

PacifiCorp's 2020 - 2021 Biennial Conservation Plan for its Washington Service Area

November 1, 2019

REVISED December 16, 2019



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Preface

Pursuant to WAC 480-109-110 (3), Pacific Power provided a draft of this Biennial Conservation Plan (Plan) to its Demand Side Management (DSM) Advisory Group on October 1, 2019. Washington Utilities and Transportation Commission (WUTC) Staff (Staff) provided comments on the draft Plan on October 16 and October 22, 2019. Other members of the DSM Advisory Group, including Public Counsel and Northwest Energy Coalition also provided comments on the draft Plan.

Revisions as of December 12, 2019

Tables 2 and Table 5 were revised to incorporate the following changes:

- Format the tables to align with the WUTC staff memo dated December 5, 2019
- Remove the decoupling threshold from the EIA Penalty Threshold calculation
- Add customer meter/site savings that align with the generator savings.
- Updates references to the EIA Penalty Threshold in the text immediately above the tables.

Introduction

Background

Seeking to increase energy conservation in Washington, voters passed Initiative Measure No. 937 (codified as Revised Code of Washington 19.285 and WAC 480-109) in 2006. As a result, each electric utility subject to the jurisdiction of the Washington Utilities and Transportation Commission (Commission) is required to project its cumulative ten-year electric conservation potential and to establish biennial conservation targets.

When determining its ten-year conservation potential, WAC 480-109-100 (2) (a) states that a utility must "...consider all available conservation resources that are cost-effective, reliable, and feasible." The potential must be derived from the utility's most recent Integrated Resource Plan (IRP), including any information learned in its subsequent resource acquisition process, or the utility must document the reasons for any differences. When developing this projection, utilities must use methodologies that are consistent with those used in the Northwest Conservation and Electric Power Plan. The projection must include a list of each measure used in the potential, its unit energy savings value, and the source of that value.¹

With respect to establishing a biennial conservation target, WAC 480-109-100 (3) states that: a) the biennial conservation target must identify, and quantify in megawatt-hours, all available conservation that is cost-effective, reliable and feasible, and b) the biennial conservation target must be no lower than a pro rata share of the utility's ten-year conservation potential. In WAC 480-109-060 (19) "pro rata" is defined as "the calculation dividing the utility's projected ten-year conservation potential into five equal proportions to establish the minimum biennial conservation target."

¹ WAC 480-109-100 (2) (a) through (c).

In compliance with these requirements, the Company provides this Biennial Conservation Plan and requests that the Commission approve the ten-year conservation potential, the EIA Target and the EIA Penalty Threshold established in this Plan.

Types of Conservation Included in the Ten-Year Forecast

WAC 480-109-100 (1) (b) establishes six types of conservation for consideration in establishing a conservation forecast:

1. End-use efficiency;
2. Behavioral programs;
3. High-efficiency cogeneration;
4. Production efficiency;
5. Distribution efficiency; and
6. Market transformation.

The Company's method for forecasting the potential for each of the above types of conservation is described below.

End-Use Efficiency, Behavioral Program, and Market Transformation

In a change from prior biennial periods, to reflect the modified IRP filing schedule² and the April 2019 passage of Senate Bill 5116, Clean Energy Transformation Act (CETA), PacifiCorp established their target using a proxy portfolio generated by the IRP team as part of the 2019 IRP process. This portfolio is one of four distinct price-policy scenarios and incorporates the social cost of carbon as specified in CETA and is referred to as P-18 (the identifier provided from the IRP modeling process)³. The need for a proxy portfolio was discussed with stakeholders during advisory group meetings and there was general consensus the use of P-18 was an effective means of projecting the cumulative ten-year conservation potential in general compliance with WAC 480-109-100 (2) (b).

The conservation potential in P-18 was informed by the energy efficiency potential identified in PacifiCorp's *Demand-Side Resource Potential Assessment for 2019-2038* (Conservation Potential Assessment, or CPA), performed by Applied Energy Group, using methodologies consistent with those used by the Northwest Power and Conservation Council (Council) and representing opportunities specific to the Company's Washington service area.⁴ The amount of cost-effective, reliable and feasible conservation identified in P-18 encompasses three of the six types of conservation: end-use efficiency, behavioral programs,⁵ and market transformation.⁶

Efficiency opportunities from waste heat-to-power and regenerative technologies were not captured in the Company's prior CPA or offered as a resource option in prior IRPs. The 2019 CPA

² On July 16, 2019, PacifiCorp filed a request for an extension of time to file the 2019 IRP until October 18, 2019.

³ Information on IRP portfolios and the assumptions for these price-policy scenarios can be found in the 2019 IRP Volume 1 – Chapters 7 and 8.

⁴ The 2019 Conservation Potential Assessment and all previous studies are available on the Company's website: <https://www.pacificorp.com/energy/integrated-resource-plan/support.html>

⁵ Because savings from behavioral programs, such as PacifiCorp's Home Energy Reports program, are already reflected in actual and forecasted sales, IRP selections include only behavioral program savings incremental to current program achievements.

⁶ Savings from market transformation are included in the Council's assumption that 85 percent of energy efficiency potential is achievable over 20 years, an assumption that PacifiCorp uses in its CPA.

included these technologies in the assessment of end-use efficiency. To the extent they are cost effective, they are included in the P-18 portfolio selections.

High-Efficiency Cogeneration

The potential for high-efficiency cogeneration was derived from PacifiCorp's *Private Generation Long-Term Resource Assessment (2019-2038)* (Private Generation Study), performed by Navigant Consulting, Inc.⁷ The Private Generation Study is an economic assessment providing forecasts of projected penetration levels of private generation resources within PacifiCorp's service areas through 2038, including a Washington-specific assessment of high-efficiency cogeneration. The Private Generation Study identified high-efficiency cogeneration opportunities that were marginally cost effective. Given the SB 5116 focus on low carbon or non-emitting resources, high efficiency cogeneration was not included in the 2020-2029 conservation forecast.

Production Efficiency

The analysis for production efficiency for this biennial period was to understand the impacts on cost effectiveness specific to thermal plant investments if the remaining life for Washington allocated plants is reduced compared to prior assumptions. Opportunities at the thermal plants have the largest energy savings potential (compared to the wind plant opportunities)⁸ and are the closest to being cost effective. The 2019 IRP (and the Washington addendum incorporating CETA impacts) will provide the best available information on remaining life, but the proxy portfolio contained information indicating shortened lives. Existing project information was run through the production efficiency cost effectiveness model and the results declined substantially and were below the thresholds necessary to secure funding. As a result, the Company is not forecasting any cost-effective, reliable and feasible opportunity for production efficiency during the 2020-2029 period, and thus, no savings from production efficiency are included in the Company's 2020-2021 Biennial Conservation Target.

Distribution Efficiency

As outlined in the prior biennial conservation report, the Company migrated to the new CYME distribution analysis software.

Engineers are now in the process of updating the new CYME distribution analysis model. Throughout the year, and especially as scheduled planning studies are performed, connectivity corrections and equipment ratings and settings are being researched, verified and input. This process competes for time from engineers performing other routine work. The combination of CYME and updated model information will enable more robust analyses of complex scenarios and the assessment of cost-effective, efficiency projects on the distribution system such as VAR (Volt Amperes Reactive) reduction.

⁷ The Private Generation study is available on the Company's website:
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019-irp/2019-irp-support-and-studies/PacifiCorp_IRP_DG_Resource_Assessment-2018_Final-Corrected.pdf

⁸ 2011 study completed by Cascade Energy provided as an Appendix in 2012-2013 biennial plan

During 2020 the Company is reasonably certain they will have a CYME model sufficiently accurate to assess four of Washington’s approximately 142 distribution circuits where VAR flow is high enough to cause voltage violations, seasonally high enough to create operational issues, or bring a circuit’s average power factor below 0.95 lagging. Circuits with these characteristics offer the best opportunity for cost effective VAR reduction, although detailed analysis is required. Cost effectiveness for any potential project will be consistent with financial analysis used to support recovery of other distribution system investments. In 2020, the Company will update the forecast of available projects that are cost effective, feasible and reliable and provide that information in the 2021 Annual Conservation Report⁹.

At this point, the Company does not have any updated information on reliable cost-effective distribution efficiency for the 2020-2029 forecast period, and no savings from distribution efficiency are included in the Company’s 2020-2021 Biennial Conservation Target

Overview of 2020-2029 Conservation Forecast & 2020-2021 Targets

Collectively, the analyses described above, and in greater detail later in this Plan, form the basis of the ten-year cumulative conservation potential available in PacifiCorp’s Washington service area before applying adjustments to account for updates since the time of the analysis. These adjustments are described later in this Plan and are detailed in Appendix 1. The ten-year cumulative conservation potential deemed cost-effective, reliable, and feasible in PacifiCorp’s Washington service area is 509,495 Megawatt-hours (MWh), as shown in Table 1.

Table 1. Cumulative 2020-2029 Conservation Potential by Type

Conservation Category	10-Year Cumulative Potential (MWh at Generator)
P-18 Selections (End-use Efficiency, Market Transformation, and Incremental Behavioral Programs)	459,890
Energy Efficiency Adjustments*	49,605
High-Efficiency Co-Generation	0
Distribution Efficiency	0
Production Efficiency	0
Total	509,495

* Includes existing behavioral programs, and measure-level adjustments based on updated information

To establish a biennial conservation target, consistent with WAC 480-109-100 (3), the Company identified all available conservation that is cost-effective, reliable and feasible for the 2020-2029 period. This amount, 101,899 MWh, is the pro-rata share of the ten year forecast which is larger than the two year sum of 101,420 MWh, and thus satisfies the requirement of WAC 480-109-100 (3) (b). The identified 2020-2021 level of conservation is then adjusted, per Commission guidance

⁹ Filed by November 15, 2020.

described later in this Plan, to develop Pacific Power’s EIA Penalty Threshold of 95,108 MWh, as shown in Table 2.

