**BEFORE THE WASHINGTON**

**UTILITIES AND TRANSPORTATION COMMISSION**

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| **In the Matter of Puget Sound Energy’s** **2017 Electric and Gas Integrated Resource Plans** |  | **DOCKETS UE-160918** **and UG-160919** |
|  |  |  |

**COMMISSION STAFF COMMENTS REGARDING**

**2017 ELECTRIC AND GAS INTEGRATED RESOURCE PLANS**

**RCW 80.01.040 and RCW 80.04.160**

**WAC 480-100-238 (ELECTRIC) and WAC 480-90-238 (GAS)**

**FEBRUARY 6, 2018**

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# **Introduction**

This document provides comments on the final 2017 integrated resource plans (IRP) submitted by Puget Sound Energy (PSE or Company). These plans are submitted every two years, and are developed with input of an advisory group of interested parties, the public, and Commission staff (Staff). The next section provides an overview of the rule that requires integrated resource plans, followed by a retrospective of PSE’s responsiveness to issues raised by the Commission following the submittal of the 2015 IRP. Next, Staff reviews how the Company’s findings have changed from the 2015 IRP, and PSE’s forecast for new resource additions. The final sections of this document provide Staff’s suggestions for improvements, highlight key issues, and list more detailed and technical issues, which are explored at a deeper level in Appendix 1.

# **Background**

WAC 480-90-128 and WAC 480-100-238 direct investor-owned energy companies (IOUs) to develop gas and electric integrated resource plans every two years, which identifies “the mix of energy supply resources and conservation that will meet current and future needs at the lowest reasonable cost to the utilities and its ratepayers.” In preparing an IRP, utilities are required to consider changes and trends in energy markets, resource costs, state and federal regulatory requirements and policies, and other shifts in the political and market landscape. The rules require that IOUs conduct a comprehensive analysis of the costs and benefits, including risk mitigation benefits, of various approaches to meeting future resource needs using the best available information. The intent is for each regulated company to develop a strategic approach that fits its unique situation, while minimizing risks and costs for the company and its ratepayers.

# **Regulatory Compliance**

Puget Sound Energy submitted their final 2017 Integrated Resources Plan (IRP) on November 14, 2017. This submission was later than the originally scheduled July 14, 2017 submittal date, but timely pursuant to an order granting a later submittal date.[[1]](#footnote-2) The submission deadline for future IRPs from PSE remains July 14 in odd-numbered years. Figures B-1 and B-2 in Appendix B summarize how the IRP satisfies the electric and natural gas IRP regulatory requirements.[[2]](#footnote-3) Figure B-3 provides PSE’s response to conditions imposed on PSE in Commission Order 01 of Dockets UE-160918 and UG-160919, which allowed an extension of the normal deadline for the 2017 IRP.

# **PSE’s Responsiveness to the 2015 IRP Acknowledgement Letter**

The Commission sent an acknowledgement letter to PSE on May 9, 2016 which found that the 2015 IPR met the requirements for IRPs in RCW 19.280.030, WAC 480-100-238, and WAC 480-90-238. The attachment to the acknowledgement letter pointed to certain places where the Commission did not agree with the company approach or analysis and directed PSE to make changes in its analysis and processes in the 2017 IRP. Staff reviewed the 2015 IRP acknowledgement letter with PSE and believes that they addressed all of the recommendations from the acknowledgement letter in the 2017 IRP. To streamline the process in the 2019 IRP, Staff recommends that PSE include a table providing an explicit crosswalk between the 2017 acknowledgement letter recommendations and the actions taken in response during 2019 IRP process and plan.

# **PSE’s Past IRP Findings of Resource Need**

PSE’s 2017 IRP reflects the ever changing economic and technology environment of energy production, transmission, and use. In the recent past, PSE’s modeling of electric portfolios has consistently pointed to aggressive energy conservation and wind energy, to satisfy Washington’s renewable portfolio standard, plus some combination of natural gas-fired electric generation resources. The natural gas electric generation resources in prior IRPs have varied between preferences for combined-cycle combustion turbines (CCCTs), simple-cycle combustion turbines (SCCTs), or a combination of the two.

