2011 Annual
Puget Sound Energy
SQI and Electric Service Reliability Report

Filed on March 29, 2012

Contents

1 Introduction

Executive Summary

As Washington state's oldest and largest energy utility, with a 6,000-square-mile service territory stretching across 11 counties, Puget Sound Energy (PSE) serves more than 1 million electric customers and over 750,000 natural gas customers primarily in the Puget Sound region of Western Washington. PSE meets the energy needs of its customer base through incremental, cost-effective energy efficiency, 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 Index Program (the SQI Program) when the Washington Utilities and Transportation Commission (UTC) authorized the merger of Washington Natural Gas Company and Puget Sound Power & Light Company in 1997.[1] The stated purpose of the SQI 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 SQI Program has been further extended[2] with various modifications to demonstrate PSE's continuous commitment to customer protection and quality service.

Service Quality Index Program

The SQI Program includes three components:

- **Customer Service Guarantee**—The Customer Service Guarantee (CSG) provides for a $50 missed appointment credit[3] for both natural gas and electric service. This guarantee became effective in 1997.[4]
- **Restoration Service Guarantee**—The Restoration Service Guarantee (RSG) provides for a $50 electric outage restoration credit to a qualified PSE electric customer.[5] This guarantee was established in 2008.

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

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

[3] As outlined in PSE's tariff (Schedule 130)

[4] Under consolidated Docket Numbers UE-951270 and UE-960195; the last update of the tariff was approved on January 26, 2000, under Docket Numbers UE-000027 and UG-000028.

[5] The specific terms and application of the $50 electric outage restoration credit to a qualified customer are described in electric tariff Schedule 131. This guarantee was part of the SQI settlement agreement in Order 12 in consolidated Docket Numbers UE-072300 and UG-072301.

- **Service Quality Index (SQI)**—PSE reports annually to the UTC on nine SQIs in this document. This document explains the SQIs, how they are calculated and PSE's performance on each of the SQIs.

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

SQI and Electric Service Reliability Report

This *2011 Annual Puget Sound Energy SQI and Electric Service Reliability Report* meets the PSE's SQI program reporting requirements[6] and the electric service reliability reporting requirements set forth by the UTC.[7,8]

To facilitate external review of PSE's SQI and Electric Service Reliability performance, the two areas were combined starting with the 2010 plan-year report.[9]

[6] 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 and 17 of consolidated Docket Numbers UE-072300 and UG-072301.

[7] 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

[8] 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 has been inviting UTC Staff and Public Counsel to discuss the format and 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 but if 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.

[9] The annual reporting of the Service Quality Index 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 after.

Overview of Performance

The following table summarizes PSE's 2011 SQI and Electric Service Reliability performance along with relevant service providers' performance metrics and the two service guarantees.

Key Measurement	Type of Metric	Benchmark/Description	2011 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 the UTC	0.28	☑
Customer Access Center Transaction Satisfaction	Service Quality Index #6	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	95%	☑
Field Services Operations Transaction Satisfaction	Service Quality Index #8	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	96%	☑
Service Provider Satisfaction—Pilchuck[10]	Service Provider Index #2A	At least 84% satisfied (rating of 5 or higher on a 7-point scale)	85%	☑
Service Provider Satisfaction—Quanta Electric	Service Provider Index #2B	At least 77% satisfied (rating of 5 or higher on a 7-point scale)	81%	☑
Service Provider Satisfaction—Quanta Gas[11]	Service Provider Index #2C	At least 84% satisfied (rating of 5 or higher on a 7-point scale)	87%	☑
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	77%[12]	☑

[10] Pilchuck statistics are from January–March 2011.

[11] Quanta Gas statistics are from April–December 2011.

[12] Starting in the 2010 annual SQI reporting, the performance, result shown excludes calls abandoned within 30 seconds. The calculation 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.

Key Measurement	Type of Metric	Benchmark/Description	2011 Performance Results	Achieved
Operations Services—*Appointments*				
Appointments Kept	Service Quality Index #10	At least 92% of appointments kept	100%[13]	☑
Service Provider New Customer Construction Appointments Kept—Pilchuck	Service Provider Index #3A	At least 98% of appointments kept	100%[13]	☑
Service Provider New Customer Construction Appointments Kept—Quanta Electric	Service Provider Index #3B	At least 98% of appointments kept	100%[13]	☑
Service Provider New Customer Construction Appointments Kept—Quanta Gas	Service Provider Index #3C	At least 98% of appointments kept	100%[13]	☑
Customer Service Guarantee	Service Guarantee #1	A $50 credit to customers when PSE fails to meet a scheduled SQI appointment	$14,400	
Operations Services—*Gas*				
Gas Safety Response Time	Service Quality Index #7	Within 55 minutes from customer call to arrival of field technician	29 minutes	☑
Secondary Safety Response Time—Pilchuck	Service Provider Index #4A	Within 60 minutes from first response assessment completion to second response arrival	51 minutes	☑
Secondary Safety Response Time—Quanta Gas	Service Provider Index #4D	Within 60 minutes from first response assessment completion to second response arrival	53 minutes	☑
Service Provider Standards Compliance—Pilchuck	Service Provider Index #1A	At least 95% compliance with site audit checklist points	99%	☑
Service Provider Standards Compliance—Quanta Electric	Service Provider Index #1B	At least 97% compliance with site audit checklist points	99%	☑
Service Provider Standards Compliance—Quanta Gas	Service Provider Index #1C	At least 97% compliance with site audit checklist points	99%	☑

[13] Appointments kept results shown are rounded to the nearest whole percentage per UTC order. Overall, in 2011 PSE and its service providers kept 99.8% of SQI appointments. The numbers of missed appointments by energy and service type are detailed in Appendix F: *Customer Service Guarantee Performance Detail.*

Key Measurement	Type of Metric	Benchmark/Description	2011 Performance Results	Achieved
Operations Services—*Electric*				
Electric Safety Response Time	Service Quality Index #11	Within 55 minutes from customer call to arrival of field technician	51 minutes	☑
Secondary Safety Response and Restoration Time—Core-Hour—Quanta Electric	Service Provider Index #4B	Within 250 minutes from the dispatch time to the restoration of non-emergency outage during core hours	234 minutes	☑
Secondary Safety Response and Restoration Time—Non-Core-Hour—Quanta Electric	Service Provider Index #4C	Within 316 minutes from the dispatch time to the restoration of non-emergency outage during non-core hours	273 minutes	☑
Restoration Service Guarantee	Service Guarantee #2	A $50 credit to eligible customers when a power outage is longer than 120 consecutive hours	No qualified customer or outage event	
Electric Service Reliability—*SAIFI & SAIDI*[14]				
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	1.07 interruptions	
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	1.29 interruptions	
Non-Major-Storm (<5% customers affected) SAIFI	Service Quality Index #4	No more than 1.30 interruptions per year per customer	1.02 interruptions	☑
IEEE Non-Major-Storm (T_{MED}) SAIFI	Reliability	Power interruptions per customer per year, excluding days exceeding the T_{MED} threshold	1.02 interruptions	

[14] See the Electric Service Reliability section for the calculation and Appendix H: *Electric Reliability Terms and Definitions* for the definition of each of the measurements

Key Measurement	Type of Metric	Benchmark/Description	2011 Performance Results	Achieved
Electric Service Reliability—*SAIFI & SAIDI (cont.)*				
Total (all outages current year) Outage Duration—System Average Interruption Duration Index (SAIDI)	Reliability	Outage minutes per customer per year, including all types of outage event	163 minutes	
Total (all outages five-year average) SAIDI	Service Quality Index #3	No more than 320 minutes per customer per year	281 minutes	☑
Non-Major-Storm (<5% customers affected) SAIDI	Reliability	Outage minutes per customer per year, excluding outage events that affected 5% or more customers	144 minutes	
IEEE Non-Major Storm (T_{MED}) SAIDI	Reliability	Outage minutes per customer per year, excluding days exceeding the T_{MED} threshold	144 minutes	

As shown in the preceding table, PSE met all its SQI benchmarks in 2011 and no SQI penalty is assessed. Detailed SQI 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 (SQI #11) 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 incident and control times**
- **Appendix B: Certification of Survey Results**—The independent survey company, the Gilmore Research Group, certifies that all SQI-related customer surveys were conducted with applicable guidelines and the results are unbiased and valid
- **Appendix C: Penalty Calculation (Not Applicable for 2011)**—This appendix is intentionally left blank since it is not applicable for the 2011 performance period
- **Appendix D: Proposed Customer Notice (Report Card)**—This appendix presents PSE's proposed 2011 Customer Service Performance Report Card, which is designed to inform customers of how well PSE delivers its services in key areas to its customers

- **Appendix E: Disconnection Results by Month**—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

Customer Notice of SQI Performance

Appendix D: *Proposed Customer Notice (Report Card)* is PSE's proposed customer notice of PSE's 2011 SQI performance. After consultation with the UTC and the Public Counsel Section of the Washington State Attorney General's Office, PSE will begin distributing the final SQI report card by June 30, 2012, as part of the customer billing package.

Changes in 2011

New Service Provider

In 2010, PSE embarked on a Request for Proposal (RFP) process for the natural gas construction and maintenance services that had been performed by Pilchuck. After careful evaluation, Quanta Services (doing business as InfraSource in the PSE service area) was selected. Transition from Pilchuck to Quanta was completed at the end of first quarter 2011. At that time, Quanta Services began performing all of PSE's electric and natural gas construction and maintenance work.

The change of the service provider does not affect the SQI #10 performance or data collection process. See further details in the *Changes to the Service Provider Program in 2011* section in the Chapter 9: *Customer Construction Services Department and Service Provider Performance*.

Change in Data Reporting and Data Collection

Prior to May 2011, the gas emergency response time data (SQI #7) have been stored in an Access database. To enhance security and reliability, PSE added a SAP business warehouse mechanism to store the data in May 2011. There is no change in the calculation of SQI #7 Gas Safety Response Time. The transition of the data storage mechanism from Access to the SAP business warehouse does not have any effect on PSE's performance or data accuracy. The *Update in SQI #7 Process* section in Chapter 6: *Gas Safety Response Time (SQI #7)* provides further discussions about the transition.

Customer Satisfaction

Puget Sound Energy wants to know what customers expect of the utility's performance and services in order to address customer concerns and improve customer satisfaction. One way PSE listens to customers is by conducting customer surveys. Customers are surveyed for a variety of reasons, including their opinions about PSE overall and about specific attributes including Customer Access Center (CAC) transactions and Field Service transactions. Complaints directed to PSE or the UTC and their resolution also are considered in working toward understanding what is most important to customers.

Another tool that helps PSE analyze customer feedback is PSE's Escalated Complaint Management System (ECMS) that was implemented in 2010. ECMS enables greater analysis of complaint data so root causes of any customer dissatisfaction may be addressed more quickly. ECMS is discussed further in Chapter 2: *UTC Complaint Ratio (SQI #2)* under "*Working to Prevent and Reduce UTC Customer Complaints*."

This section discusses the three customer satisfaction-related service quality indexes (SQIs).

- UTC Complaint Ratio (SQI #2)
- Customer Access Center Transactions Customer Satisfaction (SQI #6)
- Field Service Operations Transactions Customer Satisfaction (SQI #8)

See Chapter 9: *Customer Construction Services Department and Service Provider Performance* for discussion of customer satisfaction with PSE's service providers.

2 UTC Complaint Ratio (SQI #2)

Overview

Each year the UTC receives complaints from PSE customers on a variety of topics.

In 2011, while serving more than 1 million electric and 750,000 natural gas customers, the UTC received 523 complaints concerning PSE, a decrease of 18 complaints from 2010.

Table 1: UTC Complaint Ratio for 2011

Key Measurement	Benchmark	2011 Results	Achieved
UTC complaint ratio (SQI #2)	No more than 0.40 complaints per 1,000 customers, including all complaints filed with UTC	0.28	☑

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.

What Influences the UTC Complaint Ratio?

In 2011, complaints were distributed among seven complaint types. Although the volume changes from year to year, the distribution among the complaint types varies little. Disputed Bill and Disconnect complaint types comprised over 70 percent of the total received. This distribution has existed each year since 2008. See Table 2.

Table 2: Number of UTC Complaints by Type

Complaint Type	Complaints				
	2007	2008	2009	2010	2011
Construction	7	9	15	7	8
Customer service	58	34	45	33	38
Deposit	17	11	26	48	39
Disconnect	117	102	167	176	158
Disputed bill	184	235	319	219	209
High bill[15]	0	0	0	20	28
Quality of service	64	30	24	20	25
Other	37	21	26	18	18
Total	***484***	***442***	***622***	***541***	***523***

Historical Trend for the UTC Complaint Ratio

Each UTC complaint is individually assessed for unique attributes that may be indicators of opportunities to address processes for corrective and preventive actions. A daily status review is conducted related to total complaints received, any developing issues and closure rate. By analyzing each complaint individually, PSE can address the issues that first caused the complaints. Table 3 outlines the UTC complaint ratio from 2007 to 2011.

Table 3: UTC Complaint Ratio from 2007 to 2011

	2007	2008	2009	2010	2011
Actual complaint ratio	0.27	0.25	0.34	0.30	0.28
Benchmark complaint ratio	0.50 complaints per 1,000 customers, including all complaints filed with UTC		0.40 complaints per 1,000 customers, including all complaints filed with UTC		

[15] The high bill category was added in 2010.

Working to Prevent and Reduce UTC Customer Complaints

PSE works hard to address customer concerns so they do not become complaints. PSE staffs specially trained agents and supervisors to handle all customer concerns.

"Consumer Upheld" Complaints

Particular attention is paid to complaints that the UTC assessed as "Consumer Upheld." These types of complaints identify potential process improvement opportunities for PSE. In 2011, they prompted

- Enhanced training for supervisors outside the Customer Care organization regarding their responsibilities in escalated complaints
- Improved document management processes allowing agents in the PSE Customer Access Center to provide more timely and accurate information to customers

The focus on root cause and prevention of "Consumer Upheld" complaints has resulted in a steady reduction of complaints with this disposition. See Table 4.

Table 4: Percentage of "Consumer Upheld" UTC Complaints

	2007	2008	2009	2010	2011
Consumer Upheld	28%	26%	23%	16%	14%

Complaint Management

PSE's Customer Access Center receives over 200,000 customer calls each month. More than 99 percent of the customer issues and concerns are addressed during the initial contact. On average, fewer than 400 contacts per month are escalated to a supervisor and less than 45 of these customer inquiries become a UTC complaint.

In 2010, PSE implemented the Escalated Complaint Management System that captures data concerning customer issues that were not addressed during the initial contact with PSE. ECMS enables PSE to spot complaint trends in their early stages, take preventive action sooner, and measure the effectiveness of PSE's response.

In addition to using the ECMS, PSE trained a select group of agents to work with customers disconnected for non-pay to manage the reconnection process.

Going Forward

PSE is identifying potential issues that could trigger customer complaints. The focus is on prevention of the cause of potential complaints through timely and accurate support for each customer. Areas of particular focus for 2012 include:

- Continued focus on support of the new Customer Information System (CIS) and enhancements to it. The CIS system is discussed in more detail in Chapter 3: *Customer Access Center Transactions Customer Satisfaction (SQI #6)*
- Continued focus on UTC "Consumer Upheld" complaints to identify root cause and establish preventive and corrective actions

3
Customer Access Center Transactions Customer Satisfaction (SQI #6)

Overview

Telephone calls to PSE go to the Customer Access Center. The CAC interfaces with the greatest number of customers and strives to establish and improve upon customer satisfaction.

Every month, the Gilmore Research Group, an independent research company, conducts telephone surveys with PSE customers and prepares monthly and semi-annual reports on customer satisfaction regarding CAC transactions. In 2011, these independent surveys found that more than 95 percent of customers surveyed were satisfied with CAC's overall transaction performance (SQI #6).

Table 5: Customer Access Center Transactions Customer Satisfaction for 2011

Key Measurement	Benchmark	2011 Results	Achieved
Customer Access Center transactions customer satisfaction (SQI #6)	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	95%	☑

About the Benchmark

On a monthly basis, the Gilmore Research Group 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:

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

What Influences Customer Satisfaction with Customer Access Center Transactions?

A variety of influences are considered when rating customer satisfaction with the Customer Access Center's transaction performance. The following attributes relate to customer service representatives (CSRs) while talking with the customers:

- Were polite
- Were accommodating
- Were professional and efficient
- Listened carefully
- Provided clear explanations
- Were knowledgeable and helpful
- Provided prompt service
- Followed through on commitments discussed
- Resolved the issue during the initial phone call
- Answered all questions
- Went the extra mile

Historical Trend for Customer Satisfaction with Customer Access Center Transactions

The following table shows customer satisfaction results from 2007 to 2011.

Table 6: Customer Access Center Transactions in Customer Satisfaction from 2007 to 2011

	2007	2008	2009	2010	2011
Customer Access Center transactions customer satisfaction	92%	93%	93%	96%	95%
Benchmark	90% satisfied (rating of 5 or higher on a 7-point scale)				

Working to Uphold Customer Satisfaction with Customer Access Center Transactions

Focus on Customer Service

Customer Access Center CSRs are provided with extensive coaching and training to continuously improve their performance in order to handle each customer inquiry with courtesy and adequately address the customer's needs:

- CSRs answering customer calls are cross-trained in different disciplines to handle the vast variations of customer inquiries, including billing, emergencies, outages, web, correspondence, apartment inquiries and support (exception) queue.
- CSRs, as a group, are expected to maintain a minimum rating of 90 percent in customer satisfaction surveys as conducted by the Gilmore Research Group. The CSRs receive feedback based on the Gilmore ratings during their performance evaluation.
- Supervisors meet with each CSR for coaching sessions in order to build skills, reinforce strengths and identify future training needs.
- CSRs work to enhance customer relationships by making every effort to exceed the customer's needs and expectations.

Quality Checks and Balances

To guarantee continuous customer satisfaction in the changing economy, processes in the Customer Access Center are constantly reviewed for accuracy, maintenance and necessary changes.

To ensure that CSRs continuously rank at the optimal level of performance a team of Quality Assurance (QA) analysts has been formed. The QA analysts continuously monitor larger processes. Monitoring involves process review, random call monitoring, coaching and performance trend reporting.

As a result of this effort the overall accuracy of the Disconnect Queue QA process has been improved by 10 percent and has provided the data needed to improve the coaching and feedback model to drive the fourth-quarter score to 94 percent.

A Performance Log has been deployed to capture and track customer compliments, concerns and issues on each agent. It is closely monitored by the leads and supervisors to ensure quality customer service. The Performance Log is able to generate reports to illustrate behavioral trends.

PSE customer service representatives earned very high satisfaction ratings from customers: 79 percent of surveyed customers said they were completely satisfied[16] with the way the CSR handled the call. To maintain the highest level of quality for customer contacts across all channels (chat, web, email and voice), PSE's Customer Access Center provides coaching to all its employees. PSE measures the quality of PSE customer service not only by customer surveys and monthly reports, but also by monitoring agent and customer interactions. The coaching performance scorecard follows:

CAC Agent Performance Scorecard		
Service Level		**Results**
Job Knowledge		
	Service Order Errors	1
Overall Service Order Quality Rating		**Meeting**
	Coachable Errors	1
Overall Coachable Error Rating		**Meeting**
Overall Job Knowledge Rating		**Meeting**
Quantity /Productivity		
Compliance:	Available & ready to take calls	100%
Average Handle Time:	Handles calls in a timely manner, Does not waste customer time	4:52
Average Hold Time:	Puts customer on hold	0:11
Average Wrap Time:	Time spent on unfinished work after customer call has been released	0:43
Overall Productivity Rating		99%
Quality		
	Introduction Skills	100%
	Update Records	98%
	Communication Skills	98%
	Procedural Requirements	98%
	Techniques/Procedures	100%
	Education	100%
	Call Management	98%
	Closing Skills	100%
	Customer Value	100%
Quality Scores		99%
Quality Rating		Exceeding
Gilmore Results		
	# of Surveys	4
	Average Rating	6.76
Overall Gilmore Rating		100%
Overall Performance Rating		**Positive**

Figure 1: CAC CSR Scorecard (illustrative data)

[16] Earned the top rating of 7, Completely Satisfied, on the 1–7 scale of the Gilmore Research Group SQI #6 surveys.

PSE uses the performance scorecard to provide feedback to the CSR regarding positive behavior patterns, as well as those needing improvement. At the same time, CSRs provide feedback to the management team on the effectiveness of business processes and customers' concerns. Ultimately, this enables PSE to make improvements to better serve customers.