REVISED Table 2 - 2020-2021 EIA Target and EIA Penalty Threshold

Category	Savings (MWh at Gen)	Savings (MWh at site)¹
Pro Rata Share of 10-year conservation potential	101,899	93,189
EIA Target	101,899	93,189
Decoupling threshold	5,095	4,660
Total Utility Conservation Goal	106,994	97,849
Excluded Programs (NEEA)	(6,791)	(6,211)
Utility Specific Conservation Goal	100,203	91,638
EIA Penalty Threshold (EIA Target minus NEEA savings)	95,108	86,979

¹. Site savings are calculated from generator savings by applying an aggregate adjustment factor (0.91452) based the DSM Business Plan; site kWh/generator kWh.

Budget and Savings by Program

The Company’s 2020-2021 Demand-Side Management Business Plan (DSM Business Plan) is provided as Appendix 2 to this report. The DSM Business Plan contains forecasted savings and expenditures from the Company’s existing programs as well as information on adaptive management strategies, pilots, outreach, and evaluation efforts for the 2020-2021 period. The DSM Business Plan also provides cost-effectiveness results in support of the Company’s direction and program strategies. The Company may add programs or make changes to existing programs as filed tariff attachments or as revisions to the business plan during the 2020-2021 biennium under the adaptive management program delivery structure, which includes consultation with the Company’s DSM Advisory Group. Forecasted savings and budgets are based on the best information available at the time of this filing; a small variance between planned and actual savings and spending is expected, given uncertainty in customer participation levels in the programs during the biennium period. As required by WAC 480-109-120(2) the Company will file an Annual Conservation Plan for 2021 on or before November 15, 2020.

Excess Conservation

WAC 480-109-100 (3) (c) (i) states that “cost-effective conservation achieved in excess of a biennial conservation target may be used to meet up to twenty percent of each of the immediately subsequent two biennial targets.” And that “[t]he presence of excess conservation does not relieve a utility of its obligation to pursue the level of conservation in its biennial target.”

As stated in Order 02 in Docket UE-152072, “Pacific Power & Light Company achieved 2,718 megawatt-hours of excess conservation during the 2016-2017 biennium.” At the time of this filing, final achievement from the 2018-2019 biennium is not available, however, the Company’s 2019 Annual Conservation Plan forecasted an additional 5,932 MWh of excess conservation for the

2018-2019 biennium¹⁰. While Pacific Power fully expects to meet or exceed the 2018-2019 conservation target established in this Plan, the Company notes that excess conservation will help serve as a hedge against risks, including potential impacts of utilizing a floating UES methodology¹¹.

Stakeholder Engagement

Pacific Power appreciates the collaboration and guidance of stakeholders, in particular its DSM Advisory Group, in the development of the conservation forecast and biennial conservation target established in this Plan. A timeline of stakeholder meetings and topics applicable to the biennial planning process is provided below along with IRP public input meetings¹² where DSM related topics were on the agenda. These meetings, coupled with email communications in which supporting information was shared, were pivotal in helping the Company develop the conservation forecast and biennial target. Additional detail on how the Company complied with stakeholder engagement requirements established in WAC 480-109-110 and Attachment 1 to Order 01 in Docket UE-171092 is provided in the “Plan Compliance Information” section later in this document.

June 25, 2018 DSM Advisory Group Meeting

- Review of 2017 performance and 2016-2017 biennial period
- Home Energy Reports evaluation results, delivery transition
- SBW Savings Verification Report
- Pilot updates
- Evaluation update

June 28-29, 2018 – IRP Public Input Meeting

- 2019 IRP kickoff meeting. Reviewed 2017 IRP update highlights, 2019 IRP topics and timeline. Held a Demand-Side Management technical workshop that included the Conservation Potential Assessment development process and Demand-Side Management modeling assumptions and approach for the IRP.

July 23, 2018 – IRP Public Input Meeting (webinar)

- Conservation Potential Assessment Measures

August 30-31, 2018 IRP Public Input Meeting

- Conservation Potential Assessment and energy efficiency credits
- Private Generation Study (Navigant)

¹⁰ Excess conservation is based on target subject to penalty (78,268 MWh) and company program forecasts (84,200 MWh). Excess conservation does not include the impacts of NEEA in either the target or the forecasts.

¹¹ In response to stakeholder input during prior biennial periods and to better align with the other Washington investor-owned utilities, the Company began using floating UES values for reporting in the 2018-2019 biennium and will continue the practice for the 2020-2021 period. For “floating” UES values, updates will occur once during the biennial period, effective January 1st of the second year based on updated information available by October 1st of the first year.

¹² Information on all 2019 IRP public meetings is available at <https://www.pacificorp.com/energy/integrated-resource-plan/public-input-process.html>

September 27-28, 2018 – IRP Public Input Meeting

- Demand-Side Management T&D credit/Conservation Potential Assessment

October 26, 2018 DSM Advisory Group Meeting

- Draft 2019 Annual Conservation Plan
- 2019 program changes preview
- Ductless Heat Pump wood smoke analysis update
- Production efficiency work plan
- Demand response funding
- Other topics – Yakama Nation Tribal Council resolution
- Other topics – Street lighting upgrades

December 21, 2018 DSM Advisory Group Meeting

- Communications and outreach plan review
- Home Energy Reports update
- Collection rate/balancing account analysis update
- Street lighting update

2018 Statewide Advisory Group Meetings

In addition to the DSM Advisory Group meetings, the Company participated in seven Statewide Advisory Group (SWAG) meetings on the following dates:

- January 24, 2018
- March 30, 2018
- May 18, 2018
- June 29, 2018
- August 3, 2018
- September 7, 2018
- December 7, 2018

Topics discussed:

1. Develop a recommendation for the treatment of NEEA Savings in or out of the Energy Independence Act (EIA) target:

“We accept PSE’s calculation of its conservation target, but require the Companies to form a joint advisory group with all stakeholders, including the Department of Commerce, to engage in further discussions about whether NEEA savings should be included in conservation target calculations going forward.”¹³

“(…) those discussions should address whether to include the various subsets of NEEA savings, whether the EIA requires that NEEA savings be included in target calculations, consistency with target setting requirements for consumer-owned

¹³ Commission Order 01, Docket UE-171087 [P.7]

utilities, and the degree of control the Companies have over NEEA’s execution of its programs.”¹⁴

2. Discuss potential performance incentives:

“(…) the Company suggests conducting a workshop in a statewide collaborative setting. This may be a useful exercise and Staff proposes a joint advisory group meeting halfway through the biennium to discuss this, as well as any other common issues.”¹⁵

3. Identify areas of improvement to UTC cost-effectiveness methodology by investigating Resource Value Framework (RVF).

“Staff strongly agrees that the NSPM should be followed in a collaborative process to identify areas of improvement to UTC cost-effectiveness methodology. Staff suggests that any such comprehensive process commence after the conclusion of the Commission’s current integrated resource plan (IRP) rulemaking in Docket U-161024.”¹⁶

February 21, 2019 – IRP Public Input Meeting

- Status update regarding August 1, 2019 IRP filing extension date
- Summary of Oregon energy efficiency analysis results

May 20-21, 2019 – IRP Public Input Meeting

- Conservation Potential Assessment cost correction
- DSM bundling portfolio methodology
- Portfolio development cases, overview of resource portfolios

June 27, 2019 DSM Advisory Group Meeting

- Kickoff meeting for target setting process. Discussed challenges given timing of the 2019 IRP. There was general consensus on using the P-18 Social Cost of Carbon portfolio from the 2019 IRP work in progress as the best available proxy for target setting and that a target update may be needed. Discussed NEEA and impacts of recent Washington legislation on the target setting process.

July 12, 2019 – IRP DSM Technical Workshop (conference call)

- This call was offered to facilitate a discussion and answer clarifying questions regarding the Conservation Potential Assessment.

August 23, 2019 DSM Advisory Group Meeting

- Review of P-18 as best available proxy being used as the basis for the target setting process. Discussed a known error in P-18 and confirmed the current P-18 does not include the

¹⁴ Ibid. [P.7]

¹⁵ Commission Staff Comments Regarding Electric Utility Conservation Plans; Dockets: UE-171087, UE-171091, UE- 171092 [P.10]. The utility cited is Puget Sound Energy. The Company was in agreement with the suggestion.

¹⁶ Ibid. [P.10]

correction and a correction will not be available until October. Agreed to revisit when the 2019 IRP is available as part of the target update.

- Presented work in progress on adjustments to energy efficiency potential
 - Energy efficiency opportunities not assessed in the Conservation Potential Assessment - Home Energy Reports
 - Codes and standards impacts – HB 1444 (Appliance Efficiency Standards) impact review. Identified standards that will be included in the adjustments and those that will not be included.
 - Updates to Conservation Potential Assessment measure savings – Identified RTF updates since April 2018 that will be included in the adjustments and those that will not be included.
- Discussed NEEA’s four forecast options. There was general stakeholder agreement on using the 7th Power Plan with RTF updates forecast. Discussed the need to remove code savings from NEEA’s forecast that is related to states other than Washington. Reviewed codes and standards NEEA is tracking for overlap with codes and standards adjustments. Presented savings identified that will be deducted from NEEA’s forecast due to codes and standards.
- Discussed high efficiency co-generation and setting the potential to zero given leveled costs are generally higher than the higher energy efficiency bundle selected in P-18 and SB 5116 legislative intent on emission free resources does not support including.
- Discussed production efficiency analysis to date that indicates production efficiency potential should be set to zero.
- Presented the target calculation with current P-18 and adjustments identified to date.
- Discussed proxy decrement values tied to P-18.

September 20, 2019 DSM Advisory Group Meeting

- Reviewed latest version of the P-18 proxy portfolio (v09052019) including additional analysis by the IRP team and corrections for Jim Bridger plant coal costs and the company’s plan to utilize this version of P-18 as the basis for the proposed target.
- Reviewed Regional Technical Forum (RTF) adjustments completed since last meeting. Outlined heat pump and line voltage thermostat assumptions and adjustments tied to uncertainty around savings, the possibility of additional non-energy benefits and their key role in providing efficient choices in a clean energy future. Shared company’s plan to add this potential to the conservation forecast.
- Reviewed Distribution efficiency forecast and prior work leading up to utilization of new model and focus on analyzing Volt/VAR reduction opportunities on four Washington distribution circuits during the upcoming biennial period. Outlined Company plan to set forecast to zero while this work is underway.
- Reviewed adjustments forecasts from August 23rd meeting.
- Shared updated (v20190830) NEEA forecast and revised adjustments to align with CPA and remove the impact of codes for states other than Washington.
- Shared proposed target and noted the increase over the preliminary version shared at last meeting.
- Reviewed preliminary business plan and cost effectiveness. Provided a refresher on the proxy approach to valuing the P-18 benefits in the absence of completed decrement study.

