

RE 61(1) e-FILING REPORT COVER SHEET

REPORT NAME: 2012 Service Quality Measure Report

COMPANY NAME: Portland General Electric

DOES REPORT CONTAIN CONFIDENTIAL INFORMATION? No

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Report is required by:

OPUC Order No. 11-160, (amended Order No. 97-196 (UM 814))

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Key words: 2012 Service Quality Measure Report (SQM)

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Electric Rates and Planning



Portland General Electric Company
121 SW Salmon Street • Portland, Oregon 97204
PortlandGeneral.com

April 30, 2013

Public Utility Commission of Oregon
Attn: Filing Center
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P.O. Box 2148
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RE: 2012 Service Quality Measure (SQM) Report

Pursuant to Order No. 11-160, which amended Order No. 97-196 (UM 814), PGE hereby submits via electronic only, the 2012 Service Quality Measure Report.

Should you have any questions or comments regarding this filing, please contact George Jones at (503) 570-4554.

Please direct all formal correspondence and requests to the following email address pge.opuc.filings@pgn.com

Sincerely,

A handwritten signature in blue ink, appearing to read "Karla Wenzel". The signature is fluid and cursive, written over a white background.

Karla Wenzel
Manager, Pricing

Enclosure

cc: Lori Koho, OPUC



Portland General Electric

2012 Service Quality Measure Report

Annual Review of Safety and Operational Performance Areas

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PGE 2012 SERVICE QUALITY MEASURES REVIEW

Annual Review of Safety and Operational Performance Areas

Portland General Electric submits this annual report pursuant to OPUC Order 97-196 as later amended to provide information on the service quality of the Company. The information addresses service quality performance measures on the following:

- C1 “At fault” customer complaint frequency
- R1 Average customer interruption duration
- R2 Average customer interruption frequency
- R3 Average momentary interruption frequency
- R4 Annual service restoration
- X1 Vegetation Management program
- X2 Pole and overhead facilities inspection, testing and maintenance program
- X3 Other Programs (Marina inspection and maintenance)

In addition to the reporting on the above stated service quality performance measures, and to provide a fuller picture of PGE’s service quality, PGE has included in this report since 2008, additional information we call 21st Century Service Quality Indicators. These 21st Century Service Quality Indicators are included in an Appendix to this report and provide information on the following: customer satisfaction, system reliability and NESC safety violations.

A. “Relentless Safety” at PGE

Portland General Electric continues to have a strong focus on safety for employees and members of the public. We continue to build a safety culture that captures the experience of our diverse workforce and helps each employee identify where they can impact safety for themselves, their co-workers, their families, and the public. Senior management leadership from the Executive Safety Council, mid-management engagement with employees, and employee led safety projects, combine to bring safety into all aspects of the daily work performed at PGE. Internally, we call it “relentless safety.”

Leading Indicators are used to provide early awareness of the impact of PGE efforts on improvements to our safety culture. These indicators include: employee engagement, safety project completion rate, near miss reporting, internal and external safety training, and safety observations. Although we cannot develop a direct correlation between leading indicators and reduced injury rates, PGE, other utilities and other industries have proven that increased effort and focus on these areas will result in a safety culture that leads to fewer injuries.

PGE’s Safety Committees have demonstrated a greater ownership in identifying and resolving safety issues in their work areas. Additional training for safety committee members on how to address safety issues and support from management have contributed to the empowerment of the committees. Committee members are building working relationships with other departments needed to resolve safety issues and seeing positive results from the work.

Our work with Grassroots Safety Teams provides another opportunity for employee engagement in identifying and resolving safety issues. There are approximately 30 employees directly involved with the grassroots efforts to impact the safety culture at PGE. Their work contributes to building stronger safety based relationships throughout PGE and provides a different perspective when resolving safety issues.

Training and safety awareness efforts at all levels continue to highlight that all work practices are built around safety. The Training Department is working closely with the Safety Department to increase the amount of information presented during annual training for employees working in the field. Some of the PGE employees who provide training for apprentices are involved with the National Training Institute (NTI) and the National Joint Apprenticeship Training Committee (NJATC) in Michigan. The NTI teaching techniques help increase the skill level of PGE apprentices and journeymen, which translates into a safer work environment.

PGE is committed to improving the safety culture and working to ensure every employee returns home without injury. We are relentless in our efforts to address safety issues and provide a safe and healthy place of employment.

B. Performance Measures C1 Customer “At Fault” Complaint Frequency

In 2012, PGE’s OPUC Liaisons fielded 208 customer complaints, a slight reduction from 2011 complaints of 228. Of these, the OPUC determined twelve “at fault” designations resulting in PGE’s 2012 total “at-fault” complaint rate at 0.0146 per 1,000 customers. PGE’s standard practice is to rigorously review all at fault complaints for root cause and lessons learned.

Year	Logged Complaints	Total Customers	At Faults	At Fault Frequency
2010	353	815,000	24	0.0294
2011	254	820,676	14	0.0171
2012	208	822,466	12	0.0146

Of the 12 At Fault complaints violations assessed in 2012, the At Fault designation for these violations resulted in 3 Rule violations, 1 Tariff violation and 8 Customer Service violations.