Customer Access Center Earns Honorable Mention in Call Center Excellence Awards

The International Quality and Productivity Center awarded PSE's Customer Access Center an honorable mention in the category "Best in Class Call Center with More than 200 Employees" at its Annual Call Center Excellence Awards ceremony June 15, 2011 in Las Vegas.

PSE's Customer Access Center competed with entries submitted by companies throughout the world. Entries were judged on criteria such as customer satisfaction scores, response times, process improvements and efficiencies, and leveraging call center data to drive corporate strategic direction. PSE shared the honorable mention award with national companies Protection 1 and ING Direct USA.

The Call Center Excellence Awards program was created by the International Quality and Productivity Center to honor, recognize and promote the most innovative call center solutions and individuals each year. The program recognizes superior thinking, creativity and execution across the full spectrum of call center functions.

Going Forward

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

In 2011, PSE began the replacement of its Customer Information System and the new system deployment is anticipated in 2013. This system will appreciably update and upgrade the existing CIS and provide better tools to enhance customer experience. This is a significant investment and will require extensive training, change management and system changes. PSE is excited about the opportunity for a strong CIS system for the future.

Other 2012 areas of focus include:

- Expand the Quality Assurance audit process to be part of all larger processes. This expansion will assist in proactively improving Washington state regulatory compliance for accuracy and completeness of challenging processes.
- Evaluate additional ways to provide information on energy conservation and reduction of energy usage.
- Continue to promote customer participation in paperless web billing via enhancements to the PSE.com website.

4
Field Service Operations Transactions Customer Satisfaction (SQI #8)

Overview

The Gilmore Research Group, an independent research company, conducts telephone surveys with PSE customers who have called PSE that month and requested and received natural gas field service. In 2011, these surveys found that 96 percent of customers were satisfied with PSE's Field Service Operations transaction performance. PSE met this SQI goal in 2011 and in every previous year.

Table 7: Field Service Operations Transactions Customer Satisfaction for 2011

Key Measurement	Benchmark	2011 Results	Achieved
Field Service Operations transactions customer satisfaction (SQI #8)	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	96%	☑

About the Benchmark

Every week, the Gilmore Research Group contacts randomly selected customers who have called PSE that month 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 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:

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

What Influences Customer Satisfaction with Field Service Operations Transactions?

Many factors influence whether customers are satisfied with the natural gas field service transactions from PSE. These include whether the customer was satisfied with the customer service representative at the Customer Access Center when they called to make a service appointment and whether they were satisfied with the service performed on-site by the field technician.

Of the customers who requested natural gas field service, the most frequent reasons include customers who:

- Wanted to start or stop natural gas service
- Suspected a natural gas leak or detected a natural gas odor
- Had no heat or hot water, as if their furnace or water heater had quit working
- Had a question about gas meters or service

Customer Satisfaction with Field Service Operations Phone Calls

Response to another question on the Gilmore Research Group gas field service survey indicated almost 96 percent of customers reported they had no trouble reaching a customer service representative, and the CSRs earned high ratings from customers (more than 97 percent were satisfied). Satisfied customers said the CSRs:

- Were courteous and friendly
- Were helpful
- Provided prompt service
- Answered their questions
- Said they would send someone right away

The customers who were less than satisfied suggested CSRs should:

- Be able to offer narrower appointment time frames
- Have more information and be able to more fully answer questions
- Resolve problems more quickly
- Be more polite

The Customer Access Center management team also uses these findings to coach and train CAC employees to improve performance. While the types of disappointments mentioned by customers from 2010 to 2011 changed slightly, the number of customers satisfied with the way the CSR handled the case remained the same in 2011 compared to 2010.

Customer Satisfaction with Field Service Operations Transactions

Survey respondents were asked to rate their satisfaction with the natural gas field technician on several specific attributes. In general, PSE service technicians got high ratings from customers (at least 97 percent satisfied). Satisfied customers said the field technicians:

- Were friendly, courteous and polite
- Were knowledgeable
- Were prompt in coming to the problem area
- Did a good job or fixed the problem
- Were helpful
- Were thorough

Satisfied customers also remarked that the technicians were professional, explained clearly what was being done and left sufficient information about the work. Customers (less than 11 percent) who gave less than a "7" rating were asked follow-up questions to determine why they were not completely satisfied. These customers said the field technicians:

- Did not fix the problem or complete the job in one trip
- Were not knowledgeable or experienced

Customers who were less than completely satisfied also wanted technicians to:

- Be more knowledgeable
- Arrive more quickly
- Give better explanation/more information
- Be friendlier

In 2011, 94 percent of customers said the technicians were able to arrive on a day and time that was convenient for the customer and 96 percent said the technician came within the time frame promised.

While the types of disappointments mentioned by customers from 2010 to 2011 remained relatively the same, the percentage of customers rating the Field Service technician's completely satisfied (rating of 7) showed slight improvement from 86 percent in 2010 to 90 percent in 2011.

Historical Trend for Customer Satisfaction with Field Service Operations Transactions

The following table shows Field Service Operations transactions customer satisfaction from 2007–2011.

Table 8: Field Service Operations Transactions Customer Satisfaction from 2007 to 2011

	2007	2008	2009	2010	2011
Field Service Operations transactions customer satisfaction	90%	91%	95%	96%	96%
Benchmark	90% satisfied (rating of 5 or higher on a 7-point scale)				

Working to Uphold Customer Satisfaction with Field Service Operations Transactions

In 2011, PSE maintained a record-high customer satisfaction rating with Field Services Operations transactions. Some of the actions PSE has taken in 2011 are:

- PSE's operations management team continues to:
  - Review specific information about service orders and take appropriate actions where data indicates need for improvement
  - Coach and train employees to improve customer service
  - Thoroughly explain adjustments or repairs made to the customer's appliance
  - Ensure customer's concerns are met before leaving the premises
- Develop and utilize a new tool that tracks individual employee performance. Supervisors are able to review individual employee, workgroup and departmental metrics for each work task. This data assists supervisors in determining areas for improvement and focus on training and feedback.

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.

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

Customer Services

The first point of contact for most customers is PSE's Customer Access Center. PSE devotes resources and implements creative but consistent solutions to help ensure that telephones are answered promptly, customer service representatives are well trained to appropriately handle customer requests, and customers are treated fairly and with respect with regard to disconnects for non-payment for services. To monitor and improve performance, PSE tracks many measures of customer service, including the number of calls that are answered by CSRs within 30 seconds.

This section discusses the Customer Access Center Answering Performance (SQI #5).

5
Customer Access Center Answering Performance (SQI #5)

Overview

PSE maintains a Customer Access Center where customer service representatives answer calls promptly and attempt to provide customers with the information or help they seek, as well as providing help with emergencies 24/7/365.

The Customer Access Center's goal is to answer 75 percent 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 2011, the CSRs answered 77 percent of the calls within 30 seconds of customer request.

Table 9: Customer Access Center Answering Performance for 2011

Key Measurement	Benchmark	2011 Results	Achieved
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	77%	☑

About the Benchmark

The Customer Access Center receives most of PSE's customer inquiries and typically represents PSE to customers. A customer calling PSE has the option of going into an Interactive Voice Response (IVR) system, where they are able to perform self-serve transactions. At any time, the customer is able to press zero and be connected to a customer service representative. The Customer Access Center call answering performance is measured from the time the customer has initiated a request to speak with a CSR until the operator arrives on the line.

PSE is engaged in initiatives to ensure the Customer Access Center's answering performance meets the performance benchmark of 75 percent. 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:

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

What Influences Customer Access Center Answering Performance?

PSE received about 4.5 million calls corporate wide in 2011. About half of these calls were customer-related issues, which were handled by customer service representatives.

Call volumes directly impact service level of the CAC answering performance. The types and volumes of incoming calls throughout the year vary and are influenced by many factors including the weather, economy, advertising and other consumer communications.

The 2011 total call volume increased slightly from 2010.

The following chart shows the types of calls that were received in 2011.

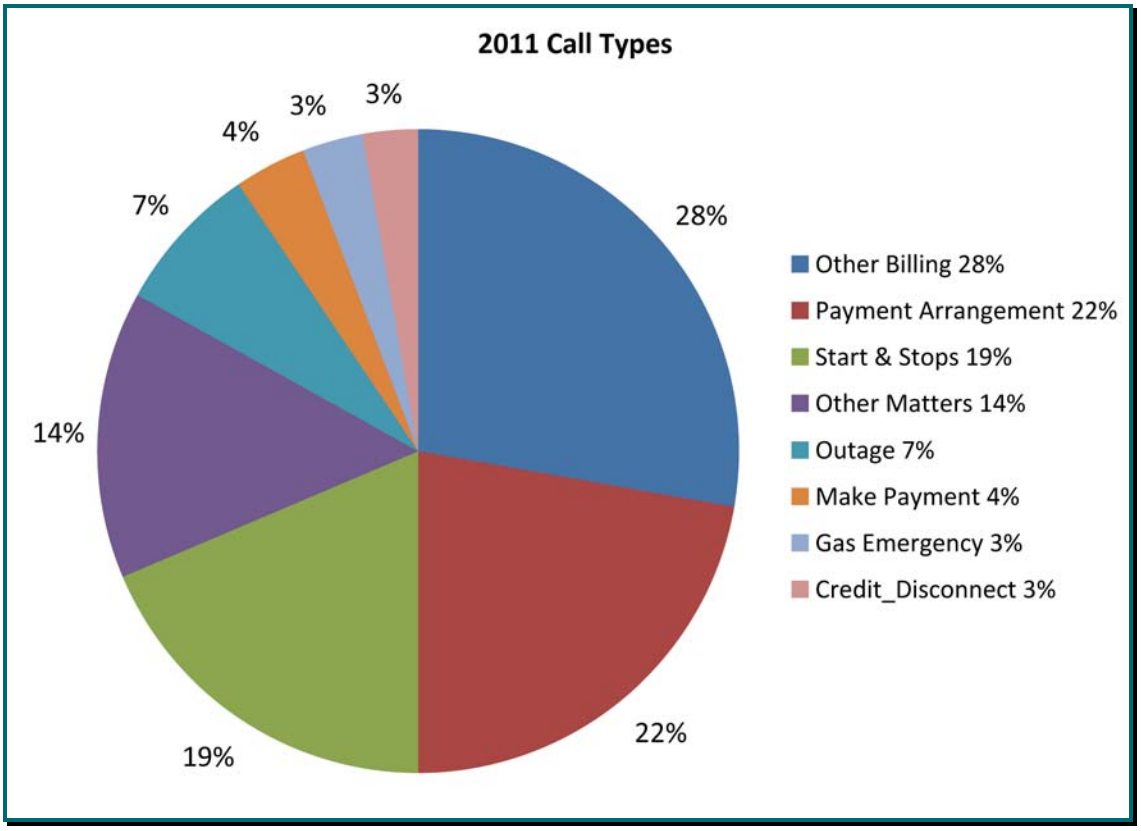

Figure 2: 2011 Incoming Call Types

To answer the variety of incoming calls, PSE has over 200 CSRs; approximately 16 percent are home-based agents, 3 percent are fluent in Spanish and 1 percent focuses on alternate customer contact methods such as the web, mail and fax.

The Workforce Management team is maintained within the Customer Access Center. This team is comprised of schedulers and forecasters who monitor call volume trends, weather patterns, real-time performance and other factors and make staffing adjustments to ensure customer calls are answered promptly while call volumes vary dramatically.

The SQI #6 CAC customer satisfaction survey indicates that 96 percent of respondents state that they did not have any trouble reaching a CSR.

Historical Trend for Customer Access Center Answering Performance

The following table shows PSE's Customer Access Center answering performance from 2007 to 2011.

Table 10: Customer Access Center's Answering Performance from 2007 to 2011

	2007	2008	2009	2010	2011
Customer Access Center Answering Performance	75%	77%	78%	78%	77%
Benchmark	75% of calls answered by a live representative within 30 seconds of request to speak with a live operator				

Working to Uphold the Customer Access Center's Answering Performance

The Customer Access Center strives to ensure that all CSRs are well-trained to efficiently perform their duties, ultimately providing better customer service.

To improve call answering performance, PSE's Customer Access Center focuses on:

- Providing customers and Customer Access Center staff with technological tools, making their tasks more efficient and accurate.
- Improvements in recruiting, coaching, staffing, forecasting, training and work load management, including:
  - Hiring seasonal CSRs during peak months to support the high call volumes and to mitigate the impact of labor and training costs.
  - Proactively scheduling CSRs based on upcoming weather events.
  - Maintaining a remote CSR program, through which customer service representatives situated strategically throughout PSE's service territory are able to respond quickly to customer calls during power outages.
  - Establishing a partnership with an outside vendor to handle overflow calls during high call-volume periods.

These actions have resulted in a more stable service level in 2010 and 2011 than in the previous two years as shown in the following graph.

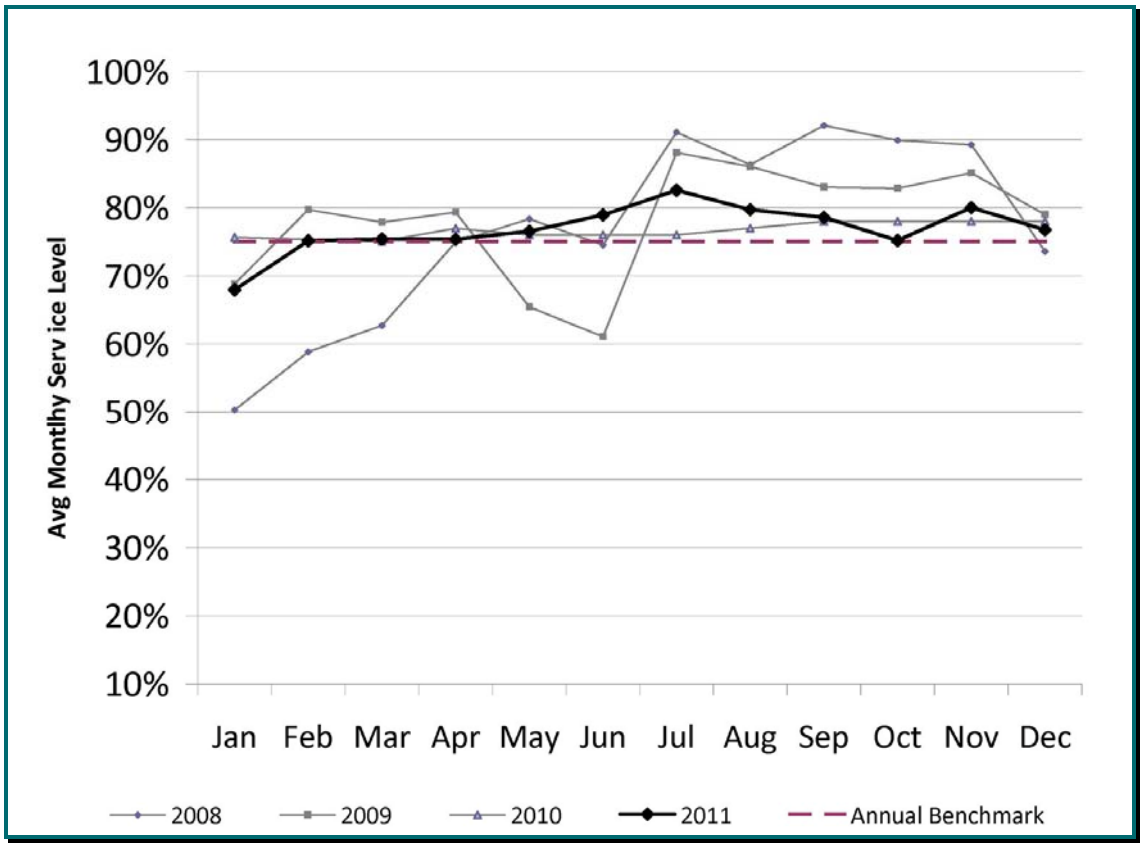

Figure 3: 2008 to 2011 Customer Access Center Monthly Answering Performance

Technology Enhancements

PSE provides CSRs with technological tools that make their tasks easier to perform and more accurate.

- ImageVision creates the payment processing deposit file to send to the bank each morning. Upgrades to the ImageVision application server enhanced the processing speed, reliability and ability to recover from any hardware failure. This enhancement resulted in being able to process about 24 percent more payments by the morning deposit deadline. This efficiency expedites posting of customer payments onto their accounts.
- Phase 2 of the Cisco Systems implementation enhanced the system's ability to route calls based on call times to the first available agent with the skill set to handle that particulate call type. The system can provide the CSRs a proactive notification on the call type they are about to receive.
- A professional voice talent has been used to improve the accuracy and quality of the Spanish prompts in the IVR phone system.

- Workforce Management improvements:
  - The eWorkforce Management tool used by the Workforce Management team has been enhanced to leverage an integrated approach to communications across the enterprise, enable more robust workforce planning capabilities, extend communication to employees through Microsoft Outlook and enhance workforce planning for back-office operations. This enhancement allows for real time adjustments to resources to ensure agents are available when customers are calling into specific queues.
  - A back-office performance worksheet for forecasting and scheduling back-office operations has been implemented to provide a more efficient allocation of back-office staff, to meet service goals and better handle backlogs.

Outage Management System (OMS)

The vision of the Outage Management System is to better serve PSE's electric customers by providing customers with more accurate outage information and responding to and resolving outages more rapidly. The project is currently in the software configuration phase. At the same time, needed electrical system asset information is being acquired or converted.

Customer Information System (CIS)

PSE has also kicked off the Customer Information System project which will replace outdated technology with a new CIS that will:

- Streamline customer interactions
- Increase Customer Service efficiencies
- Lay the foundation for future customer interactions (e.g., self-service and information via mobile devices)

The project is currently in the blueprint (design) phase.

Training Accomplishments

PSE promotes efficiency and excellent customer service through extensive training and process improvements. PSE continues to improve and monitor training to support enhanced CAC call performance.

- **Modular Training**—Modular training was implemented and consists of alternating one week in training with one week on the phones, closely assisted by the Customer Access Center leadership team. Using this method, new agents are able to assist with outage calls, start/stop services and billing related calls early in their training. This process helps to solidify agent's knowledge and ability before they move on to more complex calls.

Abandoned Calls

Call abandonment is the term referring to when customers hang up before they reach a CSR. The Customer Access Center makes every effort to answer all incoming calls within 30 seconds.

Table 11 shows PSE's five-year history of total incoming calls to CSRs from 1-888-Call-PSE and the number of calls abandoned by customers:

Table 11: Total Calls Requesting to Speak to a CSR and Abandoned Call History from 2007 to 2011

	2007	2008	2009	2010	2011
Total calls requested to speak to a CSR	2,382,130	2,309,902	2,134,358	2,023,165	2,152,292
Calls abandoned	91,306	69,256	64,447	63,365	71,606
Percent abandoned	3.8%	3.0%	3.0%	3.1%	3.3%

Busy Calls

PSE's phone system is configured with a backup system to handle overflow customer calls to 1-888-Call-PSE. Overflow calls from PSE's main IVR system are routed to a separate IVR system provided by PSE's phone service vendor that enables customers to contact PSE through a different channel. All 2011 customer calls to 1-888-Call-PSE either went through the main or the overflow backup system without encountering a busy signal.

Going Forward

In 2012, PSE will:

- Expand the cross-training of the web functions to remote CSRs. Web functions include customer correspondence via PSE.com and email
- Continue to support the initiative of increasing paperless adoption through the following methods:
  - Consolidate PSE's various web payment applications into a single platform that will provide a consistent user experience and better adoption potential of e-billing (pay online and paperless)
  - Add a mobile application that will provide customers another medium to view and pay their bill
- Deploy technology upgrades such as the Outage Management System and the Customer Information System
- Continue to monitor the IVR system for new programming options that would benefit the Customer Access Center and the customers
- Continue to search for process improvement opportunities and deliver robust, sustainable, measurable and improved outcomes

Operations Services

PSE is committed to delivering safe and dependable electric and natural gas service. Many factors influence how dependable energy can be delivered.

Providing reliable electric service to homes and businesses is inherently more susceptible to changes in weather conditions than providing natural gas service, because heavy rainfalls, high winds, and snow and ice can easily cause damage to the power lines and equipment, disrupting electric service. Damage to power lines from trees is a key issue for PSE because PSE's transmission lines average over 1,995 trees per mile, many more than other utilities. Natural gas service is less likely to be affected by most storms, but can be interrupted by excavation and natural disasters, such as earthquakes and flooding. In addition to the service interruption, gas leaks, low-hanging or downed power lines and other system equipment damage can pose serious safety risks. PSE has teams dedicated to responding quickly to electric and gas emergency situations and to restoring service to customers.

