

2019 Electric System Reliability Performance Report

August 31, 2020

Prepared by
Distribution and Engineering Services Division
SNOHOMISH COUNTY PUBLIC UTILITY DISTRICT NO. 1
Everett, Washington

Executive Summary

This report describes the Snohomish County PUD's (District) electric system reliability from January 1, 2019, through December 31, 2019.

In 2017, the District retired the legacy Outage Reporting System (ORS) as the system of record when the new Outage Management System (OMS) was put into service. In conjunction with the adoption of OMS as the system of record, several significant changes occurred.

The number of outages recorded in 2017 and beyond increased as compared to previous years because outage records are automatically generated in OMS, rather than the manual process required by ORS. IEEE recognizes this phenomenon as typical, and provides a calculation method for an ‘uplift factor’, described in IEEE Standard 1782, as a means of allowing more accurate comparison of records prior to an OMS implementation, to post-OMS data. This ‘uplift factor’ has been applied to the previous five years’ average data. Appendix C provides additional data on historical performance without the uplift factor applied.

Before OMS, manually tracking outages in ORS was suspended during declared major events, and high-level estimates of outages were used. Because of the ability to record all outages in OMS, the District has adopted the IEEE defined term, Major Event Day (MED). This allows outages occurring during non-routine conditions to be differentiated from daily operations. MEDs are defined in IEEE Guideline 1366 “Guide for Electric Power Distribution Reliability Indices.”

In addition to tracking outages during non-routine conditions, the District now tracks planned outages, although neither planned outages nor those occurring on MEDs will be included in the District’s SAIDI, SAIFI and CAIDI system indices, and are listed separately. This will allow these reliability indices to reflect reliability experienced under routine conditions to better reveal trends in daily operation, which could be skewed by major events or construction.

District customers lost power for an average of 91.3 minutes (SAIDI) in 2019 during routine operation. This is lower than the adjusted five-year average of 112.4 minutes. The average length of time required to restore power after an outage was 106.3 minutes (CAIDI) in 2019 during routine operation. This is higher than the adjusted five-year average of 100.9 minutes. District customers lost power an average of 0.86 times (SAIFI) in 2017 during routine operation. This is lower than the adjusted five-year average of 1.11 interruptions.

There was one MED for the year, which occurred on February 11.

Table of Contents

Executive Summary.....	iii
1 Background.....	6
1.1 Introduction.....	6
1.2 Statistical indicators used.....	6
2 Outage Data Collection	8
2.1 Record-keeping	8
2.2 Change in record-keeping during non-routine operations.....	8
3 System Reliability Statistics	9
3.1 Data for 2017	9
3.2 Effect of Major Event Days on the District	11
4 The Transmission System.....	12
4.1 Introduction.....	12
4.2 Outages	12
5 The Distribution System.....	14
5.1 Introduction.....	14
5.2 System Performance	14
5.2.1 Outage Causes.....	14
5.2.2 Explanation of Equipment Failure Category.....	16
5.3 Urban, Suburban, Rural Classifications	17
5.4 Reliability Improvement Priority	18
Appendix A	19
Appendix B	43

List of Figures

Figure 5-1: 2019 Distribution Outages by Cause.....	14
Figure 5-2: Five-Year Average Distribution Outages by Cause (2014-2018)	15
Figure 5-3: 2019 Distribution Outage Minutes by Cause	15
Figure 5-4: Five-Year Average Distribution Outage Minutes by Cause (2014-2018).....	16
Figure 5-5: 2019 Equipment Failures	16

List of Tables

Table 3-1: General Descriptive Data	9
Table 3-2: Outage Data for 2019	9
Table 3-3: Five-Year Average Annual Outage Data for the Period 2014-2018 (Pre-OMS)	10
Table 4-4-1: Transmission Outages	12
Table 5-1: Circuit Reliability Improvement Priority	18
Table A-1: Substation Metrics	19
Table A-2: Circuit Metrics	24
Table B-1: SAIDI 1991 - 2019	43
Table B-2: CAIDI 1991 - 2019	44

1 Background

1.1 Introduction

Understanding the causes of outages and developing methods or programs to reduce their rate of occurrence are two of the most important goals in the operation of any electric utility. This report identifies the causes of the outages in 2019 and their impacts on system reliability.

The District receives power from the Bonneville Power Administration (BPA) at three delivery points, the BPA Murray, SnoKing, and Snohomish substations. Transmission lines from those substations deliver power at 115 kV to 90 (including Jackson Hydro) distribution substations and switching stations in the District's service area. A typical distribution substation has four 12.47 kV circuits and serves an average of 4,000 customers. The District's service territory includes long circuits in the eastern and northern areas of the county, with high tree exposure through rural areas. These circuits experience relatively more outages. The urban and suburban areas in Everett and the south county area typically have shorter circuits and fewer outages.

1.2 Statistical indicators used

The District measures electric system reliability using indices defined by the Institute of Electrical and Electronics Engineers (IEEE). The definitions come from the current revision of IEEE Standard 1366- IEEE Guide for Electric Power Distribution Reliability Indices. The standard defines these indices as “sustained interruption indices,” meaning a loss of service to one or more customers for more than five minutes. At present the District defines an outage as a loss of service for one or more minutes.

SAIDI (System Average Interruption Duration Index)

This index measures the total duration of interruption for the average customer during a predefined period of time. It is commonly measured in customer minutes of interruption. Mathematically, this is calculated using the following equation:

$$\text{SAIDI} = \frac{\sum \text{Customer Interruption Durations}}{\text{Total Number of Customers Served}}$$

SAIDI can be calculated for any defined set of customers, such as all customers served from a specific circuit, all customers served from a specific substation, or for all District customers.

CAIDI (Customer Average Interruption Duration Index)

This index represents the average time required to restore service to customers after an interruption. Mathematically, this is calculated using the following equation:

$$\text{CAIDI} = \frac{\sum \text{Customer Interruption Durations}}{\text{Total Number of Customers Interrupted}}$$

CAIDI can also be calculated for any defined set of customers.

SAIFI (System Average Interruption Frequency Index)

This index indicates how often the average customer experiences a sustained interruption over a predefined period of time. Mathematically, this is calculated using the following equation:

$$\text{SAIFI} = \frac{\sum \text{Total Number of Customers Interrupted}}{\text{Total Number of Customers Served}}$$

Similar to SAIDI and CAIDI, SAIFI can be calculated for any defined set of customers.

MED (Major Event Day)

A Major Event Day is used to define a 24-hour period during which SAIDI exceeds a threshold, separating these statistics from those for typical day-to-day operations. This will prevent exceptional days from skewing statistics, allowing reliability analysis to be based on typical days. The SAIDI threshold to distinguish a day as a MED is calculated using the equation:

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

Where α is the average of the logarithms of the daily non-zero SAIDI and β is the log-standard deviation of the daily SAIDI.

MAIFI (Momentary Average Interruption Frequency Index)

This index indicates how often the average customer experiences a momentary interruption over a predefined period of time. Mathematically, this is calculated using the following equation:

$$\text{MAIFI} = \frac{\sum \text{Total Number of Customers Experiencing a Momentary Interruption}}{\text{Total Number of Customers Served}}$$

Because OMS uses breaker status change information, a portion of the momentary outages that customers experience can now be tracked as well. Similar to SAIDI and CAIDI, MAIFI can be calculated for any defined set of customers.

2 Outage Data Collection

2.1 Record-keeping

Until February 2017, the District used a computerized Outage Reporting System (ORS) to manually record information on outages occurring during routine operations. The District's practice was not to record outages that occurred during major events. This was done to alleviate the need for time spent recording outages, so that efforts could be focused on restoration.

Starting in February 2017, the District switched to using an Outage Management System (OMS). OMS automatically creates outage records based on customer calls, prediction rules and switching operations regardless of a major event, on all days of the year. The purpose of this change is to be more consistent and comprehensive in outage information recording. The effect of implementing this new system has been an increase in recorded SAIDI and SAIFI, as all customer outages are now accounted for automatically.

2.2 Change in record-keeping during non-routine operations

The District no longer excludes outages during major events from reliability calculations. Moving forward the MED threshold will be used to determine which outages will be excluded from routine-operation statistics. MEDs will be included in their own category for record keeping.

3 System Reliability Statistics

3.1 Data for 2019

The tables below show the statistical data for outages in 2019, as well as average data for the five previous years. Refer to Section 1 for definitions of the terms SAIDI, CAIDI, and SAIFI.

The 2019 system SAIDI and SAIFI values were higher than the five-year averages. November 13th was the only MED that occurred in 2019. Outages that occurred during an MED, prearranged/planned and outages caused by another utility were excluded from these numbers but are shown in their own row for reference.

Table 3-1: General Descriptive Data

Year	2019
System Customers	361,319
Area Served	2,200 square miles

Table 3-2: Outage Data for 2019

(Sustained Outage > 1 Minute)

	SAIDI	CAIDI	SAIFI	Customer Outages
Distribution	84.8	108.2	0.78	283,144
Transmission	6.5	86.6	0.08	27,310
Overall	91.3	106.3	0.86	310,453
Planned, MED, or External	33.5	230.3	0.15	52,591
Total	124.9	124.3	1	363,045

Table 3-3: Five-Year Average Annual Outage Data for the Period 2014-2018 (Pre-OMS)

(Sustained Outage > 1 Minute)

	SAIDI	CAIDI	SAIFI	Customer Outages
Distribution	81.7	105.5	0.77	277,389
Transmission	11.7	63.2	0.18	65,920
Overall	93.3	97.4	0.96	343,309
Planned, MED, or External	44.6	219.7	0.2	72,345
Total	138	118.8	1.16	415,654

Table 3-4: Five-Year Average Annual Outage Data for the Period 2014-2018 adjusted for OMS increase

(Sustained Outage > 1 Minute)

	SAIDI	CAIDI	SAIFI	Customer Outages
Distribution	97.7	109.3	0.89	320,442
Transmission	14.7	66.8	0.22	78,713
Overall	112.4	100.9	1.11	399,156
Planned, MED, or External	44.7	219.7	0.2	72,378
Total	157.1	119.2	1.32	471,534

3.2 Effect of Major Event Days on the District

MEDs are days in which the daily system SAIDI exceed a calculated threshold. These are independent of declared major events, which had been used in the past to separate extreme outage days. MEDs are identified to allow study of the system's daily operation, without being influenced by a few large events.

Beginning in 2017, the District implemented OMS, which captures all outage information, including Major Event Days.

Table 3-5: 2019 Major Event Days

Date	SAIDI	SAIFI	MAIFI	CAIDI	Customers Affected (Sustained) - Distribution	Customers Affected (Sustained) - Transmission
2019-02-11	26	0.1	0.05	253.8	37,067	0

4 The Transmission System

4.1 Introduction

For consideration as a transmission outage, an outage must involve the operation of a 55 kV or 115 kV protective device, such as those operating circuit switcher or power circuit breaker. Transmission system outages usually have an impact on a significant number of customers, as all substations fed by that portion of the system are affected.

4.2 Outages

Of the 12 transmission system operations in 2019, District customers experienced no sustained outages. Table 4-1 provides summary information for each transmission or substation operation during 2019.

Table 4-4-1: Transmission Outages

Outage Number	Date	Line or Device	Substation	Cause	Customer Minutes
1	1/6/2019	Jackson-BPA Snohomish North Loop	Jackson, BPA Snohomish	Unknown	Momentary
2	1/8/2019	Jackson-BPA Snohomish South Line	Jackson, BPA Snohomish	Unknown	Momentary
3	2/4/2019	Stimson Crossing-Eagle Creek Line	Portage	Unknown	Momentary
4	5/24/2019	Delta-Navy Line	Port Gardner, Norton	Unknown	Momentary
5	6/13/2019	Beverly Park-Snoking Line	Silver Lake, Mariner, Martha Lake, Polaris	Unknown	Momentary
6	6/22/2019	Halls Lake-Paine Field Line	Keelers, Meadowdale, Lake Serene, Gibson	Unknown	Momentary
7	8/30/2019	Jackson Generator Unit 1	None	Blown Generator Fuse	None
8	9/7/2019	Halls Lake-Paine Field Line	Keelers, Meadowdale, Lake Serene, Gibson	Unknown	Momentary
9	10/4/2019	Jackson Generator Unit 3	None	Comm. Loss	None

Outage Number	Date	Line or Device	Substation	Cause	Customer Minutes
10	11/15/2019	Paine Field-BPA Snohomish	Olivia Park	Lightning	Momentary
11	11/15/2019	Beverly Park-BPA Snohomish #9 230 kV Line	None	Lightning	None
12	12/27/2019	BPA Murray-East Arlington	None	Failed Insulator	1,593,942

5 The Distribution System

5.1 Introduction

This section describes outages on the District 12.47 kV distribution system. These outages are more frequent and involve fewer customers per event than most transmission system outages. While the number of the outages are somewhat balanced between trees, animals, and equipment failures, most of the outage minutes are due to outages caused by trees and motor vehicle accidents. Animal and equipment failures often involve distribution transformers and affect a small number of customers. Damage caused by trees and motor vehicles is less discriminating and can affect infrastructure such as feeders and large branch circuits, which have larger customer impacts.

5.2 System Performance

5.2.1 Outage Causes

Figures 5-1 and 5-2 show the count of distribution outages by cause for 2019 and average for the five-year period of 2014-2018. In 2019, 2,287 distribution outages were recorded during routine operation, compared to the five-year average of 1,861 annual outages. The percentages shown in Figures 5-1 and 5-2 are percentages of these total number of outages in each period. The District started tracking planned outages in 2017.

