

ELECTRIC SYSTEM RELIABILITY ANNUAL REPORT

2020

LIBERTY UTILITIES (CALPECO ELECTRIC) LLC (U 933 E)

-- PUBLIC VERSION --

Prepared for California Public Utilities Commission

July 15, 2021

EXECUTIVE SUMMARY

The Electric System Reliability Annual Report for 2020 has been prepared in response to CPUC Decision 16-01-008, which established reliability recording, calculation, and reporting requirements for Liberty Utilities (CalPeco Electric) LLC ("Liberty").

Liberty does not provide transmission services and does not have an Open Access Transmission Tariff (OATT). Therefore, data is presented for distribution services only. All statistics and calculations include forced distribution outages. Forced distribution outages are those that are not pre-arranged. For the purposes of this report, sustained outages are outages that lasted more than five minutes in duration, while momentary outages are outages that lasted five minutes or less in duration.

Outages are tracked/recorded using the Responder OMS system and supplemented with dispatch emails when an incident is not logged. Dispatch is notified of outages from customer calls, device alarms, line crew, or another third party. An incident ID# is created and a troubleman will go investigate the nature of the incident. If it is a customer issue, the customer is told to contact an electrician. If the incident is an outage, efforts are made to restore customers in a timely manner. Once restored the incident ID is closed with the time of restoration and saved in Responder Archive.

The reliability indicators that are tracked are as follows:

- 1. SAIDI (System Average Interruption Duration Index) minutes of sustained outages per customer per year.
- 2. SAIFI (System Average Interruption Frequency Index) number of sustained outages per customer per year.
- 3. MAIFI (Momentary Average Interruption Frequency Index) number of momentary outages per customer per year.
- 4. CAIDI (Customer Average Interruption Duration Index) is the average time required to restore service to a utility customer.

Liberty presents ten years (2011- 2020) of data, which represents the period in which Liberty Utilities has owned the utility.

Beginning in 2013, the measurement of each reliability performance indicator excludes IEEE Major Event Days ("MED") instead of CPUC Major Events. An IEEE MED is defined in IEEE-1366, Section 4.5 as a day in which the daily system SAIDI exceeds a threshold value. These threshold major event days are referred to as "TMED". Thus, any day in which the total system SAIDI exceeds TMED is excluded from Liberty's reliability results. The applicable TMED value is calculated at the end of each year using Liberty's daily SAIDI values for the prior five years. Liberty's TMED value for 2020 was 189.04 minutes of daily system SAIDI. Other reliability indices in this report are not calculated using methodologies or formulas exactly as described in the IEEE guide for electric power Distribution Reliability indices (IEEE-1366).

Table of Contents

1)	System Indices for the Last 10 Years (Years CalPeco Electric in business	s) 1
2)	Division (or District) Reliability Indices for the past 10 years	.10
3)	System and Division indices based on IEEE 1366 for the past 10 years including planned outages and including and excluding TMED	.10
4)	Service territory map including divisions of districts	.21
5)	Top two worst performing circuits (WPC) excluding TMED	.22
6)	Top 10 major unplanned power outage events within a reporting year	.25
7)	Summary list of 2020 TMED per IEEE 1366	.26
8)	Historical 10 largest unplanned outage events for the past 8 years*	.27
9)	Number of customer inquiries on reliability data and the number of days per response	.31
10)	List of PSPS's in 2020	.32

1) System Indices for the Last 10 Years

- a. Separate tables with SAIDI, SAIFI, MAIFI and CAIDI (Major Event Day (MED)) included and excluded.
 - I. Distribution System Indices (Major Event included and excluded)

Liberty Utilities (CalPeco Electric), LLC
<u>Distribution</u> Historical System Reliability Data 10 Years (Years in Business)

