	-		-	-		-	-		-	-			-	-			-	-	1.9	-
Demand Response, UT-Thermostat Demand Response, WY-Cool/WH	-	-		-	-		-	-	-	116.7		8.2	-		-		-	-	8.3	5.1	116.7
Demand Response, WY-3rd Party Contracts	-	-		-	-		-	-	-	-	-	-	-	-	-			-	39.4	-	-
Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	18.7	1.2	
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-		-	8.3		5.3	-	-	-			-	-	-		-	-	3.2		13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	7.0	-	18.1		3.0 8.2	7.2	-	116.7	6.7	8.2	-	12.0	1.8		7.0	-	163.7	21.6	3.0 161.2
Energy Efficiency, ID	6	7	7	7	8	- 8	8	8	- 8	8	7	7	7	7	6	5	5	4	3	3	77
Energy Efficiency, UT Energy Efficiency, WY	58 10		77 12	77 13		79 17		77 18	73 18	70 17	63 15	62 15	58 13	54 12	53 11	39		27	23	26	741 146
Energy Efficiency Total	74		96	98	102	104		103	100	95	86	83	78	73	70	52	48	37	31	34	964
Battery Storage - Utah-N Battery Storage - Utah-S	-	-		-	-		-	-	-	-	15.0	-	-		-		-	-	420.0	90	-
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	15.0	-	15.0	30.0	-	-	60.0	-	300.0	-	-
Battery Storage - Idaho FOT East - Summer	_	-	-	-	-	-	-	-	-	227	171	254	15.0 87	105.0	255	261	60.0 275	300	75.0 300	45.0 300	- 23
Existing Plant Retirements and PPA Termination										227	171	254	07	140	233	201	2,3	300	500	500	
JimBridger 1 (Coal Early Retirement/Conversions) JimBridger 2 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(351) (356)	-	-	-		-	-	-	-	-	-	-	-	(351) (356)
JimBridger 3 (Coal Early Retirement/Conversions)		-		-	-		-	- (330)			(349)							-			(330)
JimBridger 4 (Coal Early Retirement/Conversions) Hermiston	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(353)	-	-	-	(237)	-	-
Retire - Hydro	-	(1)	(169)	-	(1)		-	(1)		(7)			(6)	-	-	(75)	-	(1)	(237)		(179)
Expire - Wind PPA	-	-	-	(175)	-	(41)	-	-	-	- (2)	(75)	(10)	- (67)	(20)	(20)	-	- (1)	(10)	(10)	(11)	(216)
Expire - Solar PPA Expansion Resources										(2)			(67)	(49)			(1)	(115)	(175)	(11)	(2)
SCCT Frame WV	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	443 443	-	-	-	
Total SCCT Wind, YK																	- 443		206		
Total Wind	-	-		-	-		-	713	-	-	- 349	-	-	-	353			-	206	-	- 713
Utility Solar+Storage - PV - Jbridger Utility Solar+Storage - PV - S-Oregon						500		- 713			- 349				353 475					_	500
Utility Solar+Storage - PV - Yakima	-	-	-	-	-	405 905	-	- 713	-	-	349	-	-	-	-	-	-	-	224	-	405
Total Solar Demand Response, OR-Ancillary Services	1 -	-		-	-	- 905	-	713	-	- 8	- 349	-	-	-	828		-	-	224	-	1,618
Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	1.9
Demand Response, CA-Cool/WH Demand Response, CA-3rd Party Contracts	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-
Demand Response, CA-Irrigate			-	-		-	-	-			4.8	-	-	-	-	-		-	-		
Demand Response, CA-Thermostat Demand Response, OR-Cool/WH	-			-	-		-	-	-	-	5.8	-	-	-			-	-	3.0	-	-
Demand Response, OR-3rd Party Contracts	-	-		-	-		-	-	-	-	-	-	-	-	-			-	35.7	-	-
Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	-	13.3	-	-	-	-	-	-	-	7.7	-	-
Demand Response, WA-Cool/WH		-		-				-	-		-	-	-	-				-	9.9		
Demand Response, OR-irrigate Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts	-	-		-	-		-	-	-	-	5.2 11.3		-	-	5.3		-	-	3.1	-	-
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate							_			9.4	40.4				5.3				62.0		9.4
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts Demand Response, WA-4rrigate Demand Response, WA-Thermostat Demand Response Total		- 1		2	2 45	2	2	2	2	2 37	2 35	2	2 32	2	2	1	1	1	1	1	20
Demand Response, W.ACool/WH Demand Response, W.A3rd Party Contracts Demand Response, W.ATrigate Demand Response, W.AThermostat Demand Response Total Energy Efficiency, C.A.	- 1	2	2	**		45	42	41 12	39 11		35 10	33 10	32	31 9	27 8	27	26 6	26 5	23 4	24 4	403 111
Demand Response, WA-CoolWH Demand Response, WA-3rd party Contracts Demand Response, WA-Irrigate Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, WA	- - 1 40	10	2 37 10	42 11	12	12														- 20	535
Demand Response, WA-Cool/WH Demand Response, WA-3rd party Contmets Demand Response, WA-Irrigate Demand Response, WA-Irrigate Demand Response Total Demand Response Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency, Total	- - 1 40 11 52	10		42 11 55	12	12 59		55	53	50	47	45	43	42	37		34	32		29	
Demand Response, WA-CoolWH Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, WA Energy Efficiency Energy Efficiency Energy Efficiency Energy Efficiency Energy Efficiency Energy En	11	10	10	11	12	12				50	47 15	45	- 43	- - -	37 -		34		60		135
Demand Response, WA-Cool/WH Demand Response, WA-3rd party Contracts Demand Response, WA-3rigate Demand Response, WA-1rigate Demand Response, WA-Thermostat Demand Response Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency Total Battery Stonage - SOragon Battery Stonage - Soragon Battery Stonage - Portland NC	11	10	10	11	12	12			53	50 120	47 15 - 15	45		1	37 - - -		34 - - 45	- - -	60 - 15	1 1 1	135 75 45
Demund Response, WA-Cool/WH Demund Response, WA-3rd Party Contracts Demund Response, WA-3rd Party Contracts Demund Response, WA-Thermostat Demund Response, WA-Thermostat Demund Response Total Intensy Efficiency, CA Intensy Efficiency, CA Intensy Efficiency, CA Intensy Efficiency, CA Intensy Stonge, SCORE Battery Stonge, SCORE Battery Stonge, SWIllmette Valley Battery Stonge, Porland NC Battery Stonge, Willmette Valley Battery Stonge, Walla Walla	11 52 -	10	10 49 -	11 55 -	12	12 59 -		55 - - - 15	53 15 - 45	50 120	47 15	45 - -	- 43	42 - - - 15	-	35	-	-	- 60	- 30	135 75 45 15
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts Demand Response, WA-3rd Party Contracts Demand Response, WA-Thermostat Demand Response, WA-Thermostat Demand Response Total Theory Efficiency, CA Thomasy Efficiency, CA Thomasy Efficiency, CA Thomasy Efficiency, CA Thomasy Efficiency, WA Thomasy Contracts Theory Fornica, Walland Battery Storage - Wallaw Walla	- - - - - - - - - - - - - - - -	10 46 - - - - - 724	10 49 - - - - - 500	11 55 - - - - - - 515	12 59 - - - - - - 515	12 59 - - - - - 106	57 - - - - - 106	55 - - - 15 90 516	53 15 - 45 - 15 589	50 120 75 - - - 1,075	47 15 - 15 60 - 1,075	- - - - - 1,075	- - - - 1,075	- - - 15 - 1,075	- - - - 1,075	35 - - - - - 1,075	- 45 - 1,070		60 - 15	1 1 1	135 75 45 15 105 565
Demand Response, W.ACoolWH Demand Response, W.ASal Party Continuets Demand Response, W.AImigate Demand Response, W.AImigate Demand Response, W.AImigate Demand Response Total Interpy Efficiency, C.A. Interpy Efficiency, C.A. Interpy Efficiency, W.A. Interpy Efficiency, W.A. Interpy Efficiency, W.A. Interpy Efficiency Total Interpy Storage - Soragon Interpy Storage - Soragon Interpy Storage - Portland NC Interpy Storage - Vakins POT West - Summer POT West - Swinter	- - - - - -	10 46 - - - - - 724 135	10 49 - - - -	11 55 - - - -	12 59 - - - - - 515 336	12 59 - - - - 106 64	57 - - - - - 106 77	55 - - - 15 90 516 81	53 15 - 45 - 15 589 133	50 120 75 - - 1,075 270	47 15 - 15 60 - 1,075 264	- - - - -		- - - 15 - 1,075 180		35 - - - - - 1,075 68	- - 45 - - 1,070 86	-	60 - 15 60 - 1,075	- - - 30 - 1,075	135 75 45 15 105
Demand Response, WA-Cool/WH Demand Response, WA-3rd party Contmets Demand Response, WA-Irrigate Demand Response, WA-Irrigate Demand Response Total Demand Response Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency, Total	11 52 998 151	10 46 - - - - - 724 135 (61) 137	10 49 - - - - 500 276 (573)	11 55 - - - - 515 318 (224)	12 59 - - - - - 515 336 (1) 479	12 59 - - - - - 106	57 - - - - 106 77 0 - 167	55 - - - 15 90 516	53 15 - 45 - 15 589 133 (85) 227	50 120 75 - - 1,075 270 (912) 1,087	47 15 - 15 60 - 1,075 264 (442)	45 - - - 1,075 228 (396) 1,478	1,075 240 (350) 753	- - - 15 - 1,075 180 (114)	- - - - - 1,075	35 - - - - 1,075 68 (156)	- 45 - 1,070 86 (36) 697	- - - 1,062 74 (280) 70	60 - 15 60 - 1,075 - (2,260) 2,555	30 - 1,075 - (43) 250	135 75 45 15 105 565

