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COMPANY NAME: PORTLAND GENERAL ELECTRIC COMPANY

DOES REPORT CONTAIN CONFIDENTIAL INFORMATION?  No  Yes If yes, submit a redacted public version (or a cover letter) by email. Submit the confidential information as directed in OAR 860-001-0070 or the terms of an applicable protective order.

Select report type:  RE (Electric)  RG (Gas)  RW (Water)  RT (Telecommunications)  
 RO (Other, for example, industry safety information)

Did you previously file a similar report?  No  Yes, report docket number: 113

Report is required by:  OAR 860-023-0151

Statute

Order

Note: A one-time submission required by an order is a compliance filing and not a report (file compliance in the applicable docket)

Other

(For example, federal regulations, or requested by Staff)

Is this report associated with a specific docket/case?  No  Yes, docket number:

List Key Words for this report. We use these to improve search results.

PGE 2017 Corrected Annual Reliability Report

Send the completed Cover Sheet and the Report in an email addressed to [PUC.FilingCenter@state.or.us](mailto:PUC.FilingCenter@state.or.us)

Send confidential information, voluminous reports, or energy utility Results of Operations Reports to PUC Filing Center, PO Box 1088, Salem, OR 97308-1088 or by delivery service to 201 High Street SE Suite 100, Salem, OR 97301.



**Portland General Electric Company**  
121 SW Salmon Street • Portland, Oregon 97204  
[PortlandGeneral.com](http://PortlandGeneral.com)

January 30, 2019

Public Utility Commission of Oregon  
Attn: Filing Center  
201 High Street SE  
P.O. Box 1088  
Salem, OR 97308-1088

**RE: PGE 2017 *Corrected* Annual Reliability Report**

Attached for filing in RE 113, please find PGE's 2017 *Corrected* Annual Reliability Report. The corrected report does not contain confidential material and the corrected pages, (pages 3, 7, and 10) are noted in the top righthand corner.

Pursuant to PGE's Follow up Comments to Staff on PGE's 2017 Annual Reliability Report dated, December 26, 2018, PGE responded in Safety Staff Comment #4 that PGE will update and reissue the Report to OPUC Staff by January 31, 2019. PGE's follow up comments are attached as well.

Should you have any questions regarding this filing, please contact Mary Widman at (503) 464-8223.

Please direct all formal correspondence and requests to the following email address [pge.opuc.filings@pgn.com](mailto:pge.opuc.filings@pgn.com)

Sincerely,

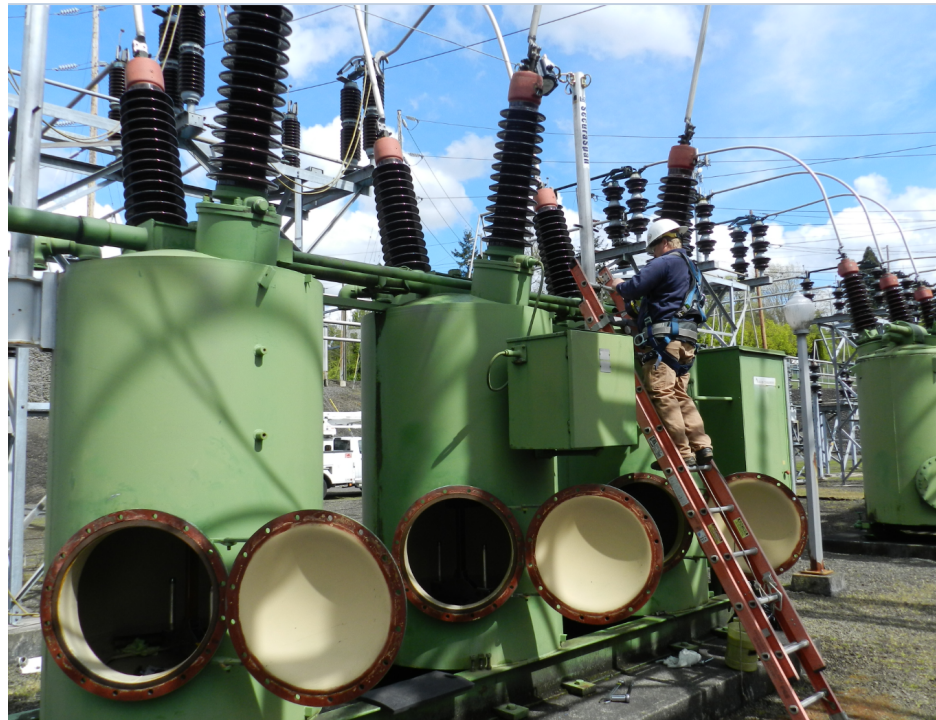
A handwritten signature in blue ink, appearing to read "Karla Wenzel". The signature is fluid and cursive, written over a white background.

Karla Wenzel  
Manager, Pricing and Tariffs

Enclosure  
cc: Lori Koho, OPUC



## Portland General Electric 2017 Annual Reliability Report



**January 1, 2017 through December 31, 2017**

## Section I

### Report Summary

The Annual Reliability Report provides distribution system performance information based on service interruptions to PGE customers. The report is utilized to understand the overall reliability of the distribution system and to identify areas of improvement and excellence.

The overall performance of PGE's distribution system is represented by the following indices<sup>1</sup>: System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI), and Momentary Average Interruption event Frequency Index<sup>2</sup> (MAIFI<sub>e</sub>).

PGE's distribution system performance calculations are based on the IEEE 1366 methodology. The data utilized for the calculations is captured from PGE's Outage Management System (OMS) and confirmed via a multi-step evaluation process. The results of the calculations are evaluated on a monthly basis and confirmed via a standardized review process.

PGE excluded the following dates from the 2017 distribution system performance indices as they met the IEEE 1366 Major Event Day (MED) exclusion criteria: January 4th, January 10<sup>th</sup>-11th, April 7<sup>th</sup>-8th, and October 21<sup>st</sup>.

Planned outage events<sup>3</sup> were also excluded from the 2017 distribution system performance indices<sup>4</sup> based on PGE's understanding of best practices performed by peer utilities and analysis methods utilized in IEEE 1782. While planned outage events were not captured in PGE's 2017 indices, these events are reported in Sections II and V of this report to comply with Oregon Administrative Rule (OAR) 860-023-0151.

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<sup>1</sup> Details regarding the performance indices can be found in Reliability Measure Definitions section of the Appendix

<sup>2</sup> MAIFI<sub>e</sub> calculations are limited to feeders with remote monitoring equipment

<sup>3</sup> Per IEEE 1366, a planned outage event is defined as "the intentional disabling of a component's capability to deliver power, done at a preselected time, usually for the purposes of construction, preventative maintenance, or repair." IEEE 1782, states "the planned outage event category includes, but is not limited to: road construction, maintenance and repairs, load swaps, replacing equipment, and house moves. Typically, planned interruptions are those interruptions that can be delayed by the utility personnel and performed only after the appropriate or required customer notification."

<sup>4</sup> PGE began excluding planned outages from distribution system performance indices in 2016. Planned outage events were not excluded in previous years.

## 4 year Corporate Annual Summary Excluding Major Event Days<sup>1</sup>

Year	Reported Outages	SAIFI Average Annual Outages per Customer (occurrences)	SAIDI <sup>2</sup> Average Annual Outage Duration per Customer (minutes)	MAIFle Average Annual Momentary Interruptions per Customer (occurrences)
<b>2017</b>	<b>8,704<sup>3</sup></b>	<b>0.62</b>	<b>113</b>	<b>1.4</b>
2016	7,496 <sup>3</sup>	0.59	97	1.1
2015	6,613 <sup>3</sup>	0.48	75	1.2
2014	5,832	0.70	95	1.3

## 4 year Corporate Annual Summary Including Major Event Days

Year	Reported Outages	SAIFI Average Annual Outages per Customer (occurrences)	SAIDI Average Annual Outage Duration per Customer (minutes)	MAIFle <sup>4</sup> Average Annual Momentary Interruptions per Customer (occurrences)
<b>2017</b>	<b>12,897<sup>3</sup></b>	<b>1.04</b>	<b>350</b>	<b>1.4</b>
2016	9,340 <sup>3</sup>	0.79	169	1.1
2015	8,752 <sup>3</sup>	0.78	175	1.2
2014	7,696	1.22	248	1.3

<sup>1</sup> A Major Event Day (MED) is a day in which the reasonable design and or operational limits of the electric power system were exceeded. MED's are determined via IEEE Standard 1366. See Section IX - Appendix for additional details.

<sup>2</sup> SAIDI values are rounded to the nearest whole number.

<sup>3</sup> PGE transitioned to a new Outage Management System (OMS) in the fall of 2015. The new OMS system captures instances in a different manner than the former OMS system (i.e. events in lieu of outages). As a result, the 2015, 2016 and 2017 Reported Outages values do not directly correlate to customer outages and values reported in previous years.

<sup>4</sup> MAIFle events for Major Event Days are not excluded.

## 2017 Corporate Annual Summary Without Major Event Days

Region	Reported Outages <sup>1</sup>	SAIFI Average Annual Outages per Customer (occurrences)	SAIDI Average Annual Outage Duration per Customer (minutes)	MAIFle Average Annual Momentary Interruptions per Customer (occurrences)
EASTERN	4,064	0.65	115	1.9
SOUTHERN	2,252	0.67	135	0.9
WESTERN	2,388	0.55	97	0.8
<b>PGE:</b>	<b>8,704</b>	<b>0.62</b>	<b>113</b>	<b>1.4</b>

## 2017 Corporate Annual Summary Including Major Event Days

Region	Reported Outages <sup>1</sup>	SAIFI Average Annual Outages per Customer (occurrences)	SAIDI Average Annual Outage Duration per Customer (minutes)	MAIFle Average Annual Momentary Interruptions per Customer (occurrences)
EASTERN	5,809	1.04	274	1.9
SOUTHERN	3,251	1.07	395	0.9
WESTERN	3,837	1.03	432	0.8
<b>PGE:</b>	<b>12,897</b>	<b>1.04</b>	<b>350</b>	<b>1.4</b>

<sup>1</sup> PGE transitioned to a new Outage Management System (OMS) in the fall of 2015. The new OMS system captures instances in a different manner than the former OMS system (i.e. events in lieu of outages). As a result, the 2017 Reported Outages values do not directly correlate to customer outages and values reported in previous years.

## Section II

### Outage Analysis

This section provides graphical representation of 2017 outage causes by both customer hours and event count. The intent of this section is to provide high-level analysis of the outages that result in the highest number of customer hours and the type of events with the highest frequency. Pie charts are utilized to reflect data from the most recent year and bar charts are utilized to capture the 4 year trend.

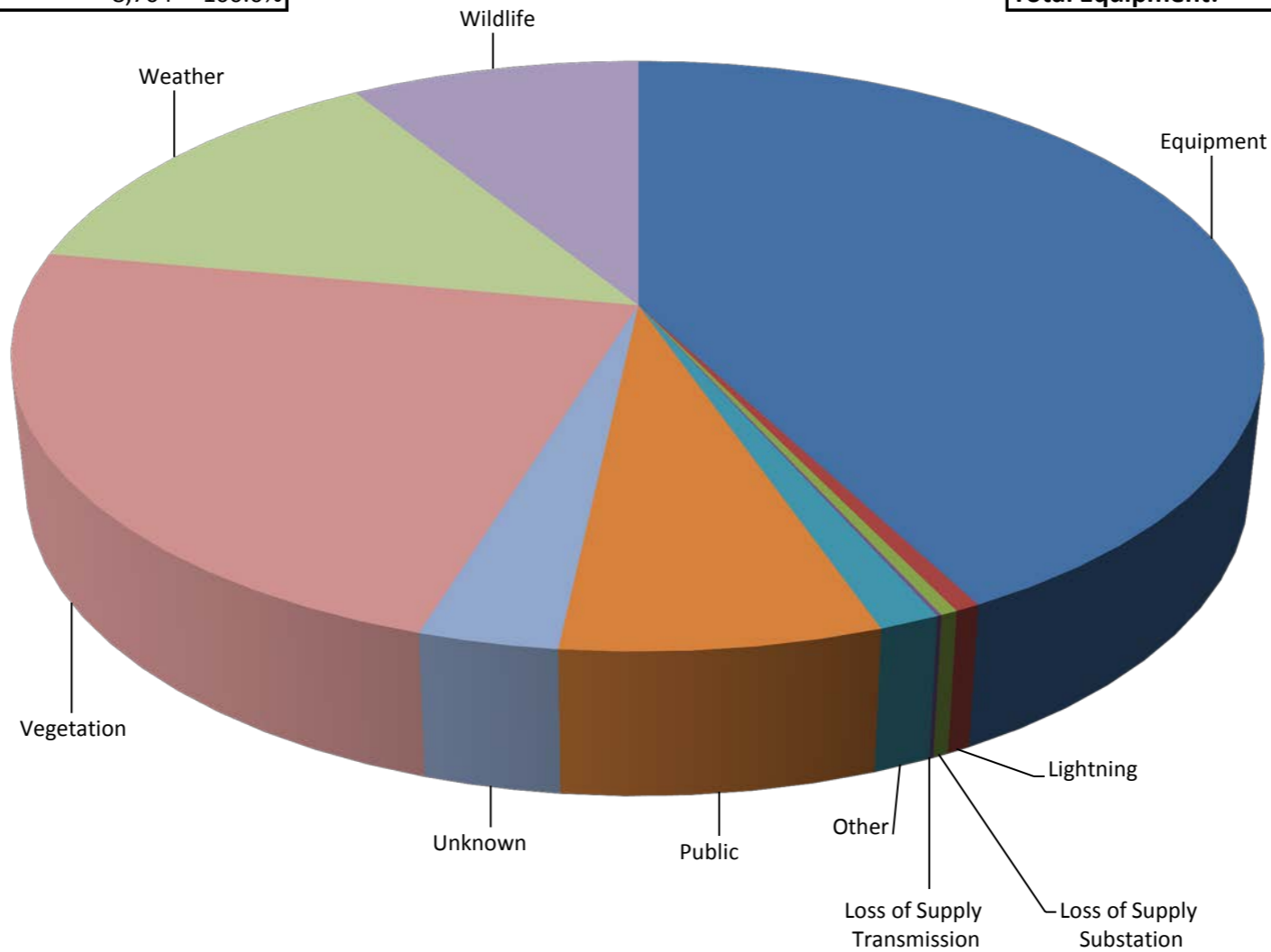
- Outage Causes by Events – Pie Chart
- Outage Causes by Events – 4 Year Comparison Bar Chart
- Outage Causes by Customer Hours – Pie Chart
- Outage Causes by Customer Hours – 4 Year Comparison Bar Chart

## 2017 Outages by Cause - Count

<b>Equipment</b>	3,681	42.3%
<b>Lightning</b>	48	0.6%
<b>Loss of Supply - Substation</b>	33	0.4%
<b>Loss of Supply - Transmission</b>	9	0.1%
<b>Other</b>	117	1.3%
<b>Public</b>	613	7.0%
<b>Unknown</b>	268	3.1%
<b>Vegetation</b>	2,016	23.2%
<b>Weather</b>	1,153	13.2%
<b>Wildlife</b>	766	8.8%
<b>Total:</b>	<b>8,704</b>	<b>100.0%</b>

<b>Vegetation:</b>		
Limb on Line	1,072	53.2%
Tree / Limb Burning	268	13.3%
Tree Uprooted	676	33.5%
<b>Total Vegetation:</b>	<b>2,016</b>	<b>100.0%</b>

<b>Equipment:</b>		
Cutout, Fuse, Arrestor	684	18.6%
Meter	30	0.8%
OH Conductor	499	13.6%
OH Hardware	875	23.8%
Pole / Structure	27	0.7%
Primary Device	19	0.5%
Transformer	437	11.9%
UG Accessory	272	7.4%
UG Conductor	834	22.7%
<b>Total Equipment:</b>	<b>3,677</b>	<b>100.0%</b>



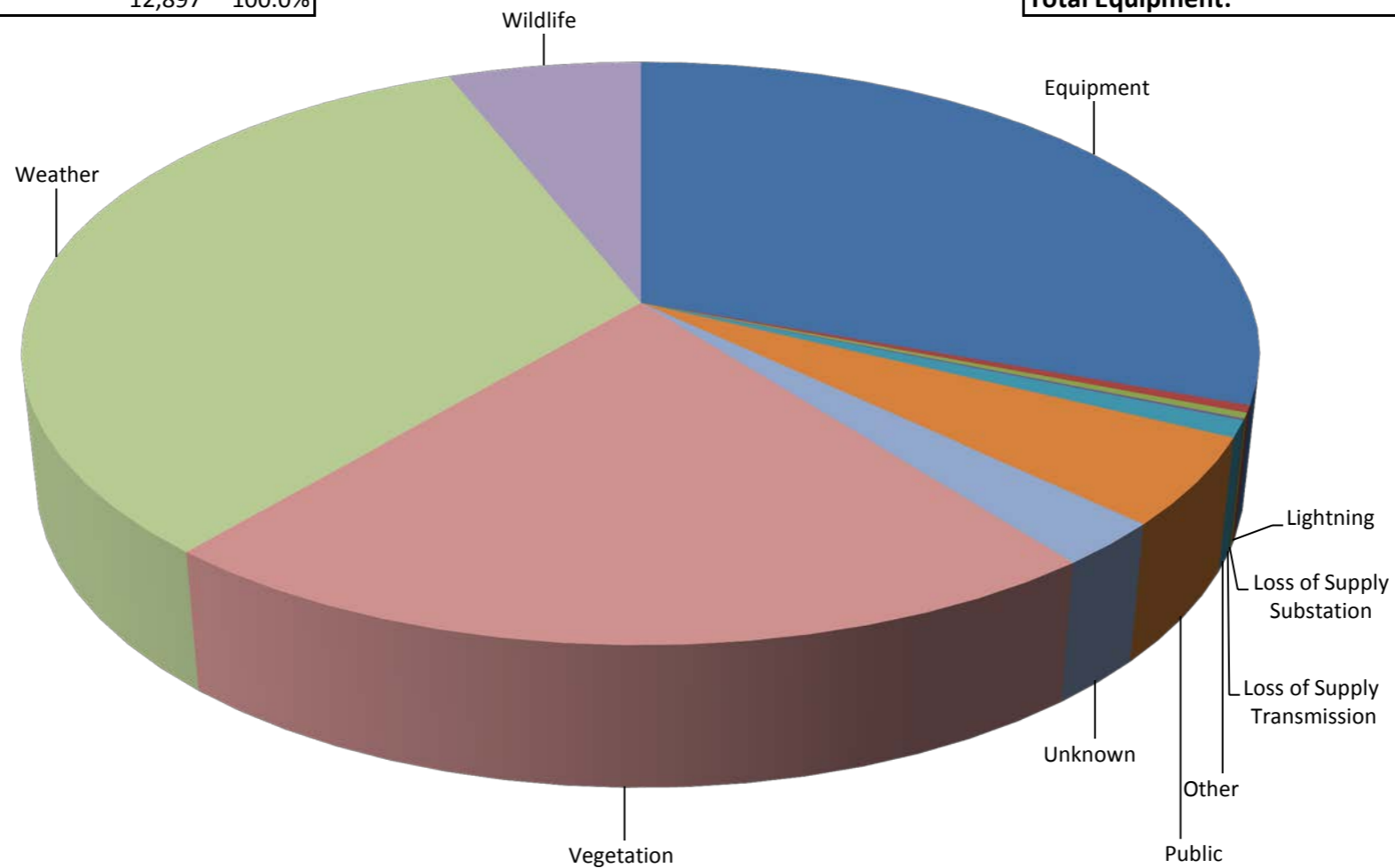


## 2017 Outages by Cause Including Major Event Days - Count

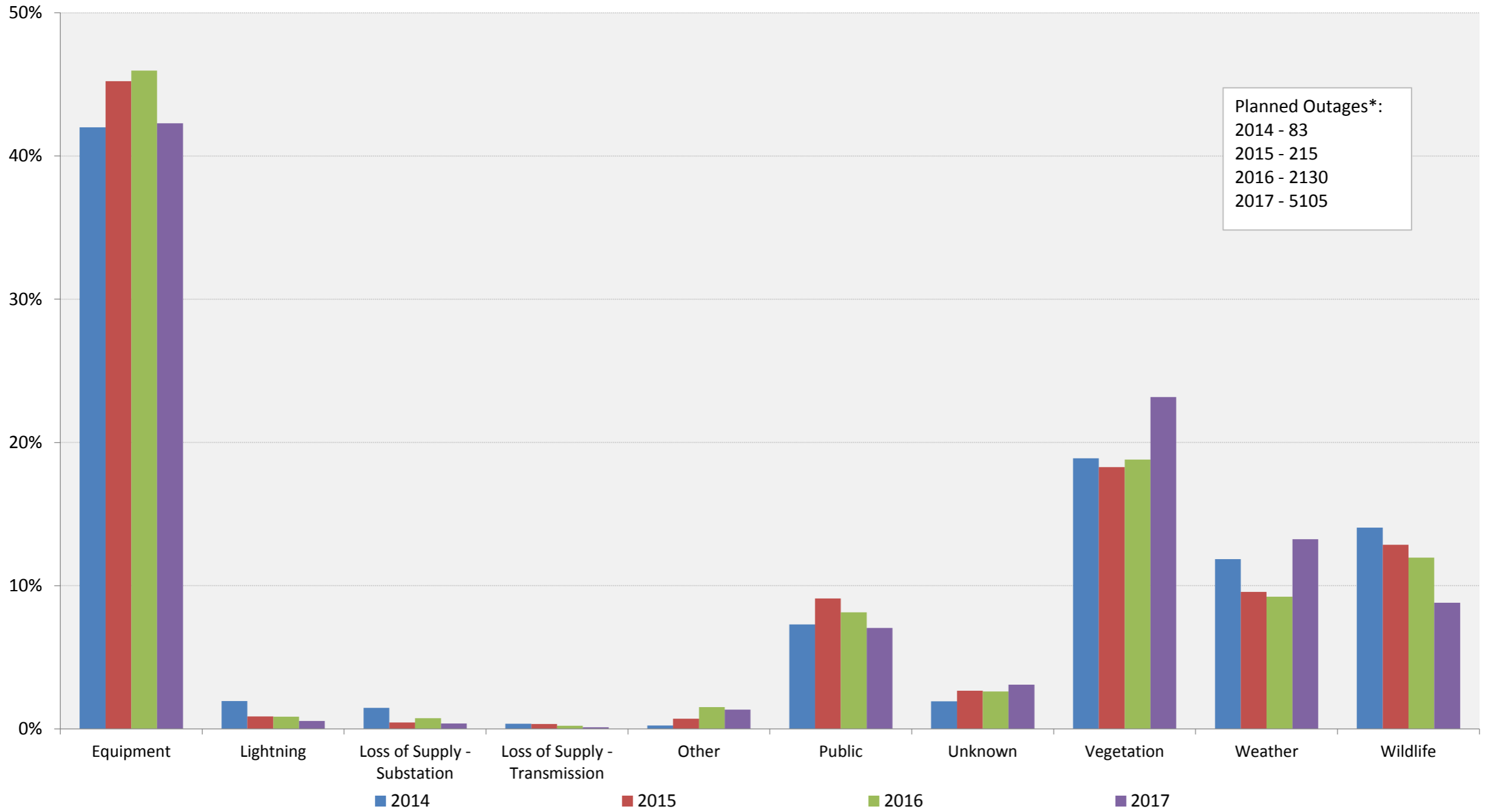
<b>Equipment</b>	3,939	30.5%
<b>Lightning</b>	51	0.4%
<b>Loss of Supply - Substation</b>	40	0.3%
<b>Loss of Supply - Transmission</b>	13	0.1%
<b>Other</b>	118	0.9%
<b>Public</b>	621	4.8%
<b>Unknown</b>	317	2.5%
<b>Vegetation</b>	2,791	21.6%
<b>Weather</b>	4,239	32.9%
<b>Wildlife</b>	768	6.0%
<b>Total:</b>	<b>12,897</b>	<b>100.0%</b>

<b>Vegetation:</b>		
Limb on Line	1,439	51.6%
Tree / Limb Burning	337	12.1%
Tree Uprooted	1,015	36.4%
<b>Total Vegetation:</b>	<b>2,791</b>	<b>100.0%</b>

<b>Equipment:</b>		
Cutout, Fuse, Arrestor	761	19.3%
Meter	30	0.8%
OH Conductor	577	14.7%
OH Hardware	921	23.4%
Pole / Structure	35	0.9%
Primary Device	23	0.6%
Transformer	452	11.5%
UG Accessory	287	7.3%
UG Conductor	849	21.6%
<b>Total Equipment:</b>	<b>3,935</b>	<b>100.0%</b>



### Outage Causes by Count 4 Year Comparison (2014-2017)



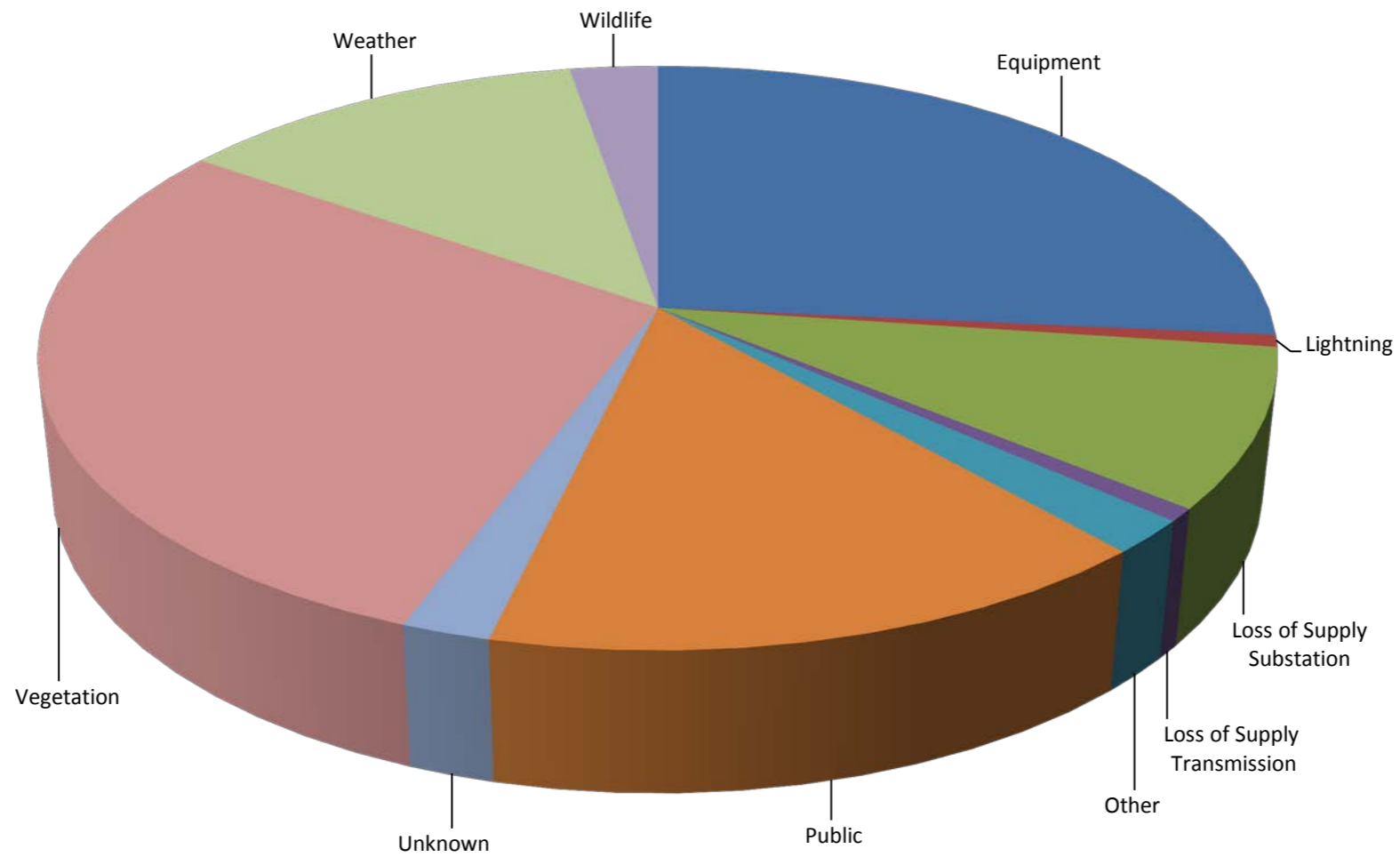
\* Note: PGE's awareness and accuracy of Planned Outages has improved significantly with the implementation of a new OMS system and application of new processes and procedures for tracking of these events.