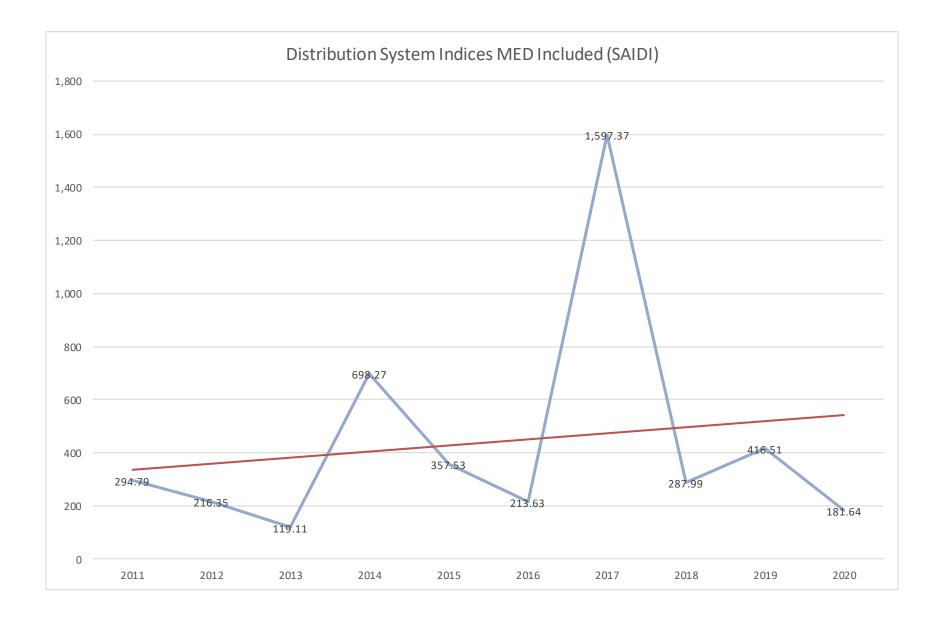
	Major Event Included									
Year	SAIDI	SAIFI	CAIDI	MAIFI						
2020	181.64	1.57	115.23	0.313						
2019	416.51	2.96	140.73	0.31						
2018	287.99	2.18	131.82	0.52						
2017	1,597.37	3.97	402.06	1.37						
2016	213.63	1.47	144.98	1.08						
2015	357.53	2.01	177.68	1.15						
2014	698.27	3.63	192.44	2.15						
2013	119.11	1.23	96.75	2.08						
2012	216.35	1.55	139.31	2.75						
2011	294.79	1.81	162.60	1.88						

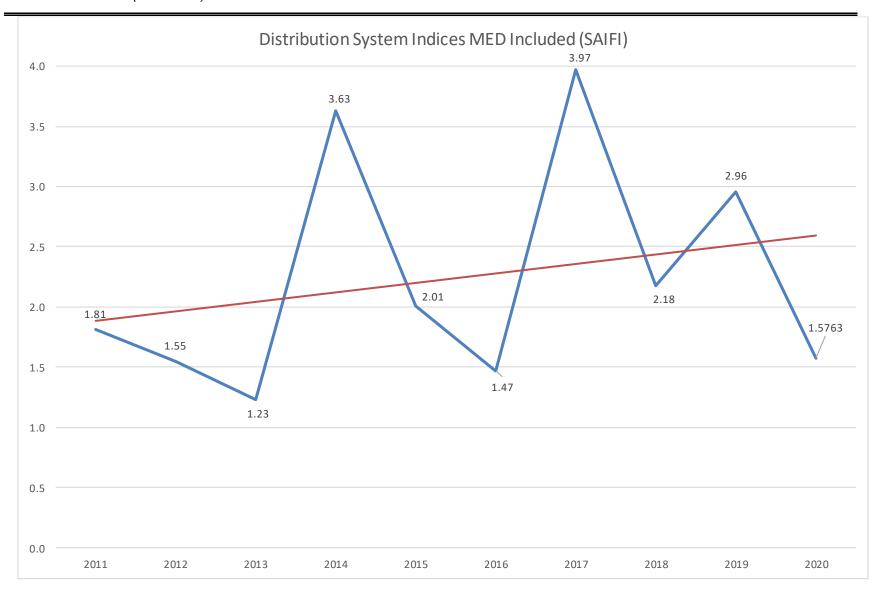
Major Event Excluded									
SAIDI	SAIFI	CAIDI	MAIFI						
181.64	1.57	115.23	0.313						
416.51	2.96	140.73	0.31						
287.99	2.18	131.82	0.52						
772.83	2.86	270.23	1.37						
213.63	1.47	144.98	1.08						
357.53	2.01	177.68	1.15						
352.37	2.40	146.58	2.15						
119.11	1.23	96.79	2.08						
216.35	1.55	139.31	2.75						
192.22	1.25	154.27	1.88						