Table K.21 – P70 Cases, Detailed Capacity Expansion Portfolio

P-70										Capacity (Resource
F - / U Existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year
Existing Plant Retirements and PPA Termination Draig 1 (Coal Early Retirement/Conversions)	_	-	- 1	- 1	- 1	-	- 1	(82)	-	- 1	-	-	- 1	- 1	-	-	- 1	-	-	-	(82)
Craig 2		-	-	-	-	-	-	-	-	-		-	-	-		-	(82)	-	-	-	-
Hayden 1 Hayden 2	-	-	-	-	-		-	-		-	-		(44)	-			-		-		-
Huntington 1		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	(459)	-	-
Huntington 2	-	-	(387)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(450)	-	(387)
Cholla 4 (Coal Early Retirement/Conversions) DaveJohnston 1		-	(387)	-		- 1				(99)			-		-		-		-		(99)
DaveJohnston 2		-	-	-		-	-	-	-	(99) (106)	-	-	-	-	-	-	-	-	-	-	(99) (106)
DaveJohnston 3 DaveJohnston 4		-	-	-	-	-	-	-		(220)	-	-	-	-	-	-	-	-	-	-	(220)
Naughton I		-		-		- 1				(330)		(156)	-		-		-		-		(330)
Naughton 2	-	-	-	-	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	-
Naughton 3 (Coal Early Retirement/Conversions) Gadsby 1-6		(280)) -	-	-	-	-	-		-		-	-	-	(356)	-	-	-	-		(280)
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(20)
Retire - Wind	-	-	-	-	-	-	-	-	-	-	-	(40) (99)	-	-	-	-	-	-	-	-	_
Expire - Wind PPA Expire - Solar PPA	+ -	(27	(17)	(49)	(0)	(1)	-	(65)	(3)		(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160)
Retire - Other	-	-	-	-	-	- (-)	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	- (-)
Expansion Resources													, ,		4-0		, ,				
SCCT Frame NTN SCCT Frame WYSW	+ -	-		-	-		-	-		-	-	185	-	-	370	-	-		370		-
Total SCCT		-	-	-	-	-	-	-	-	-	-	185	-	-	370	-	-	-	370		-
Wind, Djohnston	-	-	-	-	-	-	-	-	-	119	501	-	-	-		-	-	-	-	-	119
Wind, GO Wind, WYAE	+	-	1 :-			1,920		- :		-	- :	1,083				-		-	-		1,920
Total Wind		_				1,920	-			119	501	1,083		-		-					2,039
Utility Solar - PV - Utah-S		-	146	59	67		-	-	-	-	-	-	-		-	-	-	400		-	279 100
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S	+ -	-	1			100	-	-		-	-	-	500		-	-		-	-		100
Utility Solar+Storage - PV - GO		-	-	-	-	-	-	-	-	-	-	17	-	-	-	-	-	-	-	-	
Utility Solar+Storage - PV - Huntington Utility Solar - PV - Utah-N	+	-	-	-		-	-	-	-	- 37		703	-	-	-	-		-	-	909	- 37
Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N						157				-	- 3	-						:			37 157
Total Solar		-	146	59	67	285	-	-	-	37	3	720	500	-	-	-	-	400	-	909	594
Demand Response, ID-Cool/WH	+	-	-	-		-	-	-	-	-		-	-	-	-	-		-	2.6 1.8	-	-
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	+ =	-	1	-	-	-		-		-	-	-		5.2	-	-	-	-	3.7		-
Demand Response, ID-Thermostat		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-
Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	74.1	7.2	28.1
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	74.1	1.9	-
Demand Response, UT-Thermostat		-	-	-	-	-	-	-	-	-	-	124.9	-	-	-	-	8.3	-	-	5.1	
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4		-
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	+ -	-	-	-	-	-	-	-		-		-	-	-		-	-	-	1.8	-	-
Demand Response, WY-Thermostat		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	1.2	
Demand Response, UT-Ancillary Services	-	-	8.3	-	-	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5
Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	15.3	-	9.9	-	8.2	7.2		-	6.7	124.9	-	12.0		-	15.3	-	157.1	21.6	3.0 44.6
Energy Efficiency, ID	6			7	8	7	7	7	7	7	6	6	6	6	6	4	4	3	3	3	70
Energy Efficiency, UT Energy Efficiency, WY	58 10	67 12	69 13	73 16	75 18	66 16	67	68 18	65 19	62	54 15	53 14	52 13	50 12	49 11	36	33	26 7	23	26	670 155
Energy Efficiency Total	74		88	96	100	90	91	93	91	87	76	74	71	68	65	49	45	37	31	35	896
Battery Storage - Utah-N	-	-	-	-	150.0 15.0	-	-	-	-	525.0		-	-	-		-	-	-	120	555	150 540.0
Battery Storage - WYSW Battery Storage - Idaho	+	-	-	-	15.0	-	-	-		525.0		-	-	-	-	-	-	-	285.0	90.0	540.0
FOT East - Summer	_	-	-	-	-	-	-	-	-	256	219	300	252	254	298	300	88	300	300	300	26
FOT East - Winter	_	-	-	-	-	-	-	-		-	-	-	-	-	-	-	300	-	-	-	-
Existing Plant Retirements and PPA Termination JimBridger 1 (Coal Early Retirement/Conversions)		-		- 1	(351)	-		- 1				-	- 1	-	-	-	- 1	-	-	-	(351)
JimBridger 2	-	-	-	-						-									-	(356)	-
JimBridger 3	- '	-				-	-	-	-		-	-	-	-	-	-	-	-			
JimBridger 4				-	-	- :	-		- :	-	-	-	-	-			-	- :	-		-
Hermiston	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(237)	(349)	
Hermiston Retire - Hydro	-	(1)	(169)	-	- - - (1)	-	-	- - - (1)	-	- - - (7)	-	-	- - - (6)	-		- - - - (75)	-	- - - (1)	(237)	(349) (353)	(179)
Retire - Hydro Expire - Wind PPA		-	(169)	(175)	(1)			- - - (1)		_		- - - - (10)		- - - (20)	- (20)	(75)		- - (1) (10)		(349) (353)	(179)
Retire - Hydro Expire - Wind PPA Expire - Solar PPA		-	- - (169)	- (175)	(1)	- (41)		(1)	-	(7)	- (75)	(10)	(6) (67)	- - - (20) (49)	(20)	(75)	- - - - - (1)	(1) (10) (115)	(10) (175)	(349) (353) - - (11)	
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Expansion Resources SCCT Frame WV		-	- - (169) - -	(175)	(1)	- (41)		- - - (1)	-	_		- (10)		- - - (20) (49)	- (20)	(75)		(1) (10) (115)	(10) (175)	(349) (353) - - (11)	(179)
Retire - Hydro Eppire - Wind PPA Eppire - Solar PPA Eppire - Solar PPA Epparion Resources SCCT Frame WV SCCT Frame VK		-	- (169) - - -	(175)	(1)	(41)		(1)	-	_	- - - - (75)	(10)		- - - - (20) (49)	(20)	(75)		(1) (10) (115)	(10) (175) 443 233	(349) (353) - - (11)	(179)
Retire - Hydro Eppire - Wind PPA Eppire - Solar PPA Expire - Solar PPA Expinsion Resources SCCT Frame WV SCCT Frame WK Total SCCT Ultily Solar - PV - S-Oregon	-	-	- - (169) - - - -	- - - (175) - - - -	(1)			(1)		_	(75)	(10)		- - - - (20) (49)	(20)	(75)	-	(1) (10) (115)	(10) (175)	(349) (353) - - (11)	- (179) (216) (2) - - - 500
Retine - Hydro Egyire - Wand PPA Egyire - Solar PPA Egyire - Solar PPA Egyinsion Resources SCCT Prante WA SCCT Prante WA USA CT PRANTE WA USA	-	-	- (169) - - - - -	- - (175) - - - - -	(1)	-		- (1)	-	_	(75)	- (10)		-	(20)	(75)	- - - - (1)	(1) (10) (115)	(10) (175) 443 233	(349) (353)	(179) (216) (2)
Retire - Hydro Eppire - Wind PPA Eppire - Solar PPA Expire - Solar PPA Expires or Resources SCCT Frame WV SCCT Frame WK Total SCCT Utility Solar - PV - ScOregon Utility Solar - PV - Vakinsa Utility Solar - PV - Porträger		-) (169) 	- (175)	- (1)			- (1)	-	_		- - - (10)		-		(75)	-	(1) (10) (115)	(10) (175) 443 233	(349) (353) 	- (179) (216) (2) - - - 500
Retter - Hydro Espire - Wind PPA Espire - Solar - PV Espire - Solar - P		-	- (169) 	- - (175) - - - - - - - -	(1)			- (1) - (1) 		_	(75)	- - - (10) - - - - - -		337	- - - (20) - - - - - - - 100	- (75)	-	- - (1) (10) (115)	(10) (175) 443 233	(349) (353)	- (179) (216) (2) - - - 500
Retire - Hydro Espire - Wand PPA Espire - Salar PPA Espire - Salar PPA Espirasion Resources SCCT Frame W SCCT Frame W KCT Frame W KCT Frame W Liffly Solar - W - ScOregon Unity Solar - PV - Storegon Unity Solar - PV - Storegon Unity Solar - PV - Storegon Unity Solar - Storegon - PV - Wallar Unity Solar - Storegon - PV - Storegon		-			(1)			- (1)	-	_	(75)	(10)		-		(75)	183	- (1) (10) (115)	(10) (175) 443 233	(349) (353) 	- (179) (216) (2) - - - 500
Retire - Flydro Espire - Wald PPA Espire - Stolar PPA Espire - Stolar PPA Espiration Recurrent SCCT Frame VS SCCT Frame VS Unitary Solar - PV - ScOregon Unitary Solar - Stolar - PV - Bridger Unitary Solar - Stolar - PV - Bridger Unitary Solar - Stolar - PV - Scoregon Unitary Solar - Storage - PV - Valler		-		- (175) - (175) 	- (1)			- (1)	-	_		- - (10) - - - - - - - - -		337		- (75)	-	(1) (10) (115)	(10) (175) 443 233	(349) (353) 	- (179) (216) (2) - - - 500
Retine - Hydron Espire - Wald PPA Espire - Stelar PPA SCT - Frame - Yr Total S CCT Utility Stolar - PV - S-Cregon Utility Stolar - PV - S- Server Utility Stolar - Stelar - PV - S- Server Utility Stolar - Stelar - PV - S- Server Utility Stolar - Storage - PV - S- S- Server Utility Stolar - Storage - PV - S- S- Server Total Stolar - Storage - PV - S- S- Server Total Stolar - Storage - PV - S- S- Server Total Storage - PV - S- S- Server Demmid Besponen, Gill-Acadillary Services		-		- (175) (175) 	- (1)	500		- (1)	-	_	- (75)			337 - - - - 138		- (75)	- - - 183 - - - - 14	(1) (10) (115)	(10) (175) 443 233	(349) (353) 	- (179) (216) (2) - - - - 500 405
Retire - Hydro Espire - Wind PPA Espire - Solar PPA Espire - Solar PPA Espire - Solar PPA Espiration Resources SCCT Frame WV SCCT Frame WV Total SCCT Utility Solar - PV - Schegon Utility Solar - PV - Parking Utility Solar - PV - Parking Utility Solar - PV - Parking Utility Solar - PV - Schegon Utility Solar - S		-		- (175)	- (1)	500		- (1)	-	_	(75)	(10)		337 - - - - 138		- (75)	- - - 183 - - - - 14	- (1) (10) (115)	- (10) (175) 443 233 676	(349) (353) 	- (179) (216) (2) - - - - 500 405
Retter - Hydro Espire - Wind PPA Espire - Solar - PPA E		-		- (175)	(1)	500		(1)		_	(75)			337 - - - - 138			- - - 183 - - - - 14	- (1) (10) (115)	- (10) (175) 443 233 676	(349) (353) 	- (179) (216) (2) - - - - 500 405
Reities - Hydro Espire - Wind PPA Espire - Solar PPA Unity Solar - Solar - PV - Schregon Unity Solar - PV - Schregon Unity Solar - PV - Shringer Unity Solar - PV - Waltin Unity Solar - Solar - PV - Waltin Espire - Waltin		-	(169)		(1)	500		(1)		_	(75)			337 - - - - 138		- (75)	- - - 183 - - - - 14	(1) (10) (115) (11	- (10) (175) 443 233 676	(349) (353) 	- (179) (216) (2) - - - - 500 405
Retter - Hydro Espire - Wald PPA Espire - Solar - PV - Portiger Unitary Solar - PV - Solar - PV - Portiger Unitary Solar - Storage - PV - Solar - PV - P		-	(169)	- (175) - (175	(1)	500		(1)		_	(75)			337 - - - - 138			- - - 183 - - - - 14	- (1) (10) (115) - (10) - (105) - (105) - (105) - (105) - (105) - (105) - (105	- (10) (175) 443 233 676	(349) (353) 	- (179) (216) (2) - - - - 500 405
Reities - Hydro Espire - Wind PPA Espire - Solar PPA Unity Solar - Solar - PV - Schregon Unity Solar - PV - Schregon Unity Solar - PV - Shringer Unity Solar - PV - Waltin Unity Solar - Solar - PV - Waltin Espire - Waltin		-		- (175) - (175) 		500		(1)		_	(75)			337 - - - - 138	- - - - - 100 - - - - - - - - - - - - -		- - - 183 - - - - 14	(10) (115) (-(10) (175) 443 233 676 	(349) (353) 	- (179) (216) (2) - - - - 500 405
Reities - Hydro Espire - Wind PPA Espire - Salar PPA Espire - Salar PPA Espire - Salar PPA Espiration Resources SCCT Frame WX SCCT Frame WX SCCT Frame WX SCCT Frame WX VX Total SCCT Total SCCT Utility Solar - PV - Schregor Utility Solar - PV - String Utility Solar - PV - String Utility Solar - PV - String Utility Solar - String - PV - Pridger Utility Solar - Stronge - PV - Schregor Utility Solar - Stronge - PV - Vakima Total Solar Demmad Response, OR-Aneillary Services Demmad Response, OR-Aneillary Services Demmad Response, CA-Ard Party Contracts Demmad Response, CA-Ard Party Contracts Demmad Response, CR-Ard Party Contracts Demmad Response, OR-Aneillary Demmad Response, OR-Anei		-				500				_	(75)			337 - - - - 138			- - - 183 - - - - 14	(1) (10) (115) (11	-(10) (175) 443 233 676 	(349) (353) 	- (179) (216) (2) - - - - 500 405
Retite - Hydro Espire - Wald PPA Espire - Stelar		-				500				_	(75)			337 - - - - 138	- - - - - 100 - - - - - - - - - - - - -		- - - 183 - - - - 14	(1) (10) (10) (115	- (10) (175) (175) 443 233 676 	(349) (353) 	- (179) (216) (2) - - - - 500 405
Rettee - Hydro Espire - Wald PPA Espire - Solar PPA Solar - PPA Total SCCT Utility Solar - PV - Schegon Utility Solar - PV - Walda Wald Utility Solar - Storage - PV - Schegon Utility Solar - PV - Sc		-	(169)			500				_				337 - - - - 138	- - - - - 100 - - - - - - - - - - - - -		- - - 183 - - - - 14	(1) (10) (10) (115	- (10) (175) 443 233 676 	(349) (353) (353) (353) (11) (11) (11) (11) (11) (11) (11) (1	- (179) (216) (2) - - - - 500 405
Rettee - Hydro Espire - Wald PPA Espire - Solar PPA Solar - PV - Solar Solar - PV - Portiger Utility Solar - Solar - PV -		-	(169)			500				_	(75)			337 - - - - 138			- - - 183 - - - - 14	(1) (10) (10) (115	- (10) (175) 443 233 676	(349) (353)	- (179) (216) (2) - - - - 500 405
Reities - Hydro Espire - Wand PPA Espire - Solar - PV - Schopen Unitary Solar - PV - Schopen Unitary Solar - PV - Schopen Unitary Solar - Solar - PV - Schopen Unitary Solar - Solar - PV - Bridger Unitary Solar - Solar - PV - Wallan English Solar - PV		-	(100)		(1)	500				_	(75)			337 - - - - 138	- - - - - - - - - - - - - - - - - - -			(1) (10) (10) (115	- (10) (175) 443 233 676 	(349) (353)	- (179) (216) (2) (2) (2) (3) (2) (3) (4) (5) (4) (5) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7
Retire - Hydro Espire - Wand PPA Espire - Stelar - PPA Esp		- (1'												337 - - - - 138			- - - 183 - - - - 14	(10) (115) (- (10) (175) 443 233 676	(349) (353)	- (179) (179
Retite - Hydro Espire - Wand PPA Espire - Stelar PPA SCT - Free - Stelar PPA SCT - Stelar PPA Utility Solar - PPA - Stelar PPA Demmad Response, GR-Ancillary Services Demmad Response, GR-Ancillary Services Demmad Response, GR-And Party Contracts Demmad Response, WA-Linguite Demmad Response, WA-Lingui		- (1											(67)					(10) (115) (- (10) (175)	(349) (353)	- (179) (179) (216
Retter - Hydro Espire - Wand PPA Espire - Solar - PPA Espire -		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)										8 1.9	(67)	337 				(10) (115) (- (10) (175) 443 233 676	(349) (353) (353) (353) (353) (11) (11) (11) (11) (12) (13) (14) (14) (15) (15) (16) (16) (16) (16) (16) (16) (16) (16	- (179) (179
Retter - Hydro Espire - Wand PPA Espire - Stelar		(1)											(67)					(10) (115) (- (10) (175)	(349) (353)	- (179) (179
Retter - Hydro Espire - Wand PPA Espire - Solar - PPA Espire -		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)											(67)					(10) (115) (- (10) (175)	(349) (353) (353) (353) (353) (353) (353) (311) (11) (11) (11) (11) (11) (12) (13) (14) (14) (15) (16) (17) (17) (17) (17) (17) (17) (17) (17	- (179) (179
Rettee - Hydro Espire - Wald PPA Espire - Stolar PPA SCCT Frame VS SCCT Frame VS CTUBLY SCOLAR - VE - Scoregon Ulilay Solar - PV - Scoregon Ulilay Solar - PV - Scoregon Ulilay Solar - Stolar - PV - Bridger Ulilay Solar - Stolar - PV - Bridger Ulilay Solar - Stolar - PV - Bridger Ulilay Solar - Stolar - PV - Walle Ford Ulilay Solar - Stolar - PV - Walle Ford Ulilay Solar - Stolar - PV - Walle Ford Ulilay Solar - Stolar - PV - Walle Ford Ulilay Solar - Stolar - PV - Walle Ford Ulilay Solar - Stolar - PV - Walle Ford Ulilay Solar - Stolar - PV - Walle Ford Ulilay Solar - Stolar - PV - Walle Ford Ulilay Solar - Stolar - PV - Walle Ford Demmad Response, OR-Ancillary Services D		(1)											(67)					(10) (115) (- (10) (175)	(349) (353)	- (179) (216
Retite - Hydro Espire - Wand PPA Espire - Solar PPA Total SCCT Utility Solar - PV - Schregon Utility Solar - PV - Schregon Utility Solar - PV - Schregon Utility Solar - Solar - PV - Bridger Utility Solar - Solar - PV - Bridger Utility Solar - Solar - PV - Walling Espire - Wal	52	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)							52				- (67)					(10) (115) (- (10) (175)	(349) (353) (353) (353) (353) (11) (11) (11) (11) (12) (13) (14) (14) (15) (16) (16) (16) (16) (16) (16) (16) (16	- (179) (216
Retter - Hydro Espire - Wind PPA Espire - Solar - PPA Espire -	52 - - - - - 998 151	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)							52 - - - - - 595 303									(10) (115)	- (10) (175)	(349) (353) (353) (353) (353) (313) (313) (313) (314)	- (179) (179
Retite - Hydro Espire - Wand PPA Espire - Solar PPA Total SCCT Utility Solar - PV - Schregon Utility Solar - PV - Schregon Utility Solar - PV - Schregon Utility Solar - Solar - PV - Bridger Utility Solar - Solar - PV - Bridger Utility Solar - Solar - PV - Walling Espire - Wal	52 - - - - - 998 151	- (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)					55		52 - - - - - - - - - - - - - - - - - - -	- (2)								(10) (115) (- (10) (175) 443 233 676	(349) (353)	- (179) (179) (216

