2010 Annual
Puget Sound Energy
SQI and Electric Service Reliability Report

Filed on March 31, 2011

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 nearly 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 to deliver energy that is safe, reliable, reasonably priced 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 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 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 is 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 compliance, customer satisfaction, reliability/service restoration, efficiency, budgeting and safety. Finally, the SQI program includes PSE's gas emergency response plans for outlying areas.

SQI and Electric Service Reliability Report

This *2010 Annual Puget Sound Energy SQI and Electric Service Reliability Report* meets the PSE's SQI program reporting requirements set forth by the UTC.[6]

In the past, additional detail on electric reliability was reported in a separate report. To facilitate external review of PSE's SQI and Electric Service Reliability performance, both areas are included in this 2010 plan year report.[7,8]

This report meets all the Electric Service Reliability and SQI regulatory reporting requirements except PSE's gas emergency response plans for outlying areas. Those plans are filed concurrently with this Report as Attachment C to the filing because the plans contain confidential information.

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[6] The performance benchmark, calculation and reporting of each of the Service Quality Indices (SQIs) in this Report reflects 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. These modifications refer only to the SQIs and not necessarily the Electric Service Reliability section of the report.

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

- 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

In addition, this Report addresses all reliability measurements that PSE has been tracking in its annual electric service reliability reporting since 2002 and the requirement prescribed in Order 12 of consolidated Docket Numbers UE-072300 and UG-072301 regarding use of customer complaints in PSE's circuit reliability evaluation.

[8] The annual reporting of the Service Quality Index Program and the electric service reliability used to be filed separately by February 15 and March 31 of each year, respectively. To facilitate external review, PSE filed a petition in October 2010 with the UTC 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 2010 SQI and Electric Service Reliability performance along with relevant service providers' performance metrics.

Key measurement	Type of Metric	Benchmark/Description	2010 Performance Results	Achieved
Customer Satisfaction				
UTC Complaint Ratio	Service Quality Index #2	No more than 0.40 complaints per 1000 customers, including all complaints filed with the UTC	0.30	☑
Customer Access Center Transaction Satisfaction	Service Quality Index #6	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	96%	☑
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	Service Provider Index #2A	At least 84% satisfied (rating of 5 or higher on a 7-point scale)	88%	☑
Service Provider Satisfaction—Quanta	Service Provider Index #2B	At least 75% satisfied (rating of 5 or higher on a 7-point scale)	79%	☑
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	78%[9]	☑

[9] Result shown excludes 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.

Key measurement	Type of Metric	Benchmark/Description	2010 Performance Results	Achieved
Operations Services—*Appointments*				
Appointments Kept	Service Quality Index #10	At least 92% of appointments kept	100%[10]	☑
Service Provider New Customer Construction Appointments Kept—Pilchuck	Service Provider Index #3A	At least 92% of appointments kept	100%	☑
Service Provider New Customer Construction Appointments Kept—Quanta	Service Provider Index #3B	At least 92% of appointments kept	100%	☑
Customer Service Guarantee	Service Guarantee #1	A $50 credit to customers when PSE fails to meet a scheduled SQI appointments	$6,300	
Operations Services—*Gas*				
Gas Safety Response Time	Service Quality Index #7	Within 55 minutes from customer call to arrival of field technician	31 minutes	☑
Secondary Safety Response Time—Pilchuck	Service Provider Index #4A	Within 60 minutes from first response assessment completion to second response arrival	51 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 Gas	Service Provider Index #1C	At least 95% compliance with site audit checklist points	98%	☑
Service Provider Standards Compliance—Quanta Electric	Service Provider Index #1B	At least 95% compliance with site audit checklist points	97%	☑

[10] Appointments kept results shown are rounded to the nearest whole percentage per UTC order. However, in 2010 PSE and its service providers kept 99.7% 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	2010 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	52 minutes	☑
Secondary Safety Response and Restoration Time—Core-Hour—Quanta	Service Provider Index #4B	Within 250 minutes from the dispatch time to the restoration of non-emergency outage during core hours	242 minutes	☑
Secondary Safety Response and Restoration Time—Non-Core-Hour—Quanta	Service Provider Index #4C	Within 316 minutes from the dispatch time to the restoration of non-emergency outage during non-core hours	248 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	
Service Provider Standards Compliance—Quanta	Service Provider Index #1B	At least 95% compliance with site audit check list points	97%	☑
Electric Service Reliability—*SAIFI*[11] *& SAIDI*				
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	1.59 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	1.31 interruptions	
Non-Major-Storm (<5% customers affected) SAIFI	Service Quality Index #4	No more than 1.30 interruptions per year per customer	0.86 interruptions	☑
IEEE Non-Major-Storm (T_{MED}) SAIFI	Reliability	Power interruptions per customer per year, excluding days exceeding the T_{MED} threshold	0.87 interruptions	

[11] 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	2010 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	512 minutes	
Total (all outages five-year average) SAIDI	Service Quality Index #3	No more than 320 minutes per customer per year,	287 minutes	☑
Non-Major-Storm (<5% customers affected) SAIDI	Reliability	Outage minutes per customer per year, excluding outage events that affected 5% or more customers	129 minutes	
IEEE Non-Major Storm (T_{MED}) SAIDI	Reliability	Outage minutes per customer per year, excluding days exceed T_{MED} threshold	124 minutes	

As shown in the preceding table, PSE met all its SQI benchmarks in 2010 and no SQI penalty is assessed. Detailed and supplemental SQI performance results can be found in the following appendices:

- **Appendix A: Monthly SQI performance**—Provides monthly SQI result and additional information on major outage event and localized electric emergency event days and natural gas reportable incidents and control time. This appendix has three attachments:
  - **Attachment A—Major event and localized emergency event days** (Affected local areas only)
  - **Attachment B—Major event and localized emergency event days** (Non-affected local areas only)
  - **Attachment C—Gas reportable incident and response 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 2010)**—This appendix is intentionally left blank since it is not applicable for the 2010 performance period
- **Appendix D: Proposed customer notice (report card)**—This appendix presents the 2010 Customer Service Performance Report Card, which highlights 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 Kept Appointments and Customer Service Guarantee payments
- **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 2010 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 29, 2011, as part of customer billing package.

Changes in 2010

SQI benchmark and mechanics changes

The UTC granted many SQI amendments for the reporting period starting January 1, 2010. The two most significant changes impact the Disconnection Ratio (SQI #9) and SAIDI (SQI #3).

- The Disconnection Ratio (SQI #9) was eliminated on an interim basis effective August 31, 2010.[12]
- The way SAIDI (SQI #3) is calculated and its associated benchmark was revised to include all outage events.[13] The new calculation is explained in detail in Chapter 12: *SAIDI (SQI #3)*.

[12] The first change to the Disconnection Ratio benchmark was approved on November 13, 2009 (Order 14 of consolidated Docket Numbers UE-072300 and UG-0723010). However, the subsequent Order 15 of the same dockets temporarily eliminated the entire SQI #9 and associated penalty with a pending consideration for permanent elimination during a general rate case. The purpose of the SQI #9 elimination is to allow PSE to carry out the UTC credit and disconnection rules as set forth in the Washington Administrative Code. The 2010 monthly disconnection results are included as Appendix E: *Disconnection results by month* in this Report for informational purposes.

[13] A revamp of the SQI #3 performance calculation and benchmark to was approved by UTC in Order 17 of the aforementioned dockets. The revised SQI #3 measurement better reflects the overall customer experience regarding PSE's power restoration efforts, including during major events that had been excluded from the performance calculation in the prior years SQI #3 reporting. The SQI #3 revision is effective for the 2010-2013 performance years. The SAIDI chapter of this report describes in details the calculation of the revised SQI #3 performance.

In addition, the due date for the PSE annual SQI filing was changed to coincide with the due date of PSE annual Electric Service Reliability filing. This change enables PSE to combine the two reports into a single report.[14]

Unusual events

In November and December 2010, harsh weather conditions and multiple high winds severely damaged PSE's electric system. The strong winds with gusts around 45–60 mile per hour combined with a record-breaking snowy and cold period in the last half of November, and more high winds in mid-December. These weather events caused widespread outages in Western Washington, making power restoration difficult. Many PSE customers experienced prolonged or consecutive outages.

Since 1997, only 2006, the year when the devastating Hanukkah Eve Wind Storm occurred, had more major event outage minutes than 2010. 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. Details on major event outages are provided in the Electric Reliability Section.

Change in data reporting and data collection

On May 21, 2010, PSE completed the transition of the main Customer Access Center system vendor from Aspect to Cisco to benefit from new phone technology and better maintain functionality. The new system accurately captures the same call data as the old system. PSE's internal review shows that Customer Access Center answering performance (SQI #5) was not affected by the transition. Any impact on Customer Access Center transactions customer satisfaction (SQI #6) appears to be minimal.

See *Technology enhancements* in Chapter 5: *Customer Access Center answering performance* (SQI #5) for a detailed discussion of the phone technology change.

[14] Other approved text changes to Appointments Kept (SQI #10) and Electric Safety Response Time (SQI #11) due to the SQI #3 modification do not affect the reporting or the performance calculation of SQI #10 and SQI #11.

Customer satisfaction

Puget Sound Energy wants to know what customers expect of the utility's performance and services 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 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 way that helps PSE analyzes customer feedback is through 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 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 two service providers.

2
UTC complaint ratio (SQI #2)

Overview

Each year the UTC receives complaints from PSE customers on a variety of topics, such as bill disputes and disconnects for non-payment.

In 2010, while serving more than 1 million electric and 750,000 natural gas customers, the UTC received 541 complaints concerning PSE, a decrease of 79 complaints from 2009, which results in an improvement of 13 percent in the UTC complaint ratio. Key reasons for the change in complaint frequency and cause are addressed in this report.

Table 1: UTC complaint ratio for 2010

Key measurement	Benchmark	2010 Results	Achieved
UTC complaint ratio (SQI #2)	No more than 0.40 complaints per 1,000 customers, including all complaints filed with UTC	0.30	☑

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:

$$UTC\ complaint\ ratio = \frac{electric\ and\ gas\ complaints\ recorded\ by\ UTC}{average\ monthly\ number\ of\ electric\ and\ gas\ customers} 3\ 1{,}000$$

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 2010, a majority of customer complaints were related to high bills, disputed bills or disconnects. See Table 2 and Table 3. In 2010, the UTC added "High Bill" as a new complaint type. Previously, high bills were categorized as disputed bills. Effective in 2010, high bill complaints are separated in complaint count and percentages.

High bill complaints are often the result retroactive billing usually caused by a stopped meter or municipal annexation.

Stopped meters

In 2008 PSE began a project to actively identify and resolve meter and billing problems associated with stopped meters. A set of resolution targets was approved by the UTC in October 2008. The first target of replacing more than 100,000 meter modules was completed in June 2009 but created a high volume of complaints that were classified as "Disputed Bills" in 2009. These disputed bills peaked at a level of over 2,000 per month in the first half of 2009.

Once the first retroactive bill process target was achieved in June 2009, the number of disputed bills decreased.

The reduction in retroactive bills in 2010 from 2009 saw a corresponding reduction of Disputed Bill complaints for the same period. The reduction of 31 percent in complaints (319 to 219) is comparable to the 38 percent (21,306 to 13,315) decrease in stopped meter retroactive bills issued from 2009 to 2010. (See *Municipal annexation* section that follows.)

Municipal annexation

Retroactive billing for city utility taxes increased the number of disputed bill complaints. This type of retroactive billing typically occurs when a municipality annexes an area or when a new service was assigned an incorrect tax code due to PSE error or the inconsistency in the annexation database maintained by Washington State Department of Revenue (DOR). Also, cities are not required to notify PSE of annexations, which may delay the implementation of new tax billing. However, PSE has several methods of discovering annexations and confirms tax codes quarterly with state, county and city government authorities.

Beginning in May 2010, PSE initiated the review of utility tax billing which resulted in over 400 retroactive bills per month, up from less than 20 per month early in 2010. Another increase resulted from annexations in several municipalities. The largest was the annexation of part of Kitsap County by the City of Port Orchard on September 28, 2009.

Disconnects

The number of disconnect complaints increased from 167 in 2009 to 176 in 2010, a five percent increase. The primary trigger for a disconnect complaint is receipt of a service disconnection notice:

- Sixty-two percent of disconnect complaints are a result of a customer receiving a disconnect notice. The number of disconnect notices issued in 2009 and 2010 remained virtually constant.
- Thirty-eight percent of disconnection complains followed the occurrence of the actual service disconnection.

The number of disconnect complaints remained relatively stable from 2009 to 2010 even with the significant increase in completed disconnects—from 53,500 in 2009 to 70,500 in 2010. This suggests that suspension of the disconnect "cap" (formerly SQI #9) may not have a significant impact on total disconnect complaints in 2011.

Deposits

The number of complaints about deposit requirements to start or continue energy service in 2010 was nearly double that of 2009 and triple that of any of the previous three years. PSE is monitoring these complaints and believes the increased volume is a result of the weak economy. A greater number of accounts must be secured with deposits, and the deposit requirement aggravates an already challenging situation for the customer. PSE is committed to working with the customers who need extra help to set up installment payment plans or make other arrangements.

Table 2: Percentage of UTC complaints related to disconnects and disputed bills from 2006 to 2010

	2006	2007	2008	2009	2010
Disconnect	19%	24%	23%	27%	32%
Disputed bill	40%	38%	53%	51%	40%

Table 3: Number of UTC complaints by type

Complaint type	Complaints				
	2006	2007	2008	2009	2010
Construction	12	7	9	15	7
Customer service	71	58	34	45	33
Deposit	13	17	11	26	48
Disconnect	91	117	102	167	176
Disputed bill	192	184	235	319	219
High bill[15]	0	0	0	0	20
Quality of service	66	64	30	24	20
Other	40	37	21	26	18
Total	***485***	***484***	***442***	***622***	***541***

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

Historical trend for the UTC complaint ratio

PSE is committed to managing UTC complaints to identify root causes and to initiate corrective and preventive actions. Successful management of complaints includes integration of the complaints with other SQI measures to assure success in all areas.

Table 4: UTC complaint ratio from 2006 to 2010

	2006	2007	2008	2009	2010
Actual complaint ratio	0.28	0.27	0.25	0.34	0.30
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	

Working to prevent and reduce customer complaints

PSE reviews each UTC complaint and classifies it by the same type assigned by the UTC examiner. Each complaint is assigned further type codes and other identifiers so that common complaints can be reviewed as a group.

In addition to categorizing by group, each complaint is also reviewed for unique attributes that may help determine its root cause so that PSE can address the root cause, thereby reducing the number of future complaints of this type.

ECMS

In 2010 PSE implemented a web-based Escalated Complaint Management System (ECMS) that captures complaint data on issues escalated to a Supervisor or higher. PSE is able to analyze the ECMS data to gain insight into complaints that are resolved by supervision before they escalate further.

- The system allows complaints to be categorized more consistently and enables the data to be analyzed and reported in greater detail. The system supports:
  - Discovering the root cause of the complaints so that the actions designed to prevent further escalation of a complaint can be implemented.
  - Measuring the effectiveness of preventive actions so that resources are directed to those remedies that are the most effective.
- The ECMS now is being used by all customer care organizations and will be expanded to other PSE groups in 2011.

In addition to formalizing the complaint management process, PSE has also enhanced the following areas of customer outreach and support in 2010.

- Customer Service training processes established in 2009 were enhanced and expanded in 2010.
  - Re-qualification of a selected group of agents on customer fraud definition and action, so action taken by PSE in cases of possible fraud is accurate, consistent and fair, resulting in minimized effect on our other customers.
  - Established a formal method of documenting customer contacts in which PSE records the Background, Action and Results (BAR). This improved documentation provides a more accurate and consistent record of customer contacts and aids in conversations with the customer.
- A new phone conversation analytics system was implemented in 2010 that records calls and identifies key words. This system helps to analyze calls by type as well as provides the actual content of phone conversations so that any customer concerns can be resolved more easily.
- In 2010, PSE upgraded the Quick Reference Manual (QRM), a web-based tool that provides timely and accurate technical information to Customer Access Center agents. Focused efforts to improve customer service with tools such as the new phone system, QRM and individual training and coaching have shown results. There has been continuous improvement in reducing the number of Customer Service-related UTC customer complaints over the past five years. Table 3 reflects the reduction in Customer Service complaints from 71 in 2006 to less than half that number in 2010.
- Continuous focus on PSE system operations has resulted in significant reductions in Quality of Service-related UTC customer complaints over the past five years. Customer complaints about outage frequency and outage duration would be included in this category.
- Customers are provided with information on how PSE can assist customers with paying PSE bills. PSE offers a variety of programs, including the Home Energy Lifeline Program (HELP), which assist low-income customers.
- Review of PSE's processes for city utility tax billing found gaps in the municipalities' and PSE's areas of responsibility. As a result, PSE has changed processes to ensure timely and accurate billing of these taxes.

Going forward

PSE customer service staff work to resolve issues with customers before a complaint is made to the UTC. In 2010, the Escalated Complaints Management System was implemented and is in full use as of the end of the year. Formalizing the Root Cause identification process will be a critical aspect of 2011 plans.

For example, there is an opportunity to review the root cause of disconnect complaints resulting from receipt of notices. This research may afford the opportunity to reduce complaints and, more importantly, support customers with energy assistance, payment arrangements and other plans to reduce the possibility of service interruption.

In addition, more focus will be placed on using the determined root causes to define, implement and measure effective preventive actions to reduce the number of future complaints.