PSE’s recent natural gas IRPs have identified energy conservation, a new liquefied natural gas (LNG) peaking plant, propane facility upgrades, and regional pipeline expansion to meet its peak need.

In some areas PSE’s 2017 IRP reflects a similar path. However, in other areas the 2017 IRP sets new directions to meet customer needs employing least-cost and least-risk resources.

# **New Directions**

This IRP diverts from past planning cycles as it favors a portfolio with a significantly different combination of resources. The results of the 2017 IRP indicate that PSE should continue relying on significant levels of cost-effective energy conservation, market purchases based on economic advantage, and pursuit of cost-effective demand response resources. However, the other resources needed to flesh-out the portfolio in the next 20 years are significantly different compared to past IRPs.

While the 2015 IRP broke ground in calling for acquisition of a modest amount of demand response electricity resources, other emerging resources now appear to be available in the market at competitive costs. These include a flow-battery for storage of electricity and utility-scale solar photovoltaic (PV) generation in eastern Washington instead of additional wind energy resources. In addition, a low-cost transmission resource is proposed by shifting transmission capacity from the Lower Snake River wind farm to the Mid-Columbia trading hub to rely more heavily on short-term wholesale energy markets.

PSE’s 2017 gas portfolio is also projected to look different in the future. Future near-term peak needs are projected to be met by a combination of upgrades within PSE’s control. The ongoing construction of the new LNG plant in Tacoma combined with aggressive energy conservation and upgraded capacity to their propane injection plant and distribution system pushes the need for additional regional pipeline capacity to the 2029/2030 time horizon in most scenarios studied.

# **New Analyses and Resource Choices**

The 2017 IRP forecast cost-effective portfolio demonstrates thoughtfulness and a significant effort by PSE analysts and management in exploring the use and curtailment of existing resources. For instance, the IRP examines early retirement of all four Colstrip plants in Montana, and investigates emerging opportunities and technologies such as offshore wind, electric vehicle loads, and battery storage. Additionally, PSE was responsive to many requests by its advisory group and provided more than the normal number of meetings for broad ranging discussions. The summary of forecasted resource needs in the IRP are shown in the figures below for PSE’s electricity and natural gas portfolios.

Figure 1-4: Electric Resource Plan Forecast,

Cumulative Nameplate Capacity of Resource Additions

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2023** | **2027** | **2037** |
| **Conservation (MW)** | 374 | 521 | 714 |
| **Demand Response (MW)** | 103 | 139 | 148 |
| **Solar (MW)** | 266 | 378 | 486 |
| **Energy Storage (MW)** | 50 | 75 | 75 |
| **Redirected Transmission (MW)** | 188 | 188 | 188 |
| **Baseload Gas (MW)** | 0 | 0 | 0 |
| **Peaker (MW)** | 0 | 717 | 1,912 |

Figure 1-8: Gas Resource Plan Forecast,

Cumulative Additions in MDth/Day of Capacity

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2025/26** | **2029/30** | **2037/38** |
| **Conservation (DSR)** | 27 | 49 | 84 |
| **Swarr** [[3]](#footnote-4) | 30 | 30 | 30 |
| **LNG Distr Upgrade [[4]](#footnote-5)** | 0 | 16 | 16 |
| **Additional NWP + Westcoast [[5]](#footnote-6)** | 0 | 53 | 133 |

The timing and magnitude of the forecast needs are far enough into the future that many of these projected needs are speculative in nature. This allows for optimizing opportunities for resources such as conservation, demand response, and other distributed energy resource initiatives and programs to develop and be impactful on the long-term energy and capacity needs. Consequently, among other recommendations, Staff recommends delving into those options in more depth in the forthcoming IRP cycles.