## 2017 Outages by Cause - Customer Hours

<b>Equipment</b>	429,141	26.5%
<b>Lightning</b>	10,699	0.7%
<b>Loss of Supply - Substation</b>	141,583	8.7%
<b>Loss of Supply - Transmission</b>	11,300	0.7%
<b>Other</b>	30,573	1.9%
<b>Public</b>	246,622	15.2%
<b>Unknown</b>	32,155	2.0%
<b>Vegetation</b>	469,411	29.0%
<b>Weather</b>	204,727	12.6%
<b>Wildlife</b>	43,924	2.7%
<b>Total:</b>	<b>1,620,134</b>	<b>100.0%</b>

<b>Vegetation:</b>			
Limb on Line	217,826	46.4%	
Tree / Limb Burning	54,754	11.7%	
Tree Uprooted	196,832	41.9%	
<b>Total Vegetation:</b>	<b>469,411</b>	<b>100.0%</b>	

<b>Equipment:</b>		
Cutout, Fuse, Arrestor	71,141	16.6%
Meter	70	0.0%
OH Conductor	64,772	15.1%
OH Hardware	89,057	20.8%
Pole / Structure	21,869	5.1%
Primary Device	16,384	3.8%
Transformer	28,259	6.6%
UG Accessory	53,116	12.4%
UG Conductor	84,452	19.7%
<b>Total Equipment:</b>	<b>429,119</b>	<b>100.0%</b>

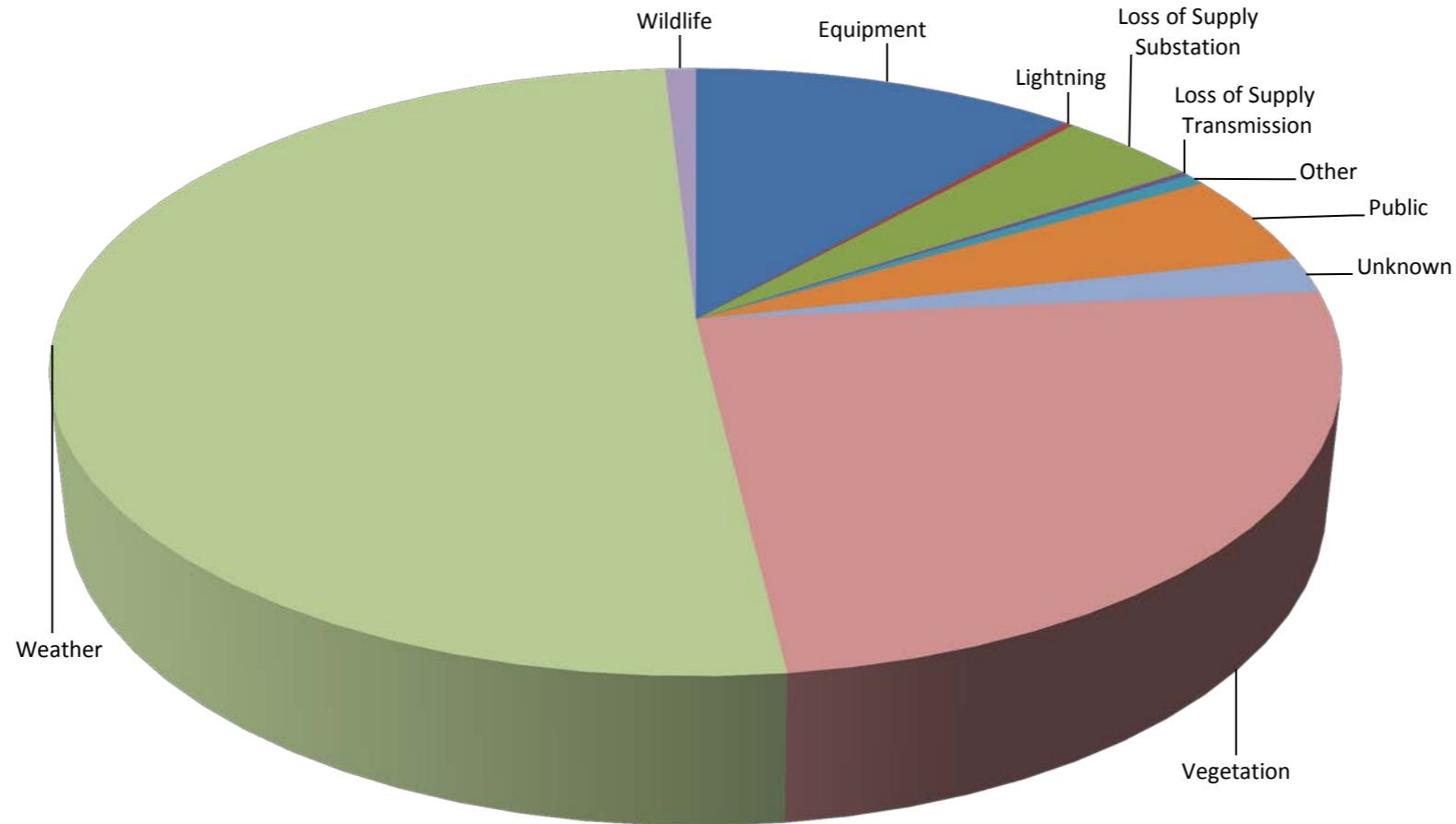


## 2017 Outages by Cause Including Major Event Days - Customer Hours

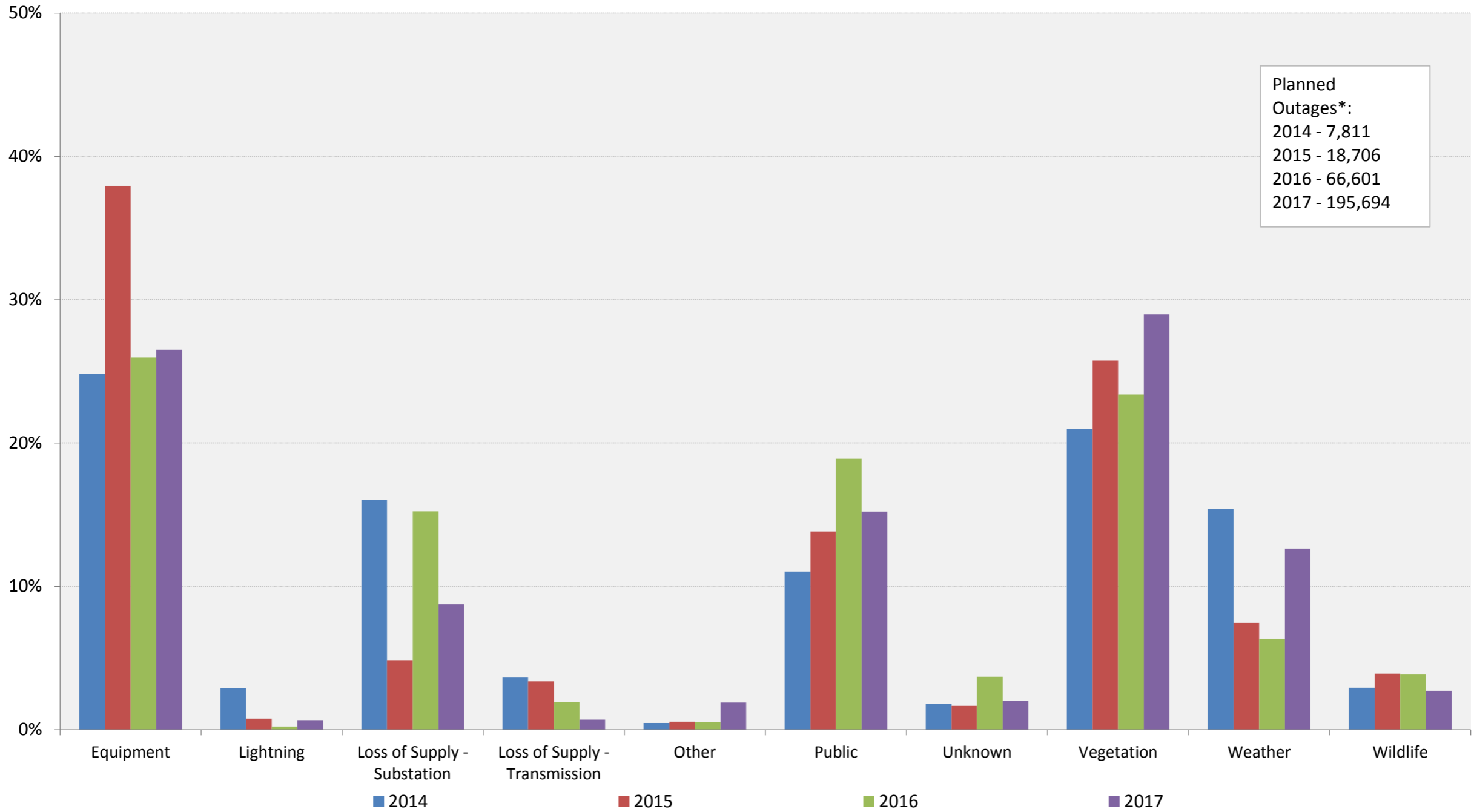
<b>Equipment</b>	573,479	11.4%
<b>Lightning</b>	12,213	0.2%
<b>Loss of Supply - Substation</b>	207,930	4.1%
<b>Loss of Supply - Transmission</b>	11,898	0.2%
<b>Other</b>	30,577	0.6%
<b>Public</b>	246,938	4.9%
<b>Unknown</b>	96,895	1.9%
<b>Vegetation</b>	1,237,789	24.6%
<b>Weather</b>	2,562,417	51.0%
<b>Wildlife</b>	45,793	0.9%
<b>Total:</b>	<b>5,025,931</b>	<b>100.0%</b>

<b>Vegetation:</b>			
Limb on Line	557,090	45.0%	
Tree / Limb Burning	121,129	9.8%	
Tree Uprooted	559,571	45.2%	
<b>Total Vegetation:</b>	<b>1,237,789</b>	<b>100.0%</b>	

<b>Equipment:</b>			
Cutout, Fuse, Arrestor	119,928	20.9%	
Meter	70	0.0%	
OH Conductor	102,828	17.9%	
OH Hardware	97,549	17.0%	
Pole / Structure	28,759	5.0%	
Primary Device	33,923	5.9%	
Transformer	39,228	6.8%	
UG Accessory	65,606	11.4%	
UG Conductor	85,568	14.9%	
<b>Total Equipment:</b>	<b>573,457</b>	<b>100.0%</b>	



### Outage Causes by Customer Hours 4 Year Comparison (2014-2017)



\* Note: PGE's awareness and accuracy of Planned Outages has improved significantly with the implementation of a new OMS system and application of new processes and procedures for tracking of these events.

## Section III

### Feeder Performance Summary

This section provides a summary of reliability indices by Region and Feeder. The list is sorted in alphabetical order by Region and Feeder Name. Each feeder is classified as one of the following:

- Urban
- Rural
- Remote

#### Definition of Feeder Classifications

- A feeder is designated Urban if 50% or more of the load is inside the Urban Growth Boundary (UGB)
- A feeder is designated Rural if one or more of the following apply:
  - The load on a feeder is greater than 0.5 MVA per square mile.
  - A feeder has more than 100 customers per mile.
  - A feeder is serving load inside an incorporated city.
  - A feeder is directly adjacent to the UGB with feeder ties into
- A feeder is Remote if all conditions above do not apply.

The table below displays the individual feeder performance thresholds based on classification

Feeder Classification	SAIDI	SAIFI	MAIFI <sub>e</sub>
Urban	2 hours (120 Minutes)	2.0 Occurrences	5
Rural	5 hours (300 Minutes)	2.6 Occurrences	10
Remote	7 hours (420 Minutes)	2.6 Occurrences	15

NOTE: Idle feeders are not included in this list. Feeders may be omitted if they are a part of an alternate/multiple feeder service.

Attachment A  
PGE 2017 Annual Reliability Report

Confidential - Provided on CD Only  
Section III, Feeder Performance Summary  
Section VIII, 2017 Feeder Information

## Section IV

### Outages by Cause Natural

This section provides the number of customer outages (frequency) and customer outage hours (duration) caused by natural events. The information is presented by feeder and attributed to one of the following cause categories<sup>1</sup>:

- Adverse Weather
- Lightning
- Animals
- Tree Contacts (Non-Preventable and Preventable)<sup>2</sup>
- Unknown

#### NOTES:

- Idle feeders are not included in this list
- Feeders may be omitted if they are a part of an alternate/multiple feeder service

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<sup>1</sup> See Section IX – Cause Code Categories and Mapping for detailed causes for each category

<sup>2</sup> See section VII for detailed information



## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
1	ABERNETHY-CLACKAMAS HEIGHTS														
2	ABERNETHY-OREGON CITY	15	705	4	63			4	16	6	59	1	568		
3	ABERNETHY-TRANSIT	8	618	3	526			2	25	1	39	2	28		
4	ALDER-ANKENY	2	2,870							2	2,870				
5	ALDER-IRVING	3	134					1	54	1	75			1	5
6	ALDER-LINCOLN	14	2,469	2	6			1	94	8	2,361	3	8		
7	ALDER-STARK	3	408	1	65					2	343				
8	ALDER-TAYLOR	3	6,395							2	6,394	1	1		
9	ALDER-YAMHILL	2	17							1	2	1	14		
10	AMITY-AMITY 13	7	157					3	12	1	130			3	15
11	AMITY-BELLEVUE	18	3,520	4	1,337			5	60	7	2,084	1	23	1	16
12	ARLETA-52ND	11	313	1	13	1	6	3	263	5	20			1	11
13	ARLETA-FOSTER	3	44					2	20	1	24				
14	ARLETA-HAROLD	5	1,152	1	0			2	336	1	5	1	811		
15	ARLETA-POWELL	5	307	2	74			2	204					1	29
16	ARLETA-STEELE	6	110	1	57			3	51	1	1	1	2		
17	BANKS-BANKS 13	17	670	2	355			4	30	9	252	2	32		
18	BANKS-CEDAR CANYON	36	2,195	5	45	2	622	2	6	23	1,517	1	5	3	1
19	BARNES-BATTLE CREEK	4	199					3	101	1	98				
20	BARNES-BOONE	5	9	5	9										
21	BARNES-COMMERCIAL	6	1,365							4	571	1	789	1	5
22	BARNES-SUNNYSIDE	5	87					4	85	1	2				
23	BEAVER-KB PIPELINE														
24	BEAVERTON-ALLEN	6	47	1	2			5	45						
25	BEAVERTON-JAMIESON	4	195	1	70			1	12	1	0			1	114
26	BEAVERTON-NORTHWEST	4	342					4	342						
27	BEAVERTON-WEST SLOPE	9	246	1	17			4	121	3	107			1	1
28	BELL-BATTIN	6	384					1	200	2	118	3	65		
29	BELL-BRENTWOOD														
30	BELL-FLAVEL	6	192	1	2			2	97	2	59			1	34

\*For detailed Tree Contacts, see Outages by Tree Contacts report

Outs = Outages  
Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
31	BELL-JOHNSON CREEK	2	30					1	16					1	13
32	BELL-KENDALL	10	262	5	87			2	145	2	25	1	4		
33	BELL-KING	8	165					3	136	3	22			2	7
34	BELL-SOUTHGATE	7	544	2	92			3	229	2	224				
35	BELL-WICHITA	14	190	3	6					4	21	6	160	1	2
36	BETHANY-BURTON	1	1			1	1								
37	BETHANY-GERMANTOWN	19	3,118	6	67					9	2,791	3	240	1	20
38	BETHANY-KAISER														
39	BETHANY-LAIDLAW	10	13,670	4	575					6	13,095				
40	BETHANY-SPRINGVILLE	6	494	3	78					2	414			1	3
41	BETHANY-THOMPSON														
42	BETHEL-FRUITLAND	9	4,758					5	4,681	4	77				
43	BETHEL-GEER	5	94	2	11							2	37	1	46
44	BETHEL-MACLEAY	4	2,062	1	4					2	2,056	1	2		
45	BLUE LAKE-BLUE LAKE 13	1	18											1	18
46	BLUE LAKE-SUNDIAL	4	55	3	53			1	2						
47	BLUE LAKE-TOYO TANSO														
48	BOISE CASCADE-BOISE #1														
49	BOONES FERRY-GOODALL	10	1,690	4	163					5	1,514	1	12		
50	BOONES FERRY-KRUSE	4	9	1	3			1	0	2	7				
51	BOONES FERRY-LAKE GROVE	30	2,634	18	119			2	492	9	2,013	1	9		
52	BOONES FERRY-MOUNTAIN PARK	2	2,763							1	2,547			1	217
53	BOONES FERRY-WEMBLEY PARK	17	517	10	146					6	294	1	77		
54	BORING-282ND	20	2,128	5	1,074			2	10	10	851	1	9	2	184
55	BORING-CITY	22	2,155	4	1,500					12	588	4	54	2	12
56	BORING-TELFORD	31	7,999	7	1,628	1	46	3	7	15	6,263	4	54	1	1
57	BRIGHTWOOD-BRIGHTWOOD 13	56	5,744	15	1,686	6	1,517	8	197	24	2,062	2	213	1	69
58	BRIGHTWOOD-NORTH BANK	22	1,383	5	783			2	44	14	555	1	1		
59	BROOKWOOD-BORWICK														
60	BROOKWOOD-BROOKWOOD 13														

\*For detailed Tree Contacts, see Outages by Tree Contacts report

Outs = Outages  
Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
61	BROOKWOOD-SUNRISE														
62	CANBY-13643	10	35	1	2			1	3	5	24			3	7
63	CANBY-13644	7	1,264					1	2	5	1,241			1	21
64	CANBY-BUTTEVILLE	15	871	6	58			2	5	3	104	2	5	2	698
65	CANBY-FILBERT	1	5											1	5
66	CANYON-13114 NETWORK #1														
67	CANYON-13115 NETWORK #1														
68	CANYON-13116 NETWORK #1														
69	CANYON-13117 NETWORK #1														
70	CANYON-13118 PSU														
71	CANYON-13119 PSU														
72	CANYON-13120														
73	CANYON-13121														
74	CANYON-13122 NETWORK #2														
75	CANYON-13123 NETWORK #2														
76	CANYON-13124 NETWORK #2														
77	CANYON-13125 NETWORK #2														
78	CANYON-13133 NETWORK #3														
79	CANYON-13134 NETWORK #3														
80	CANYON-13135 NETWORK #3														
81	CANYON-13136 NETWORK #3														
82	CANYON-21ST	3	21					1	1	2	20				
83	CANYON-23RD	10	240	5	17					3	128	2	94		
84	CANYON-BURNSIDE	1	4							1	4				
85	CANYON-CANYON 13	13	2,546	2	414			2	59	7	1,161	2	911		
86	CARVER-ALMOND	2	4,603					1	1	1	4,601				
87	CARVER-CARVER 13	16	1,104	4	780	1	19	7	236	3	67			1	1
88	CARVER-NORTH	3	21	1	2			1	9	1	10				
89	CARVER-RIVERBEND														
90	CARVER-SOUTH														

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Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
91	CARVER-WOODS	9	5,470	1	18					6	5,232			2	219
92	CEDAR HILLS-CEDAR HILLS 13														
93	CEDAR HILLS-LEAHY	20	1,081	2	576			8	451	9	51	1	3		
94	CEDAR HILLS-SHOPPING CENTER	16	4,300	5	1,085			5	58	6	3,157				
95	CEDAR HILLS-SKYLINE														
96	CEDAR HILLS-ST VINCENT	3	340					1	334	2	6				
97	CEDAR HILLS-SYLVAN	20	2,936	3	5			4	86	11	2,382	1	440	1	23
98	CENTENNIAL-BARKER	7	259	2	18			2	142	2	90			1	10
99	CENTENNIAL-BRAECROFT	5	150	1	30			3	62	1	58				
100	CENTENNIAL-CENTENNIAL 13	9	115					4	102	3	3	1	5	1	5
101	CENTENNIAL-TREELAND	11	629	3	43			3	101	4	264			1	221
102	CLACKAMAS-EVELYN														
103	CLACKAMAS-GLADSTONE	17	742	8	361	1	2	2	6	6	372				
104	CLACKAMAS-JENNIFER	1	6	1	6										
105	CLACKAMAS-TOLBERT	3	2,719					2	51					1	2,668
106	CLAXTAR-CLAXTAR 13	4	4					3	3	1	1				
107	CLAXTAR-HAYESVILLE	3	74					2	63	1	11				
108	CLAXTAR-RIDGE	5	134					3	81	1	43	1	10		
109	COFFEE CREEK-FREEMAN	1	3					1	3						
110	COFFEE CREEK-HOLIDAY	1	148							1	148				
111	COLTON-DHOOGHE	15	1,988	4	807			2	7	9	1,174				
112	COLTON-GRAYS HILL	53	7,567	13	1,882			4	56	28	4,745	5	822	3	63
113	CORNELIUS-ADAIR	6	45							4	12	1	21	1	11
114	CORNELIUS-CORNELIUS 13	15	1,263	4	59			3	219	8	986				
115	CORNELIUS-VERBOORT	13	547	2	3			4	198	7	346				
116	CORNELL-BLUFFS	5	4,280	2	3,497					2	763	1	20		
117	CORNELL-SALTZMAN	2	12					1	8	1	3				
118	CORNELL-WESTLAWN	11	790	2	7			2	319	6	464			1	0
119	CULVER-SANYO #1														
120	CURTIS-11077														

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
121	CURTIS-CURTIS 13	4	1,199	1	7			1	144	2	1,049				
122	DAYTON-EAST	10	242	3	26			3	51	3	143			1	23
123	DAYTON-LAFAYETTE	14	1,333	1	14			4	103	9	1,215				
124	DAYTON-SOUTHWEST	8	60	3	18					4	40			1	2
125	DELAWARE-DENVER	4	55	1	8			1	43	2	4				
126	DELAWARE-INTERSTATE	1	347					1	347						
127	DELAWARE-LOMBARD	4	16	2	13					2	3				
128	DENNY-EAST	17	4,632	4	164			4	330	6	4,028	3	109		
129	DENNY-NORTH														
130	DENNY-SOUTH	3	885	2	717					1	168				
131	DENNY-WEST	12	935	3	376			3	243	6	315				
132	DILLEY-DILLEY 13	11	1,569	3	147					5	395			3	1,027
133	DILLEY-SPRINGHILL														
134	DUNNS CORNER-DUNNS CORNER 13	46	6,782	8	46	1	5	7	218	25	6,435	3	40	2	38
135	DUNNS CORNER-KELSO	4	51	1	18			1	5	2	28				
136	DURHAM-BONITA	1	3	1	3										
137	DURHAM-BRIDGEPORT	4	1,259	1	904					1	43			2	311
138	DURHAM-DURHAM 13														
139	DURHAM-POOPLANT														
140	DURHAM-SATTLER	5	203					2	197	1	2	1	2	1	3
141	DURHAM-SOUTH														
142	E-11021														
143	E-11039														
144	E-11040														
145	E-11041														
146	E-11042														
147	E-11043														
148	E-11047														
149	E-11064														
150	E-13139	1	2					1	2						

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
151	E-13140	1	75					1	75						
152	E-13141														
153	E-13142														
154	E-13144	8	8,558	4	19					3	3	1	8,536		
155	E-13145	1	1							1	1				
156	E-13148														
157	E-13149														
158	E-13150														
159	EAGLE CREEK-BARTON	29	6,322	4	893			9	276	12	5,108	1	9	3	36
160	EAGLE CREEK-RIVER MILL	30	4,874	7	2,840					20	1,359	3	675		
161	EASTPORT-76TH	6	218					3	163	3	55				
162	EASTPORT-PLAZA	3	74					1	17			1	45	1	12
163	ELMA-ELMA 13	4	68	1	1			2	64					1	3
164	ELMA-FOUR CORNERS	2	17					2	17						
165	ELMA-HUDSON	7	548					4	517	2	7			1	24
166	ELMA-STATE	3	78					1	23	1	1			1	53
167	ESTACADA-ESTACADA 13	69	19,470	30	10,699			3	131	30	7,102	2	238	4	1,299
168	ESTACADA-FARADAY	43	12,125	20	5,618					17	5,403	3	1,088	3	15
169	ESTACADA-NORTH FORK	35	4,349	7	3,375	2	21	8	181	13	702	2	6	3	64
170	FAIRMOUNT-CANDALARIA	12	186	2	15			9	164	1	7				
171	FAIRMOUNT-MISSION	20	4,987					1	1	17	4,937	2	48		
172	FAIRVIEW-CLEAR CREEK	1	3	1	3										
173	FAIRVIEW-FAIRVIEW 13	5	218	1	22			2	123	2	73				
174	FAIRVIEW-KENNEL CLUB	7	175	1	141			1	4	5	30				
175	FAIRVIEW-TROUTDALE	9	11,148	4	229					4	7,489	1	3,430		
176	FAIRVIEW-WOOD VILLAGE	6	2,167	2	2,118			2	46	1	1	1	1		
177	FARGO-FARGO 13	16	1,623	2	1,159			2	59	5	303	1	8	6	95
178	GALES CREEK-GALES CREEK 13	64	7,580	14	1,468			5	21	41	5,717	2	77	2	297
179	GARDEN HOME-MCKAY	8	1,308	1	73	1	47			4	921	2	268		
180	GARDEN HOME-METZGER	10	998	3	194			1	9	4	573			2	221

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
181	GLENCOE-GLISAN	10	455	2	98	1	50	2	131	4	99			1	77
182	GLENCOE-PROVIDENCE	1	4					1	4						
183	GLENCOE-SUNNYSIDE	7	285			2	125	1	1	1	18	1	1	2	139
184	GLENCULLEN-BRIDLEMILE	15	6,133	4	1,817			3	177	8	4,139				
185	GLENCULLEN-SUNSET	14	3,225	4	51			4	563	5	2,342	1	269		
186	GLENDOVEER-13596	3	78					2	69			1	9		
187	GLENDOVEER-13597	7	536					6	252	1	284				
188	GLENDOVEER-13598	4	219					2	25	1	122	1	71		
189	GLENDOVEER-13599	10	422	1	2			4	311	3	56	1	2	1	50
190	GLENDOVEER-CLIFFGATE	5	180					2	34	2	121			1	25
191	GLENDOVEER-NORTHEAST	4	7,960	1	3			1	8	2	7,949				
192	GLISAN-FAB 2A														
193	GLISAN-UTILITY 1B														
194	GORMLEY-MCMINNVILLE WL														
195	GRAND RONDE-AGENCY	4	1,659	1	597					3	1,062				
196	GRAND RONDE-FORTHILL	14	1,379	4	1,028			4	9	4	137			2	205
197	HARBORTON-BURLINGTON	79	7,607	24	2,127			5	574	45	4,885	3	16	2	5
198	HARBORTON-HARBORTON 13														
199	HARBORTON-LINNTON	12	496	8	431					2	60	1	4	1	1
200	HARMONY-HARMONY 13	10	781	3	114			3	174	2	15			2	478
201	HARMONY-INTERNATIONAL	3	97					2	59	1	38				
202	HARMONY-LAKE	3	17	1	2			1	10					1	5
203	HARMONY-LINWOOD														
204	HARMONY-MILWAUKIE	4	34							2	18			2	16
205	HARMONY-THIESSEN	1	3							1	3				
206	HARRISON-DAVIS	2	21	1	16					1	5				
207	HARRISON-HARRISON 13	2	6									2	6		
208	HARRISON-IVON	1	4							1	4				
209	HAYDEN ISLAND-MAINLAND	1	8											1	8
210	HAYDEN ISLAND-NORTH SHORE	2	461	1	6									1	454

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
211	HAYDEN ISLAND-SOUTH SHORE	3	251	1	3			2	247						
212	HEMLOCK-FREMONT	1	9							1	9				
213	HEMLOCK-HEMLOCK 13	1	287											1	287
214	HEMLOCK-MASON	1	8	1	8										
215	HILLCREST-CASCADIA														
216	HILLCREST-HILLCREST 13	1	4											1	4
217	HILLCREST-SOUTH														
218	HILLSBORO-DAIRY CREEK	13	293	3	66			5	75	4	148	1	3		
219	HILLSBORO-DENNIS	1	1					1	1						
220	HILLSBORO-JACKSON	4	769	1	3			1	440	1	320	1	6		
221	HILLSBORO-LAUREL	29	6,178	8	1,461	3	25	1	92	14	3,918	1	522	2	160
222	HILLSBORO-SCHOLLS	4	684					2	488	1	54			1	142
223	HOGAN NORTH-BRIGADOON	2	78	1	75							1	3		
224	HOGAN NORTH-HOGAN NORTH 13	6	1,155	3	1,138							1	12	2	5
225	HOGAN NORTH-LINKS	86	32,464	50	12,508	1	4,512	1	47	32	15,371	1	10	1	16
226	HOGAN NORTH-SALQUIST	4	1,983	2	18					1	1,684			1	281
227	HOGAN SOUTH-CLEVELAND	5	157	4	154			1	2						
228	HOGAN SOUTH-LAWRENCE	22	10,328	9	1,182					7	6,345	6	2,801		
229	HOGAN SOUTH-MAIN	6	240	4	156			1	83			1	1		
230	HOGAN SOUTH-PAROPA	1	21	1	21										
231	HOGAN SOUTH-WALLULA	3	266	2	64			1	203						
232	HOLGATE-BYBEE	5	127	1	3			1	120	2	3	1	2		
233	HOLGATE-GIDEON	2	2	1	2					1	1				
234	HOLGATE-HOLGATE 13	3	204	1	21					1	182			1	1
235	HOLGATE-KENILWORTH	5	108	2	20			1	11	1	76	1	2		
236	HOLGATE-RHONE	1	3											1	3
237	HUBER-BANY														
238	HUBER-FARMINGTON	4	59					2	4	2	56				
239	HUBER-HUBER 13	4	49			1	5	2	16	1	27				
240	HUBER-KINNAMAN	3	5,809	1	17					2	5,792				

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
241	HUBER-MARYVILLE	8	57	3	7			4	46	1	3				
242	INDIAN-KEIZER	2	233	1	232					1	1				
243	INDIAN-LABISH	5	164							3	23			2	140
244	INDIAN-NORTH	8	725	2	564			3	11	2	149			1	1
245	INDIAN-STATION	1	87							1	87				
246	INDIAN-WEST	7	51	4	29					2	21			1	0
247	ISLAND-13180	10	356	2	3			2	76	3	63	2	168	1	45
248	ISLAND-13187	20	1,536	6	84					12	1,440	1	6	1	6
249	ISLAND-13188	20	659	11	120					7	514	1	23	1	2
250	ISLAND-ISLAND 13	1	22					1	22						
251	JENNINGS LODGE-ADDIE	3	93	1	27			2	66						
252	JENNINGS LODGE-JENNINGS 13	5	286	2	5			2	68	1	213				
253	JENNINGS LODGE-MELDRUM	2	3,611					1	6					1	3,605
254	JENNINGS LODGE-OAK GROVE	9	150	3	22			1	8	4	118	1	3		
255	JENNINGS LODGE-WEBSTER	6	333	3	325			1	2	2	7				
256	KELLEY POINT-MARINE														
257	KELLEY POINT-SIMMONS	1	220											1	220
258	KELLEY POINT-SOLAR #2														
259	KELLY BUTTE-BINNSMEAD	12	1,581	2	39			7	339	1	1,149	1	2	1	52
260	KELLY BUTTE-FAIRLAWN	12	501	1	1			4	217	6	282	1	1		
261	KELLY BUTTE-MALL 205	7	3,154	1	409			4	162					2	2,583
262	KELLY BUTTE-MCGREW	7	415	1	3			2	40	4	372				
263	KING CITY-BULL MOUNTAIN	6	82	5	23									1	59
264	KING CITY-FISCHER	1	5							1	5				
265	KING CITY-HAZELBROOK	9	155	4	124			1	13	2	14	1	2	1	2
266	KING CITY-NORTH														
267	KING CITY-SUMMERFIELD	3	1,250					1	1,233	1	2	1	15		
268	LAKE LABISH-LAKE LABISH														
269	LELAND-BEAVERCREEK	32	2,513	8	869			12	169	11	1,475			1	1
270	LELAND-CARUS	46	27,780	12	14,880			4	9	26	12,878	2	5	2	8