3
Customer Access Center transactions customer satisfaction (SQI #6)

Overview

Telephone calls to PSE go to the Customer Access Center (CAC). 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 2010, these independent surveys found that more than 96 percent of customers surveyed were satisfied with CAC's overall transaction performance (SQI #6).

Table 5: Customer Access Center transactions customer satisfaction for 2010

Key measurement	Benchmark	2010 Results	Achieved
Customer Access Center transactions customer satisfaction (SQI #6)	At least 90% satisfied (rating of 5 or higher on a 7-point scale)	96%	☑

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
- 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 2006 to 2010:

Table 6: Customer Access Center transactions in customer satisfaction from 2006 to 2010

	2006	2007	2008	2009	2010
Customer Access Center transactions customer satisfaction	94%	92%	93%	93%	96%
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 trained to handle customer inquiries, including billing, emergencies and outage related questions.
- 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 monthly 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.

Coaching for outstanding performance

PSE customer service representatives earned very high satisfaction ratings from customers: 82 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:

[16] Earned the top rating of 7, Completely satisfied, on the one to seven scale

CAC Customer Service Representative Performance Scorecard		
Measurement		**Results**
Productivity		
Compliance:	Available & ready to take calls	98%
Average Handle Time:	Handles calls in a timely manner; Does not waste customer time	0:03:05
Wrap Time:	Completes research & follow-up quickly	0:00:20
Overall Productivity Rating		**Meeting**
Quality		
	Introduction Skills	100%
	Update Records	100%
	Closing Skills	98%
	Phone Pro/Communication	98%
	Procedural Requirements	100%
	Call Management	100%
	Customer Perspective/Experience	98%
Overall Quality Rating		99%
Job Knowledge		
	Techniques/Procedures	100%
	Education	100%
	Bill Inquiry	N/A
Overall Job Knowledge Rating		100%
Gilmore Results		10
	Average Rating	6.76
Overall Gilmore Rating		**Exceeds**
Overall Performance Rating		**Exceeds**

Figure 1: CAC CSR scorecard (illustrative data)

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.

Going forward

PSE recognizes that continuous improvements are required to maintain customers' satisfaction with their PSE contact experience. To maintain a high customer satisfaction level, PSE will:

- Improve Washington state regulatory compliance relating to prior obligation by refining the disconnect process and implementing strategies to ensure transaction accuracy and completeness. For example:
  - Create a disconnect queue composed of highly trained CSRs to take calls relating to credit disconnects only.
  - Provide opportunity for customers to make flexible payment arrangements outside the standard operations to better meet needs of the low income customers.
  - Implement a verification strategy that includes multiple check points at different phases of the disconnection process to ensure that the process is carried out according to business rules and standards.
- 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 2010, these surveys found that more than 96 percent of customers were satisfied with PSE's Field Service Operations transaction performance.

Table 7: Field Service Operations transactions customer satisfaction for 2010

Key measurement	Benchmark	2010 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%	☑

PSE met this SQI goal in 2010 and in every previous year.

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 quarterly 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 generally 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 (almost 98 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

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 2009 to 2010 remain the same, the number of customers rating their satisfaction with the way the CSR handled the case increased by two percent in 2010 compared to 2009.

Customer satisfaction with Field Service Operations transactions

Survey respondents were asked their satisfaction with the natural gas field technician on several specific attributes. In general, PSE service technicians got high ratings from customers (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
- Clearly explained the situation

Satisfied customers also remarked that the technicians were professional, thorough, showed care or concern, were efficient and went the extra mile.

Customers (less than 14 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:

- Were not friendly or were rude or abrupt
- 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
- Fix the problem or complete the job in one trip

In 2010, more than 93 percent of customers said the technicians were able to arrive on a day and time that was convenient for the customer and 94 percent said the technician came within the time frame promised.

While the types of disappointments mentioned by customers from 2009 to 2010 remain relatively the same, the percentage of customers rating the Field Service technicians completely satisfied (rating of 7) shows slight improvement from 85 percent in 2009 to 86 percent in 2010.

Historical trend for customer satisfaction with Field Service Operations transactions

The following table shows Field Service Operations transactions customer satisfaction from 2006 to 2010.

Table 8: Field Service Operations transactions customer satisfaction from 2006 to 2010

	2006	2007	2008	2009	2010
Field Service Operations transactions customer satisfaction	91%	90%	91%	95%	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 2010, PSE achieved record high customer satisfaction rating with Field Services Operations transactions. Some of the actions PSE has taken in 2010 are:

- PSE's operations management team reviews specific information about a service order such as:
  - When the customer call came in
  - Which technician responded to the call
  - What type of service was requested
  - What work PSE actually performed for the customer
  - When the work was completed
  - Which CSR took the call

  With this information, combined with customer concerns raised during the survey, supervisors are better able to coach and train employees to improve customer service. Individuals and work groups can easily view their performance, including viewing monthly progress reports.

- When performing work on customer equipment, PSE focused improving communication by:
  - Thoroughly explaining what was wrong with the customer's appliance and what PSE did to fix it.
  - Ensuring customer's concerns are met before leaving the premises.

- PSE continued to emphasize customer service through its formal training programs for new natural gas field workers.

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 (CSRs) 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 (CAC) where customer service representatives (CSRs) 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 2010, the CSRs answered 78 percent of the calls within 30 seconds of customer request.

Table 9: Customer Access Center answering performance for 2010

Key measurement	Benchmark	2010 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	78%	☑

About the benchmark

The Customer Access Center typically receives most customer inquiries and 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 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 performance percentages. The calculation of the monthly answering performance is demonstrated through the following formula:

$$\textit{Monthly call performance} = \frac{\textit{aggregate number of calls answered by a company rep within 30 seconds}}{\textit{aggregate number of calls received requesting to speak with a CSR}}$$

What influences Customer Access Center answering performance?

PSE received about 4 million calls from customers in 2010. About half of these calls were handled by customer service representatives.

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

The 2010 total call volume decreased slightly from 2009. See Table 11.

The two most common non-emergency reasons for customer calls according to the Gilmore Research Group survey of PSE customers are:

- Issues and concerns regarding customer billing and payment
- To start or stop service for their home or business

The following chart shows the types of calls that were received in 2010:

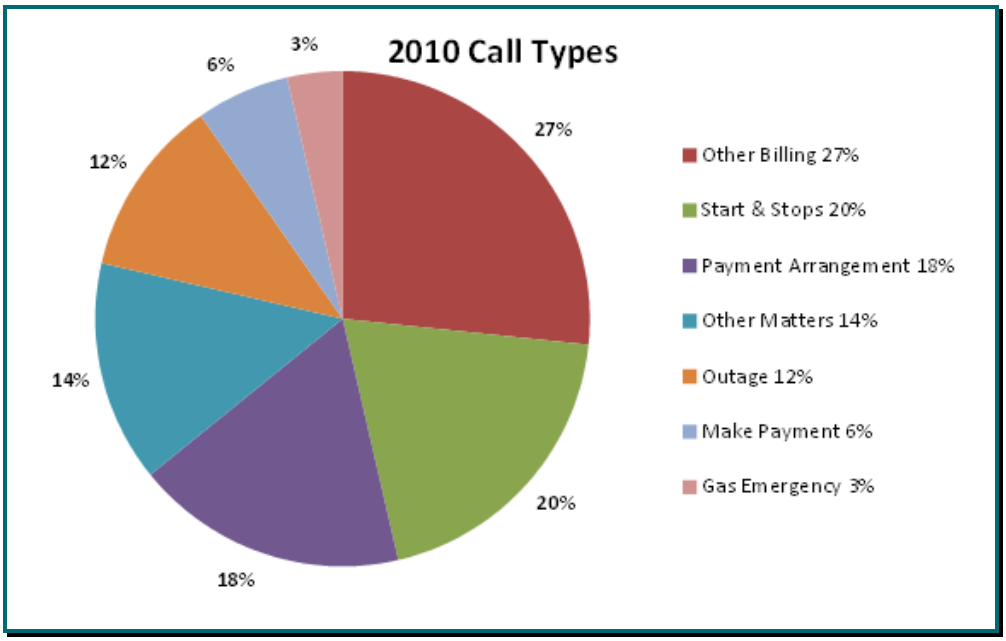

Figure 2: 2010 incoming call types

To answer the variety of calls that requested to speak to a customer service representative, PSE has over 200 CSRs; approximately 17 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 Customer Access Center's workforce management team provides continuous work load forecasting and monitoring to ensure that staffing levels are adequate for the call volume. The SQI #6 CAC customer satisfaction survey indicates that 92 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 2006 to 2010.

Table 10: Customer Access Center's answering performance from 2006 to 2010

	2006	2007	2008	2009	2010
Customer Access Center answering performance	75%	75%	77%	78%	78%
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

PSE is committed to meet the SQI #5 benchmark of 75 percent and to minimize monthly service level fluctuations. The Customer Access Center strives to ensure that all CSRs are well-trained to efficiently perform their duties with the latest tools and technology, 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 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 agents 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 power outages.
  - Establishing a partnership with an outside vendor to handle basic overflow calls during high call-volume periods.

These actions have resulted in a more stable service level as shown in the following graph:

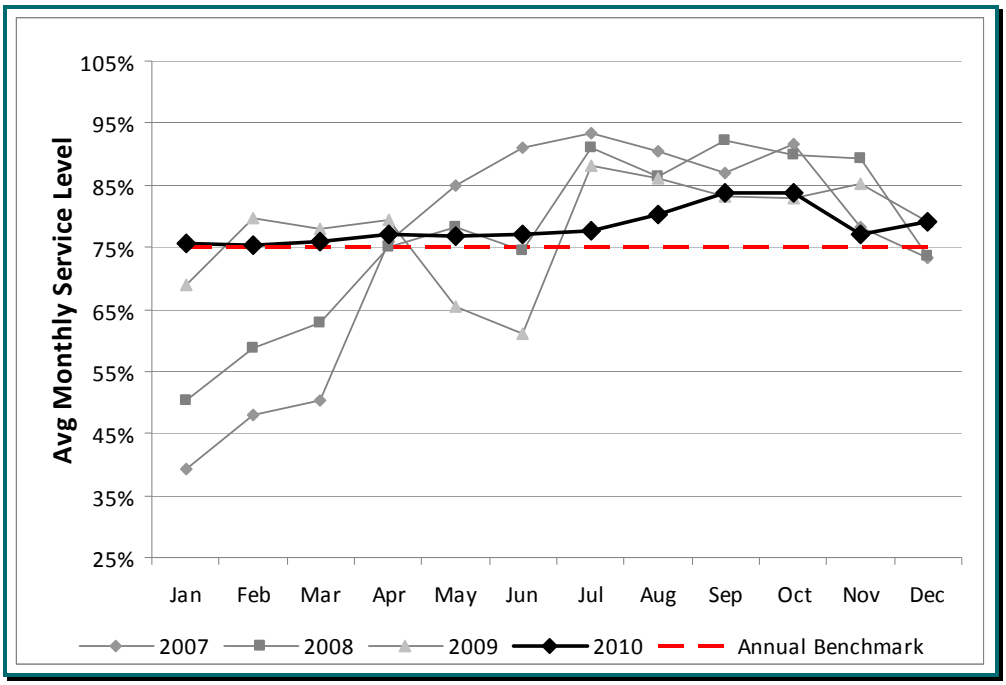

Figure 3: 2007 to 2010 customer access center monthly answering performance

Technology enhancements

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

- Cisco Systems have replaced the previous phone technology in the Customer Access Center. According to the 2010 JD Power Electric Residential Customer Satisfaction Survey, customers rated the ease of understanding and navigating PSE's phone menu 45 points higher than their peer set. See *Transition to Cisco Systems* that follows for a detailed discussion of the phone technology change.
- Escalated Complaint Management System (ECMS) software captures and tracks escalated customer complaints, enabling PSE to perform research and root cause analysis on events that led to the escalated complaint and develop preventive action plans. For detail, see Chapter 2: *UTC complaint ratio* (SQI #2).
- A new phone conversation analytics system was implemented in 2010 that records calls and identifies key words. This system helps to analyze calls by type as well as provides the actual content of phone conversations so that any customer concerns can be resolved more easily.
- Website improvements include alerting customers when there are outages in PSE's service territory and communicating the severity of these outages. The outage alerts enable customers to obtain information without needing to phone PSE.

- An outbound customer notification system was implemented in December 2010. This system can be used to proactively call customers in the event of a severe service impact such as outages in order to reduce incoming call volume.
- Nextalk TTY phone system was implemented in 2010. The system is a web-based application for the hearing impaired. The implementation of the Nextalk technology enables our hearing impaired customers to contact PSE 24/7/365. It is designed to accept direct calls from modern shared networks that are TTY compatible.

Transition to Cisco Systems

On May 21, 2010, PSE completed the transition of the main Customer Access Center system vendor from Aspect to Cisco. This included replacement of the automated call distribution unit, the screen pop-up application that had not been supported by Aspect since June 2009, and the Interactive Voice Response (IVR) unit that will not be supported by Aspect after June 2011. PSE started evaluating potential vendors in June 2009 and selected Cisco as the principal vendor but retains the Aspect eWFM product for the workforce management system.

Indiscernible transition

The transition was designed so that customers would not detect any differences; the options customers hear in the Interactive Voice Response (IVR) system are the same as they were before the system conversion. Any impact on Customer Access Center transactions customer satisfaction (SQI #6) appears to be minimal.

System validation

After the new Cisco systems were implemented, internal analysis indicated that the information reported by the systems is accurate and daily and monthly service level performance information also meets the SQI #5 requirements. These requirements include the number of calls answered within 30 seconds (service level) and the total calls offered to CSRs. The Aspect call data were also validated and uploaded into the Cisco reporting files to ensure data continuity.

No apparent effect on SQI #5

Further analyses of the call statistics suggested that switching from Cisco to Aspect merely changed the data source of Customer Access Center Answering Performance (SQI #5) but did not positively or negatively affect the performance results of SQI #5. The daily and monthly volume of calls abandoned, calls offered to customer service representatives, and calls answered by the representatives remained stable before and after the May 21, 2010 implementation date. The trend in daily and monthly average answering speed and service level within 30 seconds also demonstrated a pattern that was consistent with historical performance relative to staffing levels.

Training accomplishments

PSE promotes efficiency and excellent customer service through extensive training and process improvements.

- **Quick Reference Manual (QRM)**—This manual has been expanded to all customer care departments. The QRM enables CSRs to quickly locate information needed to satisfy customers.
- **Business Project Management (BPM)**—The BPM application enables improved process flow efficiency and process handle times by CSRs. It provides the capability to streamline processes, and enables CSRs to complete customer requests more quickly.

Other Customer Access Center initiatives

PSE has implemented several other initiatives to enhance customer service and answering performance:

- **The Back Office Support Team**—Back office support personnel work on the following activities to ensure prompt customer response from all customer contact avenues:
  - **Correspondence**—Respond to customer requests received via mail or fax, including mail return.
  - **Apartment Desk**—Respond to landlord or apartment manager requests for multi-complex residences received via phone, email or fax.
  - **Point Phone**—Liaison between the field technicians and CSRs. Respond to all CSR inquiries and scheduling pertaining to gas or electric emergency service orders.
  - **Resolution Specialists**—Increases capacity to more quickly handle complex or escalated customer calls.
- **The Spanish Program**—The majority of foreign language calls that the CAC receives are in Spanish. Additional Spanish speaking CSRs were hired to take customer calls and assist with walk-in customers. As a result, the need for interpreters has been reduced.
- **Disconnect Queue**—A disconnect queue has been added to the IVR, enabling customers with credit related disconnect inquiries to reach a disconnect specialist immediately. Disconnect specialists ensure that the disconnect process is followed accurately by tracking and performing verification.

Abandoned calls and busy calls

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

PSE's phone system is configured with a backup system to handle all 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 2010 customer calls to 1-888-Call-PSE either went through the main or the overflow backup system without encountering busy signal.

The table below 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 2006 to 2010

	2006	2007	2008	2009	2010
Total calls requested to speak to a CSR	5,070,763	4,119,289	3,938,249	4,107,539	3,944,753
Calls abandoned	150,161	91,306	69,256	64,447	63,365

Distinguished results

According to the 2010 JD Power Gas and Electric Residential Customer Satisfaction Studies, PSE CSRs scored better than their peer set in the following measures:

- Ability to answer question on the first call.
- Being courteous and friendly.
- Demonstrating personal care and concern.
- Having sufficient knowledge.
- Length of the time needed to answer questions.

Going forward

In 2011, PSE will:

- Continue to develop workload forecasting and monitoring practices that sustain service levels, even during peak periods.
- Enhance the Cisco phone system to better meet customer demands, such as:
  - Reporting capability for improved analytics and monitoring trends
  - Multi-skill routing
  - Spanish translation standardization to a professional voice talent
  - Agent validation code
  - Phone technology support for reliable and sustainable system maintenance
- Continue to search for process improvement opportunities and deliver robust, sustainable, measurable and improved outcomes.
- Continue to enhance PSE.com to provide outage alerts via text message, customization of online services and additional self-serve options.

Operations services

PSE is in the business to deliver safe and reliable electric and natural gas service. Many factors influence how reliably 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.

An operations service issue customers find important is that PSE keeps appointments it has made to perform certain requested services. PSE monitors appointments kept and missed and provides a $50 credit to customers when an appointment is missed.