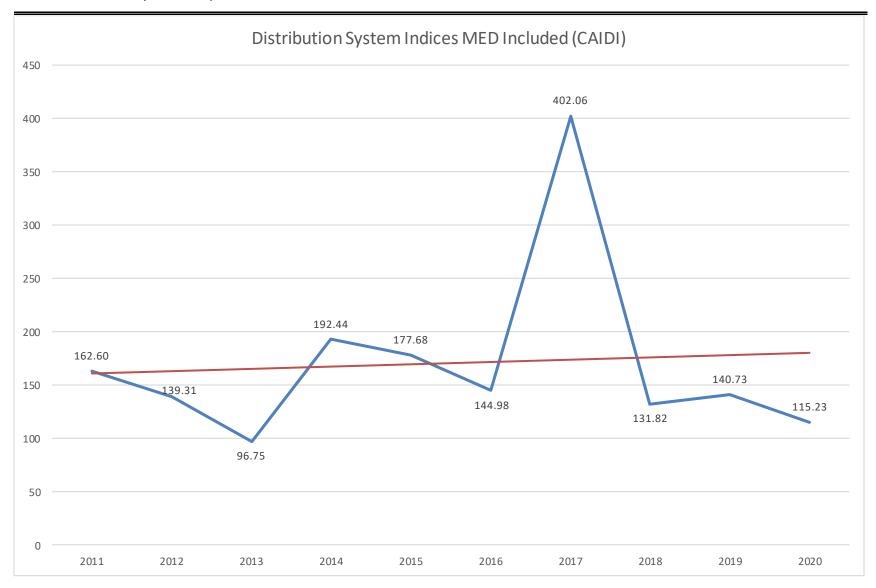
II. Transmission System Indices (MED Included and Excluded)

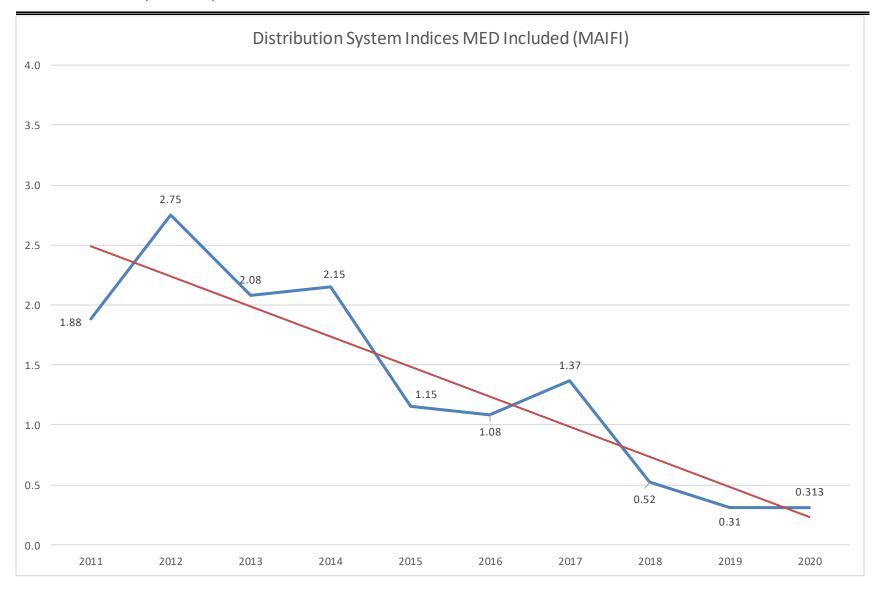
Liberty does not own Transmission.

