Puget Sound Energy
2014
SQI and Electric Service Reliability Report

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PSE PUGET SOUND ENERGY

Contents

Chapter 1

Introduction

Executive Summary

As Washington State's oldest and largest energy utility, with a 6,000-square-mile service territory stretching across 10 counties, Puget Sound Energy (PSE) serves approximately 1.1 million electric customers and over 770,000 natural gas customers primarily in the Puget Sound region of Western Washington. PSE meets the energy needs of its customer base through cost-effective energy efficiency measures, procurement of sustainable energy resources and far-sighted investment in the energy-delivery infrastructure. PSE employees are dedicated to providing quality customer service and to delivering energy that is safe, dependable, efficient and environmentally responsible.

Background

PSE first implemented its Service Quality Program (the SQ Program) when the Washington Utilities and Transportation Commission (UTC, or WUTC, or the Commission) authorized the merger of Washington Natural Gas Company and Puget Sound Power & Light Company in 1997.[1] The stated purpose of the SQ Program was to "provide a specific mechanism to assure customers that they will not experience deterioration in quality of service" and to "protect customers of PSE from poorly-targeted cost cutting." The SQ Program has been further extended[2] with various modifications to demonstrate PSE's continuous commitment to customer protection and quality service.

[1] Under consolidated Docket Numbers UE-951270 and UE-960195.

[2] Under consolidated Docket Numbers UE-011570, UG-011571, UE-072300 and UG-072301.

Service Quality Program

The SQ Program includes three components:

- **Customer Service Guarantee**—The Customer Service Guarantee (CSG) provides for a $50 missed appointment credit for both natural gas and electric service. This guarantee became effective in 1997.
- **Restoration Service Guarantee**—The Restoration Service Guarantee (RSG) provides for a $50 electric outage restoration credit to a qualified PSE electric customer. This guarantee was established in 2008.
- **Service Quality Index (SQI)**— PSE reports annually to the UTC on the final performance of these nine SQIs. This document explains the SQIs, how they are calculated and PSE's performance on each of the SQIs for the performance year of 2014.

In addition to these three components, the SQ Program also prescribes reporting requirements for PSE's primary service providers. Several Service Provider Indices (SPIs) benchmark performances in areas of construction standards compliance, reliability/service restoration and kept appointments.

The SQ Program also includes PSE's gas emergency response plans for outlying areas, which are filed concurrently with this Report as Attachment B to the annual UTC SQI and Electric Service Reliability filing. Attachment C to the 2014 annual UTC SQI and Electric Service Reliability filing is PSE's 2014 Critical Infrastructure Security Annual Report. This reporting contains a discussion of PSE's cybersecurity and physical security policies and related information for 2014.

SQI and Electric Service Reliability Report

This *Puget Sound Energy 2014 SQI and Electric Service Reliability Report* meets PSE's SQ Program reporting requirements[3] and the electric service reliability reporting requirements set forth by the UTC.[4,5] To facilitate external review of PSE's SQI and Electric Service Reliability performance, the two areas were combined starting with the 2010 reporting year.[6]

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[3] The performance benchmark, calculation and reporting of each of the Service Quality Indices (SQIs) in this Report reflect all modifications regarding SQI mechanics stipulated in the Twelfth Supplemental Order of Docket Numbers UE-011570 and UG-011571, Orders 1 and 2 of UE-031946, and Orders 12, 14, 16, 17, 18, 19,20, 21, and 23 of consolidated Docket Numbers UE-072300 and UG-072301.

[4] The Electric Service Reliability section of this Report reflects all of PSE's electric service reliability reporting requirements outlined in Docket No. UE-110060 and in the following sections of the electric service reliability WAC:

- WAC 480-100-388, Electric service reliability definitions,
- WAC 480-100-393, Electric service reliability monitoring and reporting plan,
- WAC 480-100-398, Electric service reliability reports.

[5] Two PSE commitments regarding the preparation of the Electric Service Reliability section, as outlined in Section F, Reporting of Customer Compliant Information, of Appendix D to Order 12 of consolidated Docket Numbers UE-072300 and UG-072301 (Section F), are also satisfied in this annual report. 1) Chapter 13 Customer Electric Reliability Complaints section describes how the customer complaint information is used in PSE's circuit reliability evaluation. Appendix M details PSE's actions to resolve these complaints. 2) Prior to the filing of each annual report, PSE used to invite UTC Staff and the Public Counsel Section of the Washington State Attorney General's Office ("Public Counsel") to discuss the format and

Overview of Performance

Table 1a summarizes PSE's 2014 SQI and Electric Service Reliability performance along with relevant service providers' performance metrics and the two service guarantees. PSE met all nine of the SQIs under PSE's Service Quality Program.

Table 1a: SQI and Electric Service Reliability and Service Provider Performance Metrics

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Customer Satisfaction				
UTC complaint ratio	Service Quality Index #2	No more than 0.40 complaints per 1,000 customers, including all complaints filed with UTC	0.21	☑
Customer Access Center transactions customer satisfaction	Service Quality Index #6	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	93%	☑
Field Service Operations transactions customer satisfaction	Service Quality Index #8	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	96%	☑
Customer Service				
Customer Access Center answering performance	Service Quality Index #5	At least 75% of calls answered by a live representative within 30 seconds of request to speak with live operator	76%	☑
Operations Services—*Appointments*				
Appointments kept	Service Quality Index #10	At least 92% of appointments kept	100%[7]	☑

content of the Electric Service Reliability section since the adoption of Order 12. However, as agreed to by Public Counsel, UTC Staff and PSE at the March 13, 2012 meeting, an annual external review meeting of PSE's reliability results prior to the filing is not required. If, however, an external meeting on the format and content of PSE's Electric Service Reliability section is called for by an external party or PSE, then Public Counsel should be invited.

[6]The annual reporting of the Service Quality Program and the electric service reliability was due separately before the UTC by February 15 and March 31 of each year, respectively. To facilitate external review, PSE filed a petition in October 2010 to consolidate the two reporting requirements, among other petition requests. The UTC granted PSE's petition in November 2010 (Order 17 of consolidated Docket Numbers UE-072300 and UG-072301) and the reporting consolidation became effective for the 2010 performance periods and each report thereafter.

[7] Results shown are rounded to the nearest whole percentage per UTC order. However, the 100% 2014 annual performance result does not reflect that PSE and its service providers met all the appointments during the reporting period. Numbers of missed appointments by appointment type are detailed in Appendix F: *Customer Service Guarantee Performance Detail.*

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Operations Services—*Appointments*				
Service provider appointments kept—Quanta Electric	Service Provider Index #3B[8]	At least 98% of appointments kept	99%	☑
Service provider appointments kept—Quanta Gas	Service Provider Index #3C	At least 98% of appointments kept	99%	☑
Customer Service Guarantee	Service Guarantee #1	A $50 credit to customers when PSE fails to meet a scheduled SQI appointment	$11,900	--
Operations Services—*Gas*				
Gas safety response time	Service Quality Index #7	Average 55 minutes or less from customer call to arrival of field technician	31 minutes	☑
Secondary safety response time—Quanta Gas	Service Provider Index #4D	Within 60 minutes from first response assessment completion to second response arrival	47 minutes	☑
Service provider standards compliance—Quanta Gas	Service Provider Index #1C	At least 97% compliance with site audit checklist points	98%	☑
Operations Services—*Electric*				
Electric safety response time	Service Quality Index #11	Average 55 minutes or less from customer call to arrival of field technician	53 minutes	☑
Service provider standards compliance—Quanta Electric	Service Provider Index #1B	At least 97% compliance with site audit checklist points	98%	☑
Secondary Core-Hours, Non-Emergency Safety Response and Restoration Time—Quanta Electric	Service Provider Index #4B	Within 250 minutes from the dispatch time to the restoration of non-emergency outage during core hours	248 minutes	☑
Secondary Non-Core-Hours, Non-Emergency Safety Response and Restoration Time—Quanta Electric	Service Provider Index #4C	Within 316 minutes from the dispatch time to the restoration of non-emergency outage during non-core hours	282 minutes	☑

[8] There was no result for Service Provider Indices #1A, #2A, #3A and #4A. These indices were assigned to a service provider, Pilchuck, that no longer works for PSE. PSE transitioned all natural gas construction and maintenance work to Quanta Gas as of April 30, 2011. Service Provider Indices #2B and #2C, Service Provider Customer Satisfaction for Quanta Electric and Quanta Gas, respectively, were applicable in the prior years' reporting had been ended since the 2013 reporting period.

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Operations Services—*Electric*				
Restoration Service Guarantee	Service Guarantee #2	A $50 credit to eligible customers when a power outage is longer than 120 consecutive hours	$50	--
Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Electric Service Reliability—*SAIFI & SAIDI*[9]				
$SAIFI_{Total}$ Total (all outages current year) Outage Frequency—System Average Interruption Frequency Index (SAIFI)	Reliability	Power interruptions per customer per year, including all types of outage event	1.89 interruptions	--
$SAIFI_{Total\ 5\text{-}year\ Average}$ Total (all outages five-year average) SAIFI	Reliability	Five years average of the power interruptions per customer per year, including all types of outage event	1.32 interruptions	--
$SAIFI_{5\%}$ <5% Non-Major-Storm (<5% customers affected) SAIFI	Service Quality Index #4	No more than 1.30 interruptions per year per customer	1.05 interruptions	☑
$SAIFI_{IEEE}$ IEEE Non-Major-Storm (T_{MED}) SAIFI	Reliability	Power interruptions per customer per year, excluding days exceeding the T_{MED} threshold	1.00 interruptions	--
$SAIDI_{Total}$ Total (all outages current year) Outage Frequency–System Average Interruption Duration Index (SAIDI)	Reliability	Outage minutes per customer per year, including all types of outage event	540 minutes	--
$SAIDI_{Total\ 5\text{-}year\ Average}$ Total (all outages five-year average) SAIDI	Service Quality Index #3	No more than 320 minutes per customer per year	312 minutes	☑
$SAIDI_{5\%}$ <5% Non-Major-Storm (<5% customers affected) SAIDI	Reliability	Outage minutes per customer per year, excluding outage events that affected 5% or more customers	173 minutes	--

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Electric Service Reliability—*SAIFI & SAIDI*[10]				
$SAIDI_{IEEE}$ IEEE Non-Major-Storm (T_{MED}) SAIDI	Reliability	Outage minutes per customer per year, excluding days exceeding the T_{MED} threshold	154 minutes	--

Detailed SQI monthly performance results and supplemental information can be found in the following appendices:

- **Appendix A: Monthly SQI Performance**—This appendix details monthly PSE SQI performance and the relevant performance of PSE's service providers. The attachments to the appendix provide information on the major outage event and localized electric emergency event days and the natural gas reportable incidents and control time. This appendix has three attachments:
  - **Attachment A to Appendix A**—Major Event and Localized Emergency Event Days (Affected Local Areas Only),
  - **Attachment B to Appendix A**—Major Event and Localized Emergency Event Days (Non Affected Local Areas Only),
  - **Attachment C to Appendix A**—Gas Reportable Incidents and Control Time.
- **Appendix B: Certification of Survey Results**—The independent survey company, EMC Research, certify that all SQI-related customer surveys were conducted with applicable guidelines and the results are unbiased and valid.
- **Appendix C: Penalty Calculation and Penalty Mitigation Petition**—This appendix shows the SQI #5 penalty calculation and allocation and a mitigation petition for a penalty relief from UTC.
- **Appendix D: Proposed Customer Notice (Report Card)**—This appendix presents PSE's proposed 2013 customer service performance report cards for with or without SQI #5 penalty depending the UTC approval. The Customer Service Performance Report Card is designed to inform customers of how well PSE delivers its services in key areas to its customers.
- **Appendix E: Disconnection** Results—This appendix provides the number of disconnections per 1,000 customers for non-payment of amounts due when the UTC disconnection policy would permit service curtailment.
- **Appendix F: Customer Service Guarantee Performance Detail**—This appendix details annual and monthly Kept Appointments and Customer Service Guarantee payments results by appointment type.

- **Appendix G: Customer Awareness of Customer Service Guarantee**—This appendix discusses the ways PSE makes customers aware of its Customer Service Guarantee and the results of the survey.

Detailed Electric system and reliability information is found in the following appendices:

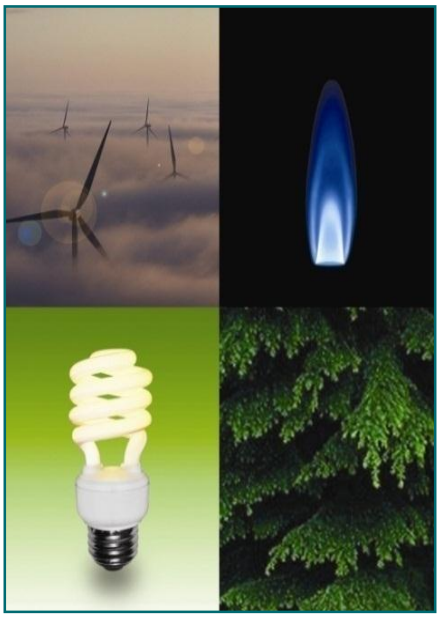
- **Appendix H: Electric Reliability Terms and Definitions**—This appendix discusses the terms and definitions found in this report.
- **Appendix I: Electric Reliability Data Collection Process and Calculations**—This appendix discusses data collection methods and issues. It explains how the various data were collected.
- **Appendix J: Current Year Electric Service Outage by Cause by Area**—This appendix details the 2013 Outage Cause by County.
- **Appendix K: Historical SAIDI and SAIFI by Area**—This appendix details the three-year history of SAIDI and SAIFI data by county.
- **Appendix L: 1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements**—This appendix presents PSE SAIFI and SAIDI performance from 1997 through the current year using different measurements.
- **Appendix M: Current-Year Commission and Rolling-Two-Year PSE Customer Electric Service Reliability Complaints with Resolutions**—This appendix lists the current-year UTC and rolling-two year PSE customer electric service reliability complaints with resolutions.
- **Appendix N: Areas of Greatest Concern with Action Plan**—This appendix details the areas of greatest concern with an action plan.
- **Appendix O: Current Year Geographic Location of Electric Service Reliability Customer Complaints on Service Territory Map with Number of Next Year's Proposed Projects and Vegetation-Management Mileage**—This appendix illustrates current-year geographic location of electric service reliability customer complaints on service territory map with number of next year's proposed projects and vegetation-management mileage.

Customer Notice of SQI Performance

Appendix D: **Proposed Customer Notice (Report Card)** is PSE's proposed customer notice of PSE's 2014 SQI performance. After consultation with the UTC staff and Public Counsel, PSE will begin distributing the final SQI report card by June 25, 2015, as part of the customer billing package.

Changes in 2014

There was no significate event in 2014 that affected PSE's service quality or electric service reliable performance results. There was also no data gathering or reporting difficulty in 2014 that impacted the SQI performance categories or their results in any way.



Chapter 2

Customer Services and Satisfaction and Operations Services

PSE has been meeting the Puget Sound region's energy needs for more than 135 years. PSE proudly embraces the responsibility to provide customers with safe, reliable, reasonably priced energy service.

This section summarizes the 2014 results of PSE's seven service quality indices (SQIs) related to customer services and satisfaction and operation services:

- UTC Complaint Ratio (SQI #2)
- Customer Access Center Answering Performance (SQI #5)
- Customer Access Center Transactions Customer Satisfaction (SQI #6)
- Field Operations Transactions Customer Satisfaction (SQI #7)
- Field Service Operations Transactions Customer Satisfaction (SQI #8)
- Appointments Kept (SQI #10)
- Electric Safety Response Time (SQI #11)

UTC Complaint Ratio (SQI #2)

Table 2a: UTC Complaint Ratio for 2014

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Customer Satisfaction				
UTC complaint ratio	Service Quality Index #2	No more than 0.40 complaints per 1,000 customers, including all complaints filed with UTC	0.21	☑

Overview

Each year the UTC receives complaints from PSE customers on a variety of topics. In 2014, while serving approximately 1.89 million customers (1.1 million electric and 790,000 natural gas), PSE customers filed 391 complaints concerning PSE with the UTC. This is a decrease of 75 complaints from 2013's 466 complaints.

About the Benchmark

The UTC complaint ratio is calculated by dividing the sum of all gas and electric complaints reported to the UTC by the average monthly number of PSE customers. The quotient is then multiplied by 1,000. The formula follows:

$$\textit{UTC complaint ratio} = \frac{\textit{electric and gas complaints recorded by UTC}}{\textit{average monthly number of electric and gas customers}} \textit{ X 1,000}$$

The average monthly customer count is the average of the total number of PSE customers, per month, during the reporting period.

Going Forward

PSE will continue identifying potential issues that could trigger any customer complaints. The focus is on prevention of the cause of these issues through timely and accurate support for each customer. Areas of focus for 2015 include:

- Continual focus on UTC "Consumer Upheld" complaint dispositions to identify root cause, establishment of preventive and corrective actions, and follow up to determine the effectiveness of the actions.
- Knowledge gained in managing escalated complaints will expand into more opportunities for training and education of others in PSE. The objective is to continue to improve PSE's company-wide customer experience.
- Continual commitment to work with UTC staff to find ways to make complaint response and resolution process more efficient for the UTC staff and PSE.

Customer Access Center Answering Performance (SQI #5)

Table 2b: Customer Access Center Answering Performance for 2014

Key Measurement	Benchmark	2014 Performance Results	Achieved
Customer Service			
Customer Access Center answering performance (SQI #5)	At least 75% of calls answered by a live representative within 30 seconds of request to speak with live operator	76%	☑

Overview

PSE's Customer Care Center (a.k.a. Customer Access Center) is where customer service representatives (CSRs) answer calls promptly and attempt to provide customers with the information or help they seek the information they need on *PSE.com*, as well as providing electric and natural gas emergencies assistance 24/7/365.

The Service Quality Program's benchmark for the Customer Care Center's call answering performance is to answer at least 75% of calls within 30 seconds on an annual basis. This goal is achieved through continuous training on quality, efficient call handling and adherence to performance expectations.

In 2014, the CSRs answered 76 percent of the calls within 30 seconds of customer requests.

About the Benchmark

The Customer Care Center receives most of PSE's customer inquiries and typically represents PSE to customers. Customers calling PSE have the option of going into an Interactive Voice Response (IVR) system where they are able to perform self-serve transactions. Or, at any time during a customer call, customers can request to be connected to a customer service representative. The Customer Access Center call answering performance is measured from the time the customer initiated a request to speak with a CSR until a CSR arrived on the line. PSE is engaged in initiatives to further the Customer Care Center's answering performance while meeting the performance benchmark of 75%. The annual performance is determined by the average of the 12 monthly call answering performance percentages. The calculation of the monthly answering performance is demonstrated through the following formula:

$$\textit{Monthly call answering performance} = \frac{\textit{aggregate number of calls answered by a company rep within 30 seconds}}{\textit{aggregate number of calls received}}$$

Going Forward

In 2015, PSE will:

- Continue to stabilize the new SAP Customer Information System (CIS) and Outage Management System (OMS) to improve overall customer service functionality and system reliability.
- Phase 2 enhancements of IVR system. This will enhance the IVR system so that it is easier for customers to select the appropriate phone routing option. IVR enhancements allow customers a choice when contacting PSE for assistance.
- Enhance and deliver on-going agent training to improve proficiency and elevate the customer experience.
- Explore improved self-service options that allow customers to complete various transactions online.
- Continually improve processes to optimize efficiency and leverage the potential of the CIS system.

Customer Access Center Transactions Customer Satisfaction (SQI #6)

Table 2c: Customer Access Center Transactions Customer Satisfaction for 2014

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Customer Satisfaction				
Customer Access Center transactions customer satisfaction	Service Quality Index #6	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	93%	☑

Overview

Most of the telephone calls to PSE go to the PSE Customer Care Center (a.k.a. Customer Access Center). The Customer Care Center (CCC) interfaces with the greatest number of customers and strives to establish and improve upon customer satisfaction.

EMC Research, an independent research company for PSE's Service Quality Program, conducted telephone surveys with PSE customers and prepared monthly and semi-annual reports on customer satisfaction regarding CCC transactions during the 2014 SQ Program year. The independent survey-results found that 93% of customers surveyed were satisfied with CCC's overall transaction performance (SQI #6). This is a 2% over 2013 survey results of 91%.

About the Benchmark

In general, on a weekly basis, an independent research company conducts phone surveys to customers who have made calls to PSE and asks the following question:

"Overall, how would you rate your satisfaction with this call to Puget Sound Energy? Would you say 7-completely satisfied, 1-not at all satisfied or some number in between?"

A customer is considered to be satisfied if they responded 5, 6 or 7. The annual performance is determined by the monthly weighted average percent of satisfied customers. The formula for the monthly percentage follows:

$$\textit{Monthly percentage of satisfied customers} = \frac{\textit{aggregate number of survey responses of 5, 6 or 7}}{\textit{aggregate number of survey responses of 1, 2, 3, 4, 5, 6 or 7}}$$

Going Forward

PSE recognizes that continuous improvements are required to maintain customers' satisfaction with their PSE contact experience.

Areas of focus for 2015 include:

- Continue to enhance the quality assurance audit process. The quality assurance process will improve the customer experience at each customer touch point within the Customer Care Center. It will also contribute to improve:
  - Regulatory compliance assurance
  - the information provided to customers
  - Customer Care Center management
  - Response to customer questions
- Deploy second phase of soft skills training program to improve handling for escalated call types and overall customer experience.

Gas Safety Response Time (SQI #7)

Table 2d: Gas Safety Response Time for 2014

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Operations Services				
Gas Safety Response Time	Service Quality Index #7	Average 55 minutes or less from customer call to arrival of field technician	31 minutes	☑

Overview

The primary responsibility of PSE's Gas First Response (GFR) team is to respond to natural gas emergencies. In 2014, PSE responded to more than 21,400 calls concerning natural gas safety. These emergencies include reports of inside or outside odors, third-party damage to PSE's system, leaks and carbon monoxide concerns. The GFR team also supports local and state first-response organizations, such as fire departments. PSE has GFR personnel located throughout its service territory. These responders are available on a 24/7/365 basis. PSE's ability to respond to these emergencies in 2014 is reported in this chapter.

In addition to responding to the natural gas emergencies, the GFR team performs various maintenance and inspection activities, adjusts and performs minor repairs on customer equipment and monitors construction excavation when it occurs near certain underground facilities.

About the Benchmark

The gas safety response time is calculated by logging the time each customer service call is created and the time the gas field technician arrives on site. The calculated response times for each service call are averaged for all emergency calls during the performance year to determine the overall annual performance.

$$\textit{Gas safety response time annual performance} = \frac{\textit{sum of all natural gas emergency response times}}{\textit{annual number of natural gas emergency calls received}}$$

Going Forward

PSE will continue to monitor and evaluate emergency response time data daily. As opportunities for improvement are discovered, PSE will adjust processes, balance workload with staffing, make necessary shift adjustments, and provide continuous employee coaching. PSE will also continue using the mobile workforce dispatch system functionality for computer-aided dispatching.

Field Service Operations Transactions Customer Satisfaction (SQI #8)

Table 2e: Field Service Operations Transactions Customer Satisfaction for 2014

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Customer Satisfaction				
Field Service Operations transactions customer satisfaction	Service Quality Index #8	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	96%	☑

Overview

EMC Research, an independent research company, conducts telephone surveys with PSE customers who have called PSE and requested and received natural gas field service. In 2014, these surveys found that 96% of customers were satisfied with PSE's field service operations transaction performance. PSE met this SQI goal in 2014 and in every previous year.

About the Benchmark

Every week, EMC Research contacts randomly-selected customers who have called PSE the previous week and requested and received natural gas field service. The firm prepares monthly and semi-annual reports on PSE's field service operations transaction performance.

Customers are asked a number of questions including the following question for the purpose of SQI #8:

> "Thinking about the entire service, from the time you first made the call until the work was completed, how would you rate your satisfaction with Puget Sound Energy? Would you say 7- completely satisfied, 1- not at all satisfied or some number in between?"

A customer is considered to be "satisfied" if they responded 5, 6 or 7.