This section discusses the three Service Quality Indexes (SQIs) 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 guarantee

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) organization is to respond to natural gas emergencies. In 2010, PSE responded to about 20,400 calls concerning natural gas safety. These emergencies include reports of inside or outside odors, third-party damage to PSE's system, leaks and carbon monoxide concerns. It includes other responses to support first-response organizations, such as fire departments. PSE's ability to respond to these emergencies is tracked and reported in this chapter.

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

In 2010, the overall average response time was 31 minutes, 24 minutes quicker than the benchmark. The following table reports the results for 2010.

Table 12: Gas safety response time for 2010

Key measurement	Benchmark	2010 Results	Achieved
Gas safety response time (SQI #7)	Average 55 minutes or less from customer call to arrival of field technician	31 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 difference is then calculated for each service call and averaged for all emergency calls during the performance year.

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

PSE has Gas First Responders located throughout its service territory. These technicians are available on a 24/7/365 basis.

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 PSE 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.

GFR has additional important functions:

- Perform state and federal compliance work, which includes performing leak surveys done on the gas delivery system, changing out meters for testing or that may have stopped working properly and other periodic maintenance and inspection activities.
- Respond to customer needs, such as equipment issues ranging from no heat or no hot water to lighting gas-fired equipment after maintenance. When responding to these requests, PSE also:
  - Inspects customers' equipment to ensure it is in safe operating condition
  - Makes minor adjustments or red-tags the equipment until it can be repaired or remediated
  - Makes minor repairs or replaces some parts to restore customer equipment to proper functioning at customer's request and expense

Historical trend for gas safety response time

The following table shows the average gas safety response time from 2006 to 2010.

Table 13: Gas safety response time from 2006 to 2010

	2006	2007	2008	2009	2010
Gas safety response time	36 minutes	38 minutes	35 minutes	33 minutes	31 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 exceeds the SQI threshold. For example, in 2010 PSE:

- Revised weekend staffing levels, adding 12-hour shifts in Pierce, Thurston, Lewis and parts of King counties based on the review of existing staffing levels to service-order volume.
- Continued to utilize the Mobile Workforce Dispatch System with computer-aided dispatching, which enabled PSE to better assign the available service technicians required in a gas safety situation and to determine the closest possible responder.
- Implemented a reporting tool that provides management with detailed response time data to facilitate the review of events with response times greater than 60 minutes and determine the root cause of response-time delay.
- Continued employee training efforts including new gas worker training, gas operator qualification training, and new standards and procedure training through staff meetings.
- Researched impacts of changing the current gas emergency response time benchmark of 55 minutes on average to a proposed performance standard requiring response to a minimum of 95 percent of gas emergencies within 60 minutes.[17]

The data did not show that the 95 percent at 60 minutes standard would significantly improve customer safety or customer satisfaction. PSE recommended keeping the current benchmark of 55 minutes for Gas Safety Response Time (SQI #7). UTC staff completed its review of PSE's SQI #7 evaluation report on in December 2010 and agreed with PSE's finding that current response time benchmark should be retained. See the full report, titled *SQI #7 Benchmark Evaluation Report* as Attachment B to the 2010 SQI and Electric Service Reliability Filing.

Percentage of gas safety response times within 60 minutes

Table 14: Gas safety response times within 60 minutes in 2010

Month	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Percent responses within 60 minutes	93%	94%	95%	94%	93%	96%	97%	97%	97%	96%	96%	97%

[17] In compliance with Order 12 of consolidated Docket Numbers UE-072300 and UG-072301.

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 utilizing the *Mobile Workforce Dispatch System* functionality for computer-aided dispatching.

7
Electric safety response time (SQI #11)

Overview

PSE has a team of employees assigned to Electric First Response (EFR) whose primary responsibility is to respond to electric outages and electric emergencies. Examples of the types of the outage and emergency events that PSE responds to include downed wires, equipment failures, car-pole accidents, bird- and animal-caused 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 14,400 electric incidents in 2010.

PSE continues to strengthen its electric safety response work processes and has met this benchmark, just as it has since the inception of this metric in 2002. The following table reports the results for 2010.

Table 15: Electric safety response time for 2010

Key measurement	Benchmark	2010 Results	Achieved
Electric safety response time (SQI #11)	Average 55 minutes or less from customer call to arrival of field technician	52 minutes	☑

About the benchmark

The electric safety response time is calculated by logging the time of each customer call and the time the EFR field technician arrives on site. The annual performance is determined by the average number of minutes from the first customer call to the arrival of the EFR field technician for EFR incidents occurred 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 24-hour period and associated carry-forward days that will take to restore electric service to these customers.
- Localized emergency event days that 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 than other times.
- **Time of day an event occurs**—Events that occur outside of normal business hours often require call-out response and may require a greater response time. Events that occur in early morning or late afternoon may experience longer response times due to traffic conditions. For example, more than 34 percent of outages in the 12 months that ended December 2010 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, so access may require snow-machines or "walk-ins."
- **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 may respond directly from their homes.

Historical trend for electric safety response time

The following table shows average electric safety response time from 2006 to 2010.

Table 16: Average electric safety response time from 2006 to 2010

	2006	2007	2008	2009	2010
Electric safety response time	49 minutes	52 minutes	55 minutes	51 minutes	52 minutes
Benchmark	Average of 55 minutes from customer call to arrival of field technician				

Working to decrease electric safety response time

In 2010, PSE strengthened procedures and processes aimed at reducing electric safety response time. These efforts include:

- Increased non-core work schedules in north King County to better respond to outages or emergencies occurring outside of normal business hours.
- Conducted quarterly communications and performance updates with field personnel regarding response times and worker safety with emphasis on goal performance.
- Evaluated use of technology designed to streamline the call-out process during non-core hours.
- Improved management reporting and training on the use of tools that provide comprehensive response time data to enable individual performance management of first responders.

Going forward

In 2011, 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:

- Finalize evaluation and implement new technology to automate the call-out process and decrease the time required to get first responders on-site during non-core hours.
- Allocate additional System Operations resources to regions where additional coverage during non-core business hours is likely to improve timely deployment of first responders, and outage communication.
- Continue the analyses and process improvements pertaining to scheduling and shift optimization as needed.
- Support the Outage and Distribution Management System (OMS/DMS) technology implementation projects. OMS/DMS provides improved electric system information to more efficiently manage outages and first response personnel.

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 or 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-hour 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 scheduled service, PSE also 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 2010, PSE kept 100 percent of the 128,258 scheduled appointments made. However, the 100% annual performance (rounded to the nearest whole percentage per UTC order) does not mean that PSE and its service providers kept all the SQI appointments in 2010. Data on missed appointments and other appointment information by service type are detailed in Appendix F: *Customer service guarantee performance detail.*

Table 17: Appointments kept for 2010

Key measurement	Benchmark	2010 Results[18]	Achieved
Appointments kept (SQI #10)	At least 92% of appointments kept	100%	☑

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

[18] SQI #10, Appointments kept, results shown are rounded to the nearest whole percentage per the UTC order.

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 meet the time period or the date agreed upon when the appointment was initially set. 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 a 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 2006 to 2010.

Table 18: Appointments kept from 2006 to 2010

	2006	2007	2008	2009	2010
Appointments kept	98%	99%	99%	99%	100%
Benchmark	92% of appointments kept				

Working to maintain the percentage of appointments kept

In 2010, 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.
- Contacted customers to reschedule prior to missing the appointment due to emergency responses or outages.
- 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:

- Continuously review reasons for missed appointments and work to resolve those issues.
- Implement software to streamline the electric residential reconnect process and enable personnel to be more efficient.

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 natural gas and electric service to prospective and new residential, commercial and industrial customers. The department manages four areas of service:

- **The New Customer Construction Support Team**—Responsible for processing applications for new natural gas and electric installations, scheduling temporary electric services for new customer construction projects, initiating new customers' accounts and reviewing customer new construction payment requirement. 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, and developers and their contractors, electricians and gas equipment dealers to scope out a project. 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 SQI performance

PSE monitors 39 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. In 2010, the service providers achieved all of these goals. The section details five of the 39 metrics relevant to PSE's SQI program.

Service Provider Indexes

Four service provider metrics were previously reported semi-annually in the *Service Provider Report*. They include:

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

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

Service provider standards compliance (SPI #1)

Service providers must meet at least 95 percent compliance with PSE's site audit checklists. The service providers met this SPI at 98 percent in 2010. The detailed 2010 results show:

- **Pilchuck**—99 percent
- **Quanta Gas**—98 percent
- **Quanta Electric**—97 percent

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

Table 19: Service provider standards compliance from 2006 to 2010

	2006	2007	2008	2009	2010
Pilchuck					
Service provider standards compliance (SPI #1A)	98%	98%	97%	99%	99%
Benchmark	95% compliance with PSE's site audit checklists				
Quanta					
Gas service provider standards compliance (SPI #1C)	98%	98%	98%	98%	98%
Electric service provider standards compliance (SPI #1B)	97%	97%	96%	98%	97%
Benchmark	95% compliance with PSE's site audit checklists				

Customer satisfaction (SPI #2)

In 2010, Pilchuck was required to achieve a minimum 84 percent satisfactory rating (rating of 5 or higher on the 7-point survey scale). Quanta was required to meet a minimum 75 percent satisfactory rating on the same 7-point scale for new construction customers (NCC) surveyed regarding contractor engineering and construction activities.

- Pilchuck's 2010 performance was 88 percent.
- Quanta's 2010 performance was 79 percent. The following table shows service provider customer satisfaction over the past five years:

Table 20: Service provider customer satisfaction performance from 2006 to 2010

	2006	2007	2008	2009	2010
Pilchuck					
Customer satisfaction performance (SPI #2A)	83%	88%	86%	86%	88%
Benchmark	83%	83%	83%	84%	84%
Quanta					
Customer satisfaction performance (SPI #2B)	78%	76%	77%	77%	79%
Benchmark	75%	78%	78%	75%	75%

Service provider new customer construction appointments kept (SPI #3)

Both Pilchuck and Quanta must keep at least 98 percent of their appointments on new customer construction commitment dates relative to the Customer Service Guarantees.

In 2010, both service providers kept 100 percent of their new customer construction service guarantee appointment dates and exceeded the benchmark. However, the 100% annual performance, due to rounding, does not necessarily mean that the service providers kept every single SQI appointment in 2010.

Numbers of new customer construction appointments—scheduled, kept, missed and cancelled—are 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:

Table 21: Service provider appointments kept from 2006 to 2010

	2006	2007	2008	2009	2010
Pilchuck					
Service provider appointments kept (SPI #3A)	100%	100%	100%	100%	100%
Benchmark	92%	92%	92%	98%	98%
Quanta					
Service provider appointments kept (SPI #3B)	99%	100%	100%	100%	100%
Benchmark	98%	98%	98%	98%	98%

Note: The percentages of appointments kept shown in the table are rounded to the nearest whole percentage per the UTC order. The number of missed appointments by energy and service type are detailed in Appendix F: *Customer service guarantee performance detail.*

Secondary safety response time (SPI #4)

This SPI consists of three sub indices:

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

Secondary safety response time—Pilchuck (SPI #4A)

Pilchuck must respond in less than 60 minutes on average from PSE's Gas First Response (GFR) assessment completion to the Second Response arrival. In 2010, Pilchuck had an average 2010 response time of 51 minutes, a one minute improvement on their 2009 performance.

Response time is measured from when PSE's Gas First Response (GFR) completes their assessment until the Second Response team arrives. The following table shows service provider gas second safety response performance from 2006 to 2010.

Table 22: Secondary safety response time—Pilchuck (SPI #4A) performance from 2006 to 2010

	2006	2007	2008	2009	2010
Pilchuck gas second safety response performance (SPI #4A)	56	55	54	52	51
Benchmark	Not exceed 60 minutes				

Secondary safety response and restoration time, core-hours and non-core-hours—Quanta (SPI #4B and SPI #4C)

Quanta 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 2010, Quanta had an average restoration time of 242 minutes during core hours, and an average restoration time of 278 minutes during non-core hours.

Restoration time is measured from the time a Quanta 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's average second safety response performance during core-hours and non-core-hours from 2006 to 2010.

Table 23: Secondary safety response and restoration time—Quanta (SPI #4B & #4C) from 2006 to 2010

	2006	2007	2008	2009	2010
Secondary Core-Hours, Non-Emergency Safety Response and Restoration Time (SPI #4B)	N/A	261	241	242	242
Core Hours Benchmark	Not exceed 250 minutes				
Secondary Non-Core-Hours, Non-Emergency Safety Response and Restoration Time (SPI #4C)	N/A	317	277	281	278
Non-Core Hours Benchmark	Not exceed 316 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 2010. The surveys showed that overall customer satisfaction improved slightly in 2010, with an average overall satisfaction rating of more than 82 percent compared, to an overall average of 81 percent in 2009.

PSE and the service providers have partnered to develop or advance the following process improvement initiatives to improve customer satisfaction with the overall new customer construction process. For example, in 2010 PSE has

- Expanded task tracking to include a new natural gas service inquiry tracking to better understand prospective customers' needs and the roadblocks preventing them from becoming a PSE customer. Task tracking provides a central location for information for PSE and service provider representatives to view the history and status of a particular request or project. New natural gas service customers are better served because they no longer have to retell the story every time they call with either a question or a status check.
- Created an electric vehicle inquiry initiative to track customer inquiries about any necessary modifications to their electric service configuration should they obtain an electric vehicle. The initiative is also to project the impact of increasing numbers of electric vehicles on PSE's electric system.
- Implemented a quality assurance process to monitor customer calls for potential improvement opportunities in agent call handling.

- Made available on PSE.com the new natural gas and electric construction application forms for both residential and non-residential new service requests. The online forms enable prospective customers to complete and submit their applications electronically to accelerate the application process.
- Produced three construction videos for the most common utility service installations to demonstrate what customers and builders need to do to be "construction ready" for a smooth new utility service installation and reduce "red tags" (installation not completed). The videos will be available in 2011 on PSE.com to new customers and Customer Construction Services (CCS) representatives working with new customers.
- Enhanced PSE.com for new construction projects by improving customer access to construction guidelines and installation requirements.
- Updated PSE's Natural Gas and Electric Service Handbooks. These publications outline PSE's processes and installation requirements to provide necessary information to new customers for a safe and efficient installation. Development of a concise and effective format for new natural gas customer materials was completed in 2010. This work will continue into 2011 to include more customer communication materials.

To better serve builders and developers in 2010, PSE and service providers regularly met with large developers, builders and electricians to gather feedback and share tariff information, operating standards and installation requirements. The following 2010 PSE initiatives were designed to improve builder and developer satisfaction:

- 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. The publication includes information on standards, tariff changes, energy efficiency and PSE new construction contact information.
- Participated as active members in eight local home builder associations and participated in about 150 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

This training includes formal 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 weekly classroom training, using in-house gas and electric trainers.
- Using customer inquiries and complaints to identify and focus training opportunities. This is an ongoing activity.
- Providing training on basic process improvement steps and techniques to all Customer Construction Services employees.
- Providing training for the launch of the electric vehicle in west Washington and created subject-matter experts.

Going forward

PSE has several new customer construction initiatives for 2011 including:

- Implementing ways to provide the customer with more self-serve options and helpful information.
- Implementing revisions to the CLX/SAP billing statement to include more detailed information about customer's construction costs.
- Creating additional utility service installation and construction videos focusing on customer-provided requirements to increase construction efficiency and customer satisfaction.
- Creating or enhancing new customer communication materials.
- Implementing software to track and respond to customer email inquiries.

10 Service guarantees

Overview

PSE offers two service guarantees to its customers: Customer Service Guarantee and Restoration Service Guarantee.

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.

For additional detail on the promotion and communication of CSG, see Appendix G: *Customer awareness of customer service guarantee*.

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.

Restoration Service Guarantee

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

The availability of the Restoration Service Guarantee is emphasized and messaged in PSE's phone system when customers call and report their outage during a major outage event when five percent or more PSE electric customers are without power or when PSE opens its Emergency Operations Center to response to a significant outage event. Information on this Restoration Service Guarantee and the Customer Service Guarantee and is provided on PSE.com and was provided in the 2010 March–April, July–August and November-December editions of the customer newsletter.

2010 Service Guarantees Credits

Customer Service Guarantee credits

In 2010, PSE credited customers a total of $6,300 for missing 126 of more than 128,258 scheduled appointments.

Table 24: 2010 service guarantees credits

	Appointment Count			Service Guarantee Payment to Customers		
Service Type	**Electric**	**Natural Gas**	**Total**	**Electric**	**Natural Gas**	**Total**
Permanent Service	6,892	7,984	14,876	$1,000	$1,900	$2,900
Reconnection	52,078	31,140	83,218	$1,350	$1,050	$2,400
Diagnostic	N/A	30,164	30,164	N/A	$1,000	$1,000
Total	***58,970***	***69,288***	***128,258***	***$2,350***	***$3,950***	***$6,300***

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, 2010.

Service provider appointments missed credits

The following table shows the number of new customer construction appointments missed by PSE service providers and the amount of customer service guarantee attributed to these missed appointments:

Table 25: Service provider missed appointment penalties for 2010

	Appointment Count			Service Guarantee Payment to Customers		
Service Provider	**Electric**	**Natural Gas**	**Total**	**Electric**	**Natural Gas**	**Total**
Quanta	20	12	31	$1,000	$600	$1,600
Pilchuck	0	26	26	$0	$1,300	$1,300
Total	***20***	***38***	***57***	***$1,000***	***$1,900***	***$2,900***

Restoration service guarantee credits

Although many customers experienced prolonged outages in 2010 due to the severe weather conditions, no outage event in the year lasted more than 120 consecutive hours and triggered the Restoration Service Guarantee. However, 59 customers contacted PSE and applied the RSG credit for the outages they experienced in November. PSE reviewed the outage and service restoration effort for each customer who applied for the credit and did not find any that would qualify for the RSG credit; either the outage was actually shorter than 120 consecutive hours or the extended service interruption was due to customer equipment damage. Overall, during 2010, PSE made no Restoration Service Guarantee payments to customers as criteria for payment was not met.

