

**BEFORE THE  
WASHINGTON UTILITIES & TRANSPORTATION COMMISSION**

In the Matter of the Petition of:

PUGET SOUND ENERGY, INC.

For Extension of SQI SAIDI Temporary  
Mechanics through 2015 Program Year

Docket Nos. UE-072300 and UG-072301  
(consolidated)

PETITION FOR EXTENDING SQI  
SAIDI TEMPORARY MECHANICS

**I. INTRODUCTION**

1. In accordance with WAC 480-07-370(b), Puget Sound Energy, Inc. ("PSE" or the "Company") hereby files this petition ("Petition") with the Washington Utilities and Transportation Commission ("UTC" or the "Commission") respectfully seeking an extension of the current mechanics associated with PSE's Service Quality Index ("SQI") No. 3: System Average Interruption Duration Index ("SAIDI") for an additional program year through 2015. After examining the outages that have been recorded and tracked in PSE's newly implemented Outage Management System ("OMS"), the Company realizes that at least one additional year of outage data is necessary to adequately assess the effect of improving outage reporting accuracy on PSE's electric service reliability statistics. As explained in this Petition, an additional year of outage data will provide further insight in designing an unbiased electric reliability measurement in the automated OMS environment. The extension of the SQI SAIDI temporary mechanics through 2015 is appropriate because PSE has sustained its electric service reliability while adopting and learning its new OMS, and because PSE needs more OMS data to design a permanent SQI electric service reliability measurement.

2. PSE is engaged in the business of providing electric and natural gas service within the State of Washington as a public service company, and is subject to the regulatory authority of the Commission as to its retail rates, service, facilities and practices. Its full name and mailing address are:

Puget Sound Energy, Inc.  
Attn: Ken Johnson  
Director – State Regulatory Affairs  
P.O. Box 97034

Bellevue, Washington 98009-9734

3. Rules and statutes that may be brought at issue in this Petition include RCW 80.01.040, RCW 80.28.020, and WAC 480-07-370(b).

## II. BACKGROUND

4. PSE first implemented its Service Quality Program (“SQ Program”) in 1997 pursuant to Docket Nos. UE-951270 and UE-960195, the dockets approving the merger between Washington Natural Gas Company and Puget Sound Power & Light Company. The purpose of the SQ Program was to “provide a specific mechanism to assure customers that they will not experience deterioration in quality of service”<sup>1</sup> and to “protect customers of PSE from poorly-targeted cost cutting”<sup>2</sup> as a result of the merger. The SQ Program has been continued since 1997 to affirm PSE’s commitment to provide quality service to its customers. The SQ Program currently includes three Service Guarantees<sup>3</sup> and nine Service Quality Indices<sup>4</sup>.

5. On October 21, 2010, PSE filed a petition (“2010 Petition”) with the Commission for an order authorizing amendments to PSE’s SQ Program mechanics. The Commission approved the petition on November 29, 2010, in its Order 17 of consolidated Docket Nos. UE-072300 and UG-072301 (“Order 17”). The 2010 Petition included temporary changes to SQI No. 3: SAIDI mechanics for the 2010 through 2013 SQI Program years and certain permanent changes to other elements of the SQ Program. The petition was developed after working closely with the Commission staff (“Staff”) for about one and half years.<sup>5</sup>

6. On July 13, 2012, PSE requested that the Commission authorize a one-year extension of the temporary SQI SAIDI mechanics to 2014 to allow for adequate collection of

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<sup>1</sup> Dockets UE-951270 & UG-960195, Fourteenth Supplemental Order Accepting Stipulation (February 5, 1997) (Stipulation at 11:14-15).

<sup>2</sup> *Id.* (Order at 32:3-6).

<sup>3</sup> Electric Schedule 130, Customer Service Guarantee, and electric Schedule 131, Restoration Service Guarantee, and natural gas Schedule 130, Customer Service Guarantee.

<sup>4</sup> SQI No. 2: WUTC Complaint Ratio, SQI No. 3: System Average Interruption Duration Index (SAIDI), SQI No. 4: System Average Interruption Duration Index (SAIFI), SQI No. 5: Customer Access Center Answering Performance, SQI No. 6: Telephone Center Transactions Customer Satisfaction, SQI No. 7: Gas Safety Response Time, SQI No. 8: Field Service Operations Transactions Customer Satisfaction, SQI No. 10: Kept Appointments, and SQI No. 11: Electric Safety Response Time.