P-71	2010	2020	2021	2022	0000	2024	2025	2025	2025	2020	2020	2020	2021	2022	2022	2024	2025	2025	2025	2020	
existing Plant Retirements and PPA Termination	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-yea
emig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-	-	-	(82)	-	-	-	-	-	-	-	-	- (82)	-	-	-	(8
mig 2 Iayden 1		 	-	-	-	-	-	-	-		-	-	(44)	-	-		(82)	-	-		-
layden 2	-	-	-	-	-	-	-	-	-	-	-	-	(33)		-	-	-	-	-	-	-
Huntington 1 Huntington 2	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459) (450)	-	—
Cholla 4 (Coal Early Retirement/Conversions)		 	(387)	-	-	-	-	-	-		-	-	-	-		-	-	-	- (430)		(38
DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(9
DaveJohnston 2 DaveJohnston 3	-		-	-	-	-	-	-	-	(106)	-	-	-	-	-	-	-	-	-	-	(10
DaveJohnston 4			-	-	-	-	-	-	-	(330)	-	-	-	-		-	-	-	-		(33
Naughton 1 (Coal Early Retirement/Conversions)	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(15
Naughton 2 Naughton 3 (Coal Early Retirement/Conversions)		(280)	-	-	-	-	-	-	-		-	(201)	-	-	-	-	-	-	-		(28
ads by 1-6		(280)	-	-	-	-	-	-	-		-	-	-	-	(356)	-	-	-	-		- (28
Retire - Hydro	-	-	-	-	-	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2
Retire - Wind	-	(27)	(17)	(49)	- (0)	-	-	(65)	- (3)	-	(19)	(40) (99)	(200)	(45)	(181)	(80)	-	(60)	(80)	-	(16
Expire - Wind PPA Expire - Solar PPA	_	- (27)	- (17)	- (49)	(1)	(1)	-	- (63)	- (3)	_	- (19)	- (99)	- (200)	-	- (181)	-	(35)	(94)	(849)	_	(10
Retire - Other	-	_	-	-	-	-	-	-	-	-	-	-	-	-	-	(1)	-	-	-	(32)	-
Expansion Resources SCCT Frame NTN		_	-			-			- 1			-			185			-			
SCCT Frame WYSW	_		-	-	-	-	-	-	-	_	-	-	-	-	-	-	-	-	370		_
Total SCCT	-		-	-	-	-	-	_	-	-	-	-	-	_	185	-	_	-	370	-	-
Wind, Djohnston Wind, GO	-	-	-	-	-	-	-	-	-	-	620	1.077	- 23	-	-	-	-	-	-	-	-
Wind, WYAE			-	-		1,920	-			_	-	-	-	-	-	-	-	-	-		1,92
Total Wind	-	-	-	-	-	1,920	-	-	-	-	620	1,077	23	-	-	-	-	-	-	-	1,92
Utility Solar - PV - Utah-S Utility Solar - PV - WYSW	-		146	59	-	100	-	-	-	-	-	-	-	-	-	-	-	400		-	20 10
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S	_	-	-	-	-	95	-	-	-	_	-	-	-	500	-	-	-	-	-	_	9
Utility Solar - PV - Naughton	-	-	-	-	156	156	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
Utility Solar+Storage - PV - Huntington Utility Solar - PV - Utah-N	-	─ ─	-	-	-	-	-	-	-	-	-	862	-	-	-	-	-	-	-	909	-
Jtility Solar - PV - Utah-N Jtility Solar+Stomge - PV - Utah-N	=		-			38			-			-			-			-			- 3
Total Solar			146	59	156		-	-	-			862	-	500	-	-	-	400		909	
Demand Response, ID-Cool/WH	-	─ ──	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	-
Demand Response, ID-3rd Party Contracts Demand Response, ID-Irrigate	_		-	-		-		-	-			-		-	5.2		-	-	1.8 3.7	1.8	-
Demand Response, ID-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-
Demand Response, UT-Cool/WH	4.1	⊢ - ⊐	7.0	-	9.9	-		7.2	-		6.7	-		6.8			7.0	-	74.1	7.2 2.6	28.
Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	_	 	-	-	-	-	-	-	-	_	-	-	-	-	-	-	-	-		1.9	_
Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	124.9	-	8.3	-	-	5.1	-
Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4	1.8	-
Demand Response, WY-Irrigate		 	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	1.8		H
Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	1.2	-
Demand Response, UT-Ancillary Services	-	- 1	8.3	-	-	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13. 3.
Demand Response, WY-Ancillary Services Demand Response Total	4.1		15.3	-	9.9	-	8.2	7.2	-		6.7	-	-	6.8	130.0	-	15.3	-	157.1	21.6	44.
Energy Efficiency, ID	6	6	6	7	8		7	7	7	7	6	6	6	6	6	4	4	3	3	3	7
Energy Efficiency, UT	58 10	67 12	69 13		75 18	68 16	71 18	68 19		67 18	54 15			50 12	49 11	36 9	32 8			26	68 15
Energy Efficiency, WY Energy Efficiency Total	74	85			100		96	94		92	75			68			45			35	
Battery Storage - Utah-N	-	-	-	-	-	-	-	_	-	330.0	-	-	-	-	-	-	-	-	255	525	33
Battery Storage - WYSW	-		-	-	-	-	-	-	-	255.0	-	-	-	-	-	-	-	-	285.0	120.0 285.0	255.
Battery Storage - Idaho FOT East - Summer			-	-	-	-	-	-	-	95	42	226	300	180	223	225	300	300		300	_
Existing Plant Retirements and PPA Termination																					
JimBridger 1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351)	<u> </u>
limBridger 2 limBridger 3			-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	(356) (349)	
JimBridger 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(353)	-
Hermiston	-		-	-	-	-	-	-	-	- (80)	-	-	- (6)	-	-	-	-	-	(237)	-	-
Retire - Hydro Expire - Wind PPA		(1)	(169)	(175)	(1)	(41)	-	(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75) -	-	(1)	(10)		(17
Expire - Solar PPA	-	-	-	- 1	-		-	-	-	(2)	-		(67)	(49)		-	(1)	(115)	(175)	(11)	(
Expansion Resources SCCT Frame WV			-	_					- 1							-			443		
Total SCCT	_		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	443	_	
Utility Solar - PV - S-Oregon	-	-	-	-	-	500	-	-	-	-		-	-	94	_	-	-	-	-	-	50
Utility Solar - PV - Yakima		 	-	-	-	405	-	-	-	-	-	-		-	-		-	-	345	1,408	40
Utility Solar+Storage - PV - Jbridger Utility Solar - PV - Walla Walla		-	-	-	-	-		-	-		-	-	-	-	100	-	-	-	-	1,408	-
Utility Solar+Storage - PV - S-Oregon	-	-	-	-	-	-	-	-	-	-	-	-	-	143	238	-	-	-	-	-	-
Utility Solar+Storage - PV - Yakima		\vdash	-	-		905	-		-			-		237	338			-	85 430	1,408	- 90
Total Solar Demand Response, OR-Ancillary Services				-		- 903	-				-	-		- 23/	338		-		430	- 1,408	- 90
Demand Response, WA-Ancillary Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-
Demand Response, CA-Cool/WH	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	<u> </u>
Demand Response, CA-3rd Party Contracts Demand Response, CA-Irrigate			-		-	-		-	-		-	-			-	- :		-	1.1 4.8		-
Demand Response, CA-Thermostat				-								-	-						5.8		
Demand Response, OR-Cool/WH	-		_	-	-	-	-	-		-	-	-		-	-	-	-	-	23.3	-	<u> </u>
Demand Response, OR-3rd Party Contracts Demand Response, OR-Irrigate		 	-	-	-	-	-	-	-			-			9.3			-	35.7 3.9		-
Demand Response, WA-Cool/WH			_	-				_	-			-	-		-				7.7		
Demand Response, WA-3rd Party Contracts	-			-	-	-	-		- 1		-	-		-				-	9.9		<u> </u>
Demand Response, WA-Irrigate Demand Response, WA-Thermostat			-	-	-	-		-	-		-	-		-	5.2		3.1	-	16.6		-
			-			-			-			-			23.9		3.1		110.4		
Demand Response Total	1			2	2	2 39	. 2	2		2	2		2	2	2	1	1	1	1	1	
Demand Response Total Energy Efficiency, CA	40 11				47 12			41		37 11	33			29	26 8	27 6	26	26 5	24	24	41 11
Demand Response Total Energy Efficiency, CA Energy Efficiency, OR		56	56		61	53	56	54		49	44		40	38	35	34	33	32		29	54
Demand Response Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA	52		-	-	105	-	-	-	-	30	-	-	-	-	-	-	-	-	-	165	13
Demand Response Total Energy Efficiency, CA Energy Efficiency, CR Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency, Total Entery Storage - S-Oregon	- 52				60	-	-		-	15	-	-	-	-	-	-	-	-	-	- 75	7
Demand Response Total Energy Efficiency, CA Inergy Efficiency, OR Inergy Efficiency, WA Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency Total Battery Stonge - S-Oregon Battery Stonge - Wilamette Valley	52 -	-	-	_	10																
Demand Response Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency Total Battery Stonge - S.Oregon Battery Stonge - Willamette Valley Battery Stonge - Portland NC	- - - -	-	-	-	45		-	-	-	30 120	-			-		-	-		- 15		
Demand Response Total Energy Efficiency, CA Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency Total Battery Stonge - S.Oregon Battery Stonge - Willamette Valley Battery Stonge - Portland NC Battery Stonge - Portland NC Battery Stonge - Portland NC Battery Stonge - Walla Walla Battery Stonge - Walka	-	-	-	-	105	-	-	-	-	120	-	-	-	-	-	-	-	-	-	45	12 10
Demand Response Total Energy Efficiency, CA Energy Efficiency, OR Energy Efficiency, OR Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency, WA Energy Efficiency Total Buttery Storage - S-Oregon Battery Storage - S-Oregon Battery Storage - Portland WC Battery Storage - Wallaw Walla Battery Storage - Walla Walla Battery Storage - Wallaw Energy Efficiency Efficien	- - - - - 998	- - - - - 959	- - 617	- - - 677 303	105 858	- - 284	377	353	412	120	1,075	1,075	1,075	1,075	1,075	- - - 1,075	- - - 1,075	1,010	- - 1,046	1,075	120 10:
Demand Response Total Inengy Hiffsiency, CA Inengy Hiffsiency, CA Inengy Hiffsiency, OR Inengy Hiffsiency, WA Inengy Hiffsiency, WA Inengy Hiffsiency Total Interpy Stonge - S. Oragon Interpy Stonge - S. Oragon Interpy Stonge - Portland NC Interpy Stonge - Portland NC Interpy Stonge - Portland NC Interpy Stonge - Wallaw Walla Interpy Stonge - Vakim Interpy - Vakim Interpy Stonge - Vakim I	-	- - - - 959 131 (308)	- 617 268	303	105 858 314	- - 284 243	249	-	- - 412 303	120	-	1,075 336	1,075 302 (350)	-	- 1,075 241	- - 1,075 185 (156)	1,075 120 (117)	- 1,010 119	1,046	45	120 103 663 253

