

**Assumptions for Benefit Calculations Provided by Generation Engineering**

Location	Description	Heat Rate Improvement Btu/Kwh	Additional Capacity Kw/Yr	Capacity Factor or Hours above Capacity	Annual Energy Benefit (MWh/Yr)	Capacity Factor Used in Heat Rate Improvement Calcs	Load Shape
1 Jim Bridger U1	Condensate Pumps	9.0	384.0	1,300	499.2	83.8%	West System Load Shape
2 Jim Bridger U1	Lighting	5.3	273.0	1,300	354.9	83.8%	West Commercial Lighting
3 Jim Bridger U1	Lighting	5.3	273.0	1,300	354.9	83.8%	West Commercial Lighting
4 Jim Bridger U2	Condensate Pumps	9.0	384.0	1,300	499.2	84.4%	West System Load Shape
5 Jim Bridger U3	Condensate Pumps	9.0	384.0	1,300	499.2	85.2%	West System Load Shape
6 Jim Bridger U4	Condensate Pumps	9.0	384.0	1,300	499.2	84.3%	West System Load Shape
7 Chehalis	CCW Fan FVDs and Temp. Reset	1.4	90.0	15%	118.3	59.0%	West Water Heating
8 Chehalis	High Efficiency Lighting	0.5	30.0	15%	39.4	59.0%	West Commercial Lighting
9 Chehalis	(2) Reverse Osmosis Pump VFDs	0.6	41.0	15%	53.9	59.0%	West Water Heating
10 Chehalis	Reduce LP Economizer Recirculation Pump Use	0.5	33.0	15%	43.4	59.0%	West Water Heating
11 Hermiston	High Efficiency Lighting	0.8	37.0	15%	48.6	70.0%	West Commercial Lighting
12 Hermiston	Install Small Condensate Pump					70.0%	West Water Heating
13 Hermiston	HVAC	0.1	4.8	15%	6.3	70.0%	West Water Heating
14 Hermiston	Compressed Air System Upgrades	0.3	13.8	15%	18.1	70.0%	West Water Heating

Note: Annual Energy Benefit (MWh/Yr) is the Additional Capacity Kw/Yr \* Hours above Capacity / 1000