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
271	LELAND-KELM	3	1,088	1	1,085			1	2	1	1				
272	LENTS-13101	8	1,474	2	119			3	1,324	2	30	1	1		
273	LENTS-HAPPY VALLEY	9	769	4	630					2	7	2	33	1	100
274	LENTS-MT SCOTT	1	2	1	2										
275	LENTS-NORTH	3	99					3	99						
276	LIBERAL-LIBERAL 13	12	533	3	26			1	20	4	132	2	348	2	7
277	LIBERAL-SAWMILL														
278	LIBERTY-BROWNING	1	12					1	12						
279	LIBERTY-LONE OAK	3	42					2	36			1	6		
280	LIBERTY-MORNINGSIDE	8	213	1	2			6	209	1	2				
281	LIBERTY-ROSEDALE	12	195	2	39			2	26	8	130				
282	LIBERTY-SKYLINE	7	2,737	1	2,606			3	115	1	2			2	14
283	LIBERTY-VISTA														
284	MAIN-AIRPORT	3	47	1	6			1	39	1	3				
285	MAIN-BENTLEY	1	2							1	2				
286	MAIN-EXPRESS	8	602	3	134			4	135	1	333				
287	MAIN-JONES FARM														
288	MAIN-RIVER	11	136	1	17			8	106			2	14		
289	MARKET-ENGLEWOOD	3	100					1	98	2	2				
290	MARKET-FAIRGROUNDS	3	38					2	22	1	16				
291	MARKET-HAWTHORNE	5	187	1	61			4	126						
292	MARKET-PARK	1	52					1	52						
293	MAXIM-MAXIM 13														
294	MCCLAIN-COTTAGE	6	42					4	37	2	5				
295	MCCLAIN-FRONT	2	130					1	35					1	95
296	MCCLAIN-HOLLYWOOD	7	165					5	95	1	5			1	65
297	MCGILL-LSI AIR 1A														
298	MERIDIAN-65TH														
299	MERIDIAN-BORLAND	3	30	2	25					1	5				
300	MERIDIAN-CHILDS	3	103					2	76					1	27

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
301	MERIDIAN-LAKEVIEW	2	25					1	3	1	22				
302	MERIDIAN-MERIDIAN 13	9	264	1	38	2	20	2	13	2	109	1	5	1	79
303	MERIDIAN-NYBERG														
304	MERIDIAN-PILKINGTON	10	231	6	131			1	3	3	97				
305	MERIDIAN-SAGERT														
306	MIDDLE GROVE-BROWN	8	154	2	51			5	101	1	1				
307	MIDDLE GROVE-CHEMEKETA	1	271					1	271						
308	MIDDLE GROVE-CORDON	9	905	1	11			3	814	4	56			1	24
309	MIDDLE GROVE-SWEGLE	3	1,106	1	9			1	10					1	1,087
310	MIDDLE GROVE-WEST	6	129	2	10			3	86					1	33
311	MIDWAY-DIVISION														
312	MIDWAY-DOUGLAS	5	450	3	443			1	4	1	2				
313	MIDWAY-LYNCH	16	1,022	2	11			10	962	3	44	1	4		
314	MIDWAY-POWELLHURST	13	756	1	5			6	493	5	77	1	180		
315	MILL CREEK-EASTLAND	7	637							4	185	2	442	1	10
316	MILL CREEK-KUEBLER	1	2							1	2				
317	MILL CREEK-MILL CREEK 13	1	13	1	13										
318	MOLALLA-BUCKAROO	2	24	2	24										
319	MOLALLA-FOREST	31	2,964	7	1,172			1	9	17	1,518	3	253	3	11
320	MOLALLA-MARQUAM	29	5,670	3	3,107	2	379	1	3	17	1,647	1	499	5	35
321	MOLALLA-YODER	14	192	6	56			2	16	2	29			4	91
322	MT ANGEL-EAST	1	75					1	75						
323	MT ANGEL-WEST	13	2,400					2	3	8	2,393	1	3	2	1
324	MT PLEASANT-CLAIRMONT	2	5,565							2	5,565				
325	MT PLEASANT-MT VIEW	2	6					2	6						
326	MT PLEASANT-RIVERCREST	3	131					3	131						
327	MT PLEASANT-SOUTH END	15	2,690	3	439			5	90	6	2,135	1	26		
328	MULINO-NORTH	7	541	1	247					4	276	1	17	1	2
329	MULINO-SOUTH	19	1,375			1	70	5	7	7	978	2	117	4	203
330	MULTNOMAH-13176	6	83	1	4			1	32	3	40	1	7		

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
331	MULTNOMAH-13177	12	1,032					5	146	5	840	1	19	1	27
332	MULTNOMAH-13181	8	10,918	1	15			3	382	2	10,509	1	4	1	8
333	MULTNOMAH-MULTNOMAH 13	11	2,248	3	264			1	13	4	1,072	2	718	1	182
334	MURRAYHILL-KINTON	1	58	1	58										
335	MURRAYHILL-MURRAYHILL 13	2	15					1	1	1	13				
336	MURRAYHILL-REUSSER														
337	MURRAYHILL-TEAL	2	56	1	51									1	5
338	NEWBERG-CHEHALEM	20	9,267	6	341			3	360	8	2,867	3	5,699		
339	NEWBERG-DUNDEE	15	3,709	6	45			4	1,119	4	323	1	2,223		
340	NEWBERG-HOOVER PARK	5	129	1	10			2	25	2	95				
341	NEWBERG-NORTH COLLEGE	14	451	2	109			5	78	4	199	1	21	2	44
342	NORTH MARION-CROSBY														
343	NORTH MARION-FRONT														
344	NORTH MARION-HUBBARD	3	367					2	272	1	96				
345	NORTH MARION-MCLAREN	18	9,365	3	7			3	7	8	8,988	1	190	3	173
346	NORTH PLAINS-MASON HILL	48	10,907	12	3,071	1	1	6	47	27	7,237	1	520	1	31
347	NORTH PLAINS-NORTH PLAINS 13	19	7,193	7	5,305			1	3	9	1,876	1	7	1	2
348	NORTHERN-11009	2	5							2	5				
349	NORTHERN-11016														
350	NORTHERN-11071	4	47	3	15			1	32						
351	OAK GROVE-LAKE HARRIET	4	643	1	23					3	619				
352	OAK GROVE-WHITE WATER	2	16					1	13	1	3				
353	OAK HILLS-FIVE OAKS	3	120	2	76							1	44		
354	OAK HILLS-GREENBRIER														
355	OAK HILLS-OAK HILLS 13	1	1					1	1						
356	OAK HILLS-SOMERSET	1	12											1	12
357	OAK HILLS-WALKER														
358	OREGON STEEL-OREGON STEEL 13														
359	ORENCO-231ST	2	3	2	3										
360	ORENCO-AMBERGLEN														

\*For detailed Tree Contacts, see Outages by Tree Contacts report

Outs = Outages  
Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
361	ORENCO-BASELINE	2	258					1	62					1	196
362	ORENCO-ORENCO 13														
363	ORENCO-PRIMATE														
364	ORENCO-WILKINS														
365	ORIENT-BARLOW	32	2,448	10	594	3	37	2	26	15	337	2	1,453		
366	ORIENT-ORIENT 13	55	20,170	18	2,816			4	61	25	16,575	6	688	2	29
367	OSWEGO-IRON MOUNTAIN	6	306	3	186			2	103	1	17				
368	OSWEGO-MARYLHURST	36	1,934	28	1,185			3	414	4	276			1	59
369	OSWEGO-PALATINE	19	2,824	4	234			2	12	12	2,562			1	17
370	OSWEGO-STAFFORD	4	65	3	24							1	41		
371	OXFORD-FAIRVIEW	2	180	1	7					1	174				
372	OXFORD-LEE	8	416	1	9			4	196	3	211				
373	OXFORD-MADRONA														
374	OXFORD-OXFORD 13	4	34					1	23	2	8			1	3
375	OXFORD-RURAL														
376	OXFORD-SHELTON	2	5					2	5						
377	PELTON-ROUND BUTTE														
378	PENINSULA PARK-OCKLEY GREEN	6	9,591	3	7,034			1	2,518	1	38	1	1		
379	PENINSULA PARK-PENINSULA PARK	6	3,959					1	13	2	17	1	1,527	2	2,401
380	PLEASANT VALLEY-BAXTER	5	1,412	1	30			1	23	2	1,355	1	4		
381	PLEASANT VALLEY-CLATSOP	1	21	1	21										
382	PLEASANT VALLEY-MOON	1	6	1	6										
383	PLEASANT VALLEY-PLEASANT 13	22	7,552	5	1,360					15	6,175	1	11	1	6
384	PLEASANT VALLEY-SUN	6	190	2	158			3	16	1	15				
385	PORTLAND WATER-PUMPING														
386	PORTSMOUTH-CARBIDE	10	1,379	6	879			1	495	2	4			1	1
387	PORTSMOUTH-DISPOSAL														
388	PORTSMOUTH-WILLIS	3	60							2	8			1	53
389	PROGRESS-GREENBURG	7	1,027	1	12			3	10	2	15	1	990		
390	PROGRESS-HALL														

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
391	PROGRESS-ROBINSON	2	34							2	34				
392	PROGRESS-SAWYER	2	7					1	5					1	2
393	PROGRESS-WASHINGTON SQ #1														
394	PROGRESS-WASHINGTON SQ #2														
395	RALEIGH HILLS-DOGWOOD	14	675	5	249			5	97	3	325	1	3		
396	RALEIGH HILLS-MONTCLAIR	7	905	2	828					4	44	1	32		
397	RALEIGH HILLS-OLESON	14	4,046	5	2,934			4	521	5	590				
398	RAMAPO-EMERALD	7	218					5	191	2	27				
399	RAMAPO-GILBERT	3	43	1	6							2	37		
400	RAMAPO-RAMAPO 13	10	1,021	1	15			1	67	6	181	1	352	1	408
401	REDLAND-HENRICI	36	15,776	8	1,213			5	1,242	21	12,646	1	3	1	673
402	REDLAND-REDLAND 13	30	8,191	6	1,673	1	2	4	18	14	5,823	4	667	1	8
403	REEDVILLE-AUGUSTA	9	370	3	8			4	356	2	5				
404	REEDVILLE-BLANTON	4	412	2	331			1	79	1	2				
405	REEDVILLE-HAZELDALE	11	692	2	53			1	3	7	634			1	2
406	REEDVILLE-INTEL #2														
407	REEDVILLE-INTEL #4														
408	REEDVILLE-INTEL #5														
409	REEDVILLE-TV	5	1,371	1	1,164			3	204	1	2				
410	RIVERGATE SOUTH-11010														
411	RIVERGATE SOUTH-11011	6	43	3	23					2	19			1	2
412	RIVERGATE SOUTH-PEARCY														
413	RIVERGATE SOUTH-SWIFT	2	6					1	6					1	0
414	RIVERVIEW-FULTON	7	634	3	377			1	28	3	229				
415	RIVERVIEW-MACADAM														
416	RIVERVIEW-TERWILLIGER	12	1,117	3	71			1	11	6	1,034	2	2		
417	ROCKWOOD-AIRPORT														
418	ROCKWOOD-BOEING														
419	ROCKWOOD-INDUSTRIAL														
420	ROCKWOOD-REYNOLDS	1	46					1	46						

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
421	ROCKWOOD-ROCKWOOD 13	7	138	1	4			3	92	3	42				
422	ROCKWOOD-WILKES														
423	ROSEMONT-HIDDEN SPRINGS	14	112	9	67			1	19	4	27				
424	ROSEMONT-MOSSY BRAE	12	240	4	24			1	12	7	204				
425	ROSEMONT-OVERLOOK	18	487	12	356			2	95	3	11			1	25
426	ROSEWAY-ALEXANDER	1	526											1	526
427	ROSEWAY-ESPLANADE	3	16	1	5			1	10					1	1
428	ROSEWAY-ROSEWAY 13	3	51			1	2	1	46	1	3				
429	RUBY-CARLINE	7	338					4	115	2	218			1	5
430	RUBY-JUNCTION	5	3,158	1	80			1	36	2	3,010	1	32		
431	SALEM-13260														
432	SALEM-13261														
433	SALEM-13262														
434	SALEM-13263														
435	SALEM-13264														
436	SALEM-UNION														
437	SANDY-362ND	16	8,060	9	4,891	1	2,789	2	4	3	10			1	366
438	SANDY-BLUFF	2	105	1	100			1	5						
439	SANDY-SANDY 13	81	7,275	18	1,150	2	6	10	123	36	3,006	12	2,789	3	202
440	SANDY-WILDCAT	14	2,660	5	585			1	4	7	2,057	1	14		
441	SCAPPOOSE-SAUVIE ISLAND	1	3											1	3
442	SCHOLLS FERRY-KEMMER	1	21					1	21						
443	SCHOLLS FERRY-RAINBOW	53	4,352	25	2,904			6	33	17	986	1	407	4	23
444	SCHOLLS FERRY-ROY ROGERS	4	471	2	205			1	263	1	4				
445	SCOGGINS-CHERRY GROVE	8	548	1	12			1	38	5	207			1	291
446	SCOGGINS-LAURELWOOD	16	1,993	2	28			3	91	6	458	4	1,270	1	147
447	SCOTTS MILLS-SCOTTS MILLS 13	31	2,342	8	589			1	7	17	649	1	19	4	1,078
448	SELLWOOD-KELLOGG PARK	11	390	1	3	6	368	1	10	2	9	1	1		
449	SELLWOOD-SELLWOOD 13	7	248	2	33			1	58	3	82	1	74		
450	SELLWOOD-WAVERLY	2	105							1	105	1	0		

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
451	SHERIDAN-EAST	4	1,431					1	3	2	187			1	1,241
452	SHERIDAN-KADELL	8	824					4	146	2	538	1	55	1	85
453	SHUTE-LINDE 1 35KV														
454	SILVERTON-NORTH	6	4,546							5	2,053			1	2,493
455	SILVERTON-SOUTH	19	10,272	3	2,630			1	58	15	7,585				
456	SILVERTON-WEST	24	4,072	6	1,807			1	4	14	1,951	3	310		
457	SIX CORNERS-13359	22	8,175	5	591			6	130	10	7,008	1	446		
458	SIX CORNERS-13360	4	229	1	12			1	50	2	167				
459	SIX CORNERS-BORCHERS	13	645	3	25			3	152	7	469				
460	SIX CORNERS-CHAPMAN	5	7,631	2	6,199					1	21	2	1,411		
461	SIX CORNERS-SIX CORNERS 13	6	313					3	47	1	163			2	102
462	SP NEWSPRINT-NEWBERG														
463	SPRING HILL-SPRING HILL														
464	SPRINGBROOK-FERNWOOD	10	3,749	2	11			2	2	6	3,736				
465	SPRINGBROOK-ST PAUL	16	698	4	550			2	11	9	136			1	0
466	SPRINGBROOK-VILLA	2	479					2	479						
467	SPRINGBROOK-ZIMRI	8	2,522	3	32			2	27	2	2,439	1	24		
468	ST HELENS-KASTER														
469	ST LOUIS-EAST														
470	ST LOUIS-NORTH	4	9					1	3	1	1			2	4
471	ST LOUIS-WEST	14	321	5	30					5	97			4	194
472	ST MARYS EAST-BETHANY														
473	ST MARYS EAST-BUTNER	16	650	8	217			2	49	5	328			1	56
474	ST MARYS EAST-ELMONICA	5	904	4	903			1	1						
475	ST MARYS EAST-JENKINS														
476	ST MARYS EAST-MILLIKAN														
477	ST MARYS EAST-ST MARYS 13														
478	STEPHENS-11001														
479	STEPHENS-11020														
480	STEPHENS-11054 NETWORK														

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
481	STEPHENS-11055 NETWORK														
482	STEPHENS-11092 NETWORK														
483	STEPHENS-11093 NETWORK														
484	STEPHENS-11094 NETWORK														
485	STEPHENS-11095 NETWORK														
486	STEPHENS-11097 NETWORK														
487	STEPHENS-11098														
488	STEPHENS-11099 NETWORK														
489	STIMSON LUMBER-FORESTEX														
490	SULLIVAN-ROBINWOOD	21	1,038	9	52			6	629	4	339			2	18
491	SULLIVAN-SALAMO	10	874	2	15			3	41	5	818				
492	SULLIVAN-SUSSEX	2	63	1	16			1	47						
493	SULLIVAN-TANNER	1	3											1	3
494	SULLIVAN-WILLAMETTE	20	3,536	2	9			4	183	10	3,001	3	341	1	2
495	SULZER PUMPS-115B														
496	SUMMIT-GOVERNMENT CAMP	1	2							1	2				
497	SUMMIT-MEADOWS	2	316							2	316				
498	SUMMIT-SUMMIT 13	12	600	5	308					7	292				
499	SUNSET-BLANCHET														
500	SUNSET-COLFAX														
501	SUNSET-CORNELL														
502	SUNSET-DORION														
503	SUNSET-IDTB														
504	SUNSET-IDTC														
505	SUNSET-INTEL D1B1														
506	SUNSET-INTEL D1X1														
507	SUNSET-KOMATSU #1														
508	SUNSET-LANE														
509	SUNSET-MCCALL														
510	SUNSET-MEEK														

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
511	SUNSET-NIXON														
512	SUNSET-PAULING														
513	SUNSET-SPALDING														
514	SUNSET-WHITMAN	1	7					1	7						
515	SUNSET-YOUNG														
516	SWAN ISLAND-BASIN														
517	SWAN ISLAND-DOLPHIN														
518	SWAN ISLAND-FREIGHTLINER														
519	SWAN ISLAND-GOING	5	182	4	180					1	3				
520	SWAN ISLAND-SHIPYARD														
521	SYLVAN-BARNES	30	23,856	8	14,735			1	90	15	8,800	5	230	1	2
522	SYLVAN-PATTON	29	3,137	8	1,402			4	369	14	1,139	3	226		
523	TABOR-82ND	5	120	2	7					2	112			1	1
524	TABOR-HOSPITAL														
525	TABOR-TABOR 13	7	1,579	1	2	1	2	1	130	4	1,445				
526	TEKTRONIX-HOCKEN														
527	TEKTRONIX-MEADOW														
528	TEKTRONIX-NORTH														
529	TEKTRONIX-SHANNON	18	1,993	4	16			4	138	7	1,440	3	399		
530	TEKTRONIX-SOUTH	9	1,563	2	189			3	178	4	1,196				
531	TEKTRONIX-TEKTRONIX 13	4	91	1	2			1	82	2	7				
532	TEKTRONIX-WEST														
533	TEMP B-NORTH														
534	TEMP B-SOUTH														
535	TIGARD-13336	4	836					1	202	3	634				
536	TIGARD-13337	4	13					1	2	2	9	1	2		
537	TIGARD-13361	3	148					1	44	2	104				
538	TIGARD-13362	6	235	1	82			1	10	2	136			2	7
539	TIGARD-TIGARD 13	6	1,729					4	1,721	2	8				
540	TOWN CENTER-LAWNFIELD	2	3,211							2	3,211				

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
541	TOWN CENTER-MONTEREY	6	246	1	5			1	12	4	230				
542	TOWN CENTER-NORTH														
543	TOWN CENTER-PRECISION CASTPARTS														
544	TOWN CENTER-SOUTH														
545	TOWN CENTER-SUNNYBROOK	1	3					1	3						
546	TOWN CENTER-VALLEY VIEW														
547	TROJAN-EAST														
548	TUALATIN-AVERY	1	2							1	2				
549	TUALATIN-CIPOLE														
550	TUALATIN-HERMAN														
551	TUALATIN-IBACH	4	25	1	20			2	4					1	1
552	TUALATIN-LEVETON														
553	TUALATIN-TUALATIN 13														
554	TURNER-CASCADE	3	171							3	171				
555	TURNER-TURNER 13	7	1,143	1	0			1	20	3	1,105	1	12	1	6
556	TWILIGHT-BREMER	20	1,775	6	933			2	28	7	766			5	48
557	UNIONVALE-UNIONVALE 13	26	1,836	7	1,069			3	20	12	703	1	6	3	38
558	UNIVERSITY-MILL	3	56					3	56						
559	UNIVERSITY-TRADE	17	690	2	218			10	419	5	52				
560	URBAN-BARBUR	2	23	1	21							1	2		
561	URBAN-CAMPUS														
562	URBAN-CORBETT	4	2,641							4	2,641				
563	URBAN-GAINES	8	236							7	175			1	62
564	URBAN-GIBBS	1	2											1	2
565	URBAN-KELLY	2	8					1	3	1	5				
566	URBAN-LANDING	1	3					1	3						
567	URBAN-MEDICAL														
568	URBAN-OHSU														
569	WACKER-WACKER 1	1	2									1	2		
570	WACONDA-NORPAC	1	2											1	2

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## 2017 Outages by Cause Natural

	Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
571	WACONDA-RIVER	9	242	5	3					1	12	2	223	1	4
572	WACONDA-WACONDA 13	6	21	2	12					3	7			1	2
573	WALLACE-WALLACE 13	19	2,582	4	193					12	1,731			3	659
574	WALLACE-WILLOW LAKE														
575	WELCHES-WELCHES 13	27	15,965	5	99			2	147	16	15,471	3	242	1	6
576	WELCHES-ZIG ZAG	89	19,193	16	2,850			5	71	52	14,677	14	1,475	2	120
577	WEST PORTLAND-72ND	5	154	2	7			3	148						
578	WEST PORTLAND-NORTH	20	4,667	5	22	1	7	8	211	5	1,185	1	3,240		
579	WEST PORTLAND-PACIFIC	5	655	3	640					2	15				
580	WEST PORTLAND-WEST PORTLAND 13	6	589	2	553			3	36	1	1				
581	WEST UNION-CORNELIUS PASS	62	14,921	36	12,540			2	17	19	2,070	3	182	2	112
582	WEST UNION-WEST UNION 13	2	178	1	23					1	155				
583	WILLAMINA-BRIDGE	22	6,829	16	6,762			2	4	4	64				
584	WILLAMINA-BUELL	13	2,687	1	1,116			1	2	9	1,566			2	4
585	WILLAMINA-LUMBER	1	60											1	60
586	WILLBRIDGE-WILLBRIDGE #1														
587	WILLBRIDGE-WILLBRIDGE #4	2	37					1	2					1	34
588	WILSONVILLE-BOECKMAN	3	55					1	5	1	40	1	10		
589	WILSONVILLE-CHARBONNEAU	1	6							1	6				
590	WILSONVILLE-CITY	2	17							1	15	1	2		
591	WILSONVILLE-MENTORTEK														
592	WILSONVILLE-PARKWAY	1	3									1	3		
593	WILSONVILLE-VILLEBOIS	3	207							2	62			1	145
594	WILSONVILLE-WEST	9	25	5	5			1	13	2	6	1	1		
595	WOODBURN-CANNERY	5	99	1	3			1	25	3	70				
596	WOODBURN-EAST	8	229	1	1			1	10	3	210			3	8
597	WOODBURN-TOMLIN	9	611	7	310					1	298			1	3
598	WOODBURN-WEST	6	296					3	276	2	9			1	10
599	YAMHILL-CARLTON	23	1,962	6	32			4	24	11	1,570			2	336
600	YAMHILL-YAMHILL 13	13	607	1	3	1	12	3	13	8	580				

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## 2017 Outages by Cause Natural

Feeder Name	Total Natural		Adverse Environment		Lightning		Animal		Non-Preventable Tree Contacts*		Preventable Tree Contacts*		Unknown	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
<b>Grand Totals:</b>	4,250	760,791	1,152	204,602	48	10,699	766	43,924	1,748	414,658	268	54,754	268	32,155

\*For detailed Tree Contacts, see Outages by Tree Contacts report

Outs = Outages  
Hrs = # of customers \* duration hrs

## Section V

### Outages by Cause System

This section provides the total number of customer outages (frequency) and customer outage hours (duration) caused by system (failure of equipment or loss of source) events. The information is presented by feeder and attributed to one of the following categories<sup>1</sup>:

- PGE Equipment<sup>2</sup>
- Loss of Substation
- Loss of Transmission
- Human Element
- Public
- Planned<sup>3</sup>

#### NOTES:

- Idle feeders are not included in this list
- Feeders may be omitted if they are a part of an alternate/multiple feeder service

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<sup>1</sup> See Section IX – Cause Code Categories and Mapping for detailed causes for each category

<sup>2</sup> The Cutout, Fuse, Arrestor category is included for reference. Outage events in this column are captured in the PGE Equipment column.

<sup>3</sup> The Planned category is included for reference. Planned outages are not included as part of Total System values or sums.

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
1 ABERNETHY-CLACKAMAS HEIGHTS	2	71	2	71	1	69										
2 ABERNETHY-OREGON CITY	6	1,167	6	1,167	2	66									11	43
3 ABERNETHY-TRANSIT	11	76	9	63	2	5							2	13	4	7
4 ALDER-ANKENY	6	406	6	406											34	548
5 ALDER-IRVING	13	12,421	10	12,410	1	2							3	10	21	188
6 ALDER-LINCOLN	8	364	7	363	2	352					1	1			76	998
7 ALDER-STARK	8	80	7	80	1	1							1	0	22	236
8 ALDER-TAYLOR	8	332	7	306							1	26			16	122
9 ALDER-YAMHILL	1	1											1	1	9	826
10 AMITY-AMITY 13	16	674	15	671	8	71							1	4	7	50
11 AMITY-BELLEVUE	35	3,560	25	547	9	128							10	3,013	7	23
12 ARLETA-52ND	12	193	10	105	2	29							2	88	50	1,313
13 ARLETA-FOSTER	6	36	6	36											13	196
14 ARLETA-HAROLD	10	3,140	6	751	3	378							4	2,388	25	403
15 ARLETA-POWELL	14	4,829	11	453	3	64							3	4,376	25	179
16 ARLETA-STEELE	10	579	8	544	1	19							2	35	57	6,068
17 BANKS-BANKS 13	14	2,359	9	80	1	54			1	1,246			4	1,033	20	77
18 BANKS-CEDAR CANYON	26	4,667	22	1,182	3	319			1	3,438	1	5	2	42	12	15
19 BARNES-BATTLE CREEK	2	23	1	1	1	1							1	21	4	16
20 BARNES-BOONE	4	10	3	7									1	3	3	281
21 BARNES-COMMERCIAL	17	656	14	623	2	73							3	33	3	3
22 BARNES-SUNNYSIDE	14	1,070	14	1,070											9	214
23 BEAVER-KB PIPELINE																
24 BEAVERTON-ALLEN	7	287	7	287											3	133
25 BEAVERTON-JAMIESON	6	837	6	837	2	537										
26 BEAVERTON-NORTHWEST	5	38	4	34	3	31					1	4			1	2
27 BEAVERTON-WEST SLOPE	12	2,209	10	2,200	1	6							2	9	4	130
28 BELL-BATTIN	5	272	4	262	1	2							1	10	3	58
29 BELL-BRENTWOOD	2	3	2	3											1	16
30 BELL-FLAVEL	6	36	4	26	2	5							2	10	3	481
31 BELL-JOHNSON CREEK	1	25	1	25											2	38
32 BELL-KENDALL	9	128	9	128	2	85									16	86
33 BELL-KING	12	1,630	10	628	2	34							2	1,002	15	325
34 BELL-SOUTHGATE	1	8	1	8											21	64
35 BELL-WICHITA	4	66	4	66	1	1									58	1,948
36 BETHANY-BURTON	3	413	2	388	1	386							1	25	6	65

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
37 BETHANY-GERMANTOWN	2	8,425					1	7,574					1	852	5	37
38 BETHANY-KAISER	6	7,015	5	854	1	121	1	6,161							8	77
39 BETHANY-LAIDLAW	7	3,761	6	3,755									1	6	2	2
40 BETHANY-SPRINGVILLE	6	1,309	4	8						1	0	1	1,301	4	180	
41 BETHANY-THOMPSON	4	2,385	3	674			1	1,711							4	79
42 BETHEL-FRUITLAND	17	521	16	453	2	4						1	68	11	172	
43 BETHEL-GEER	7	40	7	40	4	24								1	1	
44 BETHEL-MACLEAY	13	2,755	12	2,699								1	56			
45 BLUE LAKE-BLUE LAKE 13	19	793	13	670	2	10						6	123	13	1,422	
46 BLUE LAKE-SUNDIAL	7	1,496	6	39	2	15				1	1,457			1	0	
47 BLUE LAKE-TOYO TANSO																
48 BOISE CASCADE-BOISE #1																
49 BOONES FERRY-GOODALL	6	1,611	3	1,601								3	9	19	34	
50 BOONES FERRY-KRUSE	6	1,761	6	1,761										4	55	
51 BOONES FERRY-LAKE GROVE	12	1,005	9	745								3	260	8	218	
52 BOONES FERRY-MOUNTAIN PARK	9	1,073	5	552						1	496	3	25	1	1	
53 BOONES FERRY-WEMBLEY PARK	6	455	6	455										7	46	
54 BORING-282ND	13	197	12	188	1	39						1	9	5	1,751	
55 BORING-CITY	15	128	12	115	2	35				1	10	2	4	8	17	
56 BORING-TELFORD	17	5,994	11	3,057	2	16						6	2,937	5	9	
57 BRIGHTWOOD-BRIGHTWOOD 13	13	800	13	800	1	37								3	2	
58 BRIGHTWOOD-NORTH BANK	6	573	4	563								2	9	2	15	
59 BROOKWOOD-BORWICK	3	94	2	75								1	19			
60 BROOKWOOD-BROOKWOOD 13																
61 BROOKWOOD-SUNRISE	3	475	3	475										2	68	
62 CANBY-13643	39	9,508	31	540	6	34				1	2,109	7	6,859	8	19	
63 CANBY-13644	7	75	6	74	3	57						1	2	2	2	
64 CANBY-BUTTEVILLE	21	803	15	104	8	29						6	699	1	3	
65 CANBY-FILBERT																
66 CANYON-13114 NETWORK #1																
67 CANYON-13115 NETWORK #1																
68 CANYON-13116 NETWORK #1																
69 CANYON-13117 NETWORK #1																
70 CANYON-13118 PSU																
71 CANYON-13119 PSU																
72 CANYON-13120	1	2	1	2												