- Outlined the six pilots proposed by Company.

Conservation Potential and Conservation Targets

Ten-Year Conservation Potential

The forecast of cost-effective, reliable and feasible conservation for the 2020-2029 period is provided in Table 3. This section describes the process for developing the ten-year potential forecasts for each of the six types of conservation described above and provides a description of the technologies, data collection, processes, procedures, and assumptions used to develop this figure as required by WAC 480-109-120 (1) (b) (iv).

Table 3. 2020-2029 Annual and Ten-Year Conservation Forecast

Category	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2020-2029 Cumulative
Adjusted Energy Efficiency	51,326	50,095	51,782	54,155	55,201	53,984	52,520	49,657	47,542	43,234	509,495
High-Efficiency Co-Generation	-	-	-	-	-	-	-	-	-	-	-
Distribution	-	-	-	-	-	-	-	-	-	-	-
Production Efficiency	-	-	-	-	-	-	-	-	-	-	-
Total	51,326	50,095	51,782	54,155	55,201	53,984	52,520	49,657	47,542	43,234	509,495

End-Use Efficiency, Behavioral Program, and Market Transformation

The conservation forecast for end-use efficiency, behavioral programs and market transformation (collectively referred to in this document as energy efficiency) is developed through the following steps:

1. Completion of the 2019 Conservation Potential Assessment;
2. Economic screening/selection of resources through the 2019 IRP development process;
3. Addition of projected savings from the existing Home Energy Reports (behavioral) program;
4. Identification of adjustments to the 2019 IRP P-18 proxy portfolio conservation resource selections based on updates to codes and standards from HB 1444, RTF UES values, and other supplemental studies.

The 2019 Conservation Potential Assessment

The Company's 2019 Conservation Potential Assessment, performed by Applied Energy Group (AEG), identifies energy efficiency that is feasible (technical potential) and reliable (achievable technical potential), and the 2019 IRP process identifies the share of this potential that is cost-effective (economic achievable technical potential) in the P-18 proxy portfolio. To estimate the amount of feasible potential that is reliable, the Company uses the Council's assumption that up to 85% of potential is achievable over a 20-year period. It is important to note that the Council's achievability assumption extends beyond utility incentive programs:

The Council assumes that up to 85 percent of all technical potential can be achieved by the end of the plan period (20 years) to determine the technically achievable potential. Finally, through the RPM [Regional Portfolio Model], the Council looks at whether potential conservation measures are economically achievable. This

potential is then translated into savings targets, to be achieved from utility programs, market transformation activities of NEEA, and activities outside of programs including market-induced savings and savings from codes and standards (also known as momentum savings).¹⁷

Because of what the achievable potential captures, the amount of energy efficiency selected by the IRP model is inclusive of savings from market transformation efforts, including those claimed through NEEA. It also includes incremental savings from behavioral programs, to the extent they are cost-effective. Because of the short measure life associated with Pacific Power's existing Home Energy Reports program, the existing impacts are assumed to be reflected in the Company's load forecast and are excluded from the IRP energy efficiency selections. These impacts are added back into the conservation forecast for the purpose of establishing a ten-year conservation forecast and two-year target.

AEG identified energy efficiency potential in the 2019 CPA through the following steps:

1. Perform a market characterization to describe sector-level electricity use for the residential, commercial, industrial, irrigation, and street lighting sectors for the base year of 2016. To perform the market characterization, AEG used results from primary market research conducted by PacifiCorp wherever possible, supplemented by secondary data sources available from regional and national organizations such as the NEEA and the Energy Information Administration.
2. Develop a baseline projection of energy consumption by sector, segment, and end use for 2017 through 2038, building upon the base year characterization performed in step 1 above.
3. Define and characterize energy efficiency measures to be applied to all sectors, segments, and end uses. This work relied heavily on the measure characterization work performed by the RTF and Council staff in the development of the Seventh Power Plan. The 2019 CPA considered 359 unique measures across sectors, which expand to nearly 38,000 permutations when assessed separately by state, vintage, and market segment. Consistent with WAC 480-109-100 (2) (c), a list of each measure used in the potential, its unit energy savings value, and the source of that value are provided in Appendix 4-F to the 2019 CPA.
4. Estimate the potential from the efficiency measures by applying achievability and ramp rate assumptions, based on the Council's methodology.

AEG used its Load Management Analysis and Planning tool (LoadMAP™) version 6.0 to perform the steps above. AEG developed LoadMAP in 2007 and has enhanced it over time, using it for the EPRI National Potential Study and numerous utility-specific forecasting and potential studies since. The LoadMAP model:

- Incorporates the Council's methodology and the core principles of rigorous end-use models (such as EPRI's REEPS and COMMEND), but in a simplified and more accessible form.
- Includes stock-accounting algorithms that treat older, less efficient appliance/equipment stock separately from newer, more efficient equipment. Equipment is replaced according to the measure life and appliance vintage distributions.
- Balances the competing needs of simplicity and robustness by incorporating important modeling details related to equipment saturations, efficiencies, vintage, and the like, where

¹⁷ Northwest Power and Conservation Council, *Seventh Northwest Conservation and Electric Power Plan*, p. 12-11 (Feb. 2016)

market data are available, and treats end uses separately to account for varying importance and availability of data resources.

- Isolates new construction from existing equipment and buildings and treats purchase decisions for new construction and existing buildings separately.
- Uses a simple logic for appliance and equipment decisions, rather than complex decision choice algorithms or diffusion assumptions which tend to be difficult to estimate or observe and sometimes produce anomalous results that require calibration or manual adjustment.
- Includes appliance and equipment models customized by end use. For example, the logic for lighting is distinct from refrigerators and freezers.
- Accommodates various levels of segmentation. Analysis can be performed at the sector level (e.g., total residential) or for customized segments within sectors (e.g., housing type or income level).
- Provides forecasts of baseline energy use by sector, segment, end use, and technology for existing and new buildings. It also provides forecasts of total energy use and energy-efficiency savings associated with the various types of potential.

The estimated potential was grouped by leveled cost of conserved energy and converted to hourly shapes for modeling in the 2019 IRP process.

Energy Efficiency in the 2019 IRP process

PacifiCorp's 2019 IRP will present the Company's plans to provide reliable and reasonably priced service to its customers. The primary objective of the IRP is to identify the best mix of resources to serve customers in the future, identified through analysis that measures cost and risk. The least-cost, least-risk resource portfolio—defined as the “preferred portfolio”—is the portfolio that can be delivered through specific action items at a reasonable cost and with manageable risks, while considering customer demand for clean energy and ensuring compliance with state and federal regulatory obligations.

PacifiCorp relies on two models in the development and evaluation of resource portfolios: a deterministic capacity expansion optimization model called *System Optimizer* (“SO”), and a stochastic chronological production cost simulation model called *Planning and Risk* (“PaR”).¹⁸ The vendor for both models is ABB (formerly Ventyx). Both SO and PaR are modules in the Energy Portfolio Management (“EPM”) client-server system that uses the ABB *ProSym* simulation engine and Microsoft SQL Server as the database server. For more detailed discussion on how the SO and PaR models are used in the development of PacifiCorp's IRP, refer to Chapter 7 of the 2017 IRP. Similar information will be provided in the 2019 IRP when complete.

PacifiCorp models energy efficiency (referred to as Class 2 DSM in the IRP) on a comparable basis with supply-side resources in the IRP models, consistent with state IRP standards and guidelines. For resource portfolio development, conservation is structured as a supply curve that provides capacity and energy (based on predetermined hourly load shapes) at a given marginal leveled cost. Leveled costs of Washington energy efficiency resources are adjusted, consistent with the Council's methodology, to account for the following credits:

¹⁸ See Chapter 7 of the Company's 2015 IRP for more detailed discussion on how the System Optimizer and Planning and Risk models are used in the development of PacifiCorp's IRP.

- Transmission and distribution investment deferral credit
- Stochastic risk reduction credit
- Northwest Power Act ten percent credit

Modeling energy efficiency as a resource with hourly impacts and costs levelized over the planning period allows the IRP to directly compare demand-side and supply side options in assessing cost and risk of different portfolio options. The amount of energy efficiency selected by the IRP represents the optimal amount of savings for the Company to pursue based on the best information available at the time of the analysis, recognizing that some savings is likely to be achieved outside of utility incentive programs (e.g., codes and standards, market transformation), as discussed previously in this Plan.

Adjustments to the Energy Efficiency Potential identified in the 2019 IRP Process used to generate P-18.

WAC 480-109-100 (2) (b) referring to a utility's ten-year conservation potential, states "This projection must be derived from the utility's most recent IRP, including any information learned in its subsequent resource acquisition process, or the utility must document the reasons for any differences." Accordingly, in developing this projection, the Company assessed the need to adjust IRP energy efficiency selections and identified the following categories of required updates:

- **Energy efficiency opportunities not assessed in the CPA:** Projected savings from existing behavioral programs. The behavioral program forecast is based on the Company's recent request that program administrator propose a "refresh" for the 2020-2021 biennial period to address statistical significance issues identified in the last evaluation report and propose new treatment and control groups in place of those used (and added) since the program was first introduced. More information on the approach is provided in Appendix 2 to this Plan. The forecast, and associated cost-effectiveness analysis, assumes a two-year measure life and that the savings repeat every two year to ensure projected savings are accurately reflected in the pro-rata calculation.
- **Updates to CPA measure savings resulting from updated RTF information:** The Company's CPA relied on the most current and applicable data available at the time of the analysis (through January 2016). As part of the analysis to identify PacifiCorp's ten-year conservation potential and biennial conservation target, AEG reviewed updated data sources, including updates to RTF deemed measures. These measure-level updates are described in detail in Appendix 1 to this Plan.
- **Updates to CPA measure savings resulting from House Bill 1444 standards:** The CPA relied upon applicable data on standards when the work was completed (April 2018). House Bill 1444, signed into law in May 2019, added a meaningful number of new standards that were not included in the 2019 CPA. New standards change the baseline and available conservation. Impacts depend on when the standard is effective and how it is applied. AEG performed a review of the 2019 CPA, P-18 selections and the new standards imposed by the bill and determined if an adjustment/modification was necessary. These measure-level updates are described in detail in Appendix 1 to this Plan.