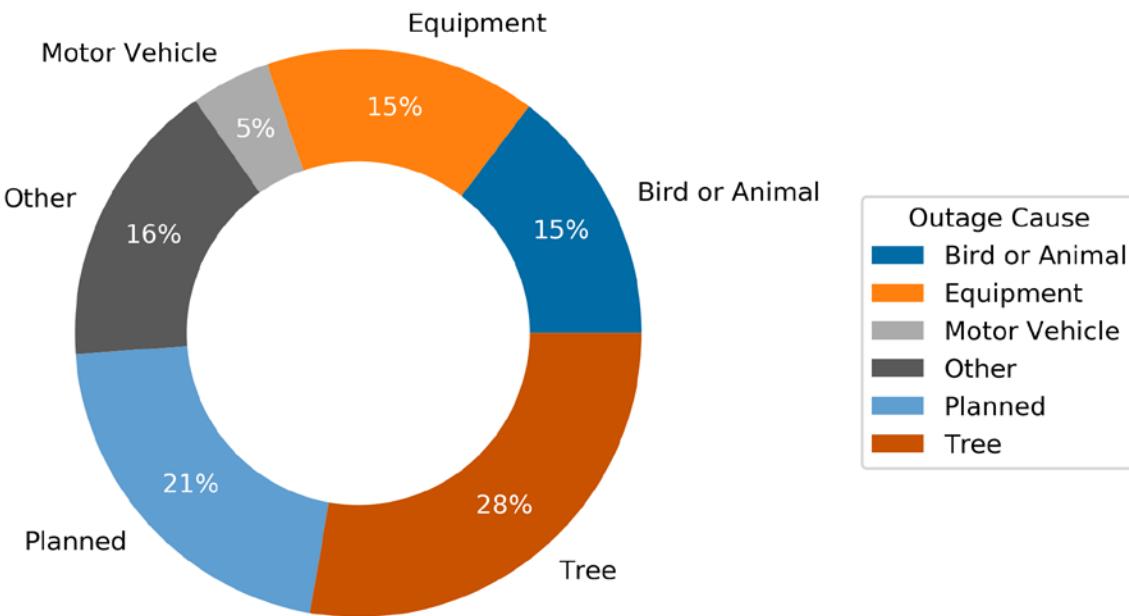


Figure 5-1: 2019 Distribution Outages by Cause

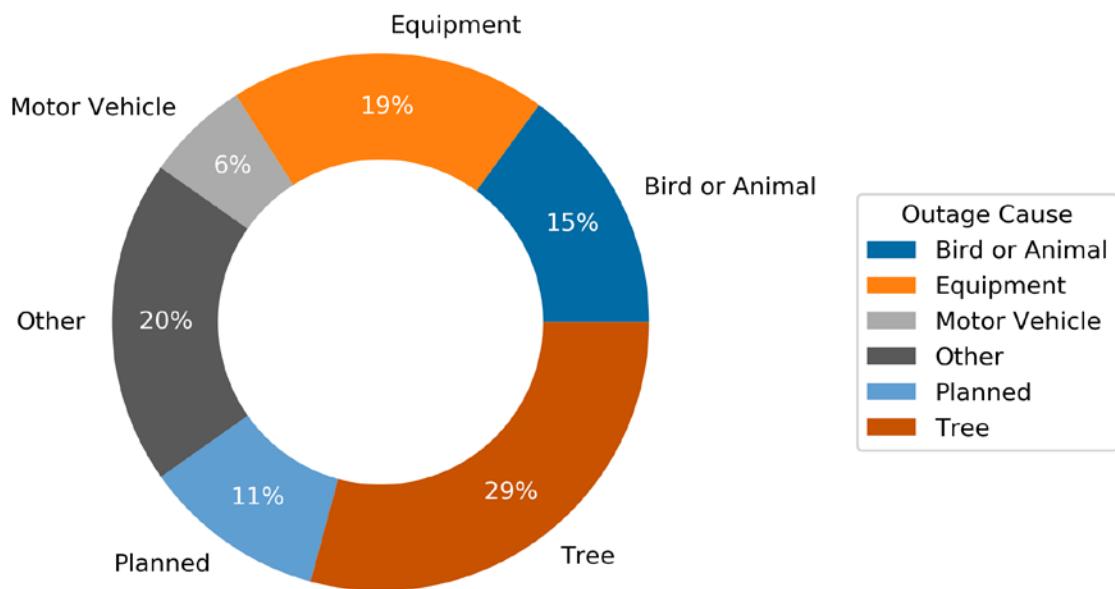


Figure 5-2: Five-Year Average Distribution Outages by Cause (2014-2018)

Figures 5-3 and 5-4 show the 2019 and five-year average percent of customer outage minutes by cause. District customers lost power for a combined total of 30,785,176 minutes in 2019 due to distribution outages, compared to the five-year average of 29,237,203 uplifted minutes. Both the number of outages and the customer minutes of outage are important parameters for planning effective outage impact reduction measures.

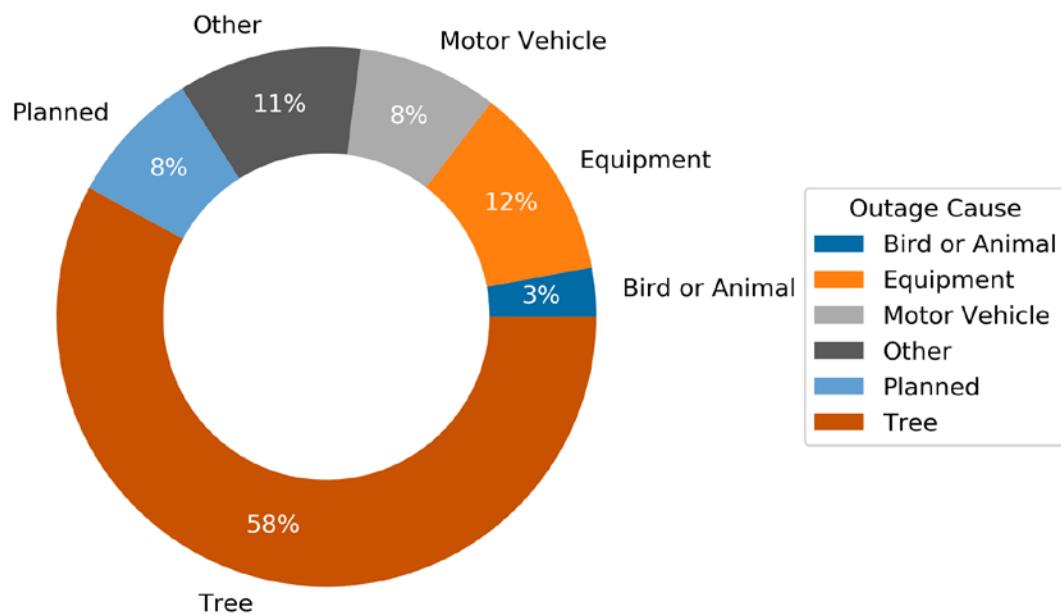


Figure 5-3: 2019 Distribution Outage Minutes by Cause

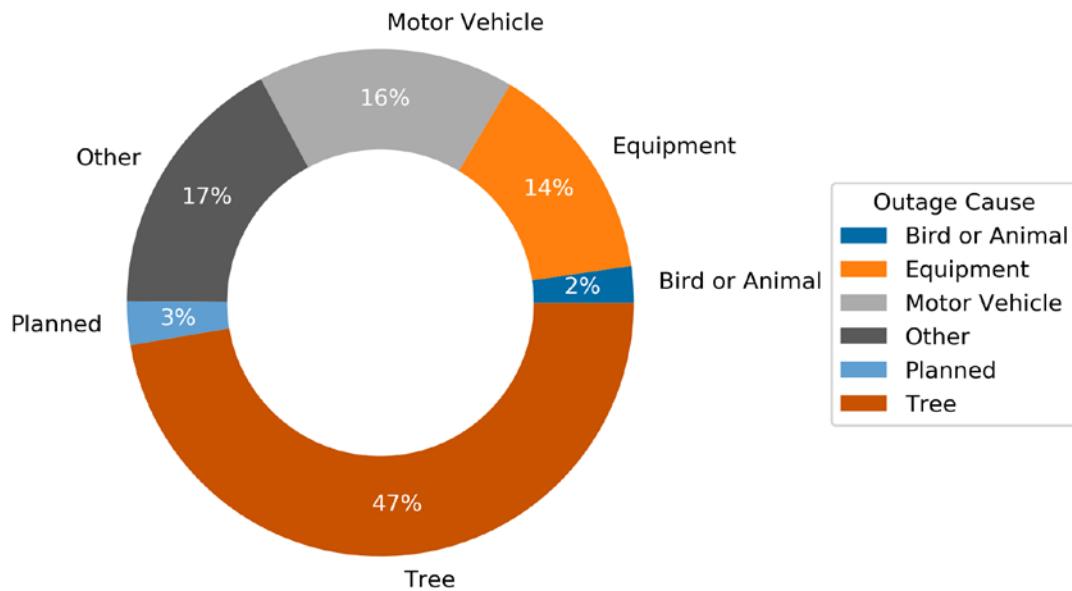


Figure 5-4: Five-Year Average Distribution Outage Minutes by Cause (2014-2018)

5.2.2 Explanation of Equipment Failure Category

Equipment failures may include any component of the distribution system, from primary overhead conductor, to fuses, transformers, insulators, and secondary service conductors. Figure 5-5 shows the number of recorded equipment failures by category during 2019. The ten most common types of equipment failure accounted for 455 outages in 2019. For comparison, Figure 5-6 shows the five-year average of the number of equipment failures for each category.

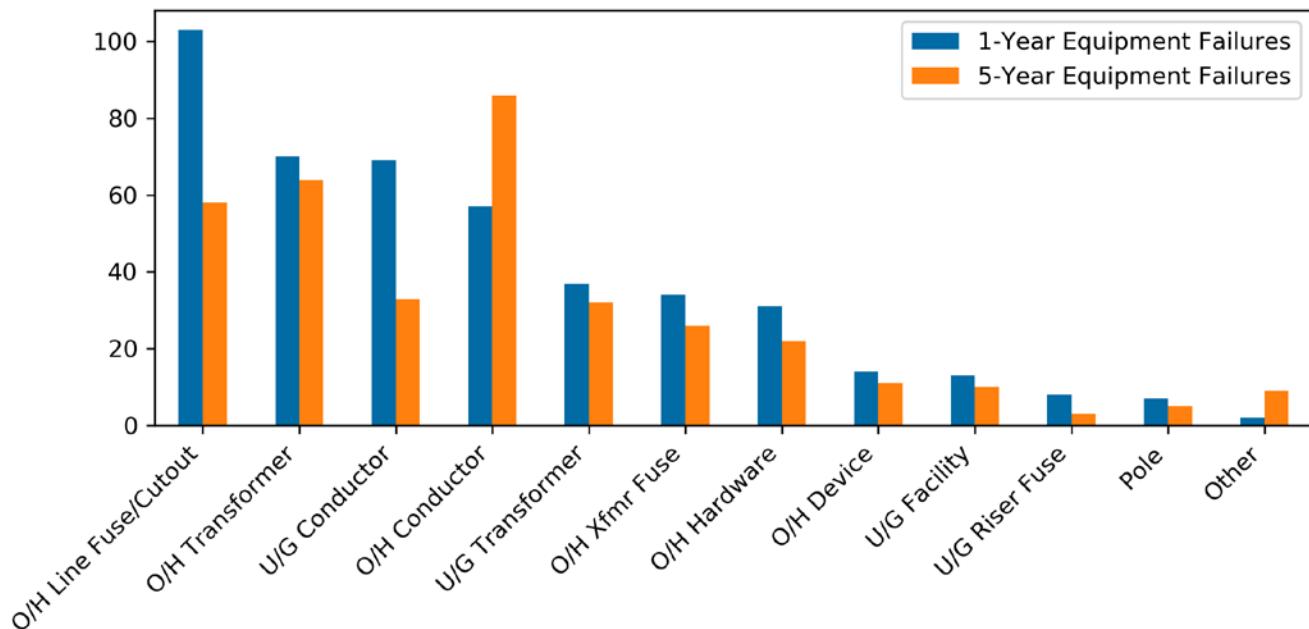


Figure 5-5: 2019 Equipment Failures

5.3 Urban, Suburban, Rural Classifications

IEEE Standard 1782 defines circuits as urban (greater than 150 customers per mile), suburban (between 150 and 50 customers per mile) and rural (less than 50 customers per mile). Classifying circuits gives an indication of how susceptible those circuits are to having an outage. Shorter circuits are less likely to have an outage, due to less available exposure to faults. Conversely, longer circuits have more conductor, and thus are more likely to be damaged. To compare similar circuits, circuits are identified by performance based on circuit length.