C. Performance Measure on Reliability: R1-SAIDI, R2-SAIFI, R3-MAIFI, R4CAIDI Executive Summary

This executive summary provides an overview of the 2012 Reliability Report and highlights key information with comparisons to past years' data. If there are any questions about this information, please call Richard Goddard at (503) 464-8061.

a. 2012 Reliability

The three year weighted average for SAIDI, SAIFI, and MAIFI indices for 2012 were 79.1 minutes, 0.61 occurrences and 1.05 occurrences respectively. The SAIDI three-year weighted averages are below the OPUC thresholds, and reflect a reduction from the three year weighted average reported in 2011.

The five-year service availability for Portland General Electric customers is 99.985%. Continued efforts in 2013 will improve system reliability by focusing on the poorest performing feeders and tap lines, putting processes in place to reduce the length of major outages and investigating outage causes that are trending up.

b. Summary of Reliability Indices Excluding Major Events

Table 1 (on the following page) indicates that PGE's system stayed under the OPUC three-year weighted average penalty threshold limits for SAIDI, SAIFI, and MAIFI thresholds.

TABLE I
10 YEAR SUMMARY OF RELIABILITY INDICES

Year	SAIDI (minutes)	SAIFI (occurrences)	MAIFI (occurrences)	CAIDI (minutes)	Number Of Outages
2012	72	0.55	1.11	131	5,093
2011	66	0.51	0.89	129.0	4,535
2010	77	0.65	1.1	118.3	5,454
2009	115	0.81	1.4	141.6	6,354
2008	75	0.73	1.3	102.7	5,817
2007	77	0.71	1.3	108.5	5,994
2006	117	1.06	1.6	110.4	6,930
2005	86	0.83	1.6	103.6	5,560
2004	85	0.8	1.8	106.3	5,582
2003	82	0.8	2.1	102.5	5,366
3 year weighted Average for 2012	71.2	0.56	1.04	127.97	N/A
Level 1 Penalty Threshold	105	1.2	5	N/A	N/A
Level 2 Penalty Threshold	115	1.2	5		

The following methods were used to derive the 2012 reliability data.

1. Correction factors for SAIDI and SAIFI are applied to tap line outages to more accurately reflect actual events. The factors of 0.8 for duration and 0.9 for number of customers have been used since 2004.

Note: Correction factors are not applied to feeder outages or outages affecting fewer than 30 customers. The information regarding number of customers affected and outage duration are more accurate for these types of outages.

2. All outages of five minutes or less are excluded from SAIDI and SAIFI calculations as well as the following cause codes: 10-Non Outage, Crew Responded, 1001-1005 (Telco Wire, Cable TV Wire, Verizon Equipment, Qwest Equipment and Comcast Equipment).

3. The three-year weighted averaging formula for 2012 is calculated with 2012 weighted at 50%, 2011 weighted at 30%, and 2010 weighted at 20%.

PGE excluded January 17th & 18th, March 22nd, November 19th, and December 16th & 17th as Major Event Days in 2012.

c. Under Performing Feeder Summary*

PGE monitors feeder performance against underperforming feeder thresholds by feeder classification (i.e. Remote, Rural, and Urban). Those feeders whose indices compute to equal or greater than any one of these thresholds are classified as underperforming.

The feeder classification definitions are as follows:

Urban – a feeder is designated as Urban if 50% or more of the load is inside the Urban Growth Boundary (UGB)

Rural – a feeder is designated Rural if one or more of the following apply:

- a. The load on a feeder is greater than 0.5 MVA per square mile
- b. A feeder has more than 100 customers per square mile
- c. A feeder is serving load inside an incorporated city
- d. A feeder is directly adjacent to the UGB with feeder ties into the UGB

Remote – a feeder is designated as Remote if none of the above conditions apply

Eleven feeders have been underperforming for the last three consecutive years. Thirty three feeders have been underperforming for two out of the last three years. The underperforming feeder summary is included below in Table 2.

**TABLE 2
NUMBER OF FEEDERS EXCEEDING UNDERPERFORMING
INDEX THRESHOLD**

YEAR	SAIDI	SAIFI	MAIFI	MAIFI ONLY	*TOTAL Number of Feeders
	# Of Feeders	# Of Feeders	# Of Feeders	# Of Feeders	
2012	58	24	11	11	76
2011	56	29	11	12	61
2010	78	37	11	7	91
2009	124	44	25	12	136
2008	59	34	16	12	80
2007	71	35	25	17	96
2006	114	86	24	15	143
2005	76	49	33	27	111
2004	67	45	40	26	104
2003	77	45	51	36	116

*A feeder can be underperforming for more than one index. In the “MAIFI ONLY” column, a feeder is underperforming only for MAIFI and no other indices. This column was added to show the impact of tracking MAIFI on more feeders every year.

d. Impact of Weather Without Outage Events on SAIDI

The 10 worst days for SAIDI in 2012 based on total customer hours are shown in Table 3. These 10 days made up 29% of the total customer minutes and contributed 20.61 minutes to the system SAIDI number listed in Table 3.