											Capacity	y (MW)										Resource	Totals 1/
	P-72	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-year
East	Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)	_		-	-			-	(82)	-		-	-	-		-			_			(82)	(82
	Craig 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(82)	-	-	-		(82
	Hayden 1 (Coal Early Retirement/Conversions) Hayden 2	-	-	-	-	(44)		-	-			-		(33)		-	- 1	-	-	-		(44)	(44
	Huntington 1 Huntington 2	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-	(459) (450)		-	(459)
	Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-	-	-	-	-	-	- (99)	-	-	-	-	-	-	-	-	-	-	(387)	(387
	DaveJohnston 1 DaveJohnston 2	-	-	-	-	-		-	-	-	(106)	-	-	-	-	-		-	-	-		(99) (106)	(106
	DaveJohnston 3 DaveJohnston 4	-	-	-	-	-	-		-	-	(220)	-		-	-	-	-	-	-	-		(220)	(220)
	Naughton 1	-	-	-	-	-	-	-	-	-	-	-	(156)	-	-	-	-	-	-	-	-	-	(156
	Naughton 2 Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-		-	-	-	-	-	(201)	-	-	-		-	-	-		(280)	(201 (280
	Gads by 1-6 Retire - Hydro	-	-		-	-	(20)	-	-		-				-	(356)		-	-	-		(20)	(356
	Retire - Wind	-	-	-	-	-	-	-	-			-	(40)			-	-	-	-	-	-	,	(40
	Expire - Wind PPA Expire - Solar PPA	-	(27)	(17)	(49)	(0) (1)	(1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)		(160)	(924 (979
	Retire - Other	-	-	-	-	- 1		-	-	-	-	-	-	-	-	-	(1)	- 1	-	-	(32)	- 1	(33
	Expansion Resources SCCT Frame NTN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370	-	-	-	185	-	-	555
	SCCT Frame WYSW Total SCCT	-	-	-	-	-		-	-	-	-	-	-	-	-	370		-	-	370 555		-	370 925
	Wind, Djohnston	-	-	-	-	-	-	-	-	-	-	620	1,100	-	-	-	-	-	-	-	-	-	620 1.100
	Wind, GO Wind, WYAE	-	-	-	-	-	1,920	-	-		-	-	ı			-		-	-	-		1,920	1,920
	Total Wind Utility Solar - PV - Utah-S	-	-	-	- 48	- 66	1,920 185	-	-	-	-	620	1,100	414	-	-	-		400	-	-	1,920 300	3,640 1,114
	Utility Solar - PV - WYSW	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-		-	-	-		100	100
	Utility Solar+Storage - PV - Utah-S Utility Solar+Storage - PV - Huntington	-	-			-		= =	-	-	====	-	-	- 86	====						909		909
	Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N	-		159	- 12					-		3	126	600						-		- 171	729 171
	Total Solar	-	-	159	60	- 66	285	-	-	-		- 3	126	1,100	-	-		-	400	-	909	571	3,109
	Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-	-	-		-	-	2.6 1.8		-	2.6
	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	1.8	-	10.6
	Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-	-	6.8	-		7.0	-	8.3	7.2	28.1	8.3 55.9
	Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6 1.9	-	76.7 1.9
	Demand Response, UT-Thermostat	-	-		-			-	-	-	-	-	-	-	-	124.9		8.3		-	5.1		138.3
	Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4	1.8	-	5.2 39.4
	Demand Response, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	1.8
	Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	8.3	-	-		5.3	-	-		-	-	-		-		-	-	18.7 3.2	1.2	13.5	19.9 16.7
	Demand Response, WY-Ancillary Services Demand Response Total	4.1	-	15.3	-	9,9	-	3.0 8.2	7.2	-	1	6.7		-	6.8	130.0	-	15.3	-	- 157.1	21.6	3.0 44.6	3.0 382.2
	Energy Efficiency, ID	6	6	6	7	8	7	7	7	7	7	6	6	6	6	6	4	4	3	3	3	69	116
	Energy Efficiency, UT Energy Efficiency, WY	58 10	12	68 13	69 14	18	66 16	67 16	65 17	65 18	62 17	54 15	53 14	50 13	50 12	49 11	36 9	8	26 7	22 5	26 5	662 150	1,061 250
	Energy Efficiency Total	74	85	87	90	100	89	91	88	89	87 285.0	75	74	69	67	65	49	46	36	30	35 720	881 285	1,428
	Battery Stomge - Utah-N Battery Stomge - WYSW	-	-		-				-		405.0	-	-		-						-	405.0	405.0
	Battery Storage - Idaho FOT East - Summer	-	-	-	-	-	-	-	-	-	-	-	277	300	247	204	206	300	300	75.0 300	240.0 300	-	315.0 122
West	Existing Plant Retirements and PPA Termination	_																			(351)	-	
	JimBridger 1 JimBridger 2	-	-	-	-	-		-	-		-	-		-	-	-		-	-	-	(356)	-	(351
	JimBridger 3 JimBridger 4	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	-	(349
	Hermiston	-	-	-	-		-	-	- 203	-	-	-	-	-	-	-	-	-	- 200	(237)	-	(179)	(237
	Retire - Hydro Expire - Wind PPA	-	(1)	(169)	(175)	(1)	(41)		(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)	-	(1)	(10)		(216)	(262
	Expire - Solar PPA Expansion Resources	-	-		-	-	-	-	-	1	(2)	-		(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)	(420
	SCCT Frame WV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-	443
	Total SCCT Utility Solar - PV - S-Oregon	-	-	-	-	-	500	-	-	-	-	-	-	-	209	-		-	-	443		500	443 709
	Utility Solar - PV - Yakima Utility Solar+Storage - PV - Jbridger	-	-	-	-	-	405	-	-	-	÷	-	-	-	-	-	-	-	-	-	1,408	405	405 1,408
	Utility Solar - PV - Walla Walla	_	-	-	-	-			-		-	-				100		-	-	-	1,408	-	100
	Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima	-	-	-	-	-	-	-	-	-	-	-	-	-	266	-	-	-	-	- 430	-	-	266 430
	Total Solar Demand Response, OR-Ancillary Services	-	-	-	-	-	905	-	-	-	-	-	-	-	475	100	-	-	-	430	1,408	905	3,318
	Demand Response, OR-Ancillary Services Demand Response, WA-Ancillary Services	-	-	-	-	-			-	-		-	-	-	1.9	- 8		-	-	-			1.9
	Demand Response, CA-Cool/WH Demand Response, CA-3rd Party Contracts	-	-		-	-		-	-	-	-	-	-	-	-	-		-	-	1.5 1.1			1.3
	Demand Response, CA-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	-	-	4.8
	Demand Response, CA-Thermostat Demand Response, OR-Cool/WH	-	-	-	-	-		-	-	-	-	-	-	-	-	-		-	-	5.8 23.3		-	5.8 23.3
	Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35.7 13.3	-	-	35.7 13.3
	Demand Response, OR-Irrigate Demand Response, WA-Cool/WH	-	-	-	-	-	-		-			-				-		-	-	7.7		-	7.7
	Demand Response, WA-3rd Party Contracts Demand Response, WA-Irrigate	-	-	-	-	-	=	-	-	-	-	-	-	-	-	-	-	-	-	9.9 8.3	-	-	9.9 8.3
	Demand Response, WA-Thermostat	_	-	-		-		-	-		-	-	-		-	-			-	16.6		-	16.6
	Demand Response Total Energy Efficiency, CA	- 1	- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	- 2	1.9	7.5	- 1	- 1	- 1	128.0	- 1	- 18	137.4
	Energy Efficiency, OR Energy Efficiency, WA	40	43	43	47 12		39 12	36 11	41 11	39 11	37 10	33	31	30	29 8	26 8	26		26	24	24	410 112	682 179
	Energy Efficiency Total	52		55	60		52	49		52	49	44			38	35	33		32		29	540	89
	Battery Stomge - S-Oregon Battery Stomge - Willamette Valley	-		-	-	- 15		-	-	-	180 45	-	-	-	-	-			-	-	150	180	331
	Battery Storage - Portland NC	-	-	-	-	-		-	-	-	75	-	-	-	-	-		-		-		75	7:
	Battery Storage - Walla Walla Battery Storage - Yakima	-	-	-	-	45 105	-	-	-	-	75	-	-	-	-	-	-	-	-	-	90	120 105	10:
	FOT West - Summer FOT West - Winter	998 151	959 131	557 269	614 304	645	235 249	254 255	233 259	290 309	1,048 323	995 313	1,075 343	1,075 309	1,075 302	1,075 253	1,075 173	1,059 151	994 151	1,059	1,075	583 257	820 228
	Existing Plant Retirements/Conversions	-	(308)	(573)	(224)	(45)	(62)	-	(148)	(3)	(764)	(93)	(506)	(306)	(114)	(557)	(156)	(117)	(280)	(2,260)		237	
	Annual Additions, Long Term Resources Annual Additions, Short Term Resources	130 1,149		317 826	211 917		3,252 484	148 510	150 493					1,209 1,684	589 1,624		82 1,454		468 1,445	1,846 1,359	3,602 1,375		
_	Total Annual Additions			1,143	1,128	1,361	3,735	658	643	740	2,572	2,057	3,036	2,892	2,213	2,240	1,536	1,605	1,913		4,977		-

740 1/Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average.

											Capacit	y (MW)										Resource	Totals 1/
	P-73	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-year
East	Existing Plant Retirements and PPA Termination Craig 1 (Coal Early Retirement/Conversions)	-	-	-	-	-		-	(82)	-	-	-	-	-	-	-	_	- 1	-	-	-	(82)	(8
	Craig 2	-	-	-	·	-	-	-	-	-	-	-	-	- (44)	-	-	-	(82)	-	-	-	- 1	(8
	Hayden 1 Hayden 2	-	-		-	-		-	-	-	-	-	-	(33)	-	-	-	-	-		-		(4
	Hunter 1 (Coal Early Retirement/Conversions) Huntington 1	-	-	-	-	(418)		-	-	-	-	-	-	-	-	-	-	-	-	(459)	-	(418)	(41
	Huntington 2 Cholla 4 (Coal Early Retirement/Conversions)	-		(387)		-	-	-			-	-	-	-		-		-		(450)		(387)	(45
	DaveJohnston 1	-	-	-	-	-	-	-	-	-	(99)	-	-	-	-	-	-	-	-	-	-	(99)	(9
	DaveJohnston 2 DaveJohnston 3	-	-	-	-	-		-	-	-	(106) (220)	-	-	-	-	-	-	-	-	-	-	(106) (220)	(10
	DaveJohnston 4 Naughton 1	-	-	-	-	-	-	-	-	-	(330)	-	(156)	-	-	-	-	-	-	-	-	(330)	(33
	Naughton 2 Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	-	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	(280)	(20
	Gads by 1-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	-	-	-	-	-	(35
	Retire - Hydro Retire - Wind	-	-	-		-	(20)	-	-		-	-	(40)	-	-	-	-	-	-	-		(20)	(2
	Espire - Wind PPA Espire - Solar PPA	-	(27)	(17)	(49)	(0)	- (1)	-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)	(35)	(60) (94)	(80) (849)	-	(160)	(92
	Retire - Other Expansion Resources	-		-	-	- ` 1		-	-	-	-	-	-	-	-	-	(1)			- '-	(32)	- ` 1	(3
	SCCT Frame NTN	-	-	-	-	-	-	-	-	-	-	-	185	-	-	370	-	-	-	-	-	-	5.5
	SCCT Frame WYSW Total SCCT	-	-	-	-	-		-	-	-	-	-	185	-	-	370	-	185 185	-	185 185	-	-	37 92
	Wind, Djohnston Wind, GO							-	-		327	293	1,061	-			-				-	327	1,06
	Wind, WYAE	-	-	-	-	-	1,920	-	-	-	- 227	293	-	-	-	-	-	-	-	-	-	1,920	1,92
	Total Wind Utility Solar - PV - Utah-S	-	-	146	59	67	1,920	-	-	-	327	- 293	1,061	- 99	-	-	-	-	400	-	-	2,247 272 100	3,60
	Utility Solar - PV - WYSW Utility Solar+Stomge - PV - Utah-S	-	-	-	-	-	100 28	-	-	-	-	-	-	401	-	-	-	-	-	-	-	100 28	42
	Utility Solar+Storage - PV - GO Utility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	-	-	909		3
	Utility Solar - PV - Utah-N	-	-	-	-	-	-	-	-	-	37	3	695	-	-	-	-	-	-	-	-	37	73
	Utility Solar+Storage - PV - Utah-N Total Solar	_		146	- 59	- 67	165 293	_	-	-	37	3	734	500				-	400		909	165 602	3,14
	Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	2.6 1.8	-	1	2.
	Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	3.7	1.8		10.
	Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9	-	-	7.2	-	-	6.7	-	-	6.8	-	-	7.0	-	8.3	7.2	28.1	8. 55.
	Demand Response, UT-3rd Party Contracts Demand Response, UT-Irrigate	-	-		-	-		-	-		-	-	-	-		-		-		74.1	2.6 1.9	-	76. 1.
	Demand Response, UT-Thermostat	-	-	-	-	-	-	-	-	-	11.0	-	113.8	-	-	-	-	8.3	-	-	5.1	11.0	138.
	Demand Response, WY-Cool/WH Demand Response, WY-3rd Party Contracts	-	-	-				-	-			-	-	-		-	-	-	-	3.4 39.4	1.8	-	5. 39.
	Demand Response, WY-Irrigate Demand Response, WY-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8 18.7	1.2	-	19
	Demand Response, UT-Ancillary Services Demand Response, WY-Ancillary Services	-	-	8.3	-	-	-	5.3 3.0	-	-	-	-	-	-	-	-	-	-	-	3.2	-	13.5 3.0	16. 3.
	Demand Response Total	4.1		15.3	-	9.9		8.2	7.2	-	11.0	6.7	113.8		12.0	-	-	15.3		157.1	21.6	55.6	382.
	Energy Efficiency, ID Energy Efficiency, UT	58	67	67	69	73	68	67	7 68	7 65	7 64	6 54	53	6 52	6 50	6 49	36		27	23	22	69 667	1,06
	Energy Efficiency, WY Energy Efficiency Total	10 74		13 86	14 90		16 92	17 92	18 94	19 91	18 89		14 74	13 71	12 68	11 65	9 49	8 46	7 37	5 31	5 30	152 888	25 1,43
	Battery Stomge - Utah-N Battery Stomge - WYSW	-	-	-	-	285.0	-	-	-	-	420.0	-	-	-	-	-	-	-	-	270	360 525.0	705	1,33 525.
	Battery Storage - Idaho	-	-			-		-	-			-	-		-	-		-		315.0	105.0		420.
West	FOT East - Summer Existing Plant Retirements and PPA Termination	-	-		-	36		-	-	-	215	216	300	273	249	298	300	300	300	300	300	25	
	JimBridger 1 JimBridger 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351)	-	(35
	JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(349)	-	(34
	JimBridger 4 Hermiston	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	(237)	(353)	-	(23
	Retire - Hydro Expire - Wind PPA	-	(1)	(169)	(175)	(1)	(41)	-	(1)	-	(7)	(75)	(10)	(6)	(20)	(20)	(75)	-	(1)	(10)	-	(179) (216)	(26
	Expire - Solar PPA	-	-	-	-	-		-	-	-	(2)		-	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)	
	Expansion Resources SCCT Frame WV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	- 1	-	443	-		44
	Total SCCT Utility Solar - PV - S-Oregon	-	-	-	-	-	234	-	-	-	-	-	-	-	235	-	-	-	-	443	-	234	44
	Utility Solar - PV - Yakima Utility Solar+Stomge - PV - Jbridger	-	-	-	-	-	405	-	-	-	-	-	-	-	-	-	-	-	-	67	1,408	405	47 1,40
	Utility Solar - PV - Walla Walla	-	-	-	-	-	265	-	-	-	-	-	-	-	100	-	-	-	-	-	-		10
	Utility Solar+Storage - PV - S-Oregon Utility Solar+Storage - PV - Yakima		-	-			266	-	-	-	-	-	-	-	240	-	-	-	-	363		266	36
	Total Solar Demand Response, OR-Ancillary Services	-	-		-	-	905	-	-	-	-	-	- 8	-	575		-			430	1,408	905	3,31
	Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	- 1.5	-		1.
	Demand Response, CA-3rd Party Contracts			-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	1.
	Demand Response, CA-Irrigate Demand Response, CA-Thermostat	-			-			-	-	-	-		_	-	-		-			4.8 5.8	-	-	5.
	Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	23.3 35.7	-	-	23. 35.
	Demand Response, OR-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	-	-	-	9.2	-	-	13.
	Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7 9.9	-	-	9.
	Demand Response, WA-Irrigate Demand Response, WA-Thermostat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	3.1	-	16.6	-	-	8. 16.
	Demand Response Total	- 1			- 1	- 2	- 1	- 7	- 2	- 2	- 7		9.4	- 2	- 2	9.2	- 1	3.1	- 1	115.6	- 1	- 18	137
	Energy Efficiency, CA Energy Efficiency, OR	40	37	43	42	39	39	37	41	39	37	33	31	30	29	26	26	24	25	22	21	392	65
	Energy Efficiency, WA Energy Efficiency Total	11 52		11 55	12 55	53	12 52		11 54	11 52			9	8 40	8 38	8 35	6 33		5 31	4 27	4 26		
	Battery Stomge - Willamette Valley Battery Stomge - Portland NC	-			-	60	-	-	-		-	-	-	-		-	-		-	-	30 195	60	
	Battery Storage - Walla Walla	-	-	-	-	180 105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105	180 105	28
	Battery Storage - Yakima FOT West - Summer	998		617	672	1,075	470	563	538	596	1,075	1,075		1,075	1,075		1,075	988	924	1,060	1,075	756	90
	FOT West - Winter Existing Plant Retirements/Conversions	151	(308)	268 (573)	303 (224)		181	188	190 (148)	239	251 (764)			(350)	207 (114)	196 (557)	(156)	94 (117)	93 (280)	(2,260)	(1,451)	222	18
	Annual Additions, Long Term Resources Annual Additions, Short Term Resources	130 1,149	134		204 975	856	3,263 651	150 751		142	933	423					82 1,488	281	468 1,317	1,974	3,714	l	
	Total Annual Additions	1,279	1,224	1,189	1,179	2,280	3,914		883	978			3,862				1,570	1,664	1,785	3,333	5,089	l	
	1/ Front office transaction amounts reflect one-year transaction	n periods, are i	not additive, an	u are reported	ı us a 10/20-ye	ar annual avera	ıge.																