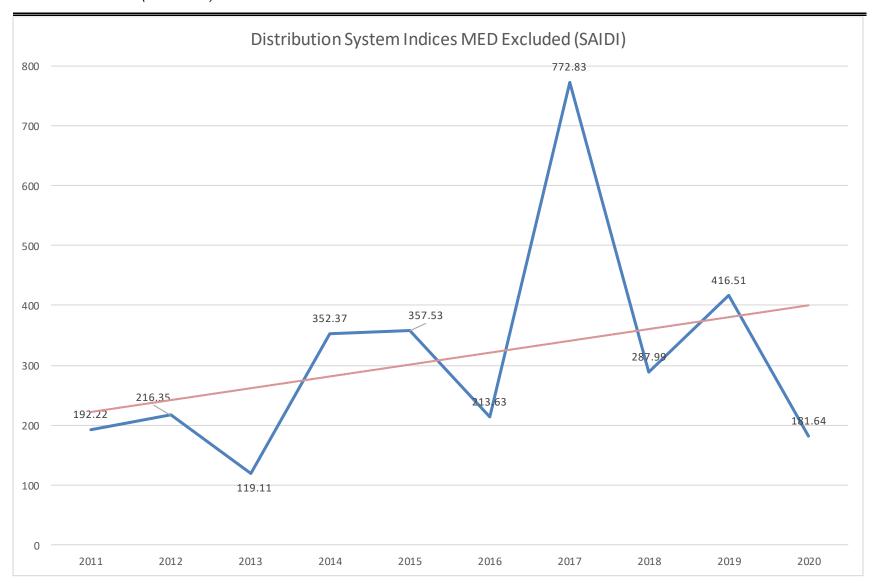
b. Separate charts showing a line graph of distribution system SAIDI, SAIFI, MAIFI, and CAIDI for the past 10 years (years in business) with linear trend line (TMED included and excluded).