- **Updates to key measures to improve alignment between target and business plan:** Applicable to residential lighting and selected electric heating equipment and controls.
 - The general service lighting adjustment found in the RTF table in Appendix 1 reduces potential based on lower UES and removes a portion of the potential (based on an analysis of lamp sales) through a membership warehouse store that does not stock any baseline equipment.
 - Ductless heat pumps savings vary depending on where (home type) the equipment is installed. Variations make the measure(s) slightly cost effective or slightly non-cost effective under the P-18 proxy assumptions. The ductless heat pump adjustment found in the RTF table in Appendix 1 reflects adding the remaining configurations in and results in an upward adjustment to the efficiency forecast.
 - Line voltage thermostats savings are highly dependent on many of the factors affecting ductless heat pumps. They also represent a lower cost way to generate electric heat savings (compared to DHP installations). They were also screened in to insure we have a complete set of electric heat options for all home types. The adjustment includes a combination of a downward adjustment for reduced UES from the RTF and an overall increase by including the potential for the reasons described above.

The forecast for energy efficiency (encompassing end-use efficiency, behavioral programs and market transformation), accounting for the above adjustments, is provided in

Table 4.

Table 4. 2020-2029 Energy Efficiency Forecast – Summary of Adjustments

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2020-2029
P-18 Selections (09052019)	45,770	46,480	47,370	49,590	49,980	48,560	46,650	44,160	42,390	38,940	459,890
Behavioral Programs	4,639	4,420	4,639	4,420	4,639	4,420	4,639	4,420	4,639	4,420	45,294
Standards adjustments (total)	(20)	(1,665)	(2,113)	(2,120)	(1,781)	(1,953)	(1,925)	(1,837)	(1,821)	(1,699)	(16,934)
RTF adjustments (total)	936	860	1,886	2,265	2,363	2,957	3,156	2,914	2,334	1,574	21,245
Adjusted Energy Efficiency Forecast	51,326	50,095	51,782	54,155	55,201	53,984	52,520	49,657	47,542	43,234	509,495

High-Efficiency Cogeneration

To support the 2019 IRP process, Navigant Consulting, Inc. prepared the Private Generation Long-Term Resource Assessment (2019-2038) on behalf of PacifiCorp. The potential for high-efficiency cogeneration in Washington is from this study, which is an economic assessment providing forecasts of projected penetration levels of private generation resources within PacifiCorp’s service areas through 2038, including a Washington-specific assessment of high-efficiency cogeneration.

WAC 480-109-060 (13) defines high-efficiency cogeneration as “the sequential production of electricity and useful thermal energy from a common fuel source,” Two of the resources included in the Navigant study, combined heat and power (“CHP”) reciprocating engines and CHP micro turbines, meet this definition and were investigated in detail to determine whether any cost-effective, reliable and feasible potential could be identified in Washington for the 2020-2029 period.

Inputs and levelized costs specific to Washington high-efficiency cogeneration resources are provided in Appendix C to the Navigant Private Generation study. While the study did project some penetration for CHP reciprocating engines and micro turbines, the levelized cost (using company natural gas forecasts) was generally higher than the highest energy efficiency bundle selected in P-18. In cases where it was approximately the same, equal, the SB 5116 focus on carbon neutral /emission free resources indicated it may be appropriate to screen the opportunity out of the conservation forecast. During the August 23rd DSM AG meeting there was discussion about available cost information for renewable natural gas which would more closely align with legislative intent. At the September 20th DSM AG meeting, the Company shared that robust information on price and availability of renewable natural gas is very limited. Anecdotal information from a British Columbia gas supplier with a product for residential customers indicates a price premium. The DSM AG was generally comfortable with the Company decision to not include this measure in the 2020-2029 conservation forecast.

Distribution Efficiency

As discussed in previous Pacific Power Biennial Conservation Plans, the ability to cost-effectively conserve energy through distribution system initiatives is highly dependent on the characteristics of a given utility's system. Regional awareness of distribution efficiency challenges and lessons learned has grown over the past several years.¹⁹

As outlined in the Company's prior biennial conservation plan, the Company has migrated to the CYME distribution analysis software which allows the engineering group to perform more robust analyses of complex scenarios. Engineers are now in the process of updating the new CYME distribution analysis model. Throughout the year, and especially as scheduled planning studies are performed, connectivity corrections and equipment ratings and settings are being researched, verified and input. This process competes for time from engineers performing other routine work. The combination of CYME and updated model information will enable more robust analyses of complex scenarios and the assessment of cost-effective, efficiency projects on the distribution system such as VAR (Volt Amperes Reactive) reduction.

During 2020 the Company is reasonably certain they will have a CYME model sufficiently accurate to assess four of Washington's approximately 142 distribution circuits where VAR flow is high enough to cause voltage violations, seasonally high enough to create operational issues, or bring a circuit's average power factor below 0.95 lagging. Circuits with these characteristics offer the best opportunity for cost effective VAR reduction, although detailed analysis is required. Cost effectiveness for any potential project will be consistent with financial analysis used to support recovery of other distribution system investments. In 2020, the Company will update the forecast of available projects that are cost effective, feasible and reliable and include the information in the 2021 Annual Conservation Plan.

¹⁹ Much of this regional awareness is due Regional Technical Forum efforts and regional utility input, including the Company. The Council's Seventh Power Plan (Chapter 12) recognized these challenges and lessons learned, estimating lower potential for distribution efficiency than in the Sixth Power Plan (215 aMW vs. 400 aMW)

At this point, the Company does not have any updated information on reliable cost-effective distribution efficiency for the 2020-2029 forecast period, and no savings from distribution efficiency are included in the Company's 2020-2021 Biennial Conservation Target.

Production Efficiency (in non-hydro generation facilities)

Production Efficiency means investments and actions that save electric energy from power consuming equipment and fixtures at an electric generating facility.” WAC 480-109-060 (20). Projects need to be in generating facilities allocated to Washington:

- Wind: GoodNoe Hills, Marengo I, Marengo II, Leaning Juniper
- Thermal: Jim Bridger, Chehalis, Hermiston, and Colstrip

Detailed studies of opportunities at these plants have been completed in prior periods²⁰ and a production side cost test model was developed that aligned with the investment criteria for funding projects at plants; including securing joint owner approval and recovering investments through rates. This “production-side” cost test model was presented to the Washington DSM Advisory Group in prior biennial periods and as an Appendix to the Company's DSM Business Plans for the last two biennial periods. All of the cost-effective projects identified at the Company's wholly owned Chehalis plant and the jointly owned Hermiston plant were completed in prior periods.

After the projects at the wholly owned sites were completed, analysis during the prior biennial periods focused on projects at the Jim Bridger plant and assessing whether there was new information on project costs or the operating profile of the plants or material changes in the production side economic model that would support a joint owner funding request. As described in prior plans, no new information available indicated the projects were cost effective to pursue.

The analysis for this biennial period focused on the economic impacts of shortened Jim Bridger life driven by a coal plant retirement scenarios being evaluated in the 2019 IRP and/or required under SB 5116. The generation team tried to incorporate these impacts into economic assessments in this interim period (prior to final end of life dates for the allocated WA facilities). The operating profile of the plant (run time) was re-assessed and found to be lower than prior analyses. The economic model was updated with the 2017 IRP decrement values since they were available. The condensate pump project was re-evaluated. Assuming a 15 year life, the benefit cost ratio was approximately 0.35 indicating a material short fall in the benefits when compared to the costs. The 2019 results indicate a decline when compared to the 2012 analysis for the same project which indicated a benefits cost ratio of approximately 0.52. When the economic life is shortened to 7.5 years, the results decline even further to approximately 0.17. With Jim Bridger units closing between 2023 and 2028 in P-18, the 7.5 year life is on the upper end.

The Company's proposal is to set the production efficiency forecast to zero for 2020-2021 and revisit for 2022-2023 biennial period after 2019 IRP and 5116 rules are finalized. This approach was shared with the DSM AG at the August 2019 meeting.

²⁰ Starting in 2011 and completed in 2012, Cascade Energy completed studies at seven of the eight non-hydro facilities that serve Washington customers. Initially, 22 projects were identified.

2020-2021 EIA Target and Penalty Threshold

Pacific Power's EIA Penalty Threshold for 2020-2021 is 95,108 MWh,²¹ as shown in REVISED Table 5. The process of converting the 10-year forecast to a target is described in detail below.

REVISED Table 5. 2020-2021 EIA Target and Penalty Threshold

Category	Savings (MWh at Gen)	Savings (MWh at site) ¹
Pro Rata Share of 10-year conservation potential	101,899	93,189
EIA Target	101,899	93,189
Decoupling threshold	5,095	4,660
Total Utility Conservation Goal	106,994	97,849
Excluded Programs (NEEA)	(6,791)	(6,211)
Utility Specific Conservation Goal	100,203	91,638
EIA Penalty Threshold (EIA Target minus NEEA savings)	95,108	86,979

¹ Site savings are calculated from generator savings by applying an aggregate adjustment factor (0.91452) based the DSM Business Plan; site kWh/generator kWh.

Cost-Effective, Reliable and Feasible Conservation

As described in WAC 480-109-100 (3), the biennial conservation target must quantify all available conservation that is cost-effective, reliable and feasible, and be no less than a pro-rata share of the 10-year conservation forecast. As shown in Table 5 above, available conservation that is cost-effective, reliable and feasible for the 2020-2029 period is 101,899 MWh, and is the pro-rata share of the ten year forecast which is larger than the two year sum of 101,420 MWh, and thus satisfies the WAC requirement.

Treatment of NEEA Initiatives

The following information is a slightly condensed version of the August 8, 2019 open meeting memo that summarizes general agreement among parties and requested Commission action with respect to how NEEA savings should be treated in this biennial period.

²¹ To remain consistent with the Council's regional power plan, the ten-year potential and two-year target values in this report are shown prior to any net-to-gross adjustment and except for production efficiency, where applicable, include line losses between the installed equipment or customer site and the generation source.