<sup>5</sup> In early 2009, the Company approached the signatory parties of Appendix D to Order 12; Commission Staff, Public Counsel, and the Energy Project; to address the issues related to the existing SQI No. 3 benchmark and calculation. Public Counsel and the Energy Project were not able to participate in all the meetings, but they were provided with the same information PSE presented to Staff in the all meetings.



electric reliability data from PSE's new OMS, given the OMS implementation date had been delayed by six months. The Commission approved PSE's petition on August 19, 2012, in Order 19 of consolidated Docket Nos. UE-072300 and UG-072301 ("Order 19").

### III. SQI SAIDI TEMPORARY MECHANICS

7. The 2010 Petition addressed both a change in measuring the SAIDI SQI (the "Mechanics"), and the duration of this temporary change. The temporary Mechanics measure PSE's overall power system reliability in term of average outage duration. The Mechanics include all outages except for exclusions, with all exclusions approved by the Commission. Since 2010, one exclusion has been approved by the Commission.<sup>6</sup> The benchmark for the SQI SAIDI under the Mechanics is 320 minutes, based upon 5-year rolling averages of 1997-2009 performance plus one standard deviation. The annual performance used in assessing potential SQI penalties is also calculated from a 5-year rolling average without exclusion of any outage events except the exclusions specifically allowed by the Commission. The Mechanics replace the previous SQI No. 3 benchmark and performance calculation that no longer adequately measured PSE's overall system reliability and customer satisfaction.

8. The 2010 Petition also addressed the duration of this temporary Mechanics. The reason for the temporary (vs. permanent) Mechanics stemmed from PSE's plans to implement an OMS system. Through the experience of other utilities, PSE expected that its electric service reliability statistics would be affected.<sup>7</sup> However, the magnitude and effect of an OMS implementation on reliability statistics for either immediate term or long term remains less foreseeable.

9. A 2012 study conducted by Lawrence Berkeley National Laboratory of 155 U.S. utilities with up to 10 years of outage data suggests that utilities would report "worse" SAIDI initially due to more accurate measurement of reliability.<sup>8</sup> A case study of a single example

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<sup>6</sup> The exclusion is related to the exclusion of January 2012 monthly SAIDI in the SQI SAIDI performance calculation to reflect the impact of the numerous and consecutive severe weather events during January per Order 20 of Docket Nos. UE-072300 and UG-072301 (consolidated).

<sup>7</sup> Jeffrey Lewis, Consolidated Edison Company of New York, Case No. 07-E-0523, Rebuttal Testimony [http://media.corporate-ir.net/media\\_files/irol/61/61493/092807/Lewis.pdf](http://media.corporate-ir.net/media_files/irol/61/61493/092807/Lewis.pdf), section 2.1 "Impact of OMS Implementation", September 2007.

<sup>8</sup> Joseph H. Eto, Kristina Hamachi LaCommare, Peter Larsen, Annika Todd, and Emily Fisher, 2012. An *Examination of Temporal Trends in Electricity Reliability*. LBNL-5268E. Berkeley: Ernest Orlando Lawrence Berkeley National Laboratory. (36:11-13) <http://escholarship.org/uc/item/4x04j3ts.pdf>.

utility with 1994-2003 outage data prepared by IEEE<sup>9</sup> members indicates that both reported pre-OMS SAIDI and SAIFI results should be adjusted upward in comparison with the OMS data,<sup>10</sup> *i.e.*, the implementation of OMS would result in higher SAIDI and SAIFI statistics in general. Given these expected changes and the need for data analysis before determining an appropriate threshold, PSE agreed to a temporary duration of 2010-2013 initially, with the ability for PSE to propose an extension as needed.

10. PSE implemented its OMS system on April 1, 2013. In the 2010 Petition, the OMS implementation had been formerly planned for October 1, 2012, but was delayed mainly due to the acceleration of the electric geographic information system (“GIS”) implementation from 2015 to 2013. Additional time was needed for field and mapping data acquisition in order to correctly redraft maps into the GIS therefore greatly improve the accuracy of OMS data and outage impact projection.