This section discusses the three Service Quality Indexes relating to operations services:

- Gas Safety Response Time (SQI #7)
- Electric Safety Response Time (SQI #11)
- Appointments Kept (SQI #10)

This section also discusses

- Customer Construction Services Department and Service Provider Performance
- Service Guarantees

For information on the Electric Service Reliability measures SQI #3 SAIDI and SQI #4 SAIFI, see the *Electric Service Reliability* section.

6 Gas Safety Response Time (SQI #7)

Overview

The primary responsibility of PSE's Gas First Response (GFR) team is to respond to natural gas emergencies. In 2011, PSE responded to about 22,800 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 first-response organizations, such as fire departments. PSE has Gas First Responders located throughout its service territory. These technicians are available on a 24/7/365 basis. PSE's ability to respond to these emergencies is tracked and reported in this chapter.

In addition, the GFR team performs various maintenance and inspection activities, adjusts and performs minor repairs on customer equipment and monitors excavation by contractors and others when it occurs near certain underground facilities.

In 2011, the overall average response time was 29 minutes, two minutes faster than last year and beating the benchmark. The following table reports the results for 2011.

Table 12: Gas Safety Response Time for 2011

Key Measurement	Benchmark	2011 Results	Achieved
Gas safety response time (SQI #7)	Average 55 minutes or less from customer call to arrival of field technician	29 minutes	☑

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.

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

What Influences Gas Safety Response Time?

The response time for a typical safety-related customer request, such as if a gas leak is suspected, depends on a number of factors, including:

- Time of year
- Time of day
- Location of the incident and location of nearest available responder—especially if it can only be reached by ferry, such as Vashon Island
- Traffic conditions
- Number of concurrent gas safety calls or system-wide emergencies

In case of a natural gas emergency, such as a ruptured gas main, firefighters and other emergency personnel may be the first to arrive. PSE works with the fire departments in PSE's service area to train them in the appropriate practices for responding to natural gas emergencies. The training includes the proper method to turn off the natural gas to a building and evacuate occupants as well as an overview of PSE's response coordination and procedures. Annually, more than 1,000 municipal first responders participate in PSE's natural gas and electric safety training programs.

Historical Trend for Gas Safety Response Time

The following table shows the average gas safety response time from 2007–2011.

Table 13: Gas Safety Response Time from 2007 to 2011

	2007	2008	2009	2010	2011
Gas safety response time	38 minutes	35 minutes	33 minutes	31 minutes	29 minutes
Benchmark	Average of 55 minutes from customer call to arrival of field technician				

Working to Uphold Gas Safety Response Time

PSE continues to work to maintain its gas safety response time at a level which meets or exceeds the SQI threshold by:

- Continued review of shift schedules to align personnel with trends in when emergencies are reported. This effort includes a studying of all emergencies and how call-out areas for after-hours call-outs are designed.
- Continued utilization of the Mobile Workforce Dispatch System with computer-aided dispatching, which enables PSE to better assign the available service technicians required in a gas safety situation and to determine the closest possible responder.
- Continued employee training efforts including new gas worker training, gas operator qualification training and new standards and procedures.

Percentage of Gas Safety Response Times within 60 Minutes

Table 14: Gas Safety Response Times within 60 Minutes in 2011

Month	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Percent responses within 60 minutes	97%	97%	97%	98%	98%	98%	98%	98%	95%	94%	97%	96%

Update in SQI #7 Process

Prior to May 2011, the gas emergency response time data have been stored in an Access database. In May 2011, in order to enhance security and reliability, PSE added a SAP business warehouse mechanism to store the data. Both systems ran in parallel through the end of the 3rd quarter to ensure that the new storage system was functioning correctly. There is no change in the calculation of SQI #7 Gas Safety Response Time.

Going Forward

PSE will continue to evaluate emergency response time data. As opportunities for improvement are discovered, PSE may 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.

7 Electric Safety Response Time (SQI #11)

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 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 12,000 electric incidents in 2011.

PSE continues to strengthen its electric safety response work processes and has met the electric safety response time benchmark, just as it has since the inception of this metric in 2002. The following table reports the results for 2011.

Table 15: Electric Safety Response Time for 2011

Key Measurement	Benchmark	2011 Results	Achieved
Electric safety response time (SQI #11)	Average 55 minutes or less from customer call to arrival of field technician	51 minutes	☑

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 customer call 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 as a result of:

- Major event days when five percent 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 field technicians in a local area are dispatched to respond to service outages.

What Influences Electric Safety Response Time?

Electric safety response time is influenced by many factors, including:

- **Number of electric safety responses**—The number of electric safety events varies during the year and is typically higher during the storm season where response times may be longer.
- **Time of day an event occurs**—Events that occur outside of normal business hours often require call-out responses and may incur a greater response time. Events that occur in early morning or late afternoon may experience longer response times due to traffic conditions. More than 32 percent of outages in the 12 months that ended December 2011 occurred during the peak commute hours of 7 a.m.–10 a.m. and 4 p.m.–6 p.m.
- **Weather conditions**—PSE responds to electric incidents in all weather conditions. Response times can be lengthened by adverse driving conditions such as snow, ice, flooded streets, landslides or downed trees.
- **Location of the emergency event**—Some areas in PSE's service territory can only be reached by ferry, bridge and border crossings or are remote and may require snow-machines or "walk-ins" to access.
- **Location of the nearest, available responder**—PSE's approximately 80 EFR personnel live and work throughout PSE's service territory and are readily available to respond to an outage or electric system incident. Although PSE has six operating bases, the majority of the time personnel respond directly from a field location, where they may be working on non-emergency or non-outage customer requests. For after-hours emergencies, they generally respond directly from their homes.

Historical Trend for Electric Safety Response Time

The following table shows average electric safety response time from 2007 to 2011.

Table 16: Average electric safety response time from 2007 to 2011

	2007	2008	2009	2010	2011
Electric safety response time	52 minutes	55 minutes	51 minutes	52 minutes	51 minutes
Benchmark	Average of 55 minutes from customer call to arrival of field technician				

Working to Decrease Electric Safety Response Time

In 2011, PSE strengthened procedures and processes aimed at reducing electric safety response time. These efforts include:

- Finalized the Request For Information (RFI) process for a new first responder call out system to be implemented alongside the new Outage Management System (OMS).
- Adjusted first responder shift coverage in one region to bring the use of existing resources in line with outage occurrence trends.
- Increased emphasis on monthly performance updates with first responders throughout the year to foster greater focus on timely incident response.
- Added dedicated Systems Operator staff to improve incident response and communication with EFR field staff.

Going Forward

In 2012, 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:

- Complete the Request for Proposal process with a selected group of call-out system software vendors, finalize selection of a system and begin first stages of implementation by the end of the year.
- Implement the Outage Management System technology, providing improved electric system information to increase efficiency in managing outage events and first response personnel.
- Continue to allocate System Operations resources to all regions during non-core business hours to improve timely deployment of first responders and outage communication.
- Continue to regularly analyze and optimize first responder shift scheduling to correspond with daily outage trends.
- Dispatch crews in parallel with servicemen on specific outages such as car-pole accidents and certain underground cable failures.

8
Appointments Kept (SQI #10)

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.

Other types of service, such as those involving safety, do not require scheduling and are performed on a 24/7/365 basis. These non-scheduled services include restoring electric service due to PSE outages or responding to a reported gas odor.

When a residential 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 2011, PSE achieved a result of 100% for this appointments kept metric. However this achievement did not mean PSE and its Service Provider kept all of the 126,156 appointments it made as the data is rounded to the nearest whole percentage per the UTC order. Data on missed appointments and other appointment information by service type is detailed in Appendix F: *Customer Service Guarantee Performance Detail.*

Table 17: Appointments Kept for 2011

Key Measurement	Benchmark	2011 Results	Achieved
Appointments kept (SQI #10)	At least 92% of appointments kept	100%	☑

For information on customer credits, see Chapter 10: *Service Guarantees.*

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 will be considered missed when PSE does not arrive during the time period or on the agreed upon date. The following are not considered missed appointments:

- 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.

Appointments that have been canceled by the customer, regardless of the customer's reason, will be considered "canceled" appointments and are not counted as either kept or missed appointments.

Additional appointments to complete repairs are considered new appointments.

Historical Trend for Appointments Kept Performance

The following table shows the percentage of appointments kept from 2007–2011.

Table 18: Appointments Kept from 2007 to 2011

	2007	2008	2009	2010	2011
Appointments kept	99%	99%	99%	100%	100%
Benchmark	92% of appointments kept				

Working to Maintain the Percentage of Appointments Kept

In 2011, PSE:

- Used mobile workforce tools to balance scheduled service work among workers and to identify and address issues that cause an appointment to be missed.
- Implemented processes to ensure reconnection requests received during non-business hours were scheduled and completed within 24 hours.
- Monitored and reviewed causes for missing appointments; provided regular feedback and coaching to PSE and service providers' personnel.

Going Forward

PSE has consistently exceeded this metric with a rating at or near 100 percent. PSE will continue its current efforts to maintain its appointments-kept service results. PSE will:

- Continue to review the reasons for missed appointments and work to find solutions so that PSE can meet customer commitments.
- Implement software to streamline the electric residential reconnect process and improve efficiency.

9 Customer Construction Services Department and Service Provider Performance

Customer Construction Services Department

The Customer Construction Services Department partners with PSE's service providers (Pilchuck and Quanta) who provide project management, design and construction services for most new customer construction projects.

The primary responsibility of PSE's Customer Construction Services Department is to facilitate the provision of new and modified natural gas and electric service to prospective and new residential, commercial and industrial customers. The department manages four areas of service:

- **New Customer Construction Support**—Processes applications for new and modified natural gas and electric installations, schedules temporary electric services for new customer construction projects, initiates new customers' accounts and reviews new customer construction payment requirements. New service inquiries come through phone calls, emails and faxes to these employees who guide customers through the construction process.
- **Pre-Engineering Services**—Provides gas and electric pre-construction new service application assistance to prospective customers. Prospective customers include individual homeowners, builders, developers and their contractors, electricians and gas equipment dealers. This work includes collaborating with customers to provide "ballpark" job cost estimates and assistance with PSE construction standards, tariff requirements and potential alternatives to unique project requirements.
- **Contract Management Services**—Manages and coordinates with PSE service providers who perform design, permitting and construction work on PSE's behalf. Contract Management Services also works with PSE's Rate Department to address rate and tariff clarifications, perform design audits and resolve customer concerns with service provider performance.
- **Builder Relations**—Focuses on enhancing relationships and communications with new home builders and building industry leaders while promoting energy efficiency opportunities.

Service Provider Index (SPI) Performance

In 2011, PSE monitored 62 important metrics to measure the performance of its primary natural gas and electric service providers (Pilchuck and Quanta). These metrics address 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 SQI program.

Changes to the Service Provider Program in 2011

In 2010, PSE embarked on a Request for Proposal process for the natural gas construction and maintenance services that had been performed by Pilchuck. After careful evaluation, Quanta Services (doing business as InfraSource in the PSE service area) was selected. The transfer of work from Pilchuck to Quanta was completed at the end of first quarter 2011. At this time, Quanta Services began performing all of PSE's electric and natural gas construction and maintenance work.

As a result of this change, service provider SPIs related to natural gas services were tracked for Pilchuck and Quanta Gas during the months of January, February and March but only for Quanta Gas for the rest of the year because Pilchuck was no longer performing these services for PSE.

Service Provider Indexes

The four service provider metrics relevant to PSE's SQI program are:

- **Service provider standards compliance (SPI #1)**—SPI #1A tracks standards compliance by Pilchuck, SPI #1B tracks standards compliance by Quanta Electric and SPI #1C tracks standards compliance by Quanta Gas.
- **Service provider customer satisfaction (SPI #2)**—SPI #2A tracks customer satisfaction with Pilchuck, SPI #2B tracks customer satisfaction with Quanta Electric and SPI #2C tracks customer satisfaction with Quanta Gas.
- **Service provider appointments kept (SPI #3)**—SPI #3A tracks appointments kept by Pilchuck, SPI #3B tracks appointments kept by Quanta Electric and #3C tracks appointments kept by Quanta Gas.
- **Secondary safety response time (SPI #4)**—SPI #4A tracks secondary safety response time by Pilchuck, SPI #4B tracks secondary safety response and restoration time by Quanta Electric for core hours, SPI #4C tracks secondary safety response and restoration time by Quanta Electric for non-core hours, and SPI #4D tracks secondary safety response time by Quanta Gas.

The benchmarks for each of the service providers are based on reasonably achievable improvement over past years' performance.

Service Provider Standards Compliance (SPI #1)

Service providers must meet a minimum percent compliance with PSE's site audit checklists (See Benchmarks in Table 19). All service providers met this SPI at 99 percent in 2011. The detailed 2011 results show:

- **Pilchuck**—99 percent
- **Quanta Gas**—99 percent
- **Quanta Electric**—99 percent

The following table shows service provider standards compliance over the past five years.

Table 19: Service Provider Standards Compliance from 2007 to 2011

	2007	2008	2009	2010	2011
Pilchuck					
Service provider standards compliance (SPI #1A)	98%	97%	99%	99%	99%
Benchmark	95% compliance with PSE's site audit checklists				
Quanta Gas					
Gas service provider standards compliance (SPI #1C)	98%	98%	98%	98%	99%
Benchmark	97% compliance with PSE's site audit checklists				
Quanta Electric					
Electric service provider standards compliance (SPI #1B)	97%	96%	98%	97%	99%
Benchmark	97% compliance with PSE's site audit checklists				

Customer Satisfaction (SPI #2)

In 2011, Pilchuck and Quanta Gas were required to achieve a minimum 84 percent satisfactory rating (rating of 5 or higher on the 7-point survey scale). Quanta Electric was required to meet a minimum 77 percent satisfactory rating on the same 7-point scale for new construction customers surveyed regarding contractor engineering and construction activities. The detailed 2011 results show

- **Pilchuck**—85 percent
- **Quanta Gas**—87 percent
- **Quanta Electric**—81 percent

The following table shows service provider customer satisfaction over the past five years.

Table 20: Service Provider Customer Satisfaction Performance from 2007 to 2011

	2007	2008	2009	2010	2011
Pilchuck					
Customer satisfaction performance (SPI #2A)	88%	86%	86%	88%	85%
Benchmark	83%	83%	84%	84%	84%
Quanta Gas					
Customer satisfaction performance (SPI #2C)	N/A	N/A	N/A	N/A	87%
Benchmark	N/A	N/A	N/A	N/A	84%
Quanta Electric					
Customer satisfaction performance (SPI #2B)	76%	77%	77%	79%	81%
Benchmark	78%	78%	75%	75%	77%

Service Provider New Customer Construction Appointments Kept (SPI #3)

Pilchuck and Quanta must keep at least 98 percent of their new customer construction appointments.

In 2011, both service providers kept 100 percent of their new customer construction service guarantee appointment dates and exceeded the benchmark. The number of new customer construction appointments for both PSE and its service providers—scheduled, kept, missed and cancelled—is detailed by energy and month in Appendix F: *Customer Service Guarantee Performance Detail* under the service type "Permanent SVC."

The following table shows service providers percentages of appointments kept for the past five years. The percentages of appointments kept shown in the table are rounded to the nearest whole percentage per the UTC order.

Table 21: Service Provider Appointments Kept from 2007 to 2011

	2007	2008	2009	2010	2011
Pilchuck					
Service provider appointments kept (SPI #3A)	100%	100%	100%	100%	100%
Benchmark	92%	92%	98%	98%	98%
Quanta Gas					
Service provider appointments kept (SPI #3C)	N/A	N/A	N/A	N/A	100%
Benchmark	N/A	N/A	N/A	N/A	98%
Quanta Electric					
Service provider appointments kept (SPI #3B)	100%	100%	100%	100%	100%
Benchmark	98%	98%	98%	98%	98%

Secondary Safety Response Time (SPI #4)

This SPI consists of four sub indices:

- **Service Provider Index #4A**—Secondary safety response time—Pilchuck
- **Service Provider Index #4B**—Secondary safety response and restoration time, core-hours—Quanta Electric
- **Service Provider Index #4C**—Secondary safety response and restoration time, non-core-hours—Quanta Electric
- **Service Provider Index #4D**—Secondary safety response time—Quanta Gas

Secondary Safety Response Time—Pilchuck (SPI #4A)

Response time is measured from when PSE's Gas First Response (GFR) team completes their assessment until the service provider's secondary response team arrives. The following table shows Pilchuck's secondary safety response performance from 2007–2011.

Table 22: Secondary Safety Response Time—Pilchuck (SPI #4A) Performance from 2007 to 2011

	2007	2008	2009	2010	2011
Pilchuck gas secondary safety response performance (SPI #4A)	55	54	52	51	51
Benchmark	Not exceed 60 minutes				

Secondary Safety Response and Restoration Time, Core-Hours and Non-Core-Hours—Quanta Electric (SPI #4B and SPI #4C)

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. In 2011, Quanta Electric had an average restoration time of 234 minutes during core hours, and an average restoration time of 273 minutes during non-core hours.

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.

The following table shows Quanta Electric's average secondary safety response performance during core-hours and non-core-hours from 2007–2011.

Table 23: Secondary Safety Response and Restoration Time—Quanta Electric (SPI #4B & #4C) from 2007 to 2011

	2007	2008	2009	2010	2011
Secondary Core-Hours, Non-Emergency Safety Response and Restoration Time (SPI #4B)	261	241	242	242	234
Core Hours Benchmark	Not exceed 250 minutes				
Secondary Non-Core-Hours, Non-Emergency Safety Response and Restoration Time (SPI #4C)	317	277	281	278	273
Non-Core Hours Benchmark	Not exceed 316 minutes				

Secondary Safety Response Time—Quanta Gas (SPI #4D)

Quanta Gas must respond within 60 minutes on average from PSE's Gas First Response (GFR) assessment completion to the service provider's secondary response arrival. In 2011, Quanta Gas had an average response time of 53 minutes. The following table shows Quanta Gas's secondary safety response performance from 2007–2011. The 2007–2010 information is not available because Quanta Gas just began providing services for PSE in 2011.

Table 24: Secondary Safety Response Time—Quanta Gas (SPI #4D) Performance from 2007 to 2011

	2007	2008	2009	2010	2011
Quanta Gas secondary safety response performance (SPI #4D)	N/A	N/A	N/A	N/A	53
Benchmark	Not exceed 60 minutes				

Actions Taken to Improve Customer Satisfaction with the New Customer Construction Process

PSE surveyed over 900 randomly selected customers, builders, developers and electricians who have done business with PSE in 2011. The surveys showed that overall customer satisfaction improved slightly in 2011, with an average overall satisfaction rating of more than 87 percent compared, to an overall average of 82 percent in 2010.

PSE and its service providers have partnered to develop or advance the following process improvement initiatives to improve customer satisfaction with the overall new customer construction process:

- Renewed emphasis on Task Tracking to ensure it is being used effectively by the service providers and PSE personnel. Task Tracking is used to better understand time lines for specific tasks and communicate average time lines to the customer. Task Tracking has been expanded so that PSE and service provider representatives can view the history and status of a particular request or project. Customers are better served because they no longer have to restate their concern every time they call with either a question or a status check.
- Placed an informational video about the construction of temporary electric services on PSE.com in early 2011. It has received over 1,500 views from customers. The second construction video, on joint trench for both electric and natural gas services was posted to PSE.com in late 2011. A third video covering natural gas service construction will be posted on PSE.com in early 2012.
- Enhanced PSE.com content usability for new construction projects by improving navigation for easier access to information related to construction guidelines and installation requirements.

- Updated PSE's Natural Gas and Electric Service Handbooks to increase customer understanding of the construction process and to improve customer satisfaction. These publications outline PSE's processes and installation requirements to provide necessary information to new customers for a safe and efficient installation. New customer materials for switching to natural gas were completed in early 2011. This work will continue into 2012 to include more communication materials specific to those building new homes and new developments.

The following 2011 PSE initiatives were designed to improve builder and developer satisfaction:

- Met regularly on-site with builders to review construction standards and PSE processes to minimize the red tags that indicate a problem and can slow project completion.
- Produced and distributed regular issues of *PSE Builder News* to about 2,800 building industry associates as well as posted each newsletter to PSE.com and distributed to members of seven local home builder associations. The publication includes information on standards, tariff changes, energy efficiency and PSE new construction contact information.
- Participated as active members in seven local home builder associations and participated in about 110 association meetings, trade shows and educational events to increase operational understanding of PSE processes and to garner industry input.