**TABLE 3
10 WORST DAYS FOR SAIDI IN 2012
Without Major Events**

Rank	Date	Customer-Minutes	Minutes Contributed to SAIDI Total	Largest Contributor to SAIDI
1	1/5/12	1,388,865	1.65	Loss of Supply - Substation
2	1/11/12	940,224	1.12	Distribution – Vegetation
3	3/12/12	2,782,280	3.31	Distribution - Vegetation
4	3/13/12	2,691,598	3.20	Distribution – Weather (other than lightning)
5	5/3/12	1,213,015	1.14	Distribution - Vegetation
6	6/8/12	1,558,449	1.85	Distribution – Weather (other than lightning)
7	6/22/12	896,016	1.07	Distribution - Public
8	9/19/12	1,021,227	1.21	Loss of Supply – Substation
9	10/5/12	1,015,807	1.21	Distribution - Vegetation
10	10/12/12	2,309,579	2.75	Loss of Supply - Substation

D. Performance Measure X1 –Vegetation Management

1. Description:

The Vegetation Management Program is a Basic Maintenance Program that is set apart from the other inspection and maintenance programs due to the crucial effect trees can have on system safety and reliability. Trees and other vegetation are trimmed or removed to provide line clearance and prevent system damage. The Vegetation Management personnel count is a valuable early warning indicator to alert Staff of the Company's ability to adequately maintain its system.

2. Understanding:

The Company acknowledges that "tickling," "brushing" contacts, brown leaves, desiccation, or any other descriptions, or results of, direct or arcing contact with primary conductors is interpreted by Staff as interference.

3. PGE Quality Control:

The Company shall inspect not less than 10% of recently completed tree trimming on a continuous basis to ensure compliance with the Program Plan and achievement of adequate clearance. PGE Foresters monitor all trimming projects on a continual basis using QA performance logs.

4. Program Expenditures:

The Annual Report will contain information showing the Company's actual annual expenditures compared with its previously planned expenditures. Information will include total budget with actual versus budgeted for each of the following elements: Maintenance Cycle Trimming, Customer Assistance Trimming, Line Construction Trimming, and PGE supervision and Administration.

Budget Plan and Actual Expenditures:

	<u>Actual</u>	<u>Budget</u>
2012 Actual versus budgeted YTD:	\$12,780,774	\$12,781,976
PGE Supervision and Administration:	\$673,617	
Maintenance Cycle Trimming:	\$12,013,928	94%
Customer Assistance Trimming:	\$511,231	4%
Line Construction Trimming:	\$255,615	2%

5. Vegetation Management Personnel Information:

The Company's Annual Report shall include the number of full time employees assigned to the following positions for each of the last three years:

	2012	2011	2010
a) Company foresters:	8	8	8
b) Company tree trimmers and arborists; and	0	0	0
c) Contractor tree trimmers and arborists.	95	95	79

E. Performance Measure X2 Pole & Overhead Facilities Inspection, Testing, and Maintenance Program

Pole and Overhead Facilities Inspection, Testing and Maintenance Program

2012 was our sixth year of the Facility Inspections and Treatment to the National Electrical Safety Code (FITNES) III 10-year cycle. 2012 FITNES overhead inspection and treatment was performed on 28,433 distribution and transmission poles and associated overhead distribution facilities (10.5% of 270,000 wood poles included in 2012 FITNES Overhead Program).

a. Corrections of Violations Discovered During Inspections

- FITNES Program timelines are established and maintained to perform corrections, repairs, or replacement work within two (2) years of violation discovery. 16,300 violations were corrected in 2012.

- Violations deemed to be an immediate hazard receive expedited attention to ensure treatment/correction within 30 days.

b. PGE Quality Control

- Accuracy of the inspection is ensured by performing QC on a random sampling pulled on average weekly.
- QC was also performed on 1,348 corrected violations (8.3% of total 16,300 corrections).

c. Program Expenditures

- 2012 Pole and Overhead Facilities Inspection, Testing and Pole Treatment: \$1,154,532 (Budget) \$1,041,544 (Actual)

d. Repair and replacement of Facilities

- 2012 Pole and Overhead Facilities Repair
\$1,315,745 (Budget) \$910,133 (Actual)
- 2012 Replacement of Facilities (Capital)
\$880,200 (Budget) \$533,338 (Actual)

e. 2013 Plans

- PGE plans to stay on the Cycle 3 FITNES plan for Pole and OH Inspections and inspect approximately 28,000 poles and related OH facilities in 2013.

F. Performance Measure X3- Other Programs

Marina Inspections

Two rounds of Marina Inspections were completed in 2012 on 47 marinas. The first round for high water findings in the Spring and the second for low water findings in the Fall. The findings continue to show that system improvements, especially those that have been converted to Under Dock (Underground systems) have reduced violations. Of the 47 Marina inspections, 5 work orders have been created. There are currently 12 violations in the work management system from 2012 to be corrected.

- Forty Seven (47) marinas were inspected starting in March of 2012. Three (3) marinas were found to have violations. All inspection reports were entered into WMIS and forwarded to the appropriate region for resolution.
- Forty Seven (47) marinas were inspected starting in September of 2012. Two (2) marinas were found to have violations. All inspection reports were entered into WMIS and forwarded to the appropriate region for resolution.