The annual performance is determined by the weighted monthly average of percent of satisfied customers. The formula for the monthly percentage follows:

$$\textit{Monthly percent of satisfied customers} = \frac{\textit{aggregate number of survey responses of 5, 6 or 7}}{\textit{aggregate number of survey responses of 1, 2, 3, 4, 5, 6 or 7}}$$

Going Forward

PSE will continue to monitor customer satisfaction survey data and provide feedback to field service technicians to ensure a high level of customer service is maintained.

PSE will review customer comments on the survey to identify changes/revisions in our current program that may be implemented to provide greater customer satisfaction.

Additionally, PSE will continue to evaluate new tools and technologies that would enable a higher level of customer service and convenience.

Appointments Kept (SQI #10)

Table 2f: Appointments Kept for 2014

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Operations Services				
Appointments kept	Service Quality Index #10	At least 92% of appointments kept	100% Note	☑

Note: Results shown are rounded to the nearest whole percentage per UTC order. Therefore, the 100% 2014 performance result does not reflect that PSE and its service providers met all the appointments during the reporting period. Numbers of missed appointments by appointment type are detailed in Appendix F: *Customer Service Guarantee Performance Detail.*

Overview

PSE provides its customers with a variety of scheduled service appointments including:

- **Permanent service**—Permanent natural gas service from an existing main or permanent secondary voltage electric service from existing secondary lines.
- **Reconnection of existing service**—Reconnection following move-out, move-in or disconnection for non-payment.
- **Natural gas diagnostic service request**—For water heater, furnace checkup, furnace not operating, other diagnostic or repair or follow-up appointments.

Service appointments that involve safety do not require scheduling and are performed on a 24/7/365 basis. These non-scheduled services include restoring electric service or responding to a reported gas odor.

When a gas or electric customer requests a scheduled service, PSE provides the customer with either a guaranteed appointment date and time frame or a guaranteed commitment to provide service on or before a specified date.

In 2014, PSE achieved a result of 100% (or 99.6% before the rounding) for this appointments kept metric. Data on missed appointments and other appointment information by service type is detailed in Appendix F: *Customer Service Guarantee Performance Detail.*

About the Benchmark

The appointments kept SQI is calculated by dividing the number of appointments kept by the total number of appointments made. The formula follows:

$$Appointments\ kept = \frac{annual\ appointments\ kept}{annual\ appointments\ missed + annual\ appointments\ kept}$$

Appointments are considered missed when PSE does not arrive during the time period or on the agreed upon date except when the appointments have been missed due to the following reasons:

- The customer fails to keep the appointment
- The customer calls PSE to specifically request the appointment be rescheduled
- PSE reschedules the appointment because conditions at the customer site make it impractical to perform the service
- The appointment falls during an SQI Major Event period

These types of appointments are not considered missed appointments but "excused" appointments.

Appointments that were canceled by the customer, regardless of the customer's reason, will be considered "canceled" appointments.

Excused and canceled appointments are not counted as either kept or missed appointments.

Additional appointments to complete repairs are considered new appointments.

Going Forward

PSE has consistently exceeded this metric. PSE will continue its efforts to improve its appointments-kept service results. PSE will:

- Continue reviewing the reasons for missed appointments and work to find solutions so that PSE can meet all its customer commitments.
- Continue stabilization efforts with the new customer information system technology and find ways to simplify the appointment review and tracking process.

Electric Safety Response Time (SQI #11)

Table 2g: Electric Safety Response Time for 2014

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Operations Services				
Electric Safety Response Time	Service Quality Index #11	Average 55 minutes or less from customer call to arrival of field technician	53 minutes	☑

Overview

PSE's Electric First Response (EFR) team has the primary responsibility of responding to electric outages and electric emergencies. Examples of the types of outages and emergency events that PSE responds to include downed wires, equipment failures, car-pole accidents, bird- and animal-related outages, trees or limbs on lines, third-party dig-ins and voltage quality problems.

EFR personnel are located throughout PSE's service territory and are available to respond on a 24/7/365 basis. EFR's priority is to ensure public and worker safety and then to restore service to customers. After addressing safety concerns, service restoration is made through temporary or permanent repairs or reconfiguration of the electric system. If the repair is beyond the capability of EFR personnel, construction crews are called in to make permanent repairs. PSE responded to more than 14,901 electric incidents in 2014.

About the Benchmark

The electric safety response time is calculated by logging the time of each customer service call and the time the EFR field technician arrives on site. The annual performance is determined by the average number of minutes from the time a customer calls to the arrival of the EFR field technician for EFR incidents occurring during the performance year. The formula follows:

$$\textit{Annual electric safety response time} = \frac{\textit{sum of all response times}}{\textit{annual number of electric safety incidents}}$$

Certain incidents are excluded from the measurement if they occurred during the following days:

- Major Event Days when 5% or more electric customers are without power during a 24-hour period and associated carry-forward days that it will take to restore electric service to these customers.
- Localized emergency event days when all available EFR in a local area are dispatched to respond to service outages.

Going Forward

In 2015, PSE will continue its efforts to improve communication and coordination between field service personnel, system operators and dispatchers to reduce response time. The efforts include:

- Continue stabilization efforts with the new outage management system technology, providing improved electric system information to increase efficiency in managing outage events and first response personnel.
- Continue to analyze and optimize first responder shift scheduling to correspond with daily outage trends.
- Improve switching efficiency between PSE's service provider, EFR and substation operators to better utilize any qualified personnel that are the closest available to the outage to perform system switching.
- Continue to improve the process to check single customer outage reports for accuracy before dispatching field resource.

Service Provider Performance

Table 2h: Service Provider Performance for 2014

Key Measurement	Type of Metric	Benchmark/Description	2014 Performance Results	Achieved
Customer Services and Satisfaction and Operations Services				
Service provider standards compliance—Quanta Electric	Service Provider Index #1B	At least 97% compliance with site audit checklist points	98%	☑
Service provider standards compliance—Quanta Gas	Service Provider Index #1C	At least 97% compliance with site audit checklist points	98%	☑
Service provider appointments kept—Quanta Electric	Service Provider Index #3B	At least 98% of appointments kept	99%	☑
Service provider appointments kept—Quanta Gas	Service Provider Index #3C	At least 98% of appointments kept	99%	☑
Secondary safety response time—Quanta Gas	Service Provider Index #4D	Within 60 minutes from first response assessment completion to second response arrival	47 minutes	☑
Secondary Core-Hours, Non-Emergency Safety Response and Restoration Time—Quanta Electric	Service Provider Index #4B	Within 250 minutes from the dispatch time to the restoration of non-emergency outage during core hours	248 minutes	☑
Secondary Non-Core-Hours, Non-Emergency Safety Response and Restoration Time—Quanta Electric	Service Provider Index #4C	Within 316 minutes from the dispatch time to the restoration of non-emergency outage during non-core hours	282 minutes	☑

There were no results for Service Provider Indices (SPI) #1A, #2A, #3A and #4A. These indices were assigned to a service provider, Pilchuck, that no longer works for PSE. PSE transitioned all natural gas construction and maintenance work to Quanta Gas as of April 30, 2011.

Service Provider Indices #2B and #2C, Service Provider Customer Satisfaction-Quanta Electric and Quanta Gas, respectively, which were applicable in the prior years' reports, have been terminated since the 2013 reporting period.

Overview

PSE monitors important metrics to assess the performance of its primary natural gas and electric service providers (Quanta Gas and Quanta Electric). These metrics address PSE standards compliance, customer satisfaction, reliability/service restoration, efficiency, budgeting and safety. Each measure is designed to monitor, stretch/challenge and improve

PSE's service. This section details the service provider metrics relevant to PSE's SQ Program.

About the Benchmark

- Service Provider Standards Compliance (SPI #1): Service providers must meet a minimum of 95 percent compliance with PSE's site audit checklists.
- Service Provider New Customer Construction Appointments Kept (SPI #3):
  - Quanta Gas and Quanta Electric must keep at least 98% of their new customer construction appointments.
- Secondary Safety Response Time (SPI #4): This SPI consists of three sub-indices.
  - Service Provider Indices #4B and #4C — Quanta Electric's secondary safety response and restoration time during core and non-core hours, respectively. Quanta Electric must respond and complete power restoration in less than 250 minutes on average during core hours and less than 316 minutes on average during non-core hours. Core hours are 7:00 a.m.–5:30 p.m., Monday through Friday, except holidays. Restoration time is measured from the time a Quanta Electric crew is dispatched to the time the problem causing the interruption has been resolved and the line has been re-energized. Both the core-hours and non-core-hours measurements exclude emergency events and significant storm events.

Service Provider Index #4D—Secondary safety response time—Quanta Gas. Quanta Gas must respond within 60 minutes on average from PSE's Gas First Response assessment completion to the service provider's secondary response arrival.

Service Provider Appointments Missed Penalties

Table 2i shows the number of new customer construction appointments missed by PSE service providers and the amount of penalties paid due to these missed appointments.

Table 2i: 2014 Service Provider Appointment Count and Missed Appointment Penalties for 2014

SQI #10 Appointment Count				Missed Appointment Penalties		
Service Provider	**Electric**	**Natural Gas**	**Total**	**Electric**	**Natural Gas**	**Total**
Quanta Gas	N/A	10,127	10,127	N/A	$5,700	$5,700
Quanta Electric	7,482	N/A	7,482	$4,750	N/A	$4,750
Total	***7,482***	***10,127***	***17,609***	***$4,750***	***$5,700***	***$10,450***

Actions Taken to Improve Customer Satisfaction with the New Customer Construction Process and Service Provider Performance

PSE and its service providers, Quanta Electric and Quanta Gas, have partnered to develop or advance the following process improvement initiatives to enhance customer satisfaction with the overall new customer construction process:

- Implemented a firm schedule date for simple service installations,
- Developed and implemented an electronic gas application available on line with digital signature. This reduced the time for a gas application from 7 days to less than 1 day.

Service Providers and Customer Construction Services Department Training

With the switch-over of the new CIS, training and new business processes were developed to handle customer requests for construction service in the new CIS.

PSE also conducts on-going training to target improvement in:

- Technical skills
- Role definition and responsibilities
- Customer communications
- Natural gas and electric contract/business training

The training format includes classroom training, phone monitoring and coaching, job shadowing and field training. Activities include:

- Updating and maintaining the Quick Reference Guide on the internal Customer Construction Services Department website
- Providing advance phone training
- Providing classroom training, using in-house gas, electric and service provider trainers
- Using customer inquiries and complaints to identify and focus training opportunities
- Providing training on basic process improvement steps and techniques to all Customer Construction Services employees

Going Forward

PSE will continue the following new customer construction initiatives for 2015:

- Continue stabilization efforts with the new customer information system technology.
- Partner with large municipalities to improve the permitting process.
- Increase electronic application capabilities to reduce cycle time for processing work.
- Continue PSE's long-standing emphasis on project management continuous improvement, including optimizing the matching skill sets of project managers and engineers to project complexity. Along with more comprehensive natural gas and electric contract/business training, this emphasis will improve project management and should result in improved service to the customer.
- Enhance task tracking with tools to remind the project managers when the task is nearing its due date.

Service Guarantees

Overview

PSE offers two service guarantees to its customers: Customer Service Guarantee (Service Guarantee #1) and Restoration Service Guarantee (Service Guarantee #2).

PSE promotes its Customer Service Guarantee and the Restoration Service Guarantee on *PSE.com*, the back of billing stock, and on the billing/return envelope. It was also highlighted in the customer newsletters[11] as part of customer bill inserts. Appendix G: *Customer Awareness of Customer Service Guarantee* discusses the ways PSE makes customers aware of its Customer Service Guarantee and the results of the survey.

Customer Service Guarantee

The Customer Service Guarantee (CSG) is designed to give customers a $50 missed appointment credit if PSE or its service providers fail to arrive by the mutually agreed upon time and date to provide one of the following types of service:

- **Permanent service**—Permanent natural gas service from an existing main or permanent secondary voltage electric service from existing secondary lines.
- **Reconnection**—Reconnection following move-out, move-in or disconnection for non-payment.
- **Natural gas diagnostic service request**—For water heater, furnace checkup, furnace not operating, other diagnostic or repair or follow-up appointments.

This service appointment guarantee applies in the absence of major storms, earthquakes, supply interruptions or other adverse events beyond PSE's control. In these cases, PSE will reschedule service appointments as quickly as possible.

The number of CSG by energy, service type, and month is detailed in Appendix F: *Customer Service Guarantee Performance Detail*. For additional detail on the promotion and communication of CSG, see Appendix 0: *Customer Awareness of Customer Service Guarantee*.

[11] SQI settlement requirement: "A promotion of the customer service guarantee will be included in the customer newsletter, "EnergyWise," at least three times per year."

Restoration Service Guarantee

Whenever a customer experiences a 120 consecutive-hour power outage, the customer may be eligible for a $50 Restoration Service Guarantee (RSG) credit. The total annual payments are limited to $1.5 million, or 30,000 customers, payable to eligible customers who request such payment or report their outage on a first-come, first-served basis. The pledge is always applicable but will be suspended if PSE lacks safe access to its facilities to perform the needed assessment or repair work. To receive the RSG credit, affected customers must report the outage or request the credit within seven days of their service restoration.

The availability of the Restoration Service Guarantee is emphasized and messaged in PSE's phone system when customers call and report their outage during a major outage event, when 5% or more PSE electric customers are without power, or when PSE opens its Emergency Operations Center in response to a significant outage event.

2014 Service Guarantees Credits

Customer Service Guarantee Credits

In 2014, PSE credited customers a total of $11,900 for missing 238 of the 88,635 SQI #10 appointments. Table 2j provides summary values of Service Guarantee counts and payments to customers in 2014 by service type.

Table 2j: 2014 PSE SQI #10 Appointment Count and Customer Service Guarantee Credits

	SQI #10 Appointment Count			Service Guarantee Payment to Customers		
Service Type	**Electric**	**Natural Gas**	**Total**	**Electric**	**Natural Gas**	**Total**
Permanent Service	7,482	10,127	17,609	$4,750	$5,700	$10,450
Reconnection	35,834	12,566	48,400	$900	$150	$1,050
Diagnostic	N/A	22,626	22,626	N/A	$400	$400
Total	***43,316***	***45,319***	***88,635***	***$5,650***	***$6,250***	***$11,900***

Appendix F: *Customer Service Guarantee Performance Detail* provides additional detail on missed appointments along with the credits paid by month and appointment service type as of December 31, 2014.

Restoration Service Guarantee Credits

PSE is committed to review all prolonged outages that may trigger the Restoration Service Guarantee (RSG) and any customer requests for the RSG credit within 30 days of a request. For 2014, there was one outage event that occurred on November 12, 2014, that lasted more than 120 consecutive hours due to a mix up in the meters that actually had an outage. The customer received a $50 Restoration Service Guarantee credit.

The customer has two electric meters that are served from two different transformers—one for the residence under the customer's name and the other for the shop in the backyard which has a business account name. On the November 12th, about 9:30 AM, PSE received an outage report from the customer that there was an outage at his premises and PSE responded at 2:30 PM the same day and made sure the meter of the residence was functioning correctly and was not out of service. Twelve days later, on November 24th, the customer called at noon to report under his residential account that his shop was still out of power. At 12:13 PM on November 24th, an electric first responder was at the customer premises and found that there was an access issue for the repair and a flagger and a crew were needed for the service restoration of the shop meter. At 3:37 PM on November 24th, the outage at the shop was finally restored, within four hours once the correct meter was identified and the access to the shop meter was available.

Chapter 3

Electric Service Reliability

Safe and reliable electric service is one of PSE's paramount goals. Information in this report provides the Washington Utilities and Transportation Commission (UTC) and our customers with reliability metrics on the services that PSE provides its customers.

Information on electric reliability is provided by the traditional reliability metrics including the number and duration of outages as measured against the Service Quality Index (SQI) approved by the UTC in 1997. Additionally, customer concerns about service quality and reliability, received either firsthand or through the UTC, provide an important perspective of electric reliability.

The following sections detail PSE's System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) performance and discuss the annual reliability reporting requirements and results for the 2014 performance year. Based on the recorded outages, both SQI SAIDI and SQI SAIFI saw a significant increase in 2014 as compared to 2013, 26% and 22% respectively. PSE's service territory was impacted by a higher than average number of weather events during the year which negatively affected reliability performance. In 2014, PSE experienced thirteen weather events as compared to the previous five year average of eight weather events per year. While these weather events affected performance, PSE met the benchmarks for SQI SAIFI and SAIDI.

As PSE moves into the Outage Management System (OMS), a Customer Information System (CIS) and an electric Geographical Information System (GIS) stabilization period, PSE continues to refine business processes and computer system interfaces to ensure that all outage data is accurately documented. As noted last year, the recording of scheduled outages continues to be an area of focus and is addressed in the About Electric Service Reliability Measurements and Baseline Statistics section.

Annually, PSE participates in a benchmarking survey coordinated by the Institute of Electrical and Electronics Engineers (IEEE). IEEE collects information from participating

utilities and documents the IEEE 1366[12] performance based on an individual ranking (#1 being the best) and within four quartiles (first quartile being the best). It's important to note that participation is voluntary, the number of utilities that participate varies from year to year, and there is slight variance on how each utility reporting and accounting for its outages. IEEE conducts the annual survey in the spring with results available in August for the outages occurred in the preceding year. As a result, there is a year-time lag in reporting our annual rank. In the 2013 IEEE survey of 93 member utilities, PSE ranked in the 28th percentile (2nd quartile) and in the 46th percentile (3rd quartile) of SAIFI and SAIDI, respectively. PSE ranked slightly worse than in 2012. The results of the 2014 IEEE survey are expected in August 2015.

While PSE believes that this annual report provides useful information to interested parties for a given calendar year, PSE cautions against putting too much emphasis on the usefulness of annualized metrics in concluding trends pertaining to system performance. Factors such as variation in weather, natural disasters and normal random variation in events such as third-party damage will all impact year-to-year comparison of system performance.

A single year's result may not lend to adequate identification of the best solution for long-term improvement, and actions taken based on an annual snapshot may result in "band-aid" solutions that may not meet long-term objectives. Notwithstanding the limits of using the annual reports to assess year-to-year trends, PSE believes the annual snapshots provide a useful view in context of the overall trends.

PSE's electric system covers a eight county geographical area. Refer to Appendix O: *Current Year Geographic Location of Electric Service Reliability Customer Complaints on Service Territory Map with Number of Next Year's Proposed Projects and Vegetation Management Mileage* for a map of the service area.

[12] Refer to Appendix H: *Terms and Definitions* for the IEEE 1366 definition.

SAIFI (SQI #4)

Overview

For electric companies, maintaining a high level of reliability requires constant commitment. Supplying power depends on an interconnected network of generation, transmission and distribution systems to get power to homes and businesses. Most customer interruptions can be traced to trees and equipment failure.

The System Average Interruption Frequency Index (SAIFI) measures the number of outages or interruptions per customer per year. Most electric utilities use this measurement in reviewing the reliability of their electrical system, excluding major outage events that cause interruptions to a significant portion of their customer base.

About the Benchmark

SAIFI is calculated by adding up the number of customers experiencing a sustained outage of 60 seconds or longer during the reporting period and then dividing it by the average annual number of electric customers. The formula follows:

$$\textit{Annual SAIFI} = \frac{\textit{Total annual customer interruptions}}{\textit{Average annual electric customer count}}$$

At PSE, for the purpose of measuring the SAIFI SQI, major outage events are excluded from the performance calculation. More details concerning major outage events are in the *Major Events* discussion in the *About Electric Service Reliability Measurements and Baseline Statistics* section.

The SQI SAIFI measurement is also referred to as $SAIFI_{5\%}$.

- **5% Exclusion SAIFI ($SAIFI_{5\%}$) (Non-major-storm SAIFI)**—Excludes customer interruptions during a Major Event. Major Events are defined as days when 5% or more of the electric customer base in a 24-hour period experiences power interruption and the days following (carried-forward days), until all those customers have service restored.

In addition to the SQI SAIFI measurement, PSE also reports on three additional key measurements:

- **Total SAIFI ($SAIFI_{Total}$)**—Includes all customer interruptions that occurred during the current reporting year, without exclusion.
- **Total 5-Year Average SAIFI ($SAIFI_{Total\ 5\text{-}year\ Average}$)**—Includes all customer interruptions that occurred during the current reporting year and the previous four years, except for events that have been approved by the UTC for exclusion.

- **IEEE SAIFI ($SAIFI_{IEEE}$)**—Measures the number of customer interruptions utilizing the IEEE standard 1366 methodology. Days that exceed the IEEE T_{MED}[13] are excluded. The 2014 T_{MED} is 5.60 minutes—that is, any day that exceeds 5.60 minutes per customer is excluded due to IEEE-defined Major Event Days.

The *About Electric Service Reliability Measurements and Baseline Statistics* section provides more detailed discussion of the four reporting measurements and the establishment of the 2003 results as the baseline statistic. Appendix L: *1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements* reports the historical results of the four measurements from 1997 through the current reporting year.

2014 SAIFI Results

The 2014 results based on the recorded outages are reported in Table 3a.

Table 3a: 2014 SAIFI Results

	Key Measurement	Benchmark	Baseline	Current Year Results	Achieved
$SAIFI_{Total}$	Total (all outages current year) Outage Frequency–System Average Interruption Frequency Index (SAIFI)		1.24	1.89	
$SAIFI_{Total\ 5\text{-}year\ Average}$	Total (all outages five-year average) SAIFI		1.37	1.32	
$SAIFI_{5\%}$ (SQI #4)	<5% Non-Major-Storm (<5% customers affected) SAIFI	No more than 1.30 interruptions per year per customer	0.80	1.05	☑
$SAIFI_{IEEE}$	IEEE Non-Major-Storm (T_{MED}) SAIFI		0.71	1.00	

[13] Refer to Appendix H: *Terms and Definitions* for the IEEE T_{MED} definition

What Influences SAIFI

PSE tracks outages by cause codes and groups the outage causes into three major categories: tree related, preventable and third party. System damages caused by tree and limbs during a major event continue to impact the most customers in 2014, as in previous years. The other major causes of outages are:

- Preventable:
  - Equipment failures—In addition to equipment that ceases to operate unexpectedly, this category also includes outages when a fuse properly operates to protect equipment when a branch or tree brushes against the line. This represents approximately 18% of customer interruptions related to equipment failure.
  - Bird or animal
- Third Party:
  - Car-pole accidents
  - Scheduled outages for system maintenance or installation of new infrastructure

Figure 3a shows the common causes for the recorded outages in 2014 and their impact on customers across the four key measurements.

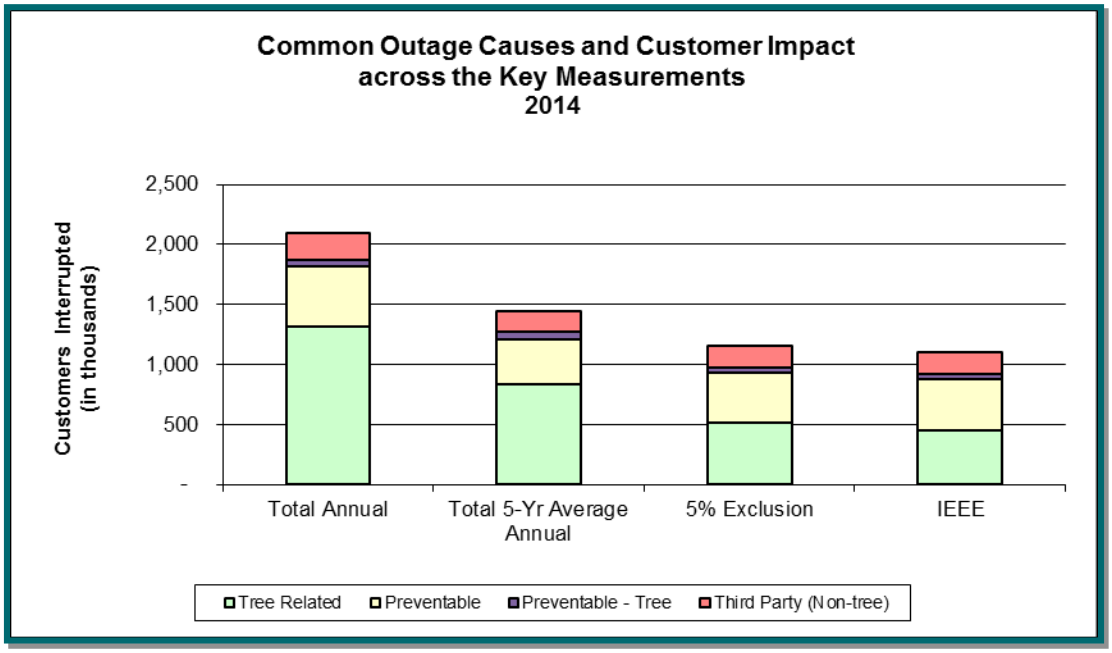


Figure 3a: Common Outage Causes and Customer Impact Across the Key Measurements in 2014

Historical Trends for SAIFI

Table 3b shows SQI SAIFI from 2010 to 2014.