Classification	Average Circuit Length	Average number of customers	Customers per Mile	Average number of outages
Urban	7.3 miles	1,382	204.0	2
Suburban	12.7 miles	1,156	95.5	3
Rural	26.1 miles	720	25.6	7

5.4 Reliability Improvement Priority

Before 2017, the System Planning and Protection department used the “20 Worst Circuits” annually to target circuits for reliability improvements. This method had flaws. Typically, the same circuits would show up year after year due to their circuit length, rather than their relative reliability. There were also circuits on the list that had experienced no distribution outages, with all outage minutes caused by transmission outages. While valuable to know, that measure was irrelevant, as no distribution improvements would improve reliability for the circuit. In 2017, an objective metric to help prioritize feeders for reliability work was developed comparing SAIDI normalized by circuit length and SAIFI. The metric is based on distribution outages only, allowing results to guide engineers to help decide which distribution changes should be prioritized to improve reliability. For this list, the circuit SAIDI and SAIFI were based on the number of customers on their original circuit. The OMS system has a design flaw when counting CMI for outages that involve multiple circuits. This happens when a breaker opens while a circuit is picking up a second circuit. This causes highly inaccurate reliability statistics for circuits with this type of outage. This should reduce the impact of the OMS design flaw on our reliability statistics.

$$rank(d, f) = \frac{d - \mu_d}{\sigma_d} + \frac{f - \mu_f}{\sigma_f}$$

Where ‘d’ is the circuit SAIDI divided by the circuit length, ‘f’ is the circuit SAIFI, ‘μ’ is the mean, and ‘σ’ is the standard deviation

Table 5-1: Circuit Reliability Improvement Priority

	Feeder	Substation	Length (mi.)	SAIFI	SAIDI	Incident Count	Customers	Score
1	12-0101	Everett	1.7	2.44	687.1	4	199	15.68
2	12-2034	Lake Chaplain	8.4	4	1248.9	4	62	8.02
3	12-2036	Lake Chaplain	27.9	7.88	438.4	22	449	6.67
4	12-4503	Polaris	0.6	1.38	89	2	261	5.47
5	12-0810	Granite Falls	38.6	6.03	700.9	29	1051	5.08
6	12-0122	Everett	2.6	1.04	329.7	3	334	4.49
7	12-0587	Clearview	63	4.95	833.2	36	1727	3.92
8	12-0503	Brier	16.8	4.07	373.2	9	1408	3.46
9	12-1819	Three Lakes	45.5	4.4	248.4	17	1142	3.14
10	12-2062	Floral Hills	14	2.67	661.2	15	1101	3.1
11	12-5395	York	19.5	4.15	192.9	19	749	3.07
12	12-1820	Three Lakes	98.4	4.07	411.1	53	1539	2.79
13	12-1594	Sultan	26	2.26	1231.5	9	359	2.74
14	12-1595	Sultan	56.3	3.64	661.1	24	1395	2.68
15	12-4615	Granite Falls	34.9	3.32	606.4	27	1358	2.6
16	12-1530	South Camano	27.9	3.21	458.5	12	653	2.46
17	12-1593	Sultan	25.1	3.2	384.5	11	552	2.41
18	12-1729	Paine Field	9.8	3.03	189.8	5	1786	2.41
19	12-2726	20th Ave	6.6	2.05	280	4	370	2.38
20	12-2048	Richmond Park	5.2	2.02	213	5	329	2.3

Appendix A

District Outage Management System

These tables include outages that occurred on both the transmission system and on the distribution system. They do not include outages that occurred during declared major events and do not have an uplift factor applied to previous years.

Table A-1: Substation Metrics

This table shows the substation reliability metrics for 2019 and the previous five year average.

Substation	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
20th Ave	2019	2421	15	298349	123.2	2.28	54
20th Ave	2014-2018	2459	8.8	96727	39.3	0.62	63.5
52nd St	2019	3463	17	147755	42.7	0.36	117.7
52nd St	2014-2018	3501	15.2	196880	55.9	0.59	94.7
Alderwood	2019	4176	10	38239	9.2	0.24	37.9
Alderwood	2014-2018	4189	14.4	284351	70	0.68	102.6
Ballinger	2019	3651	16	162318	44.5	0.19	231.6
Ballinger	2014-2018	3677	14.4	105607	28.7	0.35	82
Brier	2019	5701	31	906233	159	2.37	67
Brier	2014-2018	5775	19.8	421130	72.6	0.9	80.3
Bunk Foss	2019	2211	28	55949	25.3	0.71	35.4
Bunk Foss	2014-2018	2262	15.6	92616	40.4	0.42	96.5
Canyon Park	2019	5129	22	236907	46.2	0.35	133.5
Canyon Park	2014-2018	5001	25.4	276272	55.3	0.61	90.3
Cascade	2019	9682	6	65195	6.7	0.06	109.2
Cascade	2014-2018	9882	10	430630	44.5	0.59	75.9
Casino	2019	3714	5	4783	1.3	0.01	101.8
Casino	2014-2018	3869	10	258019	67.2	0.45	149.5
Cedar Valley	2019	1974	5	13584	6.9	0.09	74.2
Cedar Valley	2014-2018	0	0	0	0	0	0
Central Marysville	2019	5273	10	3501	0.7	0.01	109.4
Central Marysville	2014-2018	5370	15.6	144348	26.6	0.22	119.6
Clearview	2019	4724	78	1816715	384.7	2.28	168.6
Clearview	2014-2018	5529	67.8	986654	182.2	2.25	80.9
Delta	2019	992	5	4128	4.2	0.01	375.3
Delta	2014-2018	1026	6.2	28263	27.1	0.52	52.2

Substation	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Eagle Creek	2019	8798	133	1152375	131	0.75	174.7
Eagle Creek	2014-2018	8682	90.4	1586341	183.1	1.58	115.7
East Marysville	2019	10799	33	163580	15.1	0.17	87.3
East Marysville	2014-2018	10498	21.8	488614	46.5	0.5	92.8
Edgecomb	2019	3376	14	149724	44.3	0.21	214.2
Edgecomb	2014-2018	3435	18	178286	52.3	0.53	99.2
Esperance	2019	5866	10	31330	5.3	0.04	124.8
Esperance	2014-2018	5845	18	156637	26.8	0.28	96
Everett	2019	5109	19	326173	63.8	0.24	270.9
Everett	2014-2018	4945	16	191454	38.3	0.36	105.6
Fitzgerald	2019	1068	1	2507	2.3	0.02	109
Fitzgerald	2014-2018	978	0.4	6547	6.2	0.18	34.9
Five Corners	2019	5487	15	33026	6	0.05	132.1
Five Corners	2014-2018	5498	20.2	271039	49.2	0.6	82.4
Floral Hills	2019	8423	46	1212258	143.9	1.22	117.9
Floral Hills	2014-2018	7999	32.4	857082	108	1.24	86.9
Fobes	2019	4493	23	240559	53.5	0.78	68.3
Fobes	2014-2018	4547	21.6	213106	46.8	0.41	114.4
Frontier	2019	7481	17	157379	21	0.28	74.5
Frontier	2014-2018	7167	18.8	225567	31.8	1.01	31.4
Gibson	2019	6672	21	119858	17.9	0.12	144.7
Gibson	2014-2018	6530	21.4	396886	60.8	0.94	64.6
Glenwood	2019	5578	26	146082	26.2	0.7	37.6
Glenwood	2014-2018	5532	16.2	190335	34.4	0.66	52.4
Goldbar	2019	2698	58	951838	352.7	1.68	210
Goldbar	2014-2018	2771	44.4	1300455	465.7	1.97	236.6
Granite Falls	2019	6666	107	2008402	301.3	2.12	141.9
Granite Falls	2014-2018	6515	89	1756258	265.1	1.76	150.9
Harbour Pointe	2019	4910	8	168633	34.3	0.33	105.1
Harbour Pointe	2014-2018	5085	5.6	30069	5.9	0.14	43.9
Hardeson	2019	32	1	993	31	0.06	496.5
Hardeson	2014-2018	44	0.4	347	7.9	0.21	36.9
Hartford	2019	4004	66	313268	77.7	0.63	122.7
Hartford	2014-2018	4404	49.8	570597	128.9	1.09	118.3
Hilton Lake	2019	6515	17	755885	116	1.55	75
Hilton Lake	2014-2018	6527	14.2	288416	44.2	0.41	106.8
Kellogg Marsh	2019	5286	11	91029	12.3	0.04	334.3
Kellogg Marsh	2014-2018	5260	13.4	156883	29.8	0.34	87.1
Lake Chaplain	2019	547	27	425994	778.8	11.88	65.5
Lake Chaplain	2014-2018	580	13.8	218171	378.3	3.48	108.6
Lake Goodwin	2019	5078	62	758518	149.4	1.82	82.1
Lake Goodwin	2014-2018	5216	55.8	790397	150	1.27	118.4

Substation	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Lake Serene	2019	6068	14	12648	2.1	0.02	108.1
Lake Serene	2014-2018	6026	13	145363	24.2	0.39	62.7
Lake Stevens	2019	6921	51	969694	131.9	1.01	130.7
Lake Stevens	2014-2018	6578	31	375507	57.4	0.6	95.4
Lynnwood	2019	4906	30	440592	89.8	0.88	102.5
Lynnwood	2014-2018	4981	20.4	60938	12.2	0.15	81.5
Maplewood	2019	4384	25	510412	116.4	0.71	163.3
Maplewood	2014-2018	4303	15.6	130379	31	0.46	68.2
Mariner	2019	4928	9	59551	12.1	0.05	245.1
Mariner	2014-2018	4864	10.2	235694	48.4	0.14	346.4
Martha Lake	2019	5983	17	1079552	180.4	0.91	198.7
Martha Lake	2014-2018	5327	21	439872	87.2	0.91	95.7
Meadowdale	2019	4848	24	276122	57	0.93	61
Meadowdale	2014-2018	4875	18	110799	22.7	0.33	69.9
Mountlake	2019	6625	42	95122	14.4	0.08	173.9
Mountlake	2014-2018	6924	33.2	257673	36.8	0.56	66.2
Mukilteo	2019	4287	9	83534	19.5	0.47	41.4
Mukilteo	2014-2018	4308	11.4	141538	32.8	0.26	125.5
Murphy's Corner	2019	4523	6	68851	15.2	0.35	43.5
Murphy's Corner	2014-2018	4580	8.6	239189	52.2	0.52	100.1
North Alderwood	2019	719	2	79759	110.9	1.04	107.1
North Alderwood	2014-2018	735	1.2	2673	3.6	0.1	36.5
North Camano	2019	2891	32	324968	112.4	1.28	88.1
North Camano	2014-2018	2855	28.2	270508	96	0.93	103.3
North Creek	2019	6994	12	43098	6.2	0.04	138.6
North Creek	2014-2018	6918	10.6	244288	35.8	0.3	118.7
North Marysville	2019	2768	15	43303	15.6	0.28	55.8
North Marysville	2014-2018	2833	7.4	46025	16.3	0.17	98
North Mountain	2019	1839	49	775345	420.6	2.42	174
North Mountain	2014-2018	1951	49.2	1214885	620.8	3.91	158.8
North Stanwood	2019	6680	64	598195	89.6	0.85	105.2
North Stanwood	2014-2018	6690	64.2	1301918	193.4	1.59	121.9
Norton Ave	2019	3116	4	138272	44.4	0.73	61
Norton Ave	2014-2018	3209	7.2	36085	11.2	0.14	77
Olivia Park	2019	4441	20	120012	27	0.84	32.1
Olivia Park	2014-2018	4648	12	184972	39.5	0.5	78.9
Oso	2019	320	8	20601	64.4	1.14	56.4
Oso	2014-2018	368	9.6	52395	141.3	1.81	77.9
Paine Field	2019	8457	17	243473	28.8	0.46	63
Paine Field	2014-2018	8589	15	194973	22.7	0.27	85.2
Park Ridge	2019	4749	32	383630	80.8	0.71	114
Park Ridge	2014-2018	5122	23.4	124975	23.8	0.2	120.7

Substation	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Perrinville	2019	4361	24	129250	29.6	0.3	97.5
Perrinville	2014-2018	4361	17.8	150668	34.6	0.59	59
Picnic Point	2019	3733	19	44046	11.7	0.08	145.2
Picnic Point	2014-2018	3756	24.4	453185	120.7	0.84	144.4
Pinehurst	2019	6700	29	247248	36.8	0.49	74.5
Pinehurst	2014-2018	6782	27.4	300207	44.1	0.68	64.8
Polaris	2019	4006	11	146916	30	0.54	55.1
Polaris	2014-2018	3834	9.4	187329	49.3	0.95	52.1
Portage	2019	2582	38	412517	159.8	1.67	95.6
Portage	2014-2018	2669	18.4	158999	59	0.61	96.7
Quil Ceda	2019	2802	27	187156	62	0.63	98.6
Quil Ceda	2014-2018	2893	19.8	336465	115.4	0.77	149.4
Richmond Park	2019	3008	42	545029	181.2	1.18	154.1
Richmond Park	2014-2018	2926	12.8	138649	46.1	0.35	130.3
Silver Lake	2019	6112	12	837114	137	0.86	160
Silver Lake	2014-2018	6101	17.6	158248	26.1	0.38	69.5
Smokey Point	2019	3937	12	155151	39.4	0.71	55.1
Smokey Point	2014-2018	3496	9.8	398882	129.1	0.66	195.9
Snohomish	2019	3067	22	89900	29.3	0.42	69.7
Snohomish	2014-2018	3146	23.4	151391	48.4	0.86	56.5
South Camano	2019	3737	39	676087	178.2	1.81	98.5
South Camano	2014-2018	3718	45	1105500	297.1	1.77	167.4
Stimson Crossing	2019	1791	31	416449	232.5	2.58	90.3
Stimson Crossing	2014-2018	1977	22	209494	107.8	1.19	90.5
Sultan	2019	2976	48	1693453	569	4.73	120.3
Sultan	2014-2018	3637	41.6	650602	178.2	1.62	110
Sunset	2019	3896	36	305057	75.7	1.01	75.1
Sunset	2014-2018	3971	37	863261	217.3	2.2	98.9
Tenth Street	2019	4063	6	359733	88.5	0.35	256.2
Tenth Street	2014-2018	4174	12.2	152873	36.4	0.47	77.7
Thrashers Corner	2019	6408	13	160791	25.1	0.51	49.2
Thrashers Corner	2014-2018	6467	10	58223	8.7	0.15	60.1
Three Lakes	2019	4174	101	1331807	319.1	3.5	91.2
Three Lakes	2014-2018	4303	71	1179299	271.5	2.63	103.3
Tulalip	2019	2266	16	94313	41.6	0.49	85.3
Tulalip	2014-2018	2346	16.8	326306	138.4	1.21	114.8
Turners Corner	2019	2457	51	580860	236.4	1.11	212.1
Turners Corner	2014-2018	2753	36.6	366473	128.8	0.8	161.8
Village	2019	2066	23	126983	61.5	0.99	62.2
Village	2014-2018	2173	19.8	156272	70.3	0.62	114.1
Wallace River	2019	1266	23	144496	114.1	0.64	178.4
Wallace River	2014-2018	649	10.6	58846	88.6	0.87	102.3

Substation	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Waterfront	2019	3014	6	75005	24.9	0.41	60.6
Waterfront	2014-2018	3108	7.4	89629	28.3	0.45	62.4
West Monroe	2019	7230	42	625236	86.5	0.88	98.3
West Monroe	2014-2018	7071	31.8	200777	28.4	0.39	72.7
Westgate	2019	4150	15	12860	3.1	0.02	136.8
Westgate	2014-2018	4333	17	268421	58.3	0.41	143
Woods Creek	2019	5558	107	1591367	286.3	1.85	154.4
Woods Creek	2014-2018	5542	67.4	1871775	332.8	2.15	154.6
York	2019	5855	37	465261	79.5	1.47	53.9
York	2014-2018	5725	16	239769	41.8	0.62	67.1

Table A-2: Circuit Metrics

This table shows the circuit reliability metrics for 2019 and the previous five year average.