Appendix 21st Century Service Quality Indicators

1. Customer Survey Data

PGE collects survey data from Residential, Business and Large Industrial (Key) customers to measure and evaluate how customers perceive its performance across several areas including:

- Reliability and Power Quality
- Customer Service
- Management
- Communications
- Pricing
- Corporate Citizenship
- Billing and Payment

The surveys reveal relative strengths and weaknesses in the Company's performance as well as opportunities for improvement.

PGE contracts with Market Strategies International (MSI), an independent, full-service customer market research company headquartered in Michigan, to conduct customer satisfaction surveys among PGE's residential and general business customers.

Each quarter, MSI surveys 400 to 600 residential customers and every other quarter (Q2 and Q4); they survey 300-400 general business customers. They analyze and benchmark the data and provide PGE with quarter-to-quarter and year-to-year comparisons based on the "percent total positive" (%6-10) scores on an 11-point scale (where 0 means the customer has a "Very Unfavorable" impression and 10 means the customer has a "Very Favorable" impression). According to the fourth-quarter 2012 MSI survey, PGE received a positive rating on overall satisfaction for both residential and business customers, placing it in the top ten percent (decile) of its peer utilities.

In addition, PGE also acquires the results of the annual J.D. Power and Associates Electric Utility Customer Satisfaction StudySM (J.D. Power Study) for both residential and general business customers. PGE uses the J.D. Power Study primarily as a benchmark to other electric utilities. PGE was ranked as the top investor-owned utility in the nation for residential customer satisfaction and number two among large utilities in the West for business customer satisfaction by J.D. Power & Associates in 2012.

For its large industrial customers (key customers), PGE contracts with TQS Research, Inc. (TQS), an independent market research firm, to conduct annual customer satisfaction surveys. TQS, headquartered in Georgia, specializes in business-to-business research among the largest energy users in the United States and Canada. For 2012, TQS completed 82 PGE key customer interviews and benchmarked the data against the results of 52 other U.S. utility holding companies. TQS uses a 10-point scale (with 1 being *Very*

Dissatisfied and 10 being *Very Satisfied*) and reports the percent of customers that give a rating of 8, 9, or 10 (%8-10).

In the 2012 TQS research, PGE ranked second nationally in overall customer satisfaction and number one in reliability with large key customers, placing it in the top ten percent (top decile) among electric utility holding companies.

2. Ranking Methodology

National and/or peer comparison groups are not identical for MSI, J.D. Power and TQS research results, but there is some overlap in the utilities surveyed. In 2012, MSI included approximately 100 utilities serving residential customers and approximately 85 utilities serving business customers in their national databases. J.D. Power surveyed 126 utilities for its residential study and 95 utilities for its general business study. For both MSI and J.D. Power, PGE compares itself to all surveyed utilities and to a sub-set defined as a “peer group.” The TQS national comparison database contains 52 utilities and compares performance with respect to key customers only.

Utilities in the peer comparison groups for PGE are shown in the tables below for MSI, J.D. Power and TQS.

PGE’s 2012 MSI Survey peer group

Residential	Business
NV Energy North	NV Energy North
NV Energy South	NV Energy South
Seattle City Light	
Southern CA Edison	Southern CA Edison
Portland General Electric	Portland General Electric
Pacific Gas & Electric	Pacific Gas & Electric
Pacific Power	Pacific Power
Puget Sound Energy	Puget Sound Energy
Rocky Mountain Power	Rocky Mountain Power
San Diego Gas & Electric	San Diego Gas & Electric

**PGE’s 2012 J.D. Power Study
West Large Segment Peer Group**

2012

Residential	Business
Salt River Project	Salt River Project
Puget Sound Energy	Arizona Public Service
Sacramento Municipal Utility District	Southern California Edison
Rocky Mountain	San Diego Gas & Electric
Arizona Public Service	Rocky Mountain Power
CPS Energy	Pacific Gas and Electric
Florida Light & Power	Puget Sound Energy
Southern California Edison	Pacific Power
Pacific Power	NV Energy
Pacific Gas and Electric	Xcel Energy-West
NV Energy	L.A. Dept. of Water & Power
San Diego Gas & Electric	
Xcel Energy-West	
L.A. Dept. of Water & Power	

TQS

**National Utility Benchmark Study
Large Key Accounts**

Top 20 of 52 National Operating Companies	
Mississippi Power	AEP SW Elec. Power Co.
Alabama Power	South Carolina Electricity & Gas
Rocky Mountain Power	Northern States Power Wisconsin
MidAmerican Energy Op Co	AEP Texas
Portland General Electric	Pacific Power & Light
Georgia Power	Avista
Entergy Mississippi	Entergy Arkansas
SPS ~ Xcel	Westar Energy
Gulf Power	Wisconsin Energy
Duke Energy Carolinas	Public Service of Colorado

3. Customer Satisfaction Results

MSI: “Based on your overall experience as a customer of PGE, how would you rate the company on a 0-10 scale, where a 0 means you are extremely dissatisfied and 10 mean you are extremely satisfied?”

TQS: “Overall, how satisfied are you with the full package of electrical services provided by your local utility?” See PGE Customer Satisfaction results.

