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Filed Via Web Portal

Mr. Steven King
Executive Director and Secretary
Washington Utilities and Transportation Commission
P.O. Box 47250
Olympia, Washington 98504-7250

Re: Docket U-151958
Investigation into Reliability Benchmarking

Dear Mr. King,

Puget Sound Energy is providing these comments on reliability performance benchmarking in the above-referenced docket pursuant to the Commission's Notice of Opportunity to File Written Comments dated July 7, 2017, and its Notice of Workshop (collectively "Notice"). Puget Sound Energy appreciates the opportunity to collaborate and participate in the Commission's investigation of electric reliability performance benchmarking, including econometric benchmarking in Docket U-151958. Generally, Puget Sound Energy supports a collaborative way of determining the acceptable level of electric reliability which then informs system investment decisions. Puget Sound Energy also recognizes that what is acceptable electric reliability one year may not be in a future year as the service territory characteristics change, customer expectations and dependencies evolve with increasing technology maturity and societal pressures, and the demands on and capabilities of the electric grid expand. For example, as traffic congestion increases in an area, customers may expect better reliability as they choose to work from home. Puget Sound Energy does not believe that there will ever be one consideration, tool, or method from which regulatory performance and investments decisions can be solely based upon. With these types of decisions, there must be considerations of ratemaking treatment as well.

Puget Sound Energy generally finds that the econometric benchmarking approach to be only one of the considerations for regulatory electric reliability performance and system investment targets. Other considerations are described in later comments. Additionally, the current econometric reliability benchmarking model and study prepared by the Commission's consultant

Power System Engineering, Inc. (“the Study”) needs further refinement for variables that typically would be in an “econometric” model including costs, economic conditions and characteristics, and trends of the particular service territory as well as customer expectations. Puget Sound Energy recognizes that the initial econometric Study was performed with certain limitations relative to the resources that the Commission could devote to it. The Study accessed data that was only publicly available which limited the type of information that could be used and an outside party’s ability to verify the data. As such, the resulting Study provides an incomplete view of Puget Sound Energy’s electric reliability. The Study should not be used to make regulatory decisions in isolation given its restricted scope. Finally, with that view in mind, Puget Sound Energy is not sure if more time or cost should be spent to develop more accuracy as it is unlikely it would be robust enough to be used as a sole determiner of evaluating utility reliability efforts.

Puget Sound Energy’s preliminary comments in response to the ten questions in the Notice are listed below. Please note that these responses are based upon Puget Sound Energy’s own interpretation of the Commission’s questions, which are indefinite without description of specific context. For example, Puget Sound Energy assumes that terms like “benchmark” and “target” have the same meaning as they are used interchangeably in these questions whereas they could have very different meaning if they have associated rewards and penalties. To answer these questions about reliability benchmarking tools/approaches, it is important to know in what venue or context the Commission would evaluate the need for reliability investments or would determine whether a utility’s reliability performance is appropriate given its unique service territory characteristics, such as whether questions about investment are in the context of a general rate case or in the context of pre-approval.

1. Does an econometric approach, in general, provide a sound basis for establishing targets for SAIDI and SAIFI?

Under a regulatory process, the intention of establishing a target must be clear, depending on whether establishing a target is for mere benchmarking or for the application of a monetary incentive or penalty for being above or below such targets. Therefore, how any targets are established and what they are used for could and should vary. Generally, an econometric approach provides one lens for viewing reliability performance which should be considered with other information such as historic performance, operating and construction landscape, age of infrastructure, weather severity, level of modernization, regulatory interests and policies, and customer expectations relative to reliability and rates. An econometric study best shows how a utility’s reliability compares to the industry and Puget Sound Energy would expect such a study to be used in combination with information associated with operating costs as well as details that drive customer expectations when establishing SAIDI and SAIFI and system investment targets.