Electric service reliability

Safe and reliable electric service at a reasonable cost 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 calendar 2010.

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 2009 IEEE survey of 107 member utilities, PSE ranked in the top 28 percent (2nd quartile) and in the 66th percentile (3rd quartile) of SAIFI and SAIDI, respectively. As compared to other utilities, PSE ranked a little worse than 2008 even though PSE had a four percent and six percent improvement in SAIFI and SAIDI. The results of the 2010 IEEE survey are expected in August 2011.

In 2010, while SQI SAIDI increased by 17 percent when compared to recalculated 2009 results using the rolling five-year average methodology, PSE met the newly revised SQI SAIDI benchmark. The increase was the result of severe weather events that impacted the service area in the latter part of the year. PSE is pleased that the SQI SAIFI decreased by 21 percent when compared to 2009 and that benchmark continues to be met. PSE experienced six SQI SAIFI major events, encompassing 21 days, in 2010 as compared to two events, encompassing four days, in 2009. Customer concerns dropped in 2010, by 12 percent over 2009.

While PSE believes that this annual report provides useful information to interested parties for the calendar year 2010, PSE cautions against putting too much emphasis on the usefulness of this single year's information 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 limited usefulness 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 ice.

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 without exclusion (except for excluding 2006).
- **IEEE SAIFI ($SAIFI_{IEEE}$)**—Excludes days that exceed the IEEE definition for Major Event Days (IEEE T_{MED}). The 2010 T_{MED} is 7.21 minutes—that is, any day that exceeds 7.21 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.

2010 SAIFI results

The 2010 results are reported in the following table.

Table 26: 2010 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	1.59	
$SAIFI_{Total\ 5\text{-}year\ Average}$	Total (all outages five-year average) SAIFI	N/A	1.37	1.31	
$SAIFI_{5\%}$ (SQI #4)	<5% Non-Major-Storm (<5% customers affected) SAIFI	No more than 1.30 interruptions per year per customer	0.80	0.86	☑
$SAIFI_{IEEE}$	IEEE Non-Major-Storm (T_{MED}) SAIFI	N/A	0.71	0.87	

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 2010, 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 2010 and their impact on customers across the four key measurements. As illustrated, tree-related outages drive the performance across the key measurements. And, tree-related outages during a major weather event cause an even greater impact to customers.

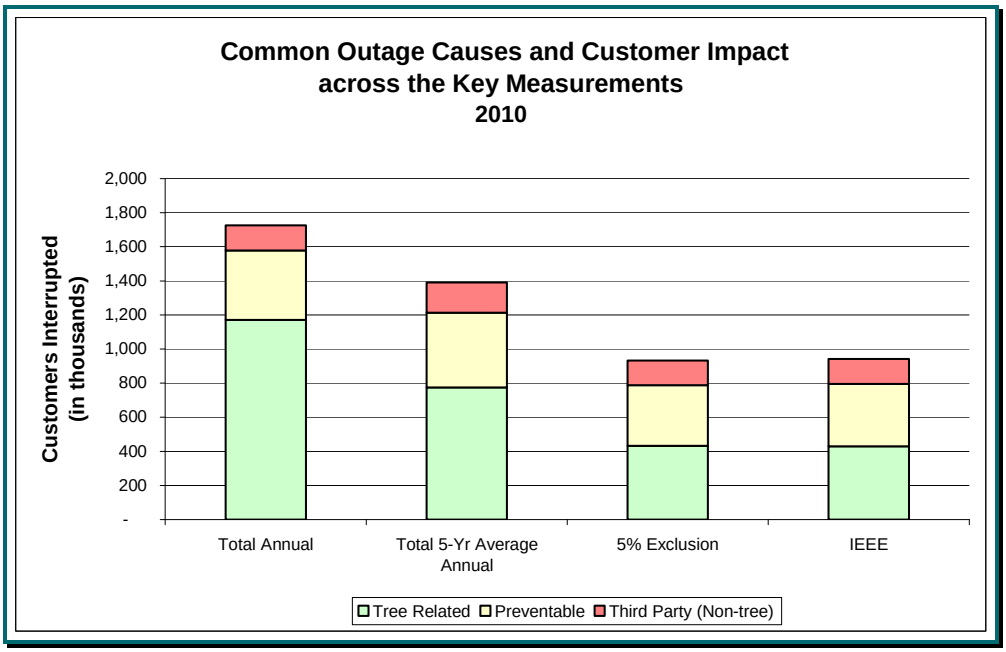

Figure 4: Common outage causes and customer impact across the key measurements in 2010

Historical trends for SAIFI

The following table shows SQI SAIFI from 2006 to 2010.

Table 27: SQI SAIFI from 2006 to 2010 (excluding major events)

	2006	2007	2008	2009	2010
$SAIFI_{5\%}$ (SQI #4)	1.23	0.97	1.01	1.09	0.86
Benchmark	1.30 interruptions per year per customer				

As shown in Table 27, 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 1997–2010. The 2010 results for both the $SAIFI_{5\%}$ and $SAIFI_{IEEE}$ were the lowest since 2004 as the most severe weather events that impacted PSE met the exclusion criteria for each measurement. Conversely, the 2010 results for $SAIFI_{Total}$ and $SAIFI_{Total\ 5\text{-}year\ Average}$ were the highest since 2001 (excluding 2006) primarily due to the four weather events that impacted PSE's service territory in November and December. The results for the four measurements illustrate how significantly major storm events influence all four metrics.

Appendix K: *Historical SAIDI and SAIFI by area* illustrates the 2008–2010 results by county under the four measurements. All counties except for Kitsap and Jefferson saw an improvement in $SAIFI_{5\%}$ in 2010. In looking at the $SAIFI_{Total}$ measurement, six of the nine counties that PSE serves saw a decline in SAIFI performance, not surprising given the extreme weather events that impacted the service territory in latter part of the year.

As described more fully in 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, excluding 2006. As reported in the *2006 Electric Service Reliability Report*, PSE experienced extraordinary weather events throughout the year, culminating in the infamous Hanukkah Eve Storm where more than 700,000 customers lost power. Given the impact of the weather events through 2006, the UTC approved the exclusion of the 2006 annual results in the rolling five-year average. 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 without exclusion (except for excluding 2006).

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 a 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 number of customer minutes interruptions utilizing the IEEE standard 1366 methodology. Days that exceed the IEEE T_{MED} are excluded. The 2010 T_{MED} is 7.21 minutes—that is, any day that exceeds 7.21 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.

2010 SAIDI results

The 2010 results are reported in the following table.

Table 28: 2010 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	512	
$SAIDI_{Total\ 5\text{-}year\ Average}$ (SQI #3)	Total (all outages five-year average) SAIDI	No more than 320 minutes per customer per year	326	287	☑
$SAIDI_{5\%}$	<5% Non-Major-Storm (<5% customers affected) SAIDI	N/A	132	129	
$SAIDI_{IEEE}$	IEEE Non-Major-Storm (T_{MED}) SAIDI	N/A	107	124	

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 47–85 percent of total customer minutes.

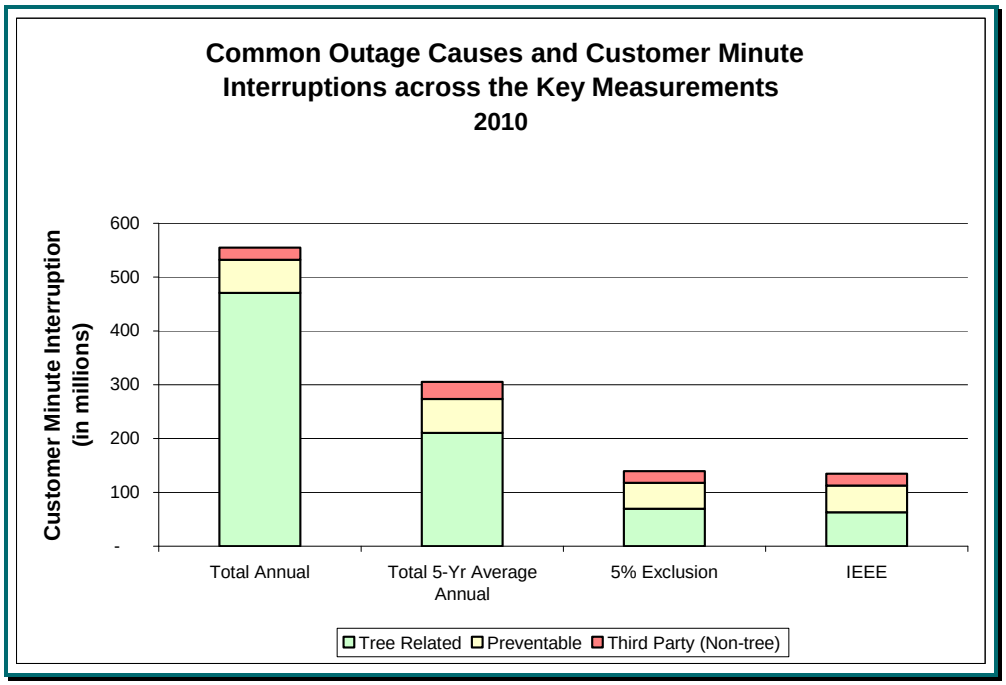

Figure 5: Common outage causes and customer minute interruptions across the key measurements in 2010

Under $SAIDI_{5\%}$ methodology, tree-related outages are also major factor impacting PSE's SAIDI performance in 2010. In 2010, tree-related outages accounted for 85 percent of total SAIDI minutes, a 55 percent increase over 2009.

Trees and limbs cause the most significant outages on the system, despite PSE's best efforts to minimize tree-related outages. Trees cause extensive damage to the infrastructure and require a specialized tree removal crew to remove fallen trees before service personnel can begin restoration efforts, producing prolonged outages.

Trees can drop large limbs or fall into power lines. A fallen tree will damage the line and could 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.[19]

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 trees are less permeable when fully leafed; thus, there is a greater degree of limb breakage due to what is termed "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.[20]

Response and repair time

Response and restoration 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 2009 the average response time was 51 minutes and in 2010 it was 52 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.

The SQI SAIDI includes all outage events. Because the Electric Safety Response Time metric and Service Provider metric exclude specific outages, it is difficult to compare response times, average job completion times and SAIDI.

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

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

In 2010, PSE made a commitment to the UTC to track and evaluate the outage components and identify areas for potential improvement. PSE provided an interim report in March 2011; the final results of the initiative will be reported in mid-2011.

Historical trends for SAIDI

The following table shows SQI SAIDI from 2006 to 2010. The 2006 through 2009 results use the benchmark that was established at the time. The 2010 results use the revised benchmark that was approved for the 2010–2013 reporting years.

Table 29: SQI SAIDI from 2006 to 2010

	2006	2007	2008	2009	2010
SAIDI$_{\text{Total 5-year Average}}$ (SQI #3)	214	167	163	190	287
Benchmark	136 minutes per customer per year, excluding 5% major events				320 minutes per customer per year, all outage events

In 2010, PSE met the SQI benchmark under the newly revised SQI SAIDI. It should be noted that PSE's 2010 SAIDI$_{5\%}$ performance of 129 minutes also would have met the original benchmark of 136 minutes, if it had not changed.

Appendix L: *1997-current year PSE SAIFI and SAIDI performance by different measurements* illustrates the comparison between the four SAIDI measurements over the last 14 years. Under the new SQI SAIDI benchmark methodology and requirements, PSE's performance met the annual benchmark between 1997 through 2010 with the exception of 2003.

The 2010 results for both the SAIDI$_{5\%}$ and SAIDI$_{\text{IEEE}}$ measurements were the lowest since 2004 because the most severe weather events that impacted PSE met the exclusion criteria for each measurement. Conversely, the 2010 results for SAIDI$_{\text{Total}}$ were the highest since 2003 (excluding 2006) primarily due to the four weather events that impacted PSE's service territory in November and December.

The chart that follows further illustrates the impact of tree-related outages during major events. In 2010, tree-related outages during a major event increased by 357 minutes as compared to 2009. The number of major events in 2010 drove SAIDI$_{\text{Total}}$ results as compared to the previous four years, excluding 2006. 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.

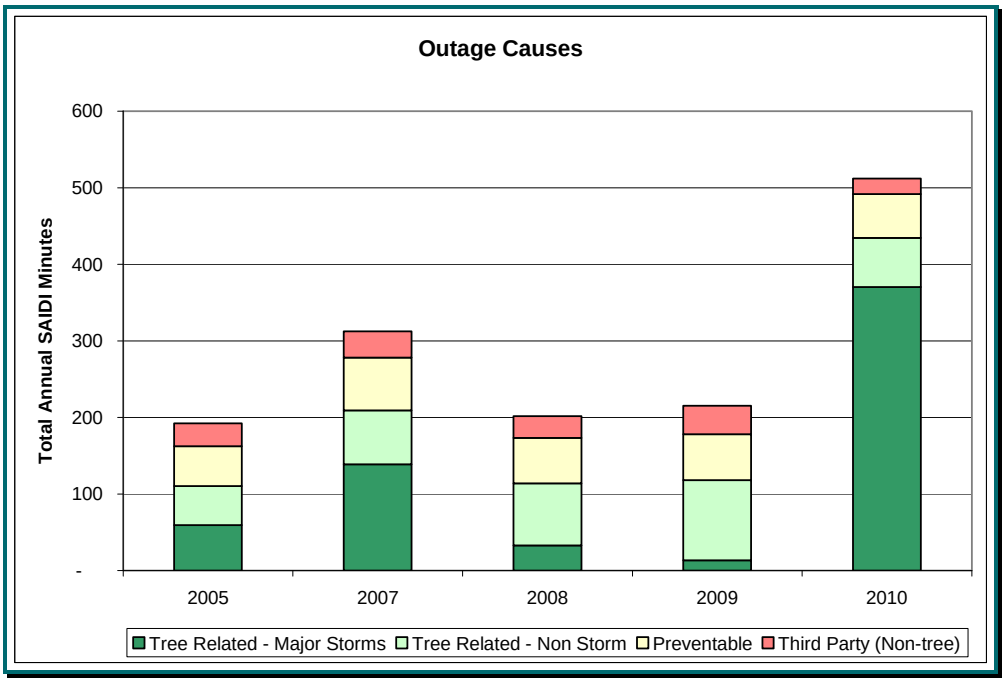

Figure 6: Outage causes

Appendix K: *Historical SAIDI and SAIFI by area* illustrates the 2008–2010 results by county under the four measurements. All counties except for Kitsap and Jefferson saw an improvement in $SAIDI_{5\%}$ in 2010. In looking at the $SAIDI_{\text{Total 5-year Average}}$ measurement, all counties but one saw a decline in 2010 results, not surprising given the major weather events that impacted the service territory in the latter part of the year. King County saw an approximate 11 percent improvement in 2010.

As described more fully in 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 customer's overall electric 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:

These annual measurements pertain to current and prior years performance.

- **Total Annual**
  - **SAIFI**—Measures all customer electric service interruptions that occurred during a calendar year without any exclusion.
  - **SAIDI**—Measures total number of all 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, excluding 2006.
  - **SAIDI**—Measures the rolling five-year average of all customer minute interruptions from the current reporting year and previous four years, excluding 2006.
- **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 minutes 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 establishes 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 the UTC regarding 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 2010, weather was relatively mild through most of the year until November and December when PSE's service territory was impacted by multiple wind, snow and ice events. PSE experienced the following major weather events that met the 5% exclusion or the IEEE exclusion criteria:

- A January wind event that affected customers in Thurston, Kitsap and Jefferson Counties.
- A March wind event that primarily affected the Kitsap and Jefferson Counties that resulted in about one-third of the customers in the area without power.
- A May wind event that primarily affected the Skagit County, Island County and southern portion of King County.
- A system-wide mid-November wind event. At its peak, approximately 150,000 customers were without power.
- A Thanksgiving-week wind, snow and ice event that primarily affected the Kitsap County.
- A mid-December wind event that primarily affected King and Pierce counties.
- Another December wind event that primarily affected the southern portion of King County.

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 2010, the only day that met the IEEE T_{MED} criteria and not the 5% exclusion criteria was March 16th, a day of high winds impacting 41,000 customers in Kitsap County. Wind was the major contributor to all the events in 2010.

Table 30: 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
1/18/2010	29.25	7.84%	Wind	1/17/2010 @ 2300 – 1/19/2010
3/16/2010	10.59	Did not meet criteria	Wind	N/A
5/3/2010	13.56	6.74%	Wind	5/3/2010 @ 0300 – 5/4/2010
11/15/2010	101.18	16.55%	Wind	11/15/2010 @ 1930 – 11/18/2010
11/22/2010	124.14	15.71%	Wind, snow and ice	11/22/2010 @ 1500 – 11/27/2010
11/23/2010	28.12			
11/24/2010	7.91			
12/14/2010	18.94	5.45%	Wind	12/14/2010 @ 1230 – 12/15/2010
12/17/2010	13.50	12.87%	Wind	12/17/2010 @ 2200 – 12/22/2010
12/18/2010	40.48			

The below table details the 2006 through 2010 IEEE T_{MED} values, number of IEEE exclusion dates, number of 5% exclusion events and number of 5% exclusion event days. In both the IEEE and 5% exclusion criteria, 2010 was a significant year for major events.

