



AN ALLETE COMPANY

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July 8, 2019

VIA ELECTRONIC FILING

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Re: In the Matter of Minnesota Power's 2019 Safety, Reliability and Service
Quality Standard Reports
Docket No. E015/M-19-254

Dear Mr. Wolf:

Minnesota Power hereby submits, via electronic filing, its Reply Comments in response to the Department of Commerce, Division of Energy Resources' Initial Comments in the above-referenced docket.

Please contact me at the number above with any questions related to this matter.

Respectfully,

A handwritten signature in black ink that reads "Jenna Warmuth". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Jenna Warmuth

JW:sr
Attach.

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

In the Matter of Minnesota Power's 2019
Annual Report Concerning Safety, Reliability,
Service Quality, and Proposed Annual Reliability Standards

Docket No: E015/M-19-254

REPLY COMMENTS

I. Introduction

The Department of Commerce - Division of Energy Resources ("Department") released their Initial Comments on Minnesota Power's (or, "the Company") 2019 Safety, Reliability and Service Quality Report ("Report") on June 7, 2019. The Department requested that the Company provide:

- Normalized and non-normalized CEMI values at outage levels of 4, 5, and 6.
- CELI values at 6 hours, 12 hours, and 24 hours. Since the Commission's Order did not specify whether the Company should provide normalized or non-normalized data, the Department recommends that MP provide both.
- A clarification as to which components of MP's filing were meant to fulfill the Commission's directive to provide more discussion of leading causes of outages and mitigation strategies; if none was provided, MP should provide this discussion.
- A discussion of "what technologies are needed to advance tracking of additional metrics" to fulfill Order Point 4 of the Commission's Order.

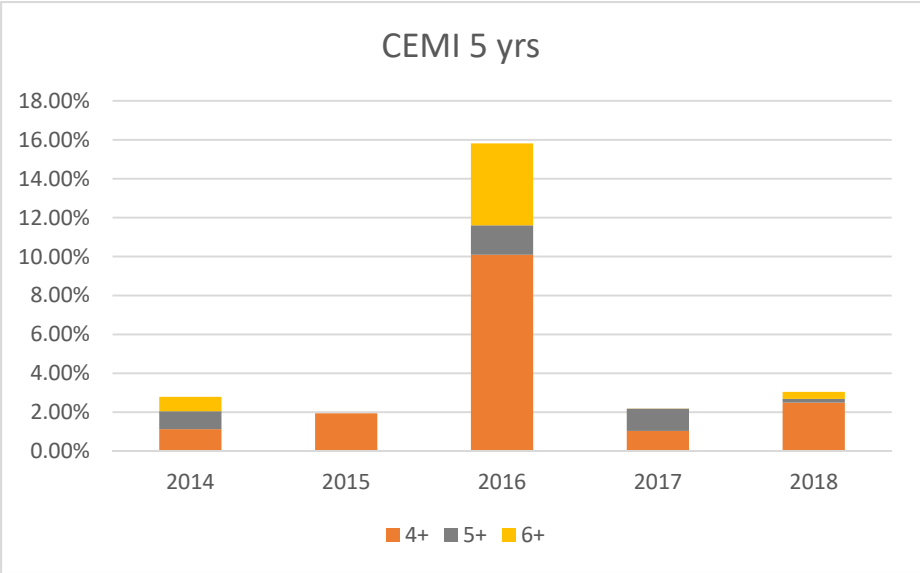
Additionally, the Department requested that in Reply Comments, Minnesota Power provide:

- An explanation of MP's calculation of 2018 CAIDI values, given the stated SAIDI/SAIFI values;
- An explanation as to why MP's rolling 5-year average values for 2014-2018 differ from the Department's calculated values;
- Provide the underlying data and calculations behind MP's Reliability by Customer Class figure;
- Comment on actions it has taken to improve the Colbyville 240 feeder, as well as any planned actions to prevent this circuit from causing problems in the future;
- Provide the specific number of calls received and calls answered within 20 seconds, both for business and non-business hours;
- Provide a breakdown of all calls received in 2018 by complaint/subject matter category;
- Provide a discussion of the best way that the Commission might measure and track data associated with new forms of self-service communication; and
- Confirm that the Department's Required Deposits table is correct; or provide an updated table with correct values.

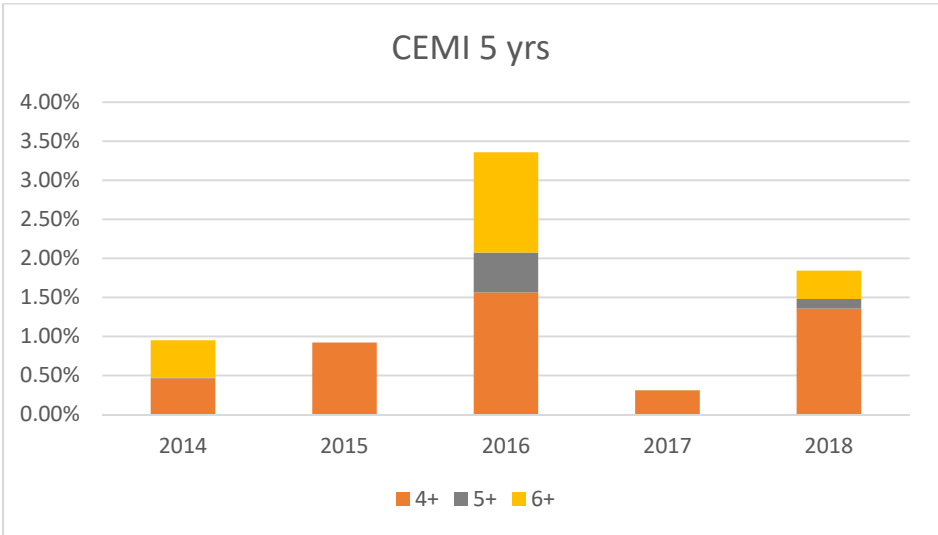
Section II of these Reply Comments addresses the Department's requests for clarification and additional information.

II. Response to the Department

Normalized and non-normalized CEMI values at outage levels of 4, 5, and 6.

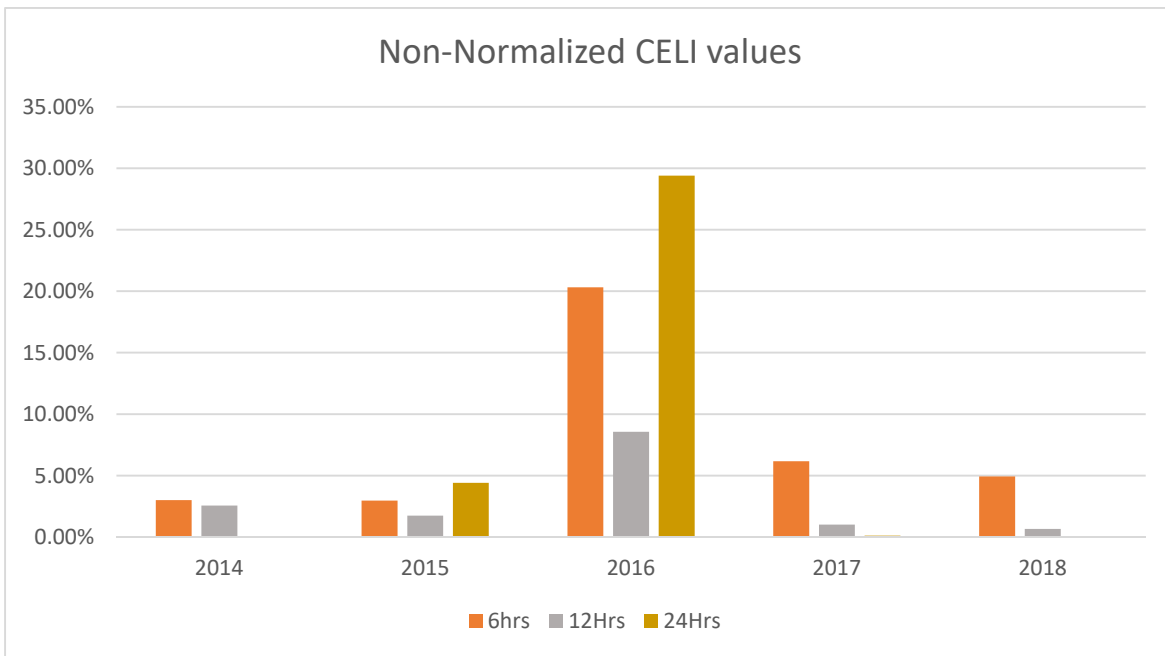


Normalized 4, 5, and 6 CEMI values:

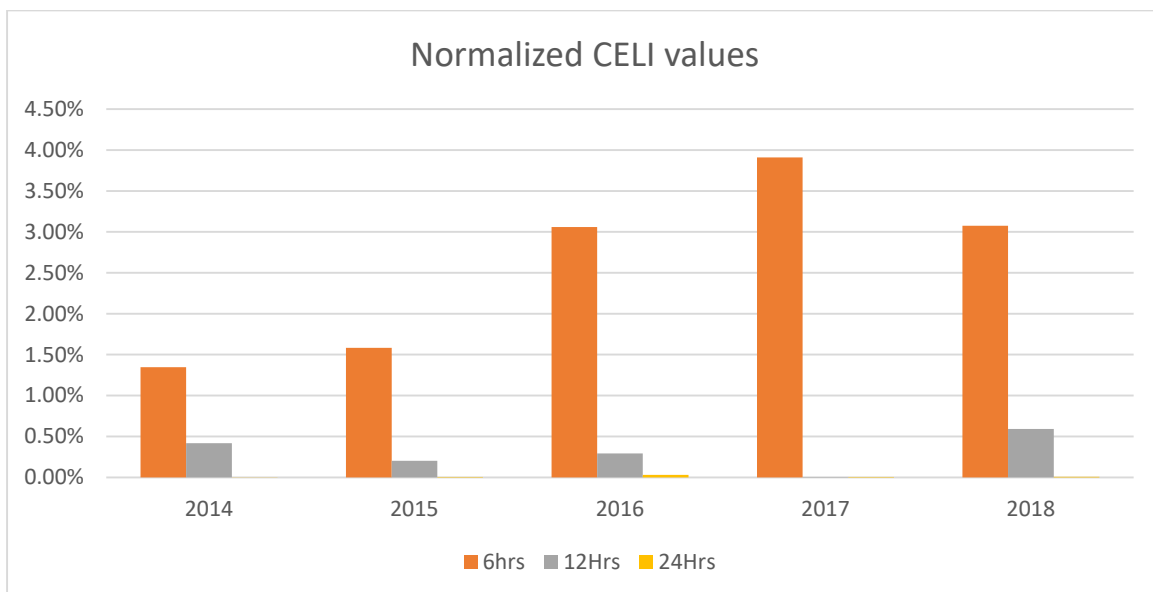


CELI values at 6 hours, 12 hours, and 24 hours, including normalized and non-normalized data