Pacific Power and Light Company (Pacific Power) filed their 2018-2019 Biennial Conservation Plan (BCP) with the Washington Utilities and Transportation Commission (commission) on November 1, 2017. The commission approved Pacific Power's plan and instructed all three investor owned utilities to participate in a special joint advisory group to discuss remaining issues in a comprehensive and collaborative manner.

In compliance, a Statewide Advisory Group (SWAG) composed of members of the advisory groups of all Washington electric and natural gas IOUs convened beginning March 30, 2018. The results of seven meetings were compiled in the Report on 2018 Washington State Investor Owned Utility Energy Efficiency Joint Advisory Group Activities and Outcomes (SWAG report) filed in Docket UE171092, by Pacific Power on July 30, 2019.

The SWAG charter identified three key issues for discussion based on the commission order and stakeholder comments on the BCPs: treatment of NEEA savings, utility performance incentive, and review of cost-effectiveness methodologies.

Treatment of NEEA Savings. The discussions addressed whether to include the various subsets of NEEA savings, whether the EIA requires that NEEA savings be included in target calculations, consistency with target setting requirements for consumer-owned utilities, and the degree of control the Companies have over NEEA's execution of its programs.

Ultimately the SWAG found a solution for the treatment of NEEA savings that satisfied all stakeholders. To accomplish this the SWAG developed two important definitions:

- *EIA Target - set by the Commission and includes NEEA savings in accordance with RCW 19.285.040 (1)(a) and (b).*
- *EIA Penalty Threshold - also set by the Commission, and may exclude NEEA savings as part of the Commission's standard practices.*

Both the EIA Target and EIA Penalty Threshold will be set by the commission and identified in the BCP order in upcoming biennium. The EIA Target will be used in calculating decoupling commitments and for reporting outside of the commission but penalties will be issued only when a utility does not achieve the EIA Penalty Threshold.

Most SWAG members agreed that the EIA Penalty Threshold would be equal to the EIA Target (include NEEA savings) if a utility were to propose and receive an incentive mechanism but that if no incentive mechanism was granted the EIA Penalty Threshold would exclude NEEA savings.

This solution ensures ratepayers' investment in NEEA savings are recognized and valued in a way that commission staff finds acceptable while not penalizing a utility if NEEA underperforms compared to the biennial forecast.

Currently there are no plans for a utility to propose an incentive mechanism in the 2020-2021 BCP.

Staff recommends the commission take no action at this time, acknowledging compliance with Order 01 in Docket UE-171092. Staff recommends the commission, in the 2020-2021 BCP order, affirmatively state that it is the commission's standard practice to remove forecasted savings from previously undertaken market transformation activities when calculating the penalty threshold. Staff further recommends that the commission recognize language agreed upon with the SWAG recognizing that the penalty threshold may diverge from the EIA target. The EIA target will be calculated in accordance with RCW 19.285.040 (1)(a) and (b) and be used when reporting to Commerce and when calculating decoupling commitments.

In preparation for the 2020-2021 biennial target-setting process, Pacific Power (and the other investor owned utilities) engaged NEEA to provide a savings forecast for the 2020-2021 period using baselines consistent with the Council's Seventh Power Plan. NEEA provided four options outlined below to create forecasts that would align with the regional work and the individual utility CPA's.

- 7th Power Plan (Frozen)
Savings rates come directly from the 7th Plan if available. Otherwise, NEEA calculates a 7th Plan equivalent baseline.
- 7th Power Plan (RTF Updates)
Savings rates directly from Regional Technical Forum (RTF) if the RTF approved a new measure after 2015. The baseline is the current practice when RTF approved new measure. Otherwise, the savings rates come directly from the 7th Plan if available. If not, NEEA calculates a 7th Power Plan equivalent baseline.
- 7th Power Plan (NEEA Update)
If new information is available, NEEA calculates a 7th Power Plan equivalent baseline to measure savings. The baseline year is the year the 7th Power Plan uses (usually 2015). Otherwise, NEEA uses the savings rates within the 7th Power Plan. NEEA reviews this analysis with Northwest Power and Conservation Council staff. The Council, the Bonneville Power Administration and public utilities use this approach.
- Net Market Effect
This approach uses NEEA's market transformation baseline. The baseline accounts for change that would have occurred absent market intervention by NEEA and its partners. The baseline start year aligns with the start of market transformation work by NEEA. Third-party evaluators review the baseline assumptions.

Pacific Power is utilizing the 7th Power Plan (RTF Updates) forecast based on "best fit" with our CPA.

Pacific Power reviewed NEEA's draft forecast with its DSM Advisory group during the August 2019 meeting and the updated forecast during the September 2019 meeting. We also noted the need to perform an analysis of the NEEA forecast for consistency with our 2019 CPA. The result of that analysis is provided in tables below. We also provided our recommendation (consistent with last biennial period) that "trackable savings" are likely already accounted for in the RTF market baseline in addition to our CPA baseline, and savings from NEEA should not be used to adjust the EIA Target or to calculate EIA Penalty Threshold.

Table 6 – NEEA codes analysis & adjustment

Code	In CPA Potential?	2020-2021 MWh@site	Notes
WSEC 2018	TRUE	-312.15	When CPA assumptions were frozen in April of 2018, the Commercial code was still under development and development on the Residential code had not yet begun. Accordingly, the CPA is expected to include potential from the future requirements of code.
WSEC 2015	FALSE	-366.70	WSEC 2015 had been finalized and incorporated into RTF work products prior to commencement of the 2019 CPA. Therefore, efficiency improvements from this code have already been accounted for in the CPA baseline.
WA 2015 WSEC	FALSE	-1,489.37	See above
Or. Specialty Code 2017	FALSE	-254.28	Savings occur outside the state of Washington and are therefore not accounted for within the WA CPA models at all.
OR Specialty Code 2017	FALSE	-81.31	Savings occur outside the state of Washington and are therefore not accounted for within the WA CPA models at all.
OR Code 2017-2020	FALSE	-79.93	Savings occur outside the state of Washington and are therefore not accounted for within the WA CPA models at all.
MT Code 2019	FALSE	-18.86	Savings occur outside the state of Washington and are therefore not accounted for within the WA CPA models at all.
IECC 2018	FALSE	-256.31	This refers to IECC codes in OR, MT, and ID rather than Washington and is therefore not accounted for within the WA CPA models at all.
ID Code 2018-2021	FALSE	-5.02	Savings occur outside the state of Washington and are therefore not accounted for within the WA CPA models at all.

True = included in CPA potential. No adjustment to NEEA forecast required.

False = included in CPA baseline (or outside of WA). Deduct from NEEA forecast.

Table 7 – NEEA standards analysis and adjustment

Standard	In CPA Potential?	2020-2021 MWh@site	Notes
Rooftop Units	TRUE	(1,190.35)	CPA assumptions reflect the Annual Energy Outlook 2018, but AEO did not incorporate this until 2019 so this standard is included within the CPA potential, not the baseline.
Pumps	TRUE	(208.43)	CPA uses "Pump Equipment Upgrade" baseline and efficient definitions from the Seventh Power Plan. Since savings are based off a 2008 study, this standard was not incorporated into the baseline assumptions.
Refrigerated Beverage Vending Machines	TRUE	(29.62)	CPA assumptions reflect the Annual Energy Outlook, but AEO did not incorporate this so this standard is included within the CPA potential, not the baseline.
Walk-In Coolers and Freezers	FALSE	(357.54)	Per Table 2-4 from CPA report below, more efficient walk-ins were incorporated as the standard starting in 2020.
Pre-rinse Spray Valves	FALSE	(29.22)	Per Table 2-4 from CPA report below, PRSVs were incorporated as the standard starting in 2019.
Fed. Std. Vending Machines	TRUE	-	CPA assumptions reflect the Annual Energy Outlook, but AEO did not incorporate this so this standard is included within the CPA potential, not the baseline.

True = included in CPA potential. No adjustment to NEEA forecast required.

False = included in CPA baseline (or outside of WA). Deduct from NEEA forecast.

Table 8 – NEEA summary of codes & standards adjustment

NEEA C&S in CPA Baseline - Adjustment	Codes, MWh @ Site	Standards, MWh @ Site	Line Losses	MWh @gen
Residential	(959)	0	9.67%	(1,051)
Commercial	(1,593)	(387)	9.53%	(2,169)
Industrial	0	0	8.16%	0
Total	(2,552)	(387)		(3,220)

Forecasted savings from NEEA, inclusive of programs and codes and standards initiatives (but excluding “trackable measures”), totaled 10,011 MWh (including line losses) for the 2020-2021 period. A total of 3,220 MWh of code and standards reported by NEEA were included in the CPA baseline or were specific to other states. Subtracting the NEEA codes and standards included in the CPA baseline results in an adjusted NEEA forecast of 6,791 MWh (at gen). Consistent with information provided above, these savings are subtracted from the Company’s identified EIA target for the purpose of establishing the EIA Penalty Threshold. NEEA’s forecast for the 2020-2021 period is described in additional detail in Appendix 3 to this Plan.

Decoupling Commitment

On September 1, 2016, the Commission issued Order 12 in Docket UE-152253. Section (7)(4) of the Order specifies:

Pacific Power must increase its annual conservation targets by 2.5 percent for the current 2016-2017 biennium, and by 5 percent per biennium thereafter through the period when decoupling is in effect. The Company’s failure to meet its incremental conservation target will be subject to financial penalties.

During development of the 2018-2019 targets, the Company initially applied the five percent adder to the target subject to penalty (after the NEEA deduction). Staff believed it was more appropriate to apply it to the conservation target prior to the NEEA deduction. For the 2020-2021 biennium, the Company is applying the full five percent decoupling adjustment, adding 5,095 MWh (based on five percent of the target prior of the NEEA deduction) to the biennial conservation target.