Table 3b: SQI SAIFI from 2010 to 2014 (excluding Major Events)

	2010	2011	2012	2013	2014
$SAIFI_{5\%}$ (SQI #4)	0.86	1.02	0.92	0.86	1.05
Benchmark	1.30 interruptions per year per customer				

As shown in Table 3b, the SQI SAIFI requirements have been met annually for the past five years.

Appendix L: *1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements* illustrates the comparison between the four SAIFI measurements for 1997–2014. Based on the recorded outages, the 2014 results across all measurements worsened when compared to 2013 as shown in Figure 3b. The driver of the decline was primarily driven by more trees related outages in 2014. PSE's service territory was impacted by several weather events which led to the higher than average tree outages.

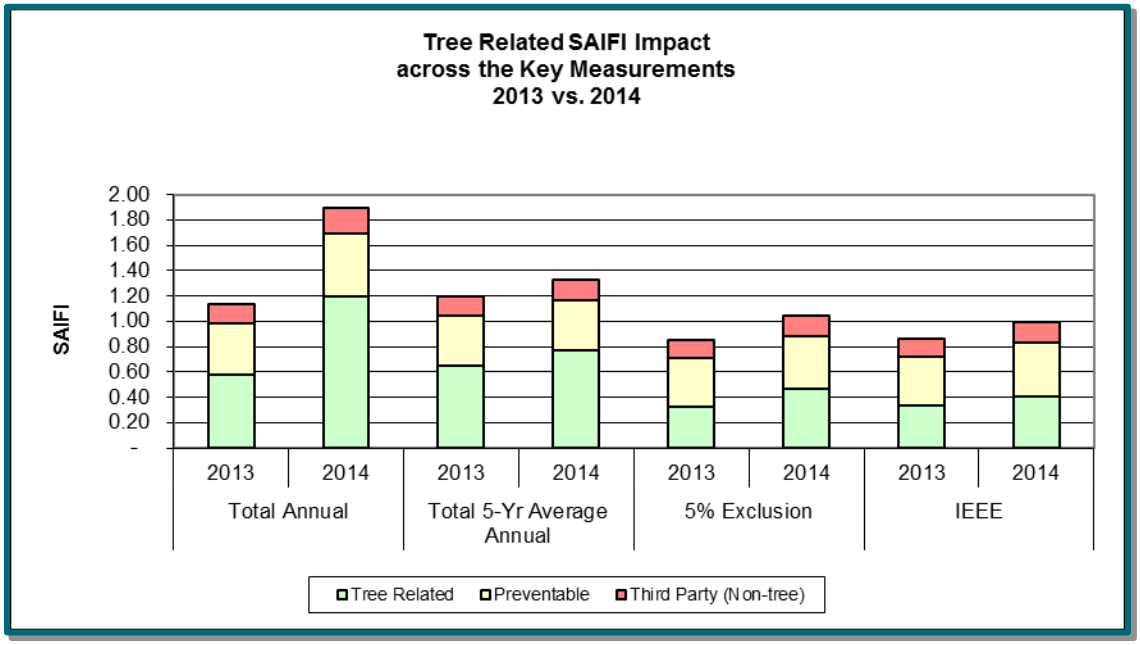


Figure 3b: Tree-Related SAIFI Impact Across the Key Measurements 2013 vs. 2014

Appendix K: *Historical SAIDI and SAIFI by Area* illustrates the 2012–2014 results by county under the four measurements. A summary of Appendix K indicates that every county saw a worse performance in two or more SAIFI measurements in 2014 as compared to 2013. The primary driver was how mild weather events affecting PSE's service territory throughout the year. Mild storms worsened both $SAIFI_{5\%}$ and $SAIFI_{IEEE}$ as some of these events did not meet the exclusion criteria for either measurement.

As described more fully in the *Areas of Greatest Concern* discussion of the *About Electric Service Reliability Measurements and Baseline Statistics* section, PSE continues to focus on identifying projects that will improve SAIFI, while managing other aspects of electric system performance.

SAIDI (SQI #3)

Overview

Providing reliable electric service is a top priority of electric companies. PSE's maintenance programs, such as vegetation management and substation inspections, capital investments and improving service personnel response and repair time are targeted to prevent or reduce the number and duration of outages. But in spite of PSE's best efforts, sometimes power outages are simply unavoidable. Most outage minutes are caused by equipment failure, trees and vegetation. When the power does go out, PSE works around the clock to restore service as soon as possible.

The System Average Interruption Duration Index (SAIDI) measures the number of outage minutes per customer per year. Most electric utilities use this measurement in reviewing the reliability of their electrical system, excluding outage events that cause interruptions to a significant portion of their customer base due to extreme weather or unusual events.

SAIDI is similar to SAIFI, but SAIDI measures the duration of customer interruptions while SAIFI measures the number of customer interruptions.

About the Benchmark

SAIDI is calculated by adding up the outage minutes of all the customers that have been without power and then dividing by the average annual number of electric customers. The formula follows:

$$Annual\ SAIDI = \frac{Total\ annual\ customer\ outage\ minutes}{Average\ annual\ electric\ customer\ count}$$

Starting in the 2010 reporting year, the UTC approved a revision to the SQI SAIDI benchmark to be the average of total customer minutes from the current reporting year and the previous four years. The new benchmark and performance calculation better reflects the overall customer experience regarding power restoration and more adequately measures PSE's overall electric system reliability.

At PSE, the SQI SAIDI measurement is referred to as **Total 5-Year Average SAIDI ($SAIDI_{Total\ 5\text{-}year\ Average}$)**.

Total 5-Year Average SAIDI ($SAIDI_{Total\ 5\text{-}year\ Average}$)—Includes all customer-minute interruptions that occurred during the current reporting year and the previous four years, except for extreme weather or unusual events.[14]

[14] Per the consolidated Docket Number UE-072300 and UG-072301, PSE can petition to exclude certain annual results or outage minutes from the annual performance calculation for the current year and years following that will be affected.

In addition to the SQI $SAIDI_{Total\ 5\text{-}year\ Average}$ measurement, PSE also reports on three additional key measurements:

- **5% Exclusion SAIDI ($SAIDI_{5\%}$) (Non-major-storm SAIDI)**—Excludes customer-minute interruptions during Major Events, where Major Events are defined as days when 5% or more of the electric customer base in a 24-hour period experiences power interruption and the days following (carried-forward days), until all those customers have service restored.
- **Total SAIDI ($SAIDI_{Total}$)**—Includes all customer minute interruptions that occurred during the current reporting year, without exclusion.
- **IEEE SAIDI ($SAIDI_{IEEE}$)**—Measures the number of customer-minute interruptions utilizing the IEEE standard 1366 methodology. Days that exceed the IEEE T_{MED} are excluded. The 2014 T_{MED} is 5.60 minutes—that is, any day that exceeds 5.60 minutes per customer is excluded due to IEEE-defined Major Event Days.

The *About Electric Service Reliability Measurements and Baseline Statistics* section provides more detailed discussion of the four reporting measurements and the establishment of the baseline statistics. Appendix L: *1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements* reports the historical results of the four measurements from 1997 through the current reporting year.

2014 SAIDI Results

The 2014 results based on the recorded outages are reported in Table 3c

Table 3c: 2014 SAIDI Results

	Key Measurement	Benchmark	Baseline	Current Year Results	Achieved
$SAIDI_{Total}$	Total (all outages current year) Outage Frequency–System Average Interruption Duration Index (SAIDI)		532	540	
$SAIDI_{Total\ 5\text{-}year\ Average}$ (SQI #3)	Total (all outages five-year average) SAIDI	No more than 320 minutes per customer per year	326	312	☑
$SAIDI_{5\%}$	<5% Non-Major-Storm (<5% customers affected) SAIDI		132	173	
$SAIDI_{IEEE}$	IEEE Non-Major-Storm (T_{MED}) SAIDI		107	154	

What Influences SAIDI

As noted in the SAIFI section, PSE tracks outages by cause codes and groups the outage causes into three major categories: tree related, preventable and third party. Figure 3c illustrates the impact of tree-related outages across the four key measurements based on the recorded outages in 2014, accounting for 41–76% of customer minutes.

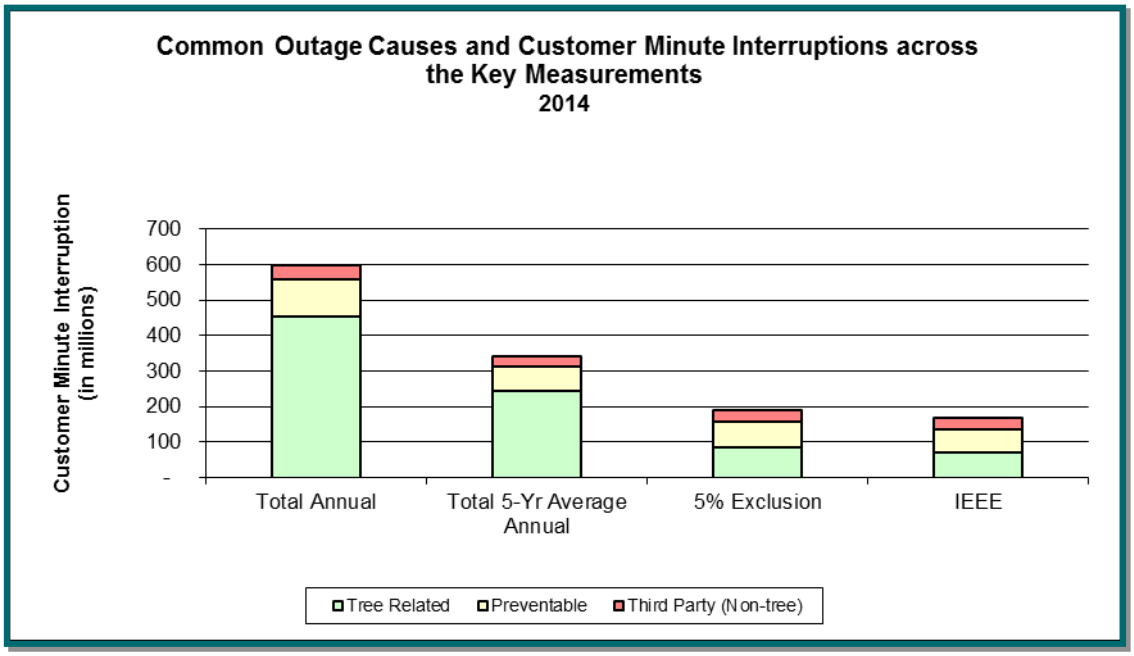


Figure 3c: Common Outage Causes and Customer Minute Interruptions Across the Key Measurements in 2014

Tree-related outages can greatly influence SAIDI performance, despite PSE's best efforts to minimize tree-related outages. Falling trees can damage the infrastructure and require a specialized tree removal crew to remove fallen trees before service personnel can begin restoration efforts, producing prolonged outages. Since 2009, tree related outages have contributed between 55 - 95% to $SAIDI_{Total}$ minutes.

A fallen tree or large limb will damage the line and may also tear down supporting structures, cross arms and poles. The number of trees growing near power lines in the Pacific Northwest is unique among other regions in the United States. Nearly 75% of PSE right-of-way edge is treed. On average there are 1,995 trees per mile on PSE's transmission system. In comparison, National Grid, the second largest utility in the United States representing four states on the East Coast, has 313 trees per mile.[15]

High winds in the fall season increase the risk of tree limb failure in deciduous trees because the trees have not fully shed their leaves. The crown of a tree is less permeable when fully leafed; thus, there is a greater degree of limb breakage due to the "sail" effect. The fully

[15] Ecological Solutions Inc. study, March 3, 2009, page 79 and page 82.

leafed crown acts like a sail, causing a higher degree of wind loading or pressure on branches and limbs and increases the potential for breakage.[16]

Response and Repair Time

Response and repair time also play an important factor to SAIDI. How long it takes to restore service depends on the complexity of the system, the number and types of system components damaged, the extent of the damage and the location of the problem. The number of outages occurring at one time can also impact the availability of repair personnel to respond, thus adding to outage minutes.

PSE tracks all outage events longer than sixty seconds. The outage length is composed of response, assessment and repair time. Response time, the time from when the customer notifies PSE that an outage has occurred, until a service technician arrives at the site of the outage, is measured by SQI #11, Electric Safety Response Time. Response and repair time for service providers are also tracked and measured. See *Electric Safety Response Time (SQI #11)* section in Chapter 2 for more detail.

The average response time for both 2013 and 2014 was 53 minutes. The 5% Exclusion Major Events, as well as localized emergency event days, are excluded from this metric.

PSE tracks a job completion metric with our electric maintenance and construction service provider to monitor the service provider crew performance. Pre-determined event types that are beyond the control of the service provider are either excluded from the metric or adjusted on a case-by-case basis. Examples include access issues and third-party constraints that might hamper the service provider's ability to repair the outage in a timely manner. Please see the *Service Provider Performance* section in Chapter 2 for more detail.

Each of the Electric Safety Response Time metric (SQI #11) and the Service Provider Secondary Safety Response and Restoration Time metrics (SP Indices #4B and 4C) is designed to measure a specific part of PSE's outage restoration effort, which should not be compared with any of the SAIDI measures. The three response time metrics track different tasks of restoration and exclude specific outages; therefore they are not comparable to each other.

[16] E. Thomas Smiley and Brian Kane, "*The Effects of Pruning Type on Wind Loading of Acer Rubrum," –Arboriculture & Urban Forestry* 32(1): January 2006, pages 33-40, International Society of Arboriculture.

Historical Trends for SAIDI

Table 3d shows SQI SAIDI from 2010 to 2014.

Table 3d: SQI SAIDI from 2010 to 2014

	2010	2011	2012	2013	2014
SAIDI$_{\text{Total 5-year Average}}$ (SQI #3)	287	281	245	247	312
Benchmark	320 minutes per customer per year, all outage events				

Appendix L: *1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements* illustrates the comparison between the four SAIDI measurements for 1997-2014. Under the revised SQI SAIDI benchmark methodology and requirements, PSE's performance met the annual benchmark between 1997 through 2014 with the exception of 2003. Based on the recorded outages, 2014 results across all four measurements worsened in 2014 driven by an increase in tree-related SAIDI minutes.

Figure 12b that follows illustrates the impact of tree-related outages. Tree-related outages account for over 50% of all customer-outage minutes during the last five years, ranging from a high of 95% in 2012 to a low of 55% in 2011. The large swing in minutes reflects the impact of major weather events experienced each year. While PSE makes efforts to reduce tree-related outages through the Vegetation Management and Tree Watch programs, it is cost-prohibitive to completely eliminate tree-related outages. The *Working to Uphold Reliability* discussion in the *About Electric Service Reliability Measurements and Baseline Statistics* section describes PSE's efforts to manage tree-related outages. The common outage causes and their impact to SAIDI$_{\text{Total}}$ from 2010 to 2014 are summarized in Figure 3d on the following page.

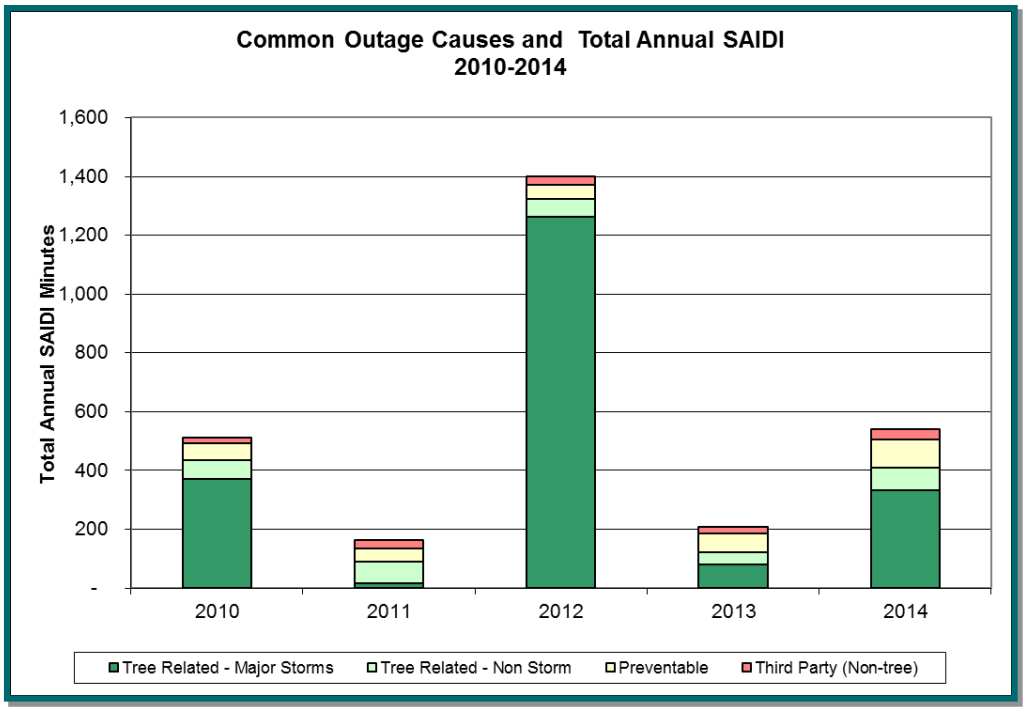


Figure 3d: 2010-2014 Common Outage Causes and SAIDI$_{Total}$

Appendix K: *Historical SAIDI and SAIFI by Area* illustrates the 2012–2014 results by county under the four measurements. A summary of Appendix K indicates that every county saw a worse performance in three or more SAIDI measurements primarily driven by weather events affecting each county throughout the year. Weather affected both SAIFI$_{5\%}$ and SAIFI$_{IEEE}$ as some of the events did not meet the exclusion criteria for either measurement.

As described more fully in the *Areas of Greatest Concern* discussion in the *About Electric Service Reliability Measurements and Baseline Statistics* section, PSE continues to focus on identifying projects that will affect SAIDI, while managing other aspects of system performance.

About Electric Service Reliability Measurements and Baseline Statistics

Overview

PSE, like most utilities, utilizes industry standard Electric Service Reliability indices to monitor its annual performance. PSE benchmarks itself against four key measurements, which provide a more complete representation of the overall electric customer service reliability. The standard formulas, as noted in the SAIFI and SAIDI chapters, are used to calculate each of the measurements but with one critical difference that showcases a particular area of electric service reliability performance. Each measurement is based on specific criteria:

- **Total Annual**
  - **SAIFI**—Measures all electric customer service interruptions that occurred during a calendar year without any exclusion.
  - **SAIDI**—Measures total number of all electric customer outage minutes in a calendar year without any exclusion.
- **Total 5-Year Average Annual**
  - **SAIFI**—Measures the rolling five-year average of all customer interruptions that occurred during the current reporting year and the previous four years, except for extreme weather or unusual events.
  - **SAIDI**—Measures the rolling five-year average of all customer minute interruptions from the current reporting year and previous four years, except for extreme weather or unusual events.
- **5% Exclusion**
  - **SAIFI**—Measures the annual average number of customer interruptions excluding major outage event days when 5% or more of customers are without power during a 24-hour period and the additional days needed to restore service to all those customers.
  - **SAIDI**—Measures the total annual number of customer outage interruption minutes from the current year excluding major outage event days when 5% or more of customers are without power during a 24-hour period and the additional days needed to restore service to all those customers.
- **$IEEE_{1366}$**
  - **SAIFI**—Measures the annual average number of customer interruption utilizing the IEEE standard 1366 methodology. Days with daily total SAIDI that exceed the IEEE T_{MED} threshold values are excluded.
  - **SAIDI**—Measures number of customer-minute interruptions utilizing the IEEE standard 1366 methodology. Daily SAIDI results that exceed the IEEE T_{MED} threshold values are excluded.

The formula for calculating each of these measurements can be found in Appendix H: *Terms and Definitions*.

Baseline Year

To meet UTC requirements, PSE established 2003 as its baseline year. While meeting the requirements, PSE would prefer to develop a baseline using multiple years, which mitigates the fluctuation of reliability statistics and proves more useful in trend analysis. PSE cautions against the attempt to use a single year's system performance data or information to assess year-to-year trends. Such trend analysis may prove inconclusive, and PSE believes that there is limited usefulness in designating one specific year's information as a "baseline."

Major Events

In 2014, PSE experienced the following major weather events that met the 5% exclusion or the IEEE exclusion criteria:

- A January wind, rain and snow event that affected customers in PSE's Western Washington service territory
- Two February wind events that affected customers in King, Pierce, Thurston, Whatcom, Skagit, Island counties
- A February snow event that affected customers in Whatcom, Skagit, Island counties
- An October wind event that affected customers in King, Pierce, Thurston, Kitsap counties and Vashon Island
- Two November wind events that affected customers in Whatcom, Skagit, Island, South King county, Pierce and Kitsap counties and Vashon Island
- Two December wind events that affected customers in Whatcom, Skagit, Island, King, Thurston, Kitsap counties and Vashon Island

Table 13a details the dates, causes and exclusion criteria for the IEEE and 5% exclusion events in 2014. Typically, an event that meets the 5% Exclusion Major Event Day criteria will also exceed the IEEE T_{MED} criteria. Since the initial reporting of the IEEE methodology in 2003, all 5% Exclusion Major Event Days have met the IEEE T_{MED} criteria.

IEEE T_{MED} is based on the customer minutes rather than the number of customers impacted. Therefore, if PSE experiences a weather event that is isolated to a small geographic area or a less populated county, it is possible that events exceed the IEEE T_{MED} but not meet the 5% exclusion criteria. There have been 25 such events since PSE started reporting IEEE statistics in 2003. In 2014, the nine of the twelve IEEE T_{MED} events also met the 5% Exclusion Major Event Day criteria.

Table 3e: 2014 Comparison Between IEEE and 5% Exclusion Methods

IEEE TMED Exclusion Date	Daily SAIDI	5% Customers Out Exclusion	Cause	Span of 5% Customers Out Exclusion Period
1/11/2014	41.62	13.39%	Wind, Rain, Snow	1/10/2014 11:00 PM - 1/13/2014 2:30 PM
2/12/2014	9.01	n/a	Wind	n/a
2/15/2014	6.09	n/a	Wind	n/a
2/23/2014	8.37	n/a	Snow	n/a
10/25/2014	93.38	13.35%	Wind	10/25/2014 4:30 PM - 10/29/2014 9:00 PM
10/26/2014	14.01			
11/11/2014	86.48	16.54%	Wind	11/11/2014 7:00 AM - 11/15/2014 10:00 PM
11/12/2014	9.41			
11/29/2014	13.51	5.67%	Wind, Snow	11/29/2014 5:30 AM - 11/30/2014 4:30 PM
12/10/2014	6.79	5.62%	Wind	12/10/2014 7:00 AM - 12/11/2014 2:00 AM
12/11/2014	85.10	21.05%	Wind	12/11/2014 5:00 PM - 12/14/2014 9:30 PM
12/12/2014	12.60			

Table 3f details the 2010 through 2014 IEEE T_{MED} values, number of IEEE exclusion dates, number of 5% exclusion events and number of 5% exclusion event days.

Table 3f: 2010 to 2014 Comparison of IEEE and 5% Exclusion Events

	2010	2011	2012	2013	2014
IEEE T_{MED}	7.21	7.68	5.38	5.62	5.60
Number of IEEE Major Event Days	10	1	10	3	12
Number of 5% Exclusion Major Events	6	1	1	3	6
Number of 5% Exclusion Major Event Days	20	2	11	7	22

Areas of Greatest Concern

The regional area planners study "area-of-concern" circuits and propose projects that will improve the reliability for the customers being served by those circuits. These areas of greatest concern provide focus for the planner in developing electric system improvement projects; however, all areas are continually evaluated for electric service reliability

improvement. To assist with identifying the highest priority projects for reliability, PSE focuses on the 50 worst-performing circuits over the past five years that consistently contributed the most customer-minute interruptions.