# **Continuous Improvement**

Looking forward, there is always room for updates and improvements. Staff recognizes that, with hard regulatory deadlines and limited planning resources, it is simply not possible to run all scenarios and “what if” cases that might provide incremental insights. The next planning cycle will provide the opportunity to address ongoing economic and technological changes together with a variety of scenarios and sensitivity analyses. The attached comments in Appendix 1 provide Staff’s perspectives on the 2017 IRP process, results, analytical methods, and recommendations for the Commission and PSE to consider now and in preparation for the 2019 PSE IRP. A few of Staff’s higher-level or key issues are highlighted in the following paragraphs.

# **Highlighted Staff Comments**

## *Market Purchases and Resource Costs*

Staff has concerns, also expressed by PSE in the IRP, regarding the risks associated with increased reliance on market purchases as the region becomes less capacity rich going forward.[[6]](#footnote-7) Similarly, Staff believes that PSE should continue to diligently monitor the rapidly changing market costs as well as the projected future costs for utility-scale wind (onshore and offshore), solar PV, batteries, demand response resources, and other distributed energy resources (DERs) in the 2019 IRP.

## *Integrate Distributed Energy Resources into the IRP Process*

PSE revived a chapter from the 2013 IRP in the 2017 IRP called “Delivery Infrastructure Planning” to address stakeholders’ concerns regarding electric transmission and distribution planning.[[7]](#footnote-8) One of the issues most often mentioned by stakeholders during the 2017 IRP process was the Energize Eastside project. The new chapter provided insight into that project and more general discussion of how distribution and transmission planning is performed by the Company. However, the level of review within the IRP advisory group was limited and did not satisfy all members’ requests for full public process.

Staff is also concerned about the lack of routine integration between PSE’s largely internal electric distribution and transmission planning and the much more public IRP and conservation processes. The increasing variety of available DERs and the coincidental modernization of PSE’s electric grid present both significant challenges and opportunities which should be addressed in the 2019 IRP process.

Energy conservation can rightly be considered a DER, and is routinely fully integrated into the IRP process. This routine full integration of conservation resources is lacking for other DERs such as smart grid enabled devices, electric vehicles, residential and commercial PV, demand response measures, and distribution system modernization/optimization. DERs are being deployed at increasing rates and this trend provides opportunities to fine-tune power demand forecasts, through scenarios or sensitivities in future IRPs, if systematically and routinely modeled by the transmission and distribution planners at PSE. A more granular analysis of commercially available DERs could reveal their cumulative value compared to other resources or in reducing forecast loads in a fully-integrated planning process. This systematic analysis would leverage the present circuit-by-circuit, one-off, analyses already performed outside of the IRP process by PSE distribution and transmission planners. At the system scale, the cumulative benefits and costs may appear more or less favorable than at the circuit level. This type of planning is one of the subjects of the Commission’s current IRP rulemaking and is also cited in its recent report to the legislature.[[8]](#footnote-9)

Because PSE’s 2017 IRP lacks comprehensive integration between PSE’s IRP team and the Company’s transmission and distribution planners, the potential exists for the IRP to miss opportunities to avoid unnecessary or premature long-term capital expenditures. This is analogous to an energy conservation “lost-opportunity” when the most cost-effective energy measure is forgone in a new construction project. Consequently, Staff recommends that PSE immediately begin evaluating how to routinely evaluate their circuits with DER in mind in a way that the findings are rolled up to a system-level evaluation in the IRP process. This may be done in manner similar to the current process for integration of conservation resources into the IRP process. Based on the 2017 IRP process, Staff believes that the DER planning process should have a similar level of public involvement as conservation resources. PSE should provide leadership in this direction now by convening a DER advisory group. The result of the systematic DER analysis reviewed by the advisory group would then feed into the 2019 IRP analysis.

## *IRP Modeling Assumptions*

PSE used a number of resource specific and general planning assumptions that Staff questions or challenges in Appendix 1, detailed comments. For instance, using historic costs for some resources and projected costs for other resources creates an uneven comparison. For offshore wind resources, considering only deep water locations appears to be a modeling error that inappropriately increases that resource’s projected cost. Modeling carbon emissions and other monetizable impacts needs to be improved and is required according to the IRP rule. The use of sub-hourly modeling was a valuable new tool in this IRP and should be employed more extensively in future IRPs.