Non-Normalized 6, 12, and 24 hours CELI values:



Normalized 6, 12, and 24 hours CELI values:



A clarification as to which components of MP's filing were meant to fulfill the Commission's directive to provide more discussion of leading causes of outages and mitigation strategies; if none was provided, MP should provide this discussion.

As highlighted in the Company's original SRSQ Report in the docket, the main causes of outages for 2018 were weather and failed equipment. There are a number of improvements Minnesota Power is currently making or that are planned for future implementation.

One area of focus in 2020 will be storm-hardening projects on the distribution system. These projects will be focused on strategically undergrounding some of the Company's worst performing feeders. The areas where customers allow minimal tree trimming and where the Company has little to no access to the lines will be prioritized. By burying the overhead lines, the Company should experience a reduction in weather related tree contacts and lightning strikes.

The Company has made several advancements with regard to tracking and improving the frequency of failed equipment. Minnesota Power recently developed an application that allows any employee to identify areas of concern as employees are making observations on the system. The employee reports the issue by scanning a barcode placed on a pole and reporting the repairs/replacement needed. This application creates a service request and is followed up with a work order to prevent the issue from creating an outage in the future. In the last 18 months, the company has received over two thousand observations and has remedied over 70 percent of those observations. The Company expects to see rates of failed equipment decrease in future years as these issues are resolved.

The Company is expanding its preventative maintenance activities on distribution assets including switches, re-closers, regulators, and capacitor banks. By performing proactive maintenance on equipment the Company should have a reduced equipment failure rate and improved reliability. The company piloted a program for replacing re-closers with maintenance free trip savers and will expand the use of trip savers in 2019 and 2020. The trip savers are maintenance free and significantly cheaper than the older oil filled re-closers. The trip savers are also being installed to replace porcelain fused cutouts and will reduce failures and clear temporary faults, which results in improved reliability.

A discussion of "what technologies are needed to advance tracking of additional metrics".

As part of Minnesota Power's grid modernization initiatives, the Company has continued to expand its advanced metering infrastructure ("AMI") meter population and has also invested extensively in feeder monitoring and trip saver technology to provide information on feeder events as well as automated restoration of momentary outages.

Along with the AMI meter expansion, the Company is investing in a Meter Data Management (“MDM”) system that will be a repository for power quality issues and event logging. This information, as part of an organized software system coupled with geographic data, will highlight improvement areas for Minnesota Power’s system.

The Company also utilizes feeder sensors that provide data on feeder level events where traditional utility communications are lacking. The data set resulting from this monitoring will need to be linked to the Outage Management System (“OMS”) to fully utilize the capability of these sensors. This integration will take place over the next several years. The company is also installing fault indicators in addition to feeder sensors to give a better visual indication of where system faults are located. The feeder sensors are being used in conjunction with the fault indicators to reduce troubleshooting outages and increase restoration times.

As another part of the Company’s modernization plan, motor operated switches are being installed in increased levels on distribution feeders. In 2019, Minnesota Power is developing the process to use secure, existing communication to communicate with motor operators. With the expansion of motor operators, faulted sections of feeders will be isolated without rolling a truck. The use of these technologies will be expanded incrementally in the future.

An explanation of MP’s calculation of 2018 CAIDI values, given the stated SAIDI/SAIFI values;

The SAIDI and SAIFI values provided to the Commission in the Company’s SRSQ Report were rounded to two decimal places. Because of the rounding, the CAIDI values appeared skewed. Listed below are the SAIDI and SAIFI values not rounded and the calculated CAIDI value.

SAIDI	SAIFI	CAIDI
134.0037452657	1.3886433425	96.4997571121

An explanation as to why MP’s rolling 5-year average values for 2014-2018 differ from the Department’s calculated values;

The 5 year averages for SAIDI, SAIFI, and calculated CAIDI values provided to the Commission have excluded 2016 values since the 2017 request to remove the 2016 data from the average calculations. To stay in line with previous filings, we have excluded 2016 values in our 5 year averages calculation for the 2019 targets. Listed below are the SAIDI, SAIFI and calculated CAIDI values rounded to 4 decimal places and the associated averages from 2014-2018 without excluding 2016 values.

YEAR	SAIDI	SAIFI	CAIDI
2014	88.3527	0.9553	92.4911
2015	101.8197	1.1713	86.9322
2016	122.6924	1.2861	95.3958
2017	108.0604	1.0401	103.8968
2018	134.0037	1.3886	96.4998
Averages	110.9858	1.1683	94.9998

Provide the underlying data and calculations behind MP’s Reliability by Customer Class figure;

Please see attachment “Reliability by Customer Class” for the underlying data.

Comment on actions it has taken to improve the Colbyville 240 feeder, as well as any planned actions to prevent this circuit from causing problems in the future;

The Colbyville 240 (COL-240) feeder has been an area of focused improvement for Minnesota Power. In 2017 and 2018, two miles of an adjacent feeder were upgraded to a larger conductor size in order to carry the COL-240 feeder during an outage event. Three gang operated switches¹ were also replaced on this feeder.

In 2018, COL-240 went under an extensive engineering review to improve reliability. As a result of this review, 29 Faulted Circuit Indicators (“FCIs”), 3 smart feeder sensors, 2 new switches, and 12 trip savers were installed. Part of this feeder was rebalanced and transferred to an adjacent feeder to provide Minnesota Power more switching opportunities. The FCIs and feeder sensors will give the line personnel better indication of where a fault is located and should decrease restoration times during an event. The trip savers installed on single phase taps will clear temporary faults, such as wildlife and lightning, without causing a sustained outage, which in turn will prevent truck rolls and improve reliability.

The company is currently working on a pilot to install motor operated switches on this feeder in 2020. These remote operated switches will allow us to isolate faulted sections of the feeder and restore customers more rapidly without having to roll a truck and dispatch line personnel.

¹ Three separate switches for each phase are operated as a group from a single control; "air-break" because the switch operates in air rather than in another medium, such as oil
<http://c03.apogee.net/contentplayer/?coursetype=foe&utilityid=mp&id=4467>

Provide the specific number of calls received and calls answered within 20 seconds, both for business and non-business hours;

Please refer to the tables below for the number of calls received and calls answered within 20 seconds for both business and non-business hours. Consistent with prior SRSQ reporting, Minnesota Power defines business hours as 7:00 am to 5:30 pm, Monday through Friday, excluding holidays.

Month 2018	Response Time	Total Calls	Calls Answered within 20 seconds
JANUARY	71%	11,348	8,038
FEBRUARY	84%	9,318	7,822
MARCH	84%	10,768	8,998
APRIL	82%	11,152	9,196
MAY	79%	13,630	10,732
JUNE	76%	13,879	10,552
JULY	87%	13,142	11,436
AUGUST	76%	13,572	10,303
SEPTEMBER	88%	11,259	9,881
OCTOBER	77%	13,595	10,456
NOVEMBER	86%	10,501	9,003
DECEMBER	89%	8,536	7,585
YTD		140,700	114,002

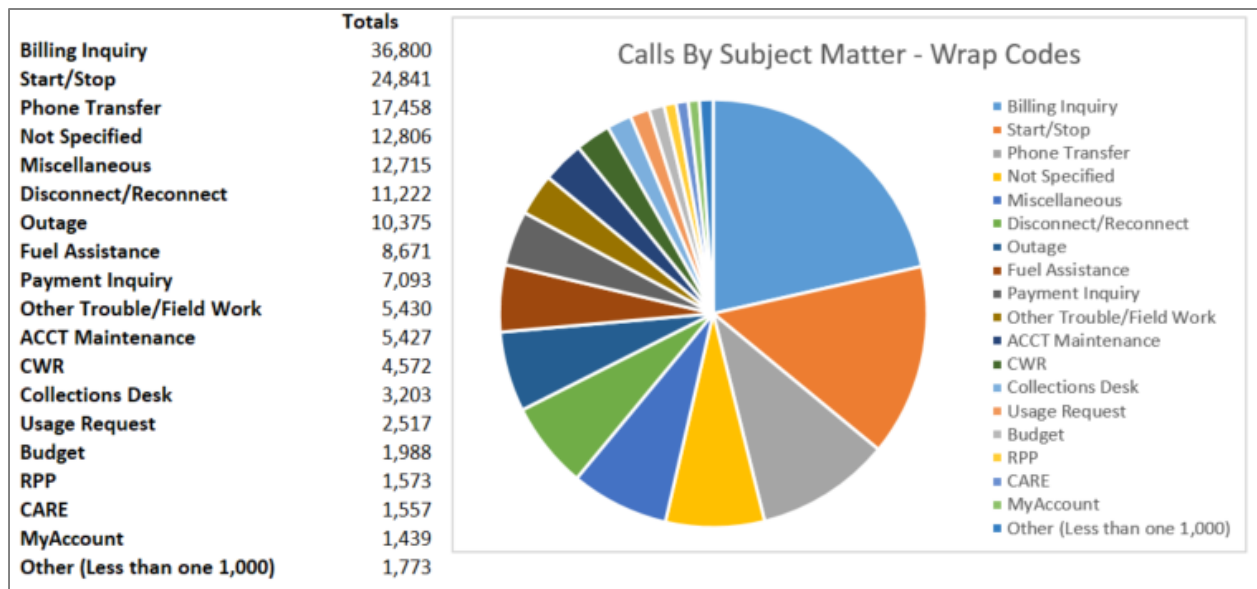
Business Hours 7:00 a.m. - 5:30 p.m.