										Capacity	y (MW)										Resource	Totals
P-74	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-ye
Existing Plant Retirements and PPA Termination Cmig 1 (Coal Early Retirement/Conversions)	-	-	-	-	(82)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(82)	
Craig 2	-	-	-	-	1	-	-	-	-	-	-	-	- (44)	-	-	-	(82)	-	-	-		
Hayden 1 Hayden 2	-	-	-	-	-		-	-	-	-	-	-	(33)	-	-		-	-	-	-	-	
Huntington 1 Huntington 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(459) (450)	-	-	(4
Cholla 4 (Coal Early Retirement/Conversions)	-	-	(387)	-			-	-	-	-	-	-	-	-	-		-		(430)	-	(387)	(3
DaveJohnston 1 DaveJohnston 2	-	-	-	-	-	-	-	-	-	(99) (106)	-	-	-	-	-	-	-	-	-	-	(99) (106)	(1
DaveJohnston 3	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	-	-	-	-	-	(220)	(2
DaveJohnston 4 Naughton 1	-	-	-	-	-		-	-	-	(330)	-	(156)	-	-	-		-	-	-	-	(330)	(
Naughton 2	-	- (200)	-	-	-	-	-	-	-	-	-	(201)	-	-	-	-	-	-	-	-	- (200)	(:
Naughton 3 (Coal Early Retirement/Conversions) Gads by 1-6	-	(280)	-	-	-		-	-	-	-	-	-	-	-	(356)		-	-	-	-	(280)	(
Retire - Hydro Retire - Wind	-	-	-	-	-	(20)	-	-	-	-	-	(40)	-	-	-	-	-	-	-	-	(20)	
Expire - Wind PPA		(27)	(17)	(49)			-	(65)	(3)	-	(19)	(99)	(200)	(45)	(181)	(80)		(60)	(80)	-	(160)	
Expire - Solar PPA Retire - Other	-	-	-	-	(1)	(1)	-	-	-	-	-	-	-	-	-	(1)	(35)	(94)	(849)	(32)	(1)	
Expansion Resources																(-,				(/		
SCCT Frame NTN SCCT Frame WYSW	-	-	-	-	-		-	-	-	-	-	-	-	-	370		185	-	370	-	-	
Total SCCT	-	-	-	-	-	-	-	-	-	-		-	-	-	370	-	185	-	370	-	-	
Wind, Djohnston Wind, GO	-	-	-	-	-	-	-	-	-	-	620	1,100	-	-	-	-	-	-	-	-	-	
Wind, WYAE Total Wind	-	-	-	-	-	1,920 1,920	-	-	-	-	- 620	1,100	-	-	-	-	-	-	-	-	1,920 1,920	
Utility Solar - PV - Utah-S			146	- 59	67	1,920			-		-	409	-		-			400	-		300	
Utility Solar - PV - WYSW Utility Solar+Storage - PV - Utah-S	_		-	-	-		-	-	-	-	-	-	- 91	-	-			100		-	-	$\bar{-}$
Utility Solar+Storage - PV - Huntington	1	-	-	-	-		-	-	-	-	-			-	-			-	-	909	-	
Utility Solar - PV - Utah-N Utility Solar+Storage - PV - Utah-N	-	-	-	-	-	171	-	-	- 64	37	- 3	626	-	-	-	-	-	-	-	-	100 171	_
Total Solar	-	-	146	59	67	199	-	-	64	37	3	1,035	91	-	-	-	-	500		909	571	
Demand Response, ID-Cool/WH Demand Response, ID-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-	-	-		-	-	2.6 1.8	-	-	_
Demand Response, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	3.7	1.8	-	_
Demand Response, ID-Thermostat Demand Response, UT-Cool/WH	4.1	-	7.0	-	9.9		-	7.2	-	-	6.7	-	-	6.8	-		7.0	-	8.3	7.2	28.1	
Demand Response, UT-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.1	2.6	-	=
Demand Response, UT-Irrigate Demand Response, UT-Thermostat	-	-	-	-	-		-	-	-	-	-	-	-	-	124.9		8.3	-	-	1.9 5.1	-	
Demand Response, WY-Cool/WH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4 39.4	1.8	-	Ξ.
Demand Response, WY-3rd Party Contracts Demand Response, WY-Irrigate	-	-	-	-	-		-	-	-	-	-	-	-	-	-		-	-	1.8	-	-	
Demand Response, WY-Thermostat Demand Response, UT-Ancillary Services	-	-	8.3	-	-	-	5.3	-	-	-	-	-	-	-	-	-	-	-	18.7 3.2	1.2	13.5	=
Demand Response, U1-Ancillary Services Demand Response, WY-Ancillary Services	-	-	-	-	-		3.0	-	-		-	-	-	-	-		-	1	-	-	3.0	
Demand Response Total Energy Efficiency, ID	4.1		15.3	- 7	9.9	- 7	8.2	7.2	- 7	- 7	6.7	- 6	- 6	6.8	130.0	- 4	15.3	- 3	157.1	21.6	44.6 70	
Energy Efficiency, UT	58	67	67	69	75	68	71	68	65	67	54	53	50	50	49	36	32	26	25	26	675	
Energy Efficiency, WY Energy Efficiency Total	10 74		13 86	14 90		16 92	17 96	19 94	19 91	18 92		14 74	13 69	12 67	11 65	9 49		37	5 33	5 35	155 899	
Battery Storage - Utah-N	-	-	-	-	30.0	-	-	-	-	300.0	-	-	-	-	-	-	-	-	-	660	330	
Battery Storage - WYSW Battery Storage - Idaho	-	-	-	-	-		-	-	-	90.0	-	-	-	-	-		-	-	285.0	300.0	90.0	
FOT East - Summer	-	-	-	-	-	-	-	-	-	23	-	300	246	284	246	248	300	300	300	300	2	=
Existing Plant Retirements and PPA Termination JimBridger 1	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(351)	-	
JimBridger 2 JimBridger 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(356)	-	=
JimBridger 4	-	-	-	-	-	-	-		-			-	-				-		-	(353)	-	
Hermiston Retire - Hydro	-	- (1)	(169)	-	- (1)	-	-	- (1)	-	- (7)	-	-	- (6)	-	-	(75)	-	- (1)	(237)	-	(179)	
Expire - Wind PPA	-	- (1)	-	(175)		(41)	-	- (1)			(75)	(10)	-	(20)	(20)	-	-	(10)			(216)	=
Expire - Solar PPA Expansion Resources	-	-	-	-	-	-	-	-	-	(2)	-	-	(67)	(49)	-	-	(1)	(115)	(175)	(11)	(2)	_
SCCT Frame WV	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	443		-	
Total SCCT Utility Solar - PV - S-Oregon	-	-	-	-	-	500	-	-	-	-	-	-	411	-	-			-	443	-	500	_
Utility Solar - PV - Yakima	-	-	-	-	-	405		-	-	-	-	-	-	-	-	-	-	-	-	-	405	=
Utility Solar+Storage - PV - Jbridger Utility Solar - PV - Walla Walla	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-		-	-	1,408	-	_
Utility Solar+Storage - PV - S-Oregon	-	-	-	-	-	-	-	-	-	-	-	-	-	64	-	-	-	-	-	- 430	-	_
Utility Solar+Storage - PV - Yakima Total Solar	_	-	_		-	905			_			-	411	164					-	1,838	905	
Demand Response, OR-Ancillary Services	-	-	-	-	-	-	-	-	-	-	-	-	-	- 19	8	-	-	-	-	-	-	=
Demand Response, WA-Ancillary Services Demand Response, CA-Cool/WH	-		-	-			-		-		-	-	-	-	-			-	1.5	-		=
Demand Response, CA-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-	-	-		-	-	1.1 4.8	-	-	_
Demand Response, CA-Irrigate Demand Response, CA-Thermostat		-	-	-	-		-	-	-		-	-	-	-	-		-	-	5.8	-		
Demand Response, OR-Cool/WH Demand Response, OR-3rd Party Contracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	23.3 35.7	-	-	_
Demand Response, OR-Irrigate	-	-	-	-	-		-		-			-			-			-	13.3		-	=
Demand Response, WA-Cool/WH Demand Response, WA-3rd Party Contracts	-	-	-	-	-		-	-	-	-	-	-	-	-	-		-	-	7.7 9.9	-	-	_
Demand Response, WA-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3 16.6	-	-	=
Demand Response, WA-Thermostat Demand Response Total	-	-	-	-	-		-	-	-	-	-	-	-	1.9	7.5		-	-	128.0		-	_
Energy Efficiency, CA	1		2 43	2 42	2 47	39	2 43	2 41	2 39	2 37	33	2 31	30	2 29	2	1 27	1	1	1 25	1	18	=
Energy Efficiency, OR Energy Efficiency, WA	40 11	11	11	12	12	12	12	11	11	11	9	9	8	8	26 8	6	6	26 5	4	4	412 113	_
Energy Efficiency Total	52	55	56		61	52	56	54					40	38		34	33	32			543	
Battery Stomge - S-Oregon Battery Stomge - Willamette Valley	-	-		-	- 15				-	240 75		-	-		-			-	75	- 60	240 90	_
Battery Storage - Portland NC	-	-	-	-	- 120		-	-	-	90 30		-	-	-	-		-	-	30	- 150	90 150	Ē
Battery Storage - Walla Walla Battery Storage - Yakima	-	1	-	-	105	-	-		-	-	-	-	-		-	-		-	-	-	105	_
FOT West - Summer FOT West - Winter	998 151	959 131	618 269	677 304	710 314	285 255	308 261	284 265	342 315	1,075 329	1,046 318	1,075 349	1,075 357	1,075 358	1,075 298	1,075 218	940 196	872 195	1,051	1,075	625 259	Ē
Existing Plant Retirements/Conversio	ns -	(308)	(573)	(224)	(84)	(62)	-	(66)	(3)	(764)	(93)	(506)	(350)	(114)	(557)	(156)	(117)	(280)			239	
Annual Additions, Long Term Resource Annual Additions, Short Term Resource	es 130 es 1,149					3,168 539		156 549					1,678	278 1,716		83 1,541		569 1,367				
	ns 1,149		1,190	1,185	1,531	3,708	729	705	862	2,430	2,114	3,973	2,289	1,716	2,226	1,624	1,714	1,936	2,902	5,377		

747 1/ Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average.