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
20th Ave	12-1493	2019	26	0	0	0	0	0
20th Ave	12-1493	2014-2018	29	0.2	400	13.8	0.2	69
20th Ave	12-1494	2019	8	0	0	0	0	0
20th Ave	12-1494	2014-2018	4	0.2	40	10	0.2	50
20th Ave	12-1495	2019	0	1	576	48	1.5	32
20th Ave	12-1495	2014-2018	18	0.8	1256	69.8	0.8	87.2
20th Ave	12-1496	2019	27	1	130	6.2	0.19	32.5
20th Ave	12-1496	2014-2018	10	1	5245	232.7	2.07	112.4
20th Ave	12-2723	2019	596	4	595	1.1	0.02	45.8
20th Ave	12-2723	2014-2018	604	2.4	13942	23	0.61	37.6
20th Ave	12-2724	2019	406	1	152	0.6	0.02	30.4
20th Ave	12-2724	2014-2018	400	0.2	33	0.1	0	164
20th Ave	12-2725	2019	993	3	60639	63.8	1.01	62.9
20th Ave	12-2725	2014-2018	993	1.8	56462	57	0.51	112.1
20th Ave	12-2726	2019	0	4	103603	280	2.15	130.5
20th Ave	12-2726	2014-2018	403	1	19348	8.8	0.12	74.2
52nd St	12-0183	2019	607	3	64526	120.6	1.79	67.2
52nd St	12-0183	2014-2018	656	2.4	6255	10.3	0.34	30.1
52nd St	12-0184	2019	1200	1	396	0.3	0	99
52nd St	12-0184	2014-2018	1195	2.4	6149	5.2	0.02	280.5
52nd St	12-0185	2019	720	4	70800	103.8	0.28	374.6
52nd St	12-0185	2014-2018	749	6.2	164744	222.7	1.91	116.4
52nd St	12-0186	2019	919	9	12033	13.6	0.12	118
52nd St	12-0186	2014-2018	953	4.2	19732	20.8	0.45	46.2
Alderwood	12-0116	2019	601	5	1882	1.5	0.01	117.6
Alderwood	12-0116	2014-2018	612	1.8	3109	5.1	0.03	191.9
Alderwood	12-0117	2019	1416	1	720	0.5	0	144
Alderwood	12-0117	2014-2018	770	2.6	12622	15.1	0.27	56.4
Alderwood	12-0132	2019	1549	2	1673	2.4	0.03	88.1
Alderwood	12-0132	2014-2018	1518	6.4	245082	159.1	1.29	123.2
Alderwood	12-0141	2019	966	2	33964	40	1.14	35
Alderwood	12-0141	2014-2018	908	3.6	23537	25	0.62	40
Ballinger	12-0258	2019	484	3	12276	29.4	0.45	65
Ballinger	12-0258	2014-2018	483	3	9324	19.3	0.31	61.1
Ballinger	12-0259	2019	717	1	129832	183.6	0.5	370.9
Ballinger	12-0259	2014-2018	691	1.8	9954	14.2	0.44	32.2
Ballinger	12-0260	2019	1103	5	11384	10.7	0.04	277.7
Ballinger	12-0260	2014-2018	1111	5.2	22916	20.7	0.47	43.8

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Ballinger	12-0261	2019	1390	7	8826	6.7	0.09	72.9
Ballinger	12-0261	2014-2018	1380	4.4	63413	45.6	0.22	210.6
Brier	12-0501	2019	1771	8	92804	54.8	1.7	32.1
Brier	12-0501	2014-2018	1803	5	89157	50	1.07	46.9
Brier	12-0502	2019	1113	4	4049	4	0.03	122.7
Brier	12-0502	2014-2018	1054	3.2	44513	40.2	0.27	147.2
Brier	12-0503	2019	1499	9	532342	378.1	5.03	75.2
Brier	12-0503	2014-2018	1460	5.8	222311	150.1	1.54	97.2
Brier	12-0504	2019	1426	9	262807	186.5	1.06	176.6
Brier	12-0504	2014-2018	1411	5.8	65150	45.7	0.52	88.1
Bunk Foss	12-4111	2019	743	5	26997	37.1	1.03	36
Bunk Foss	12-4111	2014-2018	783	3.8	35715	45.7	0.28	163.9
Bunk Foss	12-4112	2019	656	10	12784	19.9	1.06	18.8
Bunk Foss	12-4112	2014-2018	709	3.2	2544	3.7	0.19	18.9
Bunk Foss	12-4113	2019	450	3	797	1.8	0.02	113.9
Bunk Foss	12-4113	2014-2018	485	3.8	15158	32.6	0.16	200.3
Bunk Foss	12-4114	2019	363	10	15371	44	0.41	107.5
Bunk Foss	12-4114	2014-2018	400	4.8	39198	107.6	1.43	75.1
Canyon Park	12-1093	2019	954	7	15683	15.4	0.08	186.7
Canyon Park	12-1093	2014-2018	1200	6.2	23381	23.3	0.22	107.5
Canyon Park	12-1094	2019	1129	3	3760	3.4	0.04	85.5
Canyon Park	12-1094	2014-2018	1206	6	36765	30.6	0.3	102.9
Canyon Park	12-1095	2019	1461	10	217196	148.2	1.12	132.2
Canyon Park	12-1095	2014-2018	1447	8.4	110909	76.7	1.03	74.4
Canyon Park	12-1096	2019	1075	1	112	0.1	0	56
Canyon Park	12-1096	2014-2018	1032	3.8	99516	94.4	0.86	109.2
Canyon Park	12-3488	2019	390	1	156	0.5	0	156
Canyon Park	12-3488	2014-2018	114	1	5700	14.6	0.21	68.5
Cascade	12-2087	2019	2037	0	0	0	0	0
Cascade	12-2087	2014-2018	1337	2.2	10933	7.6	0.47	16.1
Cascade	12-2088	2019	2804	3	3556	1.3	0.04	34.2
Cascade	12-2088	2014-2018	3642	3.2	82623	28.4	0.35	81.3
Cascade	12-2089	2019	0	1	29236	17.3	0.16	109.1
Cascade	12-2089	2014-2018	1912	0.8	1266	0.7	0	301.5
Cascade	12-2090	2019	2919	2	32403	13.2	0.09	144
Cascade	12-2090	2014-2018	2895	3.6	86051	29.6	0.22	136.9
Casino	12-0308	2019	983	2	1704	2.1	0.03	85.2
Casino	12-0308	2014-2018	1046	3.2	4616	4.4	0.02	275.4
Casino	12-0309	2019	370	1	2632	7.2	0.06	119.6
Casino	12-0309	2014-2018	394	1	29389	77.7	0.36	216
Casino	12-0310	2019	1199	2	447	0.4	0	89.4
Casino	12-0310	2014-2018	1032	3.2	63446	52.9	0.19	279.4

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Casino	12-0311	2019	1258	0	0	0	0	0
Casino	12-0311	2014-2018	1224	2.6	160567	127.6	1.07	119.2
Cedar Valley	12-5372	2019	848	0	0	0	0	0
Cedar Valley	12-5372	2014-2018	0	0	0	0	0	0
Cedar Valley	12-5373	2019	891	4	12414	13.9	0.19	72.2
Cedar Valley	12-5373	2014-2018	0	0	0	0	0	0
Cedar Valley	12-5374	2019	0	0	0	0	0	0
Cedar Valley	12-5374	2014-2018	0	0	0	0	0	0
Cedar Valley	12-5375	2019	5	1	1170	234	2.2	106.4
Cedar Valley	12-5375	2014-2018	0	0	0	0	0	0
Cedar Valley	12-5376	2019	0	0	0	0	0	0
Cedar Valley	12-5376	2014-2018	0	0	0	0	0	0
Central Marysville	12-1419	2019	1138	0	0	0	0	0
Central Marysville	12-1419	2014-2018	1191	2.6	8352	7.1	0.21	33.7
Central Marysville	12-1420	2019	1262	3	1098	0.9	0.01	91.5
Central Marysville	12-1420	2014-2018	1278	3.8	100957	78.5	0.61	128.9
Central Marysville	12-1421	2019	1588	3	907	0.6	0.01	100.8
Central Marysville	12-1421	2014-2018	1680	4.8	17979	11.2	0.07	159.4
Central Marysville	12-1422	2019	1332	4	1496	1.3	0.01	136
Central Marysville	12-1422	2014-2018	1286	4.4	17060	13.1	0.05	262
Clearview	12-0584	2019	322	8	46341	150.3	2.15	70.1
Clearview	12-0584	2014-2018	1949	6	140913	143.2	1.45	98.6
Clearview	12-0585	2019	1123	8	8252	7.6	0.02	412.6
Clearview	12-0585	2014-2018	1263	12.8	92731	79.7	0.83	96.2
Clearview	12-0586	2019	1529	26	322222	209.5	0.97	217
Clearview	12-0586	2014-2018	1679	21.6	221470	138	1.69	81.8
Clearview	12-0587	2019	1727	36	1439900	833.8	4.99	167.2
Clearview	12-0587	2014-2018	1790	27.4	531540	306.1	4.08	75
Delta	12-3653	2019	76	5	4128	52.3	0.14	375.3
Delta	12-3653	2014-2018	101	3.2	3145	39.9	0.49	81.5
Delta	12-3654	2019	14	0	0	0	0	0
Delta	12-3654	2014-2018	18	0	0	0	0	0
Delta	12-3655	2019	210	0	0	0	0	0
Delta	12-3655	2014-2018	212	1	137	0.7	0.01	62.5
Delta	12-3656	2019	712	0	0	0	0	0
Delta	12-3656	2014-2018	749	2	24980	34.4	0.69	49.8
Delta	12-3657	2019	0	0	0	0	0	0
Delta	12-3657	2014-2018	0	0	0	0	0	0
Eagle Creek	12-0986	2019	1109	3	2444	2.3	0.01	203.7
Eagle Creek	12-0986	2014-2018	1165	3	105912	94.9	1.6	59.3
Eagle Creek	12-0987	2019	770	3	2153	3.3	0.04	76.9
Eagle Creek	12-0987	2014-2018	628	1	20943	30	0.65	46.1

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Eagle Creek	12-0988	2019	1510	23	318300	211.6	1.9	111.5
Eagle Creek	12-0988	2014-2018	1684	21.8	306865	196.3	2.27	86.5
Eagle Creek	12-0989	2019	947	5	2351	2.6	0.04	73.5
Eagle Creek	12-0989	2014-2018	982	3	25545	26.5	0.51	51.7
Eagle Creek	12-2617	2019	1478	46	533637	359.8	1.32	272.5
Eagle Creek	12-2617	2014-2018	1594	25.6	737189	472.6	2.29	205.9
Eagle Creek	12-2618	2019	1045	38	210889	210.7	1.35	156.3
Eagle Creek	12-2618	2014-2018	1189	24.2	251054	224.9	2.3	97.6
Eagle Creek	12-2619	2019	1487	14	82433	55.9	0.25	227.1
Eagle Creek	12-2619	2014-2018	1516	10.8	116883	77.6	0.74	104.7
Eagle Creek	12-2620	2019	412	1	168	0.5	0	168
Eagle Creek	12-2620	2014-2018	412	1	21949	53.2	0.41	129.9
East Marysville	12-0002	2019	671	12	6923	10.5	0.07	147.3
East Marysville	12-0002	2014-2018	153	7.6	98995	168.2	0.93	181.7
East Marysville	12-0037	2019	1680	9	142821	84.5	1.05	80.7
East Marysville	12-0037	2014-2018	1609	4	39132	23.7	0.43	55.2
East Marysville	12-0038	2019	1606	4	10466	6	0.02	373.8
East Marysville	12-0038	2014-2018	1620	3.2	132937	83.7	0.91	92.3
East Marysville	12-0070	2019	2029	5	2126	1.1	0.01	96.6
East Marysville	12-0070	2014-2018	1965	2.2	56539	28.2	0.26	109.7
East Marysville	12-0115	2019	1375	0	0	0	0	0
East Marysville	12-0115	2014-2018	1380	1	844	0.6	0	351.4
East Marysville	12-5203	2019	1507	0	0	0	0	0
East Marysville	12-5203	2014-2018	1490	0.6	33601	22.6	0.44	51.5
East Marysville	12-5204	2019	1728	3	1244	0.7	0	155.5
East Marysville	12-5204	2014-2018	1711	3.2	126567	73.3	0.8	91.4
Edgecomb	12-4831	2019	197	1	100	0.5	0.01	100
Edgecomb	12-4831	2014-2018	220	0.6	195	0.9	0.01	138.8
Edgecomb	12-4832	2019	1506	4	12858	8.8	0.01	857.2
Edgecomb	12-4832	2014-2018	1435	6	22849	15.7	0.46	34.4
Edgecomb	12-4833	2019	1342	1	66	0.1	0	66
Edgecomb	12-4833	2014-2018	1301	3.4	80074	59.8	0.46	128.7
Edgecomb	12-4834	2019	420	8	136700	333.4	1.66	200.4
Edgecomb	12-4834	2014-2018	483	8	75169	177.3	1.21	146
Esperance	12-0687	2019	1649	2	151	0.1	0	75.5
Esperance	12-0687	2014-2018	1652	5	11546	6.9	0.04	195.1
Esperance	12-0688	2019	1159	1	560	0.5	0	280
Esperance	12-0688	2014-2018	1188	4.6	84501	72.1	0.75	95.9
Esperance	12-0689	2019	1243	3	10224	8.3	0.01	681.6
Esperance	12-0689	2014-2018	1261	4.2	56472	45.1	0.53	84.5
Esperance	12-1597	2019	1898	4	20395	11.1	0.13	87.9
Esperance	12-1597	2014-2018	1604	4.2	4118	2.3	0.02	139.8