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs



### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
73	CANYON-13121															
74	CANYON-13122 NETWORK #2															
75	CANYON-13123 NETWORK #2															
76	CANYON-13124 NETWORK #2															
77	CANYON-13125 NETWORK #2															
78	CANYON-13133 NETWORK #3															
79	CANYON-13134 NETWORK #3														1	19
80	CANYON-13135 NETWORK #3															
81	CANYON-13136 NETWORK #3															
82	CANYON-21ST	4	745	4	745	1	4								3	31
83	CANYON-23RD	7	3,049	7	3,049	1	6								51	244
84	CANYON-BURNSIDE														2	97
85	CANYON-CANYON 13	11	1,308	9	1,263	2	26				1	44	1	2	84	2,115
86	CARVER-ALMOND	2	3,432	1	3								1	3,429		
87	CARVER-CARVER 13	16	3,531	12	398	2	9						4	3,134	11	230
88	CARVER-NORTH	5	130	3	24	1	14						2	106		
89	CARVER-RIVERBEND	3	11	1	3								2	9	1	6
90	CARVER-SOUTH	2	8	2	8											
91	CARVER-WOODS	13	1,134	11	345						1	2	1	788	1	6
92	CEDAR HILLS-CEDAR HILLS 13															
93	CEDAR HILLS-LEAHY	10	1,316	10	1,316	2	326								3	32
94	CEDAR HILLS-SHOPPING CENTER	10	1,182	10	1,182	1	17								8	1,208
95	CEDAR HILLS-SKYLINE															
96	CEDAR HILLS-ST VINCENT														1	18
97	CEDAR HILLS-SYLVAN	12	311	10	57	3	17						2	254	16	1,111
98	CENTENNIAL-BARKER	16	13,765	10	41			1	13,699		2	21	3	4	6	93
99	CENTENNIAL-BRAECROFT	9	305	8	304	4	217						1	2	1	1
100	CENTENNIAL-CENTENNIAL 13	16	13,709	12	723			1	12,909				3	77	8	467
101	CENTENNIAL-TREELAND	7	1,325	6	1,324	1	140						1	2	4	4
102	CLACKAMAS-EVELYN	1	1	1	1											
103	CLACKAMAS-GLADSTONE	16	8,339	11	204	2	121						5	8,135	11	429
104	CLACKAMAS-JENNIFER	6	841	6	841	1	3								2	12
105	CLACKAMAS-TOLBERT	5	627	4	93								1	535	4	751
106	CLAXTAR-CLAXTAR 13	1	1	1	1										3	18
107	CLAXTAR-HAYESVILLE	7	288	7	288	1	50								2	7
108	CLAXTAR-RIDGE	13	20,005	13	20,005	6	19,767								1	3

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
109	COFFEE CREEK-FREEMAN	1	9	1	9											
110	COFFEE CREEK-HOLIDAY	8	1,334	5	755								3	579		
111	COLTON-DHOOGHE	5	24	4	21	1	4						1	3	5	4
112	COLTON-GRAYS HILL	14	3,337	10	968	3	27						4	2,369	11	51
113	CORNELIUS-ADAIR	10	159	10	159	3	82								3	17
114	CORNELIUS-CORNELIUS 13	12	6,830	4	52								8	6,778	22	259
115	CORNELIUS-VERBOORT	8	348	8	348	2	201								7	80
116	CORNELL-BLUFFS	5	702	3	505								2	197	10	57
117	CORNELL-SALTZMAN	2	6	2	6										1	10
118	CORNELL-WESTLAWN	4	284	4	284										6	832
119	CULVER-SANYO #1															
120	CURTIS-11077	1	9								1	9			9	39
121	CURTIS-CURTIS 13	8	74	7	63								1	10	45	465
122	DAYTON-EAST	22	1,222	19	544	7	179						3	678	7	55
123	DAYTON-LAFAYETTE	7	269	7	269	1	90								4	10
124	DAYTON-SOUTHWEST	10	77	8	45	5	23						2	31	4	5
125	DELAWARE-DENVER	9	87	9	87	2	14								53	375
126	DELAWARE-INTERSTATE	2	5	1	3	1	3						1	2	8	87
127	DELAWARE-LOMBARD	8	174	8	174										21	271
128	DENNY-EAST	9	420	8	418	2	36						1	2	2	50
129	DENNY-NORTH														1	2
130	DENNY-SOUTH	4	627	4	627	1	10								2	9
131	DENNY-WEST	13	3,908	11	434						1	2	1	3,472		
132	DILLEY-DILLEY 13	10	67	10	67	3	8								5	20
133	DILLEY-SPRINGHILL															
134	DUNNS CORNER-DUNNS CORNER 13	21	1,450	17	733	6	543						4	717	5	9
135	DUNNS CORNER-KELSO	1	3	1	3	1	3									
136	DURHAM-BONITA														1	1
137	DURHAM-BRIDGEPORT	5	627	5	627										1	3
138	DURHAM-DURHAM 13	1	7	1	7										5	213
139	DURHAM-POOPLANT															
140	DURHAM-SATTLER	16	8,594	15	8,592	1	3						1	2	5	38
141	DURHAM-SOUTH															
142	E-11021														1	1
143	E-11039															
144	E-11040	1	14	1	14	1	14								2	5

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

	Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
145	E-11041	3	59	3	59	1	6									2	4
146	E-11042																
147	E-11043																
148	E-11047	6	211	6	211												
149	E-11064																
150	E-13139	4	39	4	39	1	0										
151	E-13140	3	474	2	294	1	18						1	181	8	438	
152	E-13141	3	98	3	98	1	2										
153	E-13142															4	7
154	E-13144	5	179	3	12								2	167	47	270	
155	E-13145	3	6	3	6												
156	E-13148	1	2	1	2												
157	E-13149	4	106	4	106												
158	E-13150	4	822	4	822											3	274
159	EAGLE CREEK-BARTON	8	206	5	67	1	2						3	140	6	9	
160	EAGLE CREEK-RIVER MILL	9	641	7	172								2	469	15	14,710	
161	EASTPORT-76TH	10	143	10	143	3	103									18	2,714
162	EASTPORT-PLAZA	10	831	6	322								4	509	11	40	
163	ELMA-ELMA 13	4	109	3	107								1	1			
164	ELMA-FOUR CORNERS	8	6,726	3	491								5	6,234			
165	ELMA-HUDSON	17	2,604	16	2,558	2	18						1	46	1	0	
166	ELMA-STATE															1	3,020
167	ESTACADA-ESTACADA 13	25	6,089	21	2,970	2	263						4	3,119	11	69	
168	ESTACADA-FARADAY	17	294	14	251	3	133					1	2	2	41	13	175
169	ESTACADA-NORTH FORK	10	392	8	292								2	100	14	49	
170	FAIRMOUNT-CANDALARIA	14	2,382	13	2,377	4	2,075						1	5	9	155	
171	FAIRMOUNT-MISSION	9	350	8	333	1	116					1	17			5	37
172	FAIRVIEW-CLEAR CREEK																
173	FAIRVIEW-FAIRVIEW 13	6	155	4	87								2	68	20	256	
174	FAIRVIEW-KENNEL CLUB	5	2,272	4	2,158								1	114	14	300	
175	FAIRVIEW-TROUTDALE	13	389	9	380	1	144					1	2	3	6	3	74
176	FAIRVIEW-WOOD VILLAGE	7	3,586	5	26								2	3,560	7	414	
177	FARGO-FARGO 13	23	6,313	16	843	6	81			2	4,361			5	1,109	13	143
178	GALES CREEK-GALES CREEK 13	21	2,780	15	313	5	213			2	2,072			4	396	7	87
179	GARDEN HOME-MCKAY	18	1,486	15	1,476	3	308							3	11	11	125
180	GARDEN HOME-METZGER	18	337	16	334	4	113					1	2	1	1	12	94

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

	Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
		Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
181	GLENCOE-GLISAN	7	217	4	54									3	162	35	203
182	GLENCOE-PROVIDENCE	2	4	2	4	1	2									4	17
183	GLENCOE-SUNNYSIDE	10	515	8	503	1	118							2	13	65	6,198
184	GLENCULLEN-BRIDLEMILE	19	1,067	18	897	4	628							1	169	79	836
185	GLENCULLEN-SUNSET	9	196	8	188	3	82							1	9	18	110
186	GLENDOVEER-13596	4	96	3	90	1	3				1	5				5	18
187	GLENDOVEER-13597	8	636	4	30	1	1							4	606	3	13
188	GLENDOVEER-13598	5	353	2	47	1	45							3	306	6	1,115
189	GLENDOVEER-13599	20	2,672	14	2,259	2	200				2	162		4	251	20	73
190	GLENDOVEER-CLIFFGATE	17	2,086	16	2,005	1	44							1	81	29	1,684
191	GLENDOVEER-NORTHEAST	4	29	2	5									2	23	7	43
192	GLISAN-FAB 2A																
193	GLISAN-UTILITY 1B																
194	GORMLEY-MCMINNVILLE WL	1	370	1	370											1	1
195	GRAND RONDE-AGENCY	4	825	4	825	2	91									1	3
196	GRAND RONDE-FORTHILL	12	494	11	492	4	373				1	2				7	9
197	HARBORTON-BURLINGTON	30	3,785	25	1,725	4	48							5	2,061	14	99
198	HARBORTON-HARBORTON 13																
199	HARBORTON-LINNTON	5	12	4	7	1	2				1	5				6	19
200	HARMONY-HARMONY 13	10	653	10	653	6	370									10	202
201	HARMONY-INTERNATIONAL	3	102	3	102											4	10
202	HARMONY-LAKE	4	136	4	136											4	1,241
203	HARMONY-LINWOOD	12	5,266	8	949	1	1							4	4,317	8	111
204	HARMONY-MILWAUKIE	10	21,802	8	282	2	13							2	21,521	12	92
205	HARMONY-THIESSEN	6	364	5	362	1	14				1	2				2	30
206	HARRISON-DAVIS	8	45	5	37						2	7		1	1	27	680
207	HARRISON-HARRISON 13	4	163	3	162	2	153							1	1	13	193
208	HARRISON-IVON	5	55	5	55											27	381
209	HAYDEN ISLAND-MAINLAND	1	3	1	3												
210	HAYDEN ISLAND-NORTH SHORE	9	5,442	9	5,442	2	534										
211	HAYDEN ISLAND-SOUTH SHORE	7	158	7	158	2	47										
212	HEMLOCK-FREMONT	9	144	4	72									5	71	3	2
213	HEMLOCK-HEMLOCK 13	12	652	12	652	1	16									2	4
214	HEMLOCK-MASON	5	80	4	75	1	46							1	5	2	5
215	HILLCREST-CASCADIA	1	11					1	11								
216	HILLCREST-HILLCREST 13	1	111					1	111								

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
217 HILLCREST-SOUTH	1	16					1	16							1	6
218 HILLSBORO-DAIRY CREEK	11	3,045	8	324									3	2,722	5	25
219 HILLSBORO-DENNIS															2	11
220 HILLSBORO-JACKSON	9	160	7	147	2	97							2	13	3	583
221 HILLSBORO-LAUREL	37	8,873	30	6,982	4	11							7	1,892	29	194
222 HILLSBORO-SCHOLLS	6	101	5	100	3	12					1	1			2	4
223 HOGAN NORTH-BRIGADOON	14	3,850	9	1,311							1	782	4	1,757	6	287
224 HOGAN NORTH-HOGAN NORTH 13	16	434	13	400	1	66							3	34	11	389
225 HOGAN NORTH-LINKS	22	1,073	20	1,058	3	73							2	15	37	29,922
226 HOGAN NORTH-SALQUIST	9	776	8	593	2	7							1	183	3	117
227 HOGAN SOUTH-CLEVELAND	23	4,410	19	1,629	1	121							4	2,780	8	203
228 HOGAN SOUTH-LAWRENCE	37	3,523	31	3,410	1	5			1	74			5	39	6	52
229 HOGAN SOUTH-MAIN	8	1,609	8	1,609	2	1,517									8	244
230 HOGAN SOUTH-PAROPA	5	614	5	614											19	383
231 HOGAN SOUTH-WALLULA	8	545	8	545	2	245										
232 HOLGATE-BYBEE	9	873	8	870									1	4	73	3,247
233 HOLGATE-GIDEON	1	499	1	499											23	160
234 HOLGATE-HOLGATE 13	2	11	2	11											84	2,785
235 HOLGATE-KENILWORTH	4	137	3	134	1	100							1	3	71	7,980
236 HOLGATE-RHONE	8	742	7	741	1	2					1	1			69	1,426
237 HUBER-BANY	14	1,059	14	1,059	1	6									9	205
238 HUBER-FARMINGTON	11	321	9	288	1	40							2	33	11	81
239 HUBER-HUBER 13	8	656	8	656	1	597									1	10
240 HUBER-KINNAMAN	14	618	13	616	2	28							1	2	7	53
241 HUBER-MARYVILLE	18	15,543	14	14,707	1	2							4	836	4	27
242 INDIAN-KEIZER	12	284	12	284	3	27									5	50
243 INDIAN-LABISH	25	65,831	19	3,377	5	91	1	58,843					5	3,611	10	43
244 INDIAN-NORTH	12	572	12	572	1	5									1	23
245 INDIAN-STATION	4	9	2	1									2	8		
246 INDIAN-WEST	8	425	7	424	2	168							1	1	10	674
247 ISLAND-13180	7	106	7	106	3	11									14	195
248 ISLAND-13187	11	906	10	904	2	4							1	2	24	191
249 ISLAND-13188	9	4,068	9	4,068	1	3									16	167
250 ISLAND-ISLAND 13	4	20	2	14									2	7	5	64
251 JENNINGS LODGE-ADDIE	6	434	6	434	1	166									3	34
252 JENNINGS LODGE-JENNINGS 13	18	430	13	300									5	130	2	10

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Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
253	JENNINGS LODGE-MELDRUM	6	101	5	100	3	89						1	2	1	2
254	JENNINGS LODGE-OAK GROVE	16	9,983	13	9,469	3	8,861						3	514	9	9
255	JENNINGS LODGE-WEBSTER	10	803	9	730	2	563						1	73	26	1,255
256	KELLEY POINT-MARINE	1	103					1	103							
257	KELLEY POINT-SIMMONS	1	87					1	87						1	0
258	KELLEY POINT-SOLAR #2	1	6					1	6						1	1
259	KELLY BUTTE-BINNSMEAD	9	49	8	44	1	15						1	5	18	431
260	KELLY BUTTE-FAIRLAWN	6	247	5	86	4	80						1	161	14	290
261	KELLY BUTTE-MALL 205	11	567	10	145	4	125						1	422	8	1,297
262	KELLY BUTTE-MCGREW	14	258	13	256	3	17						1	2	9	48
263	KING CITY-BULL MOUNTAIN	8	11,340	4	8,791			1	2,200				3	349	8	110
264	KING CITY-FISCHER	4	3,066	2	6			1	3,056				1	4	4	62
265	KING CITY-HAZELBROOK	7	763	6	756								1	7	2	42
266	KING CITY-NORTH	14	9,407	13	9,406	2	46			1	1				3	101
267	KING CITY-SUMMERFIELD	8	3,803	8	3,803											
268	LAKE LABISH-LAKE LABISH															
269	LELAND-BEAVERCREEK	22	4,735	18	3,985	5	3,787						4	750	37	119
270	LELAND-CARUS	24	568	19	164	2	24						5	404	33	227
271	LELAND-KELM	5	48	4	46					1	3				13	38
272	LENTS-13101	11	414	10	413	1	372						1	1	12	484
273	LENTS-HAPPY VALLEY	17	6,795	12	3,890	2	3,563						5	2,905	3	9
274	LENTS-MT SCOTT	5	304	3	278	1	8						2	26	1	29
275	LENTS-NORTH	9	508	9	508	1	48								3	10
276	LIBERAL-LIBERAL 13	15	131	15	131	5	14								11	30
277	LIBERAL-SAWMILL														5	8
278	LIBERTY-BROWNING	2	149	2	149											
279	LIBERTY-LONE OAK	11	794	11	794	1	95								3	20
280	LIBERTY-MORNINGSIDE	12	290	10	285	3	142						2	5	4	53
281	LIBERTY-ROSEDALE	19	651	15	308	1	4						4	343	11	281
282	LIBERTY-SKYLINE	17	1,127	12	995	1	505						5	132	14	131
283	LIBERTY-VISTA	7	725	6	612	1	80						1	112	1	7
284	MAIN-AIRPORT	7	93	7	93										15	547
285	MAIN-BENTLEY	15	989	13	987	2	596			1	1		1	1	14	12,450
286	MAIN-EXPRESS	14	568	14	568	1	15								8	56
287	MAIN-JONES FARM															
288	MAIN-RIVER	13	2,059	12	2,056	2	31						1	2	11	38

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### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
289 MARKET-ENGLEWOOD	5	3,283	4	389			1	2,894							7	211
290 MARKET-FAIRGROUNDS	4	4,474	3	18	1	8	1	4,456							16	2,476
291 MARKET-HAWTHORNE	4	1,992	3	9			1	1,983							3	141
292 MARKET-PARK	4	2,229	2	61	1	57	1	2,158				1	10	4	45	
293 MAXIM-MAXIM 13																
294 MCCLAIN-COTTAGE	6	344	6	344											9	261
295 MCCLAIN-FRONT	5	15	5	15											11	171
296 MCCLAIN-HOLLYWOOD	3	12	3	12											5	107
297 MCGILL-LSI AIR 1A																
298 MERIDIAN-65TH																
299 MERIDIAN-BORLAND	5	922	3	55	1	2						2	867	2	1	
300 MERIDIAN-CHILDS	2	6	2	6											1	2
301 MERIDIAN-LAKEVIEW	2	161	2	161											11	220
302 MERIDIAN-MERIDIAN 13	10	1,351	7	268								3	1,083	5	14	
303 MERIDIAN-NYBERG	1	2	1	2												
304 MERIDIAN-PILKINGTON	16	1,214	15	1,212								1	2	12	25	
305 MERIDIAN-SAGERT	5	534	3	530								2	3	2	8	
306 MIDDLE GROVE-BROWN	12	909	10	882								2	27	3	25	
307 MIDDLE GROVE-CHEMEKETA	4	2,131	3	2,130								1	1	2	10	
308 MIDDLE GROVE-CORDON	16	2,103	15	2,101	3	5						1	3			
309 MIDDLE GROVE-SWEGLE	4	223	3	19								1	204	2	11	
310 MIDDLE GROVE-WEST	4	2,212	3	2,147								1	65	3	4	
311 MIDWAY-DIVISION	9	4,695	6	182							1	4,510	2	3	8	1,505
312 MIDWAY-DOUGLAS	10	1,104	9	1,012	2	137					1	92			7	116
313 MIDWAY-LYNCH	16	2,041	13	2,022	1	6						3	19	10	90	
314 MIDWAY-POWELLHURST	6	67	4	57	1	17						2	10	8	35	
315 MILL CREEK-EASTLAND	6	77	6	77											2	5
316 MILL CREEK-KUEBLER	1	389	1	389												
317 MILL CREEK-MILL CREEK 13	1	11									1	11			3	18
318 MOLALLA-BUCKAROO	5	158	3	153	1	27							2	5	12	176
319 MOLALLA-FOREST	8	155	4	28	1	23							4	127	31	151
320 MOLALLA-MARQUAM	33	1,181	26	411	7	98							7	771	10	57
321 MOLALLA-YODER	13	7,966	10	462	4	11							3	7,504	8	29
322 MT ANGEL-EAST	4	102	3	102	2	98							1	1	1	1
323 MT ANGEL-WEST	36	2,329	33	2,301	7	11							3	28	6	865
324 MT PLEASANT-CLAIRMONT	11	547	10	540	1	242							1	6	2	35

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## 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
325 MT PLEASANT-MT VIEW	2	8	1	4									1	5	10	53
326 MT PLEASANT-RIVERCREST	3	34	2	27									1	7	8	60
327 MT PLEASANT-SOUTH END	16	1,180	15	1,164	2	323							1	16	26	45
328 MULINO-NORTH	5	48	4	19	1	5							1	29	12	80
329 MULINO-SOUTH	11	198	7	69	3	25					1	2	3	127	13	64
330 MULTNOMAH-13176	17	729	14	720	3	11					1	1	2	8	39	750
331 MULTNOMAH-13177	4	2,275	3	140	1	106							1	2,135	46	449
332 MULTNOMAH-13181	11	5,073	10	5,068									1	4	30	1,098
333 MULTNOMAH-MULTNOMAH 13	23	3,094	22	3,091	5	1,012							1	3	20	45
334 MURRAYHILL-KINTON	2	99	2	99											1	1
335 MURRAYHILL-MURRAYHILL 13	3	9	3	9											1	1
336 MURRAYHILL-REUSSER	2	24,532	1	24,530									1	2		
337 MURRAYHILL-TEAL	9	2,775	9	2,775											20	415
338 NEWBERG-CHEHALEM	27	8,700	21	299	4	45							6	8,401	11	252
339 NEWBERG-DUNDEE	24	2,496	19	677	7	361							5	1,819	6	4,120
340 NEWBERG-HOOVER PARK	8	258	7	239	2	35							1	18	4	25
341 NEWBERG-NORTH COLLEGE	13	1,282	10	102	5	44							3	1,180	19	63
342 NORTH MARION-CROSBY	4	3,098	4	3,098	1	1									3	49
343 NORTH MARION-FRONT																
344 NORTH MARION-HUBBARD	8	1,511	8	1,511	3	1,359									1	1
345 NORTH MARION-MCLAREN	15	1,685	13	1,063	5	154							2	622	20	347
346 NORTH PLAINS-MASON HILL	29	644	26	634	3	15							3	10	21	558
347 NORTH PLAINS-NORTH PLAINS 13	17	1,961	9	99	2	10					1	132	7	1,730	4	15
348 NORTHERN-11009	6	108	5	105	1	17							1	3	8	923
349 NORTHERN-11016															4	9
350 NORTHERN-11071	10	37	9	31	1	3					1	5			18	125
351 OAK GROVE-LAKE HARRIET	2	527	2	527												
352 OAK GROVE-WHITE WATER	1	1	1	1	1	1										
353 OAK HILLS-FIVE OAKS	2	28	2	28											3	93
354 OAK HILLS-GREENBRIER	4	14	3	12									1	2	1	0
355 OAK HILLS-OAK HILLS 13	4	374	3	354									1	20	10	124
356 OAK HILLS-SOMERSET	9	867	6	482							1	4	2	380	63	1,193
357 OAK HILLS-WALKER	4	8	4	8											3	8
358 OREGON STEEL-OREGON STEEL 13																
359 ORENCO-231ST	2	1,609											2	1,609	7	813
360 ORENCO-AMBERGLEN	1	10											1	10	1	1

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### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
361 ORENCO-BASELINE	4	6,258	3	795									1	5,463	1	7
362 ORENCO-ORENCO 13																
363 ORENCO-PRIMATE	8	758	6	692									2	65	3	107
364 ORENCO-WILKINS																
365 ORIENT-BARLOW	18	343	15	117									3	226	2	5
366 ORIENT-ORIENT 13	22	1,199	19	1,028	4	18							3	170	9	181
367 OSWEGO-IRON MOUNTAIN	3	47	3	47											4	11
368 OSWEGO-MARYLHURST	15	408	13	391									2	17	12	44
369 OSWEGO-PALATINE	11	956	10	717	2	9					1	239			40	188
370 OSWEGO-STAFFORD	7	112	6	109									1	3	11	59
371 OXFORD-FAIRVIEW	8	610	7	514									1	95	10	344
372 OXFORD-LEE	1	1											1	1	4	135
373 OXFORD-MADRONA	14	538	14	538	1	2									3	33
374 OXFORD-OXFORD 13	2	138	2	138											9	116
375 OXFORD-RURAL	2	63											2	63		
376 OXFORD-SHELTON	4	5,522	2	10	1	7							2	5,512	1	33
377 PELTON-ROUND BUTTE																
378 PENINSULA PARK-OCKLEY GREEN	1	20	1	20											10	181
379 PENINSULA PARK-PENINSULA PARK	11	985	9	863	4	56							2	122	10	139
380 PLEASANT VALLEY-BAXTER	8	244	5	81									3	163	10	224
381 PLEASANT VALLEY-CLATSOP	2	50	2	50	1	48									2	47
382 PLEASANT VALLEY-MOON	12	3,966	10	3,871	1	5							2	94	2	4
383 PLEASANT VALLEY-PLEASANT 13	23	401	18	345	2	117							5	56	8	75
384 PLEASANT VALLEY-SUN	9	3,161	6	41	4	10							3	3,121		
385 PORTLAND WATER-PUMPING																
386 PORTSMOUTH-CARBIDE	24	3,094	19	2,732	8	2,649					1	2	4	360	31	704
387 PORTSMOUTH-DISPOSAL																
388 PORTSMOUTH-WILLIS	9	62	8	51	1	2							1	11	42	1,835
389 PROGRESS-GREENBURG	6	213	5	212									1	2	4	301
390 PROGRESS-HALL																
391 PROGRESS-ROBINSON	4	2,376	3	1,326									1	1,050		
392 PROGRESS-SAWYER	4	21	4	21												
393 PROGRESS-WASHINGTON SQ #1																
394 PROGRESS-WASHINGTON SQ #2																
395 RALEIGH HILLS-DOGWOOD	16	1,074	16	1,074	4	851									3	36
396 RALEIGH HILLS-MONTCLAIR	10	1,007	8	1,005	1	39							2	2	1	2

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### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
397 RALEIGH HILLS-OLESON	12	594	11	588	3	342							1	6	7	31
398 RAMAPO-EMERALD	10	42,279	5	120							2	18,078	3	24,081	3	37
399 RAMAPO-GILBERT	8	494	4	487	1	294					1	1	3	6	6	1,460
400 RAMAPO-RAMAPO 13	19	3,485	15	283	1	54					1	7	3	3,195	1	143
401 REDLAND-HENRICI	33	9,290	28	1,319	6	91							5	7,971	57	310
402 REDLAND-REDLAND 13	31	3,757	24	2,081	3	15							7	1,676	13	72
403 REEDVILLE-AUGUSTA	7	698	7	698	2	235									1	289
404 REEDVILLE-BLANTON	11	1,174	11	1,174											7	69
405 REEDVILLE-HAZELDALE	5	26	4	17									1	9	6	12
406 REEDVILLE-INTEL #2																
407 REEDVILLE-INTEL #4																
408 REEDVILLE-INTEL #5																
409 REEDVILLE-TV	6	2,163	4	2,042	1	33					1	120	1	1	3	56
410 RIVERGATE SOUTH-11010																
411 RIVERGATE SOUTH-11011	7	32	7	32	1	2									5	22
412 RIVERGATE SOUTH-PEARCY	4	63	4	63											2	31
413 RIVERGATE SOUTH-SWIFT															5	13
414 RIVERVIEW-FULTON	4	1,493	2	6									2	1,487	93	1,385
415 RIVERVIEW-MACADAM	4	385	3	321									1	64	13	203
416 RIVERVIEW-TERWILLIGER	4	204	4	204											24	314
417 ROCKWOOD-AIRPORT																
418 ROCKWOOD-BOEING																
419 ROCKWOOD-INDUSTRIAL	1	5	1	5											2	1
420 ROCKWOOD-REYNOLDS	11	450	11	450	1	10									34	308
421 ROCKWOOD-ROCKWOOD 13	12	1,473	12	1,473											16	66
422 ROCKWOOD-WILKES	1	6	1	6											1	3
423 ROSEMONT-HIDDEN SPRINGS	6	465	6	465	1	10									11	516
424 ROSEMONT-MOSSY BRAE	6	880	5	877									1	3	18	267
425 ROSEMONT-OVERLOOK	17	922	17	922	3	112									11	41
426 ROSEWAY-ALEXANDER	2	100											2	100	5	604
427 ROSEWAY-ESPLANADE	3	6,084	1	232				1	5,823				1	30	14	9,690
428 ROSEWAY-ROSEWAY 13	3	2,469	2	18				1	2,451							
429 RUBY-CARLINE	11	599	11	599	1	34									33	2,451
430 RUBY-JUNCTION	18	982	12	699	1	13							6	283	16	221
431 SALEM-13260																
432 SALEM-13261																

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### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
433 SALEM-13262																
434 SALEM-13263	1	144	1	144												
435 SALEM-13264																
436 SALEM-UNION																
437 SANDY-362ND	16	1,868	13	1,017			1	353					2	498	4	21
438 SANDY-BLUFF	6	1,243	4	43			2	1,199							3	458
439 SANDY-SANDY 13	35	2,582	27	862	9	325	1	547			1	2	6	1,171	30	276
440 SANDY-WILDCAT	15	721	10	277	3	22							5	444	21	2,215
441 SCAPPOOSE-SAUVIE ISLAND	2	223	2	223												
442 SCHOLLS FERRY-KEMMER	6	36	4	22									2	14	5	50
443 SCHOLLS FERRY-RAINBOW	28	1,701	23	533	4	79							5	1,168	15	62
444 SCHOLLS FERRY-ROY ROGERS	7	150	5	143	1	117							2	7	22	428
445 SCOGGINS-CHERRY GROVE	9	969	9	969	3	664									11	50
446 SCOGGINS-LAURELWOOD	19	339	18	334	5	156							1	5	7	21
447 SCOTTS MILLS-SCOTTS MILLS 13	26	3,607	24	1,733	3	53							2	1,874	8	7
448 SELLWOOD-KELLOGG PARK	13	6,843	12	6,412	3	24							1	431	17	445
449 SELLWOOD-SELLWOOD 13	8	10,727	8	10,727	2	3									78	1,472
450 SELLWOOD-WAVERLY	4	3,210	4	3,210	1	2									18	562
451 SHERIDAN-EAST	19	1,163	17	543	5	369							2	620	7	52
452 SHERIDAN-KADELL	11	1,670	7	806	2	7							4	864	13	53
453 SHUTE-LINDE 1 35KV																
454 SILVERTON-NORTH	15	246	13	191	2	6							2	55	4	52
455 SILVERTON-SOUTH	11	131	10	121	4	51							1	10	4	4
456 SILVERTON-WEST	25	1,304	17	1,138	2	3							8	165	13	85
457 SIX CORNERS-13359	18	4,166	15	3,262	3	2,243							3	905	11	62
458 SIX CORNERS-13360	6	272	3	106	1	25					1	153	2	13	8	97
459 SIX CORNERS-BORCHERS	11	60	10	56	2	9							1	3	24	57
460 SIX CORNERS-CHAPMAN	5	505	5	505											5	25
461 SIX CORNERS-SIX CORNERS 13	1	3									1	3			5	24
462 SP NEWSPRINT-NEWBERG																
463 SPRING HILL-SPRING HILL																
464 SPRINGBROOK-FERNWOOD	8	172	7	168	3	68							1	4	26	74
465 SPRINGBROOK-ST PAUL	14	196	12	186	4	19					1	2	1	8	12	31
466 SPRINGBROOK-VILLA	4	822	4	822												
467 SPRINGBROOK-ZIMRI	17	3,619	14	2,079	6	501							3	1,540	16	1,043
468 ST HELENS-KASTER																