APPENDIX L – STOCHASTIC SIMULATION RESULTS

Introduction

This appendix reports additional results for the Monte Carlo production cost simulations conducted with the Planning and Risk (PaR) model for the core, sensitivity and final screening cases. These results supplement the data presented in Volume I, Chapter 8 (Modeling and Portfolio Selection Results) of the IRP document. The results presented include the following:

- Statistics of the stochastic simulation results
- Components of portfolios' present value revenue requirements (PVRR)
- Energy-not-served
- Customer rate impact of portfolios in the final screen as compared with the preferred portfolio
- Loss of Load Probability of portfolios in the final screen as compared with the preferred portfolio

There are thirty Initial Development cases, ten C cases, eight CP cases, six FOT Risk Assessment cases, six Gateway and No Gas cases, eight Sensitivity cases, three Rebundled DSM cases, and five P-70 cases.

Table L.1 – Stochastic Mean PVRR, Initial Development Cases

		Med Gas,	Med CO ₂		
Name	PVRR (\$m)	Name	PVRR (\$m)	Name	PVRR (\$m)
P01	24,106	P12	23,678	P30	23,733
P02	24,919	P13	24,016	P31	23,484
P03	23,822	P14	23,786	P32	23,750
P04	23,775	P15	24,285	P33	23,809
P06	23,932	P16	23,889	P34	23,938
P07	23,819	P17	24,182	P35	23,666
P08	23,875	P18	24,376	P45	23,525
P09	23,760	P19	24,000	P46	23,413
P10	23,655	P20	25,118	P53	23,468
P11	23,768	P28	23,686	P54	23,616

Table L.2 – Stochastic Mean PVRR by Price Scenario, Initial Development Cases

N.T.		PVR	R (\$m)	
Name	Low Gas, No CO ₂	Med Gas, Med CO ₂	High Gas, High CO ₂	Social Cost of Carbon
P16	19,448	23,889	29,847	39,712
P17	21,013	24,182	28,858	36,415
P18	22,456	24,376	27,785	35,276
P19	20,194	24,000	29,224	38,396
P20	20,833	25,118	28,397	37,527

Table L.3 – Stochastic Mean PVRR, C Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
P31C	23,374
P36C	23,430
P45C	23,283
P46C	23,278
P46J23C	23,312
P47C	23,198
P48C	23,221
P53C	23,340
P53J23C	23,391
P54C	23,381

Table L.4 – Stochastic Mean PVRR by Price Scenario, CP Cases

		·	PVRR (\$m)	
Name	Low Gas, No CO ₂	Med Gas, Med CO ₂	High Gas, High CO ₂	Social Cost of Carbon
P36CP	20,377	23,413	27,881	36,561
P45CP	20,094	23,192	27,786	36,934
P46CP	20,285	23,292	27,814	36,703
P46J23CP	20,306	23,303	27,812	36,555
P47CP	20,130	23,219	27,805	36,936
P48CP	20,173	23,205	27,736	36,798
P53CP	20,327	23,348	27,889	36,829
P45CNW	19,965	23,207	27,946	37,095

Table L.5 – Stochastic Mean PVRR, FOT Risk Assessment Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
P45CNW-FOT	24,075
P45CP-FOT	24,024
P46CP-FOT	24,099
P47CP-FOT	24,001
P48CP-FOT	24,098
P53CP-FOT	24,164

Table L.6 – Stochastic Mean PVRR, Gateway and No Gas Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
P-22CNW	23,603
P-23CNW	24,184
P-25CNW	24,239
P-26CNW	23,307
P29	23,328
P29PS	23,616

Table L.7 – Stochastic Mean PVRR, Sensitivity Cases

Name	Med Gas, Med CO2 PVRR (\$m)
S01	22,080
S02	24,346
S03	23,388
S04	23,308
S05	22,970
S06	24,038
S07	23,126
S08	23,186

Table L.8 – Stochastic Mean PVRR, DSM Rebundled Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
P45DP	23,281
P46DP	23,350
P53DP	23,409

Table L.9 – Stochastic Mean PVRR, P70 Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
P70	24,041
P71	24,010
P72	24,121
P73	24,261
P74	24,230

Table L.10 – Stochastic Risk Results, Initial Development Cases – Medium Gas, Medium CO_2

$\mathbb{C}\mathbf{O}_2$	Initial Cases Medium Gas, Medium CO ₂						
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs		
P01	95	23,952	24,228	24,258	10,521		
P02	97	24,759	25,056	25,089	10,723		
P03	98	23,672	23,945	23,996	10,395		
P04	142	23,558	23,909	23,978	9,758		
P06	133	23,724	24,061	24,149	10,436		
P07	133	23,610	23,950	24,038	10,396		
P08	134	23,664	24,006	24,115	10,600		
P09	131	23,562	23,882	23,996	10,514		
P10	133	23,451	23,778	23,875	9,874		
P11	98	23,617	23,886	23,941	10,415		
P12	132	23,469	23,796	23,907	10,225		
P13	94	23,872	24,133	24,185	10,532		
P14	185	23,547	23,921	24,025	10,238		
P15	93	24,129	24,387	24,422	10,127		
P16	159	23,648	24,045	24,153	13,505		
P17	110	24,021	24,303	24,370	10,953		
P18	131	24,191	24,515	24,531	8,803		
P19	143	23,784	24,154	24,225	11,377		
P20	143	24,903	25,272	25,343	11,377		
P28	98	23,540	23,811	23,859	10,438		
P30	99	23,588	23,850	23,909	10,355		
P31	98	23,340	23,607	23,658	10,252		
P32	101	23,605	23,875	23,940	10,405		
P33	134	23,607	23,938	24,034	10,168		
P34	138	23,727	24,061	24,159	10,143		
P35	106	23,499	23,795	23,851	9,818		
P45	101	23,373	23,647	23,703	10,284		
P46	108	23,258	23,565	23,594	9,951		
P53	109	23,312	23,622	23,644	10,002		
P54	102	23,471	23,738	23,792	10,305		

Table L.11 – Stochastic Risk Results, Initial Development Cases – Low Gas, No CO₂

	Initial Cases Low Gas, No CO2						
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs		
P16	112	19,295	19,555	19,593	8,955		
P17	86	20,892	21,102	21,161	7,759		
P18	111	22,315	22,592	22,623	6,856		
P19	103	20,052	20,296	20,318	7,471		
P20	94	20,702	20,913	20,952	6,962		

Table L.12 – Stochastic Risk Results, Initial Development Cases – High Gas, High CO₂

	Initial Cases High Gas, High CO2						
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs		
P16	200	29,555	30,056	30,202	19,534		
P17	136	28,652	29,014	29,069	15,676		
P18	149	27,575	27,947	28,030	12,249		
P19	178	28,970	29,407	29,539	16,665		
P20	163	28,151	28,575	28,700	14,677		

Table L.13 – Stochastic Risk Results, Initial Development Cases – Social Cost of Carbon

	Initial Cases Social Cost of Carbon						
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs		
P16	212	39,365	40,000	40,096	29,355		
P17	156	36,173	36,605	36,635	23,280		
P18	161	35,050	35,433	35,491	19,747		
P19	193	38,115	38,642	38,752	25,807		
P20	184	37,236	37,761	37,881	23,791		

Table L.14 – Stochastic Risk Results, C Cases – Medium Gas, Medium CO₂

	C Cases					
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs	
P31C	99	23,233	23,507	23,536	10,353	
P36C	146	23,213	23,574	23,677	10,275	
P45C	99	23,131	23,409	23,449	10,072	
P46C	104	23,125	23,404	23,458	9,864	
P46J23C	106	23,160	23,445	23,506	9,856	
P47C	103	23,045	23,333	23,371	10,023	
P48C	103	23,073	23,342	23,396	9,933	
P53C	105	23,185	23,466	23,518	9,921	
P53J23C	107	23,235	23,525	23,580	9,915	
P54C	102	23,233	23,509	23,547	10,211	

Table L.15 – Stochastic Risk Results, CP Cases – Medium Gas, Medium CO₂

	CP Cases Medium Gas, Medium CO2					
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs	
Р36СР	142	23,194	23,561	23,657	10,241	
P45CP	100	23,043	23,322	23,367	10,061	
P46CP	104	23,143	23,426	23,464	9,844	
P46J23CP	109	23,144	23,456	23,492	9,850	
P47CP	103	23,067	23,349	23,393	10,040	
P48CP	104	23,051	23,327	23,374	9,963	
P53CP	105	23,199	23,476	23,521	9,892	
P45CNW	98	23,062	23,348	23,372	10,338	

Table L.16 – Stochastic Risk Results, CP Cases – Low Gas, Low CO₂

Table Life Sto	CP Cases Low Gas, No CO2					
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs	
P36CP	101	20,229	20,485	20,515	7,103	
P45CP	68	20,001	20,187	20,216	6,895	
P46CP	72	20,187	20,387	20,409	6,771	
P46J23CP	79	20,195	20,412	20,427	6,802	
P47CP	72	20,030	20,223	20,264	6,883	
P48CP	72	20,070	20,268	20,293	6,862	
P53CP	73	20,228	20,428	20,450	6,800	
P45CPNW	67	19,878	20,052	20,085	7,029	

Table L.17 – Stochastic Risk Results, CP Cases – High Gas, High CO₂

Table E.17 Sto	CP Cases High Gas, High CO2					
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs	
Р36СР	180	27,612	28,091	28,193	14,782	
P45CP	133	27,585	27,947	28,039	14,733	
P46CP	139	27,596	27,971	28,067	14,443	
P46J23CP	142	27,595	28,008	28,059	14,409	
P47CP	134	27,596	27,957	28,060	14,696	
P48CP	137	27,528	27,893	27,990	14,571	
P53CP	140	27,672	28,051	28,144	14,508	
P45CPNW	133	27,748	28,121	28,190	15,151	

Table L.18 – Stochastic Risk Results, CP– Social Cost of Carbon

	CP Cases Social Cost of Carbon						
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs		
Р36СР	187	36,278	36,808	36,887	23,413		
P45CP	152	36,713	37,137	37,141	23,870		
P46CP	153	36,451	36,897	36,923	23,327		
P46J23CP	153	36,296	36,755	36,784	23,151		
P47CP	153	36,699	37,139	37,150	23,819		
P48CP	155	36,567	37,007	37,020	23,620		
P53CP	155	36,576	37,025	37,043	23,436		
P45CPNW	152	36,877	37,292	37,303	24,302		

Table L.19 – Stochastic Risk Results, FOT Risk Assessment Cases – Medium Gas, Medium CO_2

	FOT Cases						
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs		
P45CNW	104	23,917	24,212	24,258	11,032		
P45CP	108	23,867	24,160	24,193	10,923		
P46CP	113	23,924	24,239	24,296	10,762		
P47CP	109	23,835	24,130	24,156	10,829		
P48CP	111	23,927	24,241	24,293	10,904		
P53CP	115	23,986	24,305	24,357	10,828		

 $Table \ L.20-Stochastic \ Risk \ Results, Gateway \ and \ No \ Gas \ Cases-Medium \ Gas, Medium \ CO_2$

	Gateway and No Gas Studies					
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs	
P-22CNW	96	23,470	23,733	23,772	10,057	
P-23CNW	100	24,037	24,307	24,358	9,625	
P-25CNW	98	24,093	24,372	24,414	9,958	
P-26CNW	99	23,162	23,454	23,479	10,255	
P29	98	23,182	23,467	23,503	10,256	
P29PS	123	23,439	23,777	23,803	10,509	

Table L.21 – Stochastic Risk Results, Sensitivity Cases – Medium Gas, Medium CO₂

Tuble E.21 Sto	Sensitivity Studies					
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs	
S01	96	21,939	22,208	22,248	9,646	
S02	113	24,182	24,475	24,527	11,270	
S03	103	23,235	23,514	23,550	10,594	
S04	100	23,161	23,442	23,480	10,527	
S05	99	22,827	23,102	23,134	10,231	
S06	95	23,902	24,183	24,207	11,119	
S07	98	22,992	23,254	23,301	10,346	
S08	97	23,039	23,313	23,350	10,187	
P45CPNW	98	23,062	23,348	23,372	10,338	

Table L.22 – Stochastic Risk Results, DSM Rebundled Cases – Medium Gas Medium CO₂

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	DP Studies						
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs		
P45DP	101	22,956	23,248	23,268	10,026		
P46DP	106	23,012	23,321	23,344	9,639		
P53DP	107	23,070	23,381	23,401	9,687		

Table L.23 – Stochastic Risk Results, P70 Cases – Medium Gas, Medium CO₂

	P70 Studies					
PVRR (\$m)	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs	
P70	99	23,882	24,161	24,204	10,457	
P71	95	23,859	24,139	24,165	10,384	
P72	95	23,969	24,238	24,275	10,517	
P73	98	24,100	24,391	24,426	10,502	
P74	96	24,075	24,364	24,381	10,604	

Table L.24 – Stochastic Risk Adjusted PVRR, Initial Cases

	Med Gas, Med CO2				
Name	PVRR (\$m)	Name	PVRR (\$m)	Name	PVRR (\$m)
P01	25,319	P12	24,873	P30	24,928
P02	26,174	P13	25,226	P31	24,667
P03	25,022	P14	24,987	P32	24,947
P04	24,974	P15	25,506	P33	25,010
P06	25,139	P16	25,097	P34	25,146
P07	25,021	P17	25,400	P35	24,858
P08	25,081	P18	25,602	P45	24,710
P09	24,960	P19	25,211	P46	24,593
P10	24,848	P20	26,385	P53	24,650
P11	24,966	P28	24,879	P54	24,806

Table L.25 - Stochastic Risk Adjusted PVRR by Price Scenario, Initial Cases

	PVRR (\$m)					
Name	Low Gas, No CO2	Med Gas, Med CO2	High Gas, High CO ₂	Social Cost of Carbon		
P16	20,427	25,097	31,357	41,717		
P17	22,071	25,400	30,312	38,247		
P18	23,587	25,602	29,187	37,051		
P19	21,209	25,211	30,701	40,334		
P20	21,881	26,385	29,832	39,421		