Month 2018	Response Time	Total Calls	Calls Answered within 20 seconds
JANUARY	71%	1,104	779
FEBRUARY	73%	907	659
MARCH	67%	1,038	693
APRIL	66%	1,190	785
MAY	70%	1,426	1,003
JUNE	64%	1,841	1,183
JULY	60%	1,283	856
AUGUST	64%	1,425	919
SEPTEMBER	65%	1,448	942
OCTOBER	63%	1,197	758
NOVEMBER	73%	870	631
DECEMBER	74%	886	653
YTD		14,615	9,861

After Hours 5:30 p.m. - 7:00 a.m.

Provide a breakdown of all calls received in 2018 by complaint/subject matter category;

The figure below provides a breakdown of calls received in 2018 by subject matter category. This breakdown is based on the wrap codes that are used by representatives when closing and documenting a call. Calls may cover a range of topics, so the primary subject matter is determined subjectively by each representative. Please note that the total number of calls and the number of wrap codes do not reconcile as multiple representatives may handle a single call and each would choose a wrap code according to their role in addressing the customer inquiry. The Phone Transfer and Not Specified categories generally relate to calls where a representative with primarily operator responsibilities transferred the call or the caller requested to be transferred. Details regarding customer complaints are on pages 36-38 of Appendix A in the 2019 SRSQ Report.



Provide a discussion of the best way that the Commission might measure and track data associated with new forms of self-service communication; and

As discussed in Appendix A of the 2019 SRSQ Report and in responses to Information Requests 1 and 2 from the Minnesota Public Utilities Commission in its 2018 SRSQ Report,² Minnesota Power suggests that customer expectations and preferences regarding communication channels will ultimately need to be a point of consideration and review as part of service quality reporting. Minnesota Power observes there are multiple customer touchpoints, one of which is phone calls, and varied ways of contacting and responding to customers, and for customers to reach out to the Company.

There are important transformations in systems, technology and new rate offerings that Minnesota Rules do not reflect. This includes additional channels for two-way communication between utilities and customers, such as social media and other outlets, to provide timely updates on outages. Further, as AMI and time-of-day rate offerings become more predominant, meter reading and communications infrastructure are changing. Also, mobile workforce tools and online outage applications are pertinent, but not reflected in the rules or standards. While there is nothing that prevents a utility from sharing updates regarding other channels, features, or emerging technology, the current service quality rules focus largely on a specific channel for customer interactions, that being voice communications through a dedicated Call Center. The Call Center has been and will continue to be an important channel for customers, but it is becoming one of several. As more self-service options become available to customers, the types of calls that the Call Center receives will likely become predominantly more complex and time-consuming, as other

² Docket No. E015/M-18-250

channels will be used to address high call volume subject matters such as billing inquiries and transferring service. This will put pressure on the response time metrics and will inevitably challenge traditional approaches and views regarding how response times are measured and what the appropriate success metrics might be going forward. If not included as part of service quality metrics more holistically, it may lead to inaccurate conclusions regarding responsiveness to customers. As this situation is not unique to Minnesota Power, the input of other utilities and stakeholders is required for a formal update to the metrics. Each utility has unique offerings and service territories, as well as unique systems and reporting capabilities, which will be important factors in determining how best to measure and track data associated with new forms of self-service communication.

Confirm that the Department's Required Deposits table is correct; or provide an updated table with correct values.

Yes, the Department's "Table 13. MP's Required Deposits" in their reply comments is correct.

III. Conclusion

Minnesota Power appreciates the opportunity to respond to the Department's requests for further information and clarification. Modernization of the electric grid and customer service offerings present new and multifaceted challenges and opportunities for utilities, stakeholders, and the Commission alike. As we move towards the future, a holistic conversation on appropriate and accurate metrics is increasingly necessary. The Company looks forward to continuing these important conversations with stakeholders.

Dated: July 8, 2019

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Jenna Warmuth". The signature is fluid and cursive, with the first letter of each name being significantly larger and more stylized.

Jenna Warmuth
Senior Public Policy Advisor
218-355-3448
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SUBFEEDER	Commercial SP count	% of feeder	SAIDI per Commercial	SAIFI per Commercial	Industrial SP Count	% of feeder	SAIDI per Industrial	SAIFI per Industrial	Residential SP Count	% of feeder	SAIDI per Residential	SAIFI per Residential	Company Use	Total	SAIDI	SAIFI
AKE-1	62	2.64%	0.01	0.00	0	0.00%	0.00	0.00	2284	97.36%	0.23	0.01	0	2346	0.236316027	0.005617187
AKY-543	11	31.43%	0.01	0.00	0	0.00%	0.00	0.00	24	68.57%	0.02	0.00	0	35	0.021877464	0.000520892
AKY-544	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	2	100.00%	0.00	0.00	0	2	0	0
ALD-1	12	22.64%	0.00	0.00	0	0.00%	0.00	0.00	41	77.36%	0.00	0.00	0	53	0.00106994	7.03908E-06
ASK-6521	80	17.58%	0.08	0.00	1	0.22%	0.00	0.00	374	82.20%	0.36	0.00	0	455	0.435514979	0.004927357
AUN-1	99	20.54%	0.01	0.00	0	0.00%	0.00	0.00	383	79.46%	0.02	0.00	1	482	0.025418121	0.000147821
AUN-2	88	13.00%	0.00	0.00	8	1.18%	0.00	0.00	581	85.82%	0.01	0.00	0	677	0.016408098	8.4469E-05
AUR-313	22	55.00%	0.02	0.00	3	7.50%	0.00	0.00	15	37.50%	0.01	0.00	2	40	0.033822784	0.000218212
BAB-1	88	11.75%	0.00	0.00	0	0.00%	0.00	0.00	661	88.25%	0.00	0.00	1	749	0.003209821	2.11172E-05
BAB-2	31	22.79%	0.03	0.00	1	0.74%	0.00	0.00	104	76.47%	0.09	0.00	0	136	0.115250873	0.000366032
BAC-1	125	20.66%	0.12	0.00	3	0.50%	0.00	0.00	477	78.84%	0.45	0.00	0	605	0.572882644	0.006088805
BAL-1	44	14.43%	0.01	0.00	0	0.00%	0.00	0.00	261	85.57%	0.08	0.00	0	305	0.093654972	0.000591283
BAL-2	17	14.66%	0.01	0.00	0	0.00%	0.00	0.00	99	85.34%	0.06	0.00	0	116	0.070250028	0.000464579
BAR-6421	147	17.25%	0.56	0.00	0	0.00%	0.00	0.00	705	82.75%	2.70	0.01	1	852	3.257616286	0.015359275
BAX-534	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0.000450501	7.03908E-06
BBR-1	10	6.49%	0.00	0.00	0	0.00%	0.00	0.00	144	93.51%	0.00	0.00	0	154	0.002301779	2.11172E-05
BER-1	68	18.78%	0.05	0.00	0	0.00%	0.00	0.00	294	81.22%	0.22	0.00	0	362	0.275291418	0.003259094
BFV-1	71	25.45%	0.01	0.00	0	0.00%	0.00	0.00	208	74.55%	0.02	0.00	0	279	0.020617468	0.000119664
BHL-1	1	2.63%	0.00	0.00	0	0.00%	0.00	0.00	37	97.37%	0.01	0.00	0	38	0.007468465	7.74299E-05
BIW-1	67	23.26%	0.01	0.00	1	0.35%	0.00	0.00	220	76.39%	0.02	0.00	3	288	0.028311184	0.000147821
BLD-508	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0.001710497	3.51954E-05
BLD-511	158	24.53%	0.34	0.00	4	0.62%	0.01	0.00	482	74.84%	1.05	0.01	0	644	1.400101363	0.006792713
BLD-521	0	0.00%	0.00	0.00	2	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	2	0	0
BLD-524	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
BLG-1	6	35.29%	0.01	0.00	0	0.00%	0.00	0.00	11	64.71%	0.02	0.00	0	17	0.023489413	0.000387149
BOY-1	10	5.43%	0.03	0.00	0	0.00%	0.00	0.00	174	94.57%	0.58	0.00	0	184	0.609176146	0.004343113
BRD-504	5	20.00%	0.00	0.00	4	16.00%	0.00	0.00	16	64.00%	0.00	0.00	2	25	0.000464579	2.81563E-05
BRW-1	56	21.71%	0.00	0.00	1	0.39%	0.00	0.00	201	77.91%	0.00	0.00	0	258	0	0
BRW-2	40	10.96%	0.05	0.00	0	0.00%	0.00	0.00	325	89.04%	0.43	0.00	0	365	0.481902523	0.00076726
BSD-1	1	4.35%	0.00	0.00	0	0.00%	0.00	0.00	22	95.65%	0.01	0.00	0	23	0.012381743	2.11172E-05
BSD-2	36	11.92%	0.01	0.00	1	0.33%	0.00	0.00	265	87.75%	0.06	0.00	0	302	0.065090382	0.000387149
BUR-407	3	60.00%	0.00	0.00	0	0.00%	0.00	0.00	2	40.00%	0.00	0.00	0	5	0.001745692	1.40782E-05
BUR-408	56	17.39%	0.04	0.00	1	0.31%	0.00	0.00	265	82.30%	0.19	0.00	0	322	0.226890697	0.001161448
CBL-214	16	5.90%	0.02	0.00	0	0.00%	0.00	0.00	255	94.10%	0.29	0.00	0	271	0.30829063	0.0012248
CHL-1	57	5.91%	0.00	0.00	0	0.00%	0.00	0.00	908	94.09%	0.02	0.00	0	965	0.023109303	0.000133743
CHL-2	77	13.82%	0.00	0.00	1	0.18%	0.00	0.00	479	86.00%	0.00	0.00	0	557	0.001217761	1.40782E-05
CHL-3	132	13.72%	0.00	0.00	0	0.00%	0.00	0.00	830	86.28%	0.01	0.00	0	962	0.006314056	7.03908E-05
CLQ-406	452	14.38%	0.02	0.00	2	0.06%	0.00	0.00	2690	85.56%	0.10	0.00	1	3144	0.111653902	0.001780887
CLQ-409	243	13.35%	0.10	0.00	6	0.33%	0.00	0.00	1571	86.32%	0.64	0.01	0	1820	0.74065914	0.010516387
CLQ-410	77	7.91%	0.00	0.00	2	0.21%	0.00	0.00	895	91.89%	0.02	0.00	0	974	0.017632898	0.00038011
CLQ-412	28	28.28%	0.00	0.00	4	4.04%	0.00	0.00	67	67.68%	0.00	0.00	1	99	0	0
CLR-1	81	17.76%	0.02	0.00	4	0.88%	0.00	0.00	371	81.36%	0.11	0.00	0	456	0.134622424	0.000908041
CLR-2	6	8.57%	0.01	0.00	0	0.00%	0.00	0.00	64	91.43%	0.13	0.00	0	70	0.140176259	0.000633517
CNA-403	53	8.72%	0.02	0.00	0	0.00%	0.00	0.00	555	91.28%	0.25	0.01	2	608	0.275263262	0.007081315
CNA-405	136	11.04%	0.13	0.00	2	0.16%	0.00	0.00	1094	88.80%	1.06	0.01	0	1232	1.188429159	0.013916263
COA-1	3	6.98%	0.00	0.00	0	0.00%	0.00	0.00	40	93.02%	0.00	0.00	0	43	0	0
COE-1	10	5.32%	0.02	0.00	0	0.00%	0.00	0.00	178	94.68%	0.30	0.00	0	188	0.319271596	0.003413954
COF-1	14	7.69%	0.02	0.00	0	0.00%	0.00	0.00	168	92.31%	0.19	0.00	0	182	0.209595675	0.002498874
COL-240	263	7.75%	0.08	0.00	0	0.00%	0.00	0.00	3129	92.25%	0.90	0.01	0	3392	0.97548992	0.011079513
COL-241	71	3.94%	0.10	0.00	0	0.00%	0.00	0.00	1730	96.06%	2.34	0.02	0	1801	2.439133067	0.020244397
COL-242	149	5.65%	0.41	0.00	0	0.00%	0.00	0.00	2490	94.35%	6.81	0.04	0	2639	7.217247156	0.044254702
COL-244	65	2.91%	0.01	0.00	0	0.00%	0.00	0.00	2172	97.09%	0.23	0.00	1	2237	0.234894132	0.003202782
COL-245	24	11.59%	0.03	0.00	0	0.00%	0.00	0.00	183	88.41%	0.27	0.00	0	207	0.301807636	0.003843338
CQB-6301	40	10.42%	0.18	0.00	2	0.52%	0.01	0.00	342	89.06%	1.57	0.00	0	384	1.761811578	0.004568364
CRS-1	31	9.23%	0.03	0.00	0	0.00%	0.00	0.00	305	90.77%	0.30	0.01	0	336	0.329914686	0.005631265
CSB-1	93	17.71%	0.00	0.00	0	0.00%	0.00	0.00	432	82.29%	0.00	0.00	0	525	0.004223449	2.81563E-05
CSB-2	69	12.78%	0.00	0.00	0	0.00%	0.00	0.00	471	87.22%	0.00	0.00	1	540	0.000520892	1.40782E-05
CTD-1	3	6.98%	0.00	0.00	0	0.00%	0.00	0.00	40	93.02%	0.05	0.00	0	43	0.055270864	0.000366032
CUY-1	10	9.26%	0.01	0.00	0	0.00%	0.00	0.00	98	90.74%	0.14	0.00	0	108	0.152741018	0.001499324
DEN-6431	192	17.44%	1.52	0.01	1	0.09%	0.01	0.00	908	82.47%	7.19	0.04	0	1101	8.722406803	0.044494031
DER-1	77	25.00%	0.10	0.00	1	0.32%	0.00	0.00	230	74.68%	0.30	0.00	0	308	0.397088636	0.002717085