Each circuit is ranked by the total customer-minute interruptions seen by the circuit for each of the previous five years. The 50 worst-performing circuits are the circuits with the highest ranking. The percentage contribution of the 50 worst-performing circuits towards the total distribution customer-minute interruptions continues to decrease slightly, indicating that the system projects completed on the circuits has improved reliability. Over the past five years, PSE spent on average $60 million per year on planned distribution reliability projects.

Based upon reviewing the outage history, number of customers impacted, outage location and other factors, planners propose projects that are designed to improve reliability on these circuits. Appendix N: *Areas of Greatest Concern with Action Plan* details the Year End 2014 and Year End 2013 annual ranking of the 50 worst-performing circuits along with PSE's completed or future plan for system improvements on each circuit. Comparing the Year End 2014 Top 50 to the Year End 2013 Top 50, there was a turnover of 8 circuits and 42 remained on the list from last year. Since annual outage data for the year is not typically finalized until the following mid-February, the planners identify and develop projects throughout the year. Some projects are approved and released throughout the year, and some may be identified for the following budget year.

In addition, PSE also evaluates the 50 worst-performing circuits based on "circuit SAIDI." Circuit SAIDI measures the performance of individual circuits as experienced by the customers on those circuits. This tends to be a customer-centric view because customer density on the circuit has less influence on the measure.

The four regional planning teams—Whatcom/Skagit/Island, North King County, South King County, Pierce/Thurston/Kitsap—continually review the performance of the distribution system in their respective regions. Each team reviews the 50 worst-performing circuits in their regions in proposing reliability projects for the upcoming year. These compete with other system-related projects for funding.

A discussion of the System Planning process that the planners use to have their proposed projects considered for funding can be found in Chapter 7 *Delivery Infrastructure Planning* of PSE's *2013 Integrated Resource Plan* at PSE.com.

In addition to the annual process as described above, new projects are identified and released for construction throughout the year. These projects can be a result of a new initiative such as a new reliability program, a municipality altering its infrastructure plans, new system performance issues or addressing a resource need for a given area.

Customer Electric Reliability Complaints

Customer concerns and complaints are additional indices that measure PSE's success in delivering safe and reliable electric service. For the four years from 2010 through 2013, PSE has experienced a decrease in the numbers of outage-related complaints received either by PSE or the UTC. However, in 2014, PSE had an increase in both complaint categories. This increase might be attributed to the decrease in reliability performance. Furthermore, a

change in the data collection method for PSE complaints could have resulted in an increase in the number of reported PSE complaints.

During the rolling two-year period of 2013–2014, PSE received repeat complaints from 35 customers relating to reliability and power quality concerns. PSE's complaint process and the change in data collection is described in Appendix I: *Electric Reliability Data Collection Process and Calculations* and are shown in tabular form in Appendix M: *Current-Year Commission and Rolling-Two-Year PSE Customer Electric Service Reliability Complaints with Resolutions*.

In 2014, the UTC received 18 complaints relating to the reliability of PSE's energy-delivery system. These complaints are shown in Appendix M: *Current-Year Commission and Rolling-Two-Year PSE Customer Electric Service Reliability Complaints with Resolutions.*

PSE consistently investigates these customer complaints and tracks ongoing service issues as they are communicated. Customers receive follow-up correspondence to discuss their concern, as well as plans for resolution. Each planner investigates the outage history surrounding each of these customer complaints, reviews the overall circuit reliability and then prepares an appropriate plan for resolution.

Depending on the nature of the circuit reliability, the plan for resolution could be continued monitoring of the circuit. Or a planner may propose projects which will improve the circuit reliability. The map in Appendix O: *Current Year Geographic Location of Electric Service Reliability Customer Complaints on Service Territory Map with Number of Next Year's Proposed Projects and Vegetation-Management Mileage* summarizes the number of complaints by county for 2014.

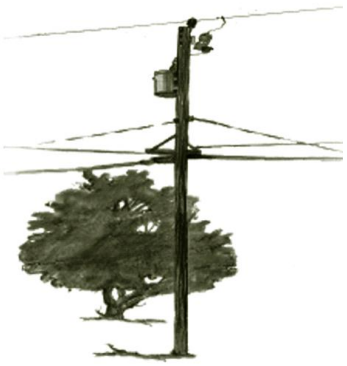
Working to Uphold Reliability

To continually improve and provide reliable electric service throughout its service area, PSE reviews the cause of outages to better understand performance at the subsystem level. Appendix J: *Current Year Electric Service Outage by Cause by Area* details the recorded outage causes in each county in 2014. It shows that trees (TF, TO, TV), birds and animals (BA) and equipment failures (EF) continue to be the primary reasons for outages in 2014 as in previous years. Scheduled outages (SO), which are taken to perform system upgrades and maintenance, also contribute a significant number of outages. The duration of the scheduled outages is minimized to lessen the effect on customers. This section discusses the efforts PSE takes to reduce the number and the overall duration of tree related and preventable outages.

The map in Appendix O: *Current Year Geographic Location of Electric Service Reliability Customer Complaints on Service Territory Map with Number of Next Year's Proposed Projects and Vegetation-Management Mileage* shows the number of reliability projects and vegetation mileage by county PSE has proposed for completion in 2015.

Vegetation Management

Outages related to trees and vegetation continue to be a major factor in the SAIDI and SAIFI indices. Trees remain a vital element of the region's quality of life, but they are also a major cause of power outages for local homes and businesses. To mitigate trees and limbs falling into electric power lines, PSE performs vegetation maintenance based on a cyclical schedule. The maintenance program focuses on achieving a safe and reliable system. Vegetation Management involves a variety of practices and techniques designed to keep trees and limbs from coming in contact with power lines and causing outages. Less than 10% of tree-related outages are caused by tree growth, illustrating an effective Vegetation Management Program.[17]



Cyclical Programs

PSE spends more than $13 million annually on a systematic, cyclical vegetation-management program to reduce outages in its overhead electric distribution, high-voltage distribution and transmission systems.

- **Overhead distribution system**—Usually trees are trimmed every four years for distribution lines in urban areas and every six years for lines in rural areas.
  - Those trees that are an imminent threat of falling into power lines (danger trees) are removed in these rights-of-way or within 12 feet of the system at the same time that trees are trimmed.
  - PSE usually completes roughly 2,000 miles of vegetation management on its distribution rights-of-way each year. In 2014, PSE completed 1,924 miles of vegetation management. The maintenance cycle is back on schedule. In 2015, 1,945 miles are scheduled for maintenance.
- **High-voltage distribution system and cross-country transmission corridor system**—Trees are trimmed every three years on PSE's high-voltage distribution rights-of-way and annually in transmission corridors. Spray and mowing activities are performed and danger trees are removed along the edge of these corridors, typically within 12 feet of the system at the same time trees are trimmed. In 2014:
  - 585 miles of high-voltage distribution lines were maintained.
  - 370 miles of transmission corridors were maintained under federal clearing requirements.
- **Fast growing, undesirable species**—Hot spotting and mid-cycle work and patrols occur yearly on the overhead distribution, high-voltage distribution and the transmission corridors to remove fast-growing, undesirable species of trees.
  - In 2014, roughly 300 miles were treated for undesirable trees.

[17] Ecological Solutions Inc., study, October 2008, page 39.

TreeWatch Program

PSE also manages vegetation impacts and spends $2 million annually with its TreeWatch program. Within this program, certified arborists work with communities and property owners to identify and remove "at-risk" trees on private property that are more than 12 feet away from power lines located beyond the limits of normal cyclical vegetation management standards. In 2014, the TreeWatch program addressed approximately 200 miles of transmission and high-voltage distribution lines and over 400 miles of distribution lines. Nearly 17,000 trees were removed or pruned. The trim and removal numbers vary year to year due to the size and complexity of the trees targeted to be trimmed and removed. The focus in 2014 was on critical high voltage distribution lines, and those distribution circuits that are on the top 50 worst circuits for tree related outages. In 2015, we plan to apply Tree Watch on over 500 miles of distribution circuits that are in the top 50 worst performing circuits. PSE will also continue to remove and trim danger trees on critical high voltage and the transmission system.

Tree Replanting Program

PSE devotes about $500,000 each year to replanting trees and non-construction-related mitigation in PSE's service area. In addition, to help customers improve system reliability, PSE has developed a vegetation planning guide called *Energy Landscaping*. The handbook helps customers evaluate landscaping opportunities and is a how-to for planting trees and shrubs and tree-care solutions. It also lists recommended trees and shrubs to plant near power lines.

Distribution, High-Voltage Distribution and Transmission Vegetation-Management Study

A vegetation-management study was conducted on PSE's overhead electric transmission system by Ecological Solutions, Inc. The results validate that PSE's pruning maintenance cycles are appropriate for the local tree growth rates. Additionally, the study illustrates that trees growing off the right-of-way are increasingly contributing to transmission system outages. The study concluded that 80% of tree-related outages are caused by trees from outside the right-of-way and 68% of trees that fail and cause outages are healthy trees.

The study further suggests that outages caused by damage from healthy trees can only be addressed by reducing the electric system's exposure to trees, which based upon species and quantities may be impractical in PSE's case.[18]

The study also revealed that: one-third of all tree-related outages are due to limbs falling on lines; a tree with branches overhanging a power line is twice as likely to cause an outage as a tree that had its overhanging branches removed. The study recommended that all branches overhanging power lines be removed (sometimes referred to as "lines to sky trimming"), resulting in a reduction of tree-related outages.

In 2012, PSE initiated a pilot project to test the recommendation. The circuit chosen is one of the least reliable circuits in the PSE service area, Chico-12, which is located in Kitsap County. Customers in the area are served by a 54-mile-long power line that runs through dense forested areas. The length of the line and the high number of nearby trees is a

[18] Ecological Solutions Inc. study, March 2009, page 12 and page 71.

combination ripe for tree-related outages—the more miles of power line, the more area of exposure to trees and tree branches. The concept of the pilot is simple: by removing tree branches that overhang power lines the probability of tree branches falling into or coming in contact with power lines will decrease, as well as any associated power outages. The tree work was completed in the fall of 2012. Initial results indicate that the circuit experienced fewer non-major event outages per year after trimming than occurred prior to the trimming. PSE will continue to monitor the impacts to reliability for another one to two years before determining if it was effective in reducing outages and reporting definitive results.

In 2013, PSE initiated an additional pilot project similar to the Chico-12 project. The circuit selected was Duvall-15 located in east King County. Although tree related circuit outages on Duvall-15 were significantly less than Chico-12, PSE selected the circuit because the vegetation component was significantly different than Chico-12. Chico-12 vegetation was primarily evergreen or conifer forest edge. Duvall-15 was a mix of both evergreen and deciduous. PSE anticipates that through both pilot programs, tree-related power outages in the area will be reduced. The impacts to reliability will continue to be monitored.

In 2014, PSE initiated an outage reduction program that focuses on removing overhanging limbs and selective removal of danger trees on the top 50 worst performing circuits. This effort was combined with circuits scheduled for maintenance in 2014. Approximately 400 miles were worked in 2014. In 2015, the outage reduction plan will complete over 500 miles of distribution on the top 50 worst circuits that are scheduled for maintenance in 2015.

Targeted Reliability Improvements

Along with vegetation management to minimize tree-related outages, PSE implemented other programs to reduce the frequency and duration of outages on the transmission and distribution systems, with a particular focus on improving the reliability on the 50 worst-performing distribution circuits. These programs include replacing existing overhead distribution wire with tree wire to prevent tree limb outages, installing more sectionalizing devices (some which are remotely monitored and control), replacing aging infrastructure, installing covered wire and devices to prevent animal-related outages and maintaining key equipment in substations.

Tree Wire

PSE works to reduce outages by installing "tree wire," which is a tough, thick-coated power line capable of withstanding contact with tree branches that would otherwise cause an outage. The vast majority of tree wire is installed at locations where there has been a previous five year history of outages related to tree branches and a field assessment confirms that installing tree wire would reduce the likelihood of outages.

In 2014, over 53 circuit miles of tree wire was installed.

Reclosers

In 2008, a high-level roadmap was developed to improve reliability and identify cost-effective tactics for planning consideration. One effective tactic is the installation of reclosers. These devices are an improvement over conventional fuses. With a conventional fuse, a temporary fault, typically a branch brushing against the line, causes the fuse to blow

open and de-energize the line. Service is not restored until a service technician patrols the line and manually replaces the blown fuse using a bucket truck.

In comparison, reclosers sense the fault on the power line and automatically attempt to re-energize the line. If the recloser no longer senses the fault, it will reclose and re-energize the line. If the fault is not temporary, the damaged section of the line can be isolated quickly with a gang-operated switch, which can be operated from the ground. Another effective tactic implemented was the installation of gang-operated switches. Gang-operated switches provide the ability to simultaneously disconnect the three-phase lines rather than one phase at a time.

In 2014, 40 reclosers and 20 gang-operated disconnect switches were installed. Nine of the reclosers were installed with communication for remote monitoring and control.

Substation Maintenance

Substations are the key hubs connecting high-voltage lines and the distribution lines that serve customers. Substations typically serve between 500 and 5,000 customers and contain major pieces of equipment, technologies to monitor and operate the system and backup systems such as batteries. These important substations are inspected monthly. Maintenance programs are in place to ensure performance and efficiently maintain expensive equipment.

As PSE continues to add more infrastructure, such as new lines and distribution substations to serve new loads, the design criteria considers reliability measures as well. For example, adding a new substation requires the installation of the transmission and distribution lines; to enhance reliability and operational flexibility, the lines typically connect to adjacent substations. This enables the operational ability to shift customers to the neighboring substations during an outage.

SCADA

Supervisory Control and Data Acquisition (SCADA) is an important aspect of operating the system. SCADA is a system used for monitoring and controlling substation equipment that will enable faster restoration of power to the customers. As the end of 2014, 99% of PSE's distribution substations have been upgraded with SCADA.

Bellevue Central Business District (CBD) SCADA project

The distribution system serving the City of Bellevue's Central Business District (CBD) is very dense. When an outage occurs, it takes time to access switches in parking garages and/or sidewalks within the downtown core to identify, isolate and restore power to the high-rise buildings. In a review of how other utilities serve similar loads, there is an indication that for urban areas, manual restoration should be replaced with SCADA switchgear that can be remotely monitored and controlled to reduce the outage impact and to manage the system. In 2014, PSE completed the fourth year of a multi-year strategy to place SCADA switches into the CBD. Twenty-two units have been installed and are operational on the EMS system. It is expected that many of the feeders in the distribution system serving the Bellevue CBD area will be ready for Distribution Automation in three to five years.

Aging Infrastructure

Cable Remediation

For an underground power-distribution system, age and moisture make buried cable vulnerable to failures and prolonged outages. Since 1989, PSE has managed a cable remediation program that considers two remediation options: silicone injection or cable replacement.

- Silicone injection extends the life of underground power cable for 20 years by restoring the cable's insulating properties.
- Replacement installs a new system with an expected life that exceeds 30 years.

In 2014, 47.9 miles of cable was remediated. PSE's cable remediation program prevented an estimated 2,600 outages in 2014.

Pole Test and Treat and Replacement Programs

In an overhead power system, the failure of a utility pole can cause an outage that could affect thousands of customers. To minimize the risk of such a large outage, PSE has a pole inspection and replacement program for both transmission and distribution wood poles. In 2014, there were 78 outages caused by a structural failure on the pole.

PSE assesses each pole's condition by excavating around the base to determine the extent of below-ground decay and by boring into the pole to assess decay within the pole. The remaining strength of the pole is calculated based on the measurements of decay. Poles whose remaining strength still meets the National Electric Safety Code (NESC) guidelines are treated with an internal fumigant, which extends its serviceable life, while those not meeting NESC guidelines are scheduled for replacement.

Industry data shows that the average serviceable life of a pole in the Pacific Northwest without remedial treatment is 43 years. Poles which have received routine treatment throughout their life last significantly longer; industry data suggests the average life could be 100 years or more. Transmission poles are inspected on a 10-year cycle; distribution poles are inspected on a 15-year cycle. In 2014, 11,574 poles were inspected and treated (8,413 distribution and 3,161 transmission) and 1,656 poles were replaced (1,468 distribution and 188 transmission).

Aging Overhead Infrastructure

Many of the tree-related outages result from the failure of smaller diameter aging overhead wires, such as copper primary and open-wire secondary. These smaller wires break due to the impact of the failing branches leading to longer customer outages. PSE is replacing these smaller aging wires with larger steel-reinforced stranded-aluminum wires, per current standards, that will better withstand the impact of falling branches. The larger wires will also enable more customers to be served in the future, as well as improve reliability. In 2014, 1.6 circuit miles of smaller diameter wire was replaced.

Substation Equipment Replacement Programs

Upgrades to the substations and equipment are important strategies for reliability. Specific types of equipment are proactively replaced under replacement programs to maintain system

reliability, reduce operational costs and offset impacts from aging infrastructure. In 2014, four transmission breakers, nine distribution breakers and 11 relay packages were replaced. Additionally, two power transformers, three circuit switchers and two Spill Prevention, Control, and Countermeasure (SPCC) were completed under these programs.

Wildlife

In 2014, there were over 1,475 bird and animal-caused outages. Birds and other animals have historically caused nearly 2,000 outages annually; however, each of these outage events typically only impacts 30 to 45 customers per event. Since 2004, PSE has reduced animal-caused outages by 500-600 per year despite an increase in eastern grey squirrel populations. In early 2000, PSE modified its construction standards to reduce the risk of animal-related outages.

Today, all equipment poles are upgraded with bushing covers, cutout covers and covered jumpers when maintenance activities are performed. In addition, new transformers and other electrical equipment come equipped with bushing covers. New electric infrastructure projects that are located within avian-designated safe habitats are constructed to avian-safe standards.

PSE's Avian Protection Program tracks all avian-related outages and retrofits mortality sites using avian-protection products and techniques to reduce the risk of repeat outages and avian mortality. The program proactively adds avian protection to circuits that are identified as potential sites for an avian-caused outage or mortality. In 2014, the PSE Avian Protection Program completed 25 avian-protection retrofit projects, in response to over 184 bird mortalities, including 14 eagles, 50 swans and 21 raptors. Over 400 poles and spans were retrofitted to reduce risk of outages and avian mortalities.

Third-Party Outages

When a vehicle hits a utility pole or similar third-party events occur, some customers will likely lose power. As part of a continuous effort, PSE planners review the location of the poles whenever a car-pole incident causes an outage. The pole may be relocated if the pole is likely to be hit again.

Planned Outages

Planned outages, typically for connecting new or upgrading existing infrastructure, are the fourth leading cause and account for 11% of recorded non-storm service interruptions in 2014. Unfortunately, service must be interrupted to safely connect new power lines or replace aging or damaged infrastructure. And the more improvements that are made, the more planned outages are necessary.

As PSE continues with the OMS and GIS stabilization effort, the recording of all planned outages and the associated outage data accuracy continues to be an area of focus. The OMS interface improvements and increased user OMS proficiency has improved the data accuracy associated with planned outages that have minimal impact to system configuration or have no underlying GIS issues. For planned outages with underlying GIS issues or inconsistency in business process, PSE made strides in 2014 in improving the data accuracy but continues to identify areas of improvement. PSE has also made improvements in recording planned

outages that do not require system switching oversight although a small portion of these outages remain unrecorded. The total impact of these unrecorded outages to SAIDI and SAIFI is very low as this type of outage impacts very few customers for a short duration.

PSE is continuing to work through a business process to ensure accurate recording of all planned outages.

Response Time Initiative

PSE recognizes that the time it takes for a serviceman to arrive to the outage site, assess the damage, and determine the appropriate plan of action impact the length of time a customer is out of power. A pilot study was conducted in late 2010 and into 2011, where PSE dispatched service provider crews in parallel with servicemen on specific outages such as car-pole accidents and radial underground cable failures. Results of the study indicated that there were varied factors that drove response time and not just one specific reason. Currently, PSE evaluates each outage independently and determines whether to dispatch crews in parallel with servicemen.

Outage Management System

PSE implemented an operational outage management system (OMS) in April 1, 2013. The new OMS enables PSE to more quickly pinpoint the sources of power outages and efficiently directed repair efforts to help the company more accurately predict restoration times during day-to-day operations.

Going Forward

In 2015, PSE will continue its programs as described earlier. Specifically:

- **Vegetation Management**
  - Continue cycle maintenance to remain on cycle. Remove or prune between 14,000 and 15,000 off-right-of-way trees under the TreeWatch program, again focusing on our critical high voltage distribution lines, the worst performing distribution circuits, and transmission lines.
  - Continue the outage reduction plan and complete over 500 miles of distribution on the top 50 worst circuits that are scheduled for maintenance.
- **Targeted Reliability Improvements**
  - **50 Worst-Performing Circuits**—PSE will continue to monitor the performance of the 50 worst-performing circuits as outlined in the *Areas of Greatest Concern* section of this chapter. Value-added projects will be developed to improve the reliability of these circuits. Appendix N: *Areas of Greatest Concern with Action Plan* provide specific plans for system improvements on each circuit.
  - **Aging Infrastructure**—PSE will continue the aging infrastructure programs such as cable remediation, pole replacement and replacing failing poles and smaller overhead wires.

- **Distribution Sectionalizing Devices**—PSE will continue to install additional sectionalizing devices on the distribution system to help minimize outages and outage times. These devices include reclosers, switches and fuses. For the nine reclosers that were installed with communication for remote monitoring and control, PSE will evaluate the outage improvement and determine feasibility of implementing remote monitoring and control at other locations.
- **Targeted Reliability Programs**—PSE will continue to install covered conductor (tree wire) to prevent tree-limb outages and convert overhead lines to underground. Replacing failing poles and installing animal guards are incorporated in the scope of some of these projects as appropriate. This has a secondary benefit of preventing outages caused by wildlife.
- **Substations**—PSE will continue to install SCADA in the distribution substations based on specific benefit and cost. Also, PSE will be installing supervisory control of the feeder breakers and ampere readings on all three-phase breakers at critical distribution substations.
- **Bellevue Central Business District (CBD) SCADA project**—PSE will continue with its effort to build the foundation to automate the distribution system serving the Bellevue CBD and help reduce outage duration.

- **Outage Management System—**PSE will continue its efforts to refine business processes, enhance functionality, and improve system interfaces to ensure outage data is accurately recorded. In addition, PSE continues to analyze the effect of implementing OMS to the outage data and reported reliability statistics.

Appendices

This section contains the following appendices:

- A: Monthly SQI Performance
  - Table A3: Attachment A to Appendix A—Major Event and Localized Emergency Event *Days* (Affected Local Areas Only)
  - *Attachment B to Appendix A—Major Event and Localized Emergency Event Days (Non Affected Local Areas Only)*
  - *Table A5: Attachment C to Appendix A—Gas Reportable Incidents* and Control Time
- B: Certification of Survey Results
- C: Penalty Calculation (Not Applicable for 2014 Reporting)
- D: Proposed Customer Notice (Report Card)
- E: Disconnection Results
- F: Customer Service Guarantee Performance Detail
- 0: Customer Awareness of Customer Service Guarantee
- H: Electric Reliability Terms and Definitions
- I: Electric Reliability Data Collection Process and Calculations
- J: Current Year Electric Service Outage by Cause by Area
- K: Historical SAIDI and SAIFI by Area
- L: 1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements
- M: Current-Year Commission and Rolling-Two-Year PSE Customer Electric Service Reliability Complaints with Resolutions
- N: Areas of Greatest Concern with Action Plan
- O: Current Year Geographic Location of Electric Service Reliability Customer Complaints on Service Territory Map with Number of Next Year's Proposed Projects and Vegetation-Management Mileage

A
Monthly SQI Performance

Appendix A consists of Tables A1 and A2 that provide monthly details on the nine service quality indices.