PGE Customer Satisfaction Rolling Average Results

	Residential (MSI) (%6-10)	General Business (MSI) (%6-10)	Key Customers (TQS) (%8-10)
2012	86%	94%	93.9%
2011	86%	92%	90.5%
2010	86%	94%	81%
2009	85%	92%	72%
2008	85%	94%	82%
2007	83%	92%	75%
2006	82%	92%	76%
2005	81%	93%	64%
2004	80%	87%	58%

Year End 2012 Rank on Customer Satisfaction

National	13 th /100	8 th /93	2nd/52
Peers	1 st /10	1 st /9	NA

4. System Reliability Results

MSI: “Thinking about the overall reliability of electric service to your [home/business], on a 0-10 scale, where 0 means you are extremely dissatisfied and 10 means you are extremely satisfied, how satisfied are you with the overall reliability of electric service?”

TQS: “Concerning the reliability of electric power, please rate the reliability at this site on the following... overall how satisfied are you with the reliability of electric power?”

PGE System Reliability Rolling Average Results

	MSI: Residential (%6-10)	General Business (MSI) (%6-10)	Key Customers (TQS) (%8-10)
2012	96%	96%	97.6%
2011	95%	98%	88.4%
2010	95%	95%	95.7%
2009	94%	98%	86.6%
2008	95%	96%	86.2%
2007	94%	95%	85%
2006	95%	94%	88%
2005	94%	94%	83%
2004	93%	91%	71%

Year End 2012 Rank on System Reliability

National	2 nd /98	2 nd /91	1 st /52
Peers	1 st /10	1 st /9	NA

5. Safety Results

MSI: “Using this same 0-10 scale, how would you rate PGE in terms of helping customers use electricity safely in their [homes/businesses]?”

PGE Safety

	Residential (MSI) (%6-10)	General Business (MSI) (%6-10)
2012	80%	80%
2011	76%	83%
2010	75%	79%
2009	76%	70%
2008	76%	64%
2007	77%	70%
2006	79%	67%
2005	74%	62%
2004	74%	60%

IEEE 2.5 BETA Method

The 2.5 Beta Method looks at the Daily SAIDI values of a utility and compares them to a threshold value (T-MED) obtained by performing a logarithmic distribution analysis on the previous 5 years of outage data. Calculating a T-MED value allows the utility to identify and study days in which the distribution system experienced stresses beyond what is observed under daily operation. Per IEEE Standard 1366-2003 the steps to obtain major event day threshold (T-MED) are outlined below.

IEEE GUIDE FOR ELECTRIC POWER DISTRIBUTION RELIABILITY INDICES	IEEE Std 1366-2003
<p>a) Collect values of daily SAIDI for five sequential years ending on the last day of the last complete reporting period. If fewer than five years of historical data are available, use all available historical data until five years of historical data are available.</p> <p>b) Only those days that have a SAIDI/Day value will be used to calculate the T_{MED} (do not include days that did not have any interruptions).</p> <p>c) Take the natural logarithm (ln) of each daily SAIDI value in the data set.</p> <p>d) Find α (Alpha), the average of the logarithms (also known as the log-average) of the data set.</p> <p>e) Find β (Beta), the standard deviation of the logarithms (also known as the log-standard deviation) of the data set.</p> <p>f) Compute the major event day threshold, T_{MED}, using equation (25).</p> $T_{MED} = e^{(\alpha + 2.5 \beta)} \quad (25)$ <p>g) Any day with daily SAIDI greater than the threshold value T_{MED} that occurs during the subsequent reporting period is classified as a major event day.</p> <p>Activities that occur on days classified as major event days should be separately analyzed and reported.</p>	

Since OPUC, PGE, Pacific Corp., and Idaho Power have collaborated on incorporating the IEEE-2.5 Beta method for calculating Major Event Days into Oregon's Electric Service Reliability Rules. The new rules became effective January of 2012. The 2012 IEEE BETA study is shown below, see the table entitled Portland General Electric IEEE-1366 BETA Study 4/30/2012.

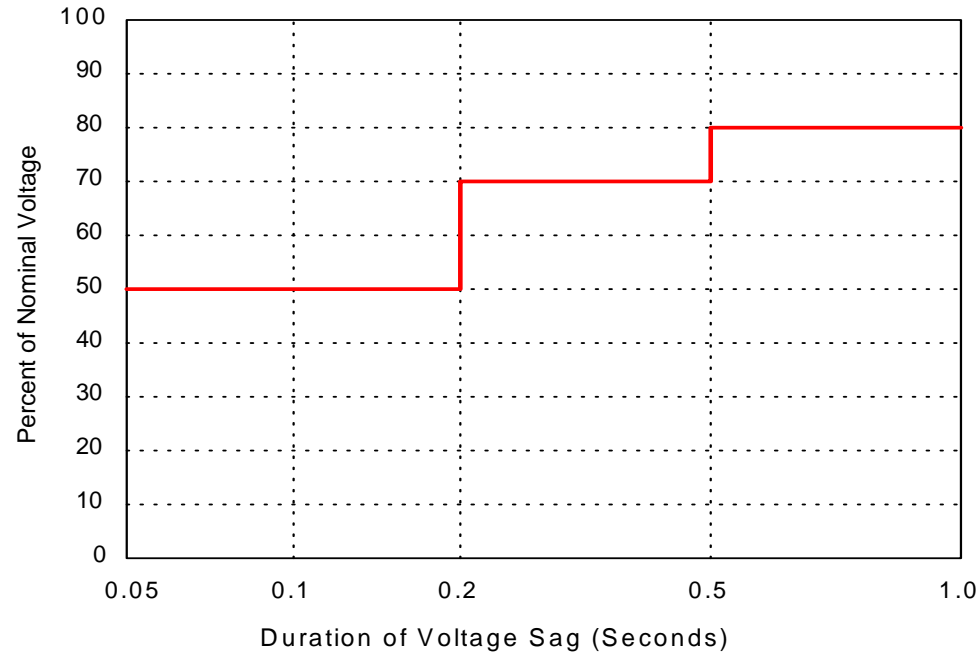
Portland General Electric IEEE-1366 BETA Study 4/30/2012