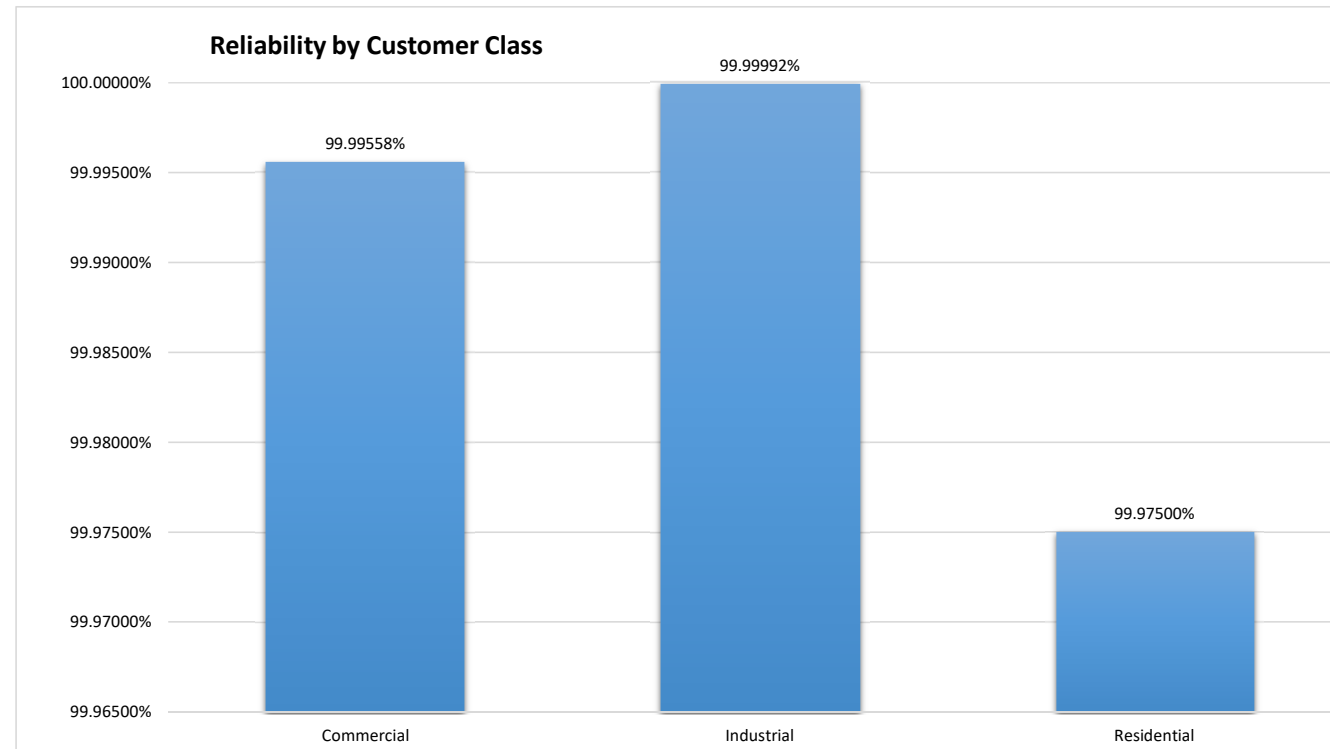
SUBFEEDER	Commercial SP count	% of feeder	SAIDI per Commercial	SAIFI per Commercial	Industrial SP Count	% of feeder	SAIDI per Industrial	SAIFI per Industrial	Residential SP Count	% of feeder	SAIDI per Residential	SAIFI per Residential	Company Use	Total	SAIDI	SAIFI
DER-2	86	13.85%	0.11	0.00	1	0.16%	0.00	0.00	534	85.99%	0.68	0.00	0	621	0.793494481	0.005413053
DHY-1	55	9.52%	0.22	0.00	1	0.17%	0.00	0.00	522	90.31%	2.05	0.01	0	578	2.266950107	0.015408548
DML-380	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
DOG-503	0	0.00%	0.00	0.00	3	100.00%	0.00	0.00	0	0.00%	0.00	0.00	1	3	0.000225251	2.81563E-05
DOR-1	24	35.82%	0.00	0.00	0	0.00%	0.00	0.00	43	64.18%	0.00	0.00	0	67	0.002597421	1.40782E-05
DRR-2	95	22.46%	0.16	0.00	1	0.24%	0.00	0.00	327	77.30%	0.56	0.01	0	423	0.730410238	0.007003886
DRS-337	6	28.57%	0.00	0.00	0	0.00%	0.00	0.00	15	71.43%	0.00	0.00	0	21	0	0
DRV-1	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	1	0.001372621	7.03908E-06
DRW-1	1	12.50%	0.00	0.00	0	0.00%	0.00	0.00	7	87.50%	0.01	0.00	0	8	0.010980966	5.63126E-05
DRX-322	27	65.85%	0.04	0.00	1	2.44%	0.00	0.00	13	31.71%	0.02	0.00	1	41	0.065090382	0.000337876
DUN-1	1	25.00%	0.00	0.00	3	75.00%	0.00	0.00	0	0.00%	0.00	0.00	0	4	0	0
ECS-1	1	3.03%	0.00	0.00	0	0.00%	0.00	0.00	32	96.97%	0.00	0.00	0	33	0	0
EGB-1	90	19.78%	0.08	0.00	0	0.00%	0.00	0.00	365	80.22%	0.30	0.00	0	455	0.37944166	0.003977081
EGV-513	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0.001956865	1.40782E-05
EGV-517	8	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	8	0	0
EMB-317	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	3	100.00%	0.00	0.00	0	3	0.00175977	3.51954E-05
EOQ-1	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	7	100.00%	0.02	0.00	0	7	0.018160829	0.000183016
EOS-1	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	4	100.00%	0.01	0.00	0	4	0.010812028	0.000112625
ESL-1	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	3	100.00%	0.01	0.00	0	3	0.007531817	7.74299E-05
ESS-1	103	10.93%	0.08	0.00	2	0.21%	0.00	0.00	837	88.85%	0.68	0.01	0	942	0.762121297	0.013916263
ESS-2	42	17.43%	0.03	0.00	0	0.00%	0.00	0.00	199	82.57%	0.16	0.00	0	241	0.192040207	0.00351954
EWP-1	2	20.00%	0.01	0.00	0	0.00%	0.00	0.00	8	80.00%	0.02	0.00	0	10	0.026100912	0.000253407
FBG-269	69	12.02%	0.39	0.00	0	0.00%	0.00	0.00	505	87.98%	2.85	0.01	4	574	3.234253576	0.009925104
FCS-214	333	24.29%	0.07	0.00	3	0.22%	0.00	0.00	1035	75.49%	0.21	0.00	0	1371	0.276509179	0.002963453
FCS-215	11	5.50%	0.02	0.00	0	0.00%	0.00	0.00	189	94.50%	0.28	0.00	0	200	0.293128449	0.003611049
FIF-219	41	91.11%	0.00	0.00	4	8.89%	0.00	0.00	0	0.00%	0.00	0.00	0	45	0	0
FIF-220	269	14.16%	0.09	0.00	1	0.05%	0.00	0.00	1630	85.79%	0.54	0.01	0	1900	0.634594267	0.009326782
FIF-221	8	88.89%	0.01	0.00	1	11.11%	0.00	0.00	0	0.00%	0.00	0.00	0	9	0.008277959	9.85471E-05
FIF-222	32	96.97%	0.00	0.00	0	0.00%	0.00	0.00	1	3.03%	0.00	0.00	0	33	0.004343113	6.33517E-05
FIF-223	1	50.00%	0.00	0.00	0	0.00%	0.00	0.00	1	50.00%	0.00	0.00	0	2	0.001288152	1.40782E-05
FIF-224	9	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	9	0	0
FIF-225	3	100.00%	0.01	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	3	0.006616736	7.74299E-05
FIF-226	44	53.66%	0.00	0.00	0	0.00%	0.00	0.00	38	46.34%	0.00	0.00	0	82	0	0
FIF-228	61	55.45%	0.00	0.00	1	0.91%	0.00	0.00	48	43.64%	0.00	0.00	0	110	0	0
FIF-230	223	18.80%	0.08	0.00	1	0.08%	0.00	0.00	962	81.11%	0.34	0.00	3	1186	0.4152917	0.005222998
FIF-231	52	92.86%	0.03	0.00	4	7.14%	0.00	0.00	0	0.00%	0.00	0.00	0	56	0.030324361	0.000492736
FIF-232	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	1	0	0
FIF-233	11	15.49%	0.00	0.00	0	0.00%	0.00	0.00	60	84.51%	0.00	0.00	2	71	0	0
FIF-234	14	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	14	0	0
FIF-260	224	23.96%	0.00	0.00	2	0.21%	0.00	0.00	709	75.83%	0.00	0.00	0	935	0.002097646	7.03908E-05
FIF-266	128	96.97%	0.01	0.00	4	3.03%	0.00	0.00	0	0.00%	0.00	0.00	0	132	0.005814281	8.4469E-05
FIN-6511	60	20.00%	0.16	0.00	1	0.33%	0.00	0.00	239	79.67%	0.65	0.01	0	300	0.820186676	0.006757518
FLF-402	98	22.02%	0.12	0.00	3	0.67%	0.00	0.00	344	77.30%	0.42	0.00	0	445	0.537673161	0.003463228
FLN-1	17	23.61%	0.01	0.00	1	1.39%	0.00	0.00	54	75.00%	0.05	0.00	0	72	0.06150749	0.000344915
FLN-2	16	7.02%	0.05	0.00	0	0.00%	0.00	0.00	212	92.98%	0.65	0.00	0	228	0.694736175	0.003484345
FOR-262	200	33.84%	0.10	0.00	0	0.00%	0.00	0.00	391	66.16%	0.20	0.00	0	591	0.297858712	0.001091058
FOR-263	78	87.64%	0.07	0.00	3	3.37%	0.00	0.00	8	8.99%	0.01	0.00	0	89	0.077324305	0.000633517
FOR-4213	3	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	3	0	0
FRR-275	86	9.82%	0.07	0.00	0	0.00%	0.00	0.00	790	90.18%	0.68	0.00	1	876	0.759101532	0.004244566
FRR-276	77	13.73%	0.02	0.00	1	0.18%	0.00	0.00	483	86.10%	0.10	0.00	0	561	0.112336693	0.001464129
FTR-1	17	23.61%	0.00	0.00	0	0.00%	0.00	0.00	55	76.39%	0.01	0.00	0	72	0.016358824	0.000225251
GES-1	77	13.12%	0.20	0.00	1	0.17%	0.00	0.00	509	86.71%	1.30	0.01	0	587	1.500943237	0.008777734
GGR-1	113	20.14%	0.23	0.00	0	0.00%	0.00	0.00	448	79.86%	0.90	0.01	0	561	1.121149623	0.011811578
GIN-1	9	36.00%	0.17	0.00	0	0.00%	0.00	0.00	16	64.00%	0.29	0.01	0	25	0.458680595	0.00842578
GLL-1	126	11.97%	0.46	0.00	0	0.00%	0.00	0.00	927	88.03%	3.36	0.01	0	1053	3.82207315	0.016450332
GLL-2	42	9.31%	0.14	0.00	0	0.00%	0.00	0.00	409	90.69%	1.34	0.01	0	451	1.475426568	0.009798401
GRR-325	24	92.31%	0.01	0.00	1	3.85%	0.00	0.00	1	3.85%	0.00	0.00	0	26	0.011480741	0.000183016
GRY-200	134	9.50%	0.03	0.00	1	0.07%	0.00	0.00	1275	90.43%	0.31	0.00	0	1410	0.343197432	0.003273173
GRY-201	88	6.46%	0.06	0.00	1	0.07%	0.00	0.00	1273	93.47%	0.85	0.02	0	1362	0.912426794	0.021997128
HAT-321	240	18.11%	0.05	0.00	3	0.23%	0.00	0.00	1082	81.66%	0.24	0.00	2	1325	0.297999493	0.001985021
HAT-332	29	29.00%	0.01	0.00	8	8.00%	0.00	0.00	63	63.00%	0.03	0.00	100	100	0.041537617	9.85471E-05