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<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
469 ST LOUIS-EAST	8	839	8	839	3	42									1	3
470 ST LOUIS-NORTH	17	3,143	16	3,136	5	11							1	7	7	11
471 ST LOUIS-WEST	19	1,474	16	59	10	36							3	1,415	13	50
472 ST MARYS EAST-BETHANY	3	82	1	2									2	80	3	92
473 ST MARYS EAST-BUTNER	7	2,908	6	2,904	1	6					1	4			9	67
474 ST MARYS EAST-ELMONICA	4	550	4	550	1	98									1	0
475 ST MARYS EAST-JENKINS															1	48
476 ST MARYS EAST-MILLIKAN	6	498	6	498												
477 ST MARYS EAST-ST MARYS 13	1	592	1	592												
478 STEPHENS-11001	2	13	2	13	1	3									6	24
479 STEPHENS-11020	2	524	1	5	1	5					1	519			12	421
480 STEPHENS-11054 NETWORK																
481 STEPHENS-11055 NETWORK																
482 STEPHENS-11092 NETWORK																
483 STEPHENS-11093 NETWORK																
484 STEPHENS-11094 NETWORK																
485 STEPHENS-11095 NETWORK	1	25	1	25												
486 STEPHENS-11097 NETWORK																
487 STEPHENS-11098	1	3	1	3	1	3									4	55
488 STEPHENS-11099 NETWORK	1	64	1	64												
489 STIMSON LUMBER-FORESTEX																
490 SULLIVAN-ROBINWOOD	4	46	4	46	1	10									11	73
491 SULLIVAN-SALAMO	5	68	4	66	1	47					1	2			9	473
492 SULLIVAN-SUSSEX	8	635	6	613	2	11							2	22	5	30
493 SULLIVAN-TANNER	1	654	1	654											3	2
494 SULLIVAN-WILLAMETTE	13	565	11	512	3	237							2	53	9	44
495 SULZER PUMPS-115B																
496 SUMMIT-GOVERNMENT CAMP	4	804	1	1				1	764				2	40	3	952
497 SUMMIT-MEADOWS	1	58						1	58						2	11
498 SUMMIT-SUMMIT 13	4	419	3	26				1	392							
499 SUNSET-BLANCHET	1	5									1	5				
500 SUNSET-COLFAX	1	38						1	38							
501 SUNSET-CORNELL																
502 SUNSET-DORION																
503 SUNSET-IDTB																
504 SUNSET-IDTC															1	48

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
505	SUNSET-INTEL D1B1															
506	SUNSET-INTEL D1X1															
507	SUNSET-KOMATSU #1															
508	SUNSET-LANE															
509	SUNSET-MCCALL	2	179					1	179					1	1	
510	SUNSET-MEEK	1	1,267					1	1,267							
511	SUNSET-NIXON	1	3					1	3							
512	SUNSET-PAULING															
513	SUNSET-SPALDING														1	6
514	SUNSET-WHITMAN	2	144	1	113								1	30	1	29
515	SUNSET-YOUNG															
516	SWAN ISLAND-BASIN	1	102	1	102										1	1
517	SWAN ISLAND-DOLPHIN															
518	SWAN ISLAND-FREIGHTLINER	1	184							1	184					
519	SWAN ISLAND-GOING	3	143	1	10	1	10						2	133	1	1
520	SWAN ISLAND-SHIPYARD															
521	SYLVAN-BARNES	10	2,566	5	2,385	2	4			1	4	4	177	17	39	
522	SYLVAN-PATTON	29	2,627	24	2,552	4	28			2	12	3	64	47	194	
523	TABOR-82ND	6	120	6	120										48	348
524	TABOR-HOSPITAL	3	40	2	37								1	2	13	60
525	TABOR-TABOR 13	10	6,542	10	6,542	1	0								55	704
526	TEKTRONIX-HOCKEN	1	3	1	3											
527	TEKTRONIX-MEADOW	1	7	1	7										2	69
528	TEKTRONIX-NORTH															
529	TEKTRONIX-SHANNON	8	178	7	177	3	100			1	1			5	276	
530	TEKTRONIX-SOUTH	16	6,167	12	1,158	1	25						4	5,009	7	77
531	TEKTRONIX-TEKTRONIX 13	2	16	2	16	1	13									
532	TEKTRONIX-WEST															
533	TEMP B-NORTH	1	3	1	3	1	3								2	3
534	TEMP B-SOUTH	1	2							1	2					
535	TIGARD-13336	2	1,819	2	1,819										2	24
536	TIGARD-13337	6	43	6	43	1	2								2	7
537	TIGARD-13361	4	302	4	302	1	2								2	17
538	TIGARD-13362	9	1,205	8	1,202								1	2	7	216
539	TIGARD-TIGARD 13	10	1,914	8	1,907					1	1	1	6	1	19	
540	TOWN CENTER-LAWNFIELD	4	49	4	49										3	355

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
541 TOWN CENTER-MONTEREY	2	19	1	4									1	15	2	82
542 TOWN CENTER-NORTH																
543 TOWN CENTER-PRECISION CASTPARTS																
544 TOWN CENTER-SOUTH																
545 TOWN CENTER-SUNNYBROOK	5	163	4	152									1	11	2	4
546 TOWN CENTER-VALLEY VIEW	1	232	1	232												
547 TROJAN-EAST																
548 TUALATIN-AVERY	18	1,647	16	1,594									2	53	7	40
549 TUALATIN-CIPOLE	2	10	2	10	1	6										
550 TUALATIN-HERMAN															1	12
551 TUALATIN-IBACH	5	101	5	101											5	27
552 TUALATIN-LEVETON																
553 TUALATIN-TUALATIN 13																
554 TURNER-CASCADE	10	1,158	7	25	1	1							3	1,133	12	13
555 TURNER-TURNER 13	11	5,838	7	30	2	7							4	5,808	5	6
556 TWILIGHT-BREMER	15	952	13	932	2	11							2	19	8	24
557 UNIONVALE-UNIONVALE 13	41	6,406	35	3,763	11	30			1	106			5	2,537	9	17
558 UNIVERSITY-MILL	4	19	4	19	2	17									5	1,688
559 UNIVERSITY-TRADE	11	1,342	9	780	3	324							2	562	9	337
560 URBAN-BARBUR	3	30	3	30											15	61
561 URBAN-CAMPUS																
562 URBAN-CORBETT	5	410	5	410											24	259
563 URBAN-GAINES	1	7	1	7											30	1,540
564 URBAN-GIBBS															5	46
565 URBAN-KELLY															3	18
566 URBAN-LANDING	2	5	2	5	1	2									4	9
567 URBAN-MEDICAL															3	18
568 URBAN-OHSU																
569 WACKER-WACKER 1																
570 WACONDA-NORPAC	1	2	1	2												
571 WACONDA-RIVER	14	1,561	12	665	1	2							2	896	5	17
572 WACONDA-WACONDA 13	17	190	14	160	2	92							3	31	5	67
573 WALLACE-WALLACE 13	14	836	12	504	4	170							2	332	30	90
574 WALLACE-WILLOW LAKE	6	515	6	515	1	11										
575 WELCHES-WELCHES 13	8	1,541	5	1,343	1	5							3	198	2	13
576 WELCHES-ZIG ZAG	16	1,063	14	1,051	2	9							2	12	5	9

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

### 2017 Outages by Cause System

Feeder Name	Total System		PGE Equipment		Cutout, Fuse, Arrestor <sup>1</sup>		Loss of Substation		Loss of Transmission		Human Factor		Public		Planned <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
577 WEST PORTLAND-72ND	7	1,121	6	1,110	4	22							1	11		
578 WEST PORTLAND-NORTH	11	620	9	405	1	28					1	212	1	3	9	43
579 WEST PORTLAND-PACIFIC	13	2,757	11	2,713	1	163					1	5	1	39	29	229
580 WEST PORTLAND-WEST PORTLAND 13	8	347	8	347	6	331									1	1
581 WEST UNION-CORNELIUS PASS	25	3,561	18	3,351	5	377							7	210	9	64
582 WEST UNION-WEST UNION 13	10	1,177	8	765									2	413	37	769
583 WILLAMINA-BRIDGE	19	6,227	18	6,226	6	90							1	1	13	111
584 WILLAMINA-BUELL	16	224	16	224	9	47									8	17
585 WILLAMINA-LUMBER	1	65	1	65												
586 WILLBRIDGE-WILLBRIDGE #1	1	3											1	3	3	3
587 WILLBRIDGE-WILLBRIDGE #4	2	7	1	5					1	2						
588 WILSONVILLE-BOECKMAN	9	120	9	120											12	94
589 WILSONVILLE-CHARBONNEAU	8	4,949	7	1,252									1	3,697	6	11
590 WILSONVILLE-CITY	5	3,475	5	3,475											1	5
591 WILSONVILLE-MENTORTEK	1	58						1	58						1	1
592 WILSONVILLE-PARKWAY	3	20	2	8									1	13	1	5
593 WILSONVILLE-VILLEBOIS	4	11	3	10									1	1	3	10
594 WILSONVILLE-WEST	12	11,141	10	666	1	35	1	10,474					1	1	4	58
595 WOODBURN-CANNERY	3	264	3	264											9	176
596 WOODBURN-EAST	19	936	19	936	3	21									11	28
597 WOODBURN-TOMLIN	11	972	9	933	1	56							2	39	20	156
598 WOODBURN-WEST	14	932	14	932	4	43									15	62
599 YAMHILL-CARLTON	20	1,660	16	552	6	41							4	1,108	16	137
600 YAMHILL-YAMHILL 13	22	6,685	18	796	7	425							4	5,889	10	604
<b>Grand Totals:</b>	<b>4,441</b>	<b>858,589</b>	<b>3,677</b>	<b>429,119</b>	<b>684</b>	<b>71,141</b>	<b>33</b>	<b>141,583</b>	<b>9</b>	<b>11,300</b>	<b>65</b>	<b>29,493</b>	<b>657</b>	<b>247,094</b>	<b>5,105</b>	<b>195,694</b>

<sup>1</sup> Values captured in the PGE Equipment total

<sup>2</sup> Planned is not included as part of Total System values

Outs = Outages  
Hrs = # of customers \* duration hrs

## Section VI

### Outages by Cause PGE Equipment

This section provides the number of customer outages (frequency) and customer outage hours (duration) caused by PGE equipment events. The information is presented by feeder and attributed to one of the following causes:

- Total PGE Equipment – This category is the sum of the following categories<sup>1</sup>:
  - Underground Conductor
  - Primary Device
  - Underground Accessory
  - Transformer
  - Overhead Conductor
  - Overhead Hardware
  - Cutout, Fuse, Arrestor
  - Meter
  - Pole
- Substation Equipment – This category is included for reference, but is not included in the Total PGE Equipment. Outages related to this category are included in the Loss of Substation column in Section V.

#### NOTES:

- Idle feeders are not included in this list
- Feeders may be omitted if they are a part of an alternate/multiple feeder service

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<sup>1</sup> See Section IX – Cause Code Categories and Mapping for detailed causes for each category



## 2017 Outages by Cause PGE Equipment <sup>1</sup>

Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
1 ABERNETHY-CLACKAMAS HEIGHTS	2	71											1	2	1	69						
2 ABERNETHY-OREGON CITY	6	1,167	2	8								2	1,093			2	66					
3 ABERNETHY-TRANSIT	9	63							1	29			6	28	2	5						
4 ALDER-ANKENY	6	406	1	286								2	13	3	107							
5 ALDER-IRVING	10	12,410	1	174								2	12,040	6	194	1	2					
6 ALDER-LINCOLN	7	363										3	6	1	4	2	352	1	1			
7 ALDER-STARK	7	80							2	67	2	5	2	7	1	1						
8 ALDER-TAYLOR	7	306							2	260			5	46								
9 ALDER-YAMHILL																						
10 AMITY-AMITY 13	15	671	3	146				1	3	1	21	1	425	1	5	8	71					
11 AMITY-BELLEVUE	25	547	3	50	1	262	1	2	1	2	3	17	7	85	9	128						
12 ARLETA-52ND	10	105										3	8	5	67	2	29					
13 ARLETA-FOSTER	6	36										1	17	5	19							
14 ARLETA-HAROLD	6	751	1	368										2	5	3	378					
15 ARLETA-POWELL	11	453	2	103					1	69	1	172	4	45	3	64						
16 ARLETA-STEELE	8	544	2	403				1	43			1	6	3	74	1	19					
17 BANKS-BANKS 13	9	80								1	7	3	3	4	17	1	54					
18 BANKS-CEDAR CANYON	22	1,182								4	84	4	548	11	231	3	319					
19 BARNES-BATTLE CREEK	1	1														1	1					
20 BARNES-BOONE	3	7						1	4			1	2	1	1							
21 BARNES-COMMERCIAL	14	623	3	38				3	274	4	230	1	3	1	5	2	73					
22 BARNES-SUNNYSIDE	14	1,070	6	525				5	346	1	188	1	3	1	8							
23 BEAVER-KB PIPELINE																						
24 BEAVERTON-ALLEN	7	287	2	70				1	2	2	19	2	196									
25 BEAVERTON-JAMIESON	6	837	3	100				1	200							2	537					
26 BEAVERTON-NORTHWEST	4	34	1	4												3	31					
27 BEAVERTON-WEST SLOPE	10	2,200	7	956						2	1,238					1	6					
28 BELL-BATTIN	4	262								1	7			2	253	1	2					
29 BELL-BRENTWOOD	2	3										1	2	1	2							
30 BELL-FLAVEL	4	26	1	19				1	1							2	5					
31 BELL-JOHNSON CREEK	1	25										1	25									
32 BELL-KENDALL	9	128	1	2						1	25	1	4	4	12	2	85					
33 BELL-KING	10	628								1	371	2	126	5	98	2	34					
34 BELL-SOUTHGATE	1	8								1	8											
35 BELL-WICHITA	4	66								2	63			1	2	1	1					
36 BETHANY-BURTON	2	388										1	1			1	386					
37 BETHANY-GERMANTOWN																						
38 BETHANY-KAISER	5	854	2	729								2	3			1	121					
39 BETHANY-LIDLAW	6	3,755	1	2				1	2	1	22	3	3,729									
40 BETHANY-SPRINGVILLE	4	8												4	8							

<sup>1</sup> See Section IX - Cause Code Categories for category definitions

<sup>2</sup> Substation Equipment failures are a part of the Loss of Substation System category; not included in Total PGE Equipment

Outs = Outages

Hrs = # of customers \* duration hrs

## 2017 Outages by Cause PGE Equipment <sup>1</sup>

Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
41	BETHANY-THOMPSON	3	674	2	134			1	540													
42	BETHEL-FRUITLAND	16	453	9	418							3	23	2	8	2	4					
43	BETHEL-GEER	7	40	1	10			1	3	1	3					4	24					
44	BETHEL-MACLEAY	12	2,699	8	1,661			2	587	1	84	1	366									
45	BLUE LAKE-BLUE LAKE 13	13	670	5	443					3	49	1	128	1	33	2	10	1	7			
46	BLUE LAKE-SUNDIAL	6	39					1	14	2	7			1	3	2	15					
47	BLUE LAKE-TOYO TANSO																					
48	BOISE CASCADE-BOISE #1																					
49	BOONES FERRY-GOODALL	3	1,601	1	964			1	633			1	4									
50	BOONES FERRY-KRUSE	6	1,761	2	8					3	1,065	1	688									
51	BOONES FERRY-LAKE GROVE	9	745	3	721					1	15	1	2	4	8							
52	BOONES FERRY-MOUNTAIN PARK	5	552	2	506			2	6	1	39											
53	BOONES FERRY-WEMBLEY PARK	6	455	4	432									2	23							
54	BORING-282ND	12	188	1	6					8	137			2	6	1	39					
55	BORING-CITY	12	115	3	45			1	5	3	19			3	11	2	35					
56	BORING-TELFORD	11	3,057	1	90			1	2	1	3			6	2,947	2	16					
57	BRIGHTWOOD-BRIGHTWOOD 13	13	800	1	5					5	140	2	599	3	18	1	37	1	2			
58	BRIGHTWOOD-NORTH BANK	4	563	1	95									3	468							
59	BROOKWOOD-BORWICK	2	75	1	1					1	74											
60	BROOKWOOD-BROOKWOOD 13																					
61	BROOKWOOD-SUNRISE	3	475	2	472									1	3							
62	CANBY-13643	31	540	3	202			2	51	5	116	4	25	11	112	6	34					
63	CANBY-13644	6	74					2	13	1	3					3	57					
64	CANBY-BUTTEVILLE	15	104	1	24			1	9			1	26	4	15	8	29					
65	CANBY-FILBERT																					
66	CANYON-13114 NETWORK #1																					
67	CANYON-13115 NETWORK #1																					
68	CANYON-13116 NETWORK #1																					
69	CANYON-13117 NETWORK #1																					
70	CANYON-13118 PSU																					
71	CANYON-13119 PSU																					
72	CANYON-13120	1	2					1	2													
73	CANYON-13121																					
74	CANYON-13122 NETWORK #2																					
75	CANYON-13123 NETWORK #2																					
76	CANYON-13124 NETWORK #2																					
77	CANYON-13125 NETWORK #2																					
78	CANYON-13133 NETWORK #3																					
79	CANYON-13134 NETWORK #3																					
80	CANYON-13135 NETWORK #3																					

<sup>1</sup> See Section IX - Cause Code Categories for category definitions

<sup>2</sup> Substation Equipment failures are a part of the Loss of Substation System category; not included in Total PGE Equipment

Outs = Outages

Hrs = # of customers \* duration hrs

## 2017 Outages by Cause PGE Equipment <sup>1</sup>

Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
81	CANYON-13136 NETWORK #3																					
82	CANYON-21ST	4	745						1	399	2	342			1	4						
83	CANYON-23RD	7	3,049	1	1,530			1	1,386			2	8	2	119	1	6					
84	CANYON-BURNSIDE																					
85	CANYON-CANYON 13	9	1,263	2	1,201				1	5	3	26	1	4	2	26						
86	CARVER-ALMOND	1	3									1	3									
87	CARVER-CARVER 13	12	398	1	7			1	21	4	50	1	299	3	10	2	9					
88	CARVER-NORTH	3	24	1	4									1	6	1	14					
89	CARVER-RIVERBEND	1	3											1	3							
90	CARVER-SOUTH	2	8											2	8							
91	CARVER-WOODS	11	345	4	305			1	2	2	16	3	20	1	2							
92	CEDAR HILLS-CEDAR HILLS 13																					
93	CEDAR HILLS-LEAHY	10	1,316	2	152			1	2	2	35	1	385	2	415	2	326					
94	CEDAR HILLS-SHOPPING CENTER	10	1,182	3	507			3	38			1	562	2	58	1	17					
95	CEDAR HILLS-SKYLINE																					
96	CEDAR HILLS-ST VINCENT																					
97	CEDAR HILLS-SYLVAN	10	57					1	2	2	26			4	12	3	17					
98	CENTENNIAL-BARKER	10	41							2	8	2	4	6	29						1	13,699
99	CENTENNIAL-BRAECROFT	8	304									1	79	3	8	4	217					
100	CENTENNIAL-CENTENNIAL 13	12	723	2	54			1	2	1	4	2	30	6	633						1	12,909
101	CENTENNIAL-TREELAND	6	1,324	3	1,179									2	4	1	140					
102	CLACKAMAS-EVELYN	1	1															1	1			
103	CLACKAMAS-GLADSTONE	11	204	3	38					2	28	1	3	3	15	2	121					
104	CLACKAMAS-JENNIFER	6	841	4	836									1	1	1	3					
105	CLACKAMAS-TOLBERT	4	93	2	11					1	77			1	4							
106	CLAXTAR-CLAXTAR 13	1	1															1	1			
107	CLAXTAR-HAYESVILLE	7	288	3	217			1	2			2	20			1	50					
108	CLAXTAR-RIDGE	13	20,005	3	231			1	1					2	2	6	19,767	1	4			
109	COFFEE CREEK-FREEMAN	1	9	1	9																	
110	COFFEE CREEK-HOLIDAY	5	755	1	5			4	751													
111	COLTON-DHOOGHE	4	21	1	11									1	3	1	4	1	2			
112	COLTON-GRAYS HILL	10	968	1	6					2	24	2	899	2	12	3	27					
113	CORNELIUS-ADAIR	10	159	1	20			1	1			2	34	3	22	3	82					
114	CORNELIUS-CORNELIUS 13	4	52	3	48							1	4									
115	CORNELIUS-VERBOORT	8	348	2	15			1	6	1	22			2	103	2	201					
116	CORNELL-BLUFFS	3	505	1	431					1	74	1	0									
117	CORNELL-SALTZMAN	2	6	1	5							1	2									
118	CORNELL-WESTLAWN	4	284	3	253					1	31											
119	CULVER-SANYO #1																					
120	CURTIS-11077																					

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## 2017 Outages by Cause PGE Equipment <sup>1</sup>

Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
121	CURTIS-CURTIS 13	7	63					1	2	1	52	2	5	3	5							
122	DAYTON-EAST	19	544	4	38					3	12	4	311	1	5	7	179					
123	DAYTON-LAFAYETTE	7	269	2	158							1	3	2	12	1	90			1	6	
124	DAYTON-SOUTHWEST	8	45	1	15					1	5			1	2	5	23					
125	DELAWARE-DENVER	9	87							2	62			5	10	2	14					
126	DELAWARE-INTERSTATE	1	3													1	3					
127	DELAWARE-LOMBARD	8	174	2	17					1	149	1	1	4	7							
128	DENNY-EAST	8	418	2	319			2	47			1	4	1	13	2	36					
129	DENNY-NORTH																					
130	DENNY-SOUTH	4	627	2	66			1	551							1	10					
131	DENNY-WEST	11	434	5	225			2	104	1	39	1	41	2	25							
132	DILLEY-DILLEY 13	10	67							2	35			5	25	3	8					
133	DILLEY-SPRINGHILL																					
134	DUNNS CORNER-DUNNS CORNER 13	17	733					3	58	4	70			4	62	6	543					
135	DUNNS CORNER-KELSO	1	3													1	3					
136	DURHAM-BONITA																					
137	DURHAM-BRIDGEPORT	5	627	2	6			2	581	1	39											
138	DURHAM-DURHAM 13	1	7					1	7													
139	DURHAM-POOPLANT																					
140	DURHAM-SATTLER	15	8,592	5	381			2	6	2	101			5	8,101	1	3					
141	DURHAM-SOUTH																					
142	E-11021																					
143	E-11039																					
144	E-11040	1	14													1	14					
145	E-11041	3	59									1	49	1	4	1	6					
146	E-11042																					
147	E-11043																					
148	E-11047	6	211	1	83							2	118	2	8			1	2			
149	E-11064																					
150	E-13139	4	39									1	14	2	24	1	0					
151	E-13140	2	294									1	276			1	18					
152	E-13141	3	98							2	95					1	2					
153	E-13142																					
154	E-13144	3	12									3	12									
155	E-13145	3	6											3	6							
156	E-13148	1	2					1	2													
157	E-13149	4	106	2	20					2	86											
158	E-13150	4	822									2	814	2	8							
159	EAGLE CREEK-BARTON	5	67	1	46									3	18	1	2					
160	EAGLE CREEK-RIVER MILL	7	172	1	11			2	14	3	145			1	2							

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Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
161	EASTPORT-76TH	10	143					1	5	1	25	1	2	4	7	3	103					
162	EASTPORT-PLAZA	6	322	1	10			1	196	1	95	1	15	1	4			1	2			
163	ELMA-ELMA 13	3	107	1	1			1	104			1	2									
164	ELMA-FOUR CORNERS	3	491	2	103					1	389											
165	ELMA-HUDSON	16	2,558	4	493			1	15			4	1,108	5	924	2	18					
166	ELMA-STATE																					
167	ESTACADA-ESTACADA 13	21	2,970	6	206	1	1,607	2	52	4	40	4	758	2	44	2	263					
168	ESTACADA-FARADAY	14	251	3	80			1	6	3	11	1	6	2	14	3	133	1	1			
169	ESTACADA-NORTH FORK	8	292	1	3			1	4	1	6	2	6	3	272							
170	FAIRMOUNT-CANDALARIA	13	2,377	1	3					1	12	4	153	3	134	4	2,075					
171	FAIRMOUNT-MISSION	8	333	2	12					1	7	3	8	1	191	1	116					
172	FAIRVIEW-CLEAR CREEK																					
173	FAIRVIEW-FAIRVIEW 13	4	87	1	31					2	47			1	10							
174	FAIRVIEW-KENNEL CLUB	4	2,158			1	1,838			2	75			1	246							
175	FAIRVIEW-TROUTDALE	9	380	1	2			2	162	1	4			4	68	1	144					
176	FAIRVIEW-WOOD VILLAGE	5	26	3	8									1	14					1	4	
177	FARGO-FARGO 13	16	843	3	580							2	37	5	145	6	81					
178	GALES CREEK-GALES CREEK 13	15	313							3	43	2	8	5	49	5	213					
179	GARDEN HOME-MCKAY	15	1,476	4	976					3	141	1	11	4	39	3	308					
180	GARDEN HOME-METZGER	16	334	8	200			1	5	1	7			2	8	4	113					
181	GLENCOE-GLISAN	4	54	1	23							2	6	1	26							
182	GLENCOE-PROVIDENCE	2	4							1	2					1	2					
183	GLENCOE-SUNNYSIDE	8	503							2	195	1	62	4	128	1	118					
184	GLENCULLEN-BRIDLEMILE	18	897	2	97					1	5	3	33	8	134	4	628					
185	GLENCULLEN-SUNSET	8	188	2	14			1	33					2	58	3	82					
186	GLENDOVEER-13596	3	90	2	87											1	3					
187	GLENDOVEER-13597	4	30							2	28			1	1	1	1					
188	GLENDOVEER-13598	2	47									1	2			1	45					
189	GLENDOVEER-13599	14	2,259	5	333	2	1,114	1	153	2	398			2	61	2	200					
190	GLENDOVEER-CLIFFGATE	16	2,005	9	978			2	965			2	4	2	14	1	44					
191	GLENDOVEER-NORTHEAST	2	5									1	4	1	1							
192	GLISAN-FAB 2A																					
193	GLISAN-UTILITY 1B																					
194	GORMLEY-MCMINNVILLE WL	1	370											1	370							
195	GRAND RONDE-AGENCY	4	825									2	735			2	91					
196	GRAND RONDE-FORTHILL	11	492							2	17	4	79	1	22	4	373					
197	HARBORTON-BURLINGTON	25	1,725	2	104			1	7	3	28	4	172	11	1,366	4	48					
198	HARBORTON-HARBORTON 13																					
199	HARBORTON-LINNTON	4	7					1	1			1	2	1	3	1	2					
200	HARMONY-HARMONY 13	10	653	1	158					1	100			2	24	6	370					

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Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
201	HARMONY-INTERNATIONAL	3	102									2	97	1	5							
202	HARMONY-LAKE	4	136									1	2	2	130					1	4	
203	HARMONY-LINWOOD	8	949	4	931				1	8			2	10	1	1						
204	HARMONY-MILWAUKIE	8	282	2	260							2	8	2	1	2	13					
205	HARMONY-THIESSEN	5	362	2	225				1	117			1	6	1	14						
206	HARRISON-DAVIS	5	37									3	18	2	18							
207	HARRISON-HARRISON 13	3	162											1	10	2	153					
208	HARRISON-IVON	5	55	1	3							2	28	2	25							
209	HAYDEN ISLAND-MAINLAND	1	3											1	3							
210	HAYDEN ISLAND-NORTH SHORE	9	5,442	3	3,578	1	1,215	2	109					1	5	2	534					
211	HAYDEN ISLAND-SOUTH SHORE	7	158	4	106			1	4							2	47					
212	HEMLOCK-FREMONT	4	72	1	4			2	14			1	54									
213	HEMLOCK-HEMLOCK 13	12	652	5	447			2	181					4	9	1	16					
214	HEMLOCK-MASON	4	75											3	29	1	46					
215	HILLCREST-CASCADIA																					
216	HILLCREST-HILLCREST 13																					
217	HILLCREST-SOUTH																					
218	HILLSBORO-DAIRY CREEK	8	324	3	17					3	299			2	8							
219	HILLSBORO-DENNIS																					
220	HILLSBORO-JACKSON	7	147	1	2			1	41			1	3	2	4	2	97					
221	HILLSBORO-LAUREL	30	6,982	5	334			3	32	8	1,993	5	4,566	5	46	4	11					
222	HILLSBORO-SCHOLLS	5	100											2	88	3	12					
223	HOGAN NORTH-BRIGADOON	9	1,311	2	307			3	907	3	41	1	56									
224	HOGAN NORTH-HOGAN NORTH 13	13	400	4	178			1	23	3	61			3	18	1	66			1	54	
225	HOGAN NORTH-LINKS	20	1,058	8	852			3	94	2	16	1	0	3	22	3	73					
226	HOGAN NORTH-SALQUIST	8	593	2	320			2	133			1	126	1	8	2	7					
227	HOGAN SOUTH-CLEVELAND	19	1,629	5	110			3	144	6	321			4	934	1	121					
228	HOGAN SOUTH-LAWRENCE	31	3,410	19	1,652			3	466	6	1,281			2	6	1	5					
229	HOGAN SOUTH-MAIN	8	1,609	1	2			1	10			2	18	2	62	2	1,517					
230	HOGAN SOUTH-PAROPA	5	614	4	602			1	12													
231	HOGAN SOUTH-WALLULA	8	545	4	269							1	26	1	4	2	245					
232	HOLGATE-BYBEE	8	870	1	4			3	649	1	7	1	90	2	120							
233	HOLGATE-GIDEON	1	499	1	499																	
234	HOLGATE-HOLGATE 13	2	11							1	8			1	3							
235	HOLGATE-KENILWORTH	3	134	1	33									1	1	1	100					
236	HOLGATE-RHONE	7	741	4	700							1	3	1	35	1	2					
237	HUBER-BANY	14	1,059	9	791			1	77	1	184			2	2	1	6					
238	HUBER-FARMINGTON	9	288	5	104									3	144	1	40					
239	HUBER-HUBER 13	8	656	5	51							1	4	1	3	1	597					
240	HUBER-KINNAMAN	13	616	6	413			1	4	1	51			3	120	2	28					