Year	Company Study				Regional Study						Results					
	Excluded Days per OPUC 10% Exclusion Rule	Excluded Days per Beta Method	SAIDI Contribution	TMED (Company)	Region	Excluded Days per Beta Method	SAIDI Contribution	TMED (Region)	Year End SAIDI per Region per Beta Method	Company SAIDI Contribution per Beta Method per Region	Company Yearly SAIDI per Beta Method (Analyzed as Regions)	Yearly SAIDI per Current Method	Company Yearly SAIDI per Beta Method (Analyzed as Company)			
2007	11/12/2007			3.83	Central	11/12/2007	9.49	8.74	68.85	18.58	68.99	77	66.44			
	11/13/2007	11/12/2007	13.58		Eastern	4/22/2007	14.48	11.66	75.73	15.64						
	11/14/2007	12/3/2007	3.97		Southern	11/12/2007	33.89	8.00	80.28	16.16						
					Western	11/12/2007	8.45	7.94	57.74	18.61						
2008				3.67	Central	12/21/2008	162.53	8.40	66.40	17.94	76.76	75	80.54			
					Central	12/22/2008	145.10									
					Central	12/23/2008	32.52									
					Central	12/24/2008	20.99									
					Eastern	2/12/2008	17.44	10.86	102.53	21.16						
	12/21/2008				Eastern	12/21/2008	740.72									
	12/22/2008	12/21/2008	376.33		Eastern	12/22/2008	224.95									
	12/23/2008	12/22/2008	142.26		Eastern	12/23/2008	45.54									
	12/24/2008	12/23/2008	45.57		Eastern	12/24/2008	87.16	9.00	57.94	11.57						
	12/25/2008	12/24/2008	43.23		Eastern	12/25/2008	16.11									
	12/26/2008	12/24/2008	10.00		Eastern	12/21/2008	705.35									
	12/27/2008	12/25/2008			Eastern	12/22/2008	146.39									
					Southern	12/23/2008	75.11	7.50	80.55	26.09						
					Southern	12/24/2008	66.93									
					Southern	12/25/2008	25.36									
					Southern	12/26/2008	9.03									
			Western	12/21/2008	119.67	8.00	78.08	21.22								
			Western	12/22/2008	84.66											
			Western	12/23/2008	38.27											
			Western	12/24/2008	19.19											
2009				4.08	Central	6/4/2009	8.93	8.00	78.08	21.22	89.68	114.9	74.25			
					Central	1/17/2009	8.06									
					Central	11/22/2009	10.20									
			1/2/2009		4.68	Eastern	1/17/2009	214.27	12.68	128.50				26.37		
	1/17/2009	1/17/2009	49.11		Eastern	1/18/2009	114.66									
	1/18/2009	1/18/2009	24.91		Eastern	11/22/2009	16.66									
	1/19/2009	3/15/2009	4.98		Southern	6/4/2009	49.04	9.76	66.55	13.33						
	6/4/2009	5/2/2009	8.30		Southern	11/22/2009	10.89									
		6/4/2009	19.42		Western	1/17/2009	8.87									
			11/22/2009		9.47	Western	5/2/2009	17.15	8.43	81.80				26.36		
			Western	5/17/2009	9.87											
			Western	6/4/2009	17.77											
2010		4/5/2010	4.92	4.51	Central	4/5/2010	8.70	8.54	54.46	14.87	69.46	77.00	72.27			
					Central	12/17/2010	8.89									
					Eastern	8/20/2010	14.31	12.81	94.20	19.31						
					Southern	N/A	N/A							10.29	64.87	13.01
					Western	N/A	N/A							9.56	69.26	22.27
2011 YTD				4.36	Central	N/A	N/A	8.45	55.56	15.58	80.74	65.95	57.25			
	3/13/2011	2/28/2011	4.55		Eastern	2/28/2011	34.54	12.57	73.97	15.16						
	3/14/2011	3/13/2011	26.61		Eastern	3/13/2011	109.07									
	3/15/2011	3/14/2011	6.79		Eastern	3/14/2011	39.17									
					Southern			9.38	79.46	15.91						
			Western			9.58	44.11	14.09								

Major Event Excluded for Southern Region Only.
 Major Event Excluded for Eastern Region Only.
 Major Event Excluded ALL Regions.