SUBFEEDER	Commercial SP count	% of feeder	SAIDI per Commercial	SAIFI per Commercial	Industrial SP Count	% of feeder	SAIDI per Industrial	SAIFI per Industrial	Residential SP Count	% of feeder	SAIDI per Residential	SAIFI per Residential	Company Use	Total	SAIDI	SAIFI
HBB-515	2	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	2	0	0
HBB-522	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
HBB-523	2	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	2	0.000527931	3.51954E-05
HCS-1	197	31.62%	0.48	0.00	1	0.16%	0.00	0.00	425	68.22%	1.05	0.00	0	623	1.532365694	0.006011375
HEW-1	32	15.46%	0.00	0.00	1	0.48%	0.00	0.00	174	84.06%	0.02	0.00	0	207	0.019181496	0.000119664
HIB-307	0	0.00%	0.00	0.00	9	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	9	0	0
HIB-308	50	83.33%	0.25	0.00	4	6.67%	0.02	0.00	6	10.00%	0.03	0.00	1	60	0.295599167	0.001428933
HIB-310	17	27.42%	0.01	0.00	1	1.61%	0.00	0.00	44	70.97%	0.01	0.00	0	62	0.019040714	4.22345E-05
HIB-312	0	0.00%	0.00	0.00	2	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	2	0	0
HIB-315	9	9.78%	0.00	0.00	7	7.61%	0.00	0.00	76	82.61%	0.01	0.00	0	92	0.010023651	6.33517E-05
HID-1	31	8.56%	0.11	0.00	0	0.00%	0.00	0.00	331	91.44%	1.13	0.01	0	362	1.237322615	0.007398074
HKY-461	141	24.69%	0.00	0.00	4	0.70%	0.00	0.00	426	74.61%	0.01	0.00	0	571	0.007447348	9.85471E-05
HKY-462	52	16.10%	0.01	0.00	2	0.62%	0.00	0.00	269	83.28%	0.05	0.00	0	323	0.056425273	0.000288602
HKZ-463	157	61.33%	0.24	0.00	2	0.78%	0.00	0.00	97	37.89%	0.15	0.00	0	256	0.389634249	0.002519991
HML-1	1	5.26%	0.00	0.00	0	0.00%	0.00	0.00	18	94.74%	0.04	0.00	0	19	0.043944983	0.000394189
HNS-229	218	27.28%	0.00	0.00	1	0.13%	0.00	0.00	580	72.59%	0.00	0.00	0	799	0.00359697	6.33517E-05
HNS-235	1	14.29%	0.00	0.00	0	0.00%	0.00	0.00	6	85.71%	0.00	0.00	0	7	0	0
HNS-236	264	6.36%	0.05	0.00	0	0.00%	0.00	0.00	3886	93.64%	0.81	0.03	0	4150	0.861125971	0.035723336
HNS-237	146	9.38%	0.02	0.00	0	0.00%	0.00	0.00	1411	90.62%	0.18	0.00	1	1557	0.199417164	0.001654184
HNS-238	72	42.60%	0.00	0.00	0	0.00%	0.00	0.00	97	57.40%	0.00	0.00	0	169	0	0
HNS-247	33	5.08%	0.04	0.00	2	0.31%	0.00	0.00	614	94.61%	0.82	0.01	0	649	0.871846492	0.012064985
HPS-1	56	22.67%	0.01	0.00	0	0.00%	0.00	0.00	191	77.33%	0.05	0.00	0	247	0.059846266	0.000183016
HUB-1	18	13.95%	0.00	0.00	0	0.00%	0.00	0.00	111	86.05%	0.02	0.00	0	129	0.024897229	0.001231839
HYN-1	12	3.79%	0.00	0.00	0	0.00%	0.00	0.00	305	96.21%	0.00	0.00	1	317	0	0
HYN-2	118	14.51%	0.01	0.00	0	0.00%	0.00	0.00	695	85.49%	0.04	0.00	0	813	0.051758362	0.000246368
IBN-1	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	13	100.00%	0.03	0.00	0	13	0.028958779	0.000358993
IBS-1	1	10.00%	0.00	0.00	0	0.00%	0.00	0.00	9	90.00%	0.02	0.00	0	10	0.018738034	0.00023229
INF-1	260	24.07%	0.13	0.00	8	0.74%	0.00	0.00	812	75.19%	0.41	0.00	1	1080	0.543698615	0.003582892
INF-2	248	18.08%	0.03	0.00	2	0.15%	0.00	0.00	1122	81.78%	0.11	0.00	1	1372	0.139866539	0.001330386
INF-3	147	14.58%	0.15	0.00	1	0.10%	0.00	0.00	860	85.32%	0.85	0.01	0	1008	0.998831513	0.007728911
INF-4	253	20.47%	0.08	0.00	0	0.00%	0.00	0.00	983	79.53%	0.32	0.00	0	1236	0.401980797	0.002280662
INF-5	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
INJ-1	58	16.62%	0.33	0.00	0	0.00%	0.00	0.00	291	83.38%	1.64	0.01	1	349	1.964727165	0.01079795
IRN-1	57	12.58%	0.02	0.00	0	0.00%	0.00	0.00	396	87.42%	0.12	0.00	0	453	0.135861302	0.002491835
JKS-1	96	35.16%	0.38	0.00	1	0.37%	0.00	0.00	176	64.47%	0.70	0.00	0	273	1.083976236	0.006215509
KER-6501	46	19.33%	0.03	0.00	0	0.00%	0.00	0.00	192	80.67%	0.13	0.00	0	238	0.156640669	0.002139881
KLY-1	21	8.75%	0.00	0.00	1	0.42%	0.00	0.00	218	90.83%	0.05	0.00	0	240	0.054433213	0.000563126
LCH-1	22	6.61%	0.04	0.00	0	0.00%	0.00	0.00	311	93.39%	0.63	0.00	0	333	0.673428877	0.005138529
LEP-1	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	1	1	0	0
LFE-1	80	10.11%	0.04	0.00	1	0.13%	0.00	0.00	710	89.76%	0.39	0.01	0	791	0.43520526	0.00566646
LFG-1	1	25.00%	0.00	0.00	0	0.00%	0.00	0.00	3	75.00%	0.00	0.00	0	4	0.002139881	2.81563E-05
LFL-525	37	55.22%	0.01	0.00	17	25.37%	0.01	0.00	13	19.40%	0.00	0.00	3	67	0.024207399	0.000527931
LFL-526	53	24.09%	0.12	0.00	1	0.45%	0.00	0.00	166	75.45%	0.37	0.00	0	220	0.491172992	0.004293839
LFL-529	221	14.51%	0.20	0.00	2	0.13%	0.00	0.00	1300	85.36%	1.18	0.01	0	1523	1.384925104	0.016253238
LFL-536	45	25.71%	0.00	0.00	7	4.00%	0.00	0.00	123	70.29%	0.00	0.00	4	175	0.00313943	1.40782E-05
LFM-1	77	18.73%	0.07	0.00	4	0.97%	0.00	0.00	330	80.29%	0.28	0.01	0	411	0.350496959	0.008151256
LFS-1	106	13.70%	0.12	0.00	2	0.26%	0.00	0.00	666	86.05%	0.78	0.01	0	774	0.90578894	0.015028438
LFW-1	95	10.13%	0.08	0.00	1	0.11%	0.00	0.00	842	89.77%	0.70	0.01	0	938	0.782344577	0.014958047
LGL-1	14	15.05%	0.00	0.00	0	0.00%	0.00	0.00	79	84.95%	0.00	0.00	0	93	0.001217761	2.11172E-05
LGP-1	23	15.44%	0.05	0.00	0	0.00%	0.00	0.00	126	84.56%	0.28	0.00	0	149	0.32996396	0.00191463
LGW-334	109	20.64%	0.24	0.00	3	0.57%	0.01	0.00	416	78.79%	0.92	0.01	2	528	1.171007433	0.012726658
LGW-335	28	18.92%	0.00	0.00	0	0.00%	0.00	0.00	120	81.08%	0.00	0.00	0	148	0	0
LLK-1	11	8.33%	0.06	0.00	0	0.00%	0.00	0.00	121	91.67%	0.67	0.00	0	132	0.728122536	0.000886924
LNG-541	318	21.07%	0.04	0.00	6	0.40%	0.00	0.00	1185	78.53%	0.15	0.00	1	1509	0.195665334	0.003019766
LNG-542	7	46.67%	0.00	0.00	4	26.67%	0.00	0.00	4	26.67%	0.00	0.00	0	15	0	0
LNG-545	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
LNL-1	22	32.35%	0.07	0.00	0	0.00%	0.00	0.00	46	67.65%	0.15	0.00	0	68	0.221899989	0.001344464
LPD-1	58	8.24%	0.02	0.00	0	0.00%	0.00	0.00	646	91.76%	0.27	0.01	0	704	0.29082667	0.005701656
LPD-2	30	8.52%	0.00	0.00	0	0.00%	0.00	0.00	322	91.48%	0.04	0.00	0	352	0.046479052	0.002618538
LPN-1	5	29.41%	0.01	0.00	0	0.00%	0.00	0.00	12	70.59%	0.03	0.00	0	17	0.038250366	0.000161899
LPR-501	19	61.29%	0.01	0.00	5	16.13%	0.00	0.00	7	22.58%	0.00	0.00	0	31	0.013015261	0.000147821