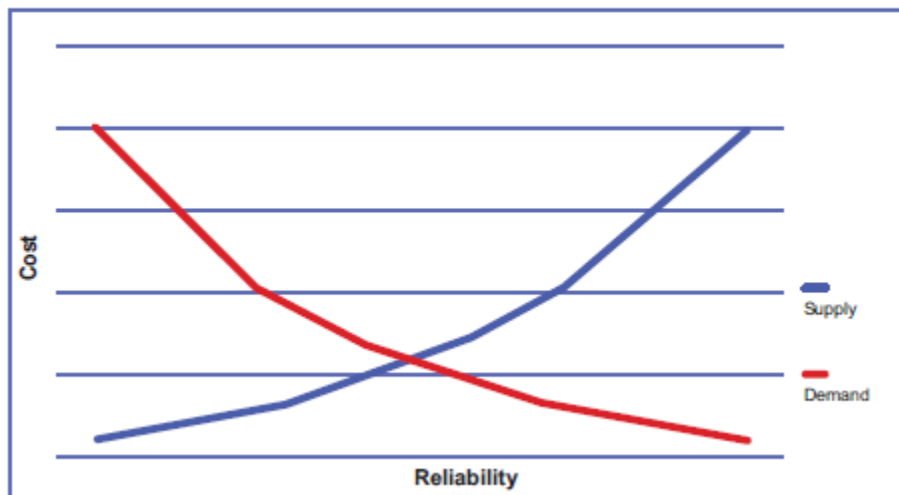
2. In the absence of an econometric benchmarking study, how should the commission evaluate whether a utility is providing an economically efficient level of reliability?

To ask this question, it is important to clarify in what venue or context would “the commission evaluate whether a utility is providing an economically efficient level of reliability”. Power System Engineering, the authors of the econometric Study, suggest that the best way to

determine an optimal level of reliability is to find the level at which the cost of reliability matches the willingness of customers to pay for that level of reliability. On page 4 of Power System Engineering's "[How is My Utility Performing](#)"¹ analysis, they state with respect to the figure below "In this figure, the vertical axis represents cost, and the horizontal axis represents increased reliability. The purple "supply" line represents how much it costs a utility to add an extra "unit" of reliability, and the red "demand" line represents how much a customer would be willing to pay for another unit of reliability. The optimal reliability point for a utility is where the two lines intersect." The econometric Study that Power System Engineering performed for the Commission does not seem to align with this suggestion fully as it seems only to address one aspect of this optimal level.

Figure 1. Figure from page 4 of "How is My Utility Performing" by Power System Engineering Inc.

Figure 2: Optimal Level of Reliability



3. Does an econometric approach, in general, provide a sound basis for evaluating the need for reliability investments?

As mentioned in the response to Question No. 1, an econometric approach that is built upon the historical SAIDI and SAIFI performance of electric utilities is only one input in evaluating what level of investment is appropriate. As mentioned in response to Question No. 2, the study performed for the Commission does not fully address what is needed to evaluate reliability investments. Costs and customer expectations are not uniform across utilities. Utility A customers may value high reliability while Utility B customers may value low cost. Targeting an industry average level of reliability to determine investment would likely lead to underinvestment for Utility A and overinvestment for Utility B. The same issue may occur if Utility A has low operating costs while Utility B has high operating costs. The approach only provides a sense of reliability need at a macro level and doesn't highlight localized reliability

¹ www.powersystem.org/docs/publications/how-is-my-utility-performing.pdf

needs at all so by itself it is not a sound basis for evaluating all the needs for reliability investment.

4. In the absence of an econometric benchmarking study, how should the commission evaluate whether a utility's reliability performance is appropriate given its unique service territory characteristics?

Puget Sound Energy believes a utility's reliability performance should be evaluated using multiple considerations and that those may be different for each utility. In addition to this econometric study, the commission should consider customer feedback regarding reliability, reliability valuation (such as the Lawrence Berkeley Lab's research on economic value of reliability to consumers² which resulted in the U.S. Department of Energy's Interruption Cost Estimate Calculator³), local economy and business make up (e.g., high tech requires high reliability), age and make up of infrastructure, grid capability to support future needs, and local weather severity (including wind).