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Everett	12-0100	2019	375	0	0	0	0	0
Everett	12-0100	2014-2018	404	2	5509	14.6	0.21	69
Everett	12-0101	2019	245	4	152440	766	2.7	283.9
Everett	12-0101	2014-2018	219	1.4	9289	36.7	0.61	60.5
Everett	12-0112	2019	922	6	59709	63	0.27	232.3
Everett	12-0112	2014-2018	857	4.2	50519	55.1	0.68	81.4
Everett	12-0113	2019	363	3	498	1.4	0.03	55.3
Everett	12-0113	2014-2018	407	2.4	20529	53.8	1.05	51.1
Everett	12-0118	2019	1261	3	3402	2.7	0.04	66.7
Everett	12-0118	2014-2018	1151	1.8	76280	56	0.2	285.2
Everett	12-0119	2019	1087	0	0	0	0	0
Everett	12-0119	2014-2018	1153	2.8	4442	4	0.05	78.6
Everett	12-0121	2019	331	0	0	0	0	0
Everett	12-0121	2014-2018	228	1	15907	67.7	0.32	208.7
Everett	12-0122	2019	331	3	110124	329.7	1.05	314.6
Everett	12-0122	2014-2018	426	0.4	8979	25.8	0.4	64.5
Everett	12-3700	2019	0	0	0	0	0	0
Everett	12-3700	2014-2018	0	0	0	0	0	0
Everett	12-3701	2019	0	0	0	0	0	0
Everett	12-3701	2014-2018	0	0	0	0	0	0
Everett	12-3702	2019	0	0	0	0	0	0
Everett	12-3702	2014-2018	0	0	0	0	0	0
Fitzgerald	12-5508	2019	805	1	2507	3.2	0.03	109
Fitzgerald	12-5508	2014-2018	788	0.2	6456	8	0.2	40
Fitzgerald	12-5509	2019	7	0	0	0	0	0
Fitzgerald	12-5509	2014-2018	9	0	0	0	0	0
Fitzgerald	12-5510	2019	241	0	0	0	0	0
Fitzgerald	12-5510	2014-2018	191	0.2	91	0.8	0.2	4
Fitzgerald	12-5511	2019	5	0	0	0	0	0
Fitzgerald	12-5511	2014-2018	4	0	0	0	0	0
Five Corners	12-1282	2019	1022	6	24933	25.4	0.19	131.9
Five Corners	12-1282	2014-2018	1075	3.8	4054	3.8	0.06	63
Five Corners	12-1283	2019	1785	2	1164	0.7	0.01	105.8
Five Corners	12-1283	2014-2018	1751	5	182908	104.4	1.23	84.9
Five Corners	12-1284	2019	870	0	0	0	0	0
Five Corners	12-1284	2014-2018	893	3.2	73430	82.3	1.11	73.9
Five Corners	12-1285	2019	1778	7	6929	4	0.03	138.6
Five Corners	12-1285	2014-2018	1784	8.2	10646	6	0.04	141.3
Floral Hills	12-2062	2019	1184	15	728500	661.7	3.32	199.3
Floral Hills	12-2062	2014-2018	1172	10.8	253124	215.8	3.04	71
Floral Hills	12-2063	2019	2752	12	27811	9.9	0.1	95.2
Floral Hills	12-2063	2014-2018	2382	11	360263	143.3	1.38	104

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Floral Hills	12-2064	2019	1719	8	181948	108	0.25	424.1
Floral Hills	12-2064	2014-2018	1613	7	224610	138.8	1.41	98.4
Floral Hills	12-2065	2019	2730	11	273999	101.9	2.2	46.4
Floral Hills	12-2065	2014-2018	2370	3.6	19084	7.2	0.2	35.3
Fobes	12-0398	2019	1854	7	6163	3.4	0.04	88
Fobes	12-0398	2014-2018	1821	6	13589	7.3	0.21	35.1
Fobes	12-0399	2019	963	5	41635	50.9	1.18	43
Fobes	12-0399	2014-2018	1020	5.6	40141	41.5	0.47	87.6
Fobes	12-0400	2019	1184	9	191728	163.5	2.1	77.7
Fobes	12-0400	2014-2018	1191	7	147078	123.7	0.81	153.5
Fobes	12-0401	2019	510	2	1033	2.1	0.04	51.6
Fobes	12-0401	2014-2018	551	3	12298	23.8	0.1	236.9
Frontier	12-0533	2019	1792	4	11927	6.7	0.05	125.5
Frontier	12-0533	2014-2018	1244	5	37549	23.9	0.45	53
Frontier	12-0534	2019	1478	6	128902	89.7	1.34	67
Frontier	12-0534	2014-2018	1489	5	10179	6.9	0.94	7.3
Frontier	12-0535	2019	2515	4	3824	1.5	0.01	159.3
Frontier	12-0535	2014-2018	2518	4.6	63670	25.3	0.83	30.6
Frontier	12-0536	2019	1640	3	12726	8	0.04	181.8
Frontier	12-0536	2014-2018	1616	4.2	114169	70	1.86	37.7
Gibson	12-2897	2019	2823	8	17520	6.3	0.07	94.7
Gibson	12-2897	2014-2018	2640	9	219540	79.8	1.2	66.7
Gibson	12-2898	2019	1602	3	11276	7	0.05	150.3
Gibson	12-2898	2014-2018	1480	5.2	112782	75	1.06	70.7
Gibson	12-2899	2019	986	1	56	0.1	0	28
Gibson	12-2899	2014-2018	937	1.8	1072	1.1	0.2	5.5
Gibson	12-2900	2019	1280	9	91006	74.9	0.46	163.5
Gibson	12-2900	2014-2018	1319	5.4	63491	49.3	0.83	59.5
Glenwood	12-0592	2019	1084	7	4996	4.7	0.04	119
Glenwood	12-0592	2014-2018	1089	5.2	90167	83.2	1.09	76.7
Glenwood	12-0593	2019	1039	8	3508	3.4	0.08	45.6
Glenwood	12-0593	2014-2018	1051	4.8	25121	24.2	0.43	56.2
Glenwood	12-0594	2019	2470	10	126606	52.1	1.44	36.1
Glenwood	12-0594	2014-2018	2448	6	72349	29.8	0.82	36.3
Glenwood	12-0595	2019	975	1	10972	20.2	0.48	42.2
Glenwood	12-0595	2014-2018	969	0.2	2697	2.8	0.02	128.4
Goldbar	12-0554	2019	1973	39	753753	385.2	1.86	207.1
Goldbar	12-0554	2014-2018	2092	33	1199740	590.4	2.25	262.1
Goldbar	12-0555	2019	740	19	198085	275.9	1.24	222.1
Goldbar	12-0555	2014-2018	781	11.4	100715	133.7	1.21	110.3
Granite Falls	12-0808	2019	528	14	73690	137.5	0.2	682.3
Granite Falls	12-0808	2014-2018	571	9.8	55538	97.3	0.58	166.4

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Granite Falls	12-0809	2019	1248	18	317850	263.8	2.41	109.4
Granite Falls	12-0809	2014-2018	1354	15.4	351592	269.6	2.42	111.5
Granite Falls	12-0810	2019	1059	29	736638	700.9	6.03	116.2
Granite Falls	12-0810	2014-2018	1432	25	722063	590.8	2.82	209.4
Granite Falls	12-0811	2019	856	6	37918	46.2	0.22	206.1
Granite Falls	12-0811	2014-2018	900	5.6	30974	22.3	0.15	144.2
Granite Falls	12-4612	2019	456	3	989	3.6	0.04	89.9
Granite Falls	12-4612	2014-2018	492	3	31679	65.4	0.49	134
Granite Falls	12-4613	2019	674	7	3111	3.8	0.03	142.3
Granite Falls	12-4613	2014-2018	661	8.6	109021	167.3	1.56	107.2
Granite Falls	12-4614	2019	261	3	14711	50	0.27	188.6
Granite Falls	12-4614	2014-2018	80	1	3261	12.5	0.25	50
Granite Falls	12-4615	2019	1331	27	823495	606.4	3.32	182.5
Granite Falls	12-4615	2014-2018	1369	20.4	452048	361.1	2.55	141.6
Harbour Pointe	12-2277	2019	1273	4	162423	273	2.63	103.7
Harbour Pointe	12-2277	2014-2018	1178	1	4641	3.6	0.03	127.4
Harbour Pointe	12-2278	2019	624	0	0	0	0	0
Harbour Pointe	12-2278	2014-2018	621	0.2	6760	10.9	0.06	178.8
Harbour Pointe	12-2279	2019	558	1	178	0.3	0	89
Harbour Pointe	12-2279	2014-2018	573	1.6	5265	9.2	0.2	44.9
Harbour Pointe	12-2280	2019	635	2	5622	9.8	0.06	156.2
Harbour Pointe	12-2280	2014-2018	629	0.8	1470	2.3	0.2	11.5
Harbour Pointe	12-4674	2019	0	0	0	0	0	0
Harbour Pointe	12-4674	2014-2018	825	0.2	1069	1.3	0	334
Harbour Pointe	12-4675	2019	0	0	0	0	0	0
Harbour Pointe	12-4675	2014-2018	326	0	0	0	0	0
Harbour Pointe	12-4676	2019	0	0	0	0	0	0
Harbour Pointe	12-4676	2014-2018	0	0	0	0	0	0
Harbour Pointe	12-4677	2019	860	1	410	0.6	0	410
Harbour Pointe	12-4677	2014-2018	861	1.8	10864	12.6	0.42	30.2
Hardeson	12-4556	2019	0	0	0	0	0	0
Hardeson	12-4556	2014-2018	0	0	0	0	0	0
Hardeson	12-4557	2019	1	0	0	0	0	0
Hardeson	12-4557	2014-2018	1	0	0	0	0	0
Hardeson	12-4558	2019	0	0	0	0	0	0
Hardeson	12-4558	2014-2018	14	0	0	0	0	0
Hardeson	12-4559	2019	0	1	993	45.1	0.09	496.5
Hardeson	12-4559	2014-2018	29	0.4	347	12	0.32	36.9
Hartford	12-3117	2019	948	29	201373	216.4	2.13	101.7
Hartford	12-3117	2014-2018	964	19.2	233387	246.3	2.17	113.4
Hartford	12-3118	2019	368	6	54192	161.3	1.15	140.8
Hartford	12-3118	2014-2018	1000	5.8	44015	104.3	1.63	64.1

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Hartford	12-3119	2019	801	5	20941	26.4	0.1	258.5
Hartford	12-3119	2014-2018	909	7.4	29249	35.8	0.09	403.2
Hartford	12-3120	2019	1246	23	12001	9.5	0.03	279.1
Hartford	12-3120	2014-2018	1896	16	260305	177.2	1.35	131.7
Hartford	12-3327	2019	570	3	24761	41	0.12	330.1
Hartford	12-3327	2014-2018	552	1.4	3640	6.3	0.08	78.5
Hilton Lake	12-0497	2019	1419	6	503152	359.4	3.82	94
Hilton Lake	12-0497	2014-2018	1390	5.6	151271	107.3	0.88	121.6
Hilton Lake	12-0498	2019	783	0	0	0	0	0
Hilton Lake	12-0498	2014-2018	764	1.4	21925	28.1	0.62	45.6
Hilton Lake	12-0499	2019	2269	7	97091	42.7	1.13	37.6
Hilton Lake	12-0499	2014-2018	2240	3.4	44795	19.9	0.21	95.3
Hilton Lake	12-0500	2019	2092	4	155642	77.2	1.07	72.5
Hilton Lake	12-0500	2014-2018	2064	3.8	70425	33.8	0.24	139.4
Kellogg Marsh	12-0904	2019	1139	1	6	0	0	6
Kellogg Marsh	12-0904	2014-2018	1156	1.8	2053	1.8	0.02	99
Kellogg Marsh	12-0905	2019	2050	5	82859	28.4	0.09	331.5
Kellogg Marsh	12-0905	2014-2018	2046	6.4	78841	38.3	0.67	56.8
Kellogg Marsh	12-0906	2019	1176	5	8164	7.1	0.02	371.1
Kellogg Marsh	12-0906	2014-2018	1197	3.6	43408	36.7	0.14	260.8
Kellogg Marsh	12-0907	2019	904	0	0	0	0	0
Kellogg Marsh	12-0907	2014-2018	868	1.6	32581	36.9	0.26	140.6
Lake Chaplain	12-2034	2019	96	4	128458	2071.9	23.23	89.2
Lake Chaplain	12-2034	2014-2018	100	1.6	6044	61.7	0.53	115.4
Lake Chaplain	12-2035	2019	0	1	72	36	1.5	24
Lake Chaplain	12-2035	2014-2018	1	0.2	901	900.6	15.8	57
Lake Chaplain	12-2036	2019	473	22	297464	662.5	11.27	58.8
Lake Chaplain	12-2036	2014-2018	477	12	211226	444.2	4.08	108.8
Lake Goodwin	12-0379	2019	983	9	35189	36.5	0.62	58.6
Lake Goodwin	12-0379	2014-2018	1089	11.2	305814	294.6	1.47	200.9
Lake Goodwin	12-0380	2019	1180	22	213537	177.2	4.45	39.8
Lake Goodwin	12-0380	2014-2018	1256	13.6	167679	139.4	1.48	94
Lake Goodwin	12-0381	2019	974	6	12147	12.7	0.16	79.9
Lake Goodwin	12-0381	2014-2018	1090	6.2	119719	118.2	1.06	111.6
Lake Goodwin	12-0382	2019	903	5	132544	149.9	1.04	143.9
Lake Goodwin	12-0382	2014-2018	1007	10.4	111149	117.9	1.68	70.1
Lake Goodwin	12-0383	2019	1008	20	365101	359.7	2.17	165.5
Lake Goodwin	12-0383	2014-2018	1112	14.4	86037	81.1	0.66	122.1
Lake Serene	12-0337	2019	1207	5	3398	2.8	0.02	117.2
Lake Serene	12-0337	2014-2018	1216	3.4	41176	33.6	0.65	51.9
Lake Serene	12-0338	2019	1309	2	282	0.2	0	47
Lake Serene	12-0338	2014-2018	1182	1.2	14365	12	0.21	57.3