PacifiCorp's 2020-2021 Business Plan

In addition to providing the ten-year conservation potential and the biennial conservation target, WAC rules require utility Biennial Conservation Plans to provide additional detail relating to conservation program implementation outreach, and evaluation. To satisfy the WAC requirements while clearly delineating between target-setting and implementation activities, the Company includes its DSM Business Plan as Appendix 2 to this Plan. The DSM Business Plan includes the following information:

- Biennial program details, biennial program budgets, and cost-effectiveness calculations, consistent with WAC 480-109-120 (1) (b) (iii),
- Information on evaluation, measurement and verification activities for the biennium, consistent with WAC 480-109-120 (1) (b) (vi),
- Pilot initiatives identified for the 2018-2019 biennium, consistent with WAC 480-109-100 (1) (c), and
- A discussion of Pacific Power's efforts to address areas of interest identified by the WUTC for the 2020-2021 biennium.

The savings, budgets, and cost-effectiveness results presented in the Business Plan represent Pacific Power's current forecast based on the best information available at the time of this filing. On or before November 15, 2020, Pacific Power will file an Annual Conservation Plan for 2021, reflecting updated forecasts for savings and budgets for the remainder of this biennial period.

Cost Recovery Mechanism

PacifiCorp recovers costs associated with its demand-side management programs through the System Benefits Charge (SBC), which is administered through Schedule 191. The SBC was originally approved by the Commission in Docket UE-001457. The SBC was last adjusted in April 2019 when it was decreased from an annual collection rate of approximately \$12.3 million to the current collection rate of \$10.8 million. The current SBC collection rate was approved in Docket UE-170678 with an effective date of April 1, 2019. The current SBC collection rate represents approximately 3.03% percent of Washington retail electric revenues.

For the 2020-2021 biennium, PacifiCorp intends to recover through the SBC costs associated with approved conservation programs, planning (including Pacific Power's estimated share of NEEA's end use load research initiative) and program administrative costs, and costs associated with compliance with WAC 480-109 and conditions from Commission's Order 01 in Docket UE-152072. As specified in condition (9) (d) of that order, costs associated with distribution and production efficiency will be recovered through a general rate case, rather than through the SBC. Projected costs for the 2020-2021 biennium are provided in Business Plan, Appendix 2 to this Plan.

Consistent with WAC 480-109-130, related to conservation cost recovery adjustment, Pacific Power will review the adequacy of Schedule 191 collections each year and make a filing, if necessary, to adjust the collection rate no later than June 1, with an effective date of at least sixty days after the filing. If no adjustment is needed, the Company will file a request for exception and supporting documents explaining why an adjustment is not needed no later than May 1.

Plan Compliance Information

Table 6 lists key compliance requirements from WAC 480-109 and Attachment A to Order 01 in Docket UE-171092, and how the Company has addressed each requirement in the preparation of this Plan.

Table 6. 2020-2021 Plan Development Compliance Requirements

DSM Advisory Group	
WAC 480-109-110 (1)	
A utility must maintain and use an external conservation advisory group of stakeholders to advise the utility on conservation issues, including those listed in the above-referenced section of the code.	A list of DSM Advisory Group meetings and topics covered is provided in the “Stakeholder Engagement” section of this Plan.
WAC 480-109-110 (2)	
A utility must meet with its conservation advisory group at least four times per year.	A list of the relevant 2018 and 2019 DSM Advisory Group meetings and IRP Public Input meetings is provided in the Stakeholder Engagement section of this Plan. The DSM Advisory Group met three times in 2018 in addition to the seven Statewide Advisory Group meetings. The DSM Advisory Group has met three times in 2019. At least one more meeting is planned for 2019.
WAC 480-109-110 (3)	
A utility must provide its conservation advisory group an electronic copy of all conservation filings that the utility intends to submit to the commission at least thirty days in advance of the filing.	A draft version of this Plan was provided to the DSM Advisory Group on October 1, 2019. The Company will continue to comply with this requirement during the 2020-2021 biennium.
Docket UE-171092 Order 01 Attachment A (3) (d)	
Pacific Power will consult the DSM Advisory Group members on the scope and design of the conservation potential assessment that will inform the 2021 IRP and Washington 2022-2031 conservation forecast in advance of beginning that work i.e., prior to the vendor Request for Proposal, etc.	The contract for the 2019 CPA included a provision for the selected firm (AEG) to provide similar services for the 2021 period. A new RFP was not issued for this work. Information on the scope and design of the 2021 CPA will be provided to the DSM Advisory Group for review and comment prior to the end of 2019, in advance of beginning the work.

Docket UE-171092 Order 01 Attachment A (3) (e)	
Pacific Power must consult with its DSM Advisory Groups starting no later than July 1, 2019, to begin to identify achievable conservation potential for 2020-2029 and to begin to set annual and biennial targets for the 2020-2021 biennium, including necessary revisions to program details.	Pacific Power began discussing the development of its 2020-2029 conservation forecast and 2020-2021 biennial conservation target at the June 27, 2019, DSM Advisory Group meeting. Conversations continued leading up to the filing of this Plan.

Conservation Forecast and Target Development	
WAC 480-109-100 (2) and (3)	
By January 1, 2010, and every two years thereafter, a utility must project its cumulative ten-year conservation potential and establish a biennial conservation target.	This Plan provides the projection for the 2020-2029 period and the target for the 2020-2021 biennium.
This projection must consider all available conservation resources that are cost-effective, reliable and feasible. This projection must be derived from the utility's most recent IRP, including any information learned in its subsequent resource acquisition process, or the utility must document the reasons for any differences.	The process for identifying cost-effective, reliable and feasible potential, beginning with the results of PacifiCorp's 2019 IRP process (including the use of conservation selections from a proxy portfolio incorporating the social cost of carbon), is described in the Conservation Potential and Conservation Targets section of this Plan. The development of a proxy method to generate value for the conservation selections from the proxy portfolio is described in the cost effectiveness section of the DSM Business Plan.
When developing this projection, utilities must use methodologies that are consistent with those used in the Northwest Conservation and Electric Power Plan.	The methodology used by the Company to develop its conservation forecast is detailed in Chapter 2 of Volume 2 of the 2019 CPA ²² and in the Conservation Potential and Conservation Targets section of this Plan. During 2018, the utility members of the Statewide Advisory Group produced an updated matrix comparing their elements of the Total Resource Cost (TRC) test and the Northwest Power and Conservation Council. As described in the August 8 th 2019 open meeting staff memo, "each utility was similar enough to be considered consistent with the method used by the NWPCC". The matrix updated in 2018 was first developed in 2011 as part of the Methodology Sub-

²² The 2019 Conservation Potential Assessment and all previous studies are available on the Company's website: <https://www.pacificorp.com/energy/integrated-resource-plan/support.html>.

	Committee of the Washington Collaborative Working group on Avoided Costs and Total Resource Cost Determinants. An in depth review of methodologies was also provided as Appendix 3 of Pacific Power’s 2016-2017 Biennial Conservation Plan.
The projection must include a list of each measure used in the potential, its unit energy savings value, and the source of that value.	A list of each measure used in the potential, including the required information, is provided as Appendix I in Volume 4 of the 2019 Conservation Potential Assessment.
The biennial conservation target must identify, and quantify in megawatt-hours, all available conservation that is cost-effective, reliable and feasible and (b) The biennial conservation target must be no lower than a pro rata share of the utility's ten-year conservation potential.	The process for developing the 2020-2021 biennial conservation target is detailed in the Conservation Potential and Conservation Targets section of this Plan. The identified target, before adjusting for NEEA and decoupling, is the pro-rata share of the ten-year forecast.
Program Implementation, Management and Evaluation	
WAC 480-109-110 (4)	
A utility must notify its conservation advisory group of company and commission public meetings scheduled to address its conservation programs, its conservation tariffs, or the development of its conservation potential assessment.	“Stakeholder Engagement” section in this Conservation Plan provides the list of meetings where information relevant to the development of the ten-year conservation potential and/or conservation program information was presented. In a prior biennial period, Company confirmed that members of the Company’s DSM Advisory Group were included on the Company’s IRP stakeholder contact/email list. Communications to the DSM Advisory group are also sent to UTCenerg@utc.wa.gov .
Docket UE-171092 Order 01 Attachment A (4)	
Pacific Power must provide its proposed annual budgets in a detailed format with a summary page indicating the proposed budget and savings levels for each electric conservation program, and subsequent supporting spreadsheets providing further detail for each program and line item shown in the summary sheet.	Projected annual budgets for the 2020-2021 biennium are provided in the DSM Business Plan. The projection for 2021 will be updated and filed by November 15, 2020, as the Company’s Annual Conservation Plan.

Docket UE-171092 Order 01 (5)	
Pacific Power must maintain its conservation tariffs with program descriptions on file with the Commission. Program details about specific measures, incentives, and eligibility requirements must be filed as tariff attachments or as revisions to the Company DSM Business Plan.	This process is described in the DSM Business Plan (Appendix 2 to this Plan).
WAC 480-109-100 (5) (a) & (b)	
A utility must use RTF deemed savings or other reliable and relevant source data that has verified savings levels and been presented to the Advisory Group for comment.	Data sources used to develop the conservation forecast and biennial target are outlined beginning on page 3-1 of Volume 2 of the 2019 CPA. Volume 4, Appendix F of the 2019 CPA provides a direct comparison of unit energy savings values used in that study to those developed by the RTF and by the Council for its Seventh Power Plan. Adjustments to those values, where appropriate, are described in detail in Appendix 1 of this Plan.
Docket UE-171092 Order 01 Attachment A (6) (c)	
Pacific Power must spend a reasonable amount of its conservation budget on EM&V.	Pacific Power's planned evaluation activities and associated budgets are provided in the DSM Business Plan (Appendix 2 to this Plan).
WAC 480-109-100 (7)	
A utility must offer a mix of conservation programs to ensure it is serving each customer sector, including programs targeted to the low-income subset of residential customers.	The comprehensive portfolio of programs, available services and incentives described in the DSM Business Plan (Appendix 2 to this Plan) are relevant to all customer sectors, including limited income customers.
WAC 480-109-100 (10)	
A utility may fully fund low-income conservation measures that are determined by the implementing agency to be cost-effective consistent with the <i>Weatherization Manual</i> maintained by the department. A utility may exclude low-income conservation from portfolio-level cost-effectiveness calculations. A utility must count savings from low-income conservation toward meeting its biennial conservation target.	The Company plans to continue to fully fund low income conservation measures through its Low Income Weatherization program. Projected savings from these efforts are included in the Biennial Conservation Target, but excluded from portfolio-level cost-effectiveness analysis. Program details, including projected savings and budgets, are provided in the DSM Business Plan (Appendix 2 to this Plan).