SARFI

System Average RMS Variation Frequency Index (SARFI) represents the average number of RMS sag events experienced by a customer over a time period, where the disturbances are those with a magnitude less than the semiconductor equipment voltage sag ride-through capability curve specified in SEMI F47-0200 (below).



The Semiconductor Equipment and Materials International (SEMI) developed the SEMI F47-0200 standard for semiconductor process equipment voltage sag immunity. The standard specifies minimum voltage sag ride-through requirements of semiconductor processing equipment. A voltage sag event is defined as a short term decrease in voltage (10 - 90% of nominal) ranging between 0.5 cycles and one minute. Voltage sags can be caused by bad weather, tree into line, car hit pole, failed equipment on PGE's system, or events originating outside PGE's system.

In 2012, PGE's Large Customer Quality and Reliability Program (QRP) tracked voltage sag events against the SEMI F47 curve for 25 customers who have unique power quality and reliability requirements.

The PGE Quality and Reliability Program (QRP) is a focused effort to provide a high level of service reliability to a group of customers determined to have unique reliability needs. The QRP program includes monitoring and reporting of power quality and reliability metrics for 25 large customers and customers located within our three Reliability Areas. These Reliability Areas are Downtown Salem Core, Hillsboro-Sunset, and Downtown Portland Network.

Additional objectives of the QRP Program include:

- Working with stakeholders to review the facilities serving QRP customers and identify potential system improvements
- Developing detailed maintenance plans including enhanced system inspections and testing.
- managing implementation of identified capital improvements
- performing root cause investigations and identifying preventive actions for significant reliability events

Through this effort, PGE is providing a higher level of service excellence to meet the service quality and reliability needs of an increasingly sophisticated and demanding customer base.

Events below the curve are considered a SARFI event. SARFI is calculated using the following formula:

$$SARFI = \frac{\sum \text{Total Number of Events}}{\text{Total Number of Customers}}$$

The 2012 SARFI results reflect 18 events.

Year	SEMI F47 (occurrences)	SEMI F47 (occurrences originating inside PGE system)	SARFI (total)	SARFI (originating inside PGE system)
2012	18	18	0.72	0.72

Please see the table below for a summary of SARFI SEMI results for 2012.

Event Date	Number of Customers	Duration of Event	Voltage	Description of Event	Follow-Up
1/18/2012	1	1.44 Cycles	46.00%	Urban – Gains 13kV relayed and reclosed for unknown reasons. Snow in the area...	Crews patrolled line and found nothing. No further action necessary.
3/18/2012	3	10.92 Cycles	8.83%	Hogan South-McGill 115kV line relayed and reclosed as a result of lightning strike. Crews patrolled line and no further action necessary.	Crews line and found nothing. No further action necessary
3/22/2012	1	5.1 Cycles	45.72%	Canyon-West Portland 115kV line relayed to lockout. Tree limb broke pole top insulator. Snow in area.	Crew removed tree limb and replaced insulator.
6/6/2012	1	19.26 Cycles	30.04%	Urban-Medical tripped and reclosed for unknown reasons. B&C phases saw voltage sag prior to feeder breaker trip.	Crew patrolled line but did not find the cause for breaker operation.
6/22/2012	1	25.92 Cycles	33.09%	Urban-Corbett 13kV tripped and relayed to lockout due to Car Hit Pole. This caused severe voltage sag on Urban-Campus.	Crew isolated affected section, made repairs and re-energized feeder.
6/25/2012	1	2.03 Seconds	64.39%	Car hit pole caused trip and lockout on Culver 13 kV. This caused voltage sag on Culver - Sanyo #2.	
7/5/2012	1	4.68 Cycles	35.28%	Dump truck hit Orenco-West Union 57 kV.	Replaced poles and repaired damaged lines.