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Lake Serene	12-0339	2019	1186	0	0	0	0	0
Lake Serene	12-0339	2014-2018	1204	2.8	15044	12.5	0.21	58.4
Lake Serene	12-0340	2019	2344	7	8968	3.9	0.04	109.4
Lake Serene	12-0340	2014-2018	2394	5.6	74779	31.7	0.43	73.7
Lake Serene	12-5205	2019	0	0	0	0	0	0
Lake Serene	12-5205	2014-2018	0	0	0	0	0	0
Lake Stevens	12-0124	2019	1795	36	830695	458.2	2.95	155.5
Lake Stevens	12-0124	2014-2018	1892	19	290183	158.8	1.53	103.7
Lake Stevens	12-0125	2019	2450	13	107653	21	0.55	38
Lake Stevens	12-0125	2014-2018	2454	8	72499	29.6	0.43	69.1
Lake Stevens	12-0273	2019	507	0	0	0	0	0
Lake Stevens	12-0273	2014-2018	282	0.8	1780	6.1	0.2	30
Lake Stevens	12-0274	2019	2028	2	31346	15.3	0.15	103.8
Lake Stevens	12-0274	2014-2018	1658	3.2	11044	6.3	0.02	330.2
Lake Stevens	12-4034	2019	0	0	0	0	0	0
Lake Stevens	12-4034	2014-2018	0	0	0	0	0	0
Lynnwood	12-0724	2019	1626	10	330490	214.3	1.23	174.9
Lynnwood	12-0724	2014-2018	1654	4.4	13663	8.4	0.24	35.4
Lynnwood	12-0725	2019	823	9	32038	39.8	1.06	37.7
Lynnwood	12-0725	2014-2018	856	6.6	24591	29.6	0.32	92.5
Lynnwood	12-0726	2019	864	3	74810	92.5	1.78	52
Lynnwood	12-0726	2014-2018	899	2.6	17015	19	0.05	391.4
Lynnwood	12-0727	2019	1291	7	3149	2.5	0.09	26.5
Lynnwood	12-0727	2014-2018	1306	6.8	5669	4.4	0.04	112.9
Lynnwood	12-4867	2019	0	1	105	0.4	0.01	35
Lynnwood	12-4867	2014-2018	306	0	0	0	0	0
Maplewood	12-0343	2019	1724	9	442684	252.4	1.54	164
Maplewood	12-0343	2014-2018	1380	3	50755	32.9	0.56	59.2
Maplewood	12-0344	2019	1027	3	818	0.8	0.01	62.9
Maplewood	12-0344	2014-2018	1147	6	13099	12.1	0.1	116.9
Maplewood	12-0345	2019	759	9	64232	84.4	0.52	162.6
Maplewood	12-0345	2014-2018	758	2.8	18613	24.4	0.22	113.2
Maplewood	12-0346	2019	806	4	2678	3.4	0.02	140.9
Maplewood	12-0346	2014-2018	788	3.8	47913	60.5	0.99	61.3
Mariner	12-3346	2019	0	0	0	0	0	0
Mariner	12-3346	2014-2018	252	0	0	0	0	0
Mariner	12-3347	2019	1319	6	25905	18.5	0.11	164
Mariner	12-3347	2014-2018	1193	3.4	212970	178.5	0.22	824
Mariner	12-3348	2019	1337	0	0	0	0	0
Mariner	12-3348	2014-2018	1341	3.4	18523	13.8	0.07	197.9
Mariner	12-3349	2019	700	1	620	1	0.01	124
Mariner	12-3349	2014-2018	710	0.6	337	0.5	0.01	76.5

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Mariner	12-3391	2019	1374	2	33026	28	0.07	412.8
Mariner	12-3391	2014-2018	1372	2.8	3865	2.8	0.24	11.9
Martha Lake	12-0073	2019	3276	9	947367	277.5	0.93	297.4
Martha Lake	12-0073	2014-2018	2239	8	170998	63.6	1.05	60.4
Martha Lake	12-0074	2019	22	0	0	0	0	0
Martha Lake	12-0074	2014-2018	27	0.6	583	23.6	0.6	39.3
Martha Lake	12-0251	2019	1020	5	123391	117.2	2.1	55.7
Martha Lake	12-0251	2014-2018	895	4.6	117475	128.6	0.8	160
Martha Lake	12-0466	2019	1399	3	8794	6	0.02	274.8
Martha Lake	12-0466	2014-2018	1325	7.8	150816	110.2	0.68	161.5
Martha Lake	12-5695	2019	0	0	0	0	0	0
Martha Lake	12-5695	2014-2018	0	0	0	0	0	0
Meadowdale	12-1837	2019	1867	4	2664	1.5	0.01	166.5
Meadowdale	12-1837	2014-2018	1790	7.4	24818	13.3	0.23	56.8
Meadowdale	12-1838	2019	1304	4	35223	27.3	0.18	151.2
Meadowdale	12-1838	2014-2018	1303	3.6	19851	15.2	0.42	36.1
Meadowdale	12-1839	2019	1139	14	192702	197.2	3.79	52.1
Meadowdale	12-1839	2014-2018	1170	3.4	2906	2.5	0.02	130.7
Meadowdale	12-1840	2019	567	2	45533	82.6	1.04	79.3
Meadowdale	12-1840	2014-2018	565	3.6	63224	111.6	1.02	109.5
Mountlake	12-0133	2019	1477	8	4847	3.4	0.11	32.5
Mountlake	12-0133	2014-2018	1393	7.4	36441	25.9	0.25	105.1
Mountlake	12-0134	2019	1799	4	1658	1	0.02	59.2
Mountlake	12-0134	2014-2018	1754	7.6	58340	33	0.89	37
Mountlake	12-0135	2019	1672	8	78287	47.6	0.16	295.4
Mountlake	12-0135	2014-2018	1662	3.6	40608	21.9	0.22	100.1
Mountlake	12-0136	2019	2030	22	10330	5.1	0.05	98.4
Mountlake	12-0136	2014-2018	2031	14.6	122283	60.2	0.76	79.1
Mukilteo	12-0128	2019	1211	2	5141	4.3	0.04	104.9
Mukilteo	12-0128	2014-2018	1227	2.8	51321	42.1	0.3	142.1
Mukilteo	12-0129	2019	957	1	9957	10.6	0.03	321.2
Mukilteo	12-0129	2014-2018	965	3.4	32329	33.7	0.1	346.9
Mukilteo	12-0600	2019	1271	2	67191	55.7	1.59	34.9
Mukilteo	12-0600	2014-2018	1249	2.4	55134	43.3	0.39	111
Mukilteo	12-4523	2019	850	4	1245	1.5	0.02	95.8
Mukilteo	12-4523	2014-2018	849	2.8	2754	3.2	0.21	15.7
Murphy's Corner	12-1748	2019	1909	1	451	0.3	0	150.3
Murphy's Corner	12-1748	2014-2018	1980	3	85385	43.5	0.54	81
Murphy's Corner	12-1749	2019	1497	3	68102	48.1	1.11	43.3
Murphy's Corner	12-1749	2014-2018	1300	2.6	138337	98.3	0.76	129.5
Murphy's Corner	12-1750	2019	677	1	148	0.2	0.01	37
Murphy's Corner	12-1750	2014-2018	686	1.8	10847	15.8	0.23	70

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Murphy's Corner	12-1751	2019	543	1	150	0.3	0	75
Murphy's Corner	12-1751	2014-2018	549	1.2	4620	8.4	0.21	40.5
North Alderwood	12-0509	2019	0	0	0	0	0	0
North Alderwood	12-0509	2014-2018	408	0.4	851	1.7	0.01	141.7
North Alderwood	12-0510	2019	180	1	282	1.7	0.04	47
North Alderwood	12-0510	2014-2018	180	0	0	0	0	0
North Alderwood	12-0511	2019	92	0	0	0	0	0
North Alderwood	12-0511	2014-2018	93	0	0	0	0	0
North Alderwood	12-0512	2019	53	1	79477	1727.8	16.07	107.5
North Alderwood	12-0512	2014-2018	52	0.6	1822	32	1.16	27.5
North Camano	12-0313	2019	893	13	101254	113.8	1.77	64.4
North Camano	12-0313	2014-2018	909	8.4	85799	95.3	1.19	79.9
North Camano	12-0314	2019	103	7	2962	31.5	0.18	174.2
North Camano	12-0314	2014-2018	127	1.6	683	6	0.05	128.6
North Camano	12-0315	2019	483	4	14960	31.6	1.07	29.6
North Camano	12-0315	2014-2018	269	8	95678	246.7	1.58	156.5
North Camano	12-0316	2019	1394	8	205792	147.8	1.14	129.3
North Camano	12-0316	2014-2018	1436	10.2	88347	61.4	0.68	90.3
North Creek	12-1410	2019	1678	5	17493	10.4	0.08	123.2
North Creek	12-1410	2014-2018	1763	2.8	153289	94.6	0.43	222.6
North Creek	12-1411	2019	1315	0	0	0	0	0
North Creek	12-1411	2014-2018	1319	0.8	8936	6.8	0.05	137.9
North Creek	12-1412	2019	1528	3	21796	14.1	0.1	140.6
North Creek	12-1412	2014-2018	1462	4.4	79167	53	0.9	58.7
North Creek	12-1413	2019	1646	3	569	0.4	0	142.3
North Creek	12-1413	2014-2018	1399	2	2694	1.6	0.02	106.9
North Creek	12-3733	2019	722	1	3240	5	0.02	324
North Creek	12-3733	2014-2018	712	0.6	203	0.3	0	253.2
North Marysville	12-0142	2019	292	1	2600	9.7	0.04	260
North Marysville	12-0142	2014-2018	294	0.4	24	0.1	0	60.5
North Marysville	12-0143	2019	799	1	26	0	0	26
North Marysville	12-0143	2014-2018	737	0.6	15213	19.4	0.16	125.1
North Marysville	12-0144	2019	1064	3	3340	3.2	0.02	159
North Marysville	12-0144	2014-2018	1125	2.6	17387	16.4	0.24	67.9
North Marysville	12-0254	2019	648	10	37337	59	1.18	50.2
North Marysville	12-0254	2014-2018	666	3.8	13401	20.6	0.14	148.8
North Mountain	12-2514	2019	1414	33	646862	460.1	2.5	184.1
North Mountain	12-2514	2014-2018	1568	35	990099	672.5	3.99	168.6
North Mountain	12-2515	2019	446	16	128483	291.6	2.17	134.6
North Mountain	12-2515	2014-2018	533	13	201805	414.3	3.06	135.2
North Mountain	12-2516	2019	2	0	0	0	0	0
North Mountain	12-2516	2014-2018	2	1	268	134.2	1	134.2

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
North Stanwood	12-0996	2019	237	4	14648	71.1	2.73	26.1
North Stanwood	12-0996	2014-2018	279	5.6	52323	198	1.28	155.2
North Stanwood	12-0997	2019	678	12	191758	291.4	2.73	106.7
North Stanwood	12-0997	2014-2018	746	9	57837	84.1	1.39	60.7
North Stanwood	12-0998	2019	1700	8	30093	17.7	0.09	191.7
North Stanwood	12-0998	2014-2018	1662	11.2	265322	157.6	1.5	104.7
North Stanwood	12-0999	2019	1971	22	292294	152.3	1.56	97.7
North Stanwood	12-0999	2014-2018	2192	18.6	402698	199	2.04	97.5
North Stanwood	12-3204	2019	2022	18	69402	33.5	0.09	389.9
North Stanwood	12-3204	2014-2018	2016	19.8	523738	259.7	1.34	194.2
Norton Ave	12-0588	2019	77	0	0	0	0	0
Norton Ave	12-0588	2014-2018	74	1	602	8	0.22	36.3
Norton Ave	12-0589	2019	990	2	131200	134.2	1.05	127.8
Norton Ave	12-0589	2014-2018	1030	2.2	27240	26.4	0.42	62.9
Norton Ave	12-0590	2019	1211	1	6100	5.3	1.06	5
Norton Ave	12-0590	2014-2018	1283	2.4	985	0.8	0.01	96.1
Norton Ave	12-0591	2019	849	1	972	1.2	0.02	54
Norton Ave	12-0591	2014-2018	885	1.6	7257	8.5	0.01	570.8
Olivia Park	12-2576	2019	1428	1	3491	2.5	1.04	2.4
Olivia Park	12-2576	2014-2018	1430	2.2	41597	29.1	0.42	70
Olivia Park	12-2577	2019	781	11	43439	58.2	1.16	50.1
Olivia Park	12-2577	2014-2018	812	4	44182	54.4	0.45	120
Olivia Park	12-2578	2019	0	4	65598	73.8	1.27	58.1
Olivia Park	12-2578	2014-2018	1051	2	49976	47.2	0.46	103.8
Olivia Park	12-2579	2019	1357	4	7484	6.1	0.24	25.7
Olivia Park	12-2579	2014-2018	1381	3.8	49217	35.6	0.65	54.8
Oso	12-1309	2019	202	3	11256	59.2	1.56	37.9
Oso	12-1309	2014-2018	233	5	24351	110.6	1	110.1
Oso	12-1310	2019	0	5	9345	71.9	0.52	137.4
Oso	12-1310	2014-2018	197	3.6	24832	101.8	0.75	135
Paine Field	12-0385	2019	267	1	1266	5.6	0.01	633
Paine Field	12-0385	2014-2018	390	0.2	66	0.2	0	331
Paine Field	12-0386	2019	112	0	0	0	0	0
Paine Field	12-0386	2014-2018	108	0.4	2873	26.6	0.4	66.5
Paine Field	12-0387	2019	1630	4	2352	1.5	0.02	67.2
Paine Field	12-0387	2014-2018	1670	5.4	18264	11.2	0.22	51.7
Paine Field	12-0388	2019	617	2	13956	23.7	0.04	536.8
Paine Field	12-0388	2014-2018	400	1.2	8978	14.6	0.06	250.8
Paine Field	12-1729	2019	1870	4	213478	119.5	2.09	57.2
Paine Field	12-1729	2014-2018	1882	2.8	26294	14	0.24	57.6
Paine Field	12-1730	2019	1602	4	1277	0.9	0.01	67.2
Paine Field	12-1730	2014-2018	1624	2.2	1035	0.6	0	129.5