It also contains the following attachments:

- **Attachment A to Appendix A**—Major Event and Localized Emergency Event Days (Affected Local Areas Only)
- **Attachment B to Appendix A**—Major Event and Localized Emergency Event Days (Non-Affected Local Areas Only)
- **Attachment C to Appendix A**—Gas Reportable Incident and Control Time

Table A1: PSE Monthly SQI Performance

Category of Service	SQI #		Benchmark	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014
Customer Satisfaction	6	Telephone Center Transactions Customer Satisfaction	90% satisfied (rating of 5 or higher on a 7-point scale)	90%	92%	92%	94%	95%	94%	96%	93%	94%	94%	93%	92%
	8	Field Service Operations Transactions Customer Satisfaction	90% satisfied (rating of 5 or higher on a 7-point scale)	95%	93%	96%	94%	97%	96%	95%	99%	97%	97%	96%	93%
	2	WUTC Complaint Ratio	0.40 complaints per 1000 customers, including all complaints filed with WUTC	0.019	0.012	0.024	0.022	0.010	0.020	0.020	0.022	0.019	0.013	0.012	0.015
Customer Services	5	Customer Access Center Answering Performance	75% of calls answered by a live representative within 30 seconds of request to speak with live operator	73%	75%	78%	77%	78%	73%	75%	64%	65%	80%	85%	86%
Operations Services	4	SAIFI	1.30 interruptions per year per customer	0.057	0.192	0.071	0.049	0.060	0.085	0.086	0.083	0.091	0.105	0.088	0.079
	3	SAIDI	320 minutes per customer per year	59	41	11	7	10	9	15	13	11	120	127	116
	11	Electric Safety Response Time	Average of 55 minutes from customer call to arrival of field technician	51	54	57	49	50	49	54	57	55	52	54	58
	7	Gas Safety Response Time	Average of 55 minutes from customer call to arrival of field technician	31	31	30	31	31	30	30	31	31	32	33	32
	10	Kept Appointments NOTE 2	92% of appointments kept	99%	100%	100%	100%	100%	100%	100%	100%	99%	100%	99%	99%

Note 1: Results shown exclude calls abandoned within 30 seconds, which had been included in the calculation for SQI reporting years 2009 and prior. The change was proposed in PSE's 2009 SQI annual report and agreed to by UTC staff and Public Counsel via their e-mails to PSE on April 1, 2010.

Note 2: Results shown are rounded to the nearest whole percentage per UTC order. However, these 100% monthly performance results do not reflect that PSE met all its appointments during the reporting period. Numbers of missed appointments by appointment type are detailed in Appendix F: *Customer Service Guarantee Performance Detail.*

Table A2: Service Providers Monthly Service Quality Performance

Category of Service	Index	Service Provider	Benchmark Description	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014
Operations Services	Service Provider New Customer Construction Appointments Kept [Note]	Quanta Electric	At least 92% of appointments kept	100%	99%	98%	100%	99%	100%	100%	99%	98%	99%	96%	98%
		Quanta Gas	At least 98% of appointments kept	99%	96%	99%	100%	99%	99%	99%	99%	99%	100%	99%	97%
	Service Provider Standards Compliance	Quanta Electric	At least 95% compliance with site audit checklist points	99%	97%	98%	98%	97%	98%	98%	96%	98%	98%	98%	98%
		Quanta Gas	At least 95% compliance with site audit checklist points	99%	98%	98%	99%	99%	98%	98%	99%	99%	99%	95%	98%
	Secondary Safety Response and Restoration Time-Core Hour	Quanta Electric	Within 250 minutes from the dispatch time to the restoration of non-emergency outage during core hours	232	243	243	237	248	250	263	259	255	250	248	241
	Secondary Safety Response and Restoration Time-Non-Core Hour	Quanta Electric	Within 316 minutes from the dispatch time to the restoration of non-emergency outage during non-core hours	260	280	263	296	275	287	272	290	273	286	291	308
	Secondary Safety Response Time	Quanta Gas	Within 60 minutes from first response assessment completion to second response arrival	43	45	46	52	45	42	50	54	42	38	61	47

Note: Results shown are rounded to the nearest whole percentage per UTC order. However, these 100% monthly performance results do not reflect that service providers met all the appointments during the reporting period. Numbers of missed appointments by appointment type are detailed in Appendix F: *Customer Service Guarantee Performance Detail* under the Permanent Service appointment type.

Table A3: Attachment A to Appendix A—Major Event and Localized Emergency Event Days (Affected Local Areas Only)

This Attachment A to Appendix A provides detail on Major Event and localized emergency event days (Affected local areas only).

PUGET SOUND ENERGY	SQI #11 Supplemental Reporting Major Event And Localized Emergency Event Days Affected Local Areas Only									
Date	Type of Event	Local Area	Duration (Days)	No. of Customers Affected	No. of Customers in Area	% of Customers Affected	No. of Outage Events	Resource Utilization (for the event, EFR Count only)	>5% Customer Affected? (Yes/No)	Comments
1/10/2014	Wind	North	4	26,977	196,467	13.7%	152	14 (of 14)	Yes	14 EFRs Event Duty
1/10/2014	Wind	Central North	4	41,596	302,950	13.7%	178	18 (of 18)	Yes	18 EFRs Event Duty
1/10/2014	Wind	Central South	4	20,916	236,997	8.8%	105	11 (of 11)	Yes	11 EFRs Event Duty
1/10/2014	Wind	South	4	25,017	241,651	10.4%	164	15 (of 15)	Yes	15 EFRs Event Duty
1/10/2014	Wind	West	4	43,447	125,340	34.7%	144	13 (of 13)	Yes	13 EFRs Event Duty
2/12/2014	Wind	Central South	2	21,531	237,081	9.1%	29	11 (of 11)	No	11 EFRs Event Duty
2/12/2014	Wind	South	2	20,542	241,745	8.5%	82	13 (of 15)	No	13 EFRs Event Duty + 2 Regular Day Off
2/15/2014	Wind	North	3	12,881	196,567	6.6%	64	13 (of 14)	No	13 EFRs Event Duty + 1 PTO
2/15/2014	Wind	South	3	9,548	241,745	3.9%	46	11 (of 15)	No	11 EFRs Event Duty + 3 EFRs Regular Day Off + 1 PTO
2/23/2014	Wind	North	4	28,401	196,567	14.4%	224	13 (of 14)	No	13 EFRs Event Duty + 1 PTO
10/21/2014	Wind	North	3	5,820	196,827	3.0%	70	14 (of 14)	No	14 EFRs Event Duty
10/25/2014	Wind	North	5	10,163	196,827	5.2%	72	14 (of 14)	Yes	14 EFRs Event Duty

EFR—Electric First Responder, **PTO**—Paid Time Off, **STD**—Short-Term Disability, **SP**—Service Provider

Table continues on next page.

PUGET SOUND ENERGY	*SQI #11 Supplemental Reporting Major Event And Localized Emergency Event Days Affected Local Areas Only*									
Date	**Type of Event**	**Local Area**	**Duration (Days)**	**No. of Customers Affected**	**No. of Customers in Area**	**% of Customers Affected**	**No. of Outage Events**	**Resource Utilization (for the event, EFR Count only)**	**>5% Customer Affected? (Yes/No)**	**Comments**
10/25/2014	Wind	Central North	5	113,783	303,909	37.4%	414	18 (of 18)	Yes	18 EFRs Event Duty
10/25/2014	Wind	Central South	5	16,201	237,247	6.8%	100	11 (of 11)	Yes	11 EFRs Event Duty
10/25/2014	Wind	South	5	7,308	242,694	3.0%	89	15 (of 15)	Yes	15 EFRs Event Duty
10/25/2014	Wind	West	5	30,157	125,663	24.0%	160	13 (of 13)	Yes	13 EFRs Event Duty
11/6/2014	Wind	North	2	13,725	196,908	7.0%	97	13 (of 14)	No	13 EFRs Event Duty + 1 PTO
11/6/2014	Wind	West	2	9,827	125,760	7.8%	76	13 (of 13)	No	13 EFRs Event Duty
11/11/2014	Wind	North	5	2,360	196,908	1.2%	38	14 (of 14)	Yes	14 EFRs Event Duty
11/11/2014	Wind	Central North	5	19,997	304,077	6.6%	80	18 (of 18)	Yes	18 EFRs Event Duty
11/11/2014	Wind	Central South	5	139,902	237,255	59.0%	377	11 (of 11)	Yes	11 EFRs Event Duty
11/11/2014	Wind	South	5	56,992	242,873	23.5%	156	15 (of 15)	Yes	15 EFRs Event Duty
11/11/2014	Wind	West	5	12,540	125,760	10.0%	69	13 (of 13)	Yes	13 EFRs Event Duty

EFR—Electric First Responder, **PTO**—Paid Time Off, **STD**—Short-Term Disability, **SP**—Service Provider

Table continues on next page.

PUGET SOUND ENERGY	SQI #11 Supplemental Reporting Major Event And Localized Emergency Event Days Affected Local Areas Only									
Date	Type of Event	Local Area	Duration (Days)	No. of Customers Affected	No. of Customers in Area	% of Customers Affected	No. of Outage Events	Resource Utilization (for the event, EFR Count only)	>5% Customer Affected? (Yes/No)	Comments
11/29/2014	Wind	North	2	36,588	196,908	18.6%	101	11 (of 14)	Yes	11 EFRs Event Duty + 3 EFRs Regular Day Off
11/29/2014	Wind	West	2	25,579	125,760	20.3%	144	16 (of 17)	Yes	16 EFRs Event Duty + 1 EFR Regular Day Off
11/29/2014	Wind	Central North	2	4,143	304,077	1.4%	35	18 (of 18)	Yes	18 EFRs Event Duty
11/29/2014	Wind	Central South	2	439	237,255	0.2%	9	11 (of 11)	Yes	11 EFRs Event Duty
11/29/2014	Wind	South	2	3,414	242,873	1.4%	4	15 (of 15)	Yes	15 EFRs Event Duty
12/9/2014	Wind	North	1	10,596	196,962	5.4%	75	14 (of 14)	No	13 EFRs Event Duty + 1 PTO
12/10/2014	Wind	South	2	9,589	243,014	3.9%	24	14 (of 15)	Yes	14 EFRs Event Duty + 1 PTO
12/10/2014	Wind	North	2	1,354	196,962	0.7%	13	14 (of 14)	Yes	14 EFRs Event Duty
12/10/2014	Wind	Central North	2	2,875	304,355	0.9%	13	18 (of 18)	Yes	18 EFRs Event Duty
12/10/2014	Wind	Central South	2	1,618	237,285	0.7%	13	11 (of 11)	Yes	11 EFRs Event Duty
12/10/2014	Wind	West	2	114	125,784	0.1%	9	13 (of 13)	Yes	13 EFRs Event Duty

EFR—Electric First Responder, **PTO**—Paid Time Off, **STD**—Short-Term Disability, **SP**—Service Provider

Table continues on next page.

PUGET SOUND ENERGY	*SQI #11 Supplemental Reporting Major Event And Localized Emergency Event Days Affected Local Areas Only*									
Date	**Type of Event**	**Local Area**	**Duration (Days)**	**No. of Customers Affected**	**No. of Customers in Area**	**% of Customers Affected**	**No. of Outage Events**	**Resource Utilization (for the event, EFR Count only)**	**>5% Customer Affected? (Yes/No)**	**Comments**
12/11/2014	Wind	North	4	42,267	196,962	21.5%	122	14 (of 14)	Yes	14 EFRs Event Duty
12/11/2014	Wind	Central North	4	30,208	304,355	9.9%	74	18 (of 18)	Yes	18 EFRs Event Duty
12/11/2014	Wind	Central South	4	8,540	237,285	3.6%	30	11 (of 11)	Yes	11 EFRs Event Duty
12/11/2014	Wind	South	4	87,150	243,014	35.9%	257	15 (of 15)	Yes	15 EFRs Event Duty
12/11/2014	Wind	West	4	21,821	125,784	17.3%	76	13 (of 14)	Yes	13 EFRs Event Duty

Table A4: Attachment B to Appendix A—Major Event and Localized Emergency Event Days (Non-Affected Local Areas Only)

This Attachment B to Appendix A provides detail on Major Event and localized emergency event days (Non-affected local areas only).

PUGET SOUND ENERGY	SQI #11 Supplemental Reporting Localized Emergency Event Days Non-Affected Local Areas Only									
Date	**Type of Event**	**Local Area**	**Duration (Days)**	**No. of Customers Affected**	**No. of Customers in Area**	**% of Customers Affected**	**No. of Outage Events**	**Resource Utilization**	**>5% Customer Affected? (Yes/No)**	**Comments**
2/12/2014	Wind	North	2	4,841	196,567	2.5%	27	14	No	
2/12/2014	Wind	Central North	2	11,622	303,064	3.8%	44	18	No	
2/12/2014	Wind	West	2	10,348	125,350	8.3%	26	13	No	
2/15/2014	Wind	Central North	3	3,286	303,064	1.1%	42	18	No	
2/15/2014	Wind	Central South	3	4,334	237,081	1.8%	32	11	No	
2/15/2014	Wind	West	3	8,018	125,350	6.4%	23	13	No	
2/23/2014	Wind	Central North	4	450	303,064	0.1%	20	18	No	
2/23/2014	Wind	Central South	4	4,111	237,081	1.7%	15	11	No	
2/23/2014	Wind	South	4	194	241,745	0.1%	17	15	No	
2/23/2014	Wind	West	4	1,978	125,350	1.6%	12	13	No	
10/21/2014	Wind	Central North	3	2,795	303,909	0.9%	25	18	No	
10/21/2014	Wind	Central South	3	1,712	237,247	0.7%	19	11	No	
10/21/2014	Wind	South	3	945	242,694	0.4%	29	15	No	
10/21/2014	Wind	West	3	11,077	125,663	8.8%	36	13	No	

Table continues on next page.

PUGET SOUND ENERGY	SQI #11 Supplemental Reporting Localized Emergency Event Days Non-Affected Local Areas Only									
Date	**Type of Event**	**Local Area**	**Duration (Days)**	**No. of Customers Affected**	**No. of Customers in Area**	**% of Customers Affected**	**No. of Outage Events**	**Resource Utilization**	**>5% Customer Affected? (Yes/No)**	**Comments**
11/6/2014	Wind	Central North	2	2,445	304,077	0.8%	28	18	No	
11/6/2014	Wind	Central South	2	188	237,255	0.1%	13	11	No	
11/6/2014	Wind	South	2	1,341	242,873	0.6%	14	15	No	
12/9/2014	Wind	Central North	1	45	304,355	0.0%	7	18	No	
12/9/2014	Wind	Central South	1	1,601	237,285	0.7%	7	11	No	
12/9/2014	Wind	South	1	211	243,014	0.1%	10	15	No	
12/9/2014	Wind	Central South	1	1,601	237,285	0.7%	7	11	No	

Table A5: Attachment C to Appendix A—Gas Reportable Incidents and Control Time

This Attachment C to Appendix A provides detail on each gas reportable incident and response times.[Note]

Natural Gas Reportable Incident Duration Report							
No.	Date	City	Address	1st Notice to PSE	First PSE Arrival	Emergency Controlled	Emergency Control Time
1	1/3/2014	Edmonds	423 2nd Ave N	13:28	13:45	13:45	0:17
2	1/4/2014	Sumner	1206 Sumner Ave	13:07	13:35	16:49	0:28
3	1/11/2014	Seattle	5125 S Dawson St	4:00	5:41	6:20	1:41
4	1/28/2014	Mill Creek	4400 132nd St SE	15:43	16:03	18:15	0:20
5	1/29/2014	Issaquah	19260 SE 49TH ST,	10:59	11:14	13:06	0:15
6	2/7/2014	Everett	2809 130TH Pl SE	11:10	11:20	11:28	0:10
7	2/10/2014	Puyallup	12420 129th St SE	11:00	11:40	21:52	0:40
8	2/14/2014	Bothell	18600 Reder Way	9:23	9:40	11:15	0:17
9	3/28/2014	Medina	8900 Points Dr NE	11:39	11:48	15:56	0:09
10	4/3/2014	Seattle	10743 68th Ave S	20:30	20:49	21:24	0:19
11	4/25/2014	North Bend	540 E Noth Bend Way	3:56	4:15	5:08	0:19
12	4/25/2014	Ellensburg	180 Hanson Rd	15:50	15:58	18:43	0:08
13	4/28/2014	Tacoma	2002 99 St E	9:39	9:57	10:09	0:18
14	4/30/2014	Mukilteo	8803 48th PL W	18:39	18:59	19:06	0:20
15	4/30/2014	Mill Creek	16314 Bothell Everett Highway	13:35	13:45	17:26	0:10
16	5/13/2014	Tacoma	2721 S 68th St	14:03	14:24	14:30	0:21
17	5/20/2014	Everett	4330 Evergreen Way	10:02	10:09	10:18	0:07
18	6/11/2014	Sammamish	3421 E Lake Sammamish Shore Lane NE	7:54	8:33	8:50	0:39
19	6/17/2014	Seattle	55 S Spokane St	5:43	6:01	6:59	0:18
20	6/20/2014	Seattle	2562 7th Ave W	15:57	16:28	16:28	0:31
21	7/6/2014	Everett	7016 Beverly Ln # B	18:01	18:29	18:44	0:28
22	7/9/2014	Everett	3332 Nassau St	14:12	14:32	14:56	0:20
23	8/2/2014	Redmond	2560 152nd Ave NE	9:07	9:29	10:15	0:22
24	8/6/2014	Issaquah	18810 Se 46th Way, Issaquah	15:01	15:24	16:23	0:23

Table continues on next page.

Natural Gas Reportable Incident Duration Report							
No.	Date	City	Address	1st Notice to PSE	First PSE Arrival	Emergency Controlled	Emergency Control Time
25	8/6/2014	Bellevue	14709 Se Allen Rd, Bellevue	8:11	8:26	10:46	0:15
26	8/11/2014	Lynnwood	515 lakeview RD, Lynnwood	8:34	8:56	9:18	0:22
27	8/14/2014	Bellevue	407 98th Ave NE	9:57	10:18	11:45	0:21
28	8/15/2014	Kent	11121 SE 220th Pl	10:11	10:31	13:30	0:20
29	8/26/2014	Mercer Island	8501 SE 68th St	8:45	9:08	9:18	0:23
30	8/26/2014	Renton	17029 108th Ave SE	9:11	9:33	10:15	0:22
31	8/27/2014	Lynnwood	19412 40th Ave West	8:20	8:41	9:06	0:21
32	8/29/2014	Milton	102 5th Avenue	15:00	15:15	15:34	0:15
33	8/30/2014	marysville	6502 55th Drive NE	12:44	13:22	13:53	0:38
34	9/4/2014	Redmond	23217 ne 51st court	16:11	16:42	19:49	0:31
35	9/10/2014	Seattle	1200 NE Pacific Street	13:30	13:41	13:58	0:11
36	9/14/2014	Tacoma	East Alexander Avenue and Marshall Avenue	3:39	5:00	5:30	1:21
37	9/14/2014	Marysville	7621 82nd Ave NE	3:13	3:39	4:47	0:26
38	10/17/2014	Bellevue	100 140th Ave SE	12:25	13:04	14:35	0:39
39	10/28/2014	Everett	13411 Meridian PL W	13:02	13:20	14:00	0:18
40	11/17/2014	Redmond	17200 NE 116th St	10:17	10:29	12:24	0:12
41	11/28/2014	Bellevue	2407 129th Ave SE	13:47	13:54	14:10	0:07
42	12/2/2014	Snohomish	17924 Interurban BLVD	12:11	12:39	14:41	0:28
43	12/3/2014	Seattle	4036 8th Ave NE	8:12	8:57	9:03	0:45
44	12/19/2014	Seattle	7700 2nd Ave S	15:40	15:54	20:45	0:14
						Average	**1:24**

Note: Report of the time duration from first arrival to control of gas emergencies, for incidents subject to reporting under the 2003 edition of WAC 480-93-200 and WAC 480-93-210, Order R-374, Docket Number UG-911261.

B
Certification of Survey Results

EMC RESEARCH MARKET & OPINION RESEARCH SERVICES

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(503) 444-6000

EMCresearch.com

TO: Eric Haechrel, Puget Sound Energy
FR: Andrew Thibault, EMC Research, Inc.
DT: February 25, 2015
RE: PSE Service Quality Index Research

This memo constitutes certification by EMC Research, Inc. that the attached report and underlying surveys were conducted and prepared in accordance with the procedures established in Docket Nos. UE-011570 and UG-011571.

These procedures, data collection methods, and quality controls are consistent with industry practices and, we believe, ensure that the data collected and information produced in the surveys is unbiased and valid.

We are glad to answer any questions about the research methodology and provide any additional information you may need.

Sincerely,

Andrew Thibault, Principal
EMC Research Inc.

C
Penalty Calculation and Penalty Mitigation Petition

PSE met all the 2014 SQI benchmarks therefore there is no penalty or penalty mitigation for the 2014 reporting year.

D
Proposed Customer Notice (Report Card)

2014 Service Quality Report Card

This appendix presents PSE's proposed 2014 Customer Service Performance Report Cards. The Customer Service Performance Report Card, which is designed to inform customers of how well PSE delivers its services in key areas to its customers.

PUGET SOUND ENERGY

2014 Service Quality Report Card

Key measurement	Benchmark	2014 Performance	Achieved
Customer Satisfaction			
Percent of customers satisfied with our Customer Care Center services, based on survey	At least 90 percent	93 percent	✓
Percent of customers satisfied with field services, based on survey	At least 90 percent	96 percent	✓
Number of complaints to the WUTC per 1,000 customers, per year	Less than 0.40	0.21	✓
Customer Services			
Percent of calls answered live within 30 seconds by our Customer Care Center	At least 75 percent	76 percent	
Operations Services			
Frequency of non-major-storm power interruptions, per year, per customer	Less than 1.30 interruptions	1.05 interruptions	✓
Length of power outages per year, per customer	Less than 5 hours, 20 minutes	5 hours, 12 minutes	✓
Time from customer call to arrival of field technicians in response to electric system emergencies	No more than 55 minutes	53 minutes	✓
Time from customer call to arrival of field technicians in response to natural gas emergencies	No more than 55 minutes	31 minutes	✓
Percent of service appointments kept	At least 92 percent	100 percent*	✓

Each year Puget Sound Energy measures how well we deliver our services to you and all of our customers in three key areas: Customer Satisfaction, Customer Services and Operations Services.

2014 Performance Highlights

In addition to meeting all nine service metrics in 2014 (see chart above), we are pleased to report improvements from the prior year in seven of the measurements. They include:

- enhanced services when you called PSE
- greater satisfaction on how we responded and completed your field-service requests
- fewer customer complaints registered with the state Utilities and Transportation Commission
- more calls were answered live within 30 seconds or less
- faster response time to electric system emergencies
- faster response time to natural gas emergencies
- kept all scheduled service appointments

Through our two Service Guarantees — keeping scheduled appointments and restoring power interruptions as soon as we can — we provide a $50 credit on your bill. In 2014, we credited customers a total of $11,900 for missing 238, or 0.4* percent, of our total 88,635 scheduled appointments.

Every day our employees continually aim to achieve new levels of providing safe, dependable and efficient service to meet your expectations of us.

* Percent in table rounded up from 99.56 percent result.

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E
Disconnection Results

Tables E1 and E2 provide the annual and monthly number of disconnections per 1,000 customers for non-payment of amounts due when the UTC disconnection policy would permit service curtailment.

Table E1: Annual Disconnection Results from 2010 to 2014 per 1,000 Customers

2010	2011	2012	2013	2014
38	37	33	13	47

Table E2: Monthly Disconnection Results per 1,000 Customers for 2014

Month	Disconnections per 1000 Customers
January	3
February	3
March	4
April	5
May	4
June	6
July	5
August	4
September	4
October	4
November	1
December	2

F
Customer Service Guarantee Performance Detail

This appendix provides detail on SQI #10, Appointments Kept, performance and customer service guarantee payment by service type and month.