5. What other statistically measurable and valid approaches should the commission consider in evaluating SAIDI and SAIFI targets?

The intention of establishing a target must be clear, depending on whether establishing a target is for mere benchmarking or for the application of a monetary incentive or penalty for being above or below such targets. The Commission should note that reliability levels are subject to a great deal of variability. A utility aiming at a specific reliability target is going to be worse than the target some of the time and better than the target some of the time due to factors outside the utility's control. To guarantee that this utility always performs at least at the target level, it would have to aim for a much better level of reliability to account for this variability. Even a 5 year rolling average SAIDI can change by more than 5% in one year. Puget Sound Energy suggests research into how other states approach this may be helpful.

6. Should the econometric benchmarking study performed by Power System Engineering be used to establish utility-specific targets for SAIDI and/or SAIFI? Why or why not?

The intention of establishing a target must be clear, depending on whether establishing a target is for mere benchmarking or for the application of a monetary incentive or penalty for being above or below such targets. After further enhancement and modification of the Study, it might be helpful as one of the considerations in establishing utility-specific electric reliability targets. Puget Sound Energy has the following concerns regarding the current Study:

- a) The Study does not account for customer expectations or operating costs (see the responses to Question Nos. 1 – 4 above).
- b) The analysis does not consider some important factors that affect reliability, including animal populations, vegetation type, directional wind speed, precipitation type and amount, traffic, age of infrastructure, and customer type. Puget Sound Energy previously submitted a list of about 40 variables that affect reliability, many of which were not

² <https://emp.lbl.gov/projects/economic-value-reliability-consumers>

³ <http://www.icecalculator.com/>

accounted for in the Study. As a result, this Study's findings are skewed toward factors that have a lower impact on Puget Sound Energy's electric reliability.

- c) The results do not appear to have a high degree of accuracy (see Puget Sound Energy's response to Question No. 9 below).

Though these are significant concerns, Puget Sound Energy recognizes that performing a study like this takes time and money and that gathering accurate data for all relevant inputs may not be feasible. Puget Sound Energy believes that the intent of the Study is sensible and that the Study, when combined with other information, is useful for gaining general alignment regarding sense of electric service reliability performance and investment needed.

7. Should the econometric benchmarking study performed by Power System Engineering be used to evaluate the need for investments in reliability? Why or why not?

After further enhancement and modification of the Study, it might be helpful as one of the considerations in establishing utility-specific electric system reliability investment targets. Puget Sound Energy has the following concerns regarding the current Study:

- a) The Study does not address costs. Like reliability, each utility has unique circumstances which affect the costs associated with maintaining and improving specific levels of reliability. For example, utilities operating in urban areas may require a larger investment to achieve certain reliability targets than utilities operating in suburban or rural areas. Though an investment need may be identified, determining the amount of investment requires information that is not included in this Study.
- b) The Study does not consider customer expectations. Even if a utility is performing better than the expected industry average, customers may still want, and be willing to pay for, better reliability.
- c) The Study results demonstrate that a range of reliability targets, and therefore investment levels, may be reasonable. It wouldn't make sense to use only this study to establish a specific level of investment.

As mentioned in the response to Question No. 6, Puget Sound Energy recognizes the difficulty in performing this kind of study and finds that such study may be useful, when combined with other information, for gaining general alignment regarding sense of performance and investment needed.

8. Do you believe that additional policy guidance from the commission on the issue of reliability performance benchmarking is necessary?

The intention of benchmarking must be clear, depending on whether benchmarking is for mere benchmarking or for the application of a monetary incentive or penalty for being above or below such benchmarks. Puget Sound Energy values documented guidance as it can eliminate changing interpretations simply due to the personnel transitions. Puget Sound Energy cautions that electric reliability performance as described above is impacted by many disparate factors over time and is therefore complex in nature.