Table L.26 – Stochastic Risk Adjusted PVRR, C Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
P31C	24,551
P36C	24,614
P45C	24,456
P46C	24,451
P46J23C	24,488
P47C	24,367
P48C	24,391
P53C	24,516
P53J23C	24,570
P54C	24,558

Table L.27 – Stochastic Risk Adjusted PVRR by Price Scenario, CP Cases

	PVRR (\$m)					
Name	Low Gas, No CO2	Med Gas, Med CO ₂	High Gas, High CO2	Social Cost of Carbon		
Р36СР	21,403	24,595	29,290	38,405		
P45CP	21,105	24,360	29,188	38,791		
P46CP	21,305	24,465	29,217	38,550		
P46J23CP	21,327	24,478	29,215	38,394		
P47CP	21,143	24,388	29,208	38,794		
P48CP	21,187	24,374	29,135	38,649		
P53CP	21,349	24,524	29,296	38,681		
P45CNW	20,969	24,376	29,355	38,960		

Table L.28 – Stochastic Risk Adjusted PVRR, FOT Risk Assessment Cases

Name	Med Gas, Med CO2 PVRR (\$m)
P45CNW	25,288
P45CP	25,233
P46CP	25,314
P47CP	25,209
P48CP	25,312
P53CP	25,382

Table L.29 - Stochastic Risk Adjusted PVRR, Gateway and No Gas Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
P-22CNW	24,792
P-23CNW	25,402
P-25CNW	25,460
P-26CNW	24,481
P29	24,503
P29PS	24,806

Table L.30 - Stochastic Risk Adjusted PVRR, Sensitivity Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
S01	23,193
S02	25,572
S03	24,565
S04	24,482
S05	24,126
S06	25,248
S07	24,291
S08	24,353

Table L.31 - Stochastic Risk Adjusted PVRR, DSM Rebundled Cases

Name	Med Gas, Med CO ₂ PVRR (\$m)
P45DP	24,453
P46DP	24,526
P53DP	24,587

Table L.32 – Stochastic Risk Adjusted PVRR, P70 Cases

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Name	Med Gas, Med CO ₂ PVRR (\$m)		
P70	25,251		
P71	25,218		
P72	25,334		
P73	25,482		
P74	25,449		

Table L.33 – Carbon Dioxide Emissions, Initial Cases

Med Gas, Med CO ₂					
Name	CO ₂ (thousand tons)	Name	CO ₂ (thousand tons)	Name	CO ₂ (thousand tons)
P01	616,896	P12	579,167	P30	587,905
P02	605,872	P13	604,396	P31	588,421
P03	595,728	P14	535,774	P32	583,565
P04	567,901	P15	472,569	P33	569,586
P06	585,907	P16	669,944	P34	568,422
P07	581,583	P17	475,390	P35	557,489
P08	595,956	P18	427,110	P45	583,981
P09	597,855	P19	607,157	P46	560,199
P10	571,707	P20	607,157	P53	562,025
P11	596,911	P28	594,322	P54	584,377

Table L.34 - Carbon Dioxide Emissions by Price Scenario, Initial Cases

	CO ₂ (thousand tons)				
Name	Low Gas, No CO2	Med Gas, Med CO ₂	High Gas, High CO ₂	Social Cost of Carbon	
P16	674,184	669,944	653,963	496,702	
P17	465,998	475,390	478,795	366,220	
P18	418,674	427,110	431,628	321,000	
P19	607,941	607,157	598,587	459,469	
P20	579,150	607,157	572,793	437,132	

Table L.35 - Carbon Dioxide Emissions, C Cases

Name	Med Gas, Med CO ₂ (thousand tons)
P31C	588,334
P36C	550,233
P45C	578,607
P46C	560,210
P46J23C	553,673
P47C	573,088
P48C	567,025
P53C	562,972
P53J23C	556,990
P54C	581,465

Table L.36 - Carbon Dioxide Emissions by Price Scenario, CP Cases

	CO ₂ (thousand tons)				
Name	Low Gas, No CO2	Med Gas, Med CO ₂	High Gas, High CO ₂	Social Cost of Carbon	
Р36СР	549,329	549,427	544,092	405,969	
P45CP	577,806	577,439	571,643	432,168	
P46CP	555,322	557,824	553,331	414,320	
P46J23CP	549,304	552,065	549,152	411,129	
P47CP	572,966	573,649	568,183	429,251	
P48CP	567,163	567,889	562,313	424,073	
P53CP	558,186	560,553	556,201	418,116	
P45CNW	586,648	585,641	579,073	437,599	

Table L.37 - Carbon Dioxide Emissions, FOT Risk Assessment Cases

Name	Med Gas, Med CO2 (thousand tons)
P45CNW-FOT	542,046
P45CP-FOT	540,134
P46CP-FOT	522,510
P47CP-FOT	535,827
P48CP-FOT	533,930
P53CP-FOT	525,364

Table L.38 - Carbon Dioxide Emissions, Gateway and No Gas Cases

The Live Cure Divinite Limitations, Cure (in) und 110 Cure Cure			
	Name	Med Gas, Med CO2 (thousand tons)	
	P-22CNW	581,028	
	P-23CNW	544,811	
	P-25CNW	580,014	
	P-26CNW	579,969	
	P29	580,126	
	P29PS	576,806	

Table L.39 - Carbon Dioxide Emissions, Sensitivity Cases

Name	Med Gas, Med CO2 (thousand tons)
S01	569,357
S02	607,239
S03	590,315
S04	590,401
S05	580,957
S06	586,136
S07	583,986
S08	581,368

Table L.40 – Carbon Dioxide Emissions, DSM Rebundled Cases

Name	Med Gas, Med CO2 (thousand tons)	
P45DP	578,417	
P46DP	556,742	
P53DP	559,529	

Table L.41 – Carbon Dioxide Emissions, P70 Cases

Name	Med Gas, Med CO2 (thousand tons)
P70	25,251
P71	25,218
P72	25,334
P73	25,482
P74	25,449

Table L.42 – Average Annual Energy Not Served, Initial Development Cases

Med Gas, Med CO ₂					
Name	GWh	Name	GWh	Name	GWh
P01	4.3	P12	5.3	P30	6.4
P02	5.6	P13	5.3	P31	5.8
P03	5.3	P14	10.2	P32	5.5
P04	7.2	P15	7.9	P33	4.7
P06	4.6	P16	4.4	P34	5.0
P07	4.6	P17	37.9	P35	6.7
P08	5.8	P18	73.3	P45	5.2
P09	5.9	P19	4.5	P46	8.1
P10	6.0	P20	4.5	P53	8.3
P11	5.1	P28	5.5	P54	5.8

Table L.43 – Average Annual ENS by Price Scenario, Initial Development Cases

Name	GWh							
	Low Gas, No CO ₂	Med Gas, Med CO ₂	High Gas, High CO ₂	Social Cost of Carbon				
P16	4.4	4.4	4.4	4.5				
P17	37.9	37.9	38.0	37.9				
P18	73.8	73.3	73.9	73.9				
P19	4.5	4.5	4.5	4.5				
P20	4.6	4.5	4.6	4.6				

Table L.44 – Average Annual Energy Not Served, C Cases

Name	Med Gas, Med CO2 GWh
P31C	6.8
P36C	8.9
P45C	6.7
P46C	7.2
P46J23C	8.3
P47C	8.1
P48C	7.5
P53C	7.4
P53J23C	8.3
P54C	7.7

Table L.45 – Average Annual Energy Not Served by Price Scenario, CP Cases

	GWh							
Name	Low Gas, No CO2	Med Gas, Med CO ₂	High Gas, High CO ₂	Social Cost of Carbon				
Р36СР	7.5	7.5	7.5	7.5				
P45CP	6.3	6.3	6.4	6.3				
P46CP	8.4	8.4	8.4	8.4				
P46J23CP	9.1	9.1	9.1	9.1				
P47CP	8.9	8.9	8.9	8.9				
P48CP	8.3	8.3	8.3	8.3				
P53CP	8.4	8.4	8.4	8.4				
P45CNW	5.4	5.4	5.4	5.4				

Table L.46 – Average Annual Energy Not Served, FOT Risk Assessment Cases

Name	Med Gas, Med CO2 GWh
P45CNW-FOT	5.2
P45CP-FOT	6.2
P46CP-FOT	8.6
P47CP-FOT	6.5
P48CP-FOT	7.6
P53CP-FOT	8.5

Table L.47 – Average Annual Energy Not Served, Gateway and No Gas Cases

Name	Med Gas, Med CO ₂ GWh
P-22CNW	4.9
P-23CNW	4.8
P-25CNW	4.0
P-26CNW	4.0
P29	4.2
P29PS	30.8

Table L.48 – Average Annual Energy Not Served, Sensitivity Cases

Name	Med Gas, Med CO ₂ GWh
S01	3.5
S02	8.4
S03	7.3
S04	5.1
S05	5.4
S06	6.5
S07	5.6
S08	5.5

Table L.49 – Average Annual Energy Not Served, DSM Rebundled Cases

Name	Med Gas, Med CO2 GWh
P45DP	6.7
P46DP	8.6
P53DP	8.6

Table L.50 - Average Annual Energy Not Served, P70 Cases

Name	Med Gas, Med CO2 GWh
P70	25250.8
P71	25218.3
P72	25334.3
P73	25481.9
P74	25449.2

Table L.51 – PVRR Cost Components by Price Scenario, Initial Cases, Medium Gas, Medium CO₂

	Stochastic PVRR (\$ millions)									
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P01	10,526	245	463	3,179	(760)	939	(5,190)	886	13,818	24,106
P02	10,520	318	461	3,078	(756)	926	(5,024)	957	14,440	24,919
P03	10,459	260	462	2,971	(764)	911	(5,076)	919	13,680	23,822
P04	9,815	236	527	2,846	(772)	987	(5,181)	890	14,426	23,775
P06	10,258	262	491	2,923	(765)	972	(4,986)	902	13,874	23,932
P07	10,196	265	496	2,886	(769)	972	(4,956)	931	13,799	23,819
P08	10,465	259	460	2,968	(767)	926	(5,025)	918	13,672	23,875
P09	10,498	261	459	2,990	(769)	897	(5,107)	908	13,622	23,760
P10	10,017	237	512	2,866	(765)	982	(5,246)	898	14,154	23,655
P11	10,496	261	464	2,987	(766)	926	(5,095)	900	13,595	23,768
P12	10,130	255	475	2,863	(760)	979	(5,022)	928	13,828	23,678
P13	10,470	260	460	3,065	(760)	903	(5,028)	921	13,726	24,016
P14	9,855	289	518	2,594	(763)	989	(4,870)	1,081	14,093	23,786
P15	10,246	380	580	1,898	(750)	1,105	(4,721)	1,171	14,376	24,285
P16	11,737	350	453	3,659	(315)	875	(4,936)	1,234	10,833	23,889
P17	10,322	421	556	1,914	(773)	1,020	(4,439)	1,684	13,476	24,182
P18	8,799	271	632	1,512	(684)	1,258	(4,894)	1,613	15,869	24,376
P19	10,811	320	483	3,180	(792)	715	(4,844)	1,089	13,039	24,000
P20	10,811	320	483	3,180	(792)	715	(4,844)	1,089	14,157	25,118
P28	10,444	258	464	2,968	(766)	923	(5,022)	922	13,495	23,686
P30	10,411	258	470	2,928	(767)	974	(5,066)	899	13,625	23,733
P31	10,341	256	463	2,925	(757)	906	(5,037)	912	13,477	23,484
P32	10,337	269	484	2,898	(769)	977	(4,981)	930	13,605	23,750
P33	10,088	248	505	2,810	(762)	995	(5,015)	917	14,023	23,809

Table L.52 Continued-PVRR Cost Components by Price Scenario, Initial Cases, Medium Gas, Medium CO₂

Tuble Elez Continued 1 (1til Cost Components by 111ce Scenario) initial Cases, fredram Gas, fredram Coz										
P34	10,023	257	511	2,806	(760)	950	(4,973)	929	14,194	23,938
P35	10,103	280	502	2,700	(760)	973	(5,187)	963	14,092	23,666
P45	10,343	268	471	2,892	(766)	915	(5,021)	923	13,500	23,524
P46	10,137	281	478	2,669	(759)	905	(4,976)	967	13,712	23,413
P53	10,158	281	478	2,688	(760)	905	(4,977)	966	13,730	23,468
P54	10,321	262	468	2,865	(702)	910	(5,014)	935	13,573	23,616

Table L.53 – PVRR Cost Components by Price Scenario, Initial Cases, Low Gas, No CO₂

	Stochastic PVRR (\$ millions)									
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P16	9,901	351	442	0	(311)	875	(3,412)	768	10,833	19,448
P17	8,213	430	546	0	(766)	1,020	(3,073)	1,168	13,476	21,013
P18	7,228	282	621	0	(684)	1,258	(3,338)	1,218	15,871	22,456
P19	9,058	323	473	0	(787)	715	(3,342)	714	13,039	20,194
P20	8,585	261	489	0	(743)	1,026	(3,557)	614	14,158	20,833

Table L.54 – PVRR Cost Components by Price Scenario, Initial Cases, High Gas, High CO₂

		Stochastic PVRR (\$ millions)									
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR	
P16	13,968	307	465	6,855	(317)	875	(5,285)	2,145	10,833	29,847	
P17	12,935	372	568	3,720	(780)	1,020	(4,868)	2,416	13,476	28,858	
P18	10,760	224	644	2,925	(688)	1,258	(5,417)	2,211	15,868	27,785	
P19	13,000	281	495	6,015	(801)	715	(5,342)	1,821	13,039	29,224	
P20	12,097	217	511	5,437	(753)	1,026	(5,793)	1,499	14,156	28,397	

Table L.55 – PVRR Cost Components by Price Scenario, Initial Cases, Social Cost of Carbon