11. As anticipated, PSE is experiencing outage data changes as OMS continues to be used and additional data is accumulated. As business processes are refined and new software enhancements are implemented, the data continues to improve. The Company realizes that at least another year of outage information from the OMS is necessary to assess the OMS implementation impact on PSE’s electric service reliability statistics. As explained in this Petition, one additional year of outage data will provide further insight in designing an unbiased electric reliability measurement in the automated OMS environment.

#### IV. PSE COMMITMENTS UPDATE

12. There are four<sup>11</sup> commitments made in PSE’s 2010 Petition and continued in the 2012 Petition. PSE is committed to:

- a) Continuing investments in reliability-related plant and practices, and reporting on investment trends in the combined annual report,

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<sup>9</sup> Institute of Electrical and Electronics Engineers.

<sup>10</sup> M. McGranaghan, A. Maitra, Member, C. Perry, and A. Gaikwad. 2006. “IEEE, Effect of Outage Management System Implementation on Reliability Indices”.  
[http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=1668677&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs\\_all.jsp%3Farnumber%3D1668677](http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=1668677&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D1668677).

<sup>11</sup> There were six commitments outlined in PSE’s 2010 Petition. Two of the six commitments were completed in 2011.



b) Continuing review of outage response times and trends, and reporting on trends in the combined annual report,

c) Establishing an operational outage management system and an electric geographic information system by July 1, 2013, and

d) Initiating the discussion with UTC Staff and stakeholders by December 31, 2013, or date as agreed upon with Staff, to amend the Service Quality Program addressing, at a minimum, SQI SAIDI and SQI SAIFI<sup>12</sup>, for the performance year 2015 and beyond. If the Company does not file either a 1) petition to permanently amend the SQ Program or 2) request to extend the temporary SQI No. 3 benchmark and performance by December 1, 2014, SQI No. 3 will revert to the 2009 benchmark and performance calculation until modified by a Commission order.<sup>13</sup> The Company may file a request to extend the effective period of the temporary SQI No. 3 benchmark and performance calculation for one year at a time prior to the Commission's approval of a permanent SAIDI measurement and the beginning of a performance year.

13. The following sections update the status of these commitments.

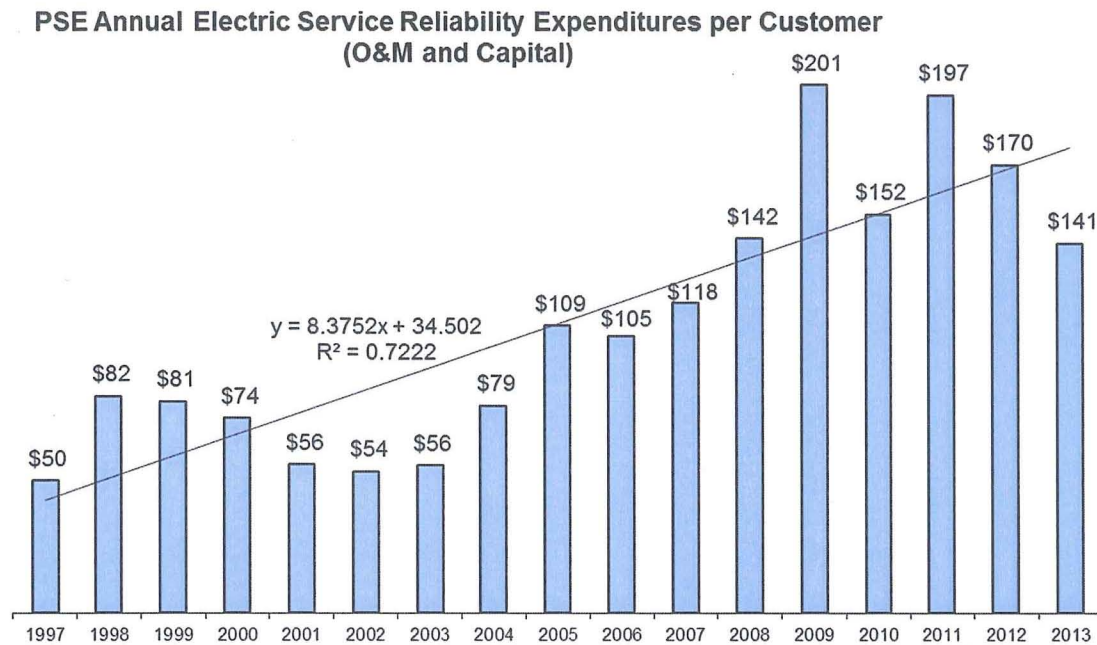
14. **Commitment a):** Reliability-related programs and initiatives; such as vegetation management, tree watch, and cable remediation; have been part of the combined SQI and electric service reliability annual reporting with an extended discussion of these programs since 2010. Every year, PSE meets with Staff to review these programs and associated investments. The following chart summarizes, per customer, total PSE electric reliability operations and maintenance (“O&M”) and capital expenditures by year. Storm restoration costs and enterprise-wide information system spending, such as GIS and OMS, are not included in the chart as they are not considered as investment that will directly improve electric reliability. However, the investment associated with SCADA (Supervisory Control and Data Acquisition), a critical element in monitoring and controlling substation equipment, is included in the electric reliability-related expenditures. As shown in Chart 1, electric service reliability expenditures overall have been trending upward at about 10 percent annually since the inception of PSE Service Quality Program in 1997.