Docket UE-171092 Order 01 Attachment A (7) (c)	
<p>PacifiCorp may spend up to 10 percent of its conservation budget on programs whose savings impact has not yet been measured, as long as the overall portfolio of conservation passes the Total Resource Cost (TRC) test. As modified by the Council. These programs may include information-only, behavior change, and pilot projects. Pacific Power may ask the Commission to modify this spending limit following full Advisory Group consultation.</p>	<p>As described in the Business Plan, the only conservation effort without EM&V is the “Be Wattsmart, Begin at Home” school initiative. Forecasted expenditures for this effort during the biennial period are \$129,066 and represents 0.46 percent of the preliminary PacifiCorp conservation budget of \$29,979,077.</p>
Docket UE-171092 Order 01 Attachment A (8) (a) & WAC 480-109-100 (8) & (10)	
<p>The Commission uses the Total Resource Cost Test (TRC), as modified by the Council, as its primary cost-effectiveness test. The Council-modified TRC test includes quantifiable non-energy benefits, a risk adder, and a 10 percent conservation benefit adder. Pacific Power’s portfolio must pass the TRC test. All cost-effectiveness calculations will assume a Net-to-Gross ratio of 1.0, consistent with the Council’s methodology.</p>	<p>Pacific Power uses the Total Resource Cost test, as modified by the Council, to screen Washington energy efficiency resources in its IRP. Program- and portfolio-level cost-effectiveness results for the 2020-2021 biennial period, showing that the portfolio is expected to be cost-effective from the TRC perspective, are provided in the DSM Business Plan (Appendix 2 to this Plan).</p>

List of Appendices

- 1) Conservation Forecast Adjustments made to PacifiCorp's Ten-Year Conservation Forecast
- 2) PacifiCorp's Washington Demand-side Management 2020-2021 Business Plan
- 3) Northwest Energy Efficiency Alliance 2020-2021 Forecast for PacifiCorp's Washington service territory

Appendix 1 - Conservation Forecast Adjustments

WAC 480-109-100 (2) (b) referring to a utility's ten-year conservation potential, states "This projection must be derived from the utility's most recent IRP, including any information learned in its subsequent resource acquisition process, or the utility must document the reasons for any differences." Accordingly, in developing this projection, the Company assessed the need to adjust IRP energy efficiency selections and identified the categories of required updates described below.

The general methodology for updating 2019 IRP energy efficiency selections found in the P-18 proxy portfolio for the 2020-2029 forecast period is summarized in the main body of this Biennial Conservation Plan. This process updated Unit Energy Savings (UES) assumptions from PacifiCorp's 2019 CPA to the most current and applicable available data and included the impacts of new standards found in House Bill 1444. A summary of the adjustment amounts by technology and year can be found in Table 4 in the main body of this Plan. This appendix details the process and data sources used to determine these adjustment amounts.

Updates to CPA measure savings resulting from updated RTF information: The Company's CPA relied on the most current and applicable data available at the time of the analysis (through January 2016). As part of the analysis to identify PacifiCorp's ten-year conservation potential and biennial conservation target, AEG reviewed updated data sources since the time of that analysis, including updates to RTF deemed measures.

Updates to CPA measure savings resulting from House Bill 1444 standards: The CPA relied upon applicable data on standards when the work was completed (April 2018). House Bill, signed into law in May 2019 added a meaningful number of new standards that were not included in the 2019 CPA. New standards change the baseline and available conservation. Impacts depend on when the standard is effective and how it is applied. AEG performed a review of the 2019 CPA, P-18 selections and the new standards imposed by the bill and determined if an adjustment/modification was necessary.

Updates to key measures to improve alignment between target and business plan: Applicable to residential lighting and selected electric heating equipment and controls.

Changes in residential lighting baseline equipment shares as measured by the most recent RTF workbook, the recent federal rollback of the USDOE "backstop" standard (including the expanded classification of general service lamps) and the Washington implementation of the same standard through House Bill 1444 all present challenges to the cost effectiveness of lighting programs and whether incentives should be available for this equipment in the upcoming biennial period. Discontinuing incentives for high quality LEDs generates theoretical risk of the market backsliding to halogens or lower quality/efficacy LEDs and these risks, while unknown at this point, are likely to vary by channel and/or consumer and/or geography. To mitigate the risk of backsliding and equity impacts (making quality efficient lighting less affordable for income qualified consumers),

the Company is planning to a) expand incentive availability in smaller retail locations where income qualified consumers may shop, (such as Dollar Stores) and, b) continue to offer incentives in traditional high volume locations where shelf surveys indicate the share inefficient lighting equipment is above the regional information utilized by the RTF in their latest workbook. Incentives in these locations will be available until measurement of the baseline equipment shares indicates it has reached the regional average. The general service lighting adjustment found in the RTF table below reduces potential based on lower UES and removes a portion of the potential (based on an analysis of lamp sales) through a membership warehouse store that does not stock any baseline equipment.

Ductless heat pumps savings vary depending on where (home type) the equipment is installed. Variations make the measure(s) slightly cost effective or slightly non-cost effective under the P-18 proxy assumptions. Other factors (head count/cost, supplemental heat, administrative cost assumptions, and the possibility of additional non-energy impact value) all contribute to the effect. There is also ongoing RTF work to update savings to account for a better understanding of interactive effects. Ductless heat pumps are important efficiency options for many customers with zonal electric heat and limited options for adding ducting and are a key technology in the clean energy landscape. The ductless heat pump adjustment found in the RTF table below reflects adding the remaining configurations in and results in an upward adjustment to the efficiency forecast.

Line voltage thermostats savings are highly dependent on many of the factors affecting ductless heat pumps. They also represent a lower cost way to generate electric heat savings (compared to DHP installations). They were also screened them in to insure we have a complete set of electric heat options for all home types. The adjustment includes a combination of a downward adjustment for reduced UES from the RTF and an overall increase by including the potential for the reasons described above.

Updates to CPA measure savings resulting from updated RTF information

The equipment affected by the updated RTF workbook is provided in the tables below. Table A1-1 indicates if an adjustment is required and the updated information primarily responsible for the change. Table A1-2 illustrates the magnitude of the adjustment by year for the forecast period. Table A1-2 also includes the impact of *Updates to key measures to improve alignment between target and business plan* described above. The adjustment methodology focuses on the unit energy savings of the affected equipment and most adjustments are performed utilizing a ratio between the prior and the updated unit energy savings. Except where noted (residential lighting), assumptions in the CPA about turn-over and availability are not modified in this analysis.

Table A1-1 RTF Adjustment Summary

Workbook to be Updated	Last Updated	Version	Notes
Residential Lighting	4/2/2019	7.1	Lower General Service Lamp (GSL) UES, but reflector UES increases. Results in small change from v6.1

Heat Pump Water Heaters	7/8/2019	4.2	DHW and Heating impacts nearly the same, but Cooling savings reduced by roughly 100 kWh/unit
Thermostatic Shower Restriction Valve	6/27/2019	3.1	Very small reduction in UES (~5 kWh) between v1.3 and v3.1
Ductless Heat Pumps for Multifamily	6/26/2019	1.1	Updated and screened in.
Duct Sealing SF	5/17/2019	5.1	UES for increased by roughly 20% between v4.4 and v5.1
Display Case Evaporator Fan Motor Retrofit	5/3/2019	4.1	UES increased by roughly 25% between v3.3 and v4.1
Compressor Head Fan Motor Retrofit to ECM	4/9/2019	3.1	Substantial decrease in UES between v2.1 and v3.1 (~30%)
Display Case Lighting	3/29/2019	1.2	Very minor increase in UES due to recalculation of Refrigeration and HVAC interactions
Non-Residential Lighting Midstream	2/25/2019	2.1	Substantial Gen. Purpose UES decrease for Period 2 (~75% reduction), small Exempted decrease
Commercial Advanced Power Strips	1/24/2019	4.1	Roughly 45% drop in UES since v3.4
Combination Ovens	12/7/2018	3.1	Only a small UES decrease after market baseline accounted for. Already embedded in CPA baseline.
Convection Ovens	11/28/2018	3.1	Notable UES decrease (~35%) after market baseline accounted for. Already embedded in CPA baseline.
ECMs for Walk-ins	10/22/2018	3.1	Very slight negative UES adjustment between v2.3 and v3.1
Hot Food Holding Cabinets	9/26/2018	3.1	Substantial change in RTF baseline and efficient case consumption results in much higher UEC
Walk-in Evaporator Fan ECM Motor Controllers	8/22/2018	3.1	Very minor UES decrease due to revision in refrigerator interactive savings calculation
Irrigation Hardware Maintenance and Upgrades	7/23/2018	4.1	Updated affected measures, but market baseline substantially lowers UES

Table A1-2 RTF Adjustment by Year

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2020-2029
RTF adjustments (total)	936	860	1,886	2,265	2,363	2,957	3,156	2,914	2,334	1,574	21,245
Residential Lighting_v7.1 (General S	(692)	(612)	(250)	(312)	(310)	(50)	(45)	(119)	(141)	(99)	(2,630)
Residential Lighting_v7.1 (Exempted	760	352	403	468	32	52	142	119	109	9	2,446
Residential Lighting_v7.1 (Linear Lig	(1)	(2)	(2)	(2)	(3)	(10)	(11)	(12)	(12)	(13)	(69)
Ductless Heat Pumps SF v4.2, MF v1.	870	1,067	1,241	1,418	1,660	1,825	1,867	1,763	1,518	1,177	14,404
Ductless Heat Pumps v2.1 (Central F	871	1,055	1,211	1,367	1,580	1,715	1,733	1,616	1,374	1,052	13,574
Heat Pump Water Heaters v4.2	(91)	(140)	(200)	(266)	(337)	(403)	(462)	(513)	(599)	(661)	(3,672)
Thermostatic Shower Restrictor Valv	(11)	(11)	(11)	(11)	(10)	(8)	(6)	(5)	(4)	(3)	(80)
Duct Sealing SF v5.1	180	178	175	175	157	124	98	78	61	51	1,276
Display Case Evaporator Fan Motor F	16	16	16	16	15	12	10	8	6	5	119
Compressor Head Fan Motor Retrofi	(146)	(147)	(149)	(149)	(136)	(110)	(88)	(71)	(58)	(46)	(1,100)
Display Case Lighting v1.2	9	9	9	9	8	6	5	3	2	2	61
Non-Residential Lighting Midstream	(494)	(596)	(276)	(202)	(134)	(150)	(125)	(45)	(38)	(30)	(2,090)
Commercial Advanced Power Strips	(27)	(29)	(30)	(25)	(21)	(14)	(9)	(7)	(6)	(5)	(173)
Combination Ovens v3.1	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)	(13)	(10)	(86)
Convection Ovens v3.1	(9)	(12)	(15)	(18)	(21)	(23)	(26)	(29)	(31)	(25)	(208)
ECMs for Walk-Ins v3.1	(6)	(6)	(6)	(6)	(6)	(5)	(4)	(3)	(2)	(2)	(47)
Hot Food Holding Cabinets v3.1	19	31	46	63	83	105	124	146	159	172	947
Walk-in Evaporator Fan ECM Motor C	(3)	(3)	(3)	(2)	(2)	(2)	(1)	(1)	(1)	(1)	(18)
Irrigation Hardware Maintenance an	(393)	(392)	(390)	(389)	(348)	(276)	(218)	(172)	(137)	(109)	(2,823)
Residential Electronic Line Voltage T	88	107	124	141	164	179	182	171	145	111	1,412