Service Providers and Customer Construction Services Department Training

PSE conducts on-going training to target improvement in:

- Technical skills
- Role definition and responsibilities
- Customer communications

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

- Updating and maintaining a Quick Reference Guide on the internal Customer Construction Services Department website.
- Providing "phone pro" training.
- Providing classroom training, using in-house gas and electric 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 has several new customer construction initiatives for 2012 including:

- Creating or enhancing new customer communication materials.
- Participating in the development and implementation of Customer Information System, Geospatial Information System and Outage Management System projects.
- Emphasizing more thorough and comprehensive project management, including better matching skill sets of project managers and engineers to project complexity. This improved project management should result in improved service to the customer.
- Refining the post construction audit to identify areas of weakness and provide coaching and training where needed.

In addition, Quanta Gas will be providing electronic hand-held devices to the field personnel to help reduce input redundancy and streamline the records process flow.

10
Service Guarantees

Overview

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

Customer Service Guarantee

Customer Service Guarantee (CSG) is designed to give customers a $50 missed appointment credit if PSE or its service providers fails 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 G: *Customer Awareness of Customer Service Guarantee.*

Restoration Service Guarantee

Whenever a customer experiences a 120 consecutive-hour power outage, the customer may be eligible for a $50 Restoration Service Guarantee 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 five percent or more PSE electric customers are without power, or when PSE opens its Emergency Operations Center in response to a significant outage event. Information on the Restoration Service Guarantee and the Customer Service Guarantee is provided on PSE.com, was on the back of billing-stock throughout 2011 and was highlighted in the 2011 March–April, July–August and November-December editions of the customer newsletter as part of customer bill inserts.

2011 Service Guarantees Credits

Customer Service Guarantee Credits

In 2011, PSE credited customers a total of $14,400 for missing about 300 of the 126,156 scheduled appointments.

Table 25: 2011 PSE Customer Service Guarantees Credits

	SQI #10 Appointment Count			Service Guarantee Payment to Customers		
Service Type	**Electric**	**Natural Gas**	**Total**	**Electric**	**Natural Gas**	**Total**
Permanent Service	6,316	7,847	14,163	$1,100	$9,550	$10,650
Reconnection	51,282	30,707	81,989	$2,000	$950	$2,950
Diagnostic	N/A	30,004	30,004	N/A	$800	$800
Total	***57,598***	***68,558***	***126,156***	***$3,100***	***$11,300***	***$14,400***

Appendix F: *Customer Service Guarantee Performance Detail* provides additional detail on missed appointments along with the credits paid by appointment type and month as of December 31, 2011.

Service Provider Appointments Missed Penalties

The following table 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 26: Service Provider Missed Appointment Penalties for 2011

	SQI #10 Missed Appointment Count			Missed Appointment Penalties		
Service Provider	**Electric**	**Natural Gas**	**Total**	**Electric**	**Natural Gas**	**Total**
Pilchuck	N/A	17	17	N/A	$850	$850
Quanta Gas (InfraSource)	N/A	161	161	N/A	$8,050	$8,050
Quanta Electric	22	13	35	$1,100	$650	$1,750
Total	***22***	***191***	***213***	***$1,100***	***$9,550***	***$10,650***

Restoration Service Guarantee Credits

PSE is committed to review all prolonged outages that may trigger the Restoration Service Guarantee (RSG) and any customer requests of the RSG credit within 30 days of a request. During 2011, there was no outage event that lasted more than 120 consecutive hours, and no customer requested the RSG credit.

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 Indices (SQIs) 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 chapters detail PSE's System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) performance and discuss the Washington State annual reliability reporting requirements and results for the 2011 calendar year.

In 2011, SQI SAIDI decreased by 2 percent when compared to 2010 results and PSE met the SQI SAIDI benchmark. Since the SQI SAIDI benchmark is based on the five year average methodology, the slight decrease is due to the 2011 Total Annual SAIDI results being lower than the year it replaced.

While PSE continues to meet the SQI SAIFI benchmark, SQI SAIFI increased by 19 percent when compared to 2010. The 2011 results for measurements with major outage event exclusion saw a decline in performance as compared 2010. Those measurements allow PSE to exclude days when the respective thresholds are exceeded which typically occur during major weather events. In 2011, PSE only experienced one major weather event but more minor weather events than in 2010. At the same time, during 2011, the total number of disruptions to customers decreased dramatically as indicated by $SAIFI_{Total}$. See Appendix L: *1997-Current Year PSE SAIFI and SAIDI Performance by Different Measurements* for more details.

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 performance based on an individual ranking (#1 being the best) and within four quartiles (first quartile being the best). In the 2010 IEEE survey of 109 member utilities, PSE ranked in the top 17 percent (1st quartile) and in the 46th percentile (2nd quartile) of SAIFI and SAIDI, respectively. PSE ranked better than in 2009, as PSE had a 7 percent and 14 percent improvement in SAIFI and SAIDI. The results of the 2011 IEEE survey are expected in August 2012.

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 snap-shots provide a useful view in context of the overall trends.

PSE's electric system covers a nine 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.

11
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* section of Chapter 13: *About Electric Service Reliability Measurements and Baseline Statistics.*

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 five percent 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 extreme weather or unusual events.
- **IEEE SAIFI ($SAIFI_{IEEE}$)**—Excludes days that exceed the IEEE definition for Major Event Days (IEEE T_{MED}). The 2011 T_{MED} is 7.68 minutes—that is, any day that exceeds 7.68 minutes per customer are excluded due to IEEE-defined Major Event Days.

Chapter 13: *About Electric Service Reliability Measurements and Baseline Statistics* 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.

2011 SAIFI Results

The 2011 results are reported in the following table.

Table 27: 2011 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)	N/A	1.24	1.07	
$SAIFI_{Total\ 5\text{-}year\ Average}$	Total (all outages five-year average) SAIFI	N/A	1.37	1.29	
$SAIFI_{5\%}$ (SQI #4)	<5% Non-Major-Storm (<5% customers affected) SAIFI	No more than 1.30 interruptions per year per customer	0.80	1.02	☑
$SAIFI_{IEEE}$	IEEE Non-Major-Storm (T_{MED}) SAIFI	N/A	0.71	1.02	

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 damage caused by trees and limbs impacted the most customers in 2011, as in previous years. Other major causes of outages within the other two categories include:

- 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
  - Bird or animal
- Third Party
  - Car-pole accidents
  - Scheduled outages for system maintenance or installation of new infrastructure

The following graph shows the common causes for outages in 2011 and their impact on customers across the four key measurements. As illustrated, tree-related outages drive the performance across the key measurements.

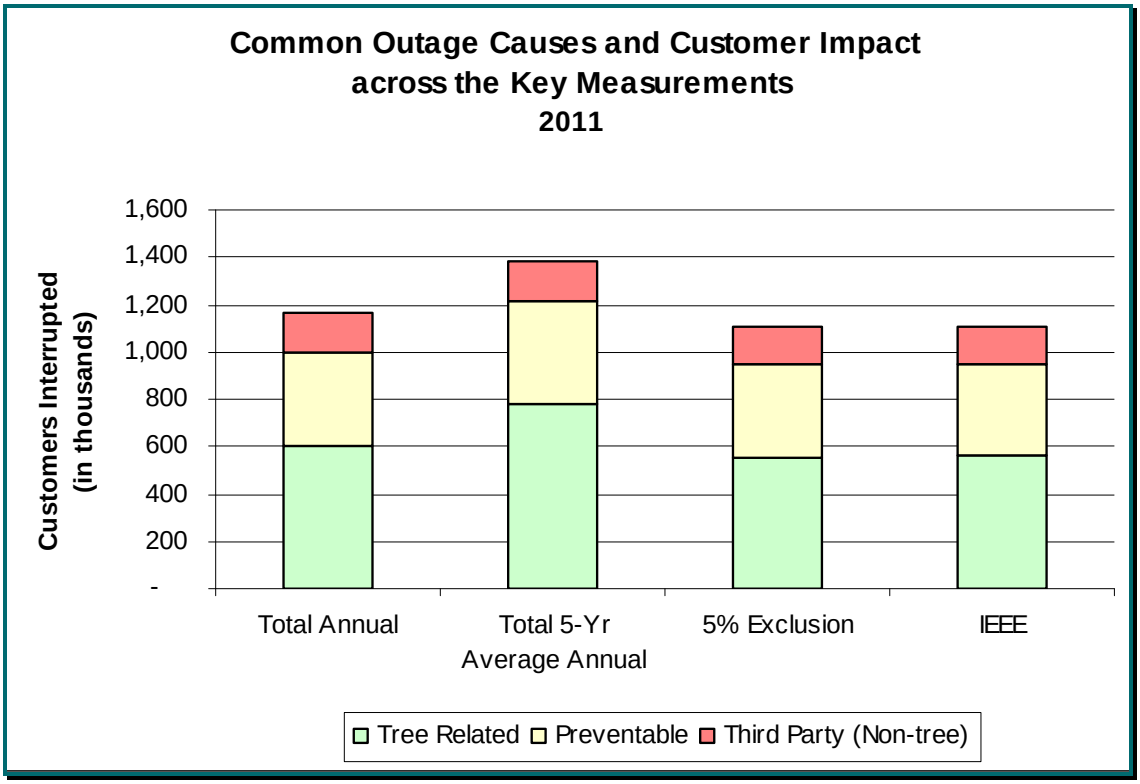

Figure 4: Common Outage Causes and Customer Impact Across the Key Measurements in 2011

Historical Trends for SAIFI

The following table shows SQI SAIFI from 2007 to 2011.

Table 28: SQI SAIFI from 2007 to 2011 (excluding major events)

	2007	2008	2009	2010	2011
$SAIFI_{5\%}$ (SQI #4)	0.97	1.01	1.09	0.86	1.02
Benchmark	1.30 interruptions per year per customer				

As shown in Table 28, 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 1997–2011. The 2011 results for $SAIFI_{Total}$ and $SAIFI_{Total\ 5\ year\ Average}$ saw an improvement in performance over 2010 due to fewer customers impacted by tree related outages as shown in the chart below. The 2011 results for $SAIFI_{5\%}$ and $SAIFI_{IEEE}$ measurements saw a decline in performance as compared to 2010. Those measurements allow PSE to exclude days when the respective thresholds are exceeded which typically occur during major weather events. In 2011, PSE only experienced one major weather event but more minor weather events than in 2010.

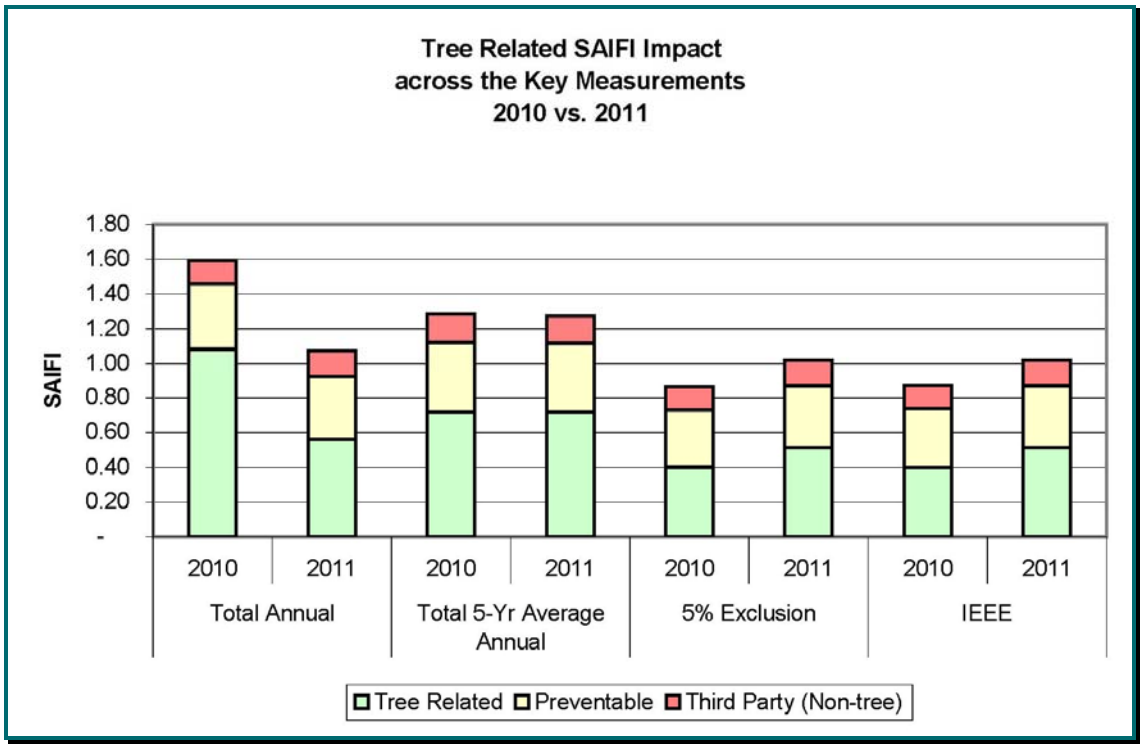

Figure 5: Tree Related SAIFI Impact Across the Key Measurements 2010 vs. 2011

Appendix K: *Historical SAIDI and SAIFI by Area* illustrates the 2009–2011 results by county under the four measurements. All counties except for Jefferson showed higher $SAIFI_{5\%}$ and $SAIFI_{IEEE}$ measurements in 2011 than in 2010. However, six of the nine counties that PSE serves saw an improvement in $SAIFI_{Total}$ performance.

As described more fully in the *Areas of Greatest Concern* section of Chapter 13: *About Electric Service Reliability Measurements and Baseline Statistics*, PSE continues to focus on identifying projects that will affect SAIFI, while managing other aspects of system performance.

12
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 maintenance, capital investments and improving service personnel response, assessment and repair time are targeted to preventing or reducing 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 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.[17]

[17] Per Docket Number UE-072300, 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 five percent 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 2011 T_{MED} is 7.68 minutes—that is, any day that exceeds 7.68 minutes per customer is excluded due to IEEE-defined Major Event Days.

Chapter 13: *About Electric Service Reliability Measurements and Baseline Statistics* 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.

2011 SAIDI Results

The 2011 results are reported in the following table.

Table 29: 2011 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)	N/A	532	163	
$SAIDI_{Total\ 5\text{-}year\ Average}$ (SQI #3)	Total (all outages five-year average) SAIDI	No more than 320 minutes per customer per year	326	281	☑
$SAIDI_{5\%}$	<5% Non-Major-Storm (<5% customers affected) SAIDI	N/A	132	144	
$SAIDI_{IEEE}$	IEEE Non-Major-Storm (T_{MED}) SAIDI	N/A	107	144	

What Influences SAIDI?

As noted in the SAIFI chapter, PSE tracks outages by cause codes and groups the outage causes into three major categories: tree related, preventable and third party. The following graph illustrates the influence of tree-related outages across the four key measurements; tree-related outages account for 46–59 percent of total customer minutes.

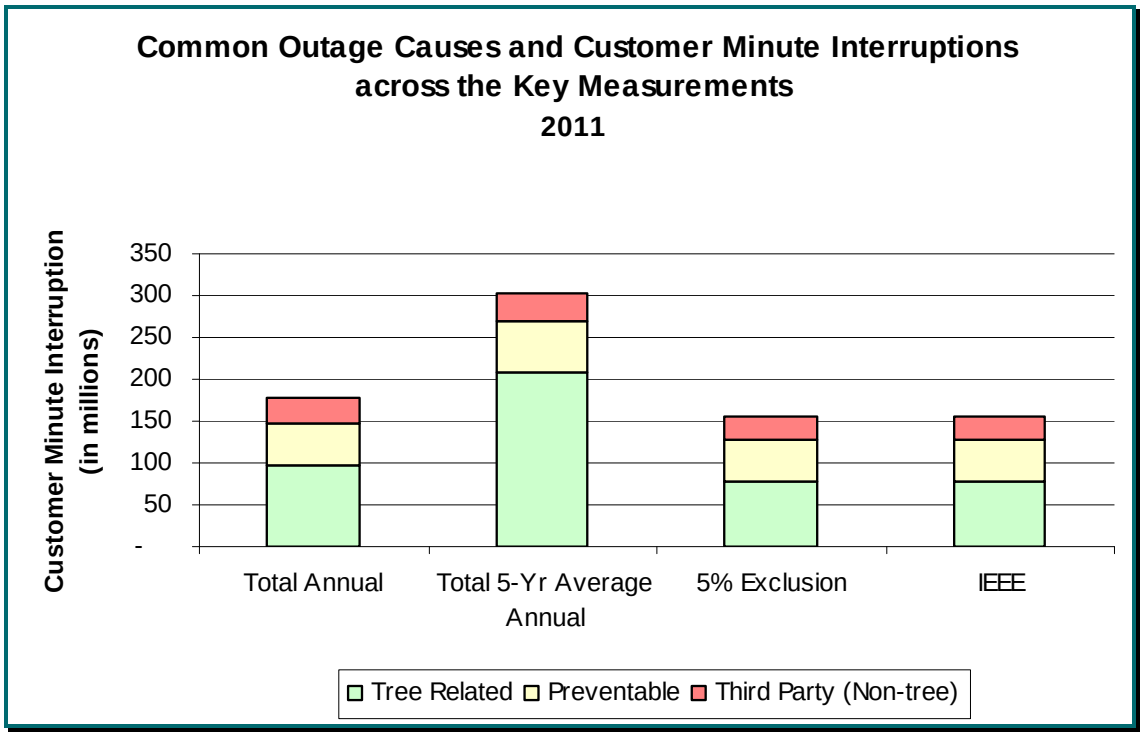

Figure 6: Common Outage Causes and Customer Minute Interruptions Across the Key Measurements in 2011

Tree related outages can greatly influence SAIDI performance. As an example, 2011 $SAIDI_{Total}$ minutes dropped by over 68 percent as compared to 2010, primarily driven by the reduction in tree-related outage minutes.

Trees and limbs cause the most outages on the system, 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.

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 percent 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.[18]

[18] Ecological Solutions Inc. study, March 3, 2009

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 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.[19]

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 or the Automated Meter Reading (AMR) system 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 Chapter 7: *Electric Safety Response Time (SQI #11)* for more detail.

In 2010 the average response time was 52 minutes and in 2011 it was 51 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. See Chapter 9: *Customer Construction Services Department and Service Provider Performance* 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 #4C and 4D) 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.

[19] *The Effects of Pruning Type on Wind Loading of Acer Rubrum* – E. Thomas Smiley and Brian Kane

Historical Trends for SAIDI

The following table shows SQI SAIDI from 2007 to 2011. The 2007 through 2009 results use the benchmark that was established at the time. The 2010 and 2011 results use the revised benchmark that was approved for the 2010–2013 reporting years.

Table 30: SQI SAIDI from 2007 to 2011

	2007	2008	2009	2010	2011
SAIDI$_{\text{Total 5-year Average}}$ (SQI #3)	167	163	190	287	281
Benchmark	136 minutes per customer per year, excluding 5% major events			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 1997-2011. Under the revised SQI SAIDI benchmark methodology and requirements, PSE's performance met the annual benchmark between 1997 through 2011 with the exception of 2003. The 2011 results for $SAIDI_{Total}$ and $SAIDI_{Total\ 5\ year\ Average}$ saw an improvement in performance as compared to 2010 because there was only one major storm in PSE's service territory during 2011.

The 2011 results for the $SAIDI_{5\%}$ and $SAIDI_{IEEE}$ measurements saw a decline in performance as compared to 2010. Those measurements allow PSE to exclude days when the respective thresholds are exceeded which typically occur during major weather events. While PSE experienced only one major weather event in 2011, there were more minor weather events than in 2010 which led to the decline in these two measurements.

The chart that follows illustrates the impact of tree-related outages. Tree-related outages account for over 50 percent of all customer-outage minutes during the last five years, ranging from a high of 85 percent in 2010 to a low of 55 percent in 2009 and 2011. The large swing in minutes reflect 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* section in Chapter 13: *About Electric Service Reliability Measurements and Baseline Statistics* describes PSE efforts to manage tree-related outages.