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Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
241 HUBER-MARYVILLE	14	14,707	5	362			2	213	1	457	2	18	2	13,648	1	2			1	8		
242 INDIAN-KEIZER	12	284	3	201					1	4	2	4	2	47	3	27	1	1				
243 INDIAN-LABISH	19	3,377	3	1,924			3	23	1	7	2	1,317	5	15	5	91					1	58,843
244 INDIAN-NORTH	12	572	1	6			1	504	5	38	2	14	2	5	1	5						
245 INDIAN-STATION	2	1	1	0			1	1														
246 INDIAN-WEST	7	424	2	204			1	3	1	49	1	0			2	168						
247 ISLAND-13180	7	106									1	2	3	93	3	11						
248 ISLAND-13187	10	904	2	69			3	603			1	219	2	10	2	4						
249 ISLAND-13188	9	4,068	3	9					2	64			3	3,992	1	3						
250 ISLAND-ISLAND 13	2	14									1	1	1	12								
251 JENNINGS LODGE-ADDIE	6	434	1	1			1	226	1	37	2	4			1	166						
252 JENNINGS LODGE-JENNINGS 13	13	300	4	195					1	13			7	89			1	3				
253 JENNINGS LODGE-MELDRUM	5	100					1	4			1	7			3	89						
254 JENNINGS LODGE-OAK GROVE	13	9,469	3	458					1	5	2	7	4	139	3	8,861						
255 JENNINGS LODGE-WEBSTER	9	730	3	44			2	83					2	40	2	563						
256 KELLEY POINT-MARINE																					1	103
257 KELLEY POINT-SIMMONS																					1	87
258 KELLEY POINT-SOLAR #2																						
259 KELLY BUTTE-BINNSMEAD	8	44	1	5					2	13			3	9	1	15	1	2				
260 KELLY BUTTE-FAIRLAWN	5	86											1	6	4	80						
261 KELLY BUTTE-MALL 205	10	145					1	4			3	11	2	4	4	125						
262 KELLY BUTTE-MCGREW	13	256	2	132					2	72			6	35	3	17						
263 KING CITY-BULL MOUNTAIN	4	8,791	2	8,341			1	149					1	300								
264 KING CITY-FISCHER	2	6					1	3					1	3								
265 KING CITY-HAZELBROOK	6	756	3	733			2	2					1	21								
266 KING CITY-NORTH	13	9,406	3	331			1	1	4	203	1	263	1	1	2	46			1	8,561		
267 KING CITY-SUMMERFIELD	8	3,803	3	1,702					4	2,099	1	3										
268 LAKE LABISH-LAKE LABISH																						
269 LELAND-BEAVERCREEK	18	3,985	1	34			2	54	1	37	4	60	5	13	5	3,787						
270 LELAND-CARUS	19	164	2	32			1	13	2	24	4	25	8	46	2	24						
271 LELAND-KELM	4	46							2	44			1	1			1	1				
272 LENTS-13101	10	413	1	2					1	18			7	21	1	372						
273 LENTS-HAPPY VALLEY	12	3,890	2	6					3	119			4	198	2	3,563				1	4	
274 LENTS-MT SCOTT	3	278							1	269					1	8	1	2				
275 LENTS-NORTH	9	508							1	2	1	5	6	454	1	48						
276 LIBERAL-LIBERAL 13	15	131	1	39			2	66			4	6	3	7	5	14						
277 LIBERAL-SAWMILL																						
278 LIBERTY-BROWNING	2	149							2	149												
279 LIBERTY-LONE OAK	11	794	6	509			2	145	1	27			1	18	1	95						
280 LIBERTY-MORNINGSIDE	10	285	1	57			1	1	1	50	3	34	1	2	3	142						

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
281	LIBERTY-ROSEDALE	15	308	6	53			1	4	3	99	1	9	3	138	1	4					
282	LIBERTY-SKYLINE	12	995	4	82			2	305	1	84	2	10	1	4	1	505	1	4			
283	LIBERTY-VISTA	6	612	1	2			1	1			3	529			1	80					
284	MAIN-AIRPORT	7	93	2	61			1	3	2	21	1	2	1	6							
285	MAIN-BENTLEY	13	987	5	12			3	265	2	111			1	2	2	596					
286	MAIN-EXPRESS	14	568	4	378			1	7	2	45	3	119	3	5	1	15					
287	MAIN-JONES FARM																					
288	MAIN-RIVER	12	2,056	7	1,840					1	176			2	9	2	31					
289	MARKET-ENGLEWOOD	4	389	1	5					1	8	2	376									
290	MARKET-FAIRGROUNDS	3	18	1	3					1	7					1	8					
291	MARKET-HAWTHORNE	3	9							1	7			2	3							
292	MARKET-PARK	2	61											1	4	1	57					
293	MAXIM-MAXIM 13																					
294	MCCLAIN-COTTAGE	6	344							1	243	3	26	2	75							
295	MCCLAIN-FRONT	5	15	1	8					1	3	2	3	1	1							
296	MCCLAIN-HOLLYWOOD	3	12	1	8							1	3					1	1			
297	MCGILL-LSI AIR 1A																					
298	MERIDIAN-65TH																					
299	MERIDIAN-BORLAND	3	55							2	53					1	2					
300	MERIDIAN-CHILDS	2	6											2	6							
301	MERIDIAN-LAKEVIEW	2	161									1	159	1	2							
302	MERIDIAN-MERIDIAN 13	7	268	3	62			1	39			1	4	2	162							
303	MERIDIAN-NYBERG	1	2									1	2									
304	MERIDIAN-PILKINGTON	15	1,212	9	474			1	30	5	708											
305	MERIDIAN-SAGERT	3	530	1	19			1	209					1	302							
306	MIDDLE GROVE-BROWN	10	882	3	23					2	853	1	2	3	4					1	0	
307	MIDDLE GROVE-CHEMEKETA	3	2,130			1	429	1	1,700					1	1							
308	MIDDLE GROVE-CORDON	15	2,101	4	285	1	0	4	1,780	2	26			1	5	3	5					
309	MIDDLE GROVE-SWEGLE	3	19											3	19							
310	MIDDLE GROVE-WEST	3	2,147			1	1,793			1	353	1	1									
311	MIDWAY-DIVISION	6	182	1	50			1	93	1	31			3	8							
312	MIDWAY-DOUGLAS	9	1,012	5	870							1	1	1	4	2	137					
313	MIDWAY-LYNCH	13	2,022	3	1,376							2	162	6	266	1	6			1	212	
314	MIDWAY-POWELLHURST	4	57					1	34					2	6	1	17					
315	MILL CREEK-EASTLAND	6	77	2	44			1	4	1	21			2	8							
316	MILL CREEK-KUEBLER	1	389					1	389													
317	MILL CREEK-MILL CREEK 13																					
318	MOLALLA-BUCKAROO	3	153	1	2							1	123			1	27					
319	MOLALLA-FOREST	4	28									1	0	2	4	1	23					
320	MOLALLA-MARQUAM	26	411	4	49			2	50	1	4	6	126	6	83	7	98					

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
321	MOLALLA-YODER	10	462	1	83	1	317					3	16	1	35	4	11					
322	MT ANGEL-EAST	3	102											1	3	2	98					
323	MT ANGEL-WEST	33	2,301	8	92			1	1	2	5	7	48	8	2,144	7	11					
324	MT PLEASANT-CLAIRMONT	10	540	8	295							1	3			1	242					
325	MT PLEASANT-MT VIEW	1	4	1	4																	
326	MT PLEASANT-RIVERCREST	2	27	1	7									1	20							
327	MT PLEASANT-SOUTH END	15	1,164	3	403			2	356	1	12	1	29	5	40	2	323	1	2			
328	MULINO-NORTH	4	19											3	14	1	5					
329	MULINO-SOUTH	7	69					1	19	1	15			1	5	3	25	1	4			
330	MULTNOMAH-13176	14	720	2	195			2	387			2	6	5	119	3	11					
331	MULTNOMAH-13177	3	140											2	34	1	106					
332	MULTNOMAH-13181	10	5,068	3	199					3	82	3	4,751	1	36							
333	MULTNOMAH-MULTNOMAH 13	22	3,091	5	509			1	179	5	1,198	2	135	4	58	5	1,012					
334	MURRAYHILL-KINTON	2	99	1	3					1	96											
335	MURRAYHILL-MURRAYHILL 13	3	9	2	5			1	3													
336	MURRAYHILL-REUSSER	1	24,530					1	24,530													
337	MURRAYHILL-TEAL	9	2,775	7	2,733					1	39	1	2									
338	NEWBERG-CHEHALEM	21	299	3	36			2	13	3	16	5	69	2	104	4	45			2	15	
339	NEWBERG-DUNDEE	19	677	6	156			2	9	2	20	2	130			7	361					
340	NEWBERG-HOOVER PARK	7	239	1	102					1	96	1	0	2	6	2	35					
341	NEWBERG-NORTH COLLEGE	10	102	2	2							3	56			5	44					
342	NORTH MARION-CROSBY	4	3,098											3	3,097	1	1					
343	NORTH MARION-FRONT																					
344	NORTH MARION-HUBBARD	8	1,511	3	115					1	8			1	29	3	1,359					
345	NORTH MARION-MCLAREN	13	1,063					2	5			5	901	1	3	5	154					
346	NORTH PLAINS-MASON HILL	26	634	2	74					5	74	2	10	14	461	3	15					
347	NORTH PLAINS-NORTH PLAINS 13	9	99	1	12							2	43	4	34	2	10					
348	NORTHERN-11009	5	105	1	4					1	67	1	10	1	7	1	17					
349	NORTHERN-11016																					
350	NORTHERN-11071	9	31									3	6	5	22	1	3					
351	OAK GROVE-LAKE HARRIET	2	527									1	521	1	6							
352	OAK GROVE-WHITE WATER	1	1													1	1					
353	OAK HILLS-FIVE OAKS	2	28	1	3					1	25											
354	OAK HILLS-GREENBRIER	3	12	2	3					1	9											
355	OAK HILLS-OAK HILLS 13	3	354	3	354																	
356	OAK HILLS-SOMERSET	6	482	5	461			1	21													
357	OAK HILLS-WALKER	4	8	3	7	1	1															
358	OREGON STEEL-OREGON STEEL 13																					
359	ORENCO-231ST																					
360	ORENCO-AMBERGLEN																					

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## 2017 Outages by Cause PGE Equipment <sup>1</sup>

Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
361 ORENCO-BASELINE	3	795									2	2	1	793								
362 ORENCO-ORENCO 13																						
363 ORENCO-PRIMATE	6	692	4	239			2	453														
364 ORENCO-WILKINS																						
365 ORIENT-BARLOW	15	117	2	44			1	6	3	42	8	24	1	2								
366 ORIENT-ORIENT 13	19	1,028	3	30			1	654	3	102	3	142	5	82	4	18						
367 OSWEGO-IRON MOUNTAIN	3	47	1	23									2	24								
368 OSWEGO-MARYLHURST	13	391	2	14			1	57	3	276	4	29	3	15								
369 OSWEGO-PALATINE	10	717	2	170					1	6	1	484	3	47	2	9	1	1				
370 OSWEGO-STAFFORD	6	109	2	71					2	35			2	3								
371 OXFORD-FAIRVIEW	7	514	3	379					1	23	2	109	1	4								
372 OXFORD-LEE																						
373 OXFORD-MADRONA	14	538	3	232			2	27	3	189	1	0	4	88	1	2						
374 OXFORD-OXFORD 13	2	138	1	137									1	1								
375 OXFORD-RURAL																						
376 OXFORD-SHELTON	2	10									1	3			1	7						
377 PELTON-ROUND BUTTE																						
378 PENINSULA PARK-OCKLEY GREEN	1	20											1	20								
379 PENINSULA PARK-PENINSULA PARK	9	863	1	394					1	353			3	61	4	56						
380 PLEASANT VALLEY-BAXTER	5	81	1	6			1	5	3	70												
381 PLEASANT VALLEY-CLATSOP	2	50											1	2	1	48						
382 PLEASANT VALLEY-MOON	10	3,871	5	816					2	363			2	2,687	1	5						
383 PLEASANT VALLEY-PLEASANT 13	18	345	5	83			2	14	3	43	1	6	5	83	2	117						
384 PLEASANT VALLEY-SUN	6	41	2	31											4	10						
385 PORTLAND WATER-PUMPING																						
386 PORTSMOUTH-CARBIDE	19	2,732	2	27			1	9	1	8	2	10	5	29	8	2,649						
387 PORTSMOUTH-DISPOSAL																						
388 PORTSMOUTH-WILLIS	8	51	2	24			1	3			1	4	3	19	1	2						
389 PROGRESS-GREENBURG	5	212	1	3					1	57			2	151			1	1				
390 PROGRESS-HALL																						
391 PROGRESS-ROBINSON	3	1,326	1	61			1	1,181	1	84												
392 PROGRESS-SAWYER	4	21	1	9			1	3					2	9								
393 PROGRESS-WASHINGTON SQ #1																						
394 PROGRESS-WASHINGTON SQ #2																						
395 RALEIGH HILLS-DOGWOOD	16	1,074	1	57			1	3	3	19	1	7	6	138	4	851						
396 RALEIGH HILLS-MONTCLAIR	8	1,005	1	358			1	441	1	90	2	48	2	27	1	39						
397 RALEIGH HILLS-OLESON	11	588	3	101					2	100			3	46	3	342						
398 RAMAPO-EMERALD	5	120	1	2			1	2	1	114	1	2	1	1								
399 RAMAPO-GILBERT	4	487	1	165					1	26			1	2	1	294						
400 RAMAPO-RAMAPO 13	15	283	1	4					6	99	3	114	4	12	1	54						

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Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
401 REDLAND-HENRICI	28	1,319	6	421					4	36	4	695	6	30	6	91			2	47		
402 REDLAND-REDLAND 13	24	2,081	4	127					3	67	9	980	3	38	3	15			2	854		
403 REEDVILLE-AUGUSTA	7	698	1	3			1	444			2	15	1	2	2	235						
404 REEDVILLE-BLANTON	11	1,174	10	504															1	670		
405 REEDVILLE-HAZELDALE	4	17	1	4			1	5			1	3	1	5								
406 REEDVILLE-INTEL #2																						
407 REEDVILLE-INTEL #4																						
408 REEDVILLE-INTEL #5																						
409 REEDVILLE-TV	4	2,042					1	18			2	1,991			1	33						
410 RIVERGATE SOUTH-11010																						
411 RIVERGATE SOUTH-11011	7	32					1	5			3	9	2	16	1	2						
412 RIVERGATE SOUTH-PEARCY	4	63					1	24			2	35	1	5								
413 RIVERGATE SOUTH-SWIFT																						
414 RIVERVIEW-FULTON	2	6											2	6								
415 RIVERVIEW-MACADAM	3	321	3	321																		
416 RIVERVIEW-TERWILLIGER	4	204	3	38							1	166										
417 ROCKWOOD-AIRPORT																						
418 ROCKWOOD-BOEING																						
419 ROCKWOOD-INDUSTRIAL	1	5	1	5																		
420 ROCKWOOD-REYNOLDS	11	450	4	221									6	219	1	10						
421 ROCKWOOD-ROCKWOOD 13	12	1,473	6	805	1	603							5	65								
422 ROCKWOOD-WILKES	1	6					1	6														
423 ROSEMONT-HIDDEN SPRINGS	6	465	2	442			1	6	1	3			1	4	1	10						
424 ROSEMONT-MOSSY BRAE	5	877	1	610					1	256	1	7	2	5								
425 ROSEMONT-OVERLOOK	17	922	5	670					1	10	1	59	7	71	3	112						
426 ROSEWAY-ALEXANDER																						
427 ROSEWAY-ESPLANADE	1	232					1	232														
428 ROSEWAY-ROSEWAY 13	2	18	1	2							1	16										
429 RUBY-CARLINE	11	599	1	231					2	82	2	227	1	10	4	15	1	34				
430 RUBY-JUNCTION	12	699	3	477					1	113	3	87	1	4	3	6	1	13				
431 SALEM-13260																						
432 SALEM-13261																						
433 SALEM-13262																						
434 SALEM-13263	1	144							1	144												
435 SALEM-13264																						
436 SALEM-UNION																						
437 SANDY-362ND	13	1,017	7	441			2	396	4	181												
438 SANDY-BLUFF	4	43	4	43																1	884	
439 SANDY-SANDY 13	27	862	4	11			1	10	5	310	1	1	7	205	9	325						
440 SANDY-WILDCAT	10	277	1	3	1	185							5	67	3	22						

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
441	SCAPPOOSE-SAUVIE ISLAND	2	223	2	223																	
442	SCHOLLS FERRY-KEMMER	4	22	3	20								1	1								
443	SCHOLLS FERRY-RAINBOW	23	533	2	3			1	4			7	103	9	343	4	79					
444	SCHOLLS FERRY-ROY ROGERS	5	143	2	14			1	5	1	7					1	117					
445	SCOGGINS-CHERRY GROVE	9	969	1	2					2	25	3	277			3	664					
446	SCOGGINS-LAURELWOOD	18	334	1	7			3	39	1	33	1	6	7	93	5	156					
447	SCOTTS MILLS-SCOTTS MILLS 13	24	1,733	1	24					4	30	5	60	10	1,554	3	53			1	12	
448	SELLWOOD-KELLOGG PARK	12	6,412							3	199			6	6,189	3	24					
449	SELLWOOD-SELLWOOD 13	8	10,727											6	10,723	2	3					
450	SELLWOOD-WAVERLY	4	3,210	1	1							1	90	1	3,117	1	2					
451	SHERIDAN-EAST	17	543	5	149					1	10	3	9	2	5	5	369	1	1			
452	SHERIDAN-KADELL	7	806	3	10							2	790			2	7					
453	SHUTE-LINDE 1 35KV																					
454	SILVERTON-NORTH	13	191	1	26							7	128	3	31	2	6					
455	SILVERTON-SOUTH	10	121	1	2			2	38			2	11	1	18	4	51					
456	SILVERTON-WEST	17	1,138	2	20			5	33	1	125	4	949	3	9	2	3					
457	SIX CORNERS-13359	15	3,262	4	403			3	594			2	13	3	8	3	2,243					
458	SIX CORNERS-13360	3	106	1	5									1	76	1	25					
459	SIX CORNERS-BORCHERS	10	56	3	30					2	11	1	1	2	5	2	9					
460	SIX CORNERS-CHAPMAN	5	505	2	233			1	4			1	13	1	255							
461	SIX CORNERS-SIX CORNERS 13																					
462	SP NEWSPRINT-NEWBERG																					
463	SPRING HILL-SPRING HILL																					
464	SPRINGBROOK-FERNWOOD	7	168					1	37	3	63					3	68					
465	SPRINGBROOK-ST PAUL	12	186	2	22			1	4			2	95	3	46	4	19					
466	SPRINGBROOK-VILLA	4	822	2	8			1	5					1	809							
467	SPRINGBROOK-ZIMRI	14	2,079	3	281							4	1,285	1	11	6	501					
468	ST HELENS-KASTER																					
469	ST LOUIS-EAST	8	839					1	3			2	2	1	791	3	42	1	2			
470	ST LOUIS-NORTH	16	3,136					2	4			1	787	7	1,936	5	11			1	399	
471	ST LOUIS-WEST	16	59					1	6			3	13	2	4	10	36					
472	ST MARYS EAST-BETHANY	1	2	1	2																	
473	ST MARYS EAST-BUTNER	6	2,904	2	188	1	2,454					1	2	1	254	1	6					
474	ST MARYS EAST-ELMONICA	4	550	1	364			1	87			1	2			1	98					
475	ST MARYS EAST-JENKINS																					
476	ST MARYS EAST-MILLIKAN	6	498	5	491													1	8			
477	ST MARYS EAST-ST MARYS 13	1	592					1	592													
478	STEPHENS-11001	2	13											1	10	1	3					
479	STEPHENS-11020	1	5													1	5					
480	STEPHENS-11054 NETWORK																					

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Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>										
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs									
481	STEPHENS-11055 NETWORK																														
482	STEPHENS-11092 NETWORK																														
483	STEPHENS-11093 NETWORK																														
484	STEPHENS-11094 NETWORK																														
485	1	25	1	25																											
486	STEPHENS-11097 NETWORK																														
487	1	3																				1	3								
488	1	64																				1	64								
489	STIMSON LUMBER-FORESTEX																														
490	4	46	1	18																				1	16	1	10	1	2		
491	4	66	3	19																				1	47						
492	6	613	1	30	2		208	1		363												2	11								
493	1	654																				1	654								
494	11	512	1	18																				2	152	3	100	2	5	3	237
495	SULZER PUMPS-115B																														
496	1	1																				1	1								
497	SUMMIT-MEADOWS																														
498	3	26	1	16																				1	8	1	3				
499	SUNSET-BLANCHET																														
500	SUNSET-COLFAX																														
501	SUNSET-CORNELL																														
502	SUNSET-DORION																														
503	SUNSET-IDTB																														
504	SUNSET-IDTC																														
505	SUNSET-INTEL D1B1																														
506	SUNSET-INTEL D1X1																														
507	SUNSET-KOMATSU #1																														
508	SUNSET-LANE																														
509	SUNSET-MCCALL																														
510	SUNSET-MEEK																														
511	SUNSET-NIXON																														
512	SUNSET-PAULING																														
513	SUNSET-SPALDING																														
514	1	113																				1	113								
515	SUNSET-YOUNG																														
516	1	102																				1	102								
517	SWAN ISLAND-DOLPHIN																														
518	SWAN ISLAND-FREIGHTLINER																														
519	1	10																				1	10								
520	SWAN ISLAND-SHIPYARD																														

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
521 SYLVAN-BARNES	5	2,385									1	8	2	2,372	2	4						
522 SYLVAN-PATTON	24	2,552	6	255			3	292	1	11	6	460	2	6	4	28			2	1,500		
523 TABOR-82ND	6	120	1	3							1	4	4	112								
524 TABOR-HOSPITAL	2	37					1	36			1	1										
525 TABOR-TABOR 13	10	6,542			1	3,335			1	7	2	72	5	3,129	1	0						
526 TEKTRONIX-HOCKEN	1	3	1	3																		
527 TEKTRONIX-MEADOW	1	7									1	7										
528 TEKTRONIX-NORTH																						
529 TEKTRONIX-SHANNON	7	177					1	48	1	1	1	20	1	8	3	100						
530 TEKTRONIX-SOUTH	12	1,158	5	411					2	609	2	72	2	41	1	25						
531 TEKTRONIX-TEKTRONIX 13	2	16												1	13				1	3		
532 TEKTRONIX-WEST																						
533 TEMP B-NORTH	1	3													1	3						
534 TEMP B-SOUTH																						
535 TIGARD-13336	2	1,819	2	1,819																		
536 TIGARD-13337	6	43					2	11	1	24			2	6	1	2						
537 TIGARD-13361	4	302	2	7									1	293	1	2						
538 TIGARD-13362	8	1,202	5	1,122							2	73	1	7								
539 TIGARD-TIGARD 13	8	1,907	7	1,843							1	65										
540 TOWN CENTER-LAWNFIELD	4	49	2	6			1	41									1	2				
541 TOWN CENTER-MONTEREY	1	4											1	4								
542 TOWN CENTER-NORTH																						
543 TOWN CENTER-PRECISION CASTPARTS																						
544 TOWN CENTER-SOUTH																						
545 TOWN CENTER-SUNNYBROOK	4	152					1	38	2	101			1	13								
546 TOWN CENTER-VALLEY VIEW	1	232	1	232																		
547 TROJAN-EAST																						
548 TUALATIN-AVERY	16	1,594	7	576			3	294	3	157	2	566	1	2								
549 TUALATIN-CIPOLE	2	10									1	4			1	6						
550 TUALATIN-HERMAN																						
551 TUALATIN-IBACH	5	101	4	72									1	29								
552 TUALATIN-LEVETON																						
553 TUALATIN-TUALATIN 13																						
554 TURNER-CASCADE	7	25	1	12							4	11	1	1	1	1						
555 TURNER-TURNER 13	7	30							1	10	1	3	2	8	2	7	1	3				
556 TWILIGHT-BREMER	13	932	6	110					1	4	1	793	3	14	2	11						
557 UNIONVALE-UNIONVALE 13	35	3,763	6	43					5	68	3	13	8	347	11	30	1	2	1	3,260		
558 UNIVERSITY-MILL	4	19									2	2			2	17						
559 UNIVERSITY-TRADE	9	780	1	360					1	51	1	3	3	42	3	324						
560 URBAN-BARBUR	3	30							1	27			2	3								

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
561	URBAN-CAMPUS																					
562	URBAN-CORBETT	5	410	1	4							1	6	3	401							
563	URBAN-GAINES	1	7											1	7							
564	URBAN-GIBBS																					
565	URBAN-KELLY																					
566	URBAN-LANDING	2	5											1	3	1	2					
567	URBAN-MEDICAL																					
568	URBAN-OHSU																					
569	WACKER-WACKER 1																					
570	WACONDA-NORPAC	1	2											1	2							
571	WACONDA-RIVER	12	665	3	121					2	508	4	22	1	5	1	2			1	8	
572	WACONDA-WACONDA 13	14	160	3	32			1	6	1	8	2	3	4	13	2	92	1	6			
573	WALLACE-WALLACE 13	12	504	3	162			1	2			1	158	2	10	4	170	1	2			
574	WALLACE-WILLOW LAKE	6	515	2	10							2	491	1	3	1	11					
575	WELCHES-WELCHES 13	5	1,343	1	198							1	1,129	2	11	1	5					
576	WELCHES-ZIG ZAG	14	1,051							2	47	6	974	4	21	2	9					
577	WEST PORTLAND-72ND	6	1,110			1	1,057	1	32							4	22					
578	WEST PORTLAND-NORTH	9	405	2	154					2	148	1	5	3	71	1	28					
579	WEST PORTLAND-PACIFIC	11	2,713					1	24	4	137	4	2,388	1	2	1	163					
580	WEST PORTLAND-WEST PORTLAND 13	8	347							1	9			1	7	6	331					
581	WEST UNION-CORNELIUS PASS	18	3,351	1	2					3	64	3	2,431	6	477	5	377					
582	WEST UNION-WEST UNION 13	8	765	2	138					6	626											
583	WILLAMINA-BRIDGE	18	6,226							3	42	2	4	5	11	6	90			2	6,078	
584	WILLAMINA-BUELL	16	224	2	18					2	6	1	4	2	149	9	47					
585	WILLAMINA-LUMBER	1	65																	1	65	
586	WILLBRIDGE-WILLBRIDGE #1																					
587	WILLBRIDGE-WILLBRIDGE #4	1	5											1	5							
588	WILSONVILLE-BOECKMAN	9	120	2	65			2	7	1	6	1	17	3	25							
589	WILSONVILLE-CHARBONNEAU	7	1,252	2	10					1	5	3	1,229	1	8							
590	WILSONVILLE-CITY	5	3,475	1	1,044			4	2,432													
591	WILSONVILLE-MENTORTEK																				1	58
592	WILSONVILLE-PARKWAY	2	8					2	8													
593	WILSONVILLE-VILLEBOIS	3	10	2	7			1	3													
594	WILSONVILLE-WEST	10	666	4	486					2	35	1	3	1	5	1	35			1	103	1 10,474
595	WOODBURN-CANNERY	3	264	1	256							1	4	1	3							
596	WOODBURN-EAST	19	936	1	6			2	45	1	8	4	8	8	849	3	21					
597	WOODBURN-TOMLIN	9	933					1	7	1	11	4	36	2	823	1	56					
598	WOODBURN-WEST	14	932	4	289			1	369	1	1	2	52	2	179	4	43					
599	YAMHILL-CARLTON	16	552	4	40	1	37			2	23	2	3	1	407	6	41					
	YAMHILL-YAMHILL 13	18	796	5	86			1	8	2	78	1	170	2	28	7	425					

<sup>1</sup> See Section IX - Cause Code Categories for category definitions

<sup>2</sup> Substation Equipment failures are a part of the Loss of Substation System category; not included in Total PGE Equipment

Outs = Outages

Hrs = # of customers \* duration hrs

**2017 Outages by Cause PGE Equipment <sup>1</sup>**

Feeder Name	Total PGE Equipment		UG Conductor		Primary Device		UG Accessory		Transformer		OH Conductor		OH Hardware		Cutout, Fuse, Arrestor		Meter		Pole		Substation <sup>2</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
<b>Grand Totals:</b>	3,677	429,119	834	84,452	19	16,384	272	53,116	437	28,259	499	64,772	684	71,141	27	21,869	11	98,539	27	21,869	11	98,539

<sup>1</sup> See Section IX - Cause Code Categories for category definitions

<sup>2</sup> Substation Equipment failures are a part of the Loss of Substation System category; not included in Total PGE Equipment

Outs = Outages  
Hrs = # of customers \* duration hrs  
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## Section VII

### Outages by Cause Vegetation

This section provides the number of customer outages (frequency) and customer outage hours (duration) caused by vegetation events. The information is presented by feeder and attributed to one of three primary categories and one of three subcategories, if applicable, of vegetation related events. Definitions for the primary and sub-categories are shown below:

- Total Trees: Total number of vegetation (i.e. tree) related outages. This category is the sum of Non-Preventable and Preventable outages.
- Total Non-Preventable: Total number uprooted trees, tree limbs, and broken/felled trees that resulted in an outage.
  - Tree Uprooted: Outages caused by a whole tree uprooting. This does not include broken tree parts (e.g. limb or tree top)
  - Limb on Line: Outages caused by broken tree tops or limbs
- Total Preventable (Tree / Limb Burning): Total number of outages caused by a tree growing into the conductor. This also includes tree burning events.
- Felled Tree/Limb: This category is included for reference, but is not included in Total Trees. Outages related to this category are included in the Public column in section V.

#### NOTES:

- Idle feeders are not included in this list
- Feeders may be omitted if they are a part of an alternate/multiple feeder service

## 2017 Outages by Cause Vegetation

Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
1 ABERNETHY-CLACKAMAS HEIGHTS												
2 ABERNETHY-OREGON CITY	7	626	1	568	6	59			6	59		
3 ABERNETHY-TRANSIT	3	67	2	28	1	39	1	39				
4 ALDER-ANKENY	2	2,870			2	2,870	1	2,867	1	4		
5 ALDER-IRVING	1	75			1	75			1	75		
6 ALDER-LINCOLN	11	2,369	3	8	8	2,361	5	1,078	3	1,283		
7 ALDER-STARK	2	343			2	343			2	343		
8 ALDER-TAYLOR	3	6,395	1	1	2	6,394			2	6,394		
9 ALDER-YAMHILL	2	17	1	14	1	2			1	2		
10 AMITY-AMITY 13	1	130			1	130			1	130		
11 AMITY-BELLEVUE	8	2,106	1	23	7	2,084	1	29	6	2,055		
12 ARLETA-52ND	5	20			5	20	3	12	2	8	1	87
13 ARLETA-FOSTER	1	24			1	24	1	24				
14 ARLETA-HAROLD	2	816	1	811	1	5			1	5		
15 ARLETA-POWELL												
16 ARLETA-STEELE	2	3	1	2	1	1			1	1		
17 BANKS-BANKS 13	11	284	2	32	9	252	2	13	7	239		
18 BANKS-CEDAR CANYON	24	1,522	1	5	23	1,517	13	969	10	548	1	39
19 BARNES-BATTLE CREEK	1	98			1	98			1	98		
20 BARNES-BOONE												
21 BARNES-COMMERCIAL	5	1,360	1	789	4	571			4	571		
22 BARNES-SUNNYSIDE	1	2			1	2	1	2				
23 BEAVER-KB PIPELINE												
24 BEAVERTON-ALLEN												
25 BEAVERTON-JAMIESON	1	0			1	0			1	0		
26 BEAVERTON-NORTHWEST												
27 BEAVERTON-WEST SLOPE	3	107			3	107			3	107		
28 BELL-BATTIN	5	183	3	65	2	118			2	118		
29 BELL-BRENTWOOD												
30 BELL-FLAVEL	2	59			2	59			2	59		
31 BELL-JOHNSON CREEK												
32 BELL-KENDALL	3	29	1	4	2	25			2	25		
33 BELL-KING	3	22			3	22			3	22		
34 BELL-SOUTHGATE	2	224			2	224	1	4	1	219		
35 BELL-WICHITA	10	181	6	160	4	21			4	21		
36 BETHANY-BURTON												
37 BETHANY-GERMANTOWN	12	3,031	3	240	9	2,791	4	1,126	5	1,665		
38 BETHANY-KAISER												
39 BETHANY-LAIDLAW	6	13,095			6	13,095	5	12,961	1	134		
40 BETHANY-SPRINGVILLE	2	414			2	414			2	414		

1-Total Trees = Total Prev. + Total Non-Prev.