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<sup>12</sup> SQI-4: System Average Interruption Duration Index (SAIFI).

<sup>13</sup> 2012 Petition at 5:3-6.

15. Chart 1: PSE annual electric service reliability O&M and expenditures per customer:



16. **Commitment b):** The electric safety response time (SQI No. 11) section of the combined annual report summarizes PSE’s safety and outage response times and trends. The following table provides a complete summary of the SQI electric safety response times. PSE has been successful in not exceeding the 55 minute benchmark since the adoption of this SQI in 2003:

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
44	51	49	49	52	55	51	52	51	51	53

17. **Commitment c):** PSE’s OMS, GIS, along with a new customer information system (“CIS”) have been in operation since April 1, 2013, three months before the original target of July 1, 2013. The advance implementation of PSE’s electric GIS, coinciding with the OMS deployment, greatly enhances the precision of the OMS. The number of unmapped customers has been significantly reduced and is no longer a major contributor of outage impact prediction inaccuracy.

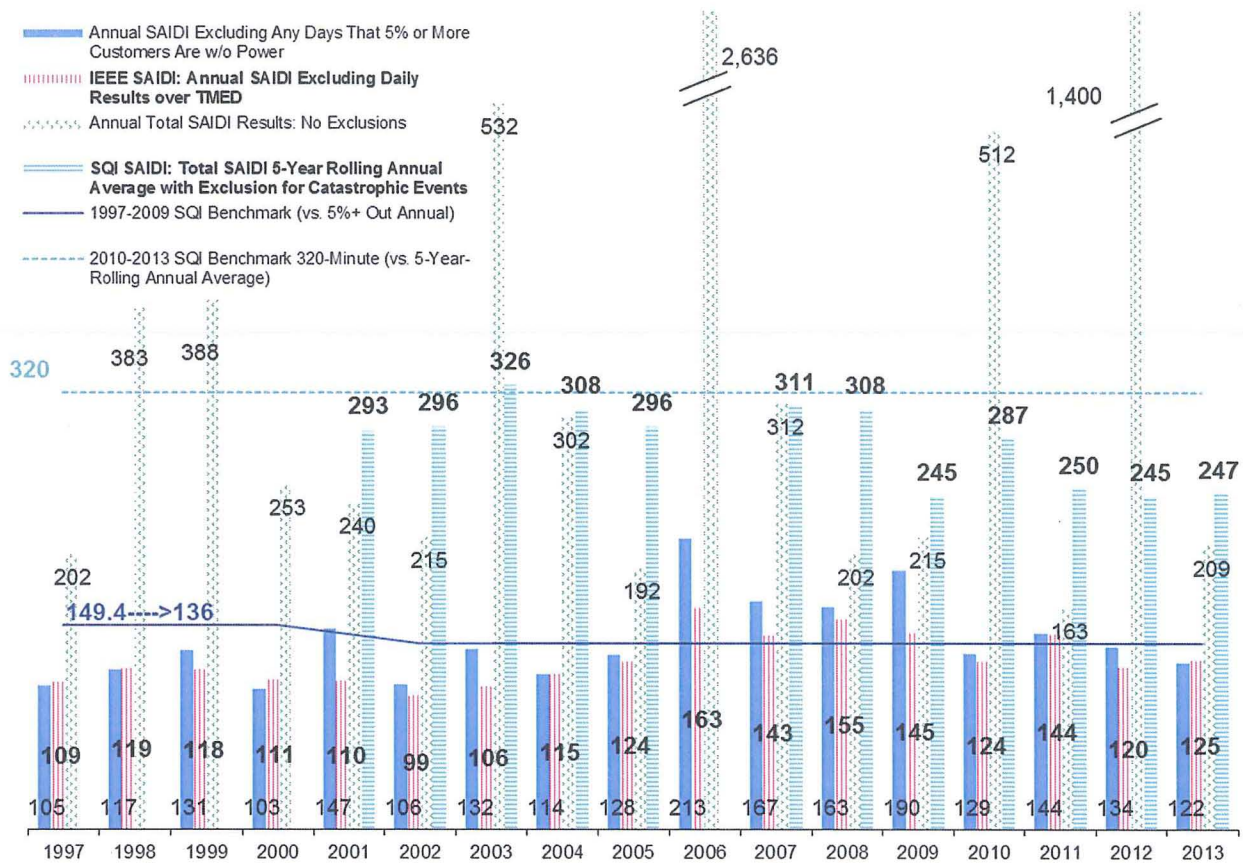


18. **Commitment d):** PSE met with UTC staff on December 19, 2013, to discuss OMS implementation and data availability in designing the permanent electric reliability measurement. PSE hereby requests an extension of the current mechanics associated with PSE's SQI SAIDI for an additional program year through 2015 as provided for in Commitment d.

## V. UPHOLDING RELIABILITY PERFORMANCE

19. The following two charts present PSE's electric service reliability statistics by different measurements for 1997 through 2013. As shown, PSE has been upholding its electric service reliability in terms of SAIDI and SAIFI since 2010 under either SQI or IEEE<sup>14</sup> measurement while the Company adopting and learning its new OMS.

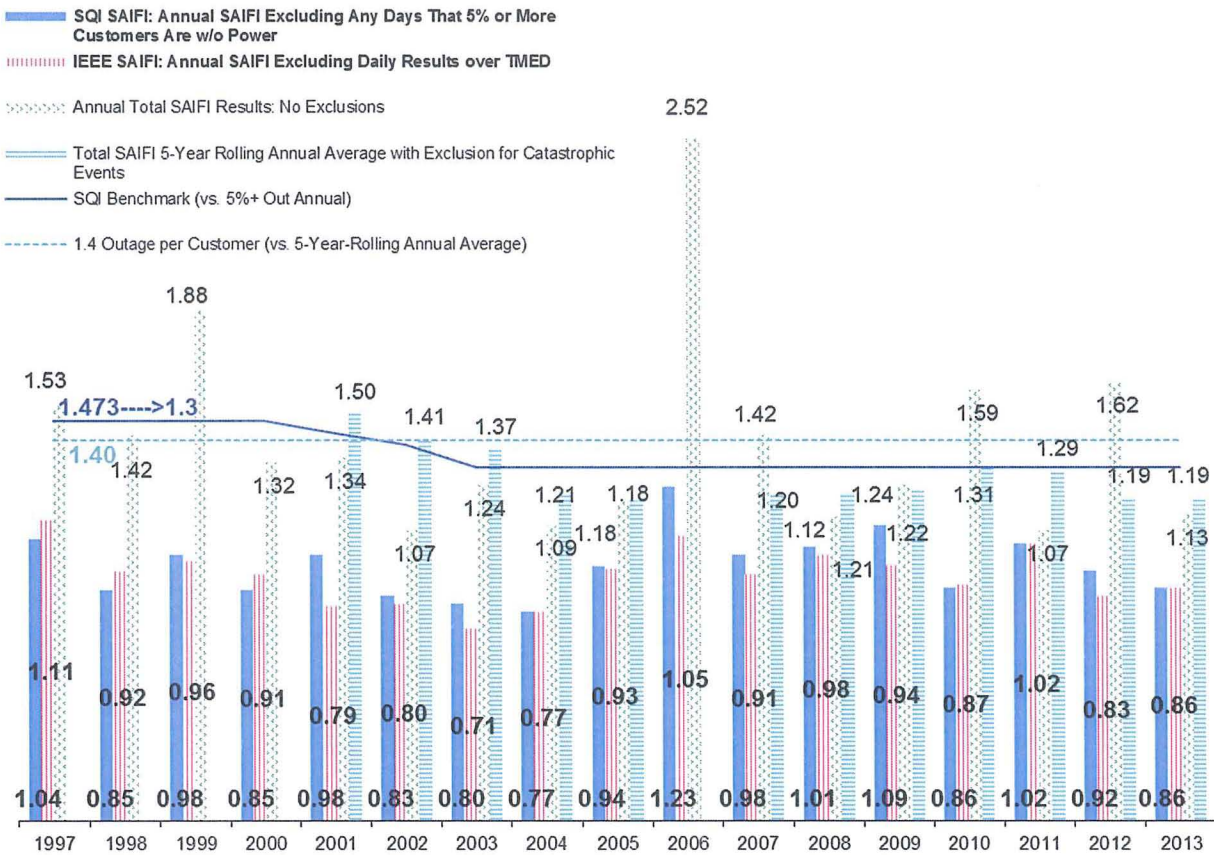
20. Chart 2: SAIDI, System Average Interruption Duration Index:<sup>15</sup>