SUBFEEDER	Commercial SP count	% of feeder	SAIDI per Commercial	SAIFI per Commercial	Industrial SP Count	% of feeder	SAIDI per Industrial	SAIFI per Industrial	Residential SP Count	% of feeder	SAIDI per Residential	SAIFI per Residential	Company Use	Total	SAIDI	SAIFI
LPR-535	181	54.85%	0.18	0.00	8	2.42%	0.01	0.00	141	42.73%	0.14	0.00	1	330	0.320904663	0.001182566
LSP-223	123	11.00%	0.01	0.00	9	0.81%	0.00	0.00	986	88.19%	0.05	0.00	0	1118	0.057227728	0.000978432
LSP-224	38	95.00%	0.05	0.00	2	5.00%	0.00	0.00	0	0.00%	0.00	0.00	0	40	0.054341705	0.000499775
LSP-225	238	13.11%	0.01	0.00	8	0.44%	0.00	0.00	1570	86.45%	0.04	0.00	0	1816	0.049322284	0.000753182
LSP-280	129	11.05%	0.08	0.00	5	0.43%	0.00	0.00	1033	88.52%	0.61	0.01	0	1167	0.687077655	0.011586327
LSP-281	193	14.76%	0.01	0.00	2	0.15%	0.00	0.00	1113	85.09%	0.07	0.00	0	1308	0.079443068	0.001358543
LSP-282	22	7.07%	0.00	0.00	1	0.32%	0.00	0.00	288	92.60%	0.00	0.00	0	311	0.004392387	4.22345E-05
MAH-6411	77	14.89%	0.31	0.00	0	0.00%	0.00	0.00	440	85.11%	1.77	0.01	0	517	2.075719394	0.013163081
MAR-1	26	11.45%	0.02	0.00	0	0.00%	0.00	0.00	201	88.55%	0.15	0.00	0	227	0.169339171	0.003420993
MAT-420	67	44.97%	0.24	0.00	1	0.67%	0.00	0.00	81	54.36%	0.29	0.00	0	149	0.537349364	0.003378759
MDL-401	81	19.61%	0.08	0.00	0	0.00%	0.00	0.00	332	80.39%	0.33	0.00	2	413	0.413236288	0.001914663
MDY-277	144	14.30%	0.14	0.00	2	0.20%	0.00	0.00	861	85.50%	0.84	0.01	0	1007	0.978390021	0.008608796
MDY-278	87	14.26%	0.06	0.00	1	0.16%	0.00	0.00	522	85.57%	0.35	0.00	1	610	0.403846154	0.003442111
MEN-1	17	10.24%	0.00	0.00	0	0.00%	0.00	0.00	149	89.76%	0.04	0.00	0	166	0.044163194	0.001548598
MHR-451	37	7.69%	0.03	0.00	2	0.42%	0.00	0.00	442	91.89%	0.38	0.00	0	481	0.41850152	0.004941435
MOT-1	100	19.72%	0.27	0.00	2	0.39%	0.01	0.00	405	79.88%	1.09	0.01	0	507	1.366686845	0.013233472
MOT-2	29	32.95%	0.06	0.00	0	0.00%	0.00	0.00	59	67.05%	0.13	0.00	0	88	0.188309494	0.001858317
MSD-1	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	20	100.00%	0.00	0.00	0	20	0	0
MTU-330	44	37.93%	0.35	0.00	1	0.86%	0.01	0.00	71	61.21%	0.57	0.00	0	116	0.923499268	0.003850377
NAS-314	3	27.27%	0.00	0.00	8	72.73%	0.00	0.00	0	0.00%	0.00	0.00	0	11	0.000316759	3.51954E-05
NAS-318	9	32.14%	0.00	0.00	0	0.00%	0.00	0.00	19	67.86%	0.00	0.00	1	28	0.001963904	0.000218212
NAS-319	128	12.00%	0.28	0.00	3	0.28%	0.01	0.00	936	87.72%	2.06	0.02	0	1067	2.351081203	0.026790742
NEV-1	99	20.67%	0.00	0.00	5	1.04%	0.00	0.00	375	78.29%	0.00	0.00	0	479	0.002428483	4.92736E-05
NIN-246	98	16.67%	0.09	0.00	0	0.00%	0.00	0.00	490	83.33%	0.43	0.00	0	588	0.518738034	0.004610598
NIN-248	109	15.24%	0.25	0.00	0	0.00%	0.00	0.00	606	84.76%	1.38	0.02	0	715	1.624401678	0.027304595
NO-0	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
NPS-1	89	16.04%	0.68	0.00	0	0.00%	0.00	0.00	466	83.96%	3.58	0.01	0	555	4.267534351	0.016921951
NSW-1	187	63.18%	0.56	0.00	2	0.68%	0.01	0.00	107	36.15%	0.32	0.00	0	296	0.879307918	0.004329035
NSW-2	65	17.86%	0.30	0.00	0	0.00%	0.00	0.00	299	82.14%	1.37	0.00	0	364	1.672415249	0.00406155
NTH-1	194	33.22%	0.04	0.00	2	0.34%	0.00	0.00	388	66.44%	0.08	0.00	1	584	0.121649397	0.002752281
NTH-2			0.00	0.00			0.00	0.00			0.00	0.00			0.014831344	0.000344915
NWG-1	23	11.86%	0.12	0.00	0	0.00%	0.00	0.00	171	88.14%	0.89	0.00	0	194	1.011276608	0.00329429
NWG-2	35	9.72%	0.38	0.00	1	0.28%	0.01	0.00	324	90.00%	3.48	0.01	0	360	3.864187972	0.013852911
OHV-1	4	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	4	0	0
OLE-4471	1	6.67%	0.00	0.00	0	0.00%	0.00	0.00	14	93.33%	0.05	0.00	0	15	0.053722266	0.000337876
OLW-4471	5	100.00%	0.02	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	5	0.02014585	0.000126703
PIL-1	87	15.24%	0.04	0.00	2	0.35%	0.00	0.00	482	84.41%	0.25	0.00	0	571	0.292290799	0.004448699
PIO-270	23	7.52%	0.06	0.00	0	0.00%	0.00	0.00	283	92.48%	0.70	0.00	0	306	0.761839734	0.00482881
PKD-1	193	35.09%	0.00	0.00	1	0.18%	0.00	0.00	356	64.73%	0.00	0.00	0	550	0	0
PKR-1	101	23.60%	0.02	0.00	0	0.00%	0.00	0.00	327	76.40%	0.05	0.00	0	428	0.071108796	0.000513853
PLA-546	54	73.97%	0.01	0.00	7	9.59%	0.00	0.00	12	16.44%	0.00	0.00	0	73	0.015866089	0.000112625
PLA-547	8	88.89%	0.00	0.00	1	11.11%	0.00	0.00	0	0.00%	0.00	0.00	0	9	0.000654635	7.03908E-06
PLR-214	15	9.68%	0.00	0.00	0	0.00%	0.00	0.00	140	90.32%	0.02	0.00	0	155	0.020230319	0.000168938
PNB-1	43	15.03%	0.17	0.00	0	0.00%	0.00	0.00	243	84.97%	0.95	0.01	0	286	1.119044937	0.006834948
PNB-2	59	16.76%	0.04	0.00	0	0.00%	0.00	0.00	293	83.24%	0.21	0.00	0	352	0.255018865	0.003174626
PNN-1	8	19.51%	0.02	0.00	0	0.00%	0.00	0.00	33	80.49%	0.07	0.00	0	41	0.081456245	0.000929159
PNR-1	47	15.99%	0.02	0.00	1	0.34%	0.00	0.00	246	83.67%	0.10	0.00	0	294	0.12446503	0.002428483
PNR-2	50	20.33%	0.05	0.00	4	1.63%	0.00	0.00	192	78.05%	0.21	0.00	1	246	0.268491666	0.001548598
PNS-1	9	23.08%	0.02	0.00	0	0.00%	0.00	0.00	30	76.92%	0.06	0.00	0	39	0.075092916	0.000872846
PPL-514	43	17.99%	0.20	0.00	0	0.00%	0.00	0.00	196	82.01%	0.90	0.00	0	239	1.095259883	0.003695518
PPL-539	24	11.48%	0.03	0.00	0	0.00%	0.00	0.00	185	88.52%	0.23	0.00	0	209	0.26003069	0.001654184
PQL-1	241	20.60%	0.99	0.00	4	0.34%	0.02	0.00	925	79.06%	3.79	0.01	0	1170	4.788377069	0.007088355
PQT-507	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	1	0	0	0
PRH-1	13	6.10%	0.00	0.00	0	0.00%	0.00	0.00	200	93.90%	0.00	0.00	0	213	0.001076979	7.03908E-06
PZG-1	21	60.00%	0.00	0.00	2	5.71%	0.00	0.00	12	34.29%	0.00	0.00	0	35	0.001703458	2.11172E-05
PZG-2	84	20.84%	0.03	0.00	2	0.50%	0.00	0.00	317	78.66%	0.12	0.00	0	403	0.148257124	0.000901002
PZG-3	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	1	0	0
RCW-1	6	85.71%	0.01	0.00	0	0.00%	0.00	0.00	1	14.29%	0.00	0.00	0	7	0.008017513	0.000105586
RDL-1	51	12.00%	0.20	0.00	0	0.00%	0.00	0.00	374	88.00%	1.49	0.00	0	425	1.695869467	0.005490483
RDL-2	3	100.00%	0.01	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	3	0.008869242	2.81563E-05
RGV-251	33	3.75%	0.00	0.00	0	0.00%	0.00	0.00	846	96.25%	0.08	0.00	0	879	0.081385854	0.000893963