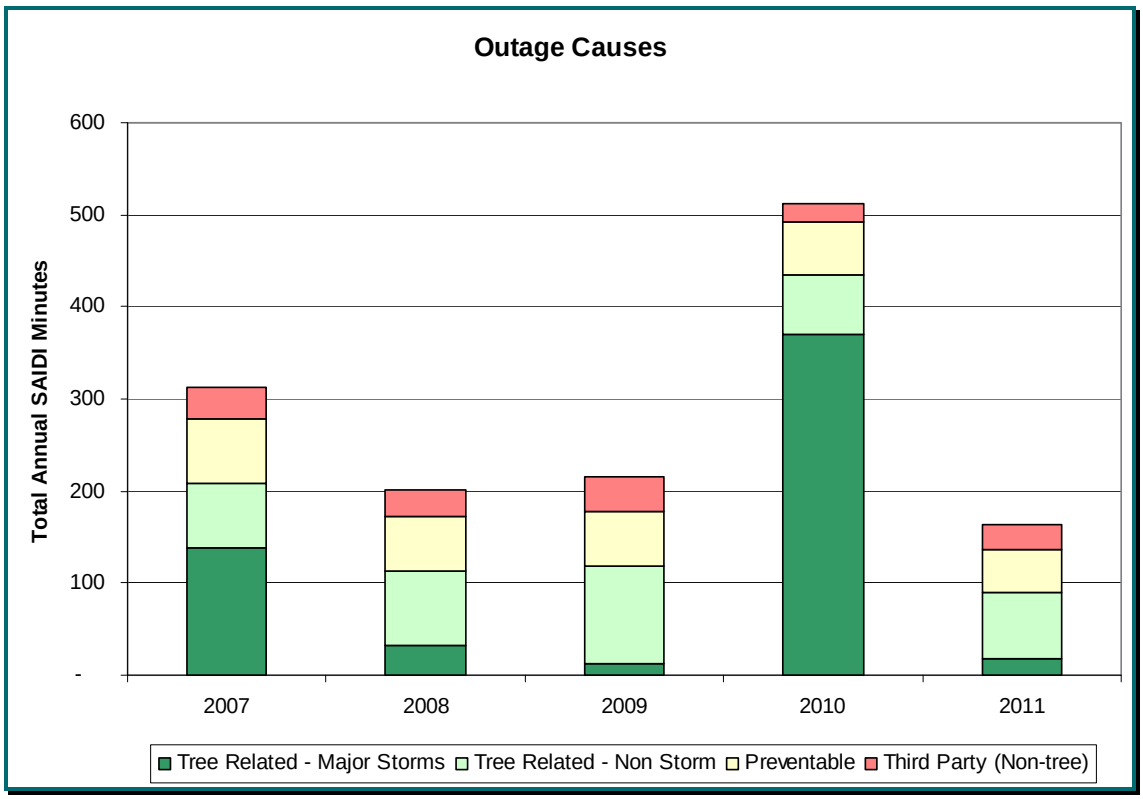

Figure 7: Outage Causes

Appendix K: *Historical SAIDI and SAIFI by Area* illustrates the 2009–2011 results by county under the four measurements. All counties except for Whatcom saw an improvement in $SAIDI_{Total}$ in 2011. However, most counties had a decline in $SAIDI_{5\%}$ and $SAIDI_{IEEE}$ performance in 2011, not surprising given that PSE had only one major weather event excluded but more minor weather events included than in 2010 under both criteria.

As described more fully in the *Areas of Greatest Concern* section of Chapter 13: *About Electric Service Reliability Measurements and Baseline Statistics*, PSE continues to focus on identifying projects that will affect SAIDI, while managing other aspects of system performance.

13
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 five percent 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 five percent 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: *Electric Reliability 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 usefulness of using a single year's system performance data or information to attempt to assess year-to-year trends. Such trend analysis may not prove useful, and PSE feels there is limited usefulness in designating one specific year's information as a "baseline."

Major Events

In 2011, weather was relatively mild as PSE only experienced one major weather event that met both the 5% exclusion and IEEE exclusion criteria:

- A February wind event that affected customers in Kitsap and Jefferson Counties and Vashon Island

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 small geographic area or a less populated county, it is possible to have events that exceed the IEEE T_{MED} but not meet the 5% exclusion criteria. There have been 18 such events since PSE has started reporting IEEE statistics in 2003.

Table 31: 2011 Comparison Between IEEE and 5% Exclusion Methods

IEEE T_{MED} Exclusion Dates	Daily SAIDI	5% Customers Out Exclusion	Cause	Span of 5% Customers Out Exclusion Dates
2/14/2011	18.79	5.28%	Wind	2/14/2011 @ 1700 – 2/15/2011 @ 1100

The below table details the 2007 through 2011 IEEE T_{MED} values, number of IEEE exclusion dates, number of 5% exclusion events and number of 5% exclusion event days. Since 2003, when PSE started reporting IEEE exclusions dates, 2011 was the first year that PSE experienced only one IEEE and 5% exclusion events.

Table 32: 2007 to 2011 Comparison of IEEE and 5% Exclusion Events

	2007	2008	2009	2010	2011
IEEE T_{MED}	6.87	7.36	6.95	7.21	7.68
Number of IEEE Major Event Days	7	4	7	10	1
Number of 5% Exclusion Major Events	4	1	2	6	1
Number of 5% Exclusion Major Event Days	16	5	4	20	2

Areas of Greatest Concern

The regional area planners study "area-of-concern" circuits and propose projects that will improve the reliability for those customers. 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 has decreased slightly, indicating that the system projects completed on the circuits has improved reliability.

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 2010 and 2011 annual ranking of the 50 worst-performing circuits along with PSE's completed or future plan for system improvements on each circuit.

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/Jefferson—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 that compete with other system-related projects for funding.

A discussion of the Total Energy System Planning (TESP) 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 *2011 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 the 10+ year reliability initiatives 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 five years from 2007 through 2011, PSE has experienced a decrease or remained static in the numbers of outage-related complaints received either by PSE or the UTC.

In 2011, the UTC received 17 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. See Table 39.*

During the rolling two-year period of 2010–2011, PSE received repeat complaints from 24 customers relating to reliability and power quality concerns. These complaints came through PSE's complaint process as 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. See Table 40.*

PSE continually investigates 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 customer complaint, 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 2011.

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 outage causes in each county in 2011. It shows that trees (TF, TO, TV), birds and animals (BA) and equipment failures (EF) continue to be the primary reasons for outages in 2011 as in previous years. While the number of scheduled outages (SO) is significant, it is not considered a reliability concern because the scheduled outages are usually taken to perform system upgrades and maintenance, which results in higher system reliability. This section discusses the efforts PSE takes to reduce the number of outages and the overall duration of 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 2012.

Vegetation Management

The general increase in SAIFI and SAIDI indices over the past few years is attributed to the increasing outages related to vegetation. 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 percent of tree-related outages are caused by tree growth, illustrating an effective Vegetation Management Program.[20]

Cyclical Programs

PSE spends more than $12.5 million annually on a systematic, cyclical vegetation-management program to reduce outages in its overhead electric distribution, high-voltage distribution and transmission systems.

[20] Ecological Solutions Inc. October 2008 page 39

- **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. Expanded efforts to meet new tree clearing requirements on transmission systems were completed in 2009 and efforts were made in 2010 to return to a four- and six-year distribution schedule. In 2011, PSE completed 1,997 miles of vegetation management. The maintenance cycle is planned to be back on schedule by 2013.
- **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 2011:
  - 564 miles of high-voltage distribution lines were maintained
  - 370 miles of transmission corridors were maintained under federal clearing requirements
  - The danger-tree patrol of the high-voltage distribution system was completed prior to the storm season on 1,762 miles of high-voltage line. The patrol identifies imminent hazard trees that could potentially fall during a wind storm. These trees are either trimmed or removed.
- **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 2011, a total of 300 miles were treated for undesirable trees.

TreeWatch Program

PSE also manages vegetation impacts 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 2011, the TreeWatch program addressed approximately 200 miles of transmission and high-voltage distribution lines and 120 miles of distribution lines. Over 11,000 trees were removed or pruned. In 2012, PSE plans to remove or prune another 15,000 off-right-of-way trees under the TreeWatch program. Our focus will be on those distribution circuits that continue to have tree-related outages, focusing on transmission, and high-voltage distribution lines.

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 Puget Sound Energy'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 percent of tree-related outages are caused by trees from outside the right-of-way and 68 percent 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.[21]

The study also revealed that: one-third of all tree-related outages are due to limbs falling on lines and 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, resulting in a reduction of tree-related outages.

Targeted Reliability Improvements

Along with vegetation management to minimize tree-related outages, PSE has 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, 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. In 2011, 25.8 circuit miles of tree wire was installed.

[21] Ecological Solutions Inc 3/09 study

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. Gang-operated switches provide the ability to simultaneously disconnect the three-phase lines rather than one phase at a time.

In 2011, 29 reclosers and 61 gang-operated disconnect switches were installed.

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 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. In 2011, 16 distribution substations were upgraded with SCADA. Ninety-nine percent of PSE's distribution substations have SCADA.

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.

Based on a 2007 study, silicone injection is only economically viable on single phase installations. This is based on a full analysis of total life cycle costs that included current silicone injection costs, trenching costs, cable neutral condition and operational considerations. Since this time, approximately 10 percent of cables receive silicone injection and the remaining cables are replaced.

In 2011, 75 miles of cable was remediated. PSE's cable remediation program prevented an estimated 2,390 outages in 2011.

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 2011, there were 38 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 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 2011, 17,306 poles were inspected and treated (10,132 distribution and 7,174 transmission) and 1,090 poles were replaced (737 distribution and 353 transmission).

Aging Overhead Infrastructure

Many of the tree-related outages result from the failure of smaller 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 2011, 23.7 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 2011, one transmission breaker, 17 distribution breakers and one relay package were replaced and two Spill Prevention, Control, and Countermeasure (SPCC) and grounding projects were completed under these programs.

In 2011, PSE hired an independent consultant to review our aging infrastructure programs. The report concluded that while PSE's practices mirrored much of the industry there were opportunities for improvement. The key recommendation for improvement is to transition to an economic life strategy, which includes consequence costs in the calculation for end-of-life of the asset.

Wildlife

In 2011, there were over 1,200 bird and animal caused outages, the lowest number recorded in the last 10 years. 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, animal-and bird-related outages have been decreasing 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 2011, the PSE Avian Protection Program completed 30 avian-protection retrofit projects, in response to over 155 bird mortalities, including 10 eagles, 46 swans and 13 raptors. Over 380 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

Scheduled outages, typically for connecting new or upgrading existing infrastructure, are the third leading cause of non-storm service interruptions. 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.

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. Starting in late 2010 and into 2011, PSE reviewed and evaluated the outage response process in order to further understand the drivers of response time. Results of the study indicated that there were varied factors that drove response time. PSE and its service provider continue to dispatch crews in parallel with servicemen on specific outages such as car-pole accidents and radial underground cable failures.

Going Forward

In 2012, PSE will continue its programs as described earlier. Specifically:

- **Vegetation Management**
  - Continue cycle maintenance with additional efforts to be back on schedule by 2013.
  - Remove or prune 15,000 off-right-of-way trees under the TreeWatch program, again focusing on worst performing distribution circuits, transmission and high-voltage distribution lines.
  - Conduct an aggressive tree trimming and overhanging branch reduction pilot study in the West Kitsap County area. The purpose of the pilot is to examine the effect of aggressive vegetation management on reliability relating to tree related outages. The circuit where this pilot study will occur is Chico-12, which has a history of tree-related outages and is one of the worst performing circuits in the company. The tree work is planned to be completed by fall 2012 and the impacts to reliability will be monitored annually.

- **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 M: *Current-Year Commission and Rolling-Two-Year PSE Customer Electric Service Reliability Complaints with Resolutions* and 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, and replacing failing poles and smaller overhead wires.
    - In addition to existing aging infrastructure programs, a 2012 initiative is currently underway to formalize PSE's assessment of risk to the transmission system due to aging breakers and transformers. This initiative is a result of the 2011 consultant's study of PSE's aging infrastructure programs. The initiative involves creating a model for assessing the equipment's condition, determining projected failure rates of the equipment based on condition, assessing the consequence of failure in each incidence and assessing the system risk. The initiative will allow a systematic and repeatable measurement of system risk and assist in prioritizing work and establishing appropriate replacement rates.
  - **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. Also, PSE will be evaluating and potentially piloting at least one recloser with communication for remote monitoring and control.
  - **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**—The distribution system in the City of Bellevue 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 the urban model of manual restoration should be replaced with remote SCADA switchgear to reduce the outage impact and to manage the system. This project is in year one of a five-year strategy to place SCADA switches into the CBD and to automate these as the systems develop.

- **Outage Management System**
  - PSE will establish an operational outage management system (OMS) by October 1, 2012. The new OMS will enable PSE to more quickly pinpoint the sources of power outages, efficiently direct repair efforts and help the company more accurately predict restoration times during day-to-day operations.

Appendices

This section contains the following appendices:

- A: *Monthly SQI Performance*
  - *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*
- B: *Certification of Survey Results*
- C: *Penalty Calculation (Not Applicable for 2011)*
- D: *Proposed Customer Notice (Report Card)*
- E: *Disconnection Results by Month*
- F: *Customer Service Guarantee Performance Detail*
- G: *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 Table 33 that provides monthly detail on the nine service quality indicators that are reported to the UTC.

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 33: Monthly SQI Performance

PSE 2011 Calendar Month SQI Performance

Category of Service	SQI #		Benchmark	Jan 2011	Feb 2011	Mar 2011	Apr 2011	May 2011	Jun 2011	Jul 2011	Aug 2011	Sep 2011	Oct 2011	Nov 2011	Dec 2011
Customer Satisfaction	6	Telephone Center Transactions Customer Satisfaction	90% satisfied (rating of 5 or higher on a 7-point scale)	94%	94%	94%	95%	98%	96%	97%	93%	96%	97%	95%	96%
	8	Field Service Operations Transactions Customer Satisfaction	90% satisfied (rating of 5 or higher on a 7-point scale)	95%	91%	96%	96%	95%	97%	98%	96%	99%	96%	99%	98%
	2	WUTC Complaint Ratio	0.40 complaints per 1000 customers, including all complaints filed with WUTC	0.025	0.026	0.032	0.035	0.023	0.029	0.016	0.024	0.021	0.020	0.017	0.016
Customer Services	5	Customer Access Center Answering Performance[NOTE 1]	75% of calls answered by a live representative within 30 seconds of request to speak with live operator	68%	75%	75%	75%	77%	79%	83%	80%	79%	75%	80%	77%
Operations Services	4	SAIFI	1.30 interruptions per year per customer	0.083	0.127	0.128	0.048	0.041	0.075	0.071	0.056	0.101	0.066	0.131	0.094
	3	SAIDI	320 minutes per customer per year	14	39	18	5	5	8	10	7	14	8	20	14
	11	Electric Safety Response Time	Average of 55 minutes from customer call to arrival of field technician	54	56	52	50	45	48	50	48	52	47	54	49
	7	Gas Safety Response Time[NOTE 2]	Average of 55 minutes from customer call to arrival of field technician	29	29	28	28	29	28	28	28	31	31	30	31
	10	Kept Appointments[NOTE 3]	92% of appointments kept	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note 1: Results shown exclude calls abandoned within 30 seconds, which had been included in the calculation in the prior years reporting. 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: Prior to May 2011, the gas emergency response time data have been stored in an Access database. In May 2011, in order to enhance security and reliability, PSE added an SAP business warehouse mechanism to store the data. Both systems were run and kept in parallel through the end of the 3rd quarter to ensure that the new storage system was functioning correctly. There is no change in the calculation of SQI No. 7 Gas Safety Response Time. Further details about the data storage change is included in Chapter 6 of the 2011 annual report.

Note 3: 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. Majority of the SQI No. 10 new customer construction appointments have been carried out by PSE's service providers, Pilchuck and Quanta. In April 2011, PSE finished its transition of natural gas construction and maintenance service provider from Pilchuck to Quanta Gas. The service provider change does not seem to have any effect on the SQI No. 10 results. Further details about the service provider change is included in the Chapter 9, Customer Construction Service and service provider performance, of the 2011 annual report.

Table 34: Monthly Service Quality Performance

PSE Service Providers 2011 Calendar Month Service Quality Performance

Category of Service	Index	Service Provider	Benchmark Description	Jan 2011	Feb 2011	Mar 2011	Apr 2011	May 2011	Jun 2011	Jul 2011	Aug 2011	Sep 2011	Oct 2011	Nov 2011	Dec 2011
Customer Satisfaction	Service Provider Satisfaction	Quanta Electric	At least 75% satisfied (rating of 5 or higher on a 7-point scale)						79%						82%
		Quanta Gas	At least 84% satisfied (rating of 5 or higher on a 7-point scale)						75% Note 1						87%
		Pilchuck	At least 84% satisfied (rating of 5 or higher on a 7-point scale)						85% Note 2						
Operations Services	Service Provider New Customer Construction Appointments Kept Note 3	Quanta Electric	At least 92% of appointments kept	99%	100%	100%	99%	100%	100%	100%	100%	100%	100%	100%	100%
		Quanta Gas/Pilchuck	At least 98% of appointments kept	97%	99%	100%	100%	98%	98%	100%	100%	100%	100%	100%	100%
	Service Provider Standards Compliance	Quanta Electric	At least 95% compliance with site audit checklist points	98%	98%	98%	98%	97%	98%	100%	100%	100%	100%	100%	100%
		Quanta Gas	At least 95% compliance with site audit checklist points	N/A	N/A	99%	96%	98%	94%	92%	96%	96%	94%	97%	96%
		Pilchuck	At least 95% compliance with site audit checklist points	99%	99%	99%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	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	229	229	229	229	229	229	233	250	244	225	236	223
	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	261	261	261	261	261	261	261	275	276	278	299	256
	Secondary Safety Response Time	Quanta Gas/Pilchuck	Within 60 minutes from first response assessment completion to second response	48	57	51	53	51	57	51	52	54	55	54	51

Note 1: The 75% performance of Quanta Gas is not statistically meaningful as the sample size for Quanta Gas is too small due the timing of the survey and the service provider transition.
Note 2: Pilchuck was replaced by Quanta Gas starting April 1, 2011; therefore there is no April–December Pilchuck result.
Note 3: 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.*

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 NO. 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
1/12/2011	Wind	West	1	21,108	139,871	15.1%	102	12 (of 13)	No	12 EFRs Event Duty + 1 EFR PTO/STD + 2 EFRs from Central North Event Duty + 2 EFRs from Central South Event Duty + 2 EFRs from South Event Duty + 19 SP Crews + 4 Tree Crews
2/12/2011	Wind	West	1	9,571	139,871	6.8%	20	8 (of 14)	No	8 EFRs Event Duty + 2 EFRs PTO/STD + 4 EFRs Regular Day Off + 2 SP Crews
2/14/2011	Wind	North	2	4,546	188,017	2.4%	13	13 (of 13)	Yes	13 EFRs Regular Duty
2/14/2011	Wind	Central North	2	14,041	292,258	4.8%	22	20 (of 20)	Yes	20 EFRs Regular Duty
2/14/2011	Wind	Central South	2	175	230,325	0.1%	3	12 (of 12)	Yes	12 EFRs Regular Duty
2/14/2011	Wind	South	2	314	231,968	0.1%	5	15 (of 15)	Yes	15 EFRs Regular Duty
2/14/2011	Wind	West	2	42,773	139,915	30.6%	56	12 (of 14)	Yes	12 EFRs Event Duty + 2 EFRs PTO/STD+ 12 SP Crews + 5 Tree Crews
2/19/2011	Wind	West	1	15,358	139,915	11.0%	19	9 (of 14)	No	9 EFRs Event Duty + 2 EFRs PTO/STD + 3 EFRs Regular Day Off + 1 EFR from South Event Duty + 6 SP Crews + 5 Tree Crews.
2/23/2011	Wind	North	2	2,244	188,017	1.2%	22	11 (of 13)	No	11 EFRs Event Duty + 2 EFRs PTO/STD + 7 SP Crews + 2 Tree Crews
3/2/2011	Wind	North	1	8,541	188,087	4.5%	81	12 (of 13)	No	12 EFRs Event Duty + 1 EFR PTO/STD + 19 SP Crews + 8 Tree Crews
3/2/2011	Wind	West	1	13,342	139,915	9.5%	62	12 (of 14)	No	12 EFRs Event Duty + 2 EFRs PTO/STD + 15 SP Crews + 7 Tree Crews
3/10/2011	Wind	Central North	2	991	292,009	0.3%	34	16 (of 20)	No	16 EFRs Event Duty + 2 EFRs Regular Duty + 2 EFRs PTO/STD + 1 EFR from West Event Duty + 7 SP Crews + 3 Tree Crews
3/10/2011	Wind	Central South	2	4,487	230,264	1.9%	22	8 (of 12)	No	8 EFRs Event Duty + 4 EFRs PTO/STD + 9 SP Crews + 4 Tree Crews