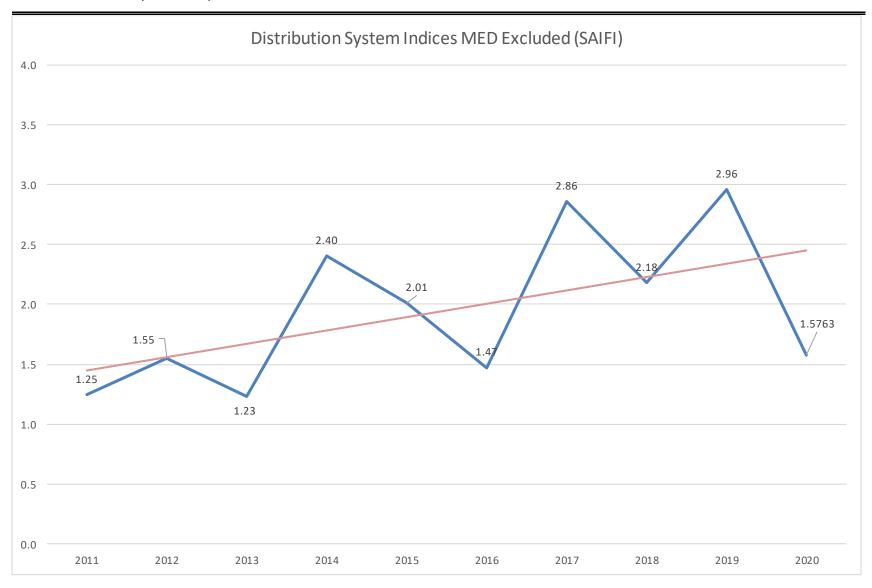


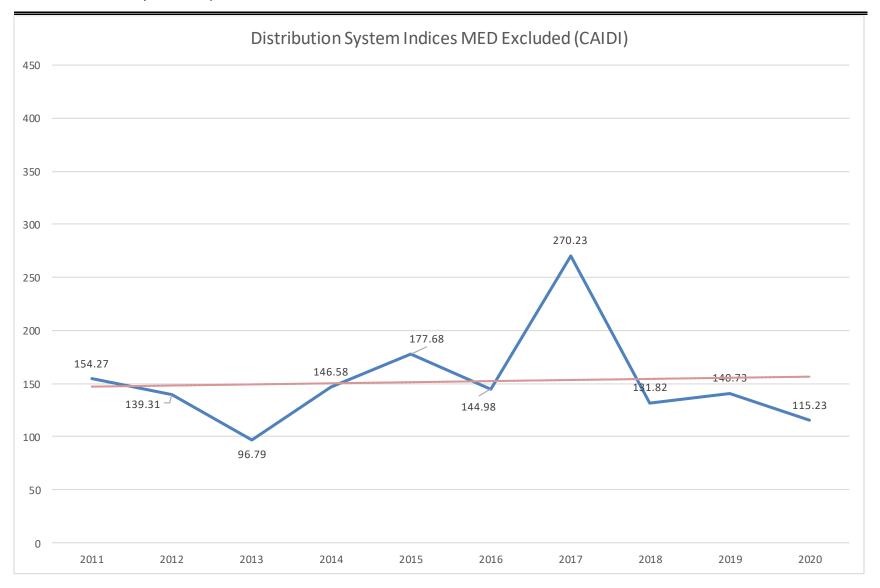


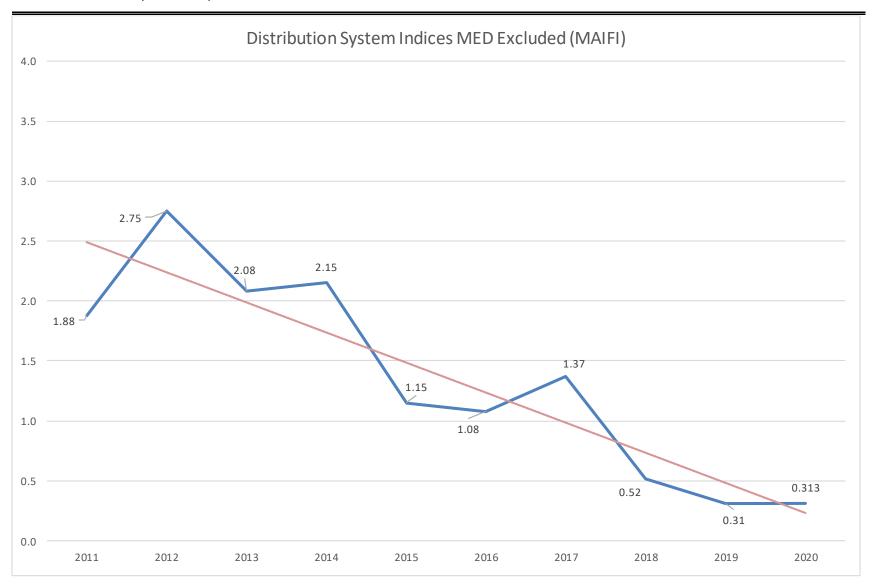












2) Division (or District) Reliability Indices for the past 10 years

Liberty has one division, Lake Tahoe. See section 1 for indices.

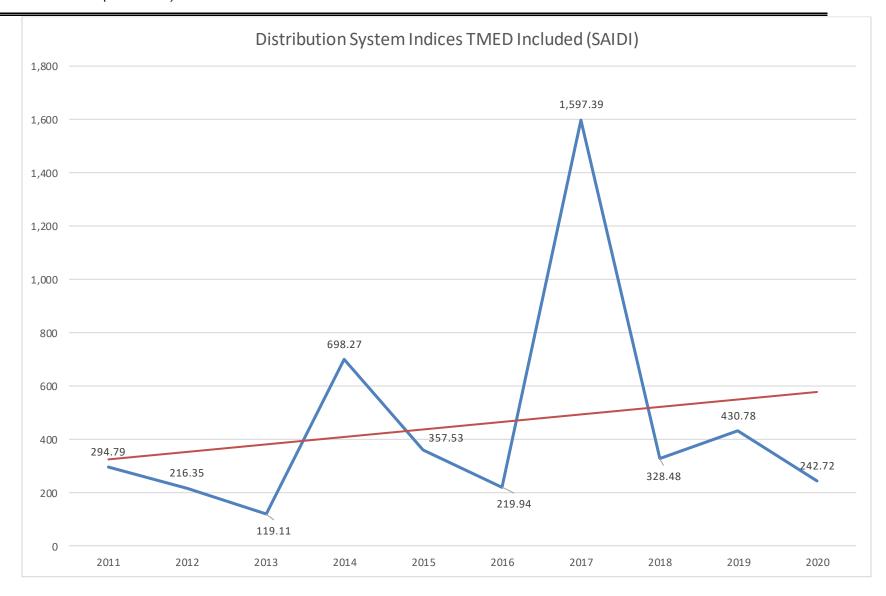
3) System and Division indices based on IEEE 1366 for the past 10 years including planned outages and including and excluding TMED