9. (For utility representatives) Please comment on the reasonableness of the benchmarks produced by the study, specific to your utility. Please describe your perspective on both a) the point estimate reliability target, and b) the target range produced by the 90 percent confidence interval.

Puget Sound Energy provides the following:

- a) Relative to the reasonableness of the point targets, the 113 SAIDI value identified in the Study for Puget Sound Energy is less than the median value for utilities reporting their SAIDI in the annual IEEE reliability survey for 2016 (see Figure 2 below). In the case of SAIFI, the report identified a value 0.9 which would be 1st quartile performance in the annual IEEE reliability survey for 2016 (see Figure 3 below). These results suggest that a utility with a service territory in a densely forested, mountainous region that experiences regular storms has the characteristics of a utility with better than average reliability. This does not make sense intuitively. Puget Sound Energy estimates that to meet these SAIDI and SAIFI benchmarks identified in the Study would require upwards of \$1.5B - \$2.0B in investment. This is much greater than historical spending on reliability and would require resources that are not currently available. Given that it would take time to adjust to a significant increase in investment and that the targets in the Study are intended to be long term predictions of what a utility might achieve as stated in the conclusion of the Study, it would not be reasonable to use the benchmarks as short term targets. Also, if the Study is used to set penalties when long-term performance is worse than the Study's expected reliability targets and there is no fully supporting recovery of investments from the Commission, then the benchmarks are not reasonable targets.
- b) Relative to the reasonableness of the target ranges, page 25 of the Study states "...the model results possess a degree of uncertainty. Accordingly, the expected targets should be considered approximations while the confidence intervals surrounding each target give some sense of the degree of uncertainty for that target." The level of uncertainty for the SAIDI range given for Puget Sound Energy spans 3 quartiles of performance as defined by the annual IEEE reliability survey for 2016 (see Figure 2 below). The range given for SAIFI is similarly broad (see Figure 3). This wide range of possible values suggests that the model has a high level of uncertainty and that therefore, using the point targets may not be reasonable.

Figure 2. Target SAIDI range for Puget Sound Energy per the Study and Annual IEEE reliability survey SAIDI results for 2016