<sup>14</sup> IEEE, SA-1366- IEEE Guide for Electric Power Distribution Reliability Indices.

<sup>15</sup> 2013 Annual Puget Sound Energy SQI and Electric Service Reliability Report, Appendix L: 1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements, at 148.

21. Chart 3: SAIFI, System Average Interruption Duration Index:<sup>16</sup>



**VI. EFFECT OF OMS ON ELECTRIC SERVICE RELIABILITY STATISTICS**

22. PSE’s new automated OMS, combined with the new GIS and CIS, provides the Company with a fully integrated and efficient platform in managing electric service restoration and in tracking and reporting of reliability performance. The new OMS is able to predict the outage impact from an individual customer level through the system level and enables PSE to pinpoint the location of a fault more quickly. Moreover, the deployment of the automated OMS also highlights some gaps with the prior outage management and data collection and reporting processes (CLX processes or CLX). Through the deployment and stabilization of PSE’s OMS platform, PSE has noticed that the data collection and reporting methods have changed substantially between the new OMS-based business processes and the previous CLX-based business processes.

<sup>16</sup> *Id.* at 149.



23. One of the key process changes related to data collection and reporting is the method for identifying the number of impacted customers during an outage. From some preliminary analyses, PSE has observed that the new OMS coupled with the connectivity information from the GIS produces a more accurate number of customers affected during an outage as compared to the number reported in CLX. The CLX processes did not have an underlying GIS, so the number of customers impacted on some outages was estimated based on the best known information. With the GIS, all impacted customers are counted. This change along with other data collection and reporting changes warrants a better understanding of the differences between pre- and post-OMS outage data, especially when these data will be combined to establish measurement for future performance evaluation. “Therefore, it is important that the calculation of the historical reliability levels be consistent with the ongoing calculations.”<sup>17</sup>

24. In addition to understanding these differences, another important task is to estimate both short and long term effects of the impact of business improvements and software enhancements and fixes that have been introduced since the initial OMS implementation. PSE estimates that 2013 outage data is most impacted by these changes because PSE employees were still learning the new OMS tool during this period. Simultaneously, employees were working through new business processes that were designed to mend procedure gaps or to adopt new OMS functionality. For example, PSE had estimated that the 2013 annual SAIDI was underreported by about one to five minutes and the 2013 annual SAIFI should have been 0.01 to 0.02 higher because some scheduled outages did not get recorded in the OMS during initial implementation. In 2014, these business process changes and software enhancements and fixes have continued to affect the data used for measuring electric service reliability.