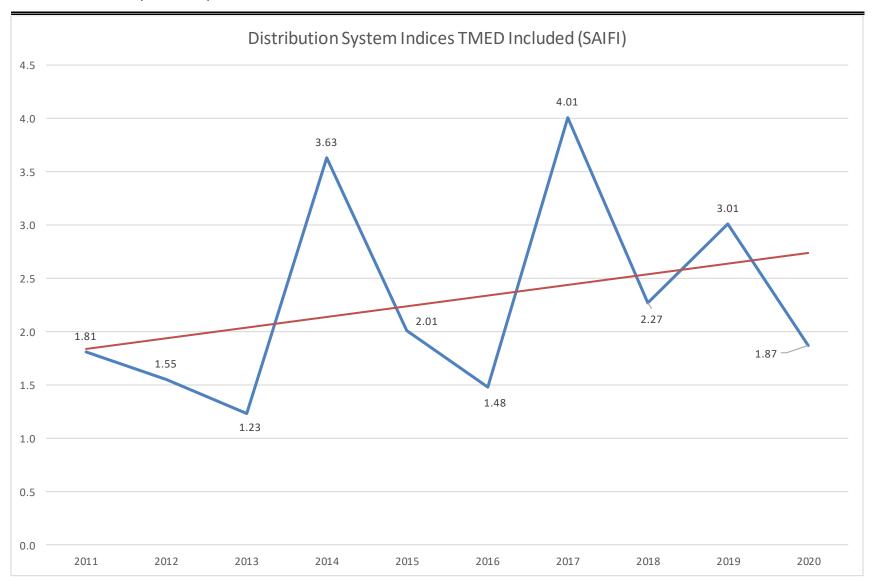
a. SAIDI, SAIFI, MAIFI, and CAIDI Data

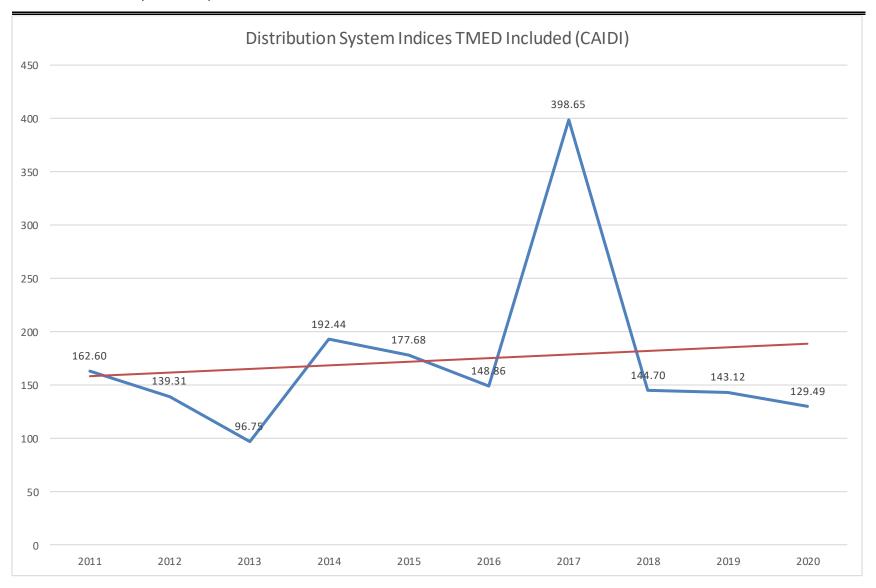
Liberty Utilities (CalPeco Electric), LLC
<u>Distribution</u> Historical System Reliability Data 10 Years (Years in Business)