Table 31: 2006–2010 comparison of IEEE and 5% exclusion events

	2006	2007	2008	2009	2010
IEEE T_{MED}	4.97	6.87	7.36	6.95	7.21
Number of IEEE Major Event Days	24	7	4	7	10
Number of 5% Exclusion Major Events	5	4	1	2	6
Number of 5% Exclusion Major Event Days	34	16	5	4	20

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 circuits are the circuits with the highest ranking over the past five years (excluding 2006). These circuits contributed 20 percent of the total companywide SAIDI minutes over the past five years.

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 2009 and 2010 annual ranking of the Top 50 Worst 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 February (for example, 2010 data was not finalized until mid-February 2011) and an additional circuit listing (as defined by the new SQI) was also developed, 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 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 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 process can be found in Chapter 7 "Delivery System Planning" of PSE's "2009 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 their infrastructure plans, new system performance issues or to address a resource need for a given area.

Customer electric reliability complaints

Customer concerns and complaints are additional indices that measure PSE's success in delivering safe and reliable electric service. For the four years from 2007 through 2010, PSE has experienced a decrease or remained static in the numbers of outage-related complaints received either by PSE or the UTC.

In 2010, the UTC received 20 complaints relating to the reliability of PSE's energy-delivery system. These complaints are shown in Appendix M: *Current-year Commission and rolling-two-year PSE customer electric service reliability complaints with resolutions.*

PSE received 26 complaints 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.*

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 2010.

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 2010. It shows that trees (TF, TO, TV), birds and animals (BA) and equipment failures (EF) continue to be the primary reasons for outages in 2010 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 2011.

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. Maintaining proper clearance from energized electric lines is important for public safety. 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.[21]

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.

- **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 at the same time that trees are trimmed.

[21] Ecological Solutions Inc. October 2008 page 39

- 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. The mileage goal in 2010 increased to 2,200 miles. 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 at the same time trees are trimmed. In 2010:
  - 568 miles of high-voltage distribution lines were maintained
  - 330 miles of transmission corridors were maintained under new federal clearing requirements
  - The danger-tree patrol of the high-voltage distribution system was completed prior to the storm season. 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 2010, 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. In 2010, the TreeWatch program addressed approximately 200 miles of transmission and high-voltage distribution lines and 120 miles of distribution lines. Nearly 15,000 trees were removed or pruned. In 2011, PSE plans to remove or prune another 15,000 off right-of-way trees under the TreeWatch program, again 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.

High-voltage distribution and transmission vegetation-management study

A vegetation-management study was conducted on PSE's overhead electric transmission system in 2008/2009 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.[22]

Targeted reliability improvements

Along with the vegetation management to minimize tree-related outages, PSE has implemented other programs to reduce frequency and duration of outages on the transmission and distribution system. These programs include replacing existing overhead distribution wire with tree wire to prevent tree limb outages, installing more sectionalizing devices, replacing aging and failing underground distribution cables, replacing aging poles and overhead wires, installing covered wire and devices to prevent animal-caused outages, and maintaining key equipment in substations.

Also, PSE has continued to focus on improving the performance of the 50 worst-performing circuits, which contributed about 20% of the total company-wide SAIDI minutes over the past five years. The following programs along with the vegetation-management program are intended improve the reliability of the 50 worst-performing circuits.

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. Approximately 29 circuit miles of tree wire was installed in 2010.

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.

[22] Ecological Solutions Inc 3/09 study

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 2010, over 100 projects to install sectionalizing devices on the distribution system were completed; specifically, 68 reclosers and 55 gang-operated disconnect switches were installed.

Improved access

Outage duration can be extensive if access to the system problem is difficult. In 2010, PSE targeted over 70 miles of inaccessible High Voltage Distribution and Transmission rights-of-way and corridors, improving access to them by mowing, improving hard-surface roads and installing access gates.

Cable remediation

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

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

In 2007 due to the rising cost of silicone injection, higher level of neutral corrosion and unit pricing on trenching costs, silicone injection became economically unfavorable in all circumstances except single-phase installations. This trend has continued with roughly 10 percent of cables being injected and the remaining cables replaced. Initial cost, as well as lifetime cost, is considered in selecting the appropriate option.

In 2010, 57 miles of cable was remediated. PSE's cable remediation program prevented an estimated 2,000 outages in 2010.

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 2010, there were 31 outages caused by pole failures.

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 2010, 14,621 poles were inspected and treated (9,472 distribution and 5,179 transmission) and 1,807 poles were replaced (1,581 distribution and 226 transmission).

Aging overhead infrastructure

Many of the tree-related outages impact smaller aging overhead wires. These smaller wires break due to the impact of the failing branches leading to customer outages. PSE is replacing these smaller aging wires with larger wires 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.

Substations maintenance and equipment upgrades

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 that distribute power to many customers are inspected monthly. Maintenance programs are in place to ensure performance and efficiently maintain expensive equipment.

Upgrades to the substations and equipment are important strategies for reliability. Specific types of equipment are proactively replaced under a replacement programs to maintain system reliability, reduce operational costs and offset impacts from aging infrastructure. In 2010, one substation bank, four transmission breakers, 15 distribution breakers and one relay package were replaced under these programs.

In addition, four locations received improvements in grounding, drainage or bank protection to bring them up to current standards. As PSE continues to add more infrastructures, such as new lines and distribution substations to serve new loads, the design criteria consider reliability as well. For example, adding a new substation considers the transmission and distribution lines needed to 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 2010, twelve distribution substations were upgraded with SCADA.

Wildlife

Birds and other animals cause nearly 2,000 outages annually; however, each of these outage events typically only impacts 30 to 45 customers per event.

In early 2000, PSE modified its construction standards to reduce the risk of animal-caused outages. Today, bushing and covered jumpers are installed on all new transformers and new electric infrastructure projects that are located within avian-designated safe habitat; projects are constructed to avian-safe standards. Since 2004, animal and small-bird caused outages have been decreasing despite an increase in eastern grey squirrel populations. Eastern grey squirrels cause 90 percent of animal-caused outages.

PSE's Avian Protection Program tracks all avian-elated outages and adds avian protection on selected circuits that have a history of avian outages. In addition, the program proactively adds avian protection to circuits that are identified as potential sites for an avian-caused outage. In 2010, PSE completed 47 avian-protection projects.

Third-party and planned 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.

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.

Going forward

In 2011, 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 transmission and high-voltage distribution lines.
  - Complete the transmission lines right-of-way clearing and mitigation per the North American Electric Reliability Corporation standards by 2011. These standards require the removal and/or mitigation of all vegetation that will exceed fifteen feet in height at mature height from the areas underneath and beside PSE's transmission lines rights-of-way. The recommendations and mitigation options to harden the electric transmission system detailed in the Ecological Solutions Inc. study are currently being considered.

- **Targeted reliability improvements**
  - **50 worst circuits**—PSE will continue to monitor the performance of the worst-performing circuits as outlined in the Areas of Greatest Concern section. 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 to replace aging distribution infrastructures that are starting to fail (which includes the cable remediation program), 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, in addition to and preventing equipment failures due to aging plants.
  - **Distribution sectionalizing devices**—PSE will continue to install additional sectionalizing devices on the distribution system to help minimize outages and outage times to the customers. 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.
  - **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 reading on all three-phase breakers at critical distribution substations.

- **Response Times**
  - PSE continues to review and evaluate the outage response process and identify additional data needs in order to further understand the drivers of response time. The results of the review will identify areas for potential improvement. PSE provided an interim report to the UTC in March 2011; the final results of the initiative will be reported in mid-2011.

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 2010)*
- 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

This appendix 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

Appendix A consists of this table that provides monthly detail on the nine service quality indicators that are reported to the UTC.

Table 32: Monthly SQI performance

Category of Service	SQI #		Benchmark	Jan 2010	Feb 2010	Mar 2010	Apr 2010	May 2010	Jun 2010	Jul 2010	Aug 2010	Sep 2010	Oct 2010	Nov 2010	Dec 2010
Customer Satisfaction	6	Telephone Center Transactions Customer Satisfaction	90% satisfied (rating of 5 or higher on a 7-point scale)	94%	96%	96%	97%	97%	97%	95%	95%	95%	95%	97%	94%
	8	Field Service Operations Transactions Customer Satisfaction	90% satisfied (rating of 5 or higher on a 7-point scale)	95%	96%	99%	99%	97%	98%	97%	95%	96%	98%	95%	95%
	2	UTC Complaint Ratio	0.40 complaints per 1000 customers, including all complaints filed with UTC	0.023	0.026	0.030	0.023	0.027	0.026	0.023	0.021	0.028	0.028	0.019	0.021
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	76%	76%	76%	78%	77%	77%	78%	80%	84%	84%	77%	75%
Operations Services	4	SAIFI	1.30 interruptions per year per customer	0.059	0.019	0.127	0.097	0.067	0.050	0.072	0.080	0.062	0.075	0.070	0.085
	3	SAIDI	320 minutes per customer per year	41	3	20	13	24	6	9	12	8	8	283	85
	11	Electric Safety Response Time	Average of 55 minutes from customer call to arrival of field technician	52	46	50	48	51	45	51	53	54	52	61	60
	7	Gas Safety Response Time	Average of 55 minutes from customer call to arrival of field technician	33	32	32	32	33	31	29	30	29	30	31	30
	10	Kept Appointments[NOTE 2]	92% of appointments kept	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note 1: Results shown excluding 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: 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 in 2010. 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).

Appendix - SQI Performance

Attachment A

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	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
1/17/2010	Wind	North	3 Days	8,569	189,200	4.5%	82	14 (of 14)	Yes	14 EFRs Regular Duty + 3 SP Crews
1/17/2010	Wind	Central North	3 Days	7,868	316,261	2.5%	52	22 (of 22)	Yes	22 EFRs Regular Duty + 2 SP Crews
1/17/2010	Wind	Central South	3 Days	5,014	213,814	2.3%	21	14 (of 14)	Yes	5 EFRs Event Duty (2 to South and 3 to West) + 9 EFRs Regular Duty + 1 Tree Crew
1/17/2010	Wind	South	3 Days	57,691	221,785	26.0%	148	15 (of 15)	Yes	15 EFRs Event Duty + 17 SP Crews + 2 Tree crews
1/17/2010	Wind	West	3 Days	25,846	139,543	18.5%	81	12 (of 13)	Yes	12 EFRs Event Duty + 1 EFR PTO/STD + 13 SP Crews
3/16/2010	Wind	West	3 Days	47,500	139,592	34.0%	114	13 (of 14)	No	13 EFRs Event Duty + 1 EFR PTO/STD + 16 SP Crews + 3 Tree Crews
4/2/2010	Wind	North	2 Days	11,931	189,298	6.3%	81	12 (of 12)	No	12 EFRs Event Duty
4/2/2010	Wind	West	2 Days	8,704	139,592	6.2%	54	12 (of 14)	No	12 EFRs Event Duty + 2 EFRs PTO/STD + 8 SP Crews + 2 Tree Crew.
5/3/2010	Wind	North	2 Days	16,135	189,265	8.5%	105	6 (of 12)	Yes	6 EFRs Event Duty + 1 EFR PTO/STD + 2 EFRs Regular Day Off + 3 EFRs Regular Duty + 10 SP Crews + 2 Tree Crews
5/3/2010	Wind	Central North	2 Days	4,970	316,995	1.6%	35	22 (of 22)	Yes	6 EFRs Event Duty (6 to Central South) + 16 EFRs Regular Duty + 14 Crews
5/3/2010	Wind	Central South	2 Days	19,784	213,898	9.2%	102	10 (of 13)	Yes	10 EFRs Event Duty + 2 EFRs PTO/STD+ 1 EFR Regular Day Off + 4 Tree Crews
5/3/2010	Wind	South	2 Days	24,497	222,204	11.0%	89	15 (of 15)	Yes	15 EFRs Regular Duty + 6 Crews
5/3/2010	Wind	West	2 Days	10,343	139,597	7.4%	43	14 (of 14)	Yes	14 EFRs Regular Duty + 4 Crews

Appendix - SQI Performance

Attachment A

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	No. of Customers Affected	No. of Customers In Area	% of Customers Affected	No. of Outage Events	Resource Utilization (for the event, EFR Count only)	>5% Customer Affected? (Yes/No)	Comments
11/15/2010	Wind	North	4 Days	35,597	189,751	18.8%	175	13 (of 14)	Yes	13 EFRs Event Duty + 1 EFRs PTO/STD + 11 SP Crews+ 3 Tree Crews
11/15/2010	Wind	Central North	4 Days	7,960	318,222	2.5%	87	14 (of 21)	Yes	16 EFRs Event Duty + 3 EFRs PTO/STD +2 EFRs Retired + 6 Crews.
11/15/2010	Wind	Central South	4 Days	50,747	214,084	23.7%	140	12 (of 12)	Yes	12 EFRs Event Duty + 11 SP Crews+ 4 Tree Crews
11/15/2010	Wind	South	4 Days	87,150	222,908	39.1%	257	15 (of 16)	Yes	15 EFRs Event Duty + 1 EFR PTO/STD + 7 SP Crews
11/15/2010	Wind	West	4 Days	21,821	139,814	15.6%	76	14 (of 14)	Yes	14 EFRs Event Duty (10 in West and 4 to Central South) + 3 Crews
11/22/2010	Wind	North	6 Days	70,704	189,751	37.3%	106	13 (of 14)	Yes	12 EFRs Event Duty + 2 EFRs PTO/STD + 9 Crews
11/22/2010	Wind	Central North	6 Days	12,155	318,222	3.8%	44	21 (of 21)	Yes	8 EFRs Event Duty + 11 EFRs Regular Duty + 2 EFRs PTO/STD + 1 SP Crew
11/22/2010	Wind	Central South	6 Days	20,356	214,084	9.5%	62	10 (of 12)	Yes	10 EFRs Event Duty + 2 EFRs PTO/STD + 6 SP Crews + 1 Tree Crew
11/22/2010	Wind	South	6 Days	18,164	222,908	8.1%	98	13 (of 16)	Yes	13 EFRs Event Duty + 3 EFRs PTO/STD + 5 SP Crews
11/22/2010	Wind	West	6 Days	143,853	139,814	102.9%	366	14 (of 14)	Yes	14 EFRs Event Duty + 5 SP Crews + 12 Tree Crews
12/14/2010	Wind	North	2 Days	663	189,940	0.3%	24	14 (of 14)	Yes	14 EFRs Regular Duty
12/14/2010	Wind	Central North	2 Days	18,907	318,388	5.9%	91	18 (of 21)	Yes	18 EFRs Event Duty + 2 EFRs Regular Duty + 1 EFRs PTO/STD + 21 SP Crews + 6 Tree Crews
12/14/2010	Wind	Central South	2 Days	16,057	214,167	7.5%	70	12 (of 12)	Yes	12 EFRs Event Duty + 20 SP Crews + 5 Tree Crews
12/14/2010	Wind	South	2 Days	16,754	223,080	7.5%	83	16 (of 16)	Yes	16 EFRs Event Duty + 6 SP Crews + 4 Tree Crews
12/14/2010	Wind	West	2 Days	7,883	139,855	5.6%	58	13 (of 14)	Yes	14 EFRs Event Duty + 7 SP Crews + 2 Tree Crews
12/17/2010	Wind	North	4 Days	1,002	189,940	0.5%	18	14 (of 14)	Yes	8 EFRs Event Duty (8 to Central South) + 6 EFRs Regular Duty

Appendix - SQI Performance

Attachment A

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	No. of Customers Affected	No. of Customers In Area	% of Customers Affected	No. of Outage Events	Resource Utilization (for the event, EFR Count only)	>5% Customer Affected? (Yes/No)	Comments
12/17/2010	Wind	Central North	4 Days	28,970	318,388	9.1%	78	15 (of 21)	Yes	15 EFRs Event Duty + 2 EFRs Regular Duty + 2 EFRs PTO/STD+ 2 EFRs Regular Day Off + 15 SP Crews+ 6 Tree Crews.
12/17/2010	Wind	Central South	4 Days	90,378	214,167	42.2%	204	11 (of 12)	Yes	11 EFRs Event Duty + 1 EFRs PTO/STD + 60 SP Crews+ 5 Tree Crews
12/17/2010	Wind	South	4 Days	31,692	223,080	14.2%	56	14 (of 15)	Yes	14 EFRs Event Duty + 1 EFRs PTO/STD+ 5 SP Crews+ 2 Tree Crews
12/17/2010	Wind	West	4 Days	7,238	139,855	5.2%	52	11 (of 13)	Yes	11 EFRs Event Duty + 2 EFRs PTO/STD+ 5 SP Crews

Abbreviations:
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).