# **Detailed Comments List**

In addition to the highlighted comments above, Staff provides additional detailed discussion, observations, and recommendations in the detailed comments of Appendix 1. The detailed comments are organized in the order of the IRP chapters and appendices. The bullet list below indicates the topics included in the detailed comments.

* **Prudence of distributed resources**
* **RFP requirements for capacity do not exempt conservation or demand response resources**
* **Tacoma LNG facility assumed to be an existing resource**
* **WA public policy on carbon emissions**
* **Clarify timing for base case resource additions**
* **Diligence in tracking renewable energy costs**
* **Resource study cost recovery does not rely on acquiring the studied resources**
* **Choosing demand response and storage even though the Base Scenario doesn’t reflect all carbon risk**
* **Provide transparency regarding PSE as party to Clean Air Rule legal challenge**
* **Strategy to mitigate risk of regional resource inadequacy**
* **Modeling regional climate change impacts**
* **Sub-hourly modeling is encouraged**
* **Characterize differences in gas price forecasts accurately**
* **Modeling estimated environmental costs and benefits is required**
* **Use contemporaneous pricing of RECs**
* **Correct offshore wind potential characterization and cost assumptions**
* **Broaden the variety of distributed resources evaluated**
* **Model electric demand forecasts with retrofit conservation in years 11 through 20**
* **Model natural gas demand forecast with retrofit conservation in years 11 through 20**
* **Focus on integrated planning for local high-growth areas**
* **Fine-tune energy loss factors**
* **Model increasing loads from** **electric vehicles**
* **Evaluate seasonal resources for peak capacity needs**
* **Update electric vehicle adoption rates**
* **Use smaller or no electric conservation bundles**
* **Leverage expertise in estimating cost of carbon abatement**
* **Increase clarity of carbon cost abatement curve analysis**
* **Use smaller or no natural gas conservation bundles**
* **Update energy delivery performance criteria** **to reflect a modernized grid**
* **Create a routine public review process for distribution and transmission planning**
* **Energize Eastside transmission build public process**
* **Energize Eastside need analysis**
* **Continue improving the public process**
* **Gas peak day standard**
* **Increasing market risk exposure**
* **Spot market size in wholesale market risk analysis**
* **Reliability Metrics**
* **Modeling market participant behavior**
* **California Imports**
* **EIM and operational flexibility**
* **Access to third party models**
* **Market price of carbon**
* **Measuring the benefits of energy storage**

# **Supplemental Information**

In addition to recommendations related to development of the 2019 IRP, in a few cases Staff is recommending that PSE provide supplemental information in this 2017 IRP cycle. These are either important policy issues that are deficient in the current plan, or are time critical issues that call for action sooner than the July 2019 deadline for the next IPR. The supplemental information could be provided through a supplemental IRP report, a presentation prepared for the upcoming open meeting, or both. PSE should supplement the information in the final IRP as described below.

* Provide the actions PSE would take to satisfy customer peak loads if the Tacoma LNG plant and associated distribution pipeline upgrade construction or permitting were delayed or the plant or pipeline upgrades were unable to be completed.
* Explain and illustrate how its forecast resource acquisitions contribute to meeting the statutory greenhouse gases goals at least through 2035, which is within the 20-year planning timeframe.
* Describe how it will incorporate distributed resource planning and public review into the development of the 2019 IRP. This should include:
	+ how PSE plans to roll up distribution energy resource analyses to system level impacts, and
	+ when PSE will create an advisory group for distribution energy resource planning, its proposed membership and role in terms similar to the existing conservation advisory group.
* More explicitly describe its market reliance risk mitigation strategy and its rationale, to the extent this can be made publicly available without revealing sensitive market information.

If this not all of this information is provided to the docket by the open meeting scheduled for February 21, 2018, Staff recommends that the Commission request that PSE provide such supplemental information into the docket within six weeks of the open meeting, by March 4, 2018.