Definition of the Categories:

- **Canceled**—Appointments canceled by either customers or PSE
- **Excused**—Appointments missed due to customer reasons or due to Major Events
- **Manual Kept**—Adjusted missed appointments resulting from review by the PSE personnel
- **Missed Approved**—Appointments missed due to PSE reasons and customers are paid the $50 Customer Service Guarantee payment
- **Missed Open**—Appointments not yet reviewed by PSE for the $50 Service Guarantee payment
- **Customer Service Guarantee Payment**—The total for the $50 Customer Service Guarantee payments made to customers for each missed approved appointment
- **System Kept**—Appointments in which PSE arrived at the customer site as promised
- **Total Appointments (Excludes Canceled and Excused)**—The total of Total Missed and Total Kept
- **Total Kept**—The total number of Manual Kept and System Kept
- **Total Missed**—The total number of Missed Approved, Missed Denied, and Missed Open

Table F1: SQI #10 and Customer Service Guarantee Payment Annual Summary for 2014

2014 SQI #10 and Customer Service Guarantee Payment Annual Summary											
	Total Appts (Exclude Canceled)	Missed Approved	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Canceled	Excused	Customer Service Guarantee Payment	Percent Kept (Exclude Canceled) Note
Electric											
Permanent Service	7,482	95	3	98	219	7,165	7,384	-	-	$4,750	99%
Reconnection	35,834	18	68	86	110	35,638	35,748	-	-	$900	100%
Sub-total	**43,316**	**113**	**71**	**184**	**329**	**42,803**	**43,132**	**-**	**-**	**$5,650**	**100%**
Gas											
Diagnostic	22,626	8	35	43	719	21,864	22,583	-	-	$400	100%
Permanent Service	10,127	114	4	118	375	9,634	10,009	-	-	$5,700	99%
Reconnection	12,566	3	40	43	103	12,420	12,523	-	-	$150	100%
Sub-total	**45,319**	**125**	**79**	**204**	**1,197**	**43,918**	**45,115**	**-**	**-**	**$6,250**	**100%**
Grand	**88,635**	**238**	**150**	**388**	**1,526**	**86,721**	**88,247**	**-**	**-**	**$11,900**	**100%**

Note: Results shown are rounded to the nearest whole percentage per UTC order for performance calculation and comparison to the benchmark. However, these 100% monthly performance results do not reflect that PSE met all its appointments during the reporting period.

Table F2: SQI #10 and Customer Service Guarantee Payment Annual Details for 2014

2014 SQI #10 and Customer Service Guarantee Payment Monthly Details												
Month	Fuel	Type	Total Appts (Exclude Canceled and Excused)	Missed Approved	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Canceled	Excused	Customer Service Guarantee Payment
Jan-14	Electric	Permanent Service	640	2	0	2	11	627	638	0	0	$100
Jan-14	Electric	Reconnection	2,596	0	6	6	8	2,582	2,590	0	0	$0
Jan-14	Gas	Diagnostic	2,480	0	2	2	102	2,376	2,478	0	0	$0
Jan-14	Gas	Permanent Service	897	24	0	24	60	813	873	0	0	$1,200
Jan-14	Gas	Reconnection	1,271	2	5	7	10	1,254	1,264	0	0	$100
Jan-14 Total			**7,884**	**28**	**13**	**41**	**191**	**7,652**	**7,843**	**0**	**0**	**$1,400**
Feb-14	Electric	Permanent Service	534	7	0	7	15	512	527	0	0	$350
Feb-14	Electric	Reconnection	2,054	1	6	7	4	2,043	2,047	0	0	$50
Feb-14	Gas	Diagnostic	2,626	2	3	5	120	2,501	2,621	0	0	$100
Feb-14	Gas	Permanent Service	744	9	0	9	37	698	735	0	0	$450
Feb-14	Gas	Reconnection	988	0	2	2	3	983	986	0	0	$0
Feb-14 Total			**6,946**	**19**	**11**	**30**	**179**	**6,737**	**6,916**	**0**	**0**	**$950**
Mar-14	Electric	Permanent Service	620	9	2	11	5	604	609	0	0	$450
Mar-14	Electric	Reconnection	3,381	2	5	7	13	3,361	3,374	0	0	$100
Mar-14	Gas	Diagnostic	1,962	1	1	2	44	1,916	1,960	0	0	$50
Mar-14	Gas	Permanent Service	761	5	0	5	21	735	756	0	0	$250
Mar-14	Gas	Reconnection	1,010	0	5	5	9	996	1,005	0	0	$0
Mar-14 Total			**7,734**	**17**	**13**	**30**	**92**	**7,612**	**7,704**	**0**	**0**	**$850**

Table continues on next page.

2014 SQI #10 and Customer Service Guarantee Payment Monthly Details												
Month	Fuel	Type	Total Appts (Exclude Canceled and Excused)	Missed Approved	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Canceled	Excused	Customer Service Guarantee Payment
Apr-14	Electric	Permanent Service	610	4	0	4	18	588	606	0	0	$200
Apr-14	Electric	Reconnection	3,970	2	2	4	9	3,957	3,966	0	0	$100
Apr-14	Gas	Diagnostic	1,573	2	5	7	36	1,530	1,566	0	0	$100
Apr-14	Gas	Permanent Service	829	1	0	1	30	798	828	0	0	$50
Apr-14	Gas	Reconnection	1,155	1	1	2	9	1,144	1,153	0	0	$50
Apr-14 Total			**8,137**	**10**	**8**	**18**	**102**	**8,017**	**8,119**	**0**	**0**	**$500**
May-14	Electric	Permanent Service	609	2	1	3	4	602	606	0	0	$100
May-14	Electric	Reconnection	3,539	4	3	7	10	3,522	3,532	0	0	$200
May-14	Gas	Diagnostic	1,109	2	2	4	31	1,074	1,105	0	0	$100
May-14	Gas	Permanent Service	849	7	0	7	34	808	842	0	0	$350
May-14	Gas	Reconnection	877	0	8	8	5	864	869	0	0	$0
May-14 Total			**6,983**	**15**	**14**	**29**	**84**	**6,870**	**6,954**	**0**	**0**	**$750**
Jun-14	Electric	Permanent Service	677	3	0	3	16	658	674	0	0	$150
Jun-14	Electric	Reconnection	3,975	1	12	13	10	3,952	3,962	0	0	$50
Jun-14	Gas	Diagnostic	990	0	2	2	23	965	988	0	0	$0
Jun-14	Gas	Permanent Service	893	8	0	8	37	848	885	0	0	$400
Jun-14	Gas	Reconnection	1,061	0	0	0	8	1,053	1,061	0	0	$0
Jun-14 Total			**7,596**	**12**	**14**	**26**	**94**	**7,476**	**7,570**	**0**	**0**	**$600**

Table continues on next page.

2014 SQI #10 and Customer Service Guarantee Payment Monthly Details												
Month	Fuel	Type	Total Appts (Exclude Canceled and Excused)	Missed Approved	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Canceled	Excused	Customer Service Guarantee Payment
Jul-14	Electric	Permanent Service	**653**	3	0	3	32	618	650	0	0	$150
Jul-14	Electric	Reconnection	**3,356**	0	7	7	11	3,338	3,349	0	0	$0
Jul-14	Gas	Diagnostic	**934**	0	0	0	34	900	934	0	0	$0
Jul-14	Gas	Permanent Service	**811**	8	0	8	38	765	803	0	0	$400
Jul-14	Gas	Reconnection	**960**	0	2	2	9	949	958	0	0	$0
Jul-14 Total			**6,714**	**11**	**9**	**20**	**124**	**6,570**	**6,694**	**0**	**0**	**$550**
Aug-14	Electric	Permanent Service	**621**	5	0	5	27	589	616	0	0	$250
Aug-14	Electric	Reconnection	**3,192**	1	6	7	7	3,178	3,185	0	0	$50
Aug-14	Gas	Diagnostic	**864**	0	3	3	28	833	861	0	0	$0
Aug-14	Gas	Permanent Service	**818**	7	0	7	14	797	811	0	0	$350
Aug-14	Gas	Reconnection	**890**	0	1	1	4	885	889	0	0	$0
Aug-14 Total			**6,385**	**13**	**10**	**23**	**80**	**6,282**	**6,362**	**0**	**0**	**$650**
Sep-14	Electric	Permanent Service	**672**	15	0	15	22	635	657	0	0	$750
Sep-14	Electric	Reconnection	**3,085**	3	7	10	6	3,069	3,075	0	0	$150
Sep-14	Gas	Diagnostic	**1,433**	0	3	3	41	1,389	1,430	0	0	$0
Sep-14	Gas	Permanent Service	**852**	7	0	7	29	816	845	0	0	$350
Sep-14	Gas	Reconnection	**1,070**	0	4	4	8	1,058	1,066	0	0	$0
Sep-14 Total			**7,112**	**25**	**14**	**39**	**106**	**6,967**	**7,073**	**0**	**0**	**$1,250**

Table continues on next page.

2014 SQI #10 and Customer Service Guarantee Payment Monthly Details												
Month	Fuel	Type	Total Appts (Exclude Canceled and Excused)	Missed Approved	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Canceled	Excused	Customer Service Guarantee Payment
Oct-14	Electric	Permanent Service	**662**	9	0	9	22	631	653	0	0	$450
Oct-14	Electric	Reconnection	**3,112**	1	6	7	6	3,099	3,105	0	0	$50
Oct-14	Gas	Diagnostic	**2,596**	1	6	7	81	2,508	2,589	0	0	$50
Oct-14	Gas	Permanent Service	**1,001**	4	0	4	24	973	997	0	0	$200
Oct-14	Gas	Reconnection	**1,337**	0	5	5	14	1,318	1,332	0	0	$0
Oct-13 Total			**8,708**	**15**	**17**	**32**	**147**	**8,529**	**8,676**	**0**	**0**	**$750**
Nov-14	Electric	Permanent Service	**559**	28	0	28	29	502	531	0	0	$1,400
Nov-14	Electric	Reconnection	**1,593**	1	1	2	17	1,574	1,591	0	0	$50
Nov-14	Gas	Diagnostic	**3,269**	0	5	5	91	3,173	3,264	0	0	$0
Nov-14	Gas	Permanent Service	**813**	16	0	16	28	769	797	0	0	$800
Nov-14	Gas	Reconnection	**1,169**	0	6	6	16	1,147	1,163	0	0	$0
Nov-14 Total			**7,403**	**45**	**12**	**57**	**181**	**7,165**	**7,346**	**0**	**0**	**$2,250**
Dec-14	Electric	Permanent Service	**1,981**	2	7	9	9	1,963	1,972	0	0	$100
Dec-14	Electric	Reconnection	**2,790**	0	3	3	88	2,699	2,787	0	0	$0
Dec-14	Gas	Diagnostic	**859**	18	4	22	23	814	837	0	0	$900
Dec-14	Gas	Permanent Service	**778**	0	1	1	8	769	777	0	0	$0
Dec-14	Gas	Reconnection	**7,033**	**28**	**15**	**43**	**146**	**6,844**	**6,990**	**0**	**0**	**$1,400**
Dec-14 Total			**7,033**	**28**	**15**	**43**	**146**	**6,844**	**6,990**	**0**	**0**	**$1,400**
Grand Total			**88,635**	**238**	**150**	**388**	**1,526**	**86,721**	**88,247**	**0**	**0**	**$11,900**

G

Customer Awareness of Customer Service Guarantee

PSE undertook the following actions in 2014 to promote customer awareness of its Customer Service Guarantee program (the Guarantee).

1. Service Guarantee information was included in the following issues o fcustomer newsletters[19]: January 2014, April 2014, July 2014, and December 2014.
2. The text of the Guarantee appeared on the back of the bill-stock throughout 2014.
3. A description of the Guarantee has been in the natural gas and the electric customer "rights and responsibilities" brochures since 2004. The brochures have been distributed to all new customers and existing customers upon request in 2014. Both natural gas and electric brochures are also posted on www.PSE.com.
4. Other channels of communications for making customers aware of the Service Guarantee were made available to customers in 2014, including:
   - Year-round presence on PSE.com
   - Rotating banners on PSE.com homepage
   - July and August 2014 outside bill statement envelopes and September and October 2014 return envelopes
   - Social media
5. PSE Customer Access Center continued to promote the Customer Service Guarantee in the following ways:
   - The Guarantee is included in PSE's online Quick Reference Manual. This manual is accessible 24/7 on PSE's intranet and is available to all customer services, gas field services, and new construction employees.
   - Prior to ending a telephone contact that involves an eligible reconnection or gas diagnostic service appointment being scheduled with a customer, the Customer Access Center representative (CSR) will give a short statement regarding the availability of the $50 missed appointment credit should the agreed upon time-frame for the appointment not be met by the company.
   - Customer Access Center representatives are provided with training and scripting on the Guarantee:
     "If we miss your customer service guarantee appointment under normal operating conditions, we will automatically credit your energy account with $50 – guaranteed."

[19] In 2013, PSE revamped and renamed the EnergyWise customer newsletter into "The Voice of myPSE." For regulatory compliance purposes, a brief reference to EnergyWise appears on the back page of the newsletter.

- PSE is taking measures to ensure that CSRs are trained on its policy to advise customers of the Guarantee before the end of any call in which an eligible appointment or commitment is made.

6. Other approaches used to inform customers of the Customer Service Guarantee include the natural gas and electric new service handbooks and brochures and PSE's website, PSE.com.

The results of customer awareness surveys are presented in Table G1.

Table G1: Customer Awareness of Customer Service Guarantee

		Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014
Field Service Operations Transactions Customer Satisfaction Survey													
Q26A. When you called to make the appointment for a service technician to come out, did the customer service representative tell you about PSE $50 Service Guarantee?	Yes	95	69	71	51	62	69	70	50	57	55	69	65
	No	129	91	99	94	115	94	106	117	100	117	100	102
	Don't Know	63	38	45	53	52	56	56	51	40	61	33	46
	Refused Response	3	-	-	3	1	-	-	-	3	-	1	1
	Total Customers Surveyed	**290**	**198**	**215**	**201**	**230**	**219**	**232**	**218**	**200**	**233**	**203**	**214**
Q26C. Which of the following best fits your understanding of how the service guarantee works if a scheduled appointment has to be changed by PSE.	You are given the $50 service guarantee if the rescheduled time causes you inconvenience.	34	26	194	23	24	30	26	20	17	22	24	17
	Whenever PSE changes an appointment, you are given the $50.	37	36	39	18	25	25	26	26	23	23	24	37
	You have no understanding or expectations about this part of the service guarantee plan.	161	93	90	120	137	109	126	133	117	153	114	127
	Don't Know	52	36	60	35	39	49	46	34	35	30	36	27
	Refused Response	3	8	6	5	5	6	8	5	8	5	5	6
	Total Customers Surveyed	**287**	**199**	**389**	**201**	**230**	**219**	**232**	**218**	**200**	**233**	**203**	**214**

Table continues on next page.

		Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014
CFS Survey													
Q26D. Did your appointment have to be rescheduled or did it occur as planned?	It occurred as planned.	258	188	200	185	217	202	218	203	187	217	190	199
	It was rescheduled.	14	6	9	7	6	7	6	8	8	9	10	9
	Technician arrived but was late.	-	-	2	2	-	1	1	1	-	1	2	-
	Don't Know	11	2	2	5	5	4	4	5	4	5	-	4
	Refused Response	3	2	-	2	2	5	3	1	1	1	1	2
	Total Customers Surveyed	**286**	**198**	**213**	**201**	**230**	**219**	**232**	**218**	**200**	**233**	**203**	**214**
Q26E. Who initiated rescheduling your appointment?	Myself (Customer Initiated)	11	5	8	2	4	5	4	5	5	6	6	5
	Puget Sound Energy (PSE) Initiated	3	1	1	3	2	2	1	2	3	3	4	3
	Don't Know	-	-	-	2	-	-	1	1	-	-	-	1
	Refused Response	-	-	-	-	-	-	-	-	-	-	-	-
	Total Customers Surveyed	**14**	**6**	**9**	**7**	**6**	**7**	**6**	**8**	**8**	**9**	**10**	**9**

H
Electric Reliability Terms and Definitions

Terms and Definitions

AMR—Automated Meter Reading system, which is a communication network capable of providing PSE with certain information pertaining to sustained outages automatically.

Area of Greatest Concern—An area targeted for specific actions to improve the level of service reliability or quality.

Cause Codes—Codes used to identify PSE's best estimation of what caused a Sustained Interruption to occur. The codes are listed below:

Code	Description	Code	Description
AO	Accident Other, with Fires	**FI**	Faulty Installation
BA	Bird or Animal	**LI**	Lightning
CP	Car Pole Accident	**SO**	Scheduled Outage (was WR − Work Required)
CR	Customer Request	**TF**	Tree − Off Right-of-Way
DU	Dig Up Underground	**TO**	Tree − On Right-of-Way
EF	Equipment Failure	**TV**	Trees/Vegetation
EO	Electrical Overload	**UN**	Unknown Cause (unknown equipment involved only)
EQ	Earthquake	**VA**	Vandalism

Commission Complaint—Any single-customer electric-service reliability complaint filed by a customer with the Washington Utilities and Transportation Commission (UTC).

Customer Complaint—Repeated Customer Inquiries relating to dissatisfaction with the resolution or explanation of a concern related to a Sustained Interruption or Power Quality. This is indicated by two or more recorded contacts in PSE's customer information system during current and prior years, whereby, after investigation by PSE, the cause of the concern is found to be on PSE's energy-delivery system.

Customer Count—The number of customers relative to focus on topic or data. The source of the data will be the outage reporting system that is a part of SAP, PSE's work management and financial information system.

Customer Inquiry—An event whereby a customer contacts the Customer Access Center to report a Sustained Interruption or Power Quality concern.

Duration of Sustained Interruption—The period, measured in minutes, hours or days, beginning when PSE is first informed the service to a customer has been interrupted and ending when the problem causing the interruption has been resolved, and the line has been re-energized. An interruption may require Step Restoration tracking to provide reliable index calculation. As an example, two trees could be down, one taking out a major feeder on a main street affecting numerous customers, another down the line in a side street, affecting only a few customers off the major feeder. When the major line is restored, and service to most customers is resumed, it is possible that the second tree will prevent resumption of service to the smaller group of customers. The Sustained Interruption associated with the second tree is treated as a separate incident for reporting and tracking purposes.

Equipment Codes

Code	Description	Code	Description
OCN	Overhead Secondary Connector	**OTF**	Overhead Transformer Fuse
OCO	Overhead Conductor	**OTR**	Overhead Transformer
OFC	Overhead Cut − Out	**UEL**	Underground Elbow
OFU	Overhead Line Fuse / Fuse Link	**UFJ**	Underground J – Box
OJU	Overhead Jumper Wire	**UPC**	Underground Primary Cable
OPO	Distribution Pole	**UPT**	Padmount Transformer
OSV	Overhead Service	**USV**	Underground Service

IEEE 1366—IEEE Standard 1366-2003, a guide approved and published by the Institute of Electrical and Electronics Engineers that defines electric power reliability indices and factors that affect their calculations.

Major Event—An event, such as a storm, that causes serious reliability problems. PSE utilizes two Major Event criteria to evaluate its reliability performance: 5% Exclusion Major Event Days and IEEE 1366 T_{MED} Exclusion Major Event Days.

Major Event Days—Days when outage events can be excluded from the reliability performance calculation. The two types of Major Event Days are:

- **5% Exclusion Major Event Days**—Days that five% or more of electric customers are experiencing an electric outage during a 24-hour period and subsequent days when the service to those customers is being restored
- **IEEE 1366 T_{MED} Exclusion Major Event Days**—Any days in which the daily system SAIDI exceeds the threshold value, T_{MED}.

Outage—The state of a system component when it is not available to perform its intended function, due to some event directly associated with that component. For the most part, a component's unavailability is considered an outage when it causes a sustained interruption of service to customers. The system component can be transmission, distribution or customer owned if it causes a sustained interruption to other customers.

Power Quality—Industry standards are not broad enough to define power quality or how and when to measure it. For purposes of this plan, power quality includes all other physical characteristics of electrical service except for Sustained Interruptions, including momentary outages, voltage sags, voltage flicker, harmonics and voltage spikes.

SAIDI—System Average Interruption Duration Index—This index is commonly referred to as customer-minutes of interruption (CMI) or customer hours, and is designed to provide information about the average time the customers are interrupted. The measurements used in PSE's Plan and reporting include Total methodology ($SAIDI_{Total}$), Total with five-year-rolling average methodology ($SAIDI_{Total\ 5\text{-}year\ Average}$), 5% exclusion methodology ($SAIDI_{5\%}$), and IEEE methodology ($SAIDI_{IEEE}$). The performance results for each of the measurement will be calculated according to the following:

$$\mathbf{SAIDI_{Total}} = \frac{\sum \textit{All customer interruption minutes}}{\textit{Average annual electric customer count}}$$

$SAIDI_{Total\ 5\text{-}year\ Average}$= Rolling five-year average of current year Annual $SAIDI_{Total}$ and prior four years Annual $SAIDI_{Total}$ results, excluding any exclusion that has been approved by the UTC. Exclusions will be replaced by preceding Annual $SAIDI_{Total}$ performance results until there are five years included in the calculation of current year $SAIDI_{Total\ 5\text{-}year\ Average}$

$$\mathbf{SAIDI_{5\%}} = \frac{\sum \textit{Customer interruption minutes during non-5\%-Exclusion-Major-Event-Days}}{\textit{Average annual electric customer count}}$$

$$\mathbf{SAIDI_{IEEE}} = \frac{\sum \textit{Customer interruption minutes during non-IEEE-1366-}T_{MED}\textit{-Exclusion-Major-Event Days}}{\textit{Average annual electric customer count}}$$

SAIFI—System Average Interruption Frequency Index—This index is designed to give information about the average frequency of sustained interruptions per customers over a predefined area. The measurements used in PSE's Plan and reporting include Total methodology ($SAIFI_{Total}$), Total with five-year-rolling average methodology ($SAIFI_{Total\ 5\text{-}year\ Average}$), 5% exclusion methodology ($SAIFI_{5\%}$) and IEEE methodology ($SAIFI_{IEEE}$). The performance results for each of the measurement will be calculated according to the following:

$$\mathbf{SAIFI_{Total}} = \frac{\textit{Total number of customers that experienced Sustained Interruptions}}{\textit{Average annual electric customer count}}$$

$SAIFI_{Total\ 5\text{-}year\ Average}$= Rolling five-year average of current year Annual Total SAIFI and prior four years Annual Total SAIFI results, excluding any exclusion that has been approved by the UTC. Exclusions will be replaced by preceding Annual Total SAIFI performance results until there are five years included in the calculation of current year $SAIFI_{Total\ 5\text{-}year\ Average}$

$SAIFI_{5\%}$=

$$\frac{\text{No. of customers that experienced Sustained Interruptions during non-5\%-Exclusion-Major-Event-Days}}{\text{Average annual electric customer count}}$$

$SAIFI_{IEEE}$=

$$\frac{\text{No. of customers that experienced Sustained Interruptions during non-IEEE-1366-}T_{MED}\text{-Exclusion-Major-Event-Days}}{\text{Average annual electric customer count}}$$

SQ—PSE's Service Quality Program was first established per conditions of the Puget Power and Washington Natural Gas merger in 1997 under Docket Number UE-960195. The SQ Program has been since extended and modified in Docket Numbers UE-011570 and UG-011571 (consolidated), Docket Number UE-031946, and Docket Numbers UE-072300 and UG-072301 (consolidated).

Step Restoration—The restoration of service to blocks of customers in an area until the entire area or feeder is restored.

Sustained Interruption—Any interruption not classified as a momentary event. PSE records any interruption longer than one minute as a Sustained Interruption.

T_{MED}—The Major Event Day identification threshold value that is calculated at the end of each reporting year for use during the next reporting year. It is determined by reviewing the past five years of daily system SAIDI, and using the IEEE 1366 2.5 beta methodology in calculating the threshold value. Any days having a daily system SAIDI greater than T_{MED} are days on which the energy-delivery system experienced stresses beyond those normally expected, which are classified as Major Event Days.

$T_{MED} = e^{(\alpha + 2.5\beta)}$ where α is the log-average of the data set and β is the log-standard deviation of the data set.

I
Electric Reliability Data Collection Process and Calculations

Data Collection—Methods and Issues

This appendix discusses data collection methods and issues. It explains how the various data were collected. Changes in methods from prior reporting periods are highlighted and the impact of the new method on data accuracy is discussed.

In April 2013, PSE implemented new OMS and CIS systems which replaced the functionality provided by the outage management system included in CLX. CIS and SAP replaces the functionality provided by CLX in recording PSE's customer inquiries concerning reliability and power quality. Due to change in data sources and business processes with OMS, PSE recognizes that data integrity will be affected for a period of time until business processes and systems are stabilized. Starting in the second quarter of 2014, one year after implementation of OMS, PSE began analyzing the data to identify data impact changes. This analysis continues as the business processes and systems are moving through the stabilization period.