SUBFEEDER	Commercial SP count	% of feeder	SAIDI per Commercial	SAIFI per Commercial	Industrial SP Count	% of feeder	SAIDI per Industrial	SAIFI per Industrial	Residential SP Count	% of feeder	SAIDI per Residential	SAIFI per Residential	Company Use	Total	SAIDI	SAIFI
RGV-252	280	9.28%	0.27	0.01	0	0.00%	0.00	0.00	2737	90.72%	2.68	0.05	0	3017	2.954238935	0.059994087
RGV-253	171	14.38%	0.07	0.00	1	0.08%	0.00	0.00	1017	85.53%	0.40	0.00	1	1189	0.469464467	0.004096745
RGV-254	182	7.61%	0.17	0.00	0	0.00%	0.00	0.00	2210	92.39%	2.04	0.03	0	2392	2.209046627	0.035286913
RGV-255	9	2.49%	0.00	0.00	0	0.00%	0.00	0.00	353	97.51%	0.13	0.00	0	362	0.13710018	0.002731163
RGV-256	36	4.10%	0.01	0.00	0	0.00%	0.00	0.00	841	95.90%	0.35	0.00	2	877	0.364244284	0.003547697
RIC-1	116	17.06%	0.01	0.00	3	0.44%	0.00	0.00	561	82.50%	0.06	0.00	0	680	0.07781704	0.000703908
RLL-1	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	2	100.00%	0.00	0.00	0	2	0.002407366	2.81563E-05
ROY-1	111	17.65%	0.10	0.00	0	0.00%	0.00	0.00	518	82.35%	0.46	0.00	0	629	0.553665953	0.003329485
ROY-2	44	24.72%	0.00	0.00	2	1.12%	0.00	0.00	132	74.16%	0.00	0.00	0	178	0.006116961	4.22345E-05
RPR-1	46	18.55%	0.12	0.00	1	0.40%	0.00	0.00	201	81.05%	0.54	0.00	0	248	0.664348463	0.003765908
RVD-1	23	12.23%	0.00	0.00	0	0.00%	0.00	0.00	165	87.77%	0.01	0.00	0	188	0.013965537	0.000225251
RVT-505	43	34.68%	0.00	0.00	2	1.61%	0.00	0.00	79	63.71%	0.01	0.00	0	124	0.011544093	0.000133743
RVT-506	14	31.11%	0.04	0.00	0	0.00%	0.00	0.00	31	68.89%	0.08	0.00	0	45	0.120804708	0.000654635
RVT-530	9	50.00%	0.01	0.00	1	5.56%	0.00	0.00	8	44.44%	0.01	0.00	1	18	0.018280493	0.000161899
RVT-532	3	75.00%	0.00	0.00	0	0.00%	0.00	0.00	1	25.00%	0.00	0.00	0	4	0	0
SAN-452	188	16.31%	0.59	0.00	4	0.35%	0.01	0.00	961	83.35%	2.99	0.01	2	1153	3.590797106	0.017182397
SAW-6311	38	10.64%	0.22	0.00	0	0.00%	0.00	0.00	319	89.36%	1.88	0.01	0	357	2.108437042	0.012001633
SBH-271	48	96.00%	0.10	0.00	2	4.00%	0.00	0.00	0	0.00%	0.00	0.00	1	50	0.101095281	0.001048823
SBT-4301	33	5.37%	0.06	0.00	0	0.00%	0.00	0.00	582	94.63%	1.07	0.01	0	615	1.125598322	0.013282746
SBT-4302	57	13.04%	0.11	0.00	0	0.00%	0.00	0.00	380	86.96%	0.75	0.01	1	437	0.8576909	0.01003069
SCH-420	8	80.00%	0.01	0.00	0	0.00%	0.00	0.00	2	20.00%	0.00	0.00	0	10	0.008446897	0.000140782
SEB-1	126	22.07%	0.02	0.00	1	0.18%	0.00	0.00	444	77.76%	0.06	0.00	0	571	0.078950332	0.004807692
SLA-203	2	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	2	0	0
SLA-250	203	8.11%	0.13	0.00	0	0.00%	0.00	0.00	2299	91.89%	1.42	0.02	2	2502	1.54610598	0.024601588
SLA-257	133	57.08%	0.00	0.00	0	0.00%	0.00	0.00	100	42.92%	0.00	0.00	1	233	0.00475138	5.63126E-05
SLA-258	190	79.50%	0.03	0.00	5	2.09%	0.00	0.00	44	18.41%	0.01	0.00	1	239	0.039109134	0.000267485
SLS-1	111	15.50%	0.16	0.00	5	0.70%	0.01	0.00	600	83.80%	0.89	0.01	0	716	1.063408041	0.017287983
SND-217	41	20.20%	0.01	0.00	2	0.99%	0.00	0.00	160	78.82%	0.04	0.00	0	203	0.053109866	0.000633517
SND-218	95	45.45%	0.23	0.00	3	1.44%	0.01	0.00	111	53.11%	0.26	0.00	8	209	0.496452303	0.004350152
SPR-1	197	22.64%	1.04	0.00	1	0.11%	0.01	0.00	672	77.24%	3.56	0.00	0	870	4.613913447	0.005581991
STC-1	31	20.95%	0.04	0.00	0	0.00%	0.00	0.00	117	79.05%	0.16	0.00	0	148	0.200839058	0.002414405
STC-2	39	8.80%	0.11	0.00	0	0.00%	0.00	0.00	404	91.20%	1.18	0.01	0	443	1.288729024	0.008812929
STR-1	4	12.50%	0.00	0.00	1	3.13%	0.00	0.00	27	84.38%	0.02	0.00	0	32	0.022785505	0.000696869
STZ-1	7	11.48%	0.06	0.00	0	0.00%	0.00	0.00	54	88.52%	0.47	0.00	0	61	0.533970605	0.00206949
STZ-2	27	25.96%	0.17	0.00	0	0.00%	0.00	0.00	77	74.04%	0.48	0.00	0	104	0.645765289	0.002322897
SVE-1	3	5.36%	0.02	0.00	0	0.00%	0.00	0.00	53	94.64%	0.38	0.00	0	56	0.405676315	0.001724575
SVR-215	113	17.36%	0.21	0.00	1	0.15%	0.00	0.00	537	82.49%	1.01	0.01	0	651	1.2208934	0.013198277
SVW-1	24	19.05%	0.16	0.00	0	0.00%	0.00	0.00	102	80.95%	0.70	0.00	0	126	0.863047641	0.003104235
SWB-1	3	5.56%	0.02	0.00	0	0.00%	0.00	0.00	51	94.44%	0.30	0.00	0	54	0.318448023	0.001710497
SWN-1	82	97.62%	0.82	0.00	2	2.38%	0.02	0.00	0	0.00%	0.00	0.00	0	84	0.844154747	0.001921669
SYL-502	8	2.31%	0.00	0.00	0	0.00%	0.00	0.00	339	97.69%	0.00	0.00	0	347	0	0
SYN-1	32	7.66%	0.02	0.00	0	0.00%	0.00	0.00	386	92.34%	0.20	0.00	1	418	0.212270526	0.001105136
TAC-1	10	9.17%	0.01	0.00	0	0.00%	0.00	0.00	99	90.83%	0.07	0.00	0	109	0.080139937	0.001618989
TFW-243	289	14.74%	0.13	0.00	5	0.25%	0.00	0.00	1667	85.01%	0.76	0.01	0	1961	0.893428314	0.017055693
TML-1	42	8.08%	0.02	0.00	0	0.00%	0.00	0.00	478	91.92%	0.25	0.00	0	520	0.273489413	0.001182566
TMS-412	116	26.30%	0.19	0.00	2	0.45%	0.00	0.00	323	73.24%	0.54	0.01	16	441	0.731986992	0.00850321
TOW-199	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
TOW-32	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
TRM-1	4	10.00%	0.01	0.00	0	0.00%	0.00	0.00	36	90.00%	0.11	0.00	0	40	0.122367384	0.000577205
TSS-272	5	100.00%	0.01	0.00	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	0	5	0.006180313	7.03908E-06
TWH-273	4	80.00%	0.00	0.00	1	20.00%	0.00	0.00	0	0.00%	0.00	0.00	0	5	0.00390669	7.03908E-06
TWN-1	55	18.64%	0.00	0.00	0	0.00%	0.00	0.00	240	81.36%	0.00	0.00	2	295	0.001548598	7.03908E-06
TWN-2	139	26.68%	0.08	0.00	1	0.19%	0.00	0.00	381	73.13%	0.21	0.00	1	521	0.292649792	0.002308819
UMF-1	1	25.00%	0.32	0.00	0	0.00%	0.00	0.00	3	75.00%	0.97	0.00	0	4	1.287870256	0.004920318
UPS-1	56	12.76%	0.04	0.00	1	0.23%	0.00	0.00	382	87.02%	0.29	0.00	0	439	0.330914236	0.001816083
UPS-2	50	15.97%	0.34	0.00	1	0.32%	0.01	0.00	262	83.71%	1.79	0.01	0	313	2.133756617	0.010657169
VND-1	82	22.84%	0.00	0.00	0	0.00%	0.00	0.00	277	77.16%	0.00	0.00	1	359	0	0
VRD-503	0	0.00%	0.00	0.00	2	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	2	0.001217761	2.11172E-05
VRD-510	0	0.00%	0.00	0.00	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	1	0	0
VRG-30	0	0.00%	0.00	0.00	4	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	4	0	0
VRG-302	40	33.06%	0.15	0.00	4	3.31%	0.02	0.00	77	63.64%	0.29	0.00	0	121	0.455175132	0.001569715