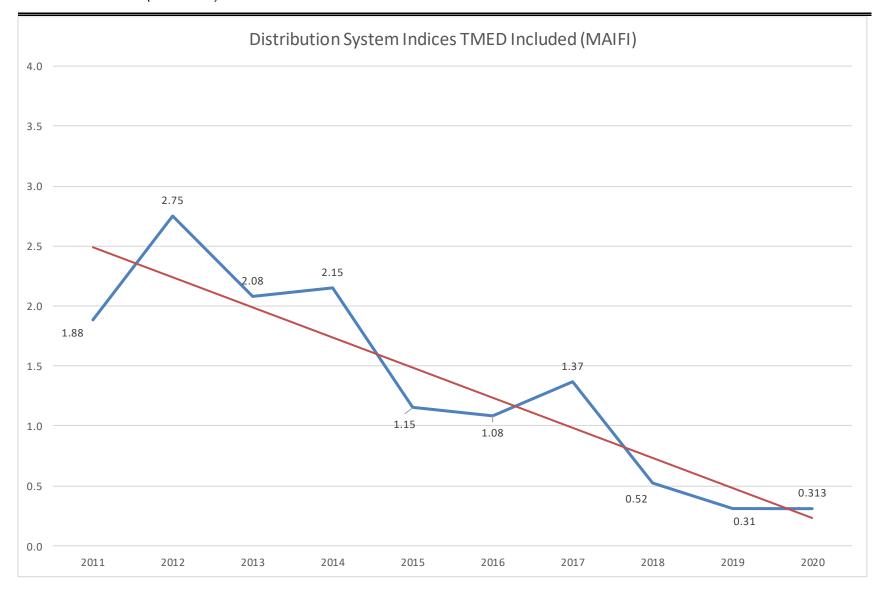
		TMED Included									
Year	SAIDI	SAIFI	CAIDI	MAIFI							
2020	242.72	1.87	129.49	0.313							
2019	430.78	3.01	143.12	0.31							
2018	328.48	2.27	144.70	0.52							
2017	1,597.39	4.01	398.65	1.37							
2016	219.94	1.48	148.86	1.08							
2015	357.53	2.01	177.68	1.15							
2014	698.27	3.63	192.44	2.15							
2013	119.11	1.23	96.75	2.08							
2012	216.35	1.55	139.31	2.75							
2011	294.79	1.81	162.60	1.88							

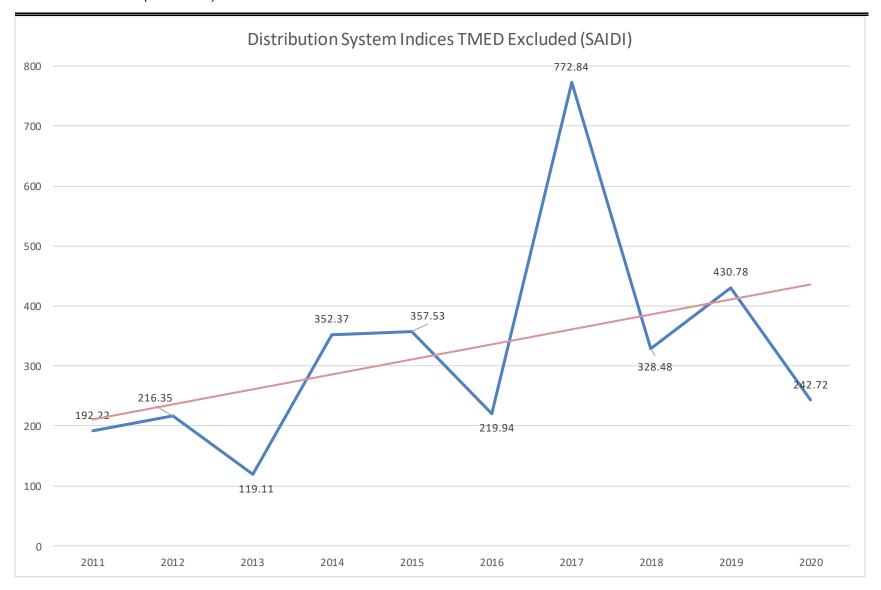
TMED Excluded								
SAIDI	SAIFI	CAIDI	MAIFI					
242.72	1.87	129.49	0.313					
430.78	3.01	143.12	0.31					
328.48	2.27	144.70	0.52					
772.84	2.89	267.42	1.37					
219.94	1.48	148.86	1.08					
357.53	2.01	177.68	1.15					
352.37	2.40	146.58	2.15					
119.11	1.23	96.79	2.08					
216.35	1.55	139.31	2.75					
192.22	1.25	154.27	1.88					