Methods for Identifying when a Sustained Interruption Begins

The following methods are used to determine the beginning point of an interruption:

- A customer calls to PSE's Customer Access Center, either through the automated voice response unit or talking with a customer representative.
- A customer calls to a PSE employee other than through the Customer Access Center.
- A customer logging into their online PSE account and reporting an outage.
- A substation breaker operation that is reflected in OMS based on a SCADA interface.
- Automated system information from PSE's AMR system (may precede customer call).

Possible Causes of Data Inconsistencies

- If service to a customer affected by a service interruption remains out after the interruption has been corrected, a follow-up call from the customer may be reported as a new incident.
- Data entry mistakes can create inconsistencies.
- During large storms less time is spent recording accurate data up-front while more effort is spent on restoring service.

Methods to Specify When the Duration of a Sustained Interruption Ends

The following methods are used to determine the ending point of an interruption:

- PSE Service personnel will log the time when customers are restored.

Possible Causes of Data Inconsistencies

- Multiple layers of issues may be contributing to a Sustained Interruption for a specific customer as described in the definition of Duration of Sustained Interruption.
- Data entry errors can affect the accuracy of the information.
- Getting consistent feedback from the field personnel responding to the outage.

Recording Cause Codes

- Outage cause codes are reported by the PSE service technician responding to the outage location.

Possible Causes of Data Inconsistencies

- During large storms less time is spent recording accurate data up-front while more effort is spent on restoring service.
- Restoration efforts take precedence over pinpointing the exact cause and location of the outage, especially in cross-country terrain or in darkness.
- A series of outages affecting a group or groups of customers at the same time or approximate times with several causes are difficult to capture.

Recording and Tracking Customer Complaints

- The CSR in PSE's Customer Access Center handling the call listens for key words and then categorizes the customer comments accordingly.
  - The CSR creates a Service Miscellaneous request for the appropriate PSE personnel to contact the customer and discuss their concerns.
  - All contact is tracked as an interaction record in PSE's Customer Information System (CIS) and Service Miscellaneous Notification in PSE's SAP System and counted as a Customer Inquiry for electric reliability reporting purposes.
  - When two or more Customer Inquiries on outage frequency or duration and/or power quality have been recorded in SAP from a customer during current and prior reporting years, these Customer Inquiries together will be considered as a PSE "Customer Complaint."

Possible Causes of Data Inconsistencies

- Data entry errors from the initial inquiry or during the feedback loop can affect the accuracy of the information.
- High volumes of customer inquiries, during storms for example, may increase likelihood of data entry errors.

Change in Definitions and Calculations

This section describes the methodology used in defining and calculating reliability metrics, which are then used to evaluate performance. The UTC in WAC 480-100-398 (2) requires a utility to report changes made in this methodology including data collection and calculation of reliability information after the initial baselines are set. The utility must explain why the changes occurred and how the change is expected to affect comparisons of the newer and older information.

Change to Include the IEEE Methodology

In the 2004 Annual Electric Service Reliability Report, PSE indicated that starting in 2005, reliability metrics using the IEEE standard 1366 methodology as a guideline would be included. This change and other modifications for monitoring and reporting electric service reliability information were adopted by PSE in UE-060391. The purpose for moving to the IEEE standard 1366 methodology is to

- Provide uniformity in reliability indices
- Identify factors which affect these indices
- Aid in consistent reporting practices among utilities

T_{MED} (Major Event Day Threshold) is the reliability index that facilitates this consistency. A detailed equation for calculating T_{MED} is provided in Appendix H: *Electric Reliability Terms and Definitions*.

While the IEEE guidelines provide a standard for the industry, companies can create a variety of definitions of an outage or sustained outage.

- PSE defines sustained outages as those lasting longer than one minute
- IEEE defines a sustained outage to be longer than five minutes

PSE will continue to use the one minute definition as PSE believes that tracking shorter duration outages allows us to better monitor the performance of the electric system and subsequently assess potential system improvements. It is also consistent with the definition of an outage used in the SQI methodology.

Changes for 2010 and Subsequent Years Reporting

In 2010, PSE met with the UTC staff to enhance the format of the Electric Service Reliability report and the reliability statistics information provided. Specific enhancements included clarification of baseline statistics and detailed comparison of and expanded set of reliability metrics. This annual report reflects all these reporting enhancements and the SQI SAIDI performance and benchmark calculation changes approved by the UTC.

Baseline Data Reliability Statistics

Pursuant to the WAC Electric Service Reliability requirements, PSE establishes 2003 as its baseline year as the performance from the year was about average for each of the reliability measurements. However, PSE would rather develop a baseline using multiple years to

mitigate the fluctuation of weather conditions and other external factors. PSE feels there is limited usefulness in designating one specific year's information as a "baseline" and cautions against the use of a single year's data to assess year-to-year system reliability trends.

Timing of Annual Report Filings

PSE will be reporting data and information on a calendar year basis. PSE's annual Electric Service Reliability report will be filed as part of the annual SQI and Electric Service Reliability report with the UTC no later than the end of March of each year.[20]

Tree-Related Outage Codes

PSE conducted a review of tree-related outages and the use of the tree on-right-of-way (TO) and tree off-right-of-way (TF) cause codes on outage notifications. However, it was found that during an outage it was difficult for field personnel to accurately assess the correct use of TF and TO cause codes.

As a result, PSE created a new outage cause code, Trees/Vegetation (TV) and revised the tree-related outage coding process. After a tree-related outage has occurred on a transmission line or causes a complete distribution circuit outage, a certified arborist field-verifies if the tree was on- or off-right-of-way and the correct code is added to the outage notification. All other tree-related outages are coded as TV.

PSE complaints

The business process for recording customer inquiries changed with the new CIS implementation. For the 2014 reporting, PSE used the Service Notification (SM) records pertaining to outage duration/frequency or power quality for reporting the number of PSE complaints for the last two calendar years. PSE feels that using this new method of data collection provides a more complete assessment of customer inquiries pertaining to reliability and power quality concern.

Areas of Greatest Concern

This section of the annual reporting includes information on specific areas PSE is targeting for specific actions to enhance the level of service reliability. For 2013, PSE designates the Areas of Greatest Concern as the 50 worst-performing circuits[21] over the previous five years that rank worst in terms of customer interruption minutes.

- Each circuit is first ranked by the annual total customer interruption minutes seen by the circuit for each of the previous five years.
- The yearly ranking results are then averaged to determine the overall 50 worst-performing circuits over the past five years.

[20] Order 17 of consolidated Docket Numbers UE-072300 and UG-072301, page 10, section 26.

[21] This definition of Areas of Concern became effective in 2012 considering the trend in system performance based on circuits that exceed the SQI, number of customers affected by those circuits and the number of complaints.

The following information will be reported on each of these areas:

- Identification of each Area of Greatest Concern.
- Explanation of the specific actions PSE plans to take in each Area of Greatest Concern to improve the service in each area during the coming year.

Exclusion Events

Per Docket Number UE-072300, PSE can petition to exclude certain annual results or outage minutes from the performance calculation for the current year and years following that will be affected. PSE must demonstrate that event was unusual or exceptional and that PSE's level of preparedness and response was reasonable. The UTC has granted the following events to be considered extraordinary:

- Total SAIDI results for 2006.
- January 2012 Storm Event.

J
Current Year Electric Service Outage by Cause by Area

This appendix details the 2014 Outage Cause by County. In Tables J1 through J3 color codes indicate which major outage category the outage cause is grouped into. The Cause Code definitions can be found in Appendix H: *Electric Reliability Terms and Definitions*.

Table J1: Color Code Legend

Color Code Legend
Preventable
Third Party (Non-Tree)
Tree Related

Table J2: Total Outages by Cause

	Northern			King/Kittitas		Southern/Western			
	Whatcom	Skagit	Island	King	Kittitas	Pierce	Thurston	Kitsap	Total
AO	32	9	11	95	3	21	27	13	211
BA	154	109	31	703	41	101	170	169	1,478
CP	22	27	7	82	5	21	40	12	216
CR	5	2	0	63	2	10	14	14	110
DU	15	6	8	80	10	15	13	19	166
EF	548	312	232	2,066	115	401	588	465	4,727
EO	40	24	13	112	10	16	33	29	277
EQ	0	0	0	0	0	0	0	0	0
FI	3	3		23	1	6	7	8	51
LI	1	9	5	25	22	2	8	2	74
SO	133	84	45	593	29	93	174	148	1,299
TF	11	8	5	47	5	13	10	61	160
TO	9	2		31		3	5	16	66
TV	624	371	378	1,926	61	314	514	957	5,145
UN	60	58	17	275	10	40	84	169	713
VA	0	0	0	5	1	4	1	2	13
Misc[Note]	35	12	6	83	3	14	21	22	196
Total	1,692	1,036	758	6,209	318	1,074	1,709	2,106	14,902

Note: Miscellaneous causes are included in both Preventable and Third Party (Non-Tree) categories

Table J3: 5% Exclusion Outages by Cause (Non-major-storm)

	Northern			King/Kittitas		Southern/Western			
	Whatcom	Skagit	Island	King	Kittitas	Pierce	Thurston	Kitsap	Total
AO	32	9	11	95	2	21	26	13	209
BA	150	107	30	692	41	100	168	169	1,457
CP	21	25	7	79	5	19	38	12	206
CR	5	2	0	62	2	9	14	14	108
DU	14	6	8	79	10	15	12	19	163
EF	508	285	214	1,916	110	359	531	435	4,358
EO	35	16	11	90	9	13	23	19	216
EQ	0	0	0	0	0	0	0	0	0
FI	2	3	0	21	1	4	7	7	45
LI	1	9	5	24	22	2	8	2	73
SO	127	83	45	588	29	93	172	145	1,282
TF	11	7	4	45	3	13	6	56	145
TO	9	2	0	29	0	3	3	13	59
TV	480	231	165	683	38	129	227	421	2,374
UN	55	53	15	190	10	32	36	87	478
VA	0	0	0	5	1	4	1	1	12
Misc[Note]	27	11	4	76	3	12	20	19	172
Total	1,477	849	519	4,674	286	828	1,292	1,432	11,357

Note: Miscellaneous causes are included in both Preventable and Third Party (Non-Tree) categories

K
Historical SAIDI and SAIFI by Area

This appendix details in Table K1, the three-year history of SAIDI and SAIFI data by county.

Table K1: SAIDI and SAIFI Data for the Past Three Years by County [Note]

Region/County	Year	SAIFI Total	SAIFI Total 5-year Average	SAIFI 5%	SAIFI IEEE	SAIDI Total	SAIDI Total 5-year Average	SAIDI 5%	SAIDI IEEE
Northern									
Whatcom	2014	1.57	0.90	1.26	1.08	314	160	235	181
	2013	0.66	0.80	0.64	0.65	100	145	95	97
	2012	0.62	0.82	0.56	0.55	113	149	106	101
Skagit	2014	2.07	1.55	1.50	1.42	493	314	333	274
	2013	1.85	1.32	1.71	1.74	322	284	278	281
	2012	1.59	1.21	1.46	1.51	317	258	292	298
Island	2014	2.95	1.52	1.23	1.36	1197	454	233	272
	2013	1.27	1.62	1.01	1.05	187	298	132	138
	2012	1.06	1.59	0.81	0.95	226	291	111	202
King/Kittitas									
King	2014	1.72	1.19	0.86	0.83	590	511	135	120
	2013	1.00	0.93	0.68	0.69	221	181	101	103
	2012	1.50	0.91	0.73	0.65	1433	169	99	86
Kittitas	2014	2.94	1.86	2.26	2.29	639	266	428	520
	2013	1.47	1.81	1.27	1.27	198	215	164	167
	2012	1.68	1.66	1.61	1.60	161	210	120	118

Note: Reported figures are based on most current SAP outage data, as of January 2015.

Table continues on next page.

Region/County	Year	SAIFI Total	SAIFI Total 5-year Average	SAIFI 5%	SAIFI IEEE	SAIDI Total	SAIDI Total 5-year Average	SAIDI 5%	SAIDI IEEE
Southern/Western									
Pierce	2014	1.70	1.44	1.05	1.12	290	830	147	128
	2013	0.90	1.07	0.81	0.81	137	179	120	120
	2012	2.36	1.06	0.88	0.76	3280	206	115	94
Thurston	2014	1.67	1.68	0.89	0.68	498	905	168	113
	2013	0.90	1.07	0.81	0.81	137	179	120	120
	2012	2.36	1.06	0.88	0.76	3280	206	115	94
Kitsap	2014	2.87	2.35	1.45	1.44	607	628	197	213
	2013	2.02	2.26	1.39	1.37	324	593	150	154
	2012	1.49	2.31	1.29	1.23	243	622	204	185

L
1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements

This appendix presents PSE SAIFI and SAIDI performance from 1997 through the current year using different measurements.

1997-2014 PSE SAIFI Performance in Different Measurements
(Average number of interruptions per year per customer)

Calendar Year	(a) Annual SAIFI Excluding Any Days That 5% or More Customers Are w/o Power	(b) Annual IEEE SAIFI Excluding Daily Results over T_{MED}	(c) Annual Total SAIFI Results: No Exclusions	(d) Annual Total SAIFI Results with Exclusions	(e) Total SAIFI 5-Year Rolling Annual Average with Exclusions
1997	1.04	1.11	1.53	1.53	
1998	0.85	0.92	1.42	1.42	
1999	0.98	0.96	1.88	1.88	
2000	0.85	0.91	1.32	1.32	
2001	0.98	0.79	1.34	1.34	1.50
2002	0.83	0.80	1.07	1.07	1.41
2003	0.80	0.71	1.24	1.24	1.37
2004	0.77	0.77	1.09	1.09	1.21
2005	0.94	0.93	1.18	1.18	1.18
2006	1.23	1.05	2.52		
2007	0.98	0.91	1.42	1.42	1.20
2008	1.01	0.98	1.12	1.12	1.21
2009	1.09	0.94	1.24	1.24	1.22
2010	0.86	0.87	1.59	1.59	1.31
2011	1.02	1.02	1.07	1.07	1.29
2012	0.92	0.83	1.62	0.92	1.19
2013	0.86	0.86	1.13	1.13	1.19
2014	1.05	1.00	1.89	1.89	1.32

Figure L1: 1997–2014 SAIFI Performance by Different Measurements

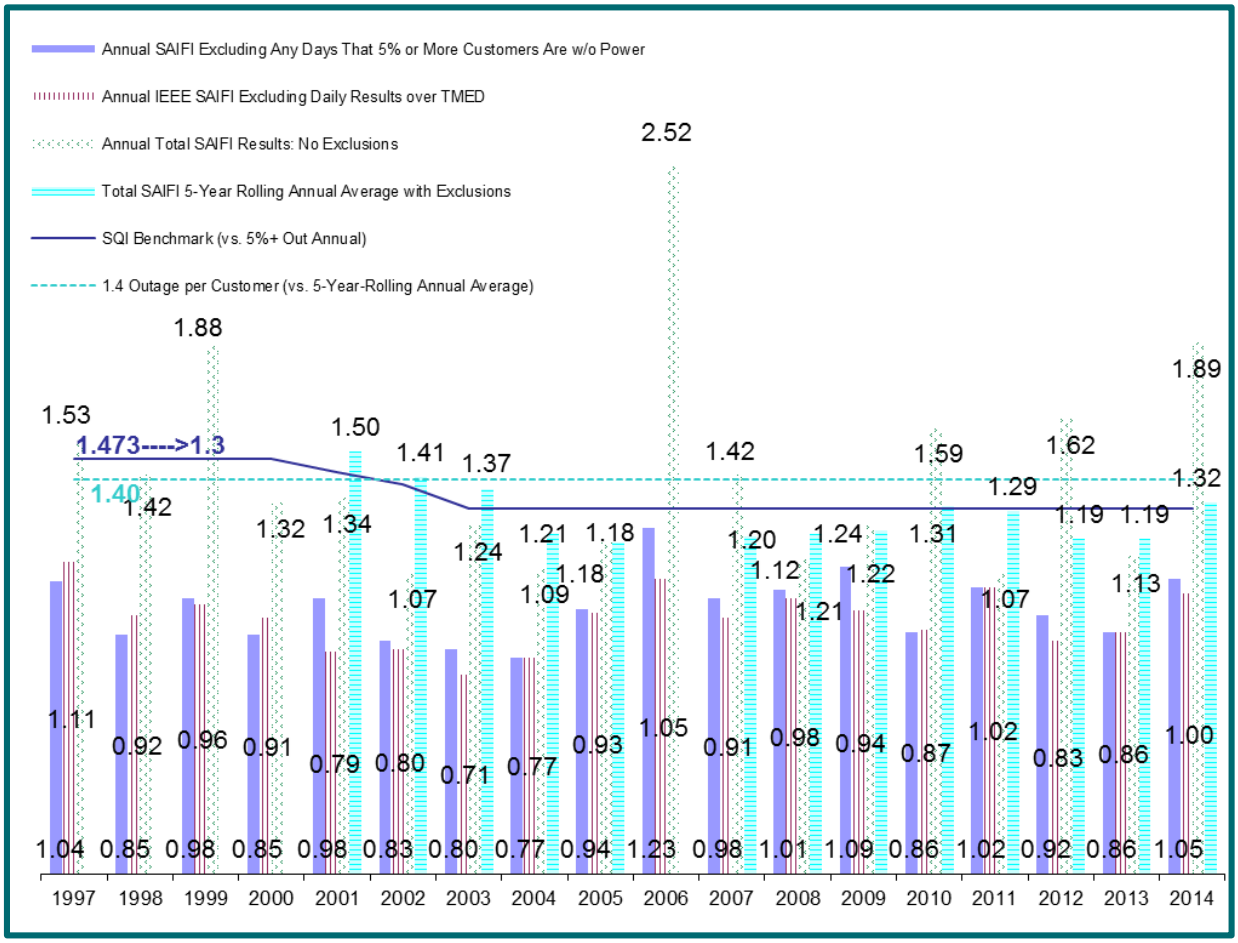

Figure L2: 1997–2014 SAIFI Performance by Different Measurements

1997-2014 PSE SAIDI Performance in Different Measurements
(Average number of outage minutes per customer per year)

Calendar Year	(a) Annual SAIDI Excluding Any Days That 5% or More Customers Are w/o Power	(b) Annual IEEE SAIDI Excluding Daily Results over T_{MED}	(c) Annual Total SAIDI Results: No Exclusions	(d) Annual Total SAIDI Results with Exclusions	(e) Total SAIDI 5-Year Rolling Annual Average with Exclusions
1997	105	109	202	202	
1998	117	119	383	383	
1999	131	118	388	388	
2000	103	111	253	253	
2001	147	110	240	240	293
2002	106	99	215	215	296
2003	132	106	532	532	326
2004	114	115	302	302	308
2005	128	124	192	192	296
2006	213	163	2,636		
2007	167	143	312	312	311
2008	163	155	202	202	308
2009	190	145	215	215	245
2010	129	124	512	512	287
2011	144	144	163	163	250
2012	134	120	1,400	134	245
2013	122	125	209	209	247
2014	173	154	540	540	312

Figure L3: 1997–2014 SAIDI Performance by Different Measurements

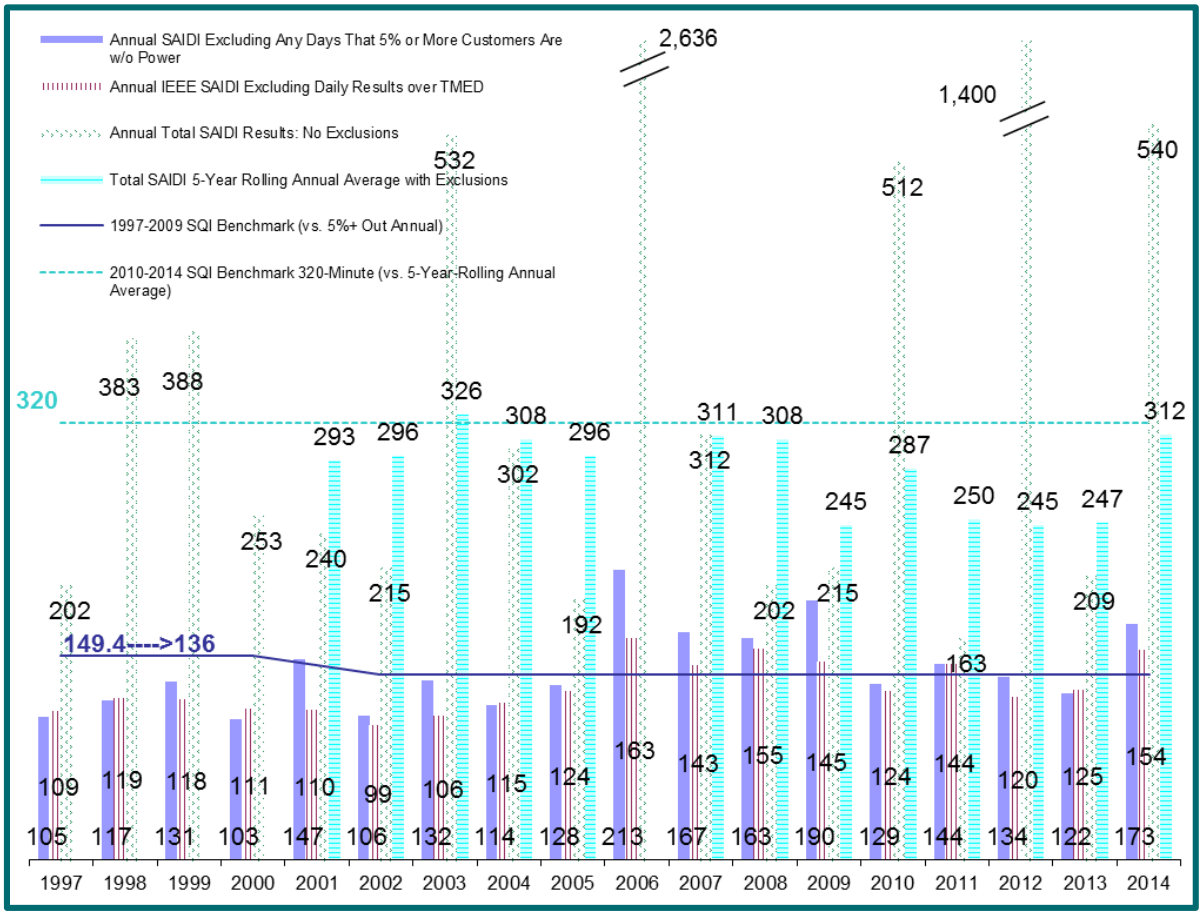

Figure L4: 1997–2014 SAIDI Performance by Different Measurements

M
Current-Year Commission and Rolling-Two-Year PSE Customer Electric Service Reliability Complaints with Resolutions

This appendix lists, in Tables M1 and M2, the current-year UTC and rolling-two year PSE customer electric service reliability complaints with resolutions.