SUBFEEDER	Commercial SP count	% of feeder	SAIDI per Commercial	SAIFI per Commercial	Industrial SP Count	% of feeder	SAIDI per Industrial	SAIFI per Industrial	Residential SP Count	% of feeder	SAIDI per Residential	SAIFI per Residential	Company Use	Total	SAIDI	SAIFI
VRG-303	3	75.00%	1.07	0.02	1	25.00%	0.36	0.01	0	0.00%	0.00	0.00	1	4	1.431819462	0.023271202
VRG-304	33	20.50%	0.01	0.00	1	0.62%	0.00	0.00	127	78.88%	0.04	0.00	0	161	0.056699797	0.000204133
VRG-305	1	50.00%	0.04	0.00	0	0.00%	0.00	0.00	1	50.00%	0.04	0.00	0	2	0.078267541	0.00076726
VRG-306	0	0.00%	0.00	0.00	1	100.00%	0.00	0.00	0	0.00%	0.00	0.00	0	1	0	0
VRG-311	55	11.27%	0.07	0.00	7	1.43%	0.01	0.00	426	87.30%	0.58	0.01	1	488	0.660096858	0.007841536
WAK-1	170	27.96%	0.12	0.00	0	0.00%	0.00	0.00	438	72.04%	0.32	0.01	1	608	0.445651256	0.01049527
WBK-1	162	32.40%	0.44	0.00	1	0.20%	0.00	0.00	337	67.40%	0.91	0.01	0	500	1.348145906	0.013268668
WRN-411	109	11.82%	0.04	0.00	4	0.43%	0.00	0.00	809	87.74%	0.29	0.00	0	922	0.333138585	0.00260446
WRR-6321	21	9.91%	0.04	0.00	0	0.00%	0.00	0.00	191	90.09%	0.38	0.00	0	212	0.419127999	0.003005688
WYE-1	65	23.38%	0.08	0.00	0	0.00%	0.00	0.00	213	76.62%	0.27	0.00	0	278	0.347484232	0.005687577
ZMP-335	56	35.22%	0.00	0.00	2	1.26%	0.00	0.00	101	63.52%	0.01	0.00	4	159	0.013838833	0.000119664
ZMP-337	16	14.68%	0.03	0.00	0	0.00%	0.00	0.00	93	85.32%	0.17	0.00	0	109	0.198269794	0.001020667
	20111	14.99%	23.25	0.19	382	0.28%	0.44	0.00	113674	84.73%	131.41	1.05	103	134167	155.1008911	1.23934987
			Commercial				Industrial				Residential				Overall	
Percentage of Uptime of Power			99.99558%				99.99992%				99.97500%				99.97049%	



STATE OF MINNESOTA)
)ss
COUNTY OF ST. LOUIS)

AFFIDAVIT OF SERVICE VIA
ELECTRONIC FILING

SUSAN ROMANS of the City of Duluth, County of St. Louis, State of Minnesota, says that on the **8th** day of **July, 2019**, she served Minnesota Power’s Reply Comments Docket No. **Docket No, E015/M-19-254** on the Minnesota Public Utilities Commission and the Office of Energy Security via electronic filing. The persons on E-Docket’s Official Service List for this Docket were served as requested.



Susan Romans