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Paine Field	12-1731	2019	2322	2	11144	5.2	0.02	214.3
Paine Field	12-1731	2014-2018	2322	2.8	137463	59.2	0.6	98.3
Paine Field	12-1732	2019	142	0	0	0	0	0
Paine Field	12-1732	2014-2018	144	0	0	0	0	0
Park Ridge	12-2319	2019	367	6	37513	118	2.37	49.8
Park Ridge	12-2319	2014-2018	910	1.4	15180	22.1	0.45	49.3
Park Ridge	12-2320	2019	787	5	44702	57.7	1.11	51.9
Park Ridge	12-2320	2014-2018	1085	5.2	39546	36.8	0.16	237
Park Ridge	12-2321	2019	1553	1	378	0.3	0	63
Park Ridge	12-2321	2014-2018	1809	6	9897	5.6	0.04	153.5
Park Ridge	12-2322	2019	957	14	276051	273	1.49	183.4
Park Ridge	12-2322	2014-2018	896	7	6618	7.1	0.19	36.9
Park Ridge	12-4183	2019	961	6	24986	24.5	0.24	104.1
Park Ridge	12-4183	2014-2018	905	3.8	53735	59.7	0.32	183.9
Perrinville	12-0092	2019	763	3	9723	14.6	0.04	388.9
Perrinville	12-0092	2014-2018	746	3.8	88967	117.7	1.42	82.7
Perrinville	12-0093	2019	1196	11	111468	97.6	1.08	90
Perrinville	12-0093	2014-2018	1195	6	45732	38.2	0.66	58
Perrinville	12-0126	2019	1484	7	7409	5.1	0.04	132.3
Perrinville	12-0126	2014-2018	1388	6	7996	5.7	0.05	105.1
Perrinville	12-0221	2019	967	3	650	0.7	0.01	108.3
Perrinville	12-0221	2014-2018	1002	2	7973	8.1	0.61	13.3
Picnic Point	12-1414	2019	672	5	23055	34.3	0.17	199.4
Picnic Point	12-1414	2014-2018	701	8.8	243524	351.3	2.11	166.7
Picnic Point	12-1415	2019	1154	4	18027	16.6	0.13	123.5
Picnic Point	12-1415	2014-2018	1174	7.4	127738	109	1.02	106.9
Picnic Point	12-1416	2019	1413	10	2964	2.2	0.03	72.3
Picnic Point	12-1416	2014-2018	1353	5.8	2891	2.1	0.02	109.6
Picnic Point	12-1417	2019	518	0	0	0	0	0
Picnic Point	12-1417	2014-2018	509	2.4	79032	153.7	0.9	170.1
Pinehurst	12-0147	2019	793	4	18105	23.1	0.06	355
Pinehurst	12-0147	2014-2018	829	2.8	12431	15	0.41	36.7
Pinehurst	12-0148	2019	1312	5	118646	92.5	1.05	88
Pinehurst	12-0148	2014-2018	1356	4.8	67731	50.3	0.69	73.4
Pinehurst	12-0149	2019	1736	5	7585	5.6	0.02	280.9
Pinehurst	12-0149	2014-2018	1765	5	31320	17.7	0.24	75.2
Pinehurst	12-0220	2019	1053	3	424	0.4	0.01	42.4
Pinehurst	12-0220	2014-2018	1006	4.2	13822	13.2	0.04	303.3
Pinehurst	12-3350	2019	1849	12	102488	56	1.03	54.3
Pinehurst	12-3350	2014-2018	1887	10.6	174903	93.2	1.55	60.1
Polaris	12-4500	2019	0	2	2160	4.6	0.11	42.4
Polaris	12-4500	2014-2018	68	1.2	29489	46.1	0.67	69.4

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Polaris	12-4501	2019	1416	5	3933	2.8	0.02	157.3
Polaris	12-4501	2014-2018	1422	3.4	35475	25	0.42	59.4
Polaris	12-4502	2019	1986	3	100121	63	1.26	50
Polaris	12-4502	2014-2018	1938	4.4	122202	62.6	1.24	50.2
Polaris	12-4503	2019	19	1	40702	53	0.38	139.9
Polaris	12-4503	2014-2018	8	0.2	163	20.4	0.2	102
Portage	12-3502	2019	183	3	23340	133.4	2.19	60.8
Portage	12-3502	2014-2018	187	0.8	137	0.7	0.01	96.4
Portage	12-3503	2019	259	2	1038	4	0.02	207.6
Portage	12-3503	2014-2018	261	3.8	45208	173.9	0.51	342.7
Portage	12-3504	2019	991	26	385865	399	4.05	98.6
Portage	12-3504	2014-2018	1118	12	89058	81.6	0.74	109.6
Portage	12-3505	2019	1166	7	2274	3.5	0.02	142.1
Portage	12-3505	2014-2018	1192	1.8	24596	21.1	0.58	36.1
Quil Ceda	12-3177	2019	326	1	143	0.5	0	143
Quil Ceda	12-3177	2014-2018	341	0.6	308	0.9	0.01	69.9
Quil Ceda	12-3178	2019	1332	20	144218	100.3	1.18	85.3
Quil Ceda	12-3178	2014-2018	1426	14.6	238130	172.4	1	172.6
Quil Ceda	12-3179	2019	0	1	2046	107.7	1.74	62
Quil Ceda	12-3179	2014-2018	32	0.4	776	23.5	0.21	114.1
Quil Ceda	12-3180	2019	1137	5	40749	36.5	0.17	209
Quil Ceda	12-3180	2014-2018	1228	4.2	97252	84.5	0.74	113.5
Richmond Park	12-0232	2019	814	13	42770	54.1	1.13	47.8
Richmond Park	12-0232	2014-2018	792	3.6	64000	78.6	0.62	126
Richmond Park	12-0233	2019	1096	14	400732	374.2	1.67	224.6
Richmond Park	12-0233	2014-2018	720	3.8	42858	40	0.38	105.8
Richmond Park	12-2048	2019	360	5	71592	217.6	2.2	99
Richmond Park	12-2048	2014-2018	361	1.4	3268	8.8	0.03	306.8
Richmond Park	12-5217	2019	756	10	29935	41	0.19	220.1
Richmond Park	12-5217	2014-2018	762	4	28524	37.6	0.19	193.6
Silver Lake	12-0239	2019	1690	1	1170	0.7	0.02	45
Silver Lake	12-0239	2014-2018	1596	2.6	26860	16	0.23	69.9
Silver Lake	12-0240	2019	1034	4	208659	207.4	2.14	96.8
Silver Lake	12-0240	2014-2018	1084	4.2	24914	23.5	0.42	55.6
Silver Lake	12-0253	2019	1732	6	625698	371.6	1.77	209.8
Silver Lake	12-0253	2014-2018	1621	9	101839	60.8	0.83	73.5
Silver Lake	12-0267	2019	830	1	1587	2.3	0.1	23
Silver Lake	12-0267	2014-2018	829	1.2	2062	2.5	0.01	265.7
Silver Lake	12-0290	2019	846	0	0	0	0	0
Silver Lake	12-0290	2014-2018	849	0.6	2573	3	0.04	85.7
Smokey Point	12-1507	2019	379	3	55563	153.1	3.56	43
Smokey Point	12-1507	2014-2018	419	1.8	46993	112.2	0.21	534.5

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Smokey Point	12-1508	2019	907	0	0	0	0	0
Smokey Point	12-1508	2014-2018	685	1	101475	136.4	0.44	308.7
Smokey Point	12-1509	2019	1382	7	97189	67.8	1.04	65.4
Smokey Point	12-1509	2014-2018	1466	5	183610	126.6	0.9	140.6
Smokey Point	12-1510	2019	1026	2	2399	2.1	0.03	63.1
Smokey Point	12-1510	2014-2018	384	2	66804	131.8	0.71	185.8
Smokey Point	12-5696	2019	14	0	0	0	0	0
Smokey Point	12-5696	2014-2018	14	0	0	0	0	0
Smokey Point	12-5697	2019	0	0	0	0	0	0
Smokey Point	12-5697	2014-2018	0	0	0	0	0	0
Smokey Point	12-5698	2019	0	0	0	0	0	0
Smokey Point	12-5698	2014-2018	0	0	0	0	0	0
Smokey Point	12-5699	2019	0	0	0	0	0	0
Smokey Point	12-5699	2014-2018	0	0	0	0	0	0
Snohomish	12-0103	2019	495	1	2412	5.1	0.01	603
Snohomish	12-0103	2014-2018	504	3	17471	35.1	0.48	73
Snohomish	12-0104	2019	549	9	3241	6	0.03	231.5
Snohomish	12-0104	2014-2018	611	6.8	78402	138.1	2.33	59.1
Snohomish	12-0123	2019	1429	3	1640	1.2	0.01	82
Snohomish	12-0123	2014-2018	1534	5.4	2543	1.7	0.03	54.3
Snohomish	12-0151	2019	598	9	82607	141	2.14	66
Snohomish	12-0151	2014-2018	617	8	46779	77.3	1.46	52.9
South Camano	12-1530	2019	655	12	299715	459	3.76	121.9
South Camano	12-1530	2014-2018	598	10	125199	192.1	1.62	118.2
South Camano	12-1531	2019	463	1	288	0.6	0.01	96
South Camano	12-1531	2014-2018	458	1.2	14060	30.6	0.52	59.2
South Camano	12-1532	2019	1561	10	140798	83.8	0.73	115.5
South Camano	12-1532	2014-2018	1577	15.6	398471	255	1.24	205.6
South Camano	12-1533	2019	1024	16	235286	230.4	3.11	74.2
South Camano	12-1533	2014-2018	1156	18.2	567770	547.3	3.25	168.6
Stimson Crossing	12-3090	2019	43	0	0	0	0	0
Stimson Crossing	12-3090	2014-2018	47	1	1136	25	0.56	44.9
Stimson Crossing	12-3091	2019	1286	24	391020	310.6	3.61	85.9
Stimson Crossing	12-3091	2014-2018	1457	16.2	153735	114.3	1.31	87.4
Stimson Crossing	12-3092	2019	252	0	0	0	0	0
Stimson Crossing	12-3092	2014-2018	280	1.4	35824	135.9	1.72	79.2
Stimson Crossing	12-3093	2019	261	7	25429	113	0.28	397.3
Stimson Crossing	12-3093	2014-2018	330	3.4	18799	64.2	0.24	270.6
Sultan	12-1593	2019	545	11	214541	388.7	5.3	73.3
Sultan	12-1593	2014-2018	578	8.8	183647	327.5	2.89	113.3
Sultan	12-1594	2019	367	9	442111	1231.5	2.26	543.8
Sultan	12-1594	2014-2018	380	7.8	124108	327	1.84	178.1

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Sultan	12-1595	2019	1976	24	922343	661.2	5.73	115.5
Sultan	12-1595	2014-2018	2094	20.2	283227	137.2	1.47	93.1
Sultan	12-1596	2019	632	1	1938	3.2	0.03	114
Sultan	12-1596	2014-2018	670	3.6	59310	91.4	0.85	107
Sultan	12-5004	2019	1	0	441	0	0	0
Sultan	12-5004	2014-2018	1	1	309	287.4	1.2	239.5
Sunset	12-5208	2019	1308	19	277354	211.1	2.91	72.4
Sunset	12-5208	2014-2018	1513	13.6	540627	401.1	4.21	95.3
Sunset	12-5209	2019	686	1	6226	9.3	0.03	283
Sunset	12-5209	2014-2018	722	8.8	133647	189.4	2.27	83.4
Sunset	12-5210	2019	537	7	3922	6.4	0.07	97.9
Sunset	12-5210	2014-2018	603	3.6	13233	22.4	0.11	211.8
Sunset	12-5211	2019	315	1	376	1.2	0.01	94
Sunset	12-5211	2014-2018	332	3.6	9222	28.5	0.25	115.1
Sunset	12-5212	2019	1016	8	17179	8	0.04	197.8
Sunset	12-5212	2014-2018	1056	7	137310	131.8	0.62	212.1
Tenth Street	12-0298	2019	1020	2	2623	2.7	0.04	61
Tenth Street	12-0298	2014-2018	1057	1.2	938	0.9	0	312.5
Tenth Street	12-0299	2019	1001	1	552	0.6	0.01	92
Tenth Street	12-0299	2014-2018	1089	2.4	1721	1.6	0.01	197.3
Tenth Street	12-0300	2019	1351	1	354943	273.5	1.04	263.3
Tenth Street	12-0300	2014-2018	1386	7.2	137901	100.7	1.21	83.1
Tenth Street	12-0301	2019	702	2	1615	2.6	0.01	230.7
Tenth Street	12-0301	2014-2018	763	1.4	12312	16.8	0.41	41.4
Tenth Street	12-0327	2019	0	0	0	0	0	0
Tenth Street	12-0327	2014-2018	0	0	0	0	0	0
Thrashers Corner	12-0275	2019	330	1	18518	77.5	1.38	55.9
Thrashers Corner	12-0275	2014-2018	390	0.2	4554	13.8	0.2	69
Thrashers Corner	12-0276	2019	1119	6	141087	132.5	2.74	48.4
Thrashers Corner	12-0276	2014-2018	1080	3.8	26233	23.5	0.23	102.4
Thrashers Corner	12-0277	2019	1840	0	0	0	0	0
Thrashers Corner	12-0277	2014-2018	1871	0.6	53	0	0	37.6
Thrashers Corner	12-0278	2019	1292	2	90	0.1	0	30
Thrashers Corner	12-0278	2014-2018	2223	2.2	11078	4.4	0.1	43.6
Thrashers Corner	12-3304	2019	0	0	0	0	0	0
Thrashers Corner	12-3304	2014-2018	2	0	0	0	0	0
Thrashers Corner	12-3471	2019	82	0	0	0	0	0
Thrashers Corner	12-3471	2014-2018	5	0.2	37	0.4	0.04	11
Thrashers Corner	12-3472	2019	1508	4	1096	0.7	0.01	64.5
Thrashers Corner	12-3472	2014-2018	1462	2.6	15948	10.8	0.25	43.9
Thrashers Corner	12-3473	2019	26	0	0	0	0	0
Thrashers Corner	12-3473	2014-2018	37	0.4	320	11.4	0.41	28