Table M1: Current Year Commission Complaints

No.	Complaint Type	Date of Complaint	Location	Closing Date
1	Reliability	1/22/2014	Kirkland	2/5/2014
2	Reliability	1/22/2014	Kirkland	2/4/2014
3	Reliability	1/22/2014	Kirkland	2/5/2014
4	Reliability	1/22/2014	Kirkland	2/5/2014
5	Reliability	1/22/2014	Kirkland	2/4/2014
6	Reliability	2/3/2014	Olympia	3/28/2014
7	Reliability	2/7/2014	Bellevue	3/26/2014
8	Reliability	7/8/2014	Bainbridge Island	7/16/2014
9	Reliability	9/24/2014	Preston	10/2/2014
10	Reliability	10/26/2014	Blaine	1/7/2015
11	Reliability	10/27/2014	Bellevue	12/2/2014
12	Reliability	10/28/2014	Bellevue	11/25/2014
13	Reliability	10/28/2014	Bellevue	11/26/2014
14	Reliability	11/14/2014	Kent	[still open]
15	Reliability	11/26/2014	Vashon	12/26/2014
16	Reliability	12/10/2014	Redmond	[still open]
17	Reliability	12/15/2014	Olympia	1/5/2015
18	Power Quality	8/14/2014	Federal Way	8/29/2014

Table M2: Rolling-Two-Year PSE Customer Electric Service Reliability Complaints with Resolutions (Sorted by County)

No.	County	Date of Complaint	Location	Complaint Type	Circuit	Response	Action by PSE
1	King	Jan 2014 Jan 2014	Auburn	Reliability	Edgewood-12	Contacted customer to discuss concerns.	Ongoing circuit maintenance and monitoring will continue.
2	King	Mar 2014 Mar 2014	Auburn	Reliability	Ellingson-16	Contacted customer to discuss concerns.	A system project with estimated completion in 2015 will provide reliability improvement. Ongoing circuit monitoring and maintenance will continue.
3	King	Sep 2013 Nov 2013	Bellevue	Reliability	Factoria-13	Reported in 2013. No new inquiries in 2014.	Ongoing circuit monitoring and maintenance will continue.
4	King	Oct 2014 Oct 2014	Bellevue	Reliability	Lake Hills-22	Contacted customer to discuss concerns.	Two system projects with estimated completion in 2015 will provide reliability improvement. Ongoing circuit monitoring and maintenance will continue.
5	King	Nov 2013 Oct 2014 Oct 2014	Bellevue	Reliability	Lake Hills-22	Contacted customer to discuss concerns.	Two system projects with estimated completion in 2015 will provide reliability improvement. Ongoing circuit monitoring and maintenance will continue.
6	King	Feb 2014 Jul 2014	Bellevue	Reliability	Clyde Hill-23	Contacted customer to discuss concerns.	A system project is planned which will provide additional reliability improvement. Ongoing circuit maintenance and monitoring will continue.

No.	County	Date of Complaint	Location	Complaint Type	Circuit	Response	Action by PSE
7	King	Oct 2014 Nov 2014	Bellevue	Reliability	Factoria-13	Contacted customer to discuss concerns.	Two system projects are planned which will provide additional reliability improvement. Ongoing circuit maintenance and monitoring will continue.
8	King	Nov 2014 Nov 2014	Duvall	Reliability	Duvall-12	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
9	King	Jul 2013 Aug 2013 Aug 2013 Sep 2013	Issaquah	Power Quality Reliability	West Issaquah-15	Reported in 2013. No new inquiries in 2014.	Ongoing circuit monitoring and maintenance will continue.
10	King	Mar 2014 Oct 2014	Issaquah	Reliability	Mirrormont-13	Contacted customer to discuss concerns.	Ongoing circuit maintenance and monitoring will continue.
11	King	Sep 2013 Nov 2013	Kirkland	Reliability	Juanita-25	Contacted customer to discuss concerns.NOte	A system project with estimated completion in 2015 will provide reliability improvement. Ongoing circuit monitoring and maintenance will continue.
12	King	Sep 2013 Oct 2013 Nov 2013	Kirkland	Reliability	Juanita-14	Contacted customer to discuss concerns.Note	Ongoing circuit monitoring and maintenance will continue.
13	King	Nov 2013 Nov 2014	Kirkland	Reliability	Bridle Trails-22	Contacted customer to discuss concerns.	A system project is being evaluated for feasibility and cost effectiveness. Ongoing circuit monitoring and maintenance will continue.

[1]Complaints were not reported in 2013 report

No.	County	Date of Complaint	Location	Complaint Type	Circuit	Response	Action by PSE
14	King	Oct 2013 Nov 2013	Kirkland	Reliability	Juanita-25	Contacted customer to discuss concerns. Note	A system project with estimated completion in 2015 will provide reliability improvement. Ongoing circuit monitoring and maintenance will continue.
15	King	Nov 2013 Feb 2014	Kirkland	Reliability	Juanita-25	Contacted customer to discuss concerns.	A system project with estimated completion in 2015 will provide reliability improvement. Ongoing circuit monitoring and maintenance will continue.
16	King	Nov 2013 Jan 2014 Feb 2014	Kirkland	Reliability	Juanita-14	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
17	King	Jan 2014 Oct 2014	Kirkland	Reliability	Inglewood-15	Contacted customer to discuss concerns.	A system project is being evaluated for feasibility and cost effectiveness. Ongoing circuit monitoring and maintenance will continue.
18	King	Jan 2014 May 2014	Mercer Island	Reliability	South Mercer-12	Contacted customer to discuss concerns.	A system project with estimated completion in 2015 will provide reliability improvement. Ongoing circuit monitoring and maintenance will continue.
19	King	Sep 2014 Oct 2014	Redmond	Power Quality	Plateau-21	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.

Note: Complaints were not reported in 2013 report

No.	County	Date of Complaint	Location	Complaint Type	Circuit	Response	Action by PSE
20	King	Jun 2014 Jun 2014	Redmond	Reliability	Spiritbrook-16	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
17	King	Jan 2014 Oct 2014	Kirkland	Reliability	Inglewood-15	Contacted customer to discuss concerns.	A system project is being evaluated for feasibility and cost effectiveness. Ongoing circuit monitoring and maintenance will continue.
21	King	Jul 2014 Jul 2014	Sammamish	Power Quality	Pine Lake-25	Contacted customer to discuss concerns.	Ongoing circuit maintenance and monitoring will continue.
22	King	Sep 2013 Sep 2013 Sep 2013 Nov 2013	Sammamish	Reliability Power Quality	Klahanie-17	Contacted customer to discuss concerns. Note	Ongoing circuit maintenance and monitoring will continue.
23	King	Jul 2013 Aug 2013	Sammamish	Reliability	Plateau-23	Contacted customer to discuss concerns. Note	Ongoing circuit monitoring and maintenance will continue.
24	King	Sep 2013 Jun 2014	Snoqualmie	Power Quality	Snoqualmie-13	Contacted customer to discuss concerns.	Ongoing circuit maintenance and monitoring will continue.
25	King	Dec 2013 Jan 2014	Snoqualmie Pass	Reliability	Hyak-13	Contacted customer to discuss concerns.	Ongoing circuit maintenance and monitoring will continue.

Note: Complaints were not reported in 2013 report

No.	County	Date of Complaint	Location	Complaint Type	Circuit	Response	Action by PSE
26	King	Jul 2014 Aug 2014	Woodinville	Reliability	Cottage Brook-13	Contacted customer to discuss concerns.	A system project with estimated completion in 2015 will provide reliability improvement. Ongoing circuit monitoring and maintenance will continue.
27	Kitsap	Nov 2014 Nov 2014	Bainbridge Island	Reliability	Port Madison-15	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
28	Kitsap	Nov 2014 Dec 2014	Bainbridge Island	Reliability	Winslow-13	Contacted customer to discuss concerns.	A system project was completed in 2014 and another system project is expected to be completed in 2015 which will improve reliability. Ongoing circuit maintenance and monitoring will continue.
29	Kitsap	Sep 2013 Oct 2013	Bainbridge Island	Reliability	Winslow-15	Contacted customer to discuss concerns. Note	A system project has been completed which will improve reliability. Ongoing circuit monitoring and maintenance will continue.
30	Kitsap	Nov 2013 Nov 2013	Port Orchard	Reliability	Fragaria-15	Reported in 2013. No new inquiries in 2014.	Ongoing circuit monitoring and maintenance will continue.
31	Kitsap	Mar 2014 Jul 2014	Seabeck	Reliability	Chico-12	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.

Note: Complaints were not reported in 2013 report

No.	County	Date of Complaint	Location	Complaint Type	Circuit	Response	Action by PSE
31	Kitsap	Mar 2014 Jul 2014	Seabeck	Reliability	Chico-12	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
32	Pierce	Oct 2013 Oct 2013	Orting	Reliability	Orting-23	Reported in 2013. No new inquiries in 2014.	A system project scheduled for construction in 2015 will provide additional reliability improvement. Ongoing circuit monitoring and maintenance will continue.
33	Skagit	Feb 2013 Aug 2013	Mount Vernon	Reliability	Big Rock-15	Reported in 2013. No new inquiries in 2014.	System projects to improve reliability are being evaluated for feasibility and cost effectiveness. Ongoing circuit monitoring and maintenance will continue.
34	Whatcom	Nov 2013 Nov 2013	Custer	Power Quality	Birch Bay-16	Reported in 2013. No new inquiries in 2014.	Customer-side problem. Not a PSE system issue.
35	Whatcom	Oct 2013 Oct 2013	Lynden	Reliability	Lynden-24	Contacted customer to discuss concerns. Note	A system project was completed in 2013 which will provide additional reliability improvement. Ongoing circuit maintenance and monitoring will continue.

Note: Complaints were not reported in 2013 report

N

Areas of Greatest Concern with Action Plan

This appendix details the areas of greatest concern with an action plan.

CMI refers to Customer Minutes of Interruptions.

Table N1 provides the 2014 and 2013 list of the 50 Worst-Performing Circuits in the PSE territory. The eight circuits that dropped off in 2014 are listed at the bottom of the table and noted as "Not on 2014 Top 50 List". The eight circuits that are new in 2014 are noted as "Not on 2013 Top 50 List."

Table N1: 2014 and 2013 Year End 50 Worst-Performing Circuits

Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
Chico-12	Kitsap	1	4,231,654	1	3,706,923	Completed recloser and three phase feeder extension project in 2010. Underground system improvement project planned for 2015. Completed enhanced tree pruning pilot project in 2012.
Prine-13	Thurston	2	3,951,479	8	3,499,796	Installed two reclosers and switches in 2010. Reconductor of overhead line to tree wire is scheduled in 2015.
Vashon-12	King	3	2,865,252	4	2,542,033	Installed recloser in 2009. Completed a cable remediation project in 2010. Installed three gang operated switches in 2011. Underground conversion and tree wire projects completed in 2014.
Vashon-13	King	4	2,024,968	3	2,170,921	Completed two underground cable remediation projects in 2009 and 2010 and two reconductor projects in 2010. Installed two gang operated switches and a recloser in 2011. Tree wire projects were completed in 2014. Underground conversion at substation is planned for all the circuits in 2016.
Cottage Brook-13	King	5	2,925,368	7	2,552,550	Completed an underground conversion project and installed a recloser in 2011. Two underground cable remediation projects completed in 2014 and three underground cable remediation projects to be completed in 2015. Underground conversion project is planned in 2015.
Marine View-13	King	6	2,091,590	26	1,783,200	Completed reconductor of overhead line to tree wire and installed recloser in 2014.

Table continues on next page.

Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
Vashon-23	King	7	2,156,738	11	1,595,905	Installed recloser in 2010. Two tree wire projects and underground conversion project completed in 2014. One tree wire project scheduled in 2015.
Silverdale-15	Kitsap	8	2,092,109	10	1,667,300	Completed one underground cable remediation project in 2009. Installed one recloser and two gang operated switches in 2011. Reconductor of entire overhead line to tree wire by 2016: phase 1 was completed 2014, phase two scheduled in 2015, and phase three planned in 2016.
Baker River Switch -24	Skagit	9	2,022,951	6	3,346,914	One underground conversion project completed in 2009. Installed one recloser in 2011 and three switches in 2014. Two underground conversion projects completed in 2013. One underground conversion project completed in 2014.
Orting-22	Pierce	10	3,973,522	9	3,677,320	Completed the reconductor of overhead line to tree wire in 2010 and 2012. Completed a feeder tie in 2010. Installed recloser in 2011. A new substation bank installed 2014. A system improvement project planned for 2015.
Longmire-17	Thurston	11	2,573,737	12	1,287,701	Reconfigured Longmire-22 and Longmire-17 in 2009 to better segregate customers. Completed reconductor of overhead line to tree wire and underground conversion project in 2012.
Sequoia-16	King	12	2,830,198	31	2,730,429	Completed an underground cable remediation project in 2013.

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Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
Sherwood-18	King	13	3,459,409	2	3,527,644	Future plans for Lake Holm substation and overhead conversion will improve reliability. Substation construction dependent on area growth. Two tree wire projects are scheduled for 2015.
Hobart-16	King	15	2,446,658	13	2,379,774	Completed a feeder tie and cable remediation project in 2009 and an underground conversion job in 2013. Completed an underground cable remedition project in 2014. A tree wire project scheduled in 2015.
Dieringer-15	Pierce	14	1,697,764	Not on 2014 list		Completed underground cable remediation project in 2013. Three projects to reconductor overhead line to tree wire scheduled for 2015/16.
Hobart-16	King	15	2,446,658	13	2,379,774	Completed a feeder tie and cable remediation project in 2009 and an underground conversion job in 2013. Completed an underground cable remedition project in 2014. A tree wire project scheduled in 2015.
Black Diamond-13	King	16	3,092,868	Not on 2014 list		Future plans for Lake Holm substation and overhead conversion will improve reliability. Substation construction dependent on area growth.
Hobart-15	King	17	2,534,960	33	1,957,281	Completed one feeder tie in 2011. Reconductor of overhead line to tree wire scheduled in 2015/16.
Orchard-13	King	18	2,697,948	50	2,519,693	Completed two underground cable remediation projects in 2014 and one is scheduled in 2015. Planning is currently reviewing and identifying potential reliability improvements projects.

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Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
Duvall-12	King	19	2,473,830	Not on 2014 list		Installed three overhead switches in 2013 and complated an overhead reconductor project in 2014. Another overhead reconductor preject scheduled in 2015.
Kingston-24	Kitsap	20	1,714,494	25	1,096,438	Completed a reconductor of overhead line to tree wire in 2013. Planning is currently reviewing a system reliability projects for future construction.
Soos Creek-25	King	21	1,869,085	38	1,653,558	Installed recloser and completed reconductor of overhead line to tree wire in 2013. Two cable remediation projects completed in 2014 and one is scheduled in 2015. Future plans for Jenkins and Lake Holmes substations will improve reliability.
Eld Inlet-25	Thurston	22	1,839,822	Not on 2014 list		Completed a feeder project in 2010 and reconductored overhead line to tree wire with a recloser in 2011. Installed recloser in 2014. One underground cable remediation project scheduled in 2015.
Blumaer-17	Thurston	23	1,852,563	5	1,966,465	Reconfigured the circuit and installed tree wire tin 2012. Completed underground cable remediation project in 2014.
Miller Bay-23	Kitsap	24	1,802,743	28	1,518,243	Completed reconductor of overhead line to tree wire in 2012 and 2013.
Fragaria-13	Kitsap	25	1,591,831	21	1,369,096	Completed two recloser projects in 2011. Reconductor of overhead line to tree wire completed in 2012. System improvement projects are planned in 2015 and 2016.

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Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
Freeland-12	Island	26	1,790,524	Not on 2014 list		Planning is currently reviewing and identifying potential reliability improvements projects.
Griffin-13	Thurston	27	1,360,801	15	1,343,234	Completed reconductor of overhead line to tree wire in 2012. Completed one underground cable remediation project in 2014 and two underground cable remediation projects scheduled in 2015.
Hickox-16	Skagit	28	1,159,063	34	755,062	Completed wildlife diversion and pole replacement projects in 2007, a recloser project in 2011, and reconductor of overhead line to tree wire in 2013. Planning is currently reviewing and identifying potential reliability improvements projects.
Big Rock-15	Skagit	29	1,361,903	22	1,190,602	Completed a pole replacement project in 2009 and installed recloser in 2013. Planning is currently reviewing a system reliability projects for future construction.
Lake Meridian-15	King	30	2,245,378	17	2,204,670	One cable remediation project is scheduled in 2015. Planning is currently reviewing and identifying potential reliability improvements projects.
Chambers-15	Thurston	31	2,058,622	47	1,947,979	Completed reconductor of overhead line to tree wire in 2011 and 2012. Completed feeder tie and recloser projects in 2012. One underground cable remediation project completed in 2014 and two underground cable remediation projects scheduled in 2015.

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Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
Hamilton-15	Skagit	32	1,164,744	43	847,564	Completed a reconductor of overhead line to tree wire in 2014. Two system improvement projects scheduled in 2015.
Patterson-15	Thurston	33	1,935,240	16	2,012,280	Completed reconductor of overhead line to tree wire in 2011. One underground cable remediation project completed in 2014 and one underground cable remediation project scheduled in 2015.
Lake Wilderness-14	King	34	1,153,088	19	1,138,796	Future plans for Jenkins substation will improve reliability. Substation construction dependent on area growth. Planning is currently reviewing and identifying potential reliability improvements projects.
Nugents Corner-26	Whatcom	35	1,134,315	23	1,058,885	Installed two reclosers in 2009 and 2011. Planning is currently reviewing and identifying potential reliability improvements projects
Silverdale-13	Kitsap	36	924,896	20	887,670	Installed regulator in 2008 and completed two cable remediation projects in 2009. Reconductor of overhead line to tree wire scheduled in 2015.
Miller Bay-17	Kitsap	37	1,832,668	24	1,773,776	Installed recloser in 2010 and completed a reconductor project in 2011. Construction of new feeder tie is scheduled in 2016/2017. Reconductor of overhead line to tree wire will be done in conjuction with a transmission project scheduled in 2016.
Marine View-17	King	38	1,362,294	27	1,326,838	Installed a recloser in 2009 and completed an undergound conversion project in 2013.

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Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
Fernwood-17	Kitsap	39	918,903	36	777,488	Completed reconductor of portions of overhead line to tree wire in 2009 and 2014. Installation of recloser and construction of feeder tie is scheduled in 2015.
Fragaria-16	Kitsap	40	1,025,838	42	869,539	Completed reconductor of overhead line to tree wire in 2014. Reconductor of another portion of overhead line to tree wire scheduled in 2015.
Yelm-27	Thurston	41	1,394,158	37	869,320	Reconductor to tree wire completed in 2013. A system improvement project is scheduled in 2015.
Luhr Beach-14	Thurston	42	2,210,264	48	1,643,768	Completed two projects to reconductor of overhead line to tree wire in 2013. Completed two underground cable remediation projects in 2014. Reconductor of overhead line to tree wire scheduled in 2015.
McKinley-17	Thurston	43	2,174,787	18	2,181,297	Completed two underground cable remediation projects in 2009 and 2013. Installed two gang operated switches in 2013. Overhead reconductor project and cable remedation project to be completed in 2015.
Poulsbo-15	Kitsap	44	995,851	Not on 2014 list		Reconductor of overhead line to tree wire project scheduled in 2016/17.
Lake Tapps-18	Pierce	45	2,186,542	30	2,124,998	Completed an overhead reconductor to tree wire project in 2013. Two reconductor projects to tree wire and a system improvement project scheduled in 2015/16.

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Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
South Mercer-12	King	46	986,941	Not on 2014 list		Completed underground cable remediation and underground system project in 2013. Installation of recloser and four underground cable remediation projects scheduled in 2015.
Kendall-12	Whatcom	47	966,100	32	984,944	Completed reconductor of overhead line to tree wire in 2012. Another reconductor overhead line to tree wire project is scheduled in 2015/2016.
Fall City-15	King	48	829,195	41	739,923	Installed a gang operated switch in 2011 and completed an underground conversion project in 2013. An overhead system improvement project installing spacers completed in 2014.
Chambers-13	Thurston	49	1,025,432	29	1,038,001	Completed recloser projects in 2012. Two underground cable remediation projects completed in 2013 and 2014.
Lake Tapps-17	Pierce	50	1,504,529	Not on 2014 list		Completed two projects to reconductor of overhead line to tree wire in 2013. Reconductor of overhead line to tree wire scheduled in 2015/16.
Southwick-15	Thurston	Not on 2014 list		14	2,716,817	Completed underground cable remediation project in 2014. Reconductor of overhead line to tree wire and an underground cable remediation project scheduled in 2015.
Blumaer-16	Thurston	Not on 2014 list		35	1,646,055	Installed recloser and gang operated switch in 2011. Completed three underground cable remediation projects 2009, 2010. and 2014. Two overhead tree wire projects completed in 2014.

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Circuit	County	2014 Year End 5 Year Avg Rank	2014 Year End Average Total CMI	2013 Year End 5 Year Avg Rank	2013 Year End Average Total CMI	Action by PSE
Winslow-12	Kitsap	Not on 2014 list		39	1,212,253	Completed cable remediation project in 2010. Installed two gang operated switches in 2012. Completed reconductor of two overhead lines to tree wire in 2014. Installation of three reclosers scheduled in 2015.
West Olympia-23	Thurston	Not on 2014 list		40	1,612,149	Installed recloser in 2012. Underground cable remediation project in 2014.
Fernwood-16	Kitsap	Not on 2013 list		44	1,646,415	One reconductor of overhead line to tree wire project completed in 2014 and one scheduled in 2015.
Fragaria-12	Kitsap	Not on 2014 list		45	714,128	Installed a recloser in 2012. Completed three projects to reconductor of overhead line to tree wire in 2012, 2013 and 2014. Another project to reconductor overhead line to tree wire scheduled in 2015.
Tolt-15	King	Not on 2014 list		46	576,603	Completed an underground conversion project in 2009 and reconductor of overhead line in 2010.
Winslow-13	Kitsap	Not on 2014 list		49	1,393,218	Reconductor of overhead line to tree wire project and two recloser installations are scheduled in 2015.

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Current Year Geographic Location of Electric Service Reliability Customer Complaints on Service Territory Map with Number of Next Year's Proposed Projects and Vegetation-Management Mileage

This appendix illustrates current-year geographic location of electric service reliability customer complaints on service territory map with number of next year's proposed projects and vegetation-management mileage.

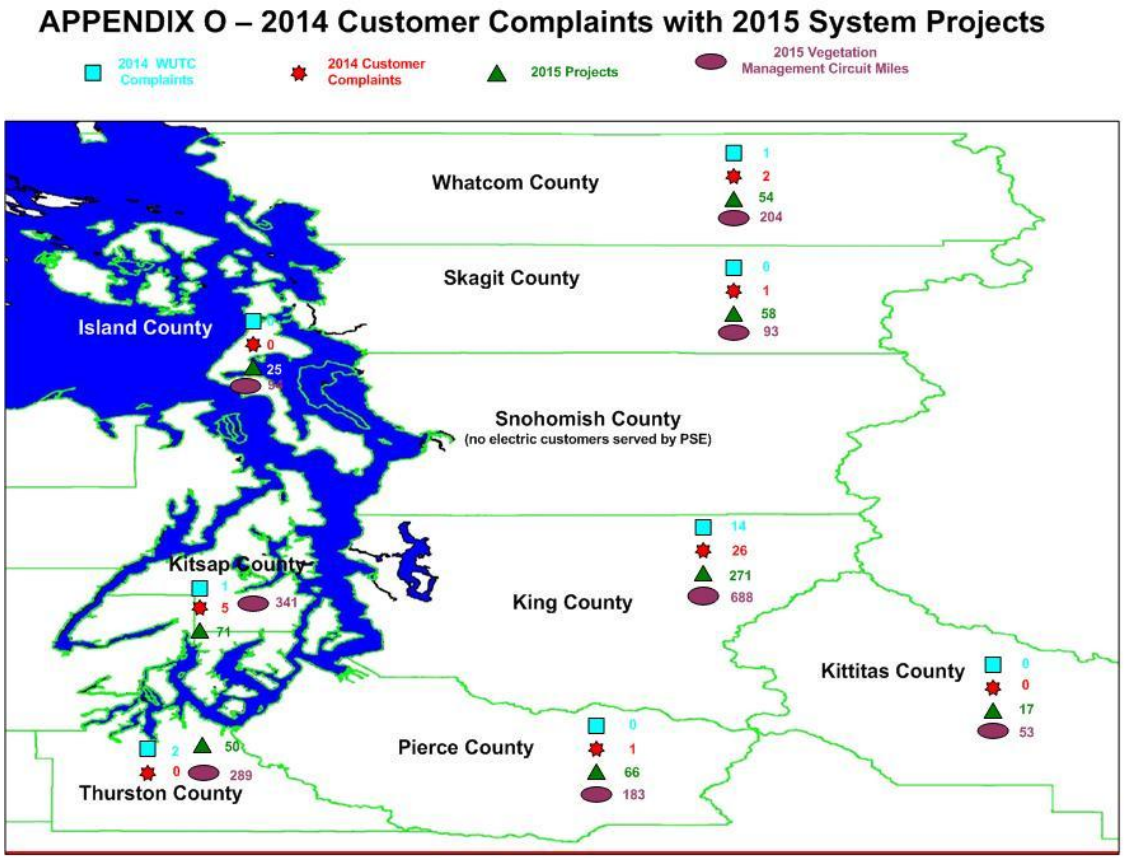

Figure O1: 2014 Customer Complaints with 2015 System Projects