**WA Efficiency Analysis**

Location	No.	Description	Measure		Load Shape	Capex	Annual OM Costs	Annual Energy Benefit (MWh)	Additional Capacity Benefit (kW/Yr)	Heat Rate Improve. Btu/kwh	PV Rev Rqt Benefits		PV Rev Rqt (Costs)		Net	
			Life Years	In-Service Year							Non_OR	OR	Non_OR	OR	Non_OR	OR
			Years	Year												
Jim Bridger U1	1	Condensate Pumps	10	2018	West System Load Shape	\$1,724,862	\$39,191	499	384	9.00	\$960,801	\$771,252	(\$1,929,539)	(\$1,846,911)	0.50	0.42
Jim Bridger U1	2	Lighting	12	2014	West Commercial Lighting	\$466,286	\$11,108	355	273	5.30	\$768,921	\$768,921	(\$663,558)	(\$663,558)	1.16	1.16
Jim Bridger U1	3	Lighting	12	2015	West Commercial Lighting	\$499,548	\$11,108	355	273	5.30	\$756,244	\$695,208	(\$670,036)	(\$659,074)	1.13	1.05
Jim Bridger U2	4	Condensate Pumps	10	2017	West System Load Shape	\$1,724,862	\$39,191	499	384	9.00	\$966,839	\$870,587	(\$2,025,298)	(\$1,983,876)	0.48	0.44
Jim Bridger U3	5	Condensate Pumps	10	2015	West System Load Shape	\$1,724,862	\$39,191	499	384	9.00	\$979,903	\$979,903	(\$2,233,018)	(\$2,233,018)	0.44	0.44
Jim Bridger U4	6	Condensate Pumps	10	2016	West System Load Shape	\$1,724,862	\$39,191	499	384	9.00	\$974,711	\$974,711	(\$2,126,124)	(\$2,126,124)	0.46	0.46
Chehalis	7	CCW Fan FVDs and Temp. Reset	10	2015	West Water Heating	\$472,146	\$10,440	118	90	1.40	\$232,216	\$232,216	(\$614,735)	(\$614,735)	0.38	0.38
Chehalis	8	High Efficiency Lighting	10	2013	West Commercial Lighting	\$132,510	\$3,020	39	30	0.50	\$83,086	\$83,086	(\$178,484)	(\$178,484)	0.47	0.47
Chehalis	9	(2) Reverse Osmosis Pump VFDs	10	2015	West Water Heating	\$196,294	\$4,703	54	41	0.60	\$102,163	\$102,163	(\$258,769)	(\$258,769)	0.39	0.39
Chehalis	10	Reduce LP Economizer Recirculation Pump Use	10	2015	West Water Heating	\$0	\$0	-	-	-	\$0	\$0	\$0	\$0		
Hermiston	11	High Efficiency Lighting	10	2014	West Commercial Lighting	\$102,406	\$2,779	49	37	0.76	\$126,644	\$126,644	(\$145,578)	(\$145,578)	0.87	0.87
Hermiston	12	Install Small Condensate Pump	10	2014	West Water Heating	\$0	\$0	-	-	-	\$0	\$0	\$0	\$0		
Hermiston	13	HVAC	10	2014	West Water Heating	\$6,515	\$107	6	5	0.10	\$16,518	\$16,518	(\$8,740)	(\$8,740)	1.89	1.89
Hermiston	14	Compressed Air System Upgrades	10	2014	West Water Heating	\$19,676	\$416	18	14	0.28	\$46,691	\$46,691	(\$27,090)	(\$27,090)	1.72	1.72
<b>10% Benefit Adder</b>																
Jim Bridger U1	1	Condensate Pumps	10	2018	West System Load Shape	\$1,724,862	\$39,191	499	384	9.00	\$1,056,881	\$848,377	(\$1,929,539)	(\$1,846,911)	0.55	0.46
Jim Bridger U1	2	Lighting	12	2014	West Commercial Lighting	\$466,286	\$11,108	355	273	5.30	\$845,813	\$845,813	(\$663,558)	(\$663,558)	1.27	1.27
Jim Bridger U1	3	Lighting	12	2015	West Commercial Lighting	\$499,548	\$11,108	355	273	5.30	\$831,868	\$764,729	(\$670,036)	(\$659,074)	1.24	1.16
Jim Bridger U2	4	Condensate Pumps	10	2017	West System Load Shape	\$1,724,862	\$39,191	499	384	9.00	\$1,063,523	\$957,646	(\$2,025,298)	(\$1,983,876)	0.53	0.48
Jim Bridger U3	5	Condensate Pumps	10	2015	West System Load Shape	\$1,724,862	\$39,191	499	384	9.00	\$1,077,894	\$1,077,894	(\$2,233,018)	(\$2,233,018)	0.48	0.48
Jim Bridger U4	6	Condensate Pumps	10	2016	West System Load Shape	\$1,724,862	\$39,191	499	384	9.00	\$1,072,182	\$1,072,182	(\$2,126,124)	(\$2,126,124)	0.50	0.50
Chehalis	7	CCW Fan FVDs and Temp. Reset	10	2015	West Water Heating	\$472,146	\$10,440	118	90	1.40	\$255,438	\$255,438	(\$614,735)	(\$614,735)	0.42	0.42
Chehalis	8	High Efficiency Lighting	10	2013	West Commercial Lighting	\$132,510	\$3,020	39	30	0.50	\$91,395	\$91,395	(\$178,484)	(\$178,484)	0.51	0.51
Chehalis	9	(2) Reverse Osmosis Pump VFDs	10	2015	West Water Heating	\$196,294	\$4,703	54	41	0.60	\$112,379	\$112,379	(\$258,769)	(\$258,769)	0.43	0.43
Chehalis	10	Reduce LP Economizer Recirculation Pump Use	10	2015	West Water Heating	\$0	\$0	-	-	-	\$0	\$0	\$0	\$0		
Hermiston	11	High Efficiency Lighting	10	2014	West Commercial Lighting	\$102,406	\$2,779	49	37	0.76	\$139,309	\$139,309	(\$145,578)	(\$145,578)	0.96	0.96
Hermiston	12	Install Small Condensate Pump	10	2014	West Water Heating	\$0	\$0	-	-	-	\$0	\$0	\$0	\$0		
Hermiston	13	HVAC	10	2014	West Water Heating	\$6,515	\$107	6	5	0.10	\$18,170	\$18,170	(\$8,740)	(\$8,740)	2.08	2.08
Hermiston	14	Compressed Air System Upgrades	10	2014	West Water Heating	\$19,676	\$416	18	14	0.28	\$51,360	\$51,360	(\$27,090)	(\$27,090)	1.90	1.90

Notes:

Capital and annual OM costs are provided by Generation Engineering (2013 dollars).

Annual energy benefit are hours provided by Generation Engineering and is valued using the DSM production \$/MWh values from the filed IRP. (These include the production costs decrement plus the stochastic risk reduction.)

Additional capacity benefit is provided by Generation Engineering and is valued using the DSM capacity resource deferral values from the filed IRP. (Capacity resource deferral \$/MWh values are converted and applied as \$kW.)

Heat rate improvement (Btu/kWh) is provided by Generation Engineering and are calculated using the thermal model fuel prices.

Non\_OR refers to non-Oregon depreciation schedule / OR refers to Oregon depreciation schedule