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

PUGET SOUND ENERGY

SQI NO. 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
9/25/2011	Wind	North	2	13,399	190,048	7.1%	125	8 (of 13)	No	8 EFRs Event Duty + 1 EFR PTO/STD + 4 EFR Regular Day Off + 8 SP Crews + 4 Tree Crews
9/25/2011	Wind	Central North	2	11,829	319,717	3.7%	60	13 (of 18)	No	13 EFRs Event Duty + 2 EFRs PTO/STD + 3 EFRs Regular Duty + 7 SP Crews + 4 Tree Crews
9/26/2011	Wind	North	2	4,013	190,048	2.1%	76	10 (of 13)	No	10 EFRs Event Duty + 3 EFRs PTO/STD + 8 SP Crews + 3 Tree Crews
9/26/2011	Wind	South	2	4,464	223,743	2.0%	44	8 (of 15)	No	8 EFRs Event Duty + 2 EFRs PTO/STD + 5 EFRs Regular Duty + 8 SP Crews + 4 Tree Crews
11/21/2011	Wind	North	3	8,331	190,406	4.4%	150	12 (of 14)	No	12 EFRs Event Duty + 2 EFRs PTO/STD + 7 SP Crews + 4 Tree Crews
11/21/2011	Wind	West	3	22,389	140,177	16.0%	85	10 (of 14)	No	10 EFRs Event Duty + 2 EFRs PTO/STD + 2 EFR Regular Duty + 10 SP Crews + 4 Tree Crews
11/24/2011	Wind	North	2	1,813	190,406	1.0%	39	8 (of 14)	No	8 EFRs Event Duty + 6 Regular Day Off + 6 SP Crews + 4 Tree Crews
12/25/2011	Wind	Central North	2	14,942	320,658	4.7%	55	12 (of 18)	No	12 EFRs Event Duty + 3 EFRs Regular Day Off + 3 Regular Duty + 5 SP Crews + 4 Tree Crews
12/25/2011	Wind	North	2	4,798	190,536	2.5%	70	9 (of 14)	No	9 EFRs Event Duty + 1 EFR PTO/STD + 4 EFRs Regular Day Off + 5 SP Crews + 3 Tree Crews
12/25/2011	Wind	West	2	16,339	140,255	11.6%	52	12 (of 16)	No	10 EFRs Event Duty + 2 EFRs PTO/STD + 2 EFRs Regular Day Off + 2 EFRs from South Event Duty + 1 SP Crew + 2 Tree Crews

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

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 NO. 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
1/12/2011	Wind	North	1	2,687	187,967	1.4%	26	13	No	
1/12/2011	Wind	Central North	1	984	291,647	0.3%	12	20	No	
1/12/2011	Wind	Central South	1	32	230,263	0.0%	6	12	No	
1/12/2011	Wind	South	1	239	231,818	0.1%	23	15	No	
2/12/2011	Wind	North	1	13,298	187,017	7.1%	36	13	No	
2/12/2011	Wind	Central North	1	984	292,258	0.3%	12	20	No	
2/12/2011	Wind	Central South	1	1,431	230,325	0.6%	15	12	No	
2/12/2011	Wind	South	1	405	231,968	0.2%	10	15	No	
2/19/2011	Wind	North	1	181	187,017	0.1%	11	13	No	
2/19/2011	Wind	Central North	1	70	292,258	0.0%	3	20	No	
2/19/2011	Wind	Central South	1	62	230,325	0.0%	5	12	No	
2/19/2011	Wind	South	1	9	231,968	0.0%	5	15	No	
2/19/2011	Wind	Central North	2	1,644	292,258	0.6%	19	20	No	
2/19/2011	Wind	Central South	2	169	230,325	0.1%	9	12	No	
2/19/2011	Wind	South	2	1,344	231,968	0.6%	11	15	No	
2/19/2011	Wind	West	2	381	139,915	0.3%	7	14	No	
3/2/2011	Wind	Central North	1	8,016	292,009	2.7%	24	20	No	

PUGET SOUND ENERGY

SQI NO. 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
3/2/2011	Wind	Central South	1	1,680	230,264	0.7%	8	12	No	
3/2/2011	Wind	South	1	3,913	231,993	1.7%	19	15	No	
3/10/2011	Wind	North	2	2,678	188,087	1.4%	26	13	No	
3/10/2011	Wind	South	2	15,810	231,993	6.8%	26	15	No	
3/10/2011	Wind	West	2	6,364	139,915	4.5%	37	14	No	
9/25/2011	Wind	Central South	2	5,553	214,308	2.6%	20	12	No	
9/25/2011	Wind	South	2	5,886	223,743	2.6%	21	15	No	
9/25/2011	Wind	West	2	774	139,970	0.6%	6	14	No	
9/26/2011	Wind	Central North	2	1,675	319,717	0.5%	23	18	No	
9/26/2011	Wind	Central South	2	301	214,308	0.1%	11	12	No	
9/26/2011	Wind	West	2	7,721	139,970	5.5%	35	14	No	
11/21/2011	Wind	Central North	3	7,125	320,475	2.2%	49	18	No	
11/21/2011	Wind	Central South	3	6,692	214,648	3.1%	29	12	No	
11/21/2011	Wind	South	3	4,936	224,232	2.2%	60	15	No	
11/24/2011	Wind	Central North	2	8,119	320,475	2.5%	13	18	No	
11/24/2011	Wind	Central South	2	129	214,648	0.1%	8	12	No	
11/24/2011	Wind	South	2	906	224,232	0.4%	18	15	No	
11/24/2011	Wind	West	2	5,531	140,177	3.9%	14	14	No	
12/25/2011	Wind	Central South	2	4,883	214,840	2.3%	13	12	No	
12/25/2011	Wind	South	2	232	224,596	0.1%	13	15	No	

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.

Natural Gas Reportable Incident Duration Report

No.	Date	City	Address	1st Notice to PSE	First PSE Arrival	Emergency Controlled	Emergency Control Time
1	1/28/2011	Puyallup	301 43rd Ave SE	13:06	13:24	14:50	1:26
2	2/2/2011	Lynwood	6509 208 ST SW	9:16	9:36	9:45	0:09
3	2/4/2011	Everett	6512 Wetmore Ave	12:39	12:45	12:45	0:00
4	2/14/2011	Bothell	23708 Locust Way	17:58	18:40	19:03	0:23
5	3/15/2011	Woodinville	13300 NE 175th St #3	15:15	15:36	15:47	0:11
6	3/22/2011	Bellevue	10819 SE 25th PL	10:53	10:59	11:08	0:09
7	3/25/2011	Seattle	110th &12th Ave SW	13:23	13:23	13:23	0:00
8	3/28/2011	Bellevue	6128 168th PL SE	12:54	13:12	13:43	0:31
9	3/28/2011	Seattle	660 S Othello St	16:19	16:35	19:35	3:00
10	4/1/2011	Mercer Island	9231 SE 46 ST	16:15	16:35	16:46	0:11
11	4/13/2011	Everett	701 116th St SW	20:58	21:11	5:46	8:35
12	4/16/2011	Seattle	6723 Palatine Ave	12:12	12:48	13:15	0:27
13	4/26/2011	Seattle	510 Warren Ave N	9:20	9:31	10:11	0:40
14	4/30/2011	Kenmore	16912 81st Ave NE	16:26	16:49	17:17	0:28
16	5/9/2011	Pacific	253 Sunset Dr	15:16	15:23	15:36	0:13
17	5/13/2011	Maple Valley	21321 SE 271st St	21:35	21:49	23:35	1:46
18	5/18/2011	Centralia	2118 N. Pearl Street	21:24	21:54	22:00	0:06
19	5/25/2011	Gig Harbor	#2 Raft Island DR NW	9:56	10:35	12:01	1:26
20	5/31/2011	Auburn	29110 34th Ave S	15:36	15:53	16:10	0:17
21	6/4/2011	Seattle	3605 E Marginal Way S	21:00	21:00	21:00	0:00
22	6/6/2011	Shoreline	19290 Aurora Ave N	23:42	0:12	3:15	3:03
23	6/27/2011	Shoreline	19217 Aurora Ave N	14:54	15:12	15:19	0:07
24	6/27/2011	Bothell	100 228 St SE	18:15	18:30	18:37	0:07
25	6/30/2011	Kirkland	515 Lake Street S.	11:16	12:49	Reportable but not an emergency (no release of natural gas) therefore no emergency control time	

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.

Natural Gas Reportable Incident Duration Report

No.	Date	City	Address	1st Notice to PSE	First PSE Arrival	Emergency Controlled	Emergency Control Time
26	7/11/2011	Dupont	1430 Wilmington Dr	13:26	13:46	13:53	0:07
27	7/11/2011	Shoreline	15552 25th Ave NE	11:21	11:32	12:55	1:23
28	8/1/2011	Federal Way	31910 Gateway Center BLVD S	11:20	11:26	14:22	2:56
29	8/3/2011	Centralia	731 S Pearl St	7:39	8:09	8:49	0:40
30	8/5/2011	Seattle	1823 Terry Ave	13:22	13:40	13:57	0:17
31	8/11/2011	Seattle	3417 Evanston Ave N	15:06	15:11	16:03	0:52
32	8/16/2011	Pacific	367 White River Dr	13:54	14:08	14:38	0:30
33	8/17/2011	North Bend	13330 Hemlock Ave SW	22:15	22:47	22:47	0:00
34	8/25/2011	Shoreline	20260 20th PL NE	8:30	8:52	10:13	1:21
35	8/30/2011	Tacoma	1312 115th St. S	11:48	12:20	12:26	0:06
36	8/31/2011	Renton	14022 SE Petrovitsky RD	10:57	11:23	11:33	0:10
37	9/4/2011	Everett	2725 86th ST SE	21:38	21:44	23:59	2:15
38	9/7/2011	Olympia	2012 Harbor View Dr NW	9:42	10:08	11:54	1:46
39	9/7/2011	Centralia	607 Pearl St	14:45	14:58	16:20	1:22
40	9/7/2011	Kirkland	663 12th Ave	13:11	13:29	13:48	0:19
41	9/20/2011	Redmond	7625 170th Ave NE	6:56	7:27	9:30	2:03
42	9/23/2011	Kent	855 2nd Ave N	10:41	10:49	10:56	0:07
43	9/23/2011	Seattle	309 NW 86th St	14:29	14:46	14:51	0:05
44	9/25/2011	Seattle	12040 8th Ave NE	13:37	13:49	15:58	2:09
45	9/25/2011	Seattle	913 NE 122nd St	13:54	14:19	16:24	2:05
46	9/26/2011	Seattle	12312 5th Ave NE	6:16	6:26	15:15	8:49
47	9/30/2011	Olympia	2806 BLVD RD SE	8:17	8:30	10:46	2:16
48	10/3/2011	Lake Stevens	633 92 Ave NE	14:58	14:58	19:49	4:51
49	10/4/2011	Seattle	1201 Western Ave	12:18	12:51	12:51	0:00
50	10/17/2011	Normandy Park	21300 1st Ave SO	15:15	15:21	15:55	0:34
51	10/17/2011	Seattle	2316 W Newton St	9:15	9:38	11:43	2:05
52	11/16/2011	Kirkland	12100 NE 85th St	15:49	16:05	16:16	0:11
53	12/2/2011	Everett	6032 Brookridge Blvd	23:57	0:36	1:48	1:12
54	12/5/2011	Everett	1500 Industrial Meter	9:22	9:44	9:51	0:07
55	12/19/2011	Seattle	2910 W Government Way	9:50	10:01	11:13	1:12
56	12/28/2011	Gig Harbor	5200 78th Ave NW	10:02	10:33	10:41	0:08
57	12/29/2011	Renton	5318 NE 5th Circle	16:53	17:25	19:30	2:05
						Average	**1:13**

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

THE GILMORE RESEARCH GROUP
SIXTY YEARS OF STRAIGHT ANSWERS

Puget Sound Energy
P.O. Box 97034
MS: EST-09E
Bellevue, WA. 98009-9734

December 30, 2011

Dear Mr. Robert Yetter,

This letter constitutes certification by The Gilmore Research Group that the attached report and the underlying surveys were conducted and prepared in accordance with the procedures established in Docket Nos. UE-011570 and UG-011571. These procedures, the data collection methods and the quality controls are consistent with industry practices and, we believe, ensure that the information produced in the surveys is unbiased and valid.

We would be glad to answer any questions or provide any additional information that you may need.

Sincerely,

Margie Cooper

The Gilmore Research Group

2101 4th Avenue 8th Floor
Seattle WA, 98121-2352
Main: (206) 726-5555; Fax: (206) 726-5620
www.gilmore-research.com

C
Penalty Calculation (Not Applicable for 2011)

This appendix is intentionally left blank since it is not applicable for the 2011 performance period.

D
Proposed Customer Notice (Report Card)

2011 Service Quality Report Card

PUGET SOUND ENERGY

2011 Service Quality Report Card

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. Combined, these areas represent nine specific service-quality indexes. Based on customer surveys and other measurements, we match our performance against a set of benchmarks. (See chart.)

2011 Performance Highlights

In addition to meeting all nine of the service metrics, we are pleased to report improvements from the prior year in four of the measurements. The better scores included:

- faster restoration of power outages
- fewer customer complaints registered with the state Utilities and Transportation Commission
- faster response time to natural-gas emergencies
- faster response time to electric-service emergencies

Through our two Service Guarantees, we commit to keeping scheduled appointments and to restoring power outages as soon as we can. If we don't keep an appointment or if electric service is out for 120 consecutive hours or longer, subject to certain conditions, we provide a $50 on a customer's bill.

In 2011, we credited customers a total of $14,400 for missing about 300 of our total 126,156 scheduled appointments. There were no qualifying outage events or customers in 2011 under the power restoration guarantee.

Our employees aim to continue their success in delivering and improving high standards of customer service to meet your expectations of us.

Puget Sound Energy 1-888-225-5773 • PSE.com

PUGET SOUND ENERGY

2011 Service Quality Report Card

KEY MEASUREMENT	BENCHMARK	20011 PERFORMANCE	ACHIEVED
CUSTOMER SATISFACTION			
Percent of customers satisfied with our Customer Access Center services, based on survey	At least 90 percent	95 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	0.28	☑
CUSTOMER SERVICES			
Percent of calls answered live within 30 seconds by our Customer Access Center	At least 75 percent	77 percent	☑
OPERATIONS SERVICES			
Frequency of non-major-storm power outages, per year, per customer	Less than 1.30 outages	1.02 outages	☑
Length of power outages per year, per customer	Less than 5 hours, 20 minutes	4 hours, 41 minutes	☑
Time from customer call to arrival of field technicians in response to electric system emergencies	No more than 55 minutes	51 minutes	☑
Time from customer call to arrival of field technicians in response to natural gas emergencies	No more than 55 minutes	29 minutes	☑
Percent of service appointments kept	At least 92 percent	100 percent*	☑

* Represents rounding to nearest whole percentage

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E
Disconnection Results by Month

The table that follows provides the number of disconnections per 1,000 customers for non-payment of amounts due when the UTC disconnection policy would permit service curtailment.

Table 35: 2011 Disconnection Results per 1,000 Customers by Month

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

2011 SQI No. 10 and Customer Service Guarantee Payment Annual Summary

12 Months All Service Type: January 2011 - December 2011

	Total Appts (Exclude Canceled)	Missed Approved	Missed Denied	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Canceled	Service Guarantee Payment	Percent Kept[Note] (Exclude Canceled)
Electric											
Permanent SVC	6,316	22	-	-	22	161	6,133	6,294	1	$1,100	100%
Reconnection	51,282	40	16	-	56	71	51,155	51,226	5,679	$2,000	100%
Sub-total	57,598	62	16	-	78	232	57,288	57,520	5,680	$3,100	100%
Gas											
Diagnostic	30,004	16	-	-	16	99	29,889	29,988	2,893	$800	100%
Permanent SVC	7,847	191	-	-	191	485	7,171	7,656	-	$9,550	98%
Reconnection	30,707	19	-	-	19	27	30,661	30,688	1,359	$950	100%
Sub-total	68,558	226	-	-	226	611	67,721	68,332	4,252	$11,300	100%
Grand Total	126,156	288	16	-	304	843	125,009	125,852	9,932	$14,400	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. There were 304 missed SQI appointments in 2011 as indicated in the "Total Missed" column.

Definition of the Categories

- **Cancelled**—Appointments cancelled by either customers or PSE
- **Customer Service Guarantee Payments**—The total for the $50 Service Guarantee payments made to customers for each missed approved appointment
- **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
- **Missed Denied**—Appointments missed due to customer reasons or due to major events
- **Missed Open**—Appointments not yet reviewed by PSE for the $50 Service Guarantee payment
- **System Kept**—Appointments in which PSE arrived at the customer site as promised
- **Total Appointments (Excludes Cancelled 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

2011 SQI No. 10 and Customer Service Guarantee Payment Monthly Details												
Month	Fuel	Type	Total Appts (Exclude Canceled and Excused)	Missed Approved	Missed Denied	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Cancelled	Customer Service Guarantee Payment
Jan-11	Electric	Permanent SVC	455	2	-	-	2	23	430	453	1	$100
Jan-11	Electric	Reconnection	4,013	2	-	-	2	8	4,003	4,011	940	$100
Jan-11	Gas	Diagnostic	3,260	-	-	-	-	4	3,256	3,260	348	$0
Jan-11	Gas	Permanent SVC	609	9	-	-	9	61	539	600		$450
Jan-11	Gas	Reconnection	2,290	1	-	-	1	1	2,288	2,289	115	$50
Jan-11 Total			10,627	14	-	-	14	97	10,516	10,613	1,404	$700
Feb-11	Electric	Permanent SVC	446	3	-	-	3	14	429	443		$150
Feb-11	Electric	Reconnection	4,000	2	1	-	3	8	3,989	3,997	472	$100
Feb-11	Gas	Diagnostic	2,856	-	-	-	-	10	2,846	2,856	294	$0
Feb-11	Gas	Permanent SVC	496	7	-	-	7	64	425	489		$350
Feb-11	Gas	Reconnection	2,739	-	-	-	-	-	2,739	2,739	98	$0
Feb-11 Total			10,537	12	1	-	13	96	10,428	10,524	864	$600
Mar-11	Electric	Permanent SVC	523	3	-	-	3	17	503	520		$150
Mar-11	Electric	Reconnection	5,386	4	-	-	4	17	5,365	5,382	495	$200
Mar-11	Gas	Diagnostic	2,694	2	-	-	2	4	2,688	2,692	266	$100
Mar-11	Gas	Permanent SVC	679	3	-	-	3	70	606	676		$150
Mar-11	Gas	Reconnection	3,403	-	-	-	-	1	3,402	3,403	120	$0
Mar-11 Total			12,685	12	-	-	12	109	12,564	12,673	881	$600
Apr-11	Electric	Permanent SVC	471	-	-	-	-	8	463	471		$0
Apr-11	Electric	Reconnection	4,371	1	-	-	1	6	4,364	4,370	493	$50
Apr-11	Gas	Diagnostic	2,216	1	-	-	1	5	2,210	2,215	184	$50
Apr-11	Gas	Permanent SVC	567	14	-	-	14	53	500	553		$700
Apr-11	Gas	Reconnection	3,005	-	-	-	-	1	3,004	3,005	110	$0
Apr-11 Total			10,630	16	-	-	16	73	10,541	10,614	787	$800
May-11	Electric	Permanent SVC	534	1	-	-	1	10	523	533		$50
May-11	Electric	Reconnection	4,636	2	1	-	3	9	4,624	4,633	452	$100
May-11	Gas	Diagnostic	1,674	2	-	-	2	4	1,668	1,672	138	$100
May-11	Gas	Permanent SVC	673	19	-	-	19	43	611	654		$950
May-11	Gas	Reconnection	3,112	1	-	-	1	4	3,107	3,111	106	$50
May-11 Total			10,629	25	1	-	26	70	10,533	10,603	696	$1,250
Jun-11	Electric	Permanent SVC	634	1	-	-	1	10	623	633		$50
Jun-11	Electric	Reconnection	4,987	2	2	-	4	-	4,983	4,983	541	$100
Jun-11	Gas	Diagnostic	1,437	-	-	-	-	7	1,430	1,437	135	$0
Jun-11	Gas	Permanent SVC	728	11	-	-	11	39	678	717		$550
Jun-11	Gas	Reconnection	2,801	4	-	-	4	1	2,796	2,797	122	$200
Jun-11 Total			10,587	18	2	-	20	57	10,510	10,567	798	$900