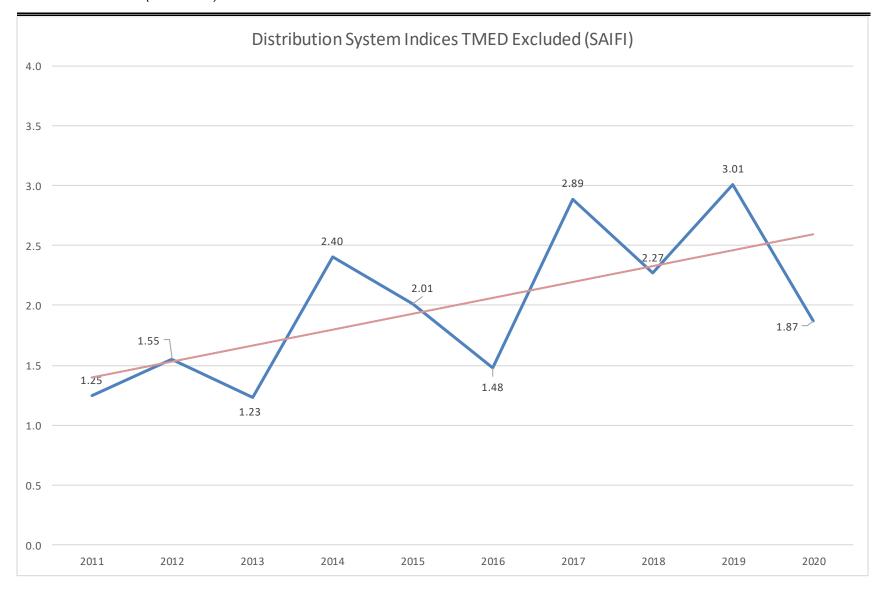


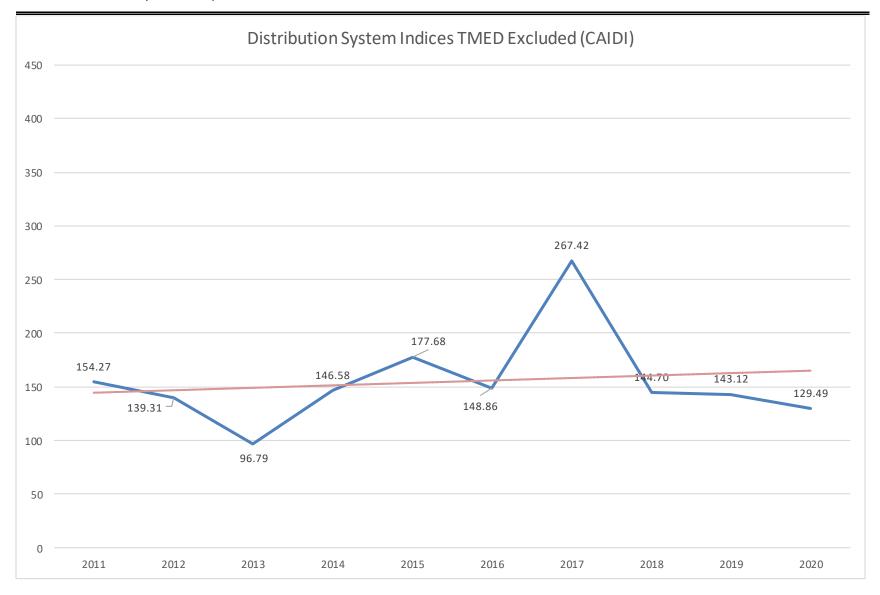