Appendix A - SQI Performance
Attachment B

PUGET SOUND ENERGY

SQI NO. 11 SUPPLEMENTAL REPORTING
LOCALIZED EMERGENCY EVENT DAYS
NON-AFFECTED LOCAL AREAS ONLY

Date	Type of Event	Local Area	Duration	No. of Customers Affected	No. of Customers in Area	% of Customers Affected	No. of Outage Events	Resource Utilization	>5% Customer Affected? (Yes/No)	Comments
3/16/2010	Wind	North	3 Days	433	189,277	0.2%	25		No	
3/16/2010	Wind	Central North	3 Days	393	316,829	0.1%	24		No	
3/16/2010	Wind	Central South	3 Days	263	213,900	0.1%	15		No	
3/16/2010	Wind	South	3 Days	2,372	222,083	1.1%	13		No	
4/2/2010	Wind	Central North	2 Days	7,435	316,960	2.3%	51		No	
4/2/2010	Wind	Central South	2 Days	5,014	213,929	2.3%	21		No	
4/2/2010	Wind	South	2 Days	598	222,168	0.3%	10		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.

Puget Sound Energy
2010 Reportable Incident

Attachment C to Appendix A

(Duration from first arrival to control of gas emergencies)

No.	Date	City	Address	1st Notice to PSE	First PSE Arrival	Incident Controlled	Response Time	Control Time
1	1/3/10	Bellevue	12727 Northup Way	11:05	11:20	17:00	0:15	5:40
2	1/24/10	Marysville	13114 51 Ave. NE	0:39	1:31	2:17	0:52	0:46
3	2/3/10	Lakewood	14902 union Ave SW	20:22	20:52	22:45	0:30	1:53
4	2/18/10	Kent	610 Railroad Ave S.	13:18	13:21	15:50	0:03	2:29
5	3/3/10	Sammamish	244 Ave. SE $ SE Windsor	9:57	10:16	12:51	0:19	2:35
6	3/10/10	Lake Stevens	2120 Soper Hill Rd.	11:20	11:29	13:45	0:09	2:16
7	3/15/10	Seattle	49th Ave SW & SW Canada	18:34	18:36	22:59	0:02	4:23
8	3/19/10	Bellevue	10349 NE 10th St.	9:20	9:35	10:05	0:15	0:30
9	3/24/10	Olympia	415 Olympia Ave	10:30	10:49	11:07	0:19	0:18
10	4/4/10	Bellevue	6200 123rd Ave SE	13:51	13:59	13:59	0:08	0:00
11	4/14/10	Everett	11323 30th Ave. W	7:32	7:50	7:55	0:18	0:05
12	5/4/10	Kent	26400 106 Ave SE	15:05	16:42	16:42	1:37	0:00
13	5/16/10	Kent	24230 115 PL SE	12:37	12:52	13:35	0:15	0:43
14	5/23/10	Bonney Lake	7413 Vandermark RD E	5:34	6:06	6:06	0:32	0:00
15	5/25/10	Mercer Island	4237 Mercer Wood DR	19:39	20:01	20:49	0:22	0:48
16	6/3/10	Tacoma	2215 Pacific Ave	6:55	7:27	7:55	0:32	0:28
17	6/16/10	Everett	12916 4th Ave W	12:00	12:32	14:19	0:32	1:47
18	6/22/10	Renton	13951 145 Ave SE	18:39	18:45	0:45	0:06	6:00
19	6/28/10	Bellevue	13207 SE 54th Place	15:08	15:16	17:44	0:08	2:28
20	6/29/10	Seattle	1801 NW Market Street	11:29	11:37	12:50	0:08	1:13
21	6/30/10	Sammamish	2029 E Lake Sammamish PKWY NE	1:37	2:15	3:06	0:38	0:51
22	7/8/10	Olympia	620 4th Ave E	10:07	10:25	10:30	0:18	0:05
23	7/13/10	Tacoma	718 N. G Street	18:04	18:10	19:43	0:06	1:33
24	7/13/10	Des Moines	27517 13th Ave South	15:52	16:12	20:48	0:20	4:36
25	7/26/10	Bothell	2003 187 Place SE	11:13	11:21	11:43	0:08	0:22
26	7/29/10	Kent	21213 76th Ave S	13:57	14:21	21:52	0:24	7:31
27	7/29/10	Everett	12829 HWY 99 #8	21:35	22:11	0:35	0:36	2:24
28	8/7/10	Puyallup	418 12th Street SW	9:58	10:26	10:39	0:28	0:13
29	8/13/10	Auburn	2302 R St. SE #103	12:00	12:22	12:34	0:22	0:12
30	8/13/10	Des Moines	23346 Marine Dr. S.	16:10	16:31	18:37	0:21	2:06
31	8/17/10	Sammamish	22208 SE 20th St	12:16	12:26	12:54	0:10	0:28
32	8/19/10	Sammamish	21926 SE 20th St	12:10	12:35	12:42	0:25	0:07
33	9/7/10	Federal Way	308th Ave S and Pacific HWY S	10:58	11:08	13:30	0:10	2:22
34	9/9/10	New Castle	12800 SE 89th Place	14:11	14:21	18:53	0:10	4:32
35	9/22/10	Redmond	13656 179th Ave	15:36	15:53	16:12	0:17	0:19
36	10/7/10	Gig Harbor	9920 Peacock Hill Ave	7:52	8:17	8:27	0:25	0:10
37	10/8/10	Olympia	1748 Yelm highway SE	10:20	11:30	19:15	1:10	7:45
38	10/18/10	Bellevue	10701 Main St	9:18	9:27	9:35	0:09	0:08
39	10/18/10	Lynwood	18503 HWY 99 #C	8:44	8:52	8:52	0:08	0:00
40	10/18/10	Mountlake Terrace	22001 52nd Ave W	14:39	15:00	16:05	0:21	1:05
41	10/20/10	Des Moines	26454 16th Ave South	10:50	11:00	11:45	0:10	0:45
42	11/3/10	Startup	36728 Highway 2	14:29	14:40	15:50	0:11	1:10
43	11/16/10	Seattle	907 10th Ave E	10:40	10:51	11:30	0:11	0:39
44	12/2/10	Monroe	14952 175th Ave SE	11:32	12:06	12:13	0:34	0:07
						Averages	0:21	1:40

Puget Sound Energy
2010 Reportable Incident

Attachment C to Appendix A

(Duration from first arrival to control of gas emergencies)

No.	Date	City	Address	1st Notice to PSE	First PSE Arrival	Incident Controlled	Response Time	Control Time

(1) Report of the time duration from first arrival to control of gas emergencies, for incidents subject to reporting under the currently

Incident types with response and control times information

WAC 480-93-200(1)(a)	Personal injury requiring hospitalization, or death
WAC 480-93-200(1)(b)	Property damage - $50000 or greater
WAC 480-93-200(1)(c)	Evacuation
WAC 480-93-200(1)(d)	unintentional ignition of gas
WAC 480-93-200(1)(e)	Customer outage - 25 or more affected
WAC 480-93-200(1)(g)	Significant incident in opinion of PSE
WAC 480-93-200(2)(a)	Uncontrolled release - 2 hours or more

Control time information is not applicable the following incident types therefore they are not included in this attachment.

WAC 480-93-200(1)(f)	Pressure related - MAOP violation
WAC 480-93-200(1)(f)	Pressure related - MOP violation
WAC 480-93-200(2)(b)	Pressure related - supply main taken out of service
WAC 480-93-200(2)(c)	Pressure related - System dropped below utilization pressure
WAC 480-93-200(2)(d)	Pressure related - System exceeds the MAOP

Leaks and odor calls

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, 2010

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 2010)

This appendix is intentionally left blank since it is not applicable for the 2010 performance period.

D
Proposed customer notice (report card)

PUGET SOUND ENERGY

2010 Customer Service Performance 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 table on other side.) Here are the highlights.

2010 Performance Highlights

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

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

FOLD

In 2010, one of the 13-year-old indices — duration of power outages — was revised to provide a more accurate representation of our performance and potential for improvement. The index now measures the duration of all types of outages that customers experience, including major outages that were not part of the performance calculation prior to 2010.

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 credit on a customer's bill.

In 2010, we credited customers a total of $6,300 for missing 126 of our total 128,258 scheduled appointments. There were no qualifying customers under the power restoration guarantee.

Every day our employees find ways to achieve new levels of operational excellence and customer service to meet your expectation of us.

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

Appendix D: Proposed customer notice (report card)

PUGET SOUND ENERGY

2010 Customer Service Performance Report Card

KEY MEASUREMENT	BENCHMARK	20010 PERFORMANCE	ACHIEVED
CUSTOMER SATISFACTION			
Percent of customers satisfied with our Customer Access Center services, based on survey	At least 90 percent	96 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	0.30	☑
CUSTOMER SERVICES			
Percent of calls answered live within 30 seconds by our Customer Access Center	At least 75 percent	78 percent	☑
OPERATIONS SERVICES			
Frequency of non-major-storm power outages, per year, per customer	Less than 1.30 outages	0.86 outages	☑
Length of power outages per year, per customer	Less than 5 hours, 20 minutes	4 hours, 47 minutes	☑
Time from customer call to arrival of field technicians in response to electric system emergencies	No more than 55 minutes	52 minutes	☑
Time from customer call to arrival of field technicians in response to natural gas emergencies	No more than 55 minutes	31 minutes	☑
Percent of service appointments kept	At least 92 percent	100 percent	☑

FOLD

Puget Sound Energy • 1-888-225-5773 • TTY: 1-800-962-9498 • PSE.com
Twitter.com/PSETalk • Facebook.com/PugetSoundEnergy • Flickr.com/PugetSoundEnergy • YouTube.com/PugetSoundEnergy

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Appendix D: Proposed customer notice (report card)

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 33: 2010 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	3	**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.

Table 1: 2010 Annual Performance As of December 31, 2010

12 Months All Service Type: January 2010 - December 2010

	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	6,892	20	-	-	20	283	6,589	6,872	-	$1,000	100%
Reconnection	52,078	27	156	45	228	4	51,846	51,850	9,960	$1,350	100%
Sub-total	58,970	47	156	45	248	287	58,435	58,722	9,960	$2,350	100%
Gas											
Diagnostic	30,164	20	75	-	95	6	30,063	30,069	2,986	$1,000	100%
Permanent SVC	7,984	38	-	8	46	811	7,127	7,938	-	$1,900	99%
Reconnection	31,140	21	16	-	37	-	31,103	31,103	1,735	$1,050	100%
Sub-total	69,288	79	91	8	178	817	68,293	69,110	4,721	$3,950	100%
Grand Total	128,258	126	247	53	426	1,104	126,728	127,832	14,681	$6,300	100%

Note: Results shown are rounded to the nearest whole percentage per UTC order. However, these 100% performance results do not reflect that PSE met all its appointments in 2010. The number of missed appointments are shown in Tables 1 and 2 of this Appendix.

Definition of the categories

Canceled: appointments canceled by either customers or PSE

Manual Kept: adjusted missed appointments resulting from the 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

Service Guarantee payment for each missed approved appointment.

Service Guarantee Payments: the total of the $50 Service Guarantee payments made to customers

System Kept: appointments in which PSE arrived at the customer site as promised

Total Appointments (Excludes Canceled): 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

PSE 2010 Annual SQI and Electric Reliability Report Appendix F Customer Service Guarantee Performance Detail 3_14_11.xls 3/14/2011 1:56 PM

Appendix F
Customer Service Guarantee Performance Detail

Table 2
2010 Monthly Performance

As of December 31, 2010

Month	Fuel	Type	Total Appts (Exclude Canceled and Excused)	Missed Approved	Missed Denied	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Canceled	Service Guarantee Payment
Jan-10	Electric	Permanent SVC	581	0			0	25	556	581		$0
Jan-10	Electric	Reconnection	3,634	1	12		13		3,621	3,621	610	$50
Jan-10	Gas	Diagnostic	2,761	1	5		6		2,755	2,755	249	$50
Jan-10	Gas	Permanent SVC	608	3			3	87	518	605		$150
Jan-10	Gas	Reconnection	2,392	4	5		9		2,383	2,383	117	$200
Jan-10 Total			9,976	9	22	0	31	112	9,833	9,945	976	$450
Feb-10	Electric	Permanent SVC	502	0			0	11	491	502		$0
Feb-10	Electric	Reconnection	4,297	2	12		14		4,283	4,283	816	$100
Feb-10	Gas	Diagnostic	2,339	4	11		15		2,324	2,324	234	$200
Feb-10	Gas	Permanent SVC	584	1			1	55	528	583		$50
Feb-10	Gas	Reconnection	3,007	3	1		4		3,003	3,003	169	$150
Feb-10 Total			10,729	10	24	0	34	66	10,629	10,695	1,219	$500
Mar-10	Electric	Permanent SVC	661	1			1	24	636	660		$50
Mar-10	Electric	Reconnection	5,204	5	21		26		5,178	5,178	1,027	$250
Mar-10	Gas	Diagnostic	2,471		7		7		2,464	2,464	237	$0
Mar-10	Gas	Permanent SVC	798				0	93	705	798		$0
Mar-10	Gas	Reconnection	3,367	1	1		2		3,365	3,365	150	$50
Mar-10 Total			12,501	7	29	0	36	117	12,348	12,465	1,414	$350
Apr-10	Electric	Permanent SVC	681	2			2	18	661	679		$100
Apr-10	Electric	Reconnection	4,523	2	13	3	18		4,505	4,505	829	$100
Apr-10	Gas	Diagnostic	2,263	2	12		14		2,249	2,249	221	$100
Apr-10	Gas	Permanent SVC	850	5			5	66	779	845		$250
Apr-10	Gas	Reconnection	3,439	3	3		6		3,433	3,433	184	$150
Apr-10 Total			11,756	14	28	3	45	84	11,627	11,711	1,234	$700
May-10	Electric	Permanent SVC	597	1			1	18	578	596		$50
May-10	Electric	Reconnection	4,081	1	11	4	16		4,065	4,065	750	$50
May-10	Gas	Diagnostic	1,843	4	6		10		1,833	1,833	168	$200
May-10	Gas	Permanent SVC	688	1			1	50	637	687		$50
May-10	Gas	Reconnection	2,431	1	1		2		2,429	2,429	114	$50
May-10 Total			9,640	8	18	4	30	68	9,542	9,610	1,032	$400
Jun-10	Electric	Permanent SVC	667	3			3	11	653	664		$150
Jun-10	Electric	Reconnection	4,430	1	6	1	8		4,422	4,422	869	$50
Jun-10	Gas	Diagnostic	1,563	1	6		7		1,556	1,556	147	$50
Jun-10	Gas	Permanent SVC	705	3			3	68	634	702		$150
Jun-10	Gas	Reconnection	2,572	3			3		2,569	2,569	166	$150
Jun-10 Total			9,937	11	12	1	24	79	9,834	9,913	1,182	$550

Appendix F
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As of December 31, 2010

Month	Fuel	Type	Total Appts (Exclude Canceled and Excused)	Missed Approved	Missed Denied	Missed Open	Total Missed	Manual Kept	System Kept	Total Kept	Canceled	Service Guarantee Payment
Jul-10	Electric	Permanent SVC	530	3			3	14	513	527		$150
Jul-10	Electric	Reconnection	4,309	2	10	1	13		4,296	4,296	867	$100
Jul-10	Gas	Diagnostic	1,228		6		6		1,222	1,222	111	$0
Jul-10	Gas	Permanent SVC	661	7			7	57	597	654		$350
Jul-10	Gas	Reconnection	2,359	1	1		2		2,357	2,357	137	$50
Jul-10 Total			9,087	13	17	1	31	71	8,985	9,056	1,115	$650
Aug-10	Electric	Permanent SVC	558	2			2	14	542	556		$100
Aug-10	Electric	Reconnection	4,684	3	15	5	23		4,661	4,661	894	$150
Aug-10	Gas	Diagnostic	1,275	3			3		1,272	1,272	131	$150
Aug-10	Gas	Permanent SVC	650	1			1	63	586	649		$50
Aug-10	Gas	Reconnection	2,671	2	2		4		2,667	2,667	144	$100
Aug-10 Total			9,838	11	17	5	33	77	9,728	9,805	1,169	$550
Sep-10	Electric	Permanent SVC	600	1			1	19	580	599		$50
Sep-10	Electric	Reconnection	4,837	6	11	5	22		4,815	4,815	882	$300
Sep-10	Gas	Diagnostic	2,242		9		9		2,233	2,233	166	$0
Sep-10	Gas	Permanent SVC	616	5			5	29	582	611		$250
Sep-10	Gas	Reconnection	2,545				0		2,545	2,545	158	$0
Sep-10 Total			10,840	12	20	5	37	48	10,755	10,803	1,206	$600
Oct-10	Electric	Permanent SVC	566	2			2	14	550	564		$100
Oct-10	Electric	Reconnection	4,543	2	11		13		4,530	4,530	837	$100
Oct-10	Gas	Diagnostic	3,889	1	6		7		3,882	3,882	335	$50
Oct-10	Gas	Permanent SVC	660	7			7	69	584	653		$350
Oct-10	Gas	Reconnection	2,461	2	2		4		2,457	2,457	146	$100
Oct-10 Total			12,119	14	19	0	33	83	12,003	12,086	1,318	$700
Nov-10	Electric	Permanent SVC	410	1			1	48	361	409		$50
Nov-10	Electric	Reconnection	3,862	1	30	3	34		3,828	3,828	695	$50
Nov-10	Gas	Diagnostic	4,525	4	5		9		4,516	4,516	633	$200
Nov-10	Gas	Permanent SVC	537	3			3	87	447	534		$150
Nov-10	Gas	Reconnection	2,249				0		2,249	2,249	149	$0
Nov-10 Total			11,583	9	35	3	47	135	11,401	11,536	1,477	$450
Dec-10	Electric	Permanent SVC	539	4			4	67	468	535		$200
Dec-10	Electric	Reconnection	3,674	1	4	23	28	4	3,642	3,646	884	$50
Dec-10	Gas	Diagnostic	3,765		2		2	6	3,757	3,763	354	$0
Dec-10	Gas	Permanent SVC	627	2		8	10	87	530	617		$100
Dec-10	Gas	Reconnection	1,647	1			1		1,646	1,646	101	$50
Dec-10 Total			10,252	8	6	31	45	164	10,043	10,207	1,339	$400
Grand Total			128,258	126	247	53	426	1,104	126,728	127,832	14,681	$6,300

G
Customer awareness of customer service guarantee

PSE undertook the following actions in 2010 to promote customer awareness of its Customer Service Guarantee program (the Guarantee).