# **Public Comments**

The Commission posted a Notice of Opportunity to File Written Comments in dockets UE-160918 and UG-160919 on November 21, 2017, with an initial due date of January 19, 2018. On January 17, 2018, in the Notice of Recessed Open Meeting the date was extended to February 22, 2018, in order to allow written comments to come in through the day after the open meeting.

As of February 2, 2018, 166 individuals and organizations had provided comments on PSE’s final 2017 IRP in the dockets.[[9]](#footnote-10) Staff has reviewed these comments, and attempted to categorize each comment to one or more of the themes listed in the table below.

|  |  |
| --- | --- |
| **Public Comment Topic** | **Number of commenters as of Feb. 2, 2018** |
| **Support for renewable energy and recognition of climate change** | 150 |
| **Opposition to coal-fired generation and support for shutting down coal facilities** | 123 |
| **Opposition to natural gas-fired generation and hydraulic fracturing** | 59 |
| **Opposition to the Energize Eastside transmission project** | 28 |
| **Support for conservation and energy efficiency** | 22 |
| **Opposition to the Tacoma LNG facility** | 21 |
| **Disputes or reservations about PSE’s resource cost assumptions** | 11 |
| **Opposition to new gas pipelines** | 7 |

Outside of the topics cited above, commenters touched on a diverse array of additional topics including:

* the potential for closed loop pump storage,
* health dangers of natural gas extraction,
* support for low-income assistance to offset higher rates for renewables,
* a desire for customer cited and behind-the-meter green programs,
* a proposed increase to the renewable portfolio standard,
* an argument against repowering wind turbines, and
* a deep dive into using the social cost of carbon for resource planning.

# **Closing Remarks**

In summary, Staff believes that PSE has done a reasonable and in some ways innovative job of performing analyses, addressing interested parties’ requests, and providing a rationale for further consideration of many promising resources. Nonetheless, it is important to clearly state that the direction and forecasts indicated by the results of PSE’s IRP are not binding on the Company or the Commission in determining the appropriateness or prudence of any PSE decisions regarding future resource acquisition.

The detailed Staff comments in Appendix 1 provide more specific critique and suggestions for the Commission and PSE to consider during the creation of PSE’s 2019 IRP and in filing the recommended supplemental information mentioned above in the 2017 IRP dockets.

The work plan for the 2019 PSE IRP should be filed with the Commission by July 14, 2018. Staff looks forward to working with PSE and stakeholders again during the development of its 2019 IRP.

1. *In the Matter of the Petition of Puget Sound Energy Seeking Exemption from the Provisions of WAC 480-90-238(4) and WAC 480-100-238(4) Relating to the Timing of Integrated Resource Plan Filings*, Dockets UE-160918 and UG-160919, Order 01 (Apr. 13, 2017). [↑](#footnote-ref-2)
2. WAC 480-100-238 and WAC 480-90-238. [↑](#footnote-ref-3)
3. “Swarr” is an upgrade to PSEs existing propane-air injection system. [↑](#footnote-ref-4)
4. “LNG Distr[ibution] Upgrade” would allow more gas to flow from PSE’s LNG peaking facility into the gas supply network. [↑](#footnote-ref-5)
5. “Additional NWP + Westcoast” is additional pipeline capacity. [↑](#footnote-ref-6)
6. Regional adequacy and its associated risks are addressed in the IRP at Page 2-2, Pages 3-5 and 3-6, and in more detail in Chapter 6, and Appendices F and G. [↑](#footnote-ref-7)
7. PSE had included a “Delivery Infrastructure Planning” chapter in the 2013 IRP but not in the 2015 IRP. [↑](#footnote-ref-8)
8. Docket U-161024; and Washington Utilities and Transportation Commission, [Report on Current Practices in Distributed Energy Resource Planning](https://www.utc.wa.gov/aboutUs/Documents/DER%20Planning%20Report%20-%20Final.pdf). Operating Budget, Laws of 2017, Ch. 1, §142, December 31, 2017. [↑](#footnote-ref-9)
9. 84 comments appear to be submissions based on a form letter. [↑](#footnote-ref-10)