					Stochastic PVR	R (\$ million	s)			
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P16	10,374	437	488	17,102	(353)	875	(4,274)	4,110	10,833	39,712
P17	9,224	441	592	13,132	(831)	1020	(4,531)	3,785	13,476	36,415
P18	7,704	281	667	11,726	(729)	1258	(5,207)	3,541	15,869	35,276
P19	9,667	390	518	15,893	(840)	715	(4,531)	3,470	13,039	38,396
P20	9,001	298	534	15,270	(800)	1026	(5,174)	3,117	14,157	37,527

Table L.56 – PVRR Cost Components, C Cases, Medium Gas, Medium CO₂

					Stochastic PVR	R (\$ millions))			
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P31C	10,266	252	473	2,929	(763)	934	(4,948)	965	13,265	23,374
P36C	9,998	282	521	2,603	(740)	935	(4,860)	1,110	13,581	23,430
P45C	10,139	248	479	2,865	(764)	893	(5,006)	972	13,458	23,283
P46C	10,109	282	485	2,676	(847)	901	(4,970)	981	13,659	23,278
P46J23C	10,058	282	499	2,641	(845)	941	(4,966)	993	13,709	23,312
P47C	10,104	253	501	2,800	(782)	893	(4,994)	998	13,426	23,198
P48C	10,057	256	506	2,741	(780)	910	(5,000)	992	13,539	23,221
P53C	10,142	282	485	2,699	(847)	901	(4,974)	976	13,677	23,340
P53J23C	10,104	282	499	2,665	(845)	941	(4,973)	983	13,735	23,391
P54C	10,189	252	468	2,882	(759)	915	(4,970)	982	13,422	23,381

Table L.57 – PVRR Cost Components, CP Cases, Medium Gas Medium CO₂

				Sto	chastic PVRR (\$	millions)				
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
Р36СР	9,982	282	520	2,599	(742)	975	(4,877)	1,090	13,582	23,413
P45CP	10,116	249	497	2,852	(764)	906	(5,008)	970	13,375	23,192
P46CP	10,024	271	504	2,652	(846)	908	(4,941)	1,025	13,694	23,292
P46J23CP	10,000	275	504	2,626	(845)	955	(4,950)	1,014	13,723	23,303
P47CP	10,109	252	503	2,804	(782)	862	(4,980)	1,017	13,434	23,219
P48CP	10,076	257	503	2,749	(780)	904	(4,999)	998	13,496	23,205
P53CP	10,055	271	504	2,674	(846)	908	(4,946)	1,017	13,712	23,348
P45CNW	10,280	258	494	2,933	(792)	932	(4,997)	988	13,111	23,207

Table L.58 – PVRR Cost Components, CP Cases, Low Gas No CO₂

				Sto	chastic PVRR (\$	millions)				
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P36CP	8,383	287	510	0	(734)	975	(3,350)	724	13,583	20,377
P45CP	8,603	254	487	0	(758)	906	(3,426)	653	13,375	20,094
P46CP	8,437	275	493	0	(840)	908	(3,380)	696	13,694	20,285
P46J23CP	8,379	278	494	0	(838)	955	(3,382)	696	13,724	20,306
P47CP	8,576	257	492	0	(776)	862	(3,406)	690	13,434	20,130
P48CP	8,529	263	492	0	(774)	904	(3,418)	679	13,497	20,173
P53CP	8,470	275	493	0	(840)	908	(3,383)	691	13,712	20,327
P45CPNW	8,731	262	483	0	(786)	932	(3,424)	654	13,112	19,965

Table L.59 – PVRR Cost Components, CP Cases, High Gas High CO₂

				1	Stochastic PVR	R (\$ millions)			
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P36CP	11,983	239	532	4,888	(750)	975	(5,357)	1,789	13,582	27,881
P45CP	12,054	208	509	5,389	(768)	906	(5,516)	1,631	13,374	27,786
P46CP	12,065	230	516	5,025	(851)	908	(5,452)	1,681	13,693	27,814
P46J23CP	12,084	234	516	4,982	(850)	955	(5,479)	1,647	13,723	27,812
P47CP	12,066	211	515	5,309	(786)	862	(5,487)	1,683	13,433	27,805
P48CP	12,039	216	515	5,200	(784)	904	(5,508)	1,659	13,495	27,736
P53CP	12,101	230	516	5,073	(851)	908	(5,463)	1,664	13,711	27,889
P45CPNW	12,098	217	506	5,534	(796)	932	(5,488)	1,676	13,110	27,946

Table L.60 - PVRR Cost Components, CP Cases, Social Cost of Carbon

				S	Stochastic PVR	R (\$ millions	s)			
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P36CP	8,893	327	556	14,280	(826)	975	(4,712)	3,358	13,583	36,561
P45CP	8,979	289	532	15,098	(813)	906	(4,844)	3,261	13,375	36,934
P46CP	8,939	323	539	14,571	(897)	908	(4,795)	3,284	13,694	36,703
P46J23CP	8,901	324	540	14,444	(897)	955	(4,820)	3,251	13,723	36,555
P47CP	8,971	291	538	15,028	(831)	862	(4,818)	3,312	13,434	36,936
P48CP	8,954	298	538	14,875	(830)	904	(4,853)	3,272	13,496	36,798
P53CP	8,979	322	539	14,696	(897)	908	(4,818)	3,251	13,712	36,829
P45CPNW	9,127	301	529	15,253	(841)	932	(4,801)	3,330	13,111	37,095

Table L.61 – PVRR Cost Components, FOT Cases, Medium Gas Medium CO₂

			,	Sto	chastic PVRR (S	millions)				
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P45CNW-FOT	9,588	245	499	2,680	(815)	945	(3,093)	723	13,304	24,075
P45CP-FOT	9,507	238	498	2,671	(806)	903	(3,090)	724	13,379	24,024
P46CP-FOT	9,414	259	508	2,492	(809)	944	(3,073)	773	13,591	24,099
P47CP-FOT	9,515	249	495	2,620	(785)	862	(3,103)	703	13,445	24,001
P48CP-FOT	9,602	264	489	2,596	(844)	890	(3,095)	728	13,468	24,098
P53CP-FOT	9,447	258	508	2,515	(809)	944	(3,074)	766	13,609	24,164

Table L.62 – PVRR Cost Components, Gateway and No Gas Cases, Medium Gas Medium CO₂

			,	· ·	Stochastic PVR	R (\$ millions))			
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P-22CNW	10,181	246	491	2,883	(772)	888	(5,012)	910	13,788	23,603
P-23CNW	9,869	277	495	2,562	(776)	957	(4,965)	961	14,804	24,184
P-25CNW	10,145	249	463	2,872	(738)	903	(5,024)	843	14,527	24,239
P-26CNW	10,183	257	472	2,888	(800)	934	(4,916)	988	13,301	23,307
P29	10,184	257	467	2,890	(800)	934	(4,916)	993	13,319	23,328
P29PS	9,921	205	568	2,836	(771)	940	(4,778)	1,292	13,402	23,616

Table L.63 – PVRR Cost Components, Sensitivity Cases, Medium Gas Medium CO₂

		Stochastic PVRR (\$ millions)												
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR				
S01	9,946	240	466	2,836	(790)	843	(4,997)	872	12,665	22,080				
S02	10,724	291	486	3,068	(794)	896	(4,855)	1,144	13,386	24,346				
S03	10,430	277	485	2,975	(774)	942	(5,007)	989	13,071	23,388				
S04	10,413	270	481	2,973	(777)	923	(4,995)	988	13,032	23,308				
S05	10,177	246	493	2,883	(775)	920	(4,929)	969	12,985	22,970				
S06	10,755	422	498	2,956	(769)	1,067	(5,059)	1,005	13,163	24,038				
S07	10,233	246	498	2,904	(760)	922	(4,952)	1,007	13,028	23,126				
S08	10,184	248	503	2,900	(770)	895	(4,998)	986	13,238	23,186				

Table L.64 – PVRR Cost Components, DSM Rebundled Cases, Medium Gas Medium CO₂

			,		Stochastic PVR	R (\$ millions))			
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P45DP	10,148	250	497	2,858	(780)	889	(4,899)	993	13,325	23,281
P46DP	10,013	272	505	2,648	(845)	887	(4,925)	1,018	13,778	23,350
P53DP	10,046	271	505	2,671	(846)	887	(4,930)	1,010	13,795	23,409

Table L.65 – PVRR Cost Components, P70 Cases, Medium Gas Medium CO₂

				S	Stochastic PVR	R (\$ millions	s)			
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P70	10,384	249	487	3,111	(761)	992	(5,239)	920	13,828	24,041
P71	10,301	232	476	3,116	(761)	999	(5,182)	891	13,860	24,010
P72	10,400	244	470	3,161	(759)	959	(5,159)	887	13,838	24,121
P73	10,379	258	501	3,034	(758)	950	(5,135)	954	14,001	24,261
P74	10,447	248	467	3,178	(761)	984	(5,138)	873	13,857	24,230

Table L.66 – 10-year Average Incremental Customer Rate Impact*

		8	10-	year Average II	ncremental Cu	stomer Rate	Impact (2019 -	- 2028)		
	Low Gas,	No CO ₂	Medium Gas,	Medium CO ₂	High Gas,	High CO ₂	Social Cost	of Carbon	Aver	age
\$ Millions	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank
P45CNW	0	4	0	5	0	5	0	6	0	5
Р36СР	114	8	102	8	81	8	9	8	77	8
P45CP	(1)	3	(1)	3	(1)	3	0	7	(0)	4
P46CP	4	5	(0)	4	(1)	4	(30)	1	(7)	1
P46J23CP	50	7	34	7	19	7	(28)	2	19	7
P47CP	(7)	1	(5)	1	(2)	2	(1)	5	(3)	2
P48CP	(5)	2	(4)	2	(2)	1	(2)	4	(3)	3
P53CP	18	6	15	6	16	6	(7)	3	11	6

^{*}The relative difference in customer rate impacts is negligible and no adjustment to the selection of P-45CNW as the preferred portfolio.

Table L.67 – 20-year Average Incremental Customer Rate Impact *

		20-year Average Incremental Customer Rate Impact (2019 - 2038)									
	Low Gas, No CO ₂		Medium Gas, Medium CO2		High Gas, High CO ₂		Social Cost of Carbon		Average		
\$ Millions	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	
P45CNW	0	1	0	6	0	8	0	8	0	7	
Р36СР	50	8	21	8	(20)	7	(45)	5	2	8	
P45CP	35	7	5	7	(30)	6	(20)	7	(3)	6	
P46CP	25	5	(12)	3	(51)	3	(56)	2	(24)	2	
P46J23CP	4	2	(33)	1	(75)	1	(90)	1	(48)	1	
P47CP	23	4	(5)	5	(37)	5	(27)	6	(11)	5	
P48CP	22	3	(13)	2	(51)	2	(46)	4	(22)	3	
P53CP	29	6	(7)	4	(45)	4	(47)	3	(17)	4	

^{*}The relative difference in customer rate impacts is negligible and no adjustment to the selection of P-45CNW as the preferred portfolio.

 $Table\ L.68-Loss\ of\ Load\ Probability,\ Major\ (>25,000\ MWh)\ July\ Event,\ Medium\ Gas\ Medium\ CO_2$

Year	P45CNW - Preferred Portfolio	Р36СР	P45CP	P46CP	P46J23CP	P47CP	P48CP	P53CP
2019	2%	0%	2%	2%	2%	2%	2%	2%
2020	0%	0%	0%	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%	0%	0%	0%
2021	2%	2%	2%	2%	2%	2%	2%	2%
2023	0%	0%	0%	0%	0%	0%	0%	0%
2023	0%	0%	0%	0%	0%	0%	0%	0%
2025	0%	0%	0%	0%	0%	0%	0%	0%
2025	0%	2%	0%	0%	0%	0%	0%	0%
	· ·					-	-	
2027	0%	2%	0%	0%	0%	0%	0%	0%
2028	0%	4%	0%	0%	0%	0%	0%	0%
2029	4%	2%	4%	2%	4%	4%	4%	2%
2030	0%	0%	0%	2%	2%	0%	0%	0%
2031	0%	0%	0%	0%	0%	0%	0%	0%
2032	0%	0%	0%	0%	0%	0%	0%	0%
2033	2%	0%	6%	6%	12%	2%	0%	6%
2034	0%	2%	0%	0%	2%	0%	2%	0%
2035	12%	0%	6%	12%	14%	12%	14%	12%
2036	6%	2%	0%	8%	10%	14%	8%	8%
2037	2%	18%	2%	24%	20%	24%	22%	24%
2038	14%	24%	8%	28%	22%	26%	26%	28%

Table L.69 - Summer Peak, Average Loss of Load Probability, Medium Gas Medium CO₂

	Average for operating years 2019 through 2028								
Event Size (MWh)	P45CNW - Preferred Portfolio	Р36СР	P45CP	Р46СР	P46J23CP	Р47СР	P48CP	Р53СР	
> 0	12%	11%	12%	11%	12%	12%	12%	11%	
>1,000	5%	8%	5%	6%	6%	6%	5%	6%	
> 10,000	1%	3%	1%	1%	1%	1%	1%	1%	
> 25,000	0%	1%	0%	0%	0%	0%	0%	0%	
> 50,000	0%	0%	0%	0%	0%	0%	0%	0%	
> 100,000	0%	0%	0%	0%	0%	0%	0%	0%	
> 500,000	0%	0%	0%	0%	0%	0%	0%	0%	

	Average for operating years 2019 through 2038								
Event Size (MWh)	P45CNW - Preferred Portfolio	Р36СР	P45CP	Р46СР	Р46Ј23СР	Р47СР	Р48СР	P53CP	
> 0	21%	15%	16%	22%	24%	24%	22%	22%	
>1,000	15%	12%	12%	17%	19%	18%	18%	17%	
> 10,000	6%	6%	4%	9%	10%	9%	9%	9%	
> 25,000	2%	0%	2%	4%	5%	4%	4%	4%	
> 50,000	1%	1%	0%	2%	2%	2%	1%	2%	
> 100,000	0%	1%	0%	0%	0%	0%	0%	0%	
> 500,000	0%	0%	0%	0%	0%	0%	0%	0%	
>1,000,000	0%	0%	0%	0%	0%	0%	0%	0%	