1. Articles that publicized the Guarantee were included in the following three 2010 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 2010.
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 2010. Both natural gas and electric brochures are also posted on PSE.com.
4. PSE 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 speaking with an agent.
   - 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 online *Quick Reference Manual*. This manual is accessible 24/7 on PSE's intranet and is available to all customer services, gas field services, and new construction employees.
   - Throughout 2010, the Customer Service Guarantee had been publicized every month in the weekly Customer Services newsletter. It is distributed to all customer-services personnel and many other PSE employees in various departments.
   - PSE 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 PSE'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.

		Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
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	20	21	10	10	25	10	32	34	28	23	28	35
	No	141	151	157	157	151	167	132	123	130	146	142	118
	Don't Know	39	28	33	33	24	23	36	43	42	31	30	47
	Refused Response												
	Total Customers Surveyed	200	200	200	200	200	200	200	200	200	200	200	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.	10	10	1	1	8	2	12	15	8	8	11	4
	Whenever PSE changes an appointment, you are given the $50.	21	10	14	14	18	13	19	24	19	18	18	28
	You have no understanding or expectations about this part of the service guarantee plan.	149	161	181	181	164	174	157	143	149	165	154	145
	Don't Know	20	19	4	4	10	11	12	18	24	8	17	22
	Refused Response										1		1
	Total Customers Surveyed	200	200	200	200	200	200	200	200	200	200	200	200
Q26D. Did your appointment have to be rescheduled or did it occur as planned?	It occurred as planned	191	190	192	192	192	195	193	187	190	195	186	185
	It was rescheduled.	3	5	4	4	4	2	5	9	8	4	11	10
	Technician arrived but was late.			1	1	1	2	1	-	1			3
	Don't Know	6	5	3	3	3	1	1	4	1	1	3	1
	Refused Response												1
	Total Customers Surveyed	200	200	200	200	200	200	200	200	200	200	200	200
Q26E. Who initiated rescheduling your appointment?	Myself (Customer Initiated)	1	2	2	2	4	2	2	5	6	4	7	6
	Puget Sound Energy (PSE) Initiated	2	3	2	2	-	-	3	2	2		4	4
	Don't Know								2				
	Refused Response												
	Total Customers Surveyed	3	5	4	4	4	2	5	9	8	4	11	10
NCC Survey													
Q11. Are you aware of Puget Sound Energy's $50 service guarantee to meet scheduled work dates?	Yes						64						69
	No						221						150
	Refused Response												
	Don't Know						3						6
	Total Customers Surveyed	-	-	-	-	-	288	-	-	-	-	-	225

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—A list of codes used to identify PSE's best estimation of what caused a Sustained Interruption to occur. The following is the PSE interruption causes code information:

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 Company's customer access center to report a Sustained Interruption or Power Quality concern.

Duration of Sustained Interruption—The period, measured in minutes, or 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 that 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 but not limited to momentary outages, voltage sags, voltage flicker, harmonics and voltage spikes.

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

- $\mathbf{SAIDI_{Total}} = \frac{\sum \text{ All customer interruption minutes}}{\text{Total number of customers served}}$
- $\mathbf{SAIDI_{Total\ 5\text{-}year\ Average}}$ = Rolling five-year average of current year Annual $SAIDI_{Total}$ and prior four years Annual $SAIDI_{Total}$ results, excluding Annual $SAIDI_{Total}$ for 2006 or any subsequent exclusion approved by the UTC. Exclusions will be replaced by preceding Annual $SAIDI_{Total}$ performance results until there are five years included in the calculation of current year $SAIDI_{Total\ 5\text{-}year\ Average}$
- $\mathbf{SAIDI_{5\%}} = \frac{\sum \text{ Customer interruption minutes during non-5\%-Exclusion-Major-Event-Days}}{\text{Total number of customers served}}$
- $\mathbf{SAIDI_{IEEE}} = \frac{\sum \text{ Customer interruption minutes during non-IEEE-1366-}T_{MED}\text{-Exclusion-Major-Event Days}}{\text{Total number of customers served}}$

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:

- **$SAIFI_{Total}$**= Total number of customers that experienced Sustained Interruptions / Total number of customers served
- **$SAIFI_{Total\ 5\text{-}year\ Average}$**= Rolling five-year average of current year Annual Total SAIFI and prior four years Annual Total SAIFI results, excluding Annual Total SAIFI for 2006 or any subsequent exclusion approved by the UTC. Exclusions will be replaced by preceding Annual Total SAIFI performance results until there are five years included in the calculation of current year $SAIFI_{Total\ 5\text{-}year\ Average}$
- **$SAIFI_{5\%}$**= Number of customers that experienced Sustained Interruptions during non-5%-Exclusion-Major-Event-Days / Total number of customers served
- **$SAIFI_{IEEE}$**= Number of customers that experienced Sustained Interruptions during non-IEEE-1366-T_{MED} Exclusion-Major-Event-Days / 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 No. UE-960195. The SQI program has been since extended and modified in Docket Nos. UE-011570 and UG-011571 (consolidated), Docket No. UE-031946, and Docket Nos. UE-072300 and UG-072301 (consolidated).

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

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

T_{MED}—The major event day identification threshold value that is calculated at the end of each reporting year for use during the next report year. It's 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 the 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 includes an explanation of 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 beginning point of the duration 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 that was 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.
- The greater the storm event the less time spent in recording accurate data up front due to the focus on the restoration effort.

Methods to specify when the duration of a sustained interruption ends

The following methods are used to determine ending point of the duration 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

- The greater the storm, the less time is spent in recording accurate data up front due to the focus on the restoration effort.
- 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 in 2010 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.

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 2010, 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 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.

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 use of a single year's data to assess year-to-year system reliability trends.

[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

Timing of annual report filings

PSE will be reporting data and information on a calendar year basis. PSE's annual Electric Service Reliability reporting 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.[24]

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.

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

J
Current year electric service outage by cause by area

This appendix details the 2010 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*.

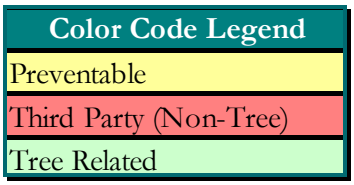

Figure 7: Color Code Legend

Table 34: Total outages by cause

	Northern			King/Kittitas		Southern/Western				
	Whatcom	Skagit	Island	King	Kittitas	Pierce	Thurston	Kitsap	Jefferson	Total
AO	21	7	2	79	4	28	41	19	6	207
BA	169	117	39	686	31	155	227	251	46	1,721
CP	38	24	7	74	4	29	32	34	7	249
CR	2	0	0	7	0	1	0	0	1	11
DU	8	5	7	72	4	22	36	18	5	177
EF	571	381	255	2,006	146	397	642	512	97	5,007
EO	3	1	3	15	1	2	11	11	1	48
EQ	0	0	0	0	0	0	0	0	0	0
FI	0	0	0	11	0	1	6	6	1	25
LI	1	1	0	6	3	3	1	1	0	16
SO	184	49	10	902	2	145	119	226	33	1,670
TF	8	7	9	58	0	18	15	25	6	146
TO	3	2	2	24	0	1	7	5	1	45
TV	290	295	224	1,541	44	348	612	1,049	145	4,548
UN	8	11	2	40	1	7	9	53	8	139
VA	0	3	0	3	1	2	0	0	8	17
Misc*	46	24	25	281	16	5	6	33	8	444
Total	1,352	927	585	5,805	257	1,164	1,764	2,243	373	14,470

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

Table 35: 5% exclusion outages by cause

	Northern			King/Kittitas		Southern/Western				
	Whatcom	Skagit	Island	King	Kittitas	Pierce	Thurston	Kitsap	Jefferson	Total
AO	21	7	2	77	4	28	40	19	6	204
BA	165	116	38	678	29	155	224	248	46	1,699
CP	36	22	7	67	4	29	31	32	7	235
CR	2	0	0	7	0	1	0	0	1	11
DU	8	5	7	72	4	22	36	18	4	176
EF	529	351	225	1,870	140	359	586	486	91	4,637
EO	2	0	2	9	1	1	10	7	1	33
EQ	0	0	0	0	0	0	0	0	0	0
FI	0	0	0	11	0	1	5	6	1	24
LI	1	1	0	5	3	3	1	1	0	15
SO	179	48	10	890	2	140	119	225	33	1,646
TF	4	2	4	29	0	6	6	17	4	72
TO	3	2	2	21	0	0	7	2	1	38
TV	183	162	104	758	27	137	242	567	86	2,266
UN	7	10	0	32	1	4	2	45	8	109
VA	0	2	0	8	0	1	3	3	0	17
Misc*	43	23	23	260	16	4	4	32	8	413
Total	1,183	751	424	4,794	231	891	1,316	1,708	297	11,595

*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 36: SAIDI and SAIFI data for the past three years by county

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	**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
	2008	0.78	0.85	0.76	0.78	119	166	117	117
Skagit	**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
	2008	1.32	1.21	1.26	1.26	193	283	174	174
Island	**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
	2008	1.16	1.42	1.10	1.08	**154**	385	122	123
King/Kittitas									
King	**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
	2008	0.89	1.10	0.83	0.77	164	339	150	135
Kittitas	**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
	2008	0.73	0.60	0.69	0.73	171	148	158	171
Southern/Western									
Pierce	**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
	2008	0.84	0.93	0.82	0.81	94	130	92	89
Thurston	**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
	2008	1.33	1.22	1.12	1.11	267	247	185	200
Kitsap	**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
	2008	2.27	2.09	1.84	1.84	471	477	286	262
Jefferson	**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
	2008	1.94	1.86	1.89	1.89	321	414	308	308
Reported figures based on most current SAP outage data, as of January 2011									

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.

1997-2010 PSE SAIFI Performance in Different Measurements
(Average number of interruptions per year per customer)

As of January 12, 2011

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

Figure 8: 1997–2010 SAIFI performance by different measurements

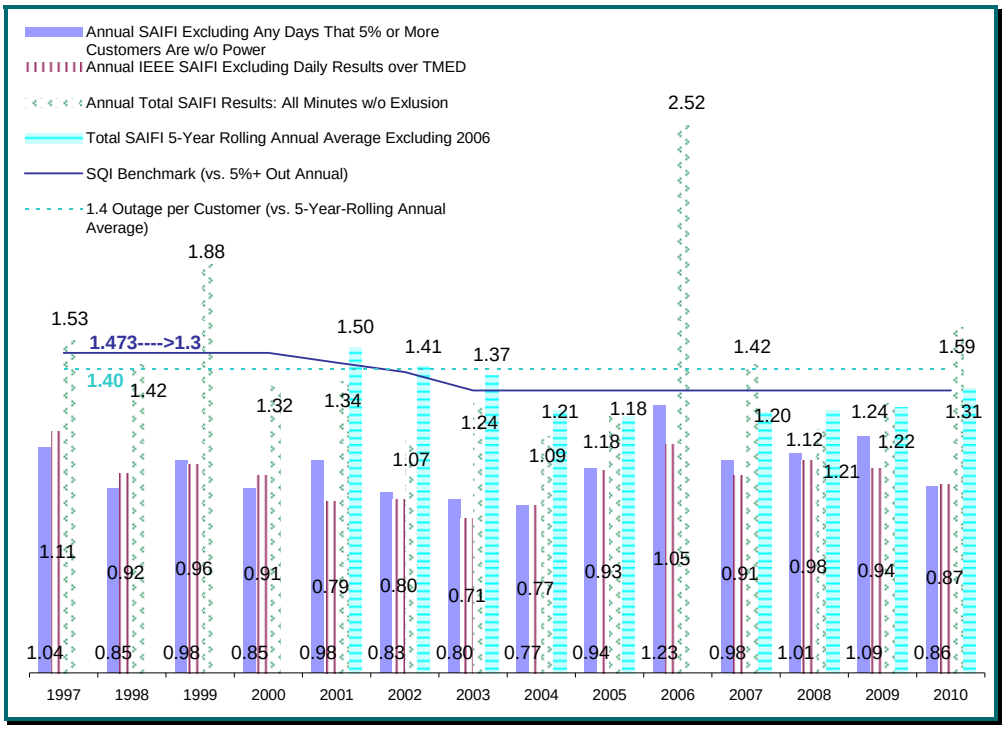

Figure 9: 1997–2010 SAIFI performance by different measurements

1997-2010 PSE SAIDI Performance in Different Measurements
(Average number of outage minutes per customer per year)

As of January 26, 2011

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

Figure 10: 1997–2010 SAIDI performance by different measurements

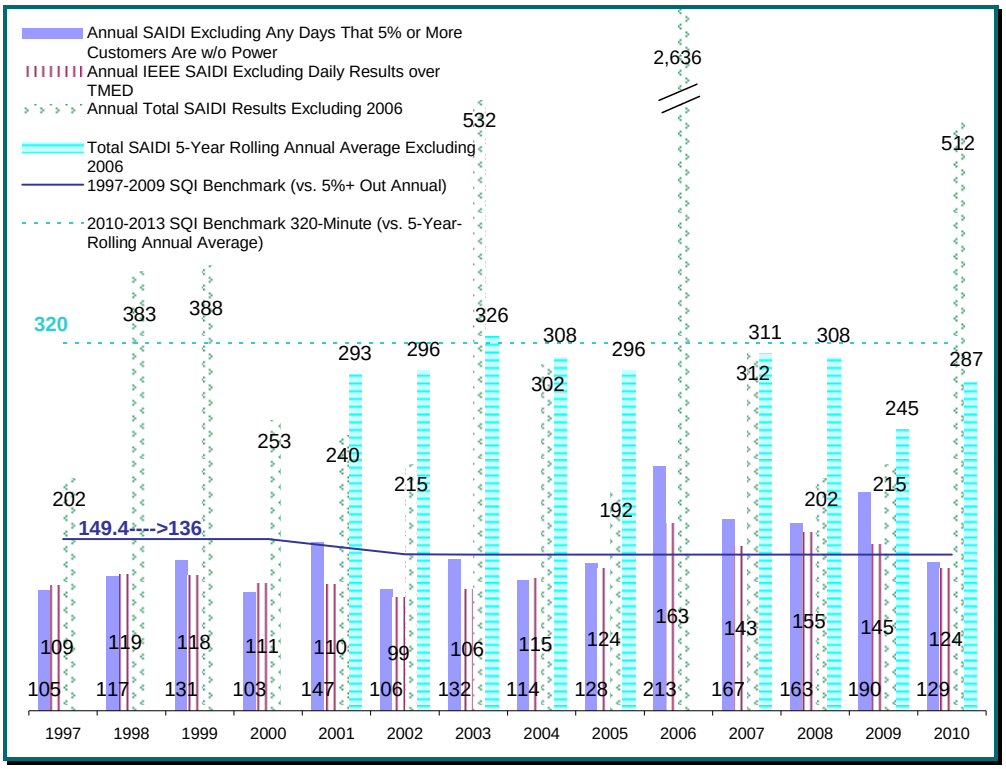

Figure 11: 1997–2010 SAIDI performance by different measurements

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.