Updates to CPA measure savings resulting from House Bill 1444 standards

The equipment affected by the standard and the effective year are provided in the tables below. Table A1-3 indicates if an adjustment is required. Table A1-4 illustrates the magnitude of the adjustment by year for the forecast period. The adjustment methodology focuses on the unit energy consumption of the affected equipment. Assumptions in the CPA about turn-over and availability are not modified in this analysis. In the case where the standards move the baseline to (or reasonably equivalent to) the measure, the remaining conservation potential is set to zero and displayed as a deduction in Table A1-4.

Table A1-3 HB 1444 Adjustment Summary

C&S Adjustment Summary

RCW 19.260.50 Limitations on	Modifying CPA?	Effective Year	If Excluded from reconsideration, why?
Hot water dispensers and mini t	Included	2021	Covered under broader ESTAR Water Cooler measure in CPA
Bottle-type water dispensers an	Included	2021	Covered under broader ESTAR Water Cooler measure in CPA
Residential pool pumps and por	Included	2020/2021	Spas go into effect in 2020, but pool pumps in 2021
Tub spout diverters	No modification	2021	Small saver not included in CPA therefore no adjustment made
Commercial hot food holding ca	No modification	2010/2011	Not updated in HB 1444
Air compressors	Included	2022	Lubricated, rotary-type only, reduce applicability starting in 2022 accordi
Commercial fryers, commercial c	Included	2021	Incorporated into analysis
Computers and computer monit	Included	2021	Incorporated into analysis
Faucets	Included	2021	Incorporated into analysis
High CRI Fluorescent Lamps	No modification	2023	Currently known standard (2017 CFR), could be updated if CA makes prog
Portable air conditioners	No modification	2/1/2022	Small saver not included in CPA therefore no adjustment made
Residential ventilating fans	No modification	2021	Small saver not included in CPA therefore no adjustment made
Showerheads	Included	2021	Incorporated into analysis
Spray sprinkler bodies	No modification	2021	Water savings code, not energy savings (no hot water)
Uninterruptible power supplies	No modification	2021	Not modeled outside of data centers in CPA and this only applies to smal
Urinals and water closets	No modification	2021	Water savings code, not energy savings (no hot water)
Water coolers	Included	2021	Incorporated into analysis
General service lamps	No modification	2020	Reinforces backstop already included in CPA baseline
Electric storage water heaters	No modification	2021	Code is a DR control connection, does not affect energy savings directly.

Three measures have remaining potential - faucet aerators, showerheads and air compressors. All the rest of the measures set baseline equal to measure and the impact of the adjustment is to remove all potential. The impacts (MWh) of the adjustments by measure and year are included in the table below.

Table A1-4 HB 1444 Adjustment by Year

C&S Potential Adjustments

Measure	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Pool Pumps	0	-401	-451	-485	-520	-541	-561	-577	-593	-612
Hot Tub/Spas	0	0	0	-7	-119	-151	-166	-121	-130	-119
Fryers	-7	-20	-28	-37	-52	-70	-86	-94	-99	-129
Dishwashers	0	-45	-55	-63	-71	-78	-99	-117	-128	-104
Steamers	0	-80	-115	-153	-195	-234	-267	-295	-316	-332
Personal Computers/Desktops	0	-370	-403	-308	-119	-175	-129	-87	-74	-21
Monitors	0	-419	-434	-414	-63	-117	-77	-50	-34	-26
Faucet Aerators	-13	-117	-127	-153	-184	-211	-231	-238	-231	-205
Low-Flow Showerheads	0	-185	-176	-170	-151	-120	-95	-76	-61	-46
Water Coolers	0	-26	-28	-29	-31	-30	-31	-32	-33	-34
Air Compressors	0	0	-297	-301	-277	-225	-183	-149	-122	-72
Total C&S	-20	-1,665	-2,113	-2,120	-1,781	-1,953	-1,925	-1,837	-1,821	-1,699

Appendix 2 - Demand-Side Management Business Plan For 2020-2021

(Appendix 2 is voluminous and therefore provided in a separate file)

Appendix 3 - Northwest Energy Efficiency Alliance 2020-2021 Forecast²³

Memorandum

8/30/2019

TO: Don Jones, DSM Planning and Development Manager, Pacific Power

FROM: Christina Steinhoff, Principal Planning Analyst

CC: Stephanie Rider, Senior Manager, Data Planning & Analytics; Susan Hermenet, NEEA
Director of Planning Evaluation Technology, BJ Moghadam, Senior Manager, NEEA
Stakeholder Relations

SUBJECT: 2020-2021 Biennium Targets Final

Pacific Power Washington, Puget Sound Energy, and Avista Washington have developed a joint approach to calculate savings from NEEA initiatives. As part of the utilities' biennial savings updates, NEEA provides a two-year electric energy savings forecast.

This memo provides a forecast of NEEA's 2020-2021 savings to support setting the next Biennial Conservation Target.

[Appendix A](#) documents NEEA's methodology. The attached Excel spreadsheet contains details about the baseline and technical assumptions by measure.

Please do not hesitate to contact Christina Steinhoff at 503.688.5427 with any questions about this report.

2020-2021 Targets

NEEA is forecasting that Pacific Power will receive 0.51 aMW of savings from its voluntary programs, 0.53 aMW from its Codes and Standards programs and an additional 0.19 aMW from other regional measures that it is able track. To avoid double counting savings, these values net out a forecast of savings the Bonneville Power Administration, Energy Trust of Oregon and local utilities will claim through their local programs. The savings are distributed based on funder share (Appendix A).

²³ The NEEA forecast is expressed in aMW (average megawatt). An aMW is 8,760 MWh.

Table 1: Savings Targets (aMW)

Category	2020	2021	Total
Program Measures	0.28	0.23	0.51
Codes & Standards Measures*	0.23	0.30	0.53
Trackable Measures	0.07	0.12	0.19

These are site-base, first year savings allocated by funding share.

**Program Measures* can result in a code or standard. As a result, some of the first-year savings from *Program Measures* are reported as *Codes & Standards Measures*.

The forecast does not include savings from programs in development such as Manufactured Homes, Windows Attachments and Extended Motors Programs. It also excludes some products in NEEA's Retail Products Portfolio where NEEA is working on energy consumption measurement.

Definitions

-Remaining Savings: Savings above the Power Plan Baseline not counted through the Bonneville Power Administration, Energy Trust of Oregon, or local utility programs. NEEA updates the baseline to the Regional Technical Forum (RTF) for measures the RTF updated after the development of the 7th Power Plan.

-Program Measures: These savings come from measures a part of a NEEA program but not a code or a standard. For example, NEEA worked on ductless heat pumps; therefore, this report counts all the savings above the Council baseline from ductless heat pumps less those claimed through local programs.

-Codes and Standards Measures: These savings come from codes or standards either a part of a NEEA program or separate work. For example, NEEA contractors develop code proposals, implement and facilitate code-development meetings, and provide testimony for the Technical Advisory Groups and the State Building code Board. After adoption, NEEA quantifies and reports the savings for the region.

-Trackable Measures: Through its work, NEEA often collects additional data. For example, NEEA worked on both the residential lighting standard and on CFLs. In doing so, NEEA collects total market data, which include other efficient measures like LEDs. This report includes Savings from those efficient measures.

Appendix A: Methodology to Estimate Savings

This report uses:

- Savings rates from the Regional Technical Forum (RTF) approved after 2015 and prior to Aug. 1, 2019.
- If RTF savings rates are not available, the report uses savings rates from the original 7th Power Plan.
 - If those rates are not available, NEEA calculates savings rates using the 7th Power Plan baseline (e.g. 2015).

For comparison against the targets, NEEA will update the savings rates with the RTF. However, all other savings rates will remain the same. These savings rates will only change based on tracked units (e.g. the DHP savings rate would change based on the climate zone of the actual installs) and not based on updates to technical assumptions or baselines.

The attached spreadsheet contains sources and additional information regarding the savings rate calculations.

Avoiding Double Counting

NEEA avoids double counting by surveying the Bonneville Power Administration, Energy Trust of Oregon and local utilities about their local programs. This report has a forecast of local program units that it uses to avoid over-reporting savings. NEEA multiplies the savings rate and baseline saturation assumptions by the units to forecast local program savings. The regional savings minus the local program savings are the savings NEEA reports to the Washington Investor Own Utilities.

Allocation

NEEA allocates the savings using funder shares. The shares vary based on the funding cycle. Savings from previous investments receive the previous funder share. Savings from current investments receive the current funder share. Table 2 shows the funder shares.

Table 2: Funder Share for the Washington Savings Forecast

Funder Share	
<i>Pacific Power</i>	
2020-2021 (f)	2.55%
2015-2019	2.55%
2010-2014	3.01%
Previous (pre 2010 investments)	2.56%

Note: NEEA will update the 2020-2021 funding share based on the final 2020-2024 Business Plan.