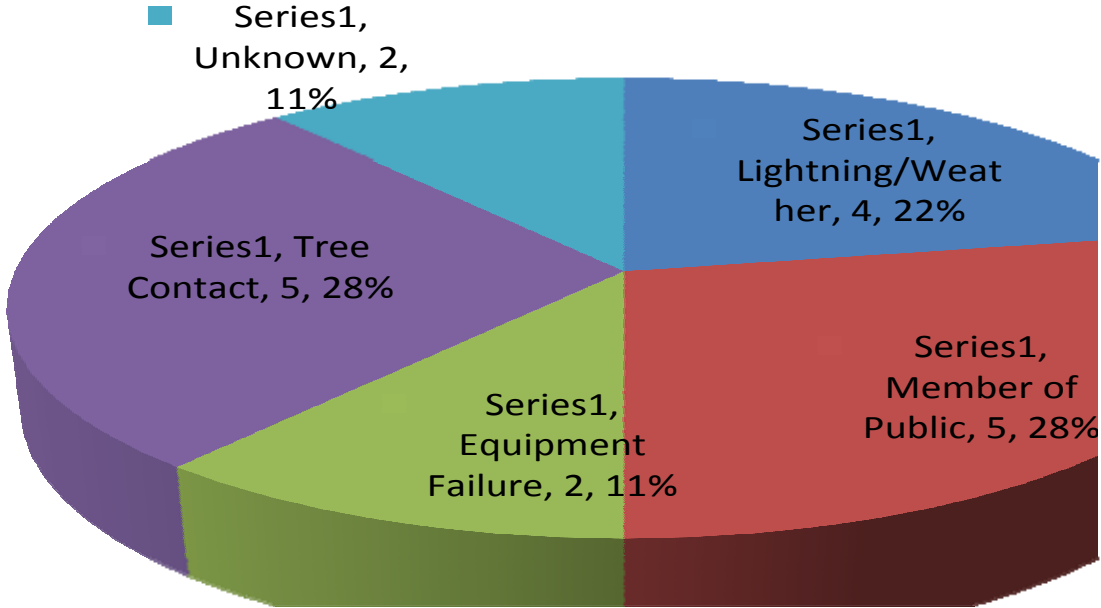
8/2/2012	1	5 Hours	31.41%	UG conductor failure	Crews repaired a primary splice in vault 10463.
8/13/2012	1	6.12 Cycles	48.12%	Car hit pole caused trip and reclose on Canyon-West Portland.	Temporary outage to Glencullen as it sectionalized.
8/13/2012	1	1.8 Seconds	9.15%	Tree across all three phases. R108 tripped & relayed to lockout.	Cleared tree from line and restored feeder.
9/7/2012	1	25.5 Cycles	18.86%	R240 Tripped and reclosed due to failed transformer fuse cutout.	Replaced cutout.
Event Date	Number of Customers	Duration of Event	Voltage	Description of Event	Follow-Up
9/8/2012	2	5.04 Cycles	40.24%	Lightning strike caused Sellwood W252 to trip and reclose, 1 op. Multnomah, Raleigh Hills, and Riverview substations had temporary outages as they transferred to alternate sources. Beaverton synch check relay was damaged,	Bypassed failed synch check relay and closed Beaverton W148 via SCADA.
10/3/2012	3	40.32 Cycles	28.26%	Carver W488 & Canemah W142 tripped & reclosed; temporary outage to Clackamas sub feeders	Patrolled, did not find cause
11/16/2012	1	25.32 Cycles	50.28%	57kV line relayed to lockout, 2 ops; temporary outage to Hillsboro sub while sub transferred to alternate 57kV source. Tree into line at 63rd & West Baseline Rd	Removed tree from line, made line repairs.

11/17/2012	1	1.17 Seconds	24.78%	R240 tripped and locked out, 3 ops. Related to previous transmission operation. Car hit pole at SW Allen Blvd and 141st,	Crew isolated faulted section, replaced damaged pole, and closed R240.
11/19/2012	1	1.69 Seconds	39.05%	High wind. Tree into line.	Took branch off line.
11/19/2012	8	23.76 Cycles	11.44%	115kV line relayed and reclosed at Beaverton. High wind. Tree down near line.	None.
11/20/2012	4	5.16 Cycles	38.49%	230 kV line relayed to lockout. High wind, heavy rain, and hail in area at the time.	Breaker closed.

* % Sag is the percentage of nominal voltage remaining during event

The graph below shows the sources for the 18 SARFI events which occurred during 2012:

Number of Events by Cause



2012 NESC Violations

Starting in 1999, a random sample of newly constructed poles was inspected by trained personnel looking for any National Electric Safety Code (NESC) violation. Quarterly, the results are reviewed with line crew management in each Region. The same crew that built a given pole is sent back to correct any violation identified.

Steady progress has been achieved over the last 11 years in construction to the NESC. Annual training for line crews includes a review of the most common violations found.

In 2012, 321 newly constructed poles were randomly selected and individually inspected. On average, 0 NESC violations were found per pole. Restated no violations were found and the facilities were constructed in accordance with the NESC.

REGION	POLES	ABANDONED ANCHOR	BUILDING CLEARANCE	B/O GROUND	CONDUIT DAM/BRKTS	CLEARANCE PEDESTRIAN	CLIMBING SPACE	GROUND ROD	WH CLEARANCE	GUY BONDING	GUY SLACK	INSULATOR BROKEN	WIRE OFF INSULATOR	STRUCTURE CLEARANCE	LOOSE WIRE	RISER GROUNDING	SECONDARY CLEARANCE	DRIVEWAY CLEARANCE	AG CLEARANCE	POLE-COM CLEARANCE	ROAD CLEARANCE	RAILROAD CLEARANCE	SERVICE ATTACHMENT	MIDSPAN COM CLEARANCE	SERVICE CLEARANCE	VERTICAL CLEARANCE	TOTAL VIOLATIONS	VIOLATIONS PER POLE
		AH	BC	BG	CD	CP	CS	DG	DL	GI	GS	IB	IW	LC	LW	MR	NC	OC	OG	PC	RC	RR	SA	SC	SD	VC		
PSC	83																										0	0.000
ORE CITY	90																										0	0.00
EASTERN	52																										0	0.000
SOUTHERN	0																										0	0.00
WESTERN	96				0																						0	0.00
TOTAL	321				0		0				0				0	0								0		0	0	00.00

PGE SERVICE TERRITORY

Including Regional Boundaries

REVISED: 2/24/2012

Legend

- SERVICE TERRITORY BOUNDARY
- EASTERN
- SOUTHERN
- WESTERN



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