No.	Complaint Type	Date of Complaint	Location	Closing Date
1	Reliability	1/25/2010	Sequim	6/29/2010
2	Reliability	2/5/2010	Lacey	6/28/2010
3	Reliability	2/16/2010	Olympia	6/28/2010
4	Reliability	3/11/2010	Renton	6/24/2010
5	Reliability	3/31/2010	Mount Vernon	6/14/2010
6	Reliability	8/2/2010	Blaine	8/9/2010
7	Reliability	9/10/2010	Lake Forest Park	11/15/2010
8	Reliability	9/14/2010	Olympia	10/1/2010
9	Reliability	9/17/2010	Kirkland	9/23/2010
10	Reliability	10/13/2010	Redmond	10/28/2010
11	Reliability	10/25/2010	Redmond	11/10/2010
12	Reliability	11/9/2010	Olympia	11/19/2010
13	Reliability	11/22/2010	Carnation	12/13/2010
14	Reliability	11/29/2010	Port Orchard	12/1/2010
15	Reliability	12/1/2010	Gig Harbor	12/10/2010
16	Reliability	12/14/2010	Gig Harbor	12/17/2010
17	Reliability	12/14/2010	Sequim	12/29/2010
18	Reliability	12/16/2010	Federal Way	12/29/2010
19	Power Quality	1/13/2010	Olympia	6/29/2010
20	Power Quality	11/19/2010	Bainbridge Island	11/19/2010

Figure 12: Current year commission complaints

Table 37: 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	Reliablity	Greenbank-13	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
2	Island	Oct 2009 Oct 2009	Clinton	Reliablity	Langley-12	Reported on 2009 report, no new inquiries in 2010	A system project in 2011 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
3	Jefferson	Sep 2010 Sep 2010	Port Townsend	Reliablity	Discovery Bay-12	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
4	Jefferson	July 2010 Sept 2010	Port Townsend	Reliability Power Quality	Hastings-12	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
5	King	Sep 2009 Sep 2009 Sep 2009	Redmond	Power Quality	Avondale-15	Reported on 2009 report, no new inquiries in 2010	Ongoing circuit monitoring and maintenance will continue.
6	King	Jul 2009 Jul 2009	Bellevue	Reliablity	Clyde Hill-26	Reported on 2009 report, no new inquiries in 2010	System improvement projects were completed in 2010, and another system project scheduled for 2011 will provide additional reliability improvement. Ongoing circuit monitoring and maintenance will continue.
7	King	Mar 2009 Mar 2009	Woodinville	Reliablity	Cottage Brook-16	Reported on 2009 report, no new inquiries in 2010	Ongoing circuit monitoring and maintenance will continue.
8	King	Jan 2009 Dec 2010	Woodinville	Reliablity	Hollywood-25	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
9	King	Nov 2010 Nov 2010	Federal Way	Reliablity	Marine View -16	Contacted customer to discuss concerns.	A system project is being submitted in 2011 that will improve reliability. Ongoing circuit monitoring and maintenance will continue.
10	King	Jan 2010 Nov 2010 Nov 2010 Nov 2010 Nov 2010 Nov 2010	Federal Way	Reliablity	Marine View -16	Contacted customer to discuss concerns.	A system project in 2011 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
11	King	Nov 2010 Nov 2010	Federal Way	Reliablity	Marine View -16	Contacted customer to discuss concerns.	System projects in 2011 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	Dec 2009 Dec 2009	Bothell	Reliablity	North Bothell-25	Reported on 2009 report, no new inquiries in 2010	A system project to improve reliability was completed in 2010. Ongoing circuit monitoring and maintenance will continue.
13	King	June 2010 Nov 2010	Issaquah	Reliablity	Snoqualmie -13	Contacted customer to discuss concerns.	A system project in 2012 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
14	King	July 2009 May 2010	Bellevue	Reliability	Somerset-13	Contacted customer to discuss concerns.	System projects in 2011 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
15	King	July 2010 Nov 2010	Vashon	Reliablity	Vashon -13	Contacted customer to discuss concerns.	A system project was completed in 2010 and another system project scheduled for 2011 will provide additional reliability improvement. Ongoing circuit monitoring and maintenance will continue.
16	Kitsap	Jan 2009 Dec 2010	Gig Harbor	Reliablity	Fragaria -16	Contacted customer to discuss concerns.	A system project in 2011 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
17	Pierce	Dec 2010 Dec 2010	Eatonville	Reliablity	Kapowsin -13	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
18	Pierce	Dec 2009 Dec 2009	Graham	Reliability Power Quality	Orting -22	Reported on 2009 report, no new inquiries in 2010	Ongoing circuit monitoring and maintenance will continue.
19	Skagit	July 2010 Aug 2010	Mount Vernon	Reliability	Big Rock-13	Contacted customer to discuss concerns.	A system project in 2011 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
20	Skagit	Oct 2009 Nov 2009 Nov 2009 Nov 2009	Sedro Woolley	Reliability Power Quality	Hamilton -13	Reported on 2009 report, no new inquiries in 2010	A system project completed in 2009 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
21	Skagit	Nov 2009 Nov 2009	Bow	Reliability	Wilson-16	Reported on 2009 report, no new inquiries in 2010	System projects completed in 2009 will improve reliability. Ongoing circuit monitoring and maintenance will continue.

No.	County	Date of Complaint	Location	Complaint Type	Circuit	Response	Action by PSE
22	Thurston	Feb 2010 Apr 2010 June 2010	Olympia	Reliability	Eld Inlet -23	Contacted customer to discuss concerns.	A system improvement project was completed in 2010 to improve reliability. Ongoing circuit monitoring and maintenance will continue.
23	Thurston	Aug 2010 Aug 2010	Olympia	Reliability	Tanglewilde -16	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
24	Thurston	Apr 2009 Nov 2010	Olympia	Reliability Power Quality	Thurston -16	Contacted customer to discuss concerns.	Ongoing circuit monitoring and maintenance will continue.
25	Whatcom	Aug 2009 Sep 2009	Blaine	Reliablity	Birch Bay-12	Reported on 2009 report, no new inquiries in 2010	A system project completed in 2010 will improve reliability. Ongoing circuit monitoring and maintenance will continue.
26	Whatcom	Oct 2010 Dec 2010 Dec 2010 Dec 2010 Dec 2010 Dec 2010	Bellingham	Reliablity	Happy Valley-16	Contacted customer to discuss concerns.	A system project in 2011 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.

Circuit	County	2010 5 Year Avg Rank	2010 Average Total CMI*	2009 5 Year Avg Rank	2009 5 Yr Average 5% Exclusion CMI*	Action by PSE**
Chico-12	Kitsap	1	4,202,013	1	1,914,271	Completed recloser and three phaser feeder extension project.
Silverdale-15	Kitsap	2	2,172,905	14	854,631	Completed a cable remediation project and underground system reliability improvement project in 2009. Three recloser projects scheduled for 2011.
Vashon-13	King	3	2,067,966	7	1,528,080	Completed two reconductor projects in 2009. Two cable remediation projects and one recloser project scheduled for 2011.
Miller Bay-17	Kitsap	4	2,060,355	21	481,926	Completed recloser project in 2010. A reconductoring project is planned for 2011-2012.
Baker River Switch-24	Skagit	5	3,229,725	2	2,906,005	Will add SCADA to recloser in 2011.
Port Gamble-13	Kitsap	6	1,797,188	4	1,472,861	In 2008 Kingston substation was energized which significantly reduced the number of customers served from this circuit. In addition, many switches and reclosers were added to improve the new circuit configuration. One recloser project scheduled for 2011.
Fragaria-13	Kitsap	7	1,424,070	Not on 2009 Top 50 List		One recloser project scheduled for 2011.
Prine-13	Thurston	8	2,844,583	29	434,733	Installed two reclosers and switches in 2010.
Winslow-12	Kitsap	9	1,531,377	28	500,431	Installed a switch in 2010. Two tree wire projects scheduled for 2011.
Airport-23	Thurston	10	1,165,065	31	542,373	A reconductor project is planned for 2011-2012.
Port Madison-12	Kitsap	11	1,514,337	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Port Gamble-12	Kitsap	12	1,012,445	9	724,931	A recloser project was completed in 2008. Two regulator banks are planned to be completed in 2011.
Fernwood-17	Kitsap	13	1,360,420	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Winslow-15	Kitsap	14	1,316,893	10	961,763	An underground conversion project was completed in 2007. An overhead upgrade project was completed in 2009.

Circuit	County	2010 5 Year Avg Rank	2010 Average Total CMI*	2009 5 Year Avg Rank	2009 5 Yr Average 5% Exclusion CMI*	Action by PSE**
Rose Hill-21	King	15	879,681	15	798,243	Tree wire and recloser projects were completed in 2009. Completed an underground conversion project and cable remediation project in 2010.
Silverdale-13	Kitsap	16	1,040,039	12	946,657	Regulator and cable remediation projects were completed in 2009.
Winslow-13	Kitsap	17	1,427,854	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
South Keyport-22	Kitsap	18	1,448,338	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Sherwood-18	King	19	979,287	25	495,273	Future plans for Lake Holm substation.
Vashon-23	King	20	1,243,551	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Cottage Brook-13	King	21	860,884	6	1,134,139	An underground conversion project and a recloser project were completed in 2010.
Vashon-12	King	22	1,599,052	37	404,106	A recloser project was completed in 2009.
Fragaria-12	Kitsap	23	701,827	Not on 2009 Top 50 List		Circuit was reconfigured in 2007 and a recloser project was installed in 2010.
Lake Wilderness-14	King	23	1,091,154	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Silverdale-16	Kitsap	24	792,467	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Greenwater-16	King	25	1,512,927	3	1,774,137	Rerouting of the overhead system in progress.
Longmire-17	Thurston	26	710,506	13	630,432	A cable remediation project was completed in 2009.

Circuit	County	2010 5 Year Avg Rank	2010 Average Total CMI*	2009 5 Year Avg Rank	2009 5 Yr Average 5% Exclusion CMI*	Action by PSE**
Big Rock-15	Skagit	27	797,862	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Hobart-16	King	28	827,306	19	523,320	A feeder tie project was completed in 2009.
Rainier View-13	Thurston	29	929,641	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Sinclair Inlet-25	Kitsap	30	652,505	Not on 2009 Top 50 List		A feeder tie project is planned for 2011.
Fernwood-16	Kitsap	30	1,722,535	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Longmire-22	Thurston	31	2,276,256	11	2,774,434	Overhead upgrade projects were completed in 2006. In 2007, the circuit was reconfigured and a cable remediation project was completed. Portions of the underground feeder system in Clearwood area was replaced from 2009 - 2011.
Slater-16	Whatcom	32	773,618	5	847,459	A feeder tie project was completed in 2010.
Happy Valley-16	Whatcom	33	742,793	23	531,457	A gang operated switch will be installed in 2011.
Griffin-16	Thurston	34	745,432	16	693,060	A cable remediation project was completed in 2010.
Yelm-27	Thurston	35	1,083,989	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Manchester-15	Kitsap	36	1,369,325	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Freeland-15	Island	37	1,052,266	34	736,028	Transmission right of way enhancement and vegetation management. Maxwelton substation is planned for completion in 2014. Feeder tie to be completed in 2011.
Murden Cove-15	Kitsap	38	1,075,776	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Port Ludlow-16	Jefferson	39	855,642	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Kendall-12	Whatcom	40	889,644	49	461,791	Planners are currently reviewing and identifying potential reliability improvements projects.

Circuit	County	2010 5 Year Avg Rank	2010 Average Total CMI*	2009 5 Year Avg Rank	2009 5 Yr Average 5% Exclusion CMI*	Action by PSE**
Griffin-13	Thurston	43	541,395	17	835,940	Completed multiple tree wire projects and one underground conversion project in 2008. One tree wire project scheduled for 2011
Nugents Corner-26	Whatcom	44	881,487	30	661,054	Installed a recloser in 2009
Blumaer-17	Kittitas	45	793,267	38	610,004	Three aging infrastructure projects identified for future construction.
Hamilton-15	Skagit	46	852,554	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Port Madison-16	Kitsap	47	697,885	Not on 2009 Top 50 List		A cable remediation project and recloser projects were completed in 2009.
East Port Orchard-13	Kitsap	48	526,688	Not on 2009 Top 50 List		Planners are currently reviewing and identifying potential reliability improvements projects.
Eld Inlet-25	Thurston	49	1,132,415	39	787,180	An overhead upgrade project was completed in 2009. One aging infrastructure project scheduled for 2011
Hickox-16	Skagit	50	531,593	20	602,193	Wildlife protection installed in 2007 and 2008. Replaced 31 distribution poles in 2007.
Southwick-17	Thurston	Not on 2010 Top 50 List		8	702,511	Feeder replaced with tree wire in early 2010.
Inglewood-13	King	Not on 2010 Top 50 List		18	580,169	Completed load shifting and fuse coordination to reduce SAIDI.
Duvall-15	King	Not on 2010 Top 50 List		22	914,924	Cable remediation projects completed in 2008 and 2009, installed two reclosers in 2009.
Fall City-15	King	Not on 2010 Top 50 List		24	558,410	Relocated recloser which should help reliability. Tree trimming scheduled for 2011. Overhead conversion project scheduled for 2011 or 2012 construction
Peasley Canyon-15	King	Not on 2010 Top 50 List		26	517,034	Installed recloser, completed feeder tie and circuit reconfiguration completed in 2009.
Duvall-12	King	Not on 2010 Top 50 List		27	833,865	Completed tree wire projects in 2009, installed a recloser in 2010.
Soos Creek-27	King	Not on 2010 Top 50 List		32	1,003,879	Installed recloser in 2010. Recloser and cable remediation project scheduled for 2011

Circuit	County	2010 5 Year Avg Rank	2010 Average Total CMI*	2009 5 Year Avg Rank	2009 5 Yr Average 5% Exclusion CMI*	Action by PSE**
Skykomish-25	King	Not on 2010 Top 50 List		33	481,288	Corrected load issues and installed tree wire in 2010
Fairwood-15	King	Not on 2010 Top 50 List		35	451,066	Completed three phases of a feeder replacement project in 2010. The remaining three phases are scheduled for 2011. Replaced an Mark 1 switch in 2010
Inglewood-15	King	Not on 2010 Top 50 List		36	476,418	Reconductor and cable remediation projects completed in 2009.
Miller Bay-22	Kitsap	Not on 2010 Top 50 List		40	560,973	Two reclosers were relocated in 2008
Tolt-15	King	Not on 2010 Top 50 List		41	572,364	Conversion completed in 2009. Reconductor completed in 2010.
Lake Hills-25	King	Not on 2010 Top 50 List		43	364,941	Replacing two switches and modifying the underground system to add a reliability loop in 2011.
Langley-16	Island	Not on 2010 Top 50 List		44	415,474	Transmission right of way enhancement and vegetation management. Maxwelton substation is planned for completion in 2014 which will help improve reliability to this circuit.
Cle Elum-11	Kittitas	Not on 2010 Top 50 List		45	911,276	Construction of feeder planned for 2011 or 2012 with additional sectionalizing switches. Installed new recloser. Tree trimming scheduled for 2013.
Orting-22	Pierce	Not on 2010 Top 50 List		46	858,268	Tree wire job completed in 2009. Two tree wire and underground feeder tie projects completed in 2010. Installing a recloser and replace aging copper wire in 2011.
Hobart-15	King	Not on 2010 Top 50 List		47	386,181	Two feeder ties completed in 2009. Two feeder ties completed in 2010. Two cable remediation jobs scheduled for 2011
Wayne-15	King	Not on 2010 Top 50 List		48	452,409	Additional switches will be installed to provide switching flexibility.
Wilson-16	Skagit	Not on 2010 Top 50 List		50	437,361	Installed three reclosers in 2009. Completed feeder tie improvement in 2010.
*Difference in Top 50 methodologies for 2009 and 2010 due to change in SAIDI benchmark in 2010						
**Dates for current or future projects are estimated completion dates						

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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-anagement mileage.

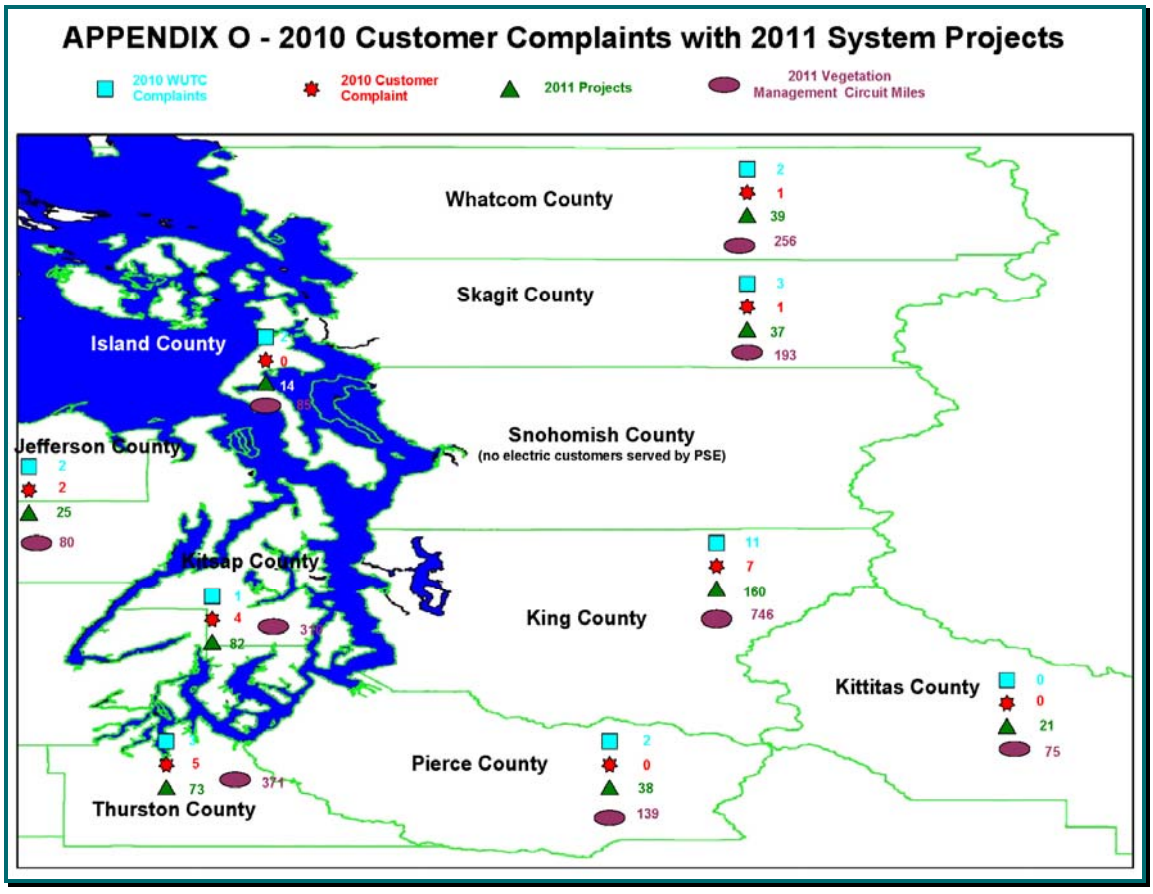

Figure 13: 2010 customer complaints with 2011 system projects