2-Total Non-Prev. = Tree Uprooted + Limb on Line

3-Felled Tree/Limb events are included in the Public System category; not included in Total Trees

Outs = Outages

Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Vegetation

Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
41 BETHANY-THOMPSON												
42 BETHEL-FRUITLAND	4	77			4	77	2	25	2	51		
43 BETHEL-GEER	2	37	2	37								
44 BETHEL-MACLEAY	3	2,058	1	2	2	2,056			2	2,056		
45 BLUE LAKE-BLUE LAKE 13												
46 BLUE LAKE-SUNDIAL												
47 BLUE LAKE-TOYO TANSO												
48 BOISE CASCADE-BOISE #1												
49 BOONES FERRY-GOODALL	6	1,527	1	12	5	1,514	4	1,511	1	4		
50 BOONES FERRY-KRUSE	2	7			2	7	1	0	1	6		
51 BOONES FERRY-LAKE GROVE	10	2,022	1	9	9	2,013			9	2,013		
52 BOONES FERRY-MOUNTAIN PARK	1	2,547			1	2,547			1	2,547		
53 BOONES FERRY-WEMBLEY PARK	7	371	1	77	6	294			6	294		
54 BORING-282ND	11	860	1	9	10	851	3	569	7	282		
55 BORING-CITY	16	643	4	54	12	588			12	588		
56 BORING-TELFORD	19	6,317	4	54	15	6,263	9	3,972	6	2,290	1	1,807
57 BRIGHTWOOD-BRIGHTWOOD 13	26	2,275	2	213	24	2,062	17	1,919	7	143		
58 BRIGHTWOOD-NORTH BANK	15	556	1	1	14	555	9	469	5	86		
59 BROOKWOOD-BORWICK												
60 BROOKWOOD-BROOKWOOD 13												
61 BROOKWOOD-SUNRISE												
62 CANBY-13643	5	24			5	24	3	14	2	11	2	7
63 CANBY-13644	5	1,241			5	1,241	2	147	3	1,094		
64 CANBY-BUTTEVILLE	5	109	2	5	3	104			3	104		
65 CANBY-FILBERT												
66 CANYON-13114 NETWORK #1												
67 CANYON-13115 NETWORK #1												
68 CANYON-13116 NETWORK #1												
69 CANYON-13117 NETWORK #1												
70 CANYON-13118 PSU												
71 CANYON-13119 PSU												
72 CANYON-13120												
73 CANYON-13121												
74 CANYON-13122 NETWORK #2												
75 CANYON-13123 NETWORK #2												
76 CANYON-13124 NETWORK #2												
77 CANYON-13125 NETWORK #2												
78 CANYON-13133 NETWORK #3												
79 CANYON-13134 NETWORK #3												
80 CANYON-13135 NETWORK #3												

1-Total Trees = Total Prev. + Total Non-Prev.

2-Total Non-Prev. = Tree Uprooted + Limb on Line

3-Felled Tree/Limb events are included in the Public System category; not included in Total Trees

Outs = Outages

Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Vegetation

Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
81 CANYON-13136 NETWORK #3												
82 CANYON-21ST	2	20			2	20			2	20		
83 CANYON-23RD	5	223	2	94	3	128			3	128		
84 CANYON-BURNSIDE	1	4			1	4			1	4		
85 CANYON-CANYON 13	9	2,072	2	911	7	1,161	3	957	4	204		
86 CARVER-ALMOND	1	4,601			1	4,601	1	4,601				
87 CARVER-CARVER 13	3	67			3	67	2	59	1	8		
88 CARVER-NORTH	1	10			1	10	1	10				
89 CARVER-RIVERBEND												
90 CARVER-SOUTH												
91 CARVER-WOODS	6	5,232			6	5,232	2	5,150	4	82		
92 CEDAR HILLS-CEDAR HILLS 13												
93 CEDAR HILLS-LEAHY	10	53	1	3	9	51	4	27	5	23		
94 CEDAR HILLS-SHOPPING CENTER	6	3,157			6	3,157	2	6	4	3,151		
95 CEDAR HILLS-SKYLINE												
96 CEDAR HILLS-ST VINCENT	2	6			2	6	1	3	1	2		
97 CEDAR HILLS-SYLVAN	12	2,822	1	440	11	2,382	3	53	8	2,328		
98 CENTENNIAL-BARKER	2	90			2	90			2	90	1	1
99 CENTENNIAL-BRAECROFT	1	58			1	58			1	58		
100 CENTENNIAL-CENTENNIAL 13	4	8	1	5	3	3	1	1	2	2	1	70
101 CENTENNIAL-TREELAND	4	264			4	264	2	37	2	227		
102 CLACKAMAS-EVELYN												
103 CLACKAMAS-GLADSTONE	6	372			6	372	3	191	3	181		
104 CLACKAMAS-JENNIFER												
105 CLACKAMAS-TOLBERT												
106 CLAXTAR-CLAXTAR 13	1	1			1	1			1	1		
107 CLAXTAR-HAYESVILLE	1	11			1	11			1	11		
108 CLAXTAR-RIDGE	2	53	1	10	1	43			1	43		
109 COFFEE CREEK-FREEMAN												
110 COFFEE CREEK-HOLIDAY	1	148			1	148			1	148		
111 COLTON-DHOOGHE	9	1,174			9	1,174	5	1,118	4	57		
112 COLTON-GRAYS HILL	33	5,566	5	822	28	4,745	16	2,567	12	2,178		
113 CORNELIUS-ADAIR	5	33	1	21	4	12	2	7	2	5		
114 CORNELIUS-CORNELIUS 13	8	986			8	986	5	885	3	100	1	2
115 CORNELIUS-VERBOORT	7	346			7	346	3	231	4	114		
116 CORNELL-BLUFFS	3	783	1	20	2	763			2	763		
117 CORNELL-SALTZMAN	1	3			1	3			1	3		
118 CORNELL-WESTLAWN	6	464			6	464	3	12	3	452		
119 CULVER-SANYO #1												
120 CURTIS-11077												

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Outs = Outages

Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Vegetation

Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
121 CURTIS-CURTIS 13	2	1,049			2	1,049			2	1,049		
122 DAYTON-EAST	3	143			3	143	1	30	2	113		
123 DAYTON-LAFAYETTE	9	1,215			9	1,215	5	430	4	785		
124 DAYTON-SOUTHWEST	4	40			4	40			4	40		
125 DELAWARE-DENVER	2	4			2	4			2	4		
126 DELAWARE-INTERSTATE												
127 DELAWARE-LOMBARD	2	3			2	3	1	2	1	1		
128 DENNY-EAST	9	4,137	3	109	6	4,028	3	3,813	3	215		
129 DENNY-NORTH												
130 DENNY-SOUTH	1	168			1	168			1	168		
131 DENNY-WEST	6	315			6	315	1	40	5	275		
132 DILLEY-DILLEY 13	5	395			5	395	4	317	1	78		
133 DILLEY-SPRINGHILL												
134 DUNNS CORNER-DUNNS CORNER 13	28	6,474	3	40	25	6,435	11	4,072	14	2,363		
135 DUNNS CORNER-KELSO	2	28			2	28	2	28				
136 DURHAM-BONITA												
137 DURHAM-BRIDGEPORT	1	43			1	43			1	43		
138 DURHAM-DURHAM 13												
139 DURHAM-POOPLANT												
140 DURHAM-SATTLER	2	3	1	2	1	2	1	2				
141 DURHAM-SOUTH												
142 E-11021												
143 E-11039												
144 E-11040												
145 E-11041												
146 E-11042												
147 E-11043												
148 E-11047												
149 E-11064												
150 E-13139												
151 E-13140												
152 E-13141												
153 E-13142												
154 E-13144	4	8,539	1	8,536	3	3			3	3		
155 E-13145	1	1			1	1			1	1		
156 E-13148												
157 E-13149												
158 E-13150												
159 EAGLE CREEK-BARTON	13	5,117	1	9	12	5,108	7	2,119	5	2,989		
160 EAGLE CREEK-RIVER MILL	23	2,034	3	675	20	1,359	6	714	14	645		

1-Total Trees = Total Prev. + Total Non-Prev.

2-Total Non-Prev. = Tree Uprooted + Limb on Line

3-Felled Tree/Limb events are included in the Public System category; not included in Total Trees

Outs = Outages

Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Vegetation

Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
161 EASTPORT-76TH	3	55			3	55			3	55		
162 EASTPORT-PLAZA	1	45	1	45								
163 ELMA-ELMA 13												
164 ELMA-FOUR CORNERS												
165 ELMA-HUDSON	2	7			2	7			2	7		
166 ELMA-STATE	1	1			1	1			1	1		
167 ESTACADA-ESTACADA 13	32	7,341	2	238	30	7,102	15	3,200	15	3,903	3	31
168 ESTACADA-FARADAY	20	6,492	3	1,088	17	5,403	3	78	14	5,325		
169 ESTACADA-NORTH FORK	15	708	2	6	13	702	3	189	10	513		
170 FAIRMOUNT-CANDALARIA	1	7			1	7			1	7	1	5
171 FAIRMOUNT-MISSION	19	4,985	2	48	17	4,937	8	4,213	9	724		
172 FAIRVIEW-CLEAR CREEK												
173 FAIRVIEW-FAIRVIEW 13	2	73			2	73			2	73		
174 FAIRVIEW-KENNEL CLUB	5	30			5	30			5	30		
175 FAIRVIEW-TROUTDALE	5	10,919	1	3,430	4	7,489	1	7,480	3	8	1	2
176 FAIRVIEW-WOOD VILLAGE	2	3	1	1	1	1			1	1		
177 FARGO-FARGO 13	6	311	1	8	5	303	1	81	4	222		
178 GALES CREEK-GALES CREEK 13	43	5,794	2	77	41	5,717	14	2,253	27	3,463	2	14
179 GARDEN HOME-MCKAY	6	1,189	2	268	4	921	3	905	1	16	1	1
180 GARDEN HOME-METZGER	4	573			4	573			4	573	1	1
181 GLENCOE-GLISAN	4	99			4	99			4	99		
182 GLENCOE-PROVIDENCE												
183 GLENCOE-SUNNYSIDE	2	19	1	1	1	18			1	18		
184 GLENCULLEN-BRIDLEMILE	8	4,139			8	4,139	3	4,055	5	84		
185 GLENCULLEN-SUNSET	6	2,611	1	269	5	2,342	4	2,341	1	1		
186 GLENDOVEER-13596	1	9	1	9								
187 GLENDOVEER-13597	1	284			1	284			1	284		
188 GLENDOVEER-13598	2	194	1	71	1	122			1	122		
189 GLENDOVEER-13599	4	58	1	2	3	56			3	56		
190 GLENDOVEER-CLIFFGATE	2	121			2	121			2	121		
191 GLENDOVEER-NORTHEAST	2	7,949			2	7,949	1	758	1	7,191		
192 GLISAN-FAB 2A												
193 GLISAN-UTILITY 1B												
194 GORMLEY-MCMINNVILLE WL												
195 GRAND RONDE-AGENCY	3	1,062			3	1,062			3	1,062		
196 GRAND RONDE-FORTHILL	4	137			4	137	3	99	1	37		
197 HARBORTON-BURLINGTON	48	4,901	3	16	45	4,885	22	4,309	23	576	1	1,415
198 HARBORTON-HARBORTON 13												
199 HARBORTON-LINNTON	3	64	1	4	2	60	2	60				
200 HARMONY-HARMONY 13	2	15			2	15			2	15		

1-Total Trees = Total Prev. + Total Non-Prev.

2-Total Non-Prev. = Tree Uprooted + Limb on Line

3-Felled Tree/Limb events are included in the Public System category; not included in Total Trees

Outs = Outages

Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Vegetation

Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
201 HARMONY-INTERNATIONAL	1	38			1	38			1	38		
202 HARMONY-LAKE												
203 HARMONY-LINWOOD												
204 HARMONY-MILWAUKIE	2	18			2	18	1	14	1	4		
205 HARMONY-THIESSEN	1	3			1	3			1	3		
206 HARRISON-DAVIS	1	5			1	5			1	5		
207 HARRISON-HARRISON 13	2	6	2	6								
208 HARRISON-IVON	1	4			1	4	1	4				
209 HAYDEN ISLAND-MAINLAND												
210 HAYDEN ISLAND-NORTH SHORE												
211 HAYDEN ISLAND-SOUTH SHORE												
212 HEMLOCK-FREMONT	1	9			1	9			1	9	1	4
213 HEMLOCK-HEMLOCK 13												
214 HEMLOCK-MASON												
215 HILLCREST-CASCADIA												
216 HILLCREST-HILLCREST 13												
217 HILLCREST-SOUTH												
218 HILLSBORO-DAIRY CREEK	5	151	1	3	4	148	2	20	2	128	1	4
219 HILLSBORO-DENNIS												
220 HILLSBORO-JACKSON	2	327	1	6	1	320	1	320				
221 HILLSBORO-LAUREL	15	4,440	1	522	14	3,918	3	366	11	3,552		
222 HILLSBORO-SCHOLLS	1	54			1	54			1	54		
223 HOGAN NORTH-BRIGADOON	1	3	1	3								
224 HOGAN NORTH-HOGAN NORTH 13	1	12	1	12								
225 HOGAN NORTH-LINKS	33	15,381	1	10	32	15,371	15	11,701	17	3,669		
226 HOGAN NORTH-SALQUIST	1	1,684			1	1,684			1	1,684		
227 HOGAN SOUTH-CLEVELAND												
228 HOGAN SOUTH-LAWRENCE	13	9,146	6	2,801	7	6,345	2	1,644	5	4,700		
229 HOGAN SOUTH-MAIN	1	1	1	1								
230 HOGAN SOUTH-PAROPA												
231 HOGAN SOUTH-WALLULA												
232 HOLGATE-BYBEE	3	5	1	2	2	3			2	3		
233 HOLGATE-GIDEON	1	1			1	1			1	1		
234 HOLGATE-HOLGATE 13	1	182			1	182			1	182		
235 HOLGATE-KENILWORTH	2	78	1	2	1	76	1	76				
236 HOLGATE-RHONE												
237 HUBER-BANY												
238 HUBER-FARMINGTON	2	56			2	56	1	2	1	54		
239 HUBER-HUBER 13	1	27			1	27			1	27		
240 HUBER-KINNAMAN	2	5,792			2	5,792			2	5,792	1	2

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Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
241 HUBER-MARYVILLE	1	3			1	3			1	3		
242 INDIAN-KEIZER	1	1			1	1			1	1		
243 INDIAN-LABISH	3	23			3	23			3	23		
244 INDIAN-NORTH	2	149			2	149			2	149		
245 INDIAN-STATION	1	87			1	87	1	87				
246 INDIAN-WEST	2	21			2	21			2	21		
247 ISLAND-13180	5	232	2	168	3	63	2	62	1	2		
248 ISLAND-13187	13	1,446	1	6	12	1,440	4	751	8	689		
249 ISLAND-13188	8	537	1	23	7	514	2	495	5	18		
250 ISLAND-ISLAND 13												
251 JENNINGS LODGE-ADDIE												
252 JENNINGS LODGE-JENNINGS 13	1	213			1	213			1	213	1	1
253 JENNINGS LODGE-MELDRUM												
254 JENNINGS LODGE-OAK GROVE	5	121	1	3	4	118	1	5	3	113		
255 JENNINGS LODGE-WEBSTER	2	7			2	7			2	7		
256 KELLEY POINT-MARINE												
257 KELLEY POINT-SIMMONS												
258 KELLEY POINT-SOLAR #2												
259 KELLY BUTTE-BINNSMEAD	2	1,150	1	2	1	1,149	1	1,149				
260 KELLY BUTTE-FAIRLAWN	7	283	1	1	6	282	1	5	5	277		
261 KELLY BUTTE-MALL 205												
262 KELLY BUTTE-MCGREW	4	372			4	372	3	10	1	362		
263 KING CITY-BULL MOUNTAIN												
264 KING CITY-FISCHER	1	5			1	5			1	5		
265 KING CITY-HAZELBROOK	3	16	1	2	2	14	1	12	1	3		
266 KING CITY-NORTH												
267 KING CITY-SUMMERFIELD	2	17	1	15	1	2	1	2				
268 LAKE LABISH-LAKE LABISH												
269 LELAND-BEAVERCREEK	11	1,475			11	1,475	3	1,289	8	186	1	270
270 LELAND-CARUS	28	12,883	2	5	26	12,878	8	1,758	18	11,120		
271 LELAND-KELM	1	1			1	1			1	1		
272 LENTS-13101	3	31	1	1	2	30			2	30		
273 LENTS-HAPPY VALLEY	4	39	2	33	2	7			2	7		
274 LENTS-MT SCOTT												
275 LENTS-NORTH												
276 LIBERAL-LIBERAL 13	6	480	2	348	4	132	1	9	3	123		
277 LIBERAL-SAWMILL												
278 LIBERTY-BROWNING												
279 LIBERTY-LONE OAK	1	6	1	6								
280 LIBERTY-MORNINGSIDE	1	2			1	2			1	2		

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
281	LIBERTY-ROSEDALE	8	130			8	130			8	130	
282	LIBERTY-SKYLINE	1	2			1	2			1	2	
283	LIBERTY-VISTA											
284	MAIN-AIRPORT	1	3			1	3			1	3	
285	MAIN-BENTLEY	1	2			1	2			1	2	
286	MAIN-EXPRESS	1	333			1	333	1	333			
287	MAIN-JONES FARM											
288	MAIN-RIVER	2	14	2	14							
289	MARKET-ENGLEWOOD	2	2			2	2			2	2	
290	MARKET-FAIRGROUNDS	1	16			1	16			1	16	
291	MARKET-HAWTHORNE											
292	MARKET-PARK											
293	MAXIM-MAXIM 13											
294	MCCLAIN-COTTAGE	2	5			2	5	1	2	1	3	
295	MCCLAIN-FRONT											
296	MCCLAIN-HOLLYWOOD	1	5			1	5			1	5	
297	MCGILL-LSI AIR 1A											
298	MERIDIAN-65TH											
299	MERIDIAN-BORLAND	1	5			1	5	1	5			
300	MERIDIAN-CHILDS											
301	MERIDIAN-LAKEVIEW	1	22			1	22			1	22	
302	MERIDIAN-MERIDIAN 13	3	114	1	5	2	109			2	109	
303	MERIDIAN-NYBERG											
304	MERIDIAN-PILKINGTON	3	97			3	97	1	39	2	58	
305	MERIDIAN-SAGERT											
306	MIDDLE GROVE-BROWN	1	1			1	1			1	1	
307	MIDDLE GROVE-CHEMEKETA											
308	MIDDLE GROVE-CORDON	4	56			4	56	1	40	3	16	
309	MIDDLE GROVE-SWEGLE											
310	MIDDLE GROVE-WEST											
311	MIDWAY-DIVISION											
312	MIDWAY-DOUGLAS	1	2			1	2			1	2	
313	MIDWAY-LYNCH	4	48	1	4	3	44	1	36	2	8	
314	MIDWAY-POWELLHURST	6	258	1	180	5	77			5	77	
315	MILL CREEK-EASTLAND	6	627	2	442	4	185	2	176	2	9	
316	MILL CREEK-KUEBLER	1	2			1	2			1	2	
317	MILL CREEK-MILL CREEK 13											
318	MOLALLA-BUCKAROO											
319	MOLALLA-FOREST	20	1,771	3	253	17	1,518	9	1,404	8	115	
320	MOLALLA-MARQUAM	18	2,146	1	499	17	1,647	11	1,572	6	75	

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
321 MOLALLA-YODER	2	29			2	29			2	29		
322 MT ANGEL-EAST												
323 MT ANGEL-WEST	9	2,395	1	3	8	2,393	1	11	7	2,382		
324 MT PLEASANT-CLAIRMONT	2	5,565			2	5,565			2	5,565		
325 MT PLEASANT-MT VIEW												
326 MT PLEASANT-RIVERCREST												
327 MT PLEASANT-SOUTH END	7	2,162	1	26	6	2,135	4	1,583	2	553		
328 MULINO-NORTH	5	292	1	17	4	276	1	25	3	250		
329 MULINO-SOUTH	9	1,095	2	117	7	978	2	727	5	251		
330 MULTNOMAH-13176	4	47	1	7	3	40	1	5	2	35		
331 MULTNOMAH-13177	6	859	1	19	5	840	2	833	3	7		
332 MULTNOMAH-13181	3	10,513	1	4	2	10,509			2	10,509		
333 MULTNOMAH-MULTNOMAH 13	6	1,790	2	718	4	1,072	3	909	1	164		
334 MURRAYHILL-KINTON												
335 MURRAYHILL-MURRAYHILL 13	1	13			1	13			1	13		
336 MURRAYHILL-REUSSER												
337 MURRAYHILL-TEAL												
338 NEWBERG-CHEHALEM	11	8,566	3	5,699	8	2,867	6	2,596	2	271		
339 NEWBERG-DUNDEE	5	2,546	1	2,223	4	323	1	35	3	288		
340 NEWBERG-HOOVER PARK	2	95			2	95			2	95		
341 NEWBERG-NORTH COLLEGE	5	220	1	21	4	199	2	81	2	119	1	1,165
342 NORTH MARION-CROSBY												
343 NORTH MARION-FRONT												
344 NORTH MARION-HUBBARD	1	96			1	96			1	96		
345 NORTH MARION-MCLAREN	9	9,178	1	190	8	8,988	3	3,882	5	5,106		
346 NORTH PLAINS-MASON HILL	28	7,757	1	520	27	7,237	12	3,354	15	3,883	2	6
347 NORTH PLAINS-NORTH PLAINS 13	10	1,884	1	7	9	1,876	3	1,574	6	303	1	153
348 NORTHERN-11009	2	5			2	5			2	5		
349 NORTHERN-11016												
350 NORTHERN-11071												
351 OAK GROVE-LAKE HARRIET	3	619			3	619			3	619		
352 OAK GROVE-WHITE WATER	1	3			1	3			1	3		
353 OAK HILLS-FIVE OAKS	1	44	1	44								
354 OAK HILLS-GREENBRIER												
355 OAK HILLS-OAK HILLS 13												
356 OAK HILLS-SOMERSET												
357 OAK HILLS-WALKER												
358 OREGON STEEL-OREGON STEEL 13												
359 ORENCO-231ST												
360 ORENCO-AMBERGLEN												

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	
361	ORENCO-BASELINE												
362	ORENCO-ORENCO 13												
363	ORENCO-PRIMATE												
364	ORENCO-WILKINS												
365	ORIENT-BARLOW	17	1,790	2	1,453	15	337	8	266	7	71	1	5
366	ORIENT-ORIENT 13	31	17,263	6	688	25	16,575	15	13,818	10	2,757		
367	OSWEGO-IRON MOUNTAIN	1	17			1	17			1	17		
368	OSWEGO-MARYLHURST	4	276			4	276			4	276		
369	OSWEGO-PALATINE	12	2,562			12	2,562	7	2,442	5	119		
370	OSWEGO-STAFFORD	1	41	1	41							1	3
371	OXFORD-FAIRVIEW	1	174			1	174	1	174				
372	OXFORD-LEE	3	211			3	211			3	211		
373	OXFORD-MADRONA												
374	OXFORD-OXFORD 13	2	8			2	8	1	6	1	2		
375	OXFORD-RURAL												
376	OXFORD-SHELTON												
377	PELTON-ROUND BUTTE												
378	PENINSULA PARK-OCKLEY GREEN	2	39	1	1	1	38			1	38		
379	PENINSULA PARK-PENINSULA PARK	3	1,545	1	1,527	2	17	1	7	1	10		
380	PLEASANT VALLEY-BAXTER	3	1,359	1	4	2	1,355	1	1,324	1	31		
381	PLEASANT VALLEY-CLATSOP												
382	PLEASANT VALLEY-MOON												
383	PLEASANT VALLEY-PLEASANT 13	16	6,186	1	11	15	6,175	9	5,587	6	589		
384	PLEASANT VALLEY-SUN	1	15			1	15			1	15		
385	PORTLAND WATER-PUMPING												
386	PORTSMOUTH-CARBIDE	2	4			2	4			2	4		
387	PORTSMOUTH-DISPOSAL												
388	PORTSMOUTH-WILLIS	2	8			2	8			2	8		
389	PROGRESS-GREENBURG	3	1,005	1	990	2	15			2	15		
390	PROGRESS-HALL												
391	PROGRESS-ROBINSON	2	34			2	34			2	34		
392	PROGRESS-SAWYER												
393	PROGRESS-WASHINGTON SQ #1												
394	PROGRESS-WASHINGTON SQ #2												
395	RALEIGH HILLS-DOGWOOD	4	329	1	3	3	325			3	325		
396	RALEIGH HILLS-MONTCLAIR	5	76	1	32	4	44	1	1	3	43		
397	RALEIGH HILLS-OLESON	5	590			5	590	1	143	4	447	1	6
398	RAMAPO-EMERALD	2	27			2	27	1	25	1	3		
399	RAMAPO-GILBERT	2	37	2	37								
400	RAMAPO-RAMAPO 13	7	532	1	352	6	181	2	4	4	177		

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
401 REDLAND-HENRICI	22	12,649	1	3	21	12,646	6	4,624	15	8,022	1	6
402 REDLAND-REDLAND 13	18	6,490	4	667	14	5,823	6	4,355	8	1,468		
403 REEDVILLE-AUGUSTA	2	5			2	5	1	1	1	4		
404 REEDVILLE-BLANTON	1	2			1	2	1	2				
405 REEDVILLE-HAZELDALE	7	634			7	634	2	16	5	618		
406 REEDVILLE-INTEL #2												
407 REEDVILLE-INTEL #4												
408 REEDVILLE-INTEL #5												
409 REEDVILLE-TV	1	2			1	2			1	2		
410 RIVERGATE SOUTH-11010												
411 RIVERGATE SOUTH-11011	2	19			2	19			2	19		
412 RIVERGATE SOUTH-PEARCY												
413 RIVERGATE SOUTH-SWIFT												
414 RIVERVIEW-FULTON	3	229			3	229			3	229		
415 RIVERVIEW-MACADAM												
416 RIVERVIEW-TERWILLIGER	8	1,035	2	2	6	1,034	2	824	4	210		
417 ROCKWOOD-AIRPORT												
418 ROCKWOOD-BOEING												
419 ROCKWOOD-INDUSTRIAL												
420 ROCKWOOD-REYNOLDS												
421 ROCKWOOD-ROCKWOOD 13	3	42			3	42	2	24	1	18		
422 ROCKWOOD-WILKES												
423 ROSEMONT-HIDDEN SPRINGS	4	27			4	27	1	2	3	25		
424 ROSEMONT-MOSSY BRAE	7	204			7	204	3	157	4	47		
425 ROSEMONT-OVERLOOK	3	11			3	11	1	7	2	5		
426 ROSEWAY-ALEXANDER												
427 ROSEWAY-ESPLANADE												
428 ROSEWAY-ROSEWAY 13	1	3			1	3	1	3				
429 RUBY-CARLINE	2	218			2	218			2	218		
430 RUBY-JUNCTION	3	3,042	1	32	2	3,010	1	6	1	3,005		
431 SALEM-13260												
432 SALEM-13261												
433 SALEM-13262												
434 SALEM-13263												
435 SALEM-13264												
436 SALEM-UNION												
437 SANDY-362ND	3	10			3	10	1	2	2	8		
438 SANDY-BLUFF												
439 SANDY-SANDY 13	48	5,794	12	2,789	36	3,006	12	1,884	24	1,122	1	61
440 SANDY-WILDCAT	8	2,071	1	14	7	2,057	2	1,811	5	246		

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
441	SCAPPOOSE-SAUVIE ISLAND											
442	SCHOLLS FERRY-KEMMER											
443	18	1,393	1	407	17	986	9	404	8	581		
444	1	4			1	4			1	4		
445	5	207			5	207	4	35	1	172		
446	10	1,728	4	1,270	6	458	4	157	2	301		
447	18	668	1	19	17	649	7	323	10	326		
448	3	9	1	1	2	9			2	9		
449	4	157	1	74	3	82			3	82		
450	2	105	1	0	1	105			1	105		
451	2	187			2	187	1	173	1	13		
452	3	593	1	55	2	538	2	538				
453	SHUTE-LINDE 1 35KV											
454	5	2,053			5	2,053	3	46	2	2,007		
455	15	7,585			15	7,585	6	368	9	7,217		
456	17	2,261	3	310	14	1,951	5	38	9	1,913		
457	11	7,454	1	446	10	7,008	1	4,099	9	2,909		
458	2	167			2	167	1	149	1	18		
459	7	469			7	469	2	74	5	394		
460	3	1,431	2	1,411	1	21	1	21				
461	1	163			1	163			1	163		
462	SP NEWSPRINT-NEWBERG											
463	SPRING HILL-SPRING HILL											
464	6	3,736			6	3,736	3	3,492	3	244		
465	9	136			9	136	3	120	6	16		
466	SPRINGBROOK-VILLA											
467	3	2,463	1	24	2	2,439	1	2,434	1	5		
468	ST HELENS-KASTER											
469	ST LOUIS-EAST											
470	1	1			1	1			1	1		
471	5	97			5	97	2	7	3	90		
472	ST MARYS EAST-BETHANY											
473	5	328			5	328	2	240	3	88		
474	ST MARYS EAST-ELMONICA											
475	ST MARYS EAST-JENKINS											
476	ST MARYS EAST-MILLIKAN											
477	ST MARYS EAST-ST MARYS 13											
478	STEPHENS-11001											
479	STEPHENS-11020											
480	STEPHENS-11054 NETWORK											

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	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
481	STEPHENS-11055 NETWORK											
482	STEPHENS-11092 NETWORK											
483	STEPHENS-11093 NETWORK											
484	STEPHENS-11094 NETWORK											
485	STEPHENS-11095 NETWORK											
486	STEPHENS-11097 NETWORK											
487	STEPHENS-11098											
488	STEPHENS-11099 NETWORK											
489	STIMSON LUMBER-FORESTEX											
490	SULLIVAN-ROBINWOOD	4	339			4	339	1	2	3	338	
491	SULLIVAN-SALAMO	5	818			5	818	3	197	2	621	
492	SULLIVAN-SUSSEX											
493	SULLIVAN-TANNER											
494	SULLIVAN-WILLAMETTE	13	3,342	3	341	10	3,001	4	45	6	2,956	
495	SULZER PUMPS-115B											
496	SUMMIT-GOVERNMENT CAMP	1	2			1	2			1	2	
497	SUMMIT-MEADOWS	2	316			2	316	2	316			
498	SUMMIT-SUMMIT 13	7	292			7	292	6	244	1	48	
499	SUNSET-BLANCHET											
500	SUNSET-COLFAX											
501	SUNSET-CORNELL											
502	SUNSET-DORION											
503	SUNSET-IDTB											
504	SUNSET-IDTC											
505	SUNSET-INTEL D1B1											
506	SUNSET-INTEL D1X1											
507	SUNSET-KOMATSU #1											
508	SUNSET-LANE											
509	SUNSET-MCCALL											
510	SUNSET-MEEK											
511	SUNSET-NIXON											
512	SUNSET-PAULING											
513	SUNSET-SPALDING											
514	SUNSET-WHITMAN											
515	SUNSET-YOUNG											
516	SWAN ISLAND-BASIN											
517	SWAN ISLAND-DOLPHIN											
518	SWAN ISLAND-FREIGHTLINER											
519	SWAN ISLAND-GOING	1	3			1	3	1	3			
520	SWAN ISLAND-SHIPYARD											

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## 2017 Outages by Cause Vegetation

Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
521 SYLVAN-BARNES	20	9,030	5	230	15	8,800	2	56	13	8,744	1	3
522 SYLVAN-PATTON	17	1,365	3	226	14	1,139	9	1,075	5	64		
523 TABOR-82ND	2	112			2	112			2	112		
524 TABOR-HOSPITAL												
525 TABOR-TABOR 13	4	1,445			4	1,445	1	204	3	1,241		
526 TEKTRONIX-HOCKEN												
527 TEKTRONIX-MEADOW												
528 TEKTRONIX-NORTH												
529 TEKTRONIX-SHANNON	10	1,839	3	399	7	1,440	3	351	4	1,089		
530 TEKTRONIX-SOUTH	4	1,196			4	1,196			4	1,196		
531 TEKTRONIX-TEKTRONIX 13	2	7			2	7	1	4	1	3		
532 TEKTRONIX-WEST												
533 TEMP B-NORTH												
534 TEMP B-SOUTH												
535 TIGARD-13336	3	634			3	634	1	42	2	592		
536 TIGARD-13337	3	11	1	2	2	9	1	5	1	4		
537 TIGARD-13361	2	104			2	104	1	4	1	100		
538 TIGARD-13362	2	136			2	136			2	136		
539 TIGARD-TIGARD 13	2	8			2	8			2	8		
540 TOWN CENTER-LAWNFIELD	2	3,211			2	3,211			2	3,211		
541 TOWN CENTER-MONTEREY	4	230			4	230	2	21	2	209		
542 TOWN CENTER-NORTH												
543 TOWN CENTER-PRECISION CASTPARTS												
544 TOWN CENTER-SOUTH												
545 TOWN CENTER-SUNNYBROOK												
546 TOWN CENTER-VALLEY VIEW												
547 TROJAN-EAST												
548 TUALATIN-AVERY	1	2			1	2			1	2		
549 TUALATIN-CIPOLE												
550 TUALATIN-HERMAN												
551 TUALATIN-IBACH												
552 TUALATIN-LEVETON												
553 TUALATIN-TUALATIN 13												
554 TURNER-CASCADE	3	171			3	171			3	171		
555 TURNER-TURNER 13	4	1,117	1	12	3	1,105	2	300	1	805		
556 TWILIGHT-BREMER	7	766			7	766	1	585	6	181		
557 UNIONVALE-UNIONVALE 13	13	709	1	6	12	703	7	644	5	59		
558 UNIVERSITY-MILL												
559 UNIVERSITY-TRADE	5	52			5	52			5	52		
560 URBAN-BARBUR	1	2	1	2								

1-Total Trees = Total Prev. + Total Non-Prev.