2011 SQI No. 10 and Customer Service Guarantee Payment Monthly Details

Month	Fuel	Type	Total Appts (Exclude Canceled and Excused)	Missed Approved	Missed Denied	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Cancelled	Customer Service Guarantee Payment
Jul-11	Electric	Permanent SVC	483	1	-	-	1	21	461	482		$50
Jul-11	Electric	Reconnection	4,310	4	-	-	4	1	4,305	4,306	463	$200
Jul-11	Gas	Diagnostic	1,045	-	-	-	-	5	1,040	1,045	88	$0
Jul-11	Gas	Permanent SVC	664	14	-	-	14	29	621	650		$700
Jul-11	Gas	Reconnection	2,284	3	-	-	3	1	2,280	2,281	96	$150
Jul-11 Total			8,786	22	-	-	22	57	8,707	8,764	647	$1,100
Aug-11	Electric	Permanent SVC	636	2	-	-	2	24	610	634		$100
Aug-11	Electric	Reconnection	4,726	3	1	-	4	1	4,721	4,722	408	$150
Aug-11	Gas	Diagnostic	1,185	1	-	-	1	3	1,181	1,184	105	$50
Aug-11	Gas	Permanent SVC	740	24	-	-	24	22	694	716		$1,200
Aug-11	Gas	Reconnection	2,478	2	-	-	2	-	2,476	2,476	127	$100
Aug-11 Total			9,765	32	1	-	33	50	9,682	9,732	640	$1,600
Sep-11	Electric	Permanent SVC	558	2	-	-	2	15	541	556		$100
Sep-11	Electric	Reconnection	4,092	8	2	-	10	9	4,073	4,082	417	$400
Sep-11	Gas	Diagnostic	1,884	2	-	-	2	11	1,871	1,882	169	$100
Sep-11	Gas	Permanent SVC	660	19	-	-	19	22	619	641		$950
Sep-11	Gas	Reconnection	2,252	2	-	-	2	7	2,243	2,250	114	$100
Sep-11 Total			9,446	33	2	-	35	64	9,347	9,411	700	$1,650
Oct-11	Electric	Permanent SVC	577	3	-	-	3	10	564	574		$150
Oct-11	Electric	Reconnection	4,568	5	4	-	9	-	4,559	4,559	396	$250
Oct-11	Gas	Diagnostic	4,159	2	-	-	2	14	4,143	4,157	403	$100
Oct-11	Gas	Permanent SVC	651	18	-	-	18	30	603	633		$900
Oct-11	Gas	Reconnection	2,638	4	-	-	4	7	2,627	2,634	113	$200
Oct-11 Total			12,593	32	4	-	36	61	12,496	12,557	912	$1,600
Nov-11	Electric	Permanent SVC	487	4	-	-	4	1	482	483		$200
Nov-11	Electric	Reconnection	3,395	5	4	-	9	10	3,376	3,386	349	$250
Nov-11	Gas	Diagnostic	4,103	2	-	-	2	16	4,085	4,101	408	$100
Nov-11	Gas	Permanent SVC	762	38	-	-	38	28	696	724		$1,900
Nov-11	Gas	Reconnection	2,168	1	-	-	1	2	2,165	2,167	148	$50
Nov-11 Total			10,915	50	4	-	54	57	10,804	10,861	905	$2,500
Dec-11	Electric	Permanent SVC	512	-	-	-	-	8	504	512		$0
Dec-11	Electric	Reconnection	2,798	2	1	-	3	2	2,793	2,795	253	$100
Dec-11	Gas	Diagnostic	3,491	4	-	-	4	16	3,471	3,487	355	$200
Dec-11	Gas	Permanent SVC	618	15	-	-	15	24	579	603		$750
Dec-11	Gas	Reconnection	1,537	1	-	-	1	2	1,534	1,536	90	$50
Dec-11 Total			8,956	22	1	-	23	52	8,881	8,933	698	$1,100
Grand Total			**126,156**	**288**	**16**	-	**304**	**843**	**125,009**	**125,852**	**9,932**	**$14,400**

G
Customer Awareness of Customer Service Guarantee

PSE undertook the following actions in 2011 to promote customer awareness of its Customer Service Guarantee program (the Guarantee).

1. Articles that publicized the Guarantee were included in 2011 in the following three issues of the "Energywise" customer newsletter: March-April, July-August, and November-December.
2. The text of the Guarantee appeared on the back of the bill-stock throughout 2011.
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 2011. Both natural gas and electric brochures are also posted on PSE.com.
4. PSE Customer Access Center continued to promote the Customer Service Guarantee in the following ways:
   - On relevant phone paths where a qualifying appointment will be generated, the Access Center announcement invites customers to ask about PSE's Customer Service Guarantee – before customers directly speak with an agent.
   - Customer Access Center employees 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"
   - The Guarantee is included in PSE's on-line Quick Reference Manual. This manual is accessible 24/7/365 on PSE's intranet and is available to all customer services, gas field services, and new construction employees.
   - Throughout 2011, the Customer Service Guarantee information was publicized every month in one issue of the weekly Customer Services newsletter as a reminder of the importance of providing Service Guarantee information to customers when applicable. The weekly Customer Services newsletter is distributed to all customer services personnel and many other PSE employees in various departments.
   - The Company is taking measures to ensure that agents 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.
5. Other approaches used to inform customers of the Customer Service Guarantee include the natural gas and electric new service handbooks and brochures and the Company's website, PSE.com.

The results of customer awareness surveys as assessed using two separate Gilmore Research Group's surveys are presented in the following table.

Customer Awareness of Customer Service Guarantee														
		Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Total
CFS 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	42	42	40	42	20	34	23	35	36	50	41	40	220
	No	111	116	109	118	162	131	133	114	118	107	107	112	747
	Don't Know	47	42	51	40	18	35	44	51	46	44	52	48	233
	Refused Response													-
	Total Customers Surveyed	200	200	200	200	200	200	200	200	200	201	200	200	1,200
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.	16	21	13	13	10	6	5	14	11	10	12	11	79
	Whenever PSE changes an appointment, you are given the $50.	17	26	26	21	11	13	11	18	10	28	21	19	114
	You have no understanding or expectations about this part of the service guarantee plan.	140	135	104	96	30	44	85	141	155	146	158	155	549
	Don't Know	27	18	57	70	149	136	98	27	22	17	8	15	457
	Refused Response						1	1		2		1		1
	Total Customers Surveyed	200	200	200	200	200	200	200	200	200	201	200	200	1,200
Q26D. Did your appointment have to be rescheduled or did it occur as planned?	It occurred as planned.	185	192	193	185	194	186	171	189	185	189	191	193	1,135
	It was rescheduled.	12	3	5	7	3	6	8	4	10	8	3	5	36
	Technician arrived but was late.	1	2	-	-	-	1	-	2	-	-	1	-	4
	Don't Know	2	3	2	6	3	5	18	4	5	4	4	2	21
	Refused Response				2		2	3	1			1		4
	Total Customers Surveyed	200	200	200	200	200	200	200	200	200	201	200	200	1,200
Q26E. Who initiated rescheduling your appointment?	Myself (Customer Initiated)	6	1	5	4	1	3	4	3	8	5	3	4	20
	Puget Sound Energy (PSE) Initiated	6	2		3	2	2	4	-	2	3	-	1	15
	Don't Know						1		1					1
	Refused Response													-
	Total Customers Surveyed	12	3	5	7	3	6	8	4	10	8	3	5	36
NCC Survey														
Q11. Are you aware of Puget Sound Energy's $50 service guarantee to meet scheduled work dates?	Yes						75						78	75
	No						179						179	179
	Refused Response													-
	Don't Know						4						5	4
	Total Customers Surveyed	-	-	-	-	-	258	-	-	-	-	-	262	258

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, where by, 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 of 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 distribution reliability indices and factors that affect their calculations.

Major Event—An event, such as 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 percent 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.

Power Quality—There are no industry standards that are broad enough to be able 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:

$$\mathbf{SAIDI_{Total}} = \sum \frac{\textit{All customer interruption minutes}}{\textit{Total number of customers served}}$$

$\mathbf{SAIDI_{Total\ 5\text{-}year\ Average}}$ = 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 $SAIDI_{Total\ 5\text{-}year\ Average}$

$$\mathbf{SAIDI_{5\%}} = \sum \frac{\textit{Customer interruption minutes during non-5\%-Exclusion-Major-Event-Days}}{\textit{Total number of customers served}}$$

$$\mathbf{SAIDI_{IEEE}} = \sum \frac{\textit{Customer interruption minutes during non-IEEE-1366-}T_{MED}\textit{-Exclusion-Major-Event Days}}{\textit{Total number of customers served}}$$

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:

$$\mathbf{SAIFI_{Total}} = \frac{\textit{Total number of customers that experienced Sustained Interruptions}}{\textit{Total number of customers served}}$$

$\mathbf{SAIFI_{Total\ 5\text{-}year\ Average}}$= 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 $SAIFI_{Total\ 5\text{-}year\ Average}$

$$\mathbf{SAIFI_{5\%}} = \frac{\textit{Number of customers that experienced Sustained Interruptions during non-5\%-Exclusion-Major-Event-Days}}{\textit{Total number of customers served}}$$

$$\mathbf{SAIFI_{IEEE}} = \frac{\textit{Number of customers that experienced Sustained Interruptions during non-IEEE-1366-}T_{MED}\textit{-Exclusion-Major-Event-Days}}{\textit{Total number of customers served}}$$

SQI—PSE's Service Quality Index Program was first established per conditions of the Puget Power and Washington Natural Gas merger in 1997 under Docket Number UE-960195. The SQI 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.

$\mathbf{T_{MED}}$—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.

Methods for Identifying when a Sustained Interruption Begins

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

- A customer call to PSE's Customer Access Center, either through the automated voice response unit or talking with a customer representative.
- A customer call to a PSE employee other than through the Customer Access Center.
- 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.
- If, during restoration activities, service technicians need to create a larger outage, those customers affected by that larger outage may not 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 the problem causing the outage has been resolved.

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.

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 request for the appropriate PSE personnel to contact the customer and discuss their concerns.
  - All contact is tracked as an inbound client comment in PSE's Customer Information System (CIS) 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 the CIS 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 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.[22]

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.

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

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 2011, PSE designates the Areas of Greatest Concern as the 50 worst-performing circuits[23] 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.

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

[23] This is a change from the previous definition of Areas of Concern, which considered the trend in system performance based on circuits that exceed the SQI, number of customers affected by those circuits and the number of complaints.

J
Current Year Electric Service Outage by Cause by Area

This appendix details the 2011 Outage Cause by County. The 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*.

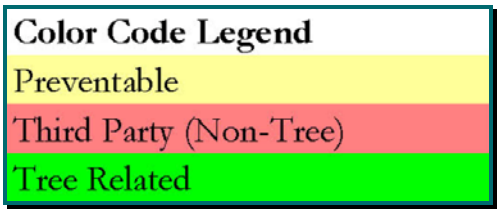

Figure 8: Color Code Legend

Table 36: Total Outages by Cause

	Northern			King/Kittitas		Southern/Western				
	Whatcom	Skagit	Island	King	Kittitas	Pierce	Thurston	Kitsap	Jefferson	Total
AO	19	17	11	90	4	20	46	18	4	229
BA	131	75	34	523	31	94	153	200	27	1,268
CP	26	26	8	88	8	23	48	21	3	251
CR	2	2	0	9	0	0	0	5	0	18
DU	16	10	4	86	7	14	37	25	3	202
EF	554	381	231	1,935	174	367	613	467	103	4,825
EO	6	0	0	15	3	7	12	9	1	53
EQ	0	0	0	0	0	0	0	0	0	0
FI	1	1	1	1	0	0	4	9	1	18
LI	1	3		6	4	1	4	17	1	37
SO	261	137	19	758	4	161	124	180	27	1,671
TF	19	4	10	52	1	9	13	44	12	164
TO	2	1		20		2	5	7		37
TV	338	258	162	828	27	122	261	646	119	2,761
UN	6	13	5	32	0	3	7	54	9	129
VA	0	1	0	2	0	3	8	1	1	16
Misc*	36	15	14	198	9	8	10	25	12	327
Total	1,418	944	499	4,643	272	834	1,345	1,728	323	12,006

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

Table 37: 5% Exclusion Outages by Cause

	Northern			King/Kittitas		Southern/Western				
	Whatcom	Skagit	Island	King	Kittitas	Pierce	Thurston	Kitsap	Jefferson	Total
AO	19	17	11	90	4	20	46	18	4	229
BA	131	75	34	523	31	94	153	200	27	1,268
CP	26	26	8	88	8	23	48	21	3	251
CR	2	2	0	9	0	0	0	5	0	18
DU	16	10	4	86	7	14	37	25	3	202
EF	549	381	230	1,929	174	367	613	464	103	4,810
EO	6	0	0	13	3	7	12	8	1	50
EQ	0	0	0	0	0	0	0	0	0	0
FI	1	1	1	1			4	9	1	18
LI	1	3	0	6	4	1	4	17	1	37
SO	261	137	19	758	4	160	123	180	27	1,669
TF	19	4	10	50	1	9	13	41	12	159
TO	2	1	0	20	0	2	5	7	0	37
TV	338	255	162	816	27	122	259	606	118	2,703
UN	6	13	5	30	0	3	7	54	9	127
VA	0	1	0	2	0	3	8	1	1	16
Misc*	36	14	14	198	9	8	10	25	12	326
Total	1,413	940	498	4,619	272	833	1,342	1,681	322	11,920

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

K
Historical SAIDI and SAIFI by Area

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

Table 38: SAIDI and SAIFI Data for the Past Three Years by County[Note]

Region/County	Year	SAIFI Total Annual	SAIFI Total 5 years Avg	SAIFI 5%	SAIFI IEEE	SAIDI Total Annual	SAIDI Total 5 years Avg	SAIDI 5%	SAIDI IEEE
Northern									
Whatcom	2011	0.92	0.99	0.92	0.91	158	203	157	157
	2010	0.75	0.91	0.62	0.66	121	185	89	94
	2009	1.09	0.86	0.91	0.80	239	179	178	145
Skagit	2011	1.34	1.17	1.34	1.29	215	265	214	209
	2010	1.03	1.18	0.79	0.84	266	251	158	177
	2009	0.92	1.08	0.87	0.74	323	220	307	130
Island	2011	0.91	2.04	0.91	0.91	128	498	128	128
	2010	1.69	2.00	0.48	0.63	589	493	50	100
	2009	3.42	1.87	0.70	0.51	475	415	117	92
King/Kittitas									
King	2011	0.79	0.97	0.76	0.76	118	184	113	114
	2010	1.26	1.01	0.69	0.72	315	191	97	92
	2009	0.89	1.01	0.87	0.83	149	214	147	133
Kittitas	2011	1.77	1.45	1.77	1.77	144	222	144	144
	2010	1.65	1.24	1.58	1.60	221	235	188	208
	2009	2.53	1.05	2.53	1.57	393	214	393	233
Southern/Western									
Pierce	2011	0.79	1.03	0.79	0.79	80	174	80	80
	2010	1.56	1.09	0.62	0.71	381	186	70	71
	2009	1.22	0.95	1.09	0.90	182	136	165	141
Thurston	2011	1.08	1.55	1.08	1.08	139	384	139	139
	2010	2.08	1.63	0.92	0.98	794	412	156	171
	2009	1.63	1.41	1.60	1.00	291	281	288	151
Kitsap	2011	2.54	2.64	2.17	2.18	442	698	286	288
	2010	3.45	2.60	1.97	1.63	1696	701	321	245
	2009	2.01	2.20	1.85	1.71	299	431	264	218
Jefferson	2011	1.47	1.89	1.47	1.47	262	417	261	261
	2010	2.59	1.98	1.64	1.85	466	430	219	242
	2009	0.92	1.62	0.84	0.67	189	388	156	99

Note: Reported figures based on most current SAP outage data, as of January 2012

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.

1997-2011 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 Excluding 2006	(e) Total SAIFI 5-Year Rolling Annual Average Excluding 2006
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

Figure 9: 1997–2011 SAIFI Performance by Different Measurements

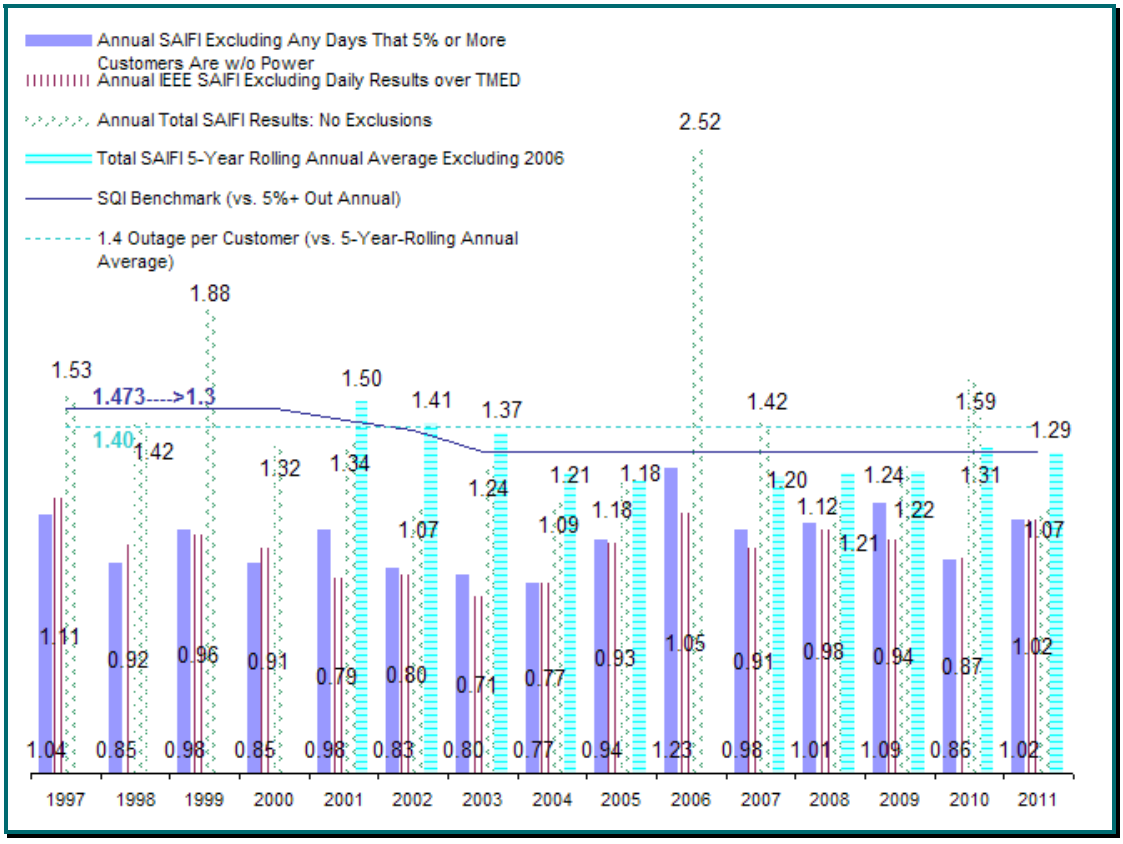

Figure 10: 1997–2011 SAIFI Performance by Different Measurements

1997-2011 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 Excluding 2006	(e) Total SAIDI 5-Year Rolling Annual Average Excluding 2006
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	281

Figure 11: 1997–2011 SAIDI Performance by Different Measurements

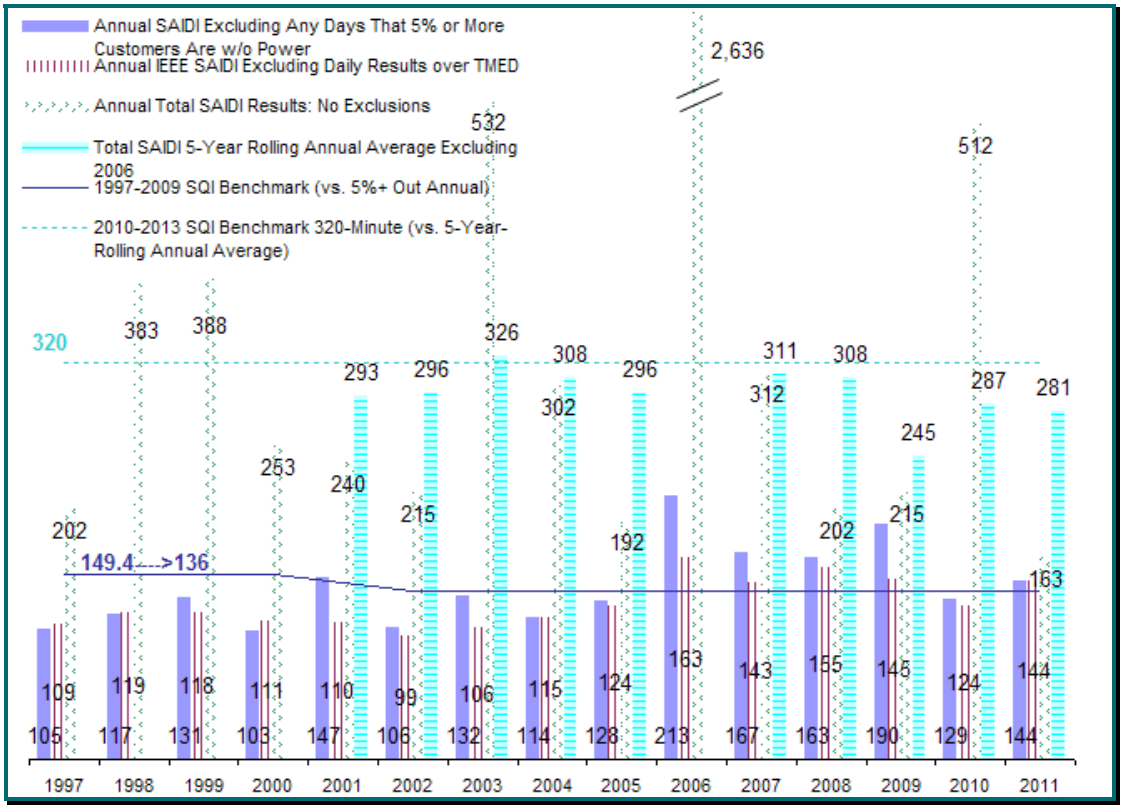

Figure 12: 1997–2011 SAIDI Performance by Different Measurements

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.