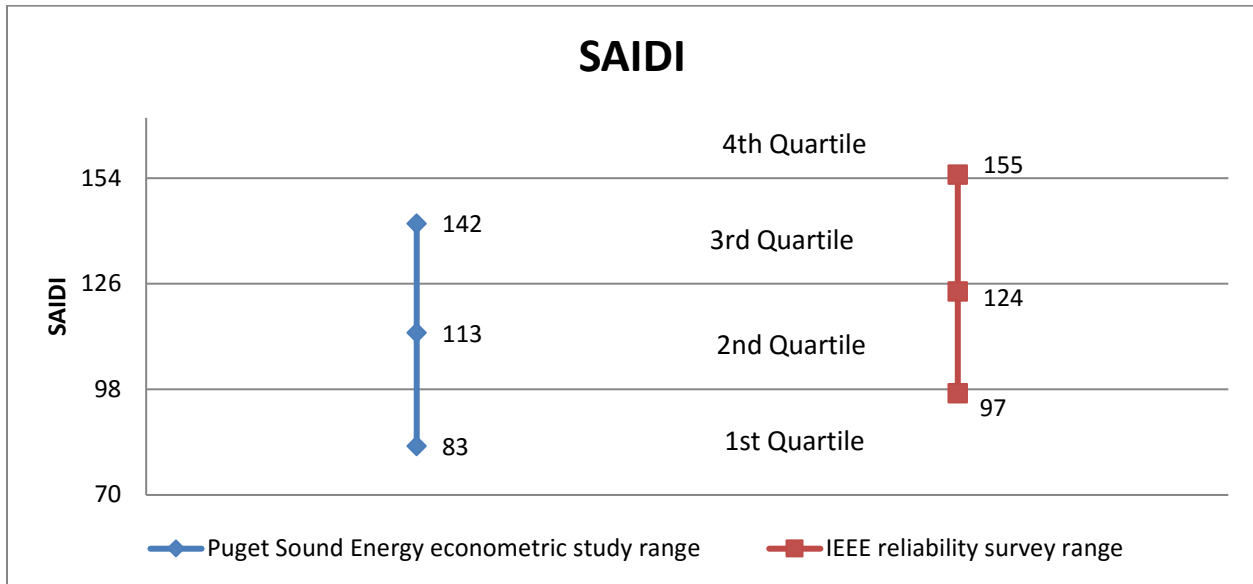
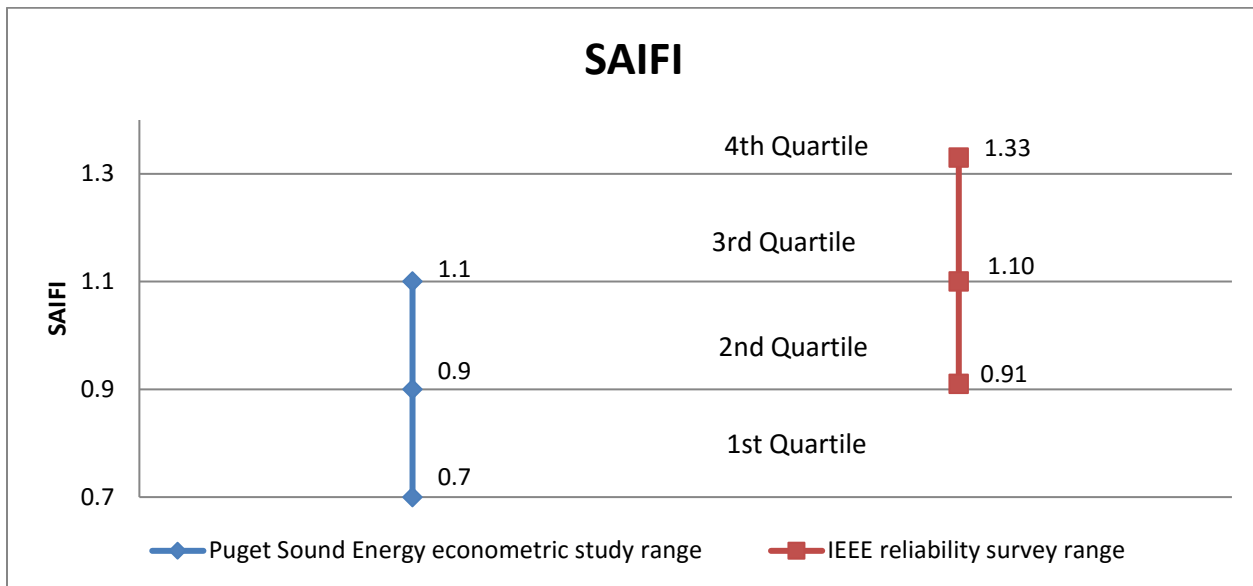


Figure 3. Target SAIFI range for Puget Sound Energy per the Study and Annual IEEE reliability survey SAIFI results for 2016



10. Please provide any additional commentary you believe the commission should consider when determining whether or how, to use the study from Power System Engineering to establish reliability benchmarks or to evaluate investments in reliability.

Many forces that have a large impact on reliability are not consistent, predictable or controllable. Add to this that every customer has unique and continually changing expectations, but cannot be served independently and it becomes clear that determining and delivering a reasonable level of

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reliability is not an exact science. While an econometric study can be informative, additional information is necessary when developing reliability targets and evaluating reliability investment.

Thank you for the opportunity to file these initial comments. Puget Sound Energy looks forward to working with parties and providing additional comments as these proceedings progress. Please contact Cathy Koch at (425) 462-3877 or Mei Cass at (425) 462-3800 for additional information about this filing. If you have any other questions, please contact me at (425) 456-2110.

Sincerely,

/s/ Kenneth S. Johnson

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