2-Total Non-Prev. = Tree Uprooted + Limb on Line

3-Felled Tree/Limb events are included in the Public System category; not included in Total Trees

Outs = Outages

Hrs = # of customers \* duration hrs

## 2017 Outages by Cause Vegetation

Feeder Name	Total Trees <sup>1</sup>		Total Preventable (Tree/Limb Burning)		Total Non-Preventable <sup>2</sup>		Tree Uprooted		Limb on Line		Felled Tree/Limb <sup>3</sup>	
	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs	Outs	Hrs
561 URBAN-CAMPUS												
562 URBAN-CORBETT	4	2,641			4	2,641	3	2,639	1	2		
563 URBAN-GAINES	7	175			7	175	4	120	3	55		
564 URBAN-GIBBS												
565 URBAN-KELLY	1	5			1	5			1	5		
566 URBAN-LANDING												
567 URBAN-MEDICAL												
568 URBAN-OHSU												
569 WACKER-WACKER 1	1	2	1	2								
570 WACONDA-NORPAC												
571 WACONDA-RIVER	3	235	2	223	1	12			1	12		
572 WACONDA-WACONDA 13	3	7			3	7	3	7				
573 WALLACE-WALLACE 13	12	1,731			12	1,731	7	1,339	5	392		
574 WALLACE-WILLOW LAKE												
575 WELCHES-WELCHES 13	19	15,713	3	242	16	15,471	8	4,017	8	11,454		
576 WELCHES-ZIG ZAG	66	16,152	14	1,475	52	14,677	31	7,176	21	7,501		
577 WEST PORTLAND-72ND												
578 WEST PORTLAND-NORTH	6	4,426	1	3,240	5	1,185	3	480	2	705		
579 WEST PORTLAND-PACIFIC	2	15			2	15			2	15		
580 WEST PORTLAND-WEST PORTLAND 13	1	1			1	1			1	1		
581 WEST UNION-CORNELIUS PASS	22	2,252	3	182	19	2,070	8	309	11	1,760		
582 WEST UNION-WEST UNION 13	1	155			1	155			1	155		
583 WILLAMINA-BRIDGE	4	64			4	64			4	64		
584 WILLAMINA-BUELL	9	1,566			9	1,566	3	586	6	979		
585 WILLAMINA-LUMBER												
586 WILLBRIDGE-WILLBRIDGE #1												
587 WILLBRIDGE-WILLBRIDGE #4												
588 WILSONVILLE-BOECKMAN	2	50	1	10	1	40			1	40		
589 WILSONVILLE-CHARBONNEAU	1	6			1	6			1	6		
590 WILSONVILLE-CITY	2	17	1	2	1	15			1	15		
591 WILSONVILLE-MENTORTEK												
592 WILSONVILLE-PARKWAY	1	3	1	3								
593 WILSONVILLE-VILLEBOIS	2	62			2	62	1	11	1	51		
594 WILSONVILLE-WEST	3	7	1	1	2	6			2	6		
595 WOODBURN-CANNERY	3	70			3	70	2	68	1	3		
596 WOODBURN-EAST	3	210			3	210	2	208	1	2		
597 WOODBURN-TOMLIN	1	298			1	298	1	298				
598 WOODBURN-WEST	2	9			2	9	1	2	1	7		
599 YAMHILL-CARLTON	11	1,570			11	1,570	4	829	7	740		
600 YAMHILL-YAMHILL 13	8	580			8	580	3	160	5	419		
<b>Grand Totals:</b>	<b>2,016</b>	<b>469,411</b>	<b>268</b>	<b>54,754</b>	<b>1,748</b>	<b>414,658</b>	<b>676</b>	<b>196,832</b>	<b>1,072</b>	<b>217,826</b>	<b>33</b>	<b>5,169</b>

1-Total Trees = Total Prev. + Total Non-Prev.

2-Total Non-Prev. = Tree Uprooted + Limb on Line

3-Felled Tree/Limb events are included in the Public System category; not included in Total Trees

Outs = Outages

Hrs = # of customers \* duration hrs



## Section VIII

### 2017 Feeder Information

The Feeder Information list consists of the following categories for each feeder:

- Code
- Name
- Region
- Number of Customers
- Class

NOTE:

- This list INCLUDES idle and alternate feeder services.

Attachment A  
PGE 2017 Annual Reliability Report

Confidential - Provided on CD Only  
Section III, Feeder Performance Summary  
Section VIII, 2017 Feeder Information

## **Section IX**

### **Appendix**

- Reliability Measure Definitions
- IEEE 1366 TMED Definition and Classification
- Cause Code Categories and Mapping
- PGE Service Territory Map

## Reliability Measure Definitions

1. Reliability The degree to which electric service is supplied without interruptions.

2. SAIDI The system average interruption duration index. This is the sustained interruption duration time (in minutes) that an average customer experiences during the year. It is determined by dividing the annual sum of all customer sustained interruption durations by the total number of customers served.

$$\text{SAIDI} = \frac{\text{Sum of customer sustained interruption durations}}{\text{Total number of PGE customers served}}$$

3. SAIFI The system average sustained interruption frequency index. This index is the number of times that an average customer experiences a sustained interruption during a year. It is determined by dividing the total annual number of customer sustained interruptions by the total number of customers served

$$\text{SAIFI} = \frac{\text{Total number of customer sustained interruptions}}{\text{Total number of PGE customers served}}$$

4. MAIFI<sub>e</sub> Momentary average interruption frequency index of events for the system. This index is the number of times that an average customer experiences momentary interruption events during a year. It is determined by dividing the total annual number of customer momentary interruption events by the total number of customers served. Note that this index does not include the events immediately preceding a sustained interruption.

$$\text{MAIFI}_e = \frac{\text{Total number of customer momentary interruption events}}{\text{Total number of PGE customers served on Feeders with MV90 or SCADA}}$$

## Major Event Day (MED) Definition and Classification<sup>1</sup>

A MED is a day in which the daily system SAIDI exceeds a threshold value, TMED. The SAIDI index is used as the basis of this definition since it leads to consistent results regardless of utility size, and because SAIDI is a good indicator of operational and design stress. Even though SAIDI is used to determine the MEDs, all indices should be calculated based on removal of the identified days.

In calculating daily system SAIDI, any interruption that spans multiple days is accrued to the day on which the interruption begins. The MED identification TMED value is calculated at the end of each reporting period (typically one year) for use during the next reporting period, as follows:

- 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.
- b) Only those days that have a SAIDI/Day value will be used to calculate TMED (do not include days that did not have any interruptions).
- c) Take the natural logarithm (ln) of each daily SAIDI value in the dataset.
- d) Find  $\alpha$  (Alpha), the average of the logarithms (also known as the log-average) of the data set.
- e) Find  $\beta$  (Beta), the standard deviation of the logarithms (also known as the log-standard deviation) of the data set.
- f) Compute the MED threshold, TMED, using:

$$T_{\text{MED}} = e^{(\alpha + 2.5\beta)}$$

- g) Any day with daily SAIDI greater than the threshold value TMED that occurs during the subsequent reporting period is classified as a MED.

Activities that occur on days classified as MEDs should be separately analyzed and reported.

---

<sup>1</sup> Per IEEE Standard 1366-2012: IEEE Guide for Electric Power Distribution Reliability Indices

## Cause Code Categories and Mapping

*Due to implementation of a new OMS system, a more detailed list of cause codes have been created and mapped to performance categories*

Cause Code Category Mapping - Natural		Cause Code Category Mapping - System			
Category	Cause	Category	Cause	Category	Cause
Adverse Weather	Earthquake	Cutout, Fuse, Arrestor	Arrestor	PGE Equipment	Primary Splice
Adverse Weather	Flooding	Cutout, Fuse, Arrestor	Fuse / Cutout	PGE Equipment	Recloser / Sectionalizer
Adverse Weather	Forest Fire	Human Factor	Design Error	PGE Equipment	Regulator
Adverse Weather	High Winds	Human Factor	Installation Error - Improper Install	PGE Equipment	Secondary Cable
Adverse Weather	Severe Heat	Human Factor	Installation Error - Wrong Equipment	PGE Equipment	Secondary Conductor
Adverse Weather	Snow / Ice	Human Factor	Operational Error	PGE Equipment	Secondary Deadend
Animal	Other - Animal	Human Factor	Utility Made Contact	PGE Equipment	Secondary Splice
Animal	Reportable Bird	PGE Equipment	Anchor / Guying	PGE Equipment	Sleeve
Animal	Squirrel	PGE Equipment	Arrestor	PGE Equipment	Stress Cone
Lightning	Lightning	PGE Equipment	Capacitor	PGE Equipment	Submersible Transformer
Unknown	Other - Environment / Weather	PGE Equipment	Cross Arm	PGE Equipment	Switch
Unknown	Pole Fire	PGE Equipment	Elbow	PGE Equipment	UG Connector / Clamp / Jumper
Non-Preventable Tree	Limb on Line	PGE Equipment	Fuse / Cutout	Public	Car Hit Equipment
Non-Preventable Tree	Tree Uprooted	PGE Equipment	Insulator	Public	Electrical Contact
Preventable Tree	Tree / Limb Burning	PGE Equipment	Lateral	Public	Felled Tree / Limb
		PGE Equipment	Meter	Public	Non Residential Fire
		PGE Equipment	Network Protector	Public	Object Contact
		PGE Equipment	OH Connector / Clamp / Jumper	Public	Other - PGE Intentional Outage
		PGE Equipment	Other - Pole Hardware Failure	Public	Other - Public
		PGE Equipment	Other - Underground Hardware Failure	Public	Residential Fire
		PGE Equipment	Overhead Transformer	Public	Underground Dig In
		PGE Equipment	Padmount Transformer	Public	Unplanned - Safety
		PGE Equipment	Pole / Structure	Public	Vandalism / Theft
		PGE Equipment	Primary Cable		
		PGE Equipment	Primary Conductor		

NOTE: Outages where the System is Substation are grouped into Loss of Supply - Substation and outages where the System is Transmission are grouped into Loss of Supply - Transmission

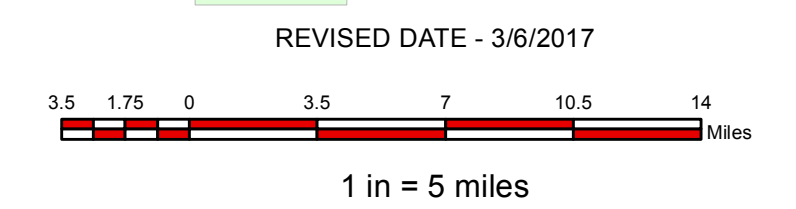
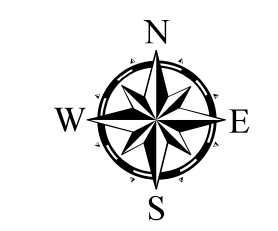
## Cause Code Categories and Mapping

Cause Code Category Mapping - Equipment			
Category	Cause	Category	Cause
Cutout, Fuse, Arrestor	Arrestor	Pole	Pole / Structure
Cutout, Fuse, Arrestor	Fuse / Cutout	Substation	Other - Substation Equipment Failure
Meter	Meter	Substation	Protection System
OH Conductor	Primary Conductor	Substation	Terminal Equipment
OH Conductor	Secondary Conductor	Transformer	Overhead Transformer
OH Conductor	Secondary Deadend	Transformer	Padmount Transformer
OH Conductor	Sleeve	Transformer	Submersible Transformer
Primary Device	Capacitor	UG Accessory	Elbow
Primary Device	Network Protector	UG Accessory	Lateral
Primary Device	Recloser / Sectionalizer	UG Accessory	Other - Underground Hardware Failure
Primary Device	Regulator	UG Accessory	Primary Splice
Primary Device	Switch	UG Accessory	Secondary Splice
OH Hardware	Anchor / Guying	UG Accessory	Stress Cone
OH Hardware	Cross Arm	UG Accessory	UG Connector / Clamp / Jumper
OH Hardware	Insulator	UG Conductor	Primary Cable
OH Hardware	OH Connector / Clamp / Jumper	UG Conductor	Secondary Cable
OH Hardware	Other - Pole Hardware Failure		

Cause Code Category Mapping - Tree	
Category	Cause
Non-Preventable Tree	Limb on Line
Non-Preventable Tree	Tree Uprooted
Preventable Tree	Tree / Limb Burning

# PGE SERVICE TERRITORY

- Non-PGE
- EASTERN
- SOUTHERN
- WESTERN

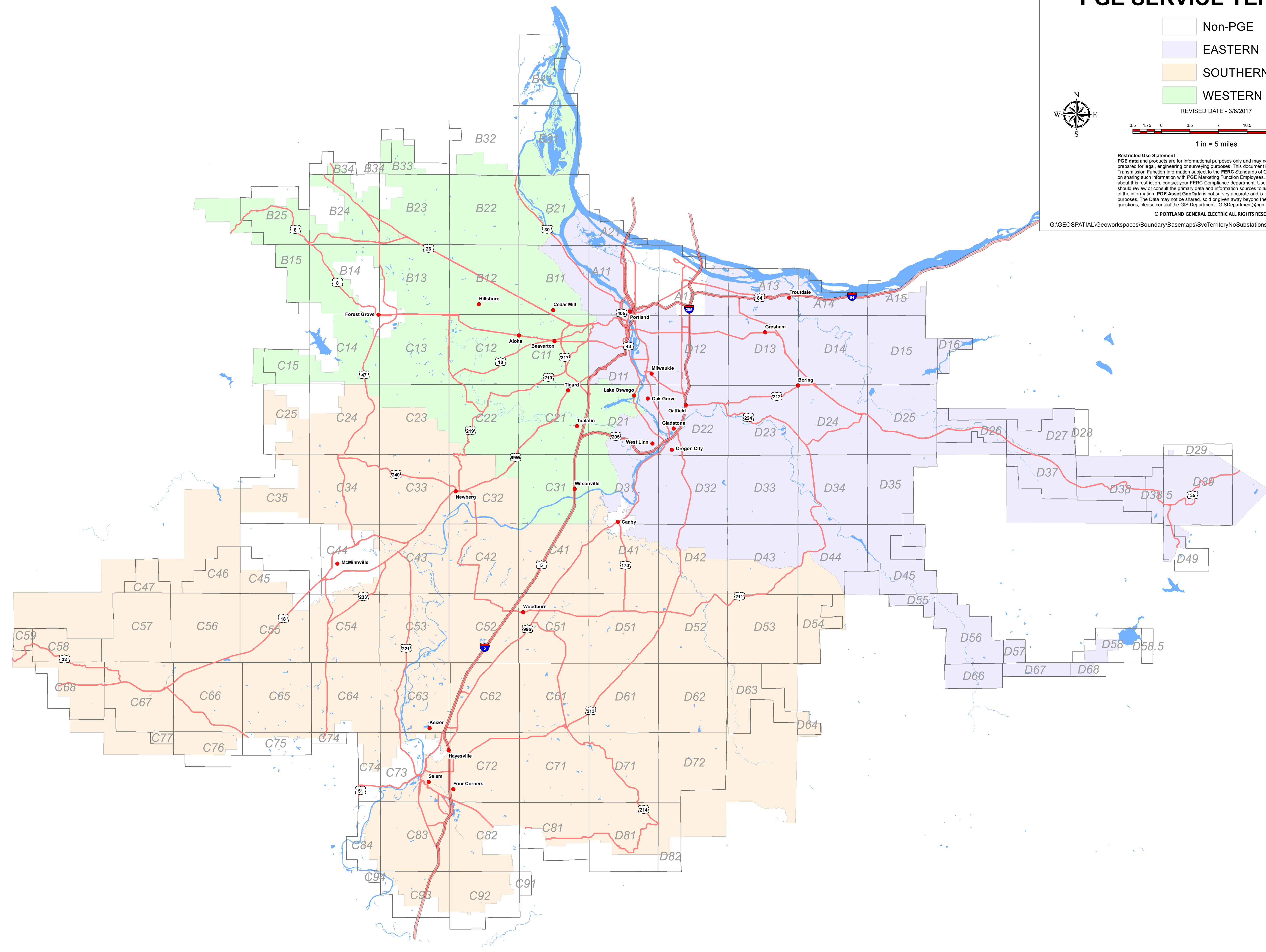


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SOURCE DATA: GISP







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

TO: Lori Koho, manager of PUC Safety Section  
CC: Yassir Rashid, Rob Weik  
FROM: Jay Landstrom, manager of T&D Asset Management  
SUBJECT: **Follow up on Staff comments to PGE's 2017 Reliability Report**  
DATE: December 26, 2018

Comments on PGE 2017 Reliability Report

*Safety Staff Comment 1:*

"Page 2: 2014 SAIDI is listed as 95 minutes excluding MED and 248 minutes including MED. In 2014 report, these values were listed as 93 minutes and 245 minutes respectively."

**Response:** A data error related to PGE's customer counts was identified in Q3, 2015. This error impacted PGE's reported SAIDI, SAIFI, and MAIFI values captured in the 2013 and 2014 Annual Reliability reports. PGE submitted RE 113, Supplemental Filing for PGE 2013 and 2014 Annual Reliability Reports, noting these errors and supplementing with corrected reports. RE 113 was submitted August 26, 2015 to the PUC's Filing Center. A copy is attached to this response. The amended/corrected 2014 Annual Reliability Report reflects PGE's SAIDI excluding MED as 94.5 minutes and 248 minutes for SAIDI including MED, which are the values reflected in the 2017 report.

*Safety Staff Comment 2:*

"Page 3: The first column of both tables is titled 'Year' instead of what appears to be 'Region.'"

**Response:** This was an error and will be corrected.

*Safety Staff Comment 3:*

"Page 7: PGE lists the total number of outages and duration hours of the planned outages (labeled as Grand Totals) as 5,105 outages and 195,694 hours respectively. These figures are different from what PGE listed on page 7 and page (5,092 outages) and on page 10 (194,939 hours)."

**Response:** This was an error and will be corrected. The Grand Totals on page 81 (5,105 outages and 195,694 hours) are the correct values.

*Safety Staff Comment 4:*

“PGE needs to explain the aforementioned discrepancies and all other discrepancies and correct the record.”

**Response:** PGE will update and reissue the 2017 Annual Reliability Report to OPUC Staff by January 31, 2019.

*Safety Staff Comment 5:*

“Page 5: In its 2013 Reliability Report, PGE categorizes equipment caused outages into 16 categories. In its 2014 Reliability Report, PGE categorizes equipment caused outages into 13 categories. In its 2015 Reliability Report, PGE categorizes equipment caused outages into 28 categories. In its 2016 and 2017 Reliability Reports, PGE categorizes equipment caused outages into 9 categories. Same applies to data included on pages 6, 8, and 9.”

**Response:** PGE has performed a variety of actions over the past few years as related to outage cause code reporting. These actions were driven by improvements (2013 – 2014) and new system implementation (2015+):

2013-2014: Report charts/graphs only list an equipment outage category if there was an actual outage in the category that year. For example, if there were no outages caused by regulators, the regulator category would not appear on the graphic.

2015: New OMS system implemented in Q3, 2015. Major cause categories in the new system were aligned with IEEE standards. The new OMS system included an extensive list of equipment caused outage categories (28). PGE chose to display the entire list in the 2015 Annual Reliability Report.

2016: Outage cause code list reduced to fewer categories in an effort to make information easier to analyze and consume. This is the approach we will continue on a going forward basis.

*Safety Staff Comment 6:*

“Page 5: In its 2013 Reliability Report, PGE categorizes vegetation caused outages into 4 categories. In its 2014 Reliability Report, PGE categorizes vegetation caused outages into 5 categories. In its 2015, 2016, and 2017 Reliability Reports, PGE categorizes vegetation caused outages into 3 categories. Same applies to data included on pages 6, 8, and 9.”

**Response:** See response to Comment 5.

*Safety Staff Comment 7:*

"PEG needs to be consistent in its reporting from one year to the other. Staff will prepare guidelines that utilities are expected to follow when reporting its annual reliability reports. Staff would like PGE to explain the reasons behind reporting Sections III and VIII of the reliability report as confidential starting 2014, whereas they were not regarded as confidential before 2014."

**Response:** PGE agrees and sees value in consistent reporting. PGE does not currently plan to perform additional modifications to outage cause codes. This is driven by the desire to have a consistent data set in which to perform review and analysis.

Sections III and VIII of PGE's Annual Reliability Reports were made confidential starting in 2014 given the concern that if publicly available, the information on feeders and number of customers served could be used by someone with ill intentions to disrupt and damage the system. This concern was identified around the same time that the Commission was asking for briefings on seismic resilience and physical security from the electric companies. Information deemed confidential and redacted was submitted to Staff on a CD marked confidential.

*Safety Staff Comment 8:*

"Page 99: PGE lists felled tree/limb in the Public cause category but not in the vegetation cause category. What if a limb fell due to poor tree trimming? I do not know whether this Staff agrees with such categorization. PGE should provide an explanation to why this cause is listed in the Public Category rather than in the Vegetation category."

**Response:** The cause code "Felled Tree Limb" refers specifically to an outage event created by a member of the public cutting a tree or tree branch and causing an outage to the PGE system. This is not a vegetation caused outage.

If a limb falls because PGE failed to do proper tree trimming, this would be covered by the 'Limb on Line' cause code. This covers all limbs dropped by trees not related to human error. This is not the same as "Felled Tree Limb" event.

*Safety Staff Comment 9:*

"Section OAR 860-023-0151 (2)(b) requires PGE to provide summary of sustained interruptions by cause compared to the previous four-year performance, and lists 11 cause categories that should be used to classify outages. One of those categories is planned outages. PGE does not appear to have included planned outages when it calculated its reliability indices for 2016 and 2017 reporting periods. Comparing the figure that PGE provided on page 7 of its 2017 Reliability Report against figures it provided in previous reliability reports, one would conclude those figures pertain to data that includes major event days ("MED").

“Accordingly, the analysis below is based on data that includes MED. If planned outages related data were included in those calculation, reliability indices values would have been different than what PGE reported in its 2016 and 2017. Same argument would be made regarding reliability indices excluding MED.”

**Response:** PGE’s 2016 and 2017 Annual Reliability Reports are explicit in noting that planned outages were excluded and note the following in the Report Summary section of the report (page 2):

“Planned outage events<sup>1</sup> were also excluded from the 2016 distribution system performance indices<sup>2</sup> based on PGE’s understanding of best practices performed by peer utilities and analysis methods utilized in IEEE 1782. While planned outage events were not captured in PGE’s 2016 indices, these events are reported in Sections II and V of this report to comply with Oregon Administrative Rule (OAR) 860-023-0151.”

The following tables show the impact of including planned outages for the 2016 and 2017 SAIDI and SAIFI values. As PGE performs work to ensure and enhance reliability on its system, planned outages are often necessary. It seems inappropriate to include planned outages in the indices for a couple of reasons. First, PGE would suggest that OAR 860-023-101 doesn’t contemplate “planned outages” in the calculation of the indices because “planned outages” do not involve a “protective device making the interruption” and that is one of the mandatory data elements that an electric company is obligated to capture for each interruption of service, under that rule, in order to demonstrate compliance. Secondly, it seems unfair to include “planned outages” in the indices and show reduced reliability when, in reality, the customer is notified in advance, can make plans for the outage time and the underlying work/outage is intentional, to benefit customers and the system.

---

<sup>1</sup> Per IEEE 1366, a planned outage event is defined as “the intentional disabling of a component’s capability to deliver power, done at a preselected time, usually for the purposes of construction, preventative maintenance, or repair.” IEEE 1782, states “the planned outage event category includes, but is not limited to: road construction, maintenance and repairs, load swaps, replacing equipment, and house moves. Typically, planned interruptions are those interruptions that can be delayed by the utility personnel and performed only after the appropriate or required customer notification.”

<sup>2</sup> Planned outage events were not excluded from PGE’s distribution system performance indices in previous years.

2016			2017		
Excluding MED			Excluding MED		
Category	SAIDI	SAIFI	Category	SAIDI	SAIFI
Unplanned Outages	97.01	0.59	Unplanned Outages	112.86	0.62
Planned Outages	3.68	0.03	Planned Outages	13.58	0.04
Including MED			Including MED		
Category	SAIDI	SAIFI	Category	SAIDI	SAIFI
Unplanned Outages	169.32	0.79	Unplanned Outages	350.10	1.04
Planned Outages	4.74	0.03	Planned Outages	13.79	0.04

*Safety Staff Comment 10:*

“Page 7: Planned outages are listed as 83 in 2014, 215 in 2015, 2,130 in 2016, and 5,092 in 2017. The number of planned outages increased by more than 60 fold between 2014 and 2017. In its report, PGE does not explain this trend of dramatic increase in the number of planned outages between 2014 and 2017.

The percentage of planned outages increased from 1.1% in 2014 to 28.3% in 2017.”

**Response:** Prior to the installation of a new OMS system, PGE captured very few planned outage events. The planned outages that were captured prior to Q3, 2015 represented customers that were unaware of a planned outage due to failure to receive or read communications (e.g. letters or door hangers) and/or incorrect resident information. These scenarios would result in a customer reporting an outage if they were home during the event.

With the installation of a new OMS system, PGE developed an extensive process and workflow to capture each planned outage performed. As a result, the capture and reporting of PGE’s planned outage events increased significantly.

Additionally, PGE has seen an increase in the number of planned outages given a significant focus on replacement of underground cable and transformers containing PCB oil.

*Safety Staff Comment 11:*

“Page 10: Durations of planned outages are listed as 7,811 hours in 2014, 18,706 in hours 2015, 66,601 hours in 2016, and 194,939 hours in 2017. The duration of planned outages increased by nearly 24 fold between 2014 and 2017. In its report, PGE does not explain this trend of dramatic increase in the duration of planned outages between 2014 and 2017.

The percentage of planned outages durations increased from 0.2% in 2014 to 3.7% in 2017.”

**Response:** See response to Comment 10. We attribute this increase to the implementation of the new OMS and better capturing and reporting of planned outages.

*Safety Staff Comment 12:*

“Staff would seek more information from P E regarding the following:

- Worst performing feeders,
- Capital expenditures,
- O&M expenditures,
- Vegetation management expenditures,
- Plans to improve reliability, and
- Potential reliability risks and plans to mitigate those potential risks.”

**Response:** PGE looks forward to discussing this request in more detail with Safety Staff to identify the data and information to submit.

*Safety Staff Comment 13:*

“Data would be more operable if it is provided in MS Excel format.”

**Response:** PGE is open to reporting the data in Excel format and would like to work with Staff to determine the information it needs.

Sincerely,

A handwritten signature in black ink, appearing to read "Jay Landstrom". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jay Landstrom  
Manager, T&D Asset Management