Table 39: Current Year Commission Complaints

No.	Complaint Type	Date of Complaint	Location	Closing Date
1	Reliability	2/17/2011	Gig Harbor	2/25/2011
2	Reliability	2/18/2011	Olympia	2/28/2011
3	Reliability	3/4/2011	Rockport	5/2/2011
4	Reliability	3/11/2011	Grotto	3/25/2011
5	Reliability	3/16/2011	Port Orchard	3/23/2011
6	Reliability	3/31/2011	Bellevue	4/8/2011
7	Reliability	4/20/2011	Ravensdale	5/12/2011
8	Reliability	4/25/2011	Federal Way	4/28/2011
9	Reliability	5/24/2011	Tumwater	6/16/2011
10	Reliability	6/21/2011	Redmond	6/24/2011
11	Reliability	7/26/2011	Auburn	8/2/2011
12	Reliability	8/18/2011	Redmond	8/25/2011
13	Reliability	8/31/2011	Renton	9/6/2011
14	Reliability	11/21/2011	Centralia	12/1/2011
15	Reliability	11/22/2011	Sequim	11/29/2011
16	Reliability Power Quality	11/8/2011	Port Orchard	12/23/2011
17	Power Quality	10/6/2011	Issaquah	11/8/2011

Table 40: 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	Island	Nov 2010 Nov 2010	Greenbank	Reliability	Greenbank-13	Reported on 2010 report, no new inquiries in 2011	A system project with estimated completion in 2012 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
2	Jefferson	Sep 2010 Sep 2010	Port Townsend	Reliability	Discovery Bay-12	Reported on 2010 report, no new inquiries in 2011	Ongoing circuit monitoring and maintenance will continue.
3	Jefferson	Sep 2010 Dec 2011 Dec 2011	Sequim	Reliability Power Quality	Discovery Bay-13	Contacted customer to discuss concerns.	A system project with estimated completion in 2013 will provide additional reliability improvement. Ongoing circuit monitoring and maintenance will continue.
4	Jefferson	Jul 2010 Sep 2010	Port Townsend	Power Quality Reliability	Hastings-12	Reported on 2010 report, no new inquiries in 2011	Ongoing circuit monitoring and maintenance will continue.
5	Jefferson	Dec 2010 Mar 2011	Quilcene	Reliability	Silverdale-13	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
6	King	Nov 2011 Nov 2011	Issaquah	Reliability Power Quality	Goodes Corner-16	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
7	King	Oct 2011 Nov 2011	Enumclaw	Reliability	Greenwater-16	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
8	King	Apr 2011 Apr 2011	Woodinville	Reliability	Hollywood-23	Contacted customer to discuss concerns.	A system project with estimated completion in 2012 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
9	King	Oct 2010 Feb 2011	Kirkland	Reliability	Inglewood-15	Contacted customer to discuss concerns.	Completed vegetation management in 2011 on the circuit. Ongoing circuit monitoring and maintenance will continue.
10	King	Nov 2010 Nov 2010	Federal Way	Reliability	Marine View-16	Reported on 2010 report, no new inquiries in 2011	System project was completed in January 2012 which will improve reliability. Ongoing circuit monitoring and maintenance will continue.
11	King	Nov 2010 Nov 2010 Nov 2010	Federal Way	Reliability	Marine View-16	Reported on 2010 report, no new inquiries in 2011	A system project was completed in January 2012 which will improve reliability. Ongoing circuit monitoring and maintenance will continue.

No.	County	Date of Complaint	Location	Complaint Type	Circuit	Response	Action by PSE
12	King	Jan 2010 Nov 2010 Nov 2010 Nov 2010 Nov 2010 Nov 2010	Federal Way	Reliability	Marine View-16	Reported on 2010 report, no new inquiries in 2011	System project was completed in January 2012 which will improve reliability. Ongoing circuit monitoring and maintenance will continue.
13	King	Feb 2011 Mar 2011 Dec 2011 Dec 2011	Grotto	Power Quality Reliability	Skykomish-25	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
14	King	Jun 2010 Nov 2010	Issaquah	Reliability	Snoqualmie-13	Reported on 2010 report, no new inquiries in 2011	A system project with estimated completion in 2012 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
15	King	Jul 2010 Nov 2010 Sep 2011 Oct 2011	Vashon	Reliability	Vashon-13	Contacted customer to discuss concerns.	A system project was completed in 2010 and another system project with estimated completion in 2012 will provide additional reliability improvement. Ongoing circuit monitoring and maintenance will continue.
16	Kitsap	Jan 2011 Jan 2011	Seabeck	Power Quality Reliability	Chico-12	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
17	Kitsap	Feb 2011 Feb 2011	Port Orchard	Reliability	East Port Orchard-15	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
18	Kitsap	Apr 2011 Oct 2011	Bainbridge Island	Reliability	Winslow-15	Contacted customer to discuss concerns.	A system project with estimated completion in 2012 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
19	Pierce	Dec 2010 Dec 2010	Eatonville	Reliability	Kapowsin-13	Reported on 2010 report, no new inquiries in 2011	Ongoing circuit monitoring and maintenance will continue.
20	Skagit	Jul 2010 Aug 2010	Mount Vernon	Reliability	Big Rock-13	Reported on 2010 report, no new inquiries in 2011	A system project completed in 2011 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
21	Thurston	Mar 2011 Sep 2011	Yelm	Reliability	Longmire-17	Contacted customer to discuss concerns.	Completed tree trimming which will improve reliability. Ongoing circuit monitoring and maintenance will continue.
22	Thurston	Aug 2010 Aug 2010	Olympia	Reliability	Tanglewilde-16	Reported on 2010 report, no new inquiries in 2011	Ongoing circuit monitoring and maintenance will continue.
23	Thurston	Aug 2011 Aug 2011	Roy	Reliability	Yelm-27	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
24	Whatcom	Oct 2010 Dec 2010 Dec 2010 Dec 2010 Dec 2010 Dec 2010	Bellingham	Reliability	Happy Valley-16	Reported on 2010 report, no new inquiries in 2011	A system project completed in 2011 and a system project with estimated completion in 2012 will improve reliability. Ongoing circuit monitoring and maintenance will continue.

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 41: 50 Worst-Performing Circuits

Circuit	County	2011 5 Year Avg Rank	2011 Average Total CMI	2010 5 Year Avg Rank	2010 Average Total CMI	Action by PSE
Chico-12	Kitsap	1	4,116,330	1	4,202,013	Completed recloser and three phase feeder extension project. Underground system improvement project planned for 2013. Enhanced tree pruning pilot project planned for 2012.
Vashon-13	King	2	1,985,662	3	2,067,966	Completed two cable remediation projects in 2009 and 2010 and two reconductor projects in 2010. Installed two gang operated switches and a recloser in 2011.
Miller Bay-17	Kitsap	3	2,208,577	4	2,060,355	Completed recloser project in 2010. Reconductor project completed in 2011. A new feeder tie is scheduled for 2013 completion.
Silverdale-15	Kitsap	4	1,827,586	2	2,172,905	Completed a cable remediation project in 2009 and installed three reclosers in 2011. Two tree wire projects are scheduled for completion by 2013.
Baker River Switch-24	Skagit	5	3,148,193	5	3,229,725	Completed an underground conversion project in 2009. Installed recloser in 2011. Proposing underground conversion and reroute of feeder.
Nugents Corner-26	Whatcom	6	1,209,932	44	881,487	Installed two reclosers in 2009 and 2011. Evaluating a potential reliability improvement project.
Winslow-13	Kitsap	7	1,552,808	17	1,427,854	A tree wire project is scheduled for completion by 2013.
Port Madison-12	Kitsap	8	1,520,733	11	1,514,337	Installed recloser and two gang operated switch in 2011. Evaluating a potential reliability improvement project.
Winslow-12	Kitsap	9	1,491,315	9	1,531,377	Completed cable remediation project in 2010. Two overhead reconductor projects scheduled for completion by 2013. Installation of two gang operated switches proposed for 2012.
Fernwood-17	Kitsap	10	1,352,091	13	1,360,420	Planning will continue to monitor this circuit.
Fragaria-13	Kitsap	11	1,379,952	7	1,424,070	Completed two recloser projects in 2011. Reconductor of overhead line to tree wire scheduled for 2012.
Prine-13	Thurston	12	2,221,869	8	2,844,583	Installed two reclosers and switches in 2010.

Circuit	County	2011 5 Year Avg Rank	2011 Average Total CMI	2010 5 Year Avg Rank	2010 Average Total CMI	Action by PSE
Port Gamble-13	Kitsap	13	1,368,480	6	1,797,188	Reliability was significantly improved with the addition of Kingston substation. Installed a gang operated switch in 2011. Reconductor of overhead feeder to tree wire is scheduled for completion by 2013.
Griffin-16	Thurston	14	855,143	34	745,432	A cable remediation project was completed in 2010. Planning will continue to monitor this circuit
Manchester-15	Kitsap	15	1,395,054	36	1,369,325	Proposing an overhead tree wire project in 2012.
Winslow-15	Kitsap	16	1,235,009	14	1,316,893	An underground conversion project and reconductor of overhead feeder to tree wire scheduled for 2012.
Sherwood-18	King	17	1,204,833	19	979,287	Future plans for Lake Holm substation and overhead conversion will improve reliability. Substation construction dependent on area growth.
Longmire-17	Thurston	18	781,089	26	710,506	Longmire-22 and Longmire-17 were reconfigured in 2009 to better segregate load.
Big Rock-15	Skagit	19	1,020,055	27	797,862	Installation of a recloser scheduled for 2012.
Fragaria-16	Kitsap	20	1,181,618	Not on 2010 Top 50 List		Planning is currently reviewing and identifying potential reliability improvements projects.
Silverdale-13	Kitsap	21	899,534	16	1,040,039	Regulator and cable remediation projects were completed by 2009. Planning is currently reviewing and identifying potential reliability improvements projects
Kendall-12	Whatcom	22	948,940	40	889,644	Reconductor of overhead line to tree wire scheduled for 2012
Cottage Brook-13	King	23	1,035,372	21	860,884	Completed an underground conversion project and installed a recloser in 2011. Planning is currently reviewing and identifying potential reliability improvements projects.
Vashon-12	King	24	1,620,192	22	1,599,052	Two tree wire projects scheduled to be completed by 2013.
Vashon-23	King	25	1,018,072	20	1,243,551	Installed recloser in 2010. One tree wire project proposed for 2012 and one proposed for 2013.
Happy Valley-16	Whatcom	26	819,664	33	742,793	Installed two gang operated switches in 2011. Installation of a recloser submitted for 2012.
Lake Wilderness-14	King	27	1,092,299	23	1,091,154	Proposing construction of a new substation in the next five years. Construction dependent area growth.

Circuit	County	2011 5 Year Avg Rank	2011 Average Total CMI	2010 5 Year Avg Rank	2010 Average Total CMI	Action by PSE
Rainier View-13	Thurston	28	860,029	29	929,641	Installed a recloser in 2010. Planning is currently reviewing and identifying potential reliability improvements projects.
Sinclair Inlet-25	Kitsap	29	731,410	42	652,505	A feeder tie project is scheduled to be completed in 2012.
Port Gamble-12	Kitsap	30	896,729	12	1,012,445	Two recloser projects were completed in 2008. Installed two regulator banks in 2011.
Long Lake-23	Kitsap	31	1,017,028	Not on 2010 Top 50 List		Two reclosers and one gang operated switch were installed in 2011. A cable remediation project is planned for 2012.
Wayne-15	King	32	690,094	Not on 2010 Top 50 List		Planning is currently reviewing and identifying potential reliability improvements projects.
Hamilton-15	Skagit	33	1,090,630	46	852,554	Completed one recloser project in 2010.
Tolt-15	King	34	762,515	Not on 2010 Top 50 List		Planning is currently reviewing and identifying potential reliability improvements projects.
Greenwater-16	King	35	1,452,079	25	1,512,927	Rerouting of the overhead system proposed for 2012.
Fernwood-16	Kitsap	36	1,717,859	30	1,722,535	Completed one recloser project in 2010.
Freeland-15	Island	37	1,046,299	37	1,052,266	Maxwelton substation is planned for 2014 construction. Cable remediation project completed in 2010. Reconductor overhead line to tree wire project submitted in 2012.
Hickox-16	Skagit	38	619,372	50	531,593	Wildlife diversion and pole replacement projects completed in 2007. Recloser project completed in 2011. Reconductor of overhead line to tree wire planned for 2012.
Airport-23	Thurston	39	1,045,459	Not on 2010 Top 50 List		Planning is currently reviewing and identifying potential reliability improvements projects.
Inglewood-13	King	40	698,294	Not on 2010 Top 50 List		Planning is currently reviewing and identifying potential reliability improvements projects.
Slater-16	Whatcom	41	738,334	32	773,618	A feeder tie project is scheduled for 2011-2013. Installation of SCADA recloser scheduled for 2012.
Hobart-16	King	42	785,985	28	827,306	A feeder tie and cable remediation project was completed in 2009. Conversion job submitted in 2012.
Griffin-13	Thurston	43	572,984	43	541,395	Reconductor of overhead line to tree wire scheduled for 2012

Circuit	County	2011 5 Year Avg Rank	2011 Average Total CMI	2010 5 Year Avg Rank	2010 Average Total CMI	Action by PSE
Blumaer-16	Thurston	44	983,762	Not on 2010 Top 50 List		Planning is currently reviewing and identifying potential reliability improvements projects.
Yelm-27	Thurston	45	931,260	35	1,083,989	Installed spacers on feeder out of substation in 2011
Skykomish-25	King	46	865,826	Not on 2010 Top 50 List		Planning is currently reviewing and identifying potential reliability improvements projects.
Snoqualmie-13	King	47	1,412,106	Not on 2010 Top 50 List		Planning is currently reviewing and identifying potential reliability improvements projects.
Silverdale-16	Kitsap	48	707,794	24	792,467	An autotransformer replacement project and a cable replacement project are planned for 2012.
Long Lake-21	Kitsap	49	629,812	Not on 2010 Top 50 List		Completed a tree wire project and two recloser projects in 2011. A tree wire project is planned for 2012.
Port Ludlow-16	Jefferson	50	817,325	39	855,642	Planning is currently reviewing and identifying potential reliability improvements projects.
Airport -23	Thurston	Not on 2011 Top 50 List		10	1,165,065	Completed reconductor of overhead line to tree wire in 2010.
Rose Hill-21	King	Not on 2011 Top 50 List		15	879,681	Completed tree wire and recloser projects in 2009, underground feeder conversion project in 2010. Reconductor overhead line to tree wire pending completion of a transmission line project.
South Keyport-22	Kitsap	Not on 2011 Top 50 List		18	1,448,338	Installed two gang operated switches and replaced padmount switch in 2011. The circuit has been reconfigured to better segregate load. A cable replacement project is planned for 2012. A feeder tie project is planned for 2013.
Longmire-22	Thurston	Not on 2011 Top 50 List		31	2,276,256	Portions of the underground feeder system were replaced from 2009-2011 and a second recloser and additional switches have been installed. Overhead reconductor to tree wire scheduled for 2012.
Murden Cove-15	Kitsap	Not on 2011 Top 50 List		38	1,075,776	Installed five gang operated switches in 2011. The circuit has been reconfigured to better segregate load.
Port Madison-16	Kitsap	Not on 2011 Top 50 List		41	697,885	Completed one recloser project in 2010. Two cable replacement projects are planned for 2012. Planning is currently reviewing and identifying potential reliability improvements projects.

Circuit	County	2011 5 Year Avg Rank	2011 Average Total CMI	2010 5 Year Avg Rank	2010 Average Total CMI	Action by PSE
Blumaer-17	Thurston	Not on 2011 Top 50 List		45	793,267	Installed one gang operated switch and two reclosers in 2009. A tree wire project is planned for 2013. The circuit has been reconfigured to better segregate the load.
Fragaria-12	Kitsap	Not on 2011 Top 50 List		47	701,827	Completed one tree wire project,installed one recloser and two gang operated switches in 2011. One tree wire project and two gang operated switches planned for 2012.
East Port Orchard-13	Kitsap	Not on 2011 Top 50 List		48	526,688	Installed two reclosers in 2010. Evaluating a potential reliability improvement project.
Eld Inlet-25	Thurston	Not on 2011 Top 50 List		49	1,132,415	An overhead upgrade project was completed in 2009 and 2010. Planning will continue to monitor this circuit.

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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.

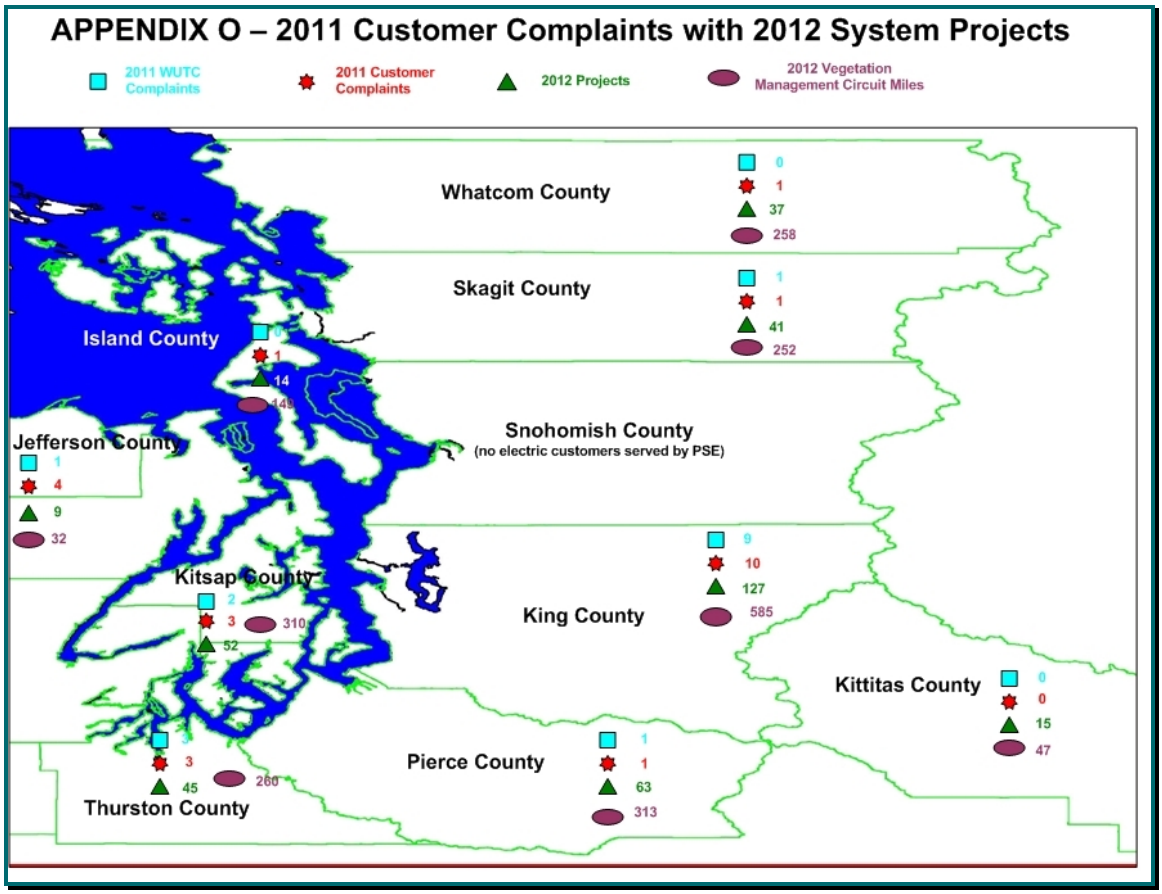

Figure 13: 2011 Customer Complaints with 2012 System Projects