25. Cumulatively, these changes create challenges in comparing data from the new OMS with the data from the legacy CLX process. The legacy reporting methods and statistics formed the basis for the current SQI SAIDI and SAIFI metrics and benchmarks. CLX and OMS did not run in parallel during the initial OMS implementation so a direct side-by-side historical comparison is not possible. In order to fully understand what the electric service

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<sup>17</sup> M. McGranaghan, A. Maitra, Member, C. Perry, and A. Gaikwad. 2006. “IEEE, Effect of Outage Management System Implementation on Reliability Indices”. [http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=1668677&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs\\_all.jsp%3Farnumber%3D1668677](http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=1668677&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D1668677). At 1: Section III, 5-7.

reliability measurement and associated performance metrics should be in the automated OMS environment, it is therefore necessary to normalize the historical reliability data to current OMS reporting practices.

## **VII. CONTINUING EFFORTS TOWARD ESTABLISHING PERMANENT SQI ELECTRIC SERVICE RELIABILITY MEASUREMENT**

26. It is imperative for PSE to establish a new permanent SQI electric service reliability measurement because the 2009 SQI No. 3 benchmark and performance calculation had not been a valid measurement prior to 2010, as outlined in PSE's October 2010 Petition and the Commission's Order 17. Meanwhile, a reliability measurement designed with the limited 2013-2014 OMS outage data and unadjusted pre-OMS data would result in a measurement that skews toward the pre-OMS environment that no longer exists. Neither the reversal of SQI No. 3 measurement to the 2009 metrics nor another measurement that relies on the unadjusted pre-OMS data would reflect the electric service reliability experienced by PSE customers. Therefore, if the Commission grant the relief requested in this Petition, PSE intends to continue its examination of how the OMS has impacted its reliability statistics and determine a method that allows for reasonable comparison of OMS and CLX reliability data before the Company proposes the new permanent SQI electric service reliability measurement.

27. PSE has already begun work on creating the plan to bridge the difference between CLX and OMS reporting and calculating methods in order to characterize reliability statistics from the pre-OMS years. The Company plans to review a sample of outage data from across its service territory from the five years preceding its OMS deployment (2008-2012) and compare it to data from similar situations that have been obtained after OMS was in place (2013-2015). The goal is to conclude this analysis by June 30, 2015, and to subsequently incorporate this analysis into the design of post-OMS permanent SQI electric service reliability measurement by December 1, 2015. PSE will initiate the discussion with UTC Staff and other stakeholders by July 30, 2015, or date as agreed upon with Staff, to working on the amendment, at least, of the SQI SAIDI and SAIFI metrics of the Service Quality Program. However, it is not yet known whether or not the amount of post-OMS outage data will be sufficient to derive meaningful conclusions in the permanent measurement design. The Company needs the reconciled results of pre- and post-OMS outage data and more experience with the OMS in



order to propose a reasonable permanent SQI electric system reliability measurement that reflects customer experience.

28. PSE shares the goal of adopting the IEEE methodology for SQI SAIDI and SAIFI measurement with the UTC Staff. However, there are several critical details related to the IEEE method that have not been determined. Key among these details is the approach to setting metrics for performance benchmark and defining an extraordinary/catastrophic event. The extension of the SQI SAIDI temporary Mechanics by an additional year also allows for the opportunity to incorporate any future electric system reliability standards and metrics published by IEEE in 2015.

### VIII. REQUEST FOR AN EXTENSION OF SQI SAIDI TEMPORARY MECHANICS

29. For the reasons set forth above, PSE respectfully seeking a one-time extension of the temporary Mechanics associated with PSE's SQI SAIDI for one additional program year, through 2015. The one-year extension will allow PSE to normalize its pre-OMS data with the data from its new OMS and to work toward establishing a permanent SQI electric system reliability measurement based upon the industry-accepted standards.

30. PSE respectfully requests that the Commission issue an order approving a one-time extension of SQI-3: SQI SAIDI temporary benchmark and associated performance calculations for the 2015 SQI reporting year.

DATED: November 26, 2014

PUGET SOUND ENERGY, INC.

By \_\_\_\_\_

  
Ken Johnson  
Director - State Regulatory Affairs