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Thrashers Corner	12-3474	2019	0	0	0	0	0	0
Thrashers Corner	12-3474	2014-2018	16	0	0	0	0	0
Three Lakes	12-1818	2019	731	23	336299	449.6	2.09	215.2
Three Lakes	12-1818	2014-2018	774	15.4	215469	284.1	1.62	175.7
Three Lakes	12-1819	2019	1137	17	285010	249.6	4.44	56.2
Three Lakes	12-1819	2014-2018	1233	13.4	250684	209.7	2.71	77.5
Three Lakes	12-1820	2019	1528	53	634296	412.1	4.08	100.9
Three Lakes	12-1820	2014-2018	1688	30.2	500674	301	3.07	98.1
Three Lakes	12-1821	2019	703	8	76202	107.2	2.36	45.4
Three Lakes	12-1821	2014-2018	807	12	212472	281.4	2.43	115.6
Tulalip	12-0505	2019	300	3	39696	146.5	0.18	810.1
Tulalip	12-0505	2014-2018	352	2.2	7680	23.1	0.27	85.5
Tulalip	12-0506	2019	399	1	2240	5.8	0.01	448
Tulalip	12-0506	2014-2018	429	2.6	16124	39.4	0.82	48.2
Tulalip	12-0507	2019	1045	6	6541	6.4	0.09	73.5
Tulalip	12-0507	2014-2018	1064	8.4	250769	238.8	1.74	137.3
Tulalip	12-0508	2019	554	6	45836	87.3	1.83	47.6
Tulalip	12-0508	2014-2018	612	3.6	51733	86.7	1.05	82.4
Turners Corner	12-1428	2019	160	1	9372	63.8	1.08	58.9
Turners Corner	12-1428	2014-2018	176	3.6	5616	32.6	0.25	131
Turners Corner	12-1429	2019	597	8	62798	110.4	0.13	872.2
Turners Corner	12-1429	2014-2018	1101	9	137248	156.7	0.85	184.6
Turners Corner	12-1430	2019	833	25	264616	321.9	1.81	177.8
Turners Corner	12-1430	2014-2018	900	10.2	149776	172.2	1.06	162.7
Turners Corner	12-1431	2019	823	16	244074	299.5	1.25	239.3
Turners Corner	12-1431	2014-2018	882	12.2	71504	82.9	0.49	168
Turners Corner	12-4310	2019	46	1	0	0	0	0
Turners Corner	12-4310	2014-2018	58	1.6	2330	44.5	0.45	99.5
Village	12-4304	2019	397	2	35680	95.1	0.54	175.8
Village	12-4304	2014-2018	425	2.8	29439	70.2	0.46	152.9
Village	12-4305	2019	1663	18	90850	55.2	1.11	49.6
Village	12-4305	2014-2018	1812	15	126492	71	0.66	108
Village	12-4306	2019	4	0	442	0	0	0
Village	12-4306	2014-2018	5	0.6	42	9.5	0.14	68
Village	12-4307	2019	0	1	11	1	0.09	11
Village	12-4307	2014-2018	18	0.6	300	9.4	0.21	44.3
Wallace River	12-4485	2019	404	14	40254	102.7	1.34	76.5
Wallace River	12-4485	2014-2018	463	7.6	39521	92.8	1.09	85.5
Wallace River	12-4486	2019	1	0	0	0	0	0
Wallace River	12-4486	2014-2018	1	0	0	0	0	0
Wallace River	12-4487	2019	717	9	104242	120.2	0.33	367
Wallace River	12-4487	2014-2018	150	3	19325	56.2	0.47	118.6

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
Waterfront	12-1842	2019	1142	1	60892	58.1	1.12	52
Waterfront	12-1842	2014-2018	1101	2.4	77781	65.8	0.99	66.6
Waterfront	12-1843	2019	887	0	0	0	0	0
Waterfront	12-1843	2014-2018	925	0.4	261	0.3	0	72.5
Waterfront	12-1846	2019	412	3	705	1.8	0.03	54.2
Waterfront	12-1846	2014-2018	454	2	4248	9.5	0.29	32.7
Waterfront	12-1847	2019	601	2	13408	22.6	0.09	248.3
Waterfront	12-1847	2014-2018	637	2.6	7338	12.2	0.22	54.5
West Monroe	12-0631	2019	646	2	814	1.3	0	407
West Monroe	12-0631	2014-2018	659	2	3830	5.9	0.22	27.1
West Monroe	12-0632	2019	1413	11	85505	60.8	1.11	54.8
West Monroe	12-0632	2014-2018	1430	2.6	8340	5.9	0.25	23.2
West Monroe	12-0633	2019	794	6	643	0.7	0.01	71.4
West Monroe	12-0633	2014-2018	828	4.8	29830	38.9	0.25	156.4
West Monroe	12-0634	2019	332	7	47245	147.6	1.78	82.7
West Monroe	12-0634	2014-2018	376	5	41685	121	1.42	85.4
West Monroe	12-3360	2019	679	8	63828	93.2	3.67	25.4
West Monroe	12-3360	2014-2018	661	8.8	89735	137.7	1.74	79
West Monroe	12-3361	2019	1086	2	75526	77.5	1.12	69.2
West Monroe	12-3361	2014-2018	1024	1.2	7318	6.7	0.06	118.9
West Monroe	12-3362	2019	1300	3	259862	199.4	0.29	694.8
West Monroe	12-3362	2014-2018	1255	4	19105	14.8	0.28	52.3
West Monroe	12-3363	2019	855	3	91813	117.7	0.3	389
West Monroe	12-3363	2014-2018	845	3.4	934	1.1	0.01	74.2
Westgate	12-0404	2019	842	1	3411	4.4	0.01	379
Westgate	12-0404	2014-2018	895	6.2	91913	102.6	0.65	158.1
Westgate	12-0405	2019	838	2	187	0.2	0	93.5
Westgate	12-0405	2014-2018	1554	3.2	91302	72.6	0.7	103.7
Westgate	12-0406	2019	1398	9	7530	5.4	0.05	100.4
Westgate	12-0406	2014-2018	1291	3.6	28365	21.7	0.25	88.6
Westgate	12-0407	2019	997	3	1732	1.8	0.01	216.5
Westgate	12-0407	2014-2018	979	4	56841	58	0.22	259.1
Woods Creek	12-1808	2019	1861	42	748345	403.2	2.93	137.6
Woods Creek	12-1808	2014-2018	1969	24.2	611829	316.8	2.35	135.1
Woods Creek	12-1809	2019	1416	39	420346	300.5	0.73	408.9
Woods Creek	12-1809	2014-2018	1482	21.6	401187	272.4	1.46	186.4
Woods Creek	12-1810	2019	1097	9	80781	69.2	0.38	180.7
Woods Creek	12-1810	2014-2018	908	9.8	271122	274.2	2.17	126.5
Woods Creek	12-1811	2019	1154	17	341895	303.6	3.02	100.6
Woods Creek	12-1811	2014-2018	1249	11.8	587637	476.3	2.72	175
York	12-5392	2019	1543	3	26122	17.9	0.04	414.6
York	12-5392	2014-2018	1531	4.8	50518	33	0.42	77.8

Substation	Circuit	Period	Customers	Outages	CMI	SAIDI	SAIFI	CAIDI
York	12-5393	2019	1830	7	167313	93.1	2	46.6
York	12-5393	2014-2018	1828	2.8	30445	16.7	0.41	40.2
York	12-5394	2019	1702	8	126180	75.1	1.1	68.5
York	12-5394	2014-2018	1621	2	17914	10.6	0.4	26.4
York	12-5395	2019	744	19	145646	194.5	4.19	46.5
York	12-5395	2014-2018	748	6.4	140892	186.1	1.99	93.5

*Indicates substations that do not have five years of history.

Appendix B

Historical Data: SAIDI, CAIDI, and SAIFI

No uplift factor was applied to these historical metrics.

Table B-1: SAIDI 1991 - 2019

Year	Distribution	Transmission	Overall	Excluded Outages	Overall (Everything)
1991	68.3	27.7	96	180	276
1992	95.3	5.5	101.4	82.3	183.7
1993	87.4	9.8	97.2	1136.2	1233.5
1994	60.2	41.5	101.7	9.2	110.9
1995	81.6	12.9	94.5	359.5	454
1996	52.1	8.5	60.6	60.7	121.1
1997	47.7	2.8	50.5	43.8	94.3
1998	47.9	24.3	72.2	40.4	112.6
1999	46.2	17.3	63.5	134.1	236.1
2000	52.5	3.1	55.6	147.3	219.4
2001	34.6	14.7	49.3	7.4	88.8
2002	32.4	21.8	54.2	25.5	89.8
2003	31.7	19.9	52.6	105.1	185.9
2004	35.9	4.2	40.1	237.8	287.2
2005	57.3	6.8	64.1	0	74.7
2006	50.6	17.7	68.3	567.2	684.2
2007	38.4	28.8	67.3	188.8	274.8
2008	41.6	8.4	50	33.8	97.2
2009	49.8	15.3	65.1	0	76.4
2010	69.1	10.9	79.9	34.2	114.1
2011	77.2	6.2	83.3	0	83.3
2012	63.2	8.4	71.6	44.2	115.9
2013	63.7	20.8	84.5	0	84.5
2014	90.3	21.8	112	116.9	228.9
2015	64.1	16.9	81	1312.1	1390.1
2016	57.5	2.1	59.6	77	136.6
2017	117.7	11.9	129.6	43.9	173.6
2018	86.9	5.4	92.4	172.5	264.9
2019	84.8	6.5	91.3	33.5	124.9
5-Year Average (2014-2018)	81.7	11.7	93.3	44.6	138

Table B-2: CAIDI 1991 - 2019

Year	Distribution	Transmission	Overall	Excluded Outages	Overall (Everything)
1991	91.0	62.0	80.0	175.0	124.0
1992	100.7	31.6	90.1	235.0	128.0
1993	93.4	38.7	81.7	1001.9	530.7
1994	78.8	163.0	99.9	96.5	99.6
1995	89.9	68.0	86.1	197.7	155.7
1996	81.0	48.7	74.1	84.0	78.7
1997	78.6	23.6	69.5	117.0	85.7
1998	77.8	74.8	76.8	98.8	83.5
1999	73.3	198.0	88.5	155.2	107.9
2000	97.0	44.4	90.9	132.2	118.9
2001	66.5	57.1	63.4	56.2	63.5
2002	66.4	149.8	85.6	94.8	87.4
2003	88.8	88.9	88.8	107.4	106.8
2004	75.1	35.6	67.3	286.5	157.0
2005	83.6	42.5	75.8	0.0	76.5
2006	94.7	54.7	79.7	301.5	217.3
2007	76.2	164.6	99.0	220.9	158.5
2008	86.6	47.0	75.8	148.7	73.0
2009	86.8	51.9	75.0	0.0	74.1
2010	106.4	68.2	98.9	141.4	108.7
2011	112.7	40.6	99.6	0.0	99.6
2012	101.8	33.4	82.0	108.2	190.2
2013	104.3	95.7	102.0	0.0	102.0
2014	117.8	70.4	104.2	338.4	205.8
2015	100.3	79.0	94.9	699.4	509.2
2016	106.2	27.7	96.4	160.4	124.2
2017	98.0	51.7	90.7	168.8	102.1
2018	106	78.7	103.9	236.5	163.6
2019	108.2	86.6	106.3	230.3	124.3
5-Year Average (2014-2018)	105.5	63.2	97.4	219.7	118.8

Table B-3: SAIFI 1991 - 2019

Year	Distribution	Transmission	Overall	Excluded Outages	Overall (Everything)
1991	0.75	0.45	1.20	1.03	2.23
1992	0.95	0.17	1.13	0.35	1.48
1993	0.94	0.26	1.19	1.13	2.32
1994	0.76	0.26	1.02	0.10	1.11
1995	0.91	0.19	1.10	1.82	2.92
1996	0.64	0.17	0.82	0.72	1.54
1997	0.61	0.12	0.73	0.37	1.10
1998	0.62	0.32	0.94	0.41	1.35
1999	0.63	0.09	0.72	0.86	2.19
2000	0.54	0.07	0.61	1.11	1.85
2001	0.26	0.52	0.78	0.13	1.40
2002	0.49	0.15	0.63	0.27	1.03
2003	0.37	0.22	0.59	0.98	1.74
2004	0.47	0.12	0.58	0.83	1.52
2005	0.69	0.16	0.85	0.00	0.98
2006	0.53	0.33	0.86	1.88	3.15
2007	0.50	0.18	0.68	1.19	2.13
2008	0.48	0.18	0.66	0.23	1.35
2009	0.57	0.30	0.87	0.00	1.03
2010	0.65	0.16	0.81	0.24	1.05
2011	0.68	0.15	0.84	0.00	0.84
2012	0.62	0.25	0.87	0.41	1.28
2013	0.61	0.22	0.83	0.00	0.83
2014	0.77	0.31	1.08	0.35	1.47
2015	0.64	0.21	0.85	1.88	2.73
2016	0.55	0.08	0.63	0.48	1.11
2017	1.20	0.23	1.43	0.26	1.70
2018	0.82	0.07	0.89	0.73	1.62
2019	0.78	0.08	0.86	0.15	1
5-Year Average (2014-2018)	0.77	0.18	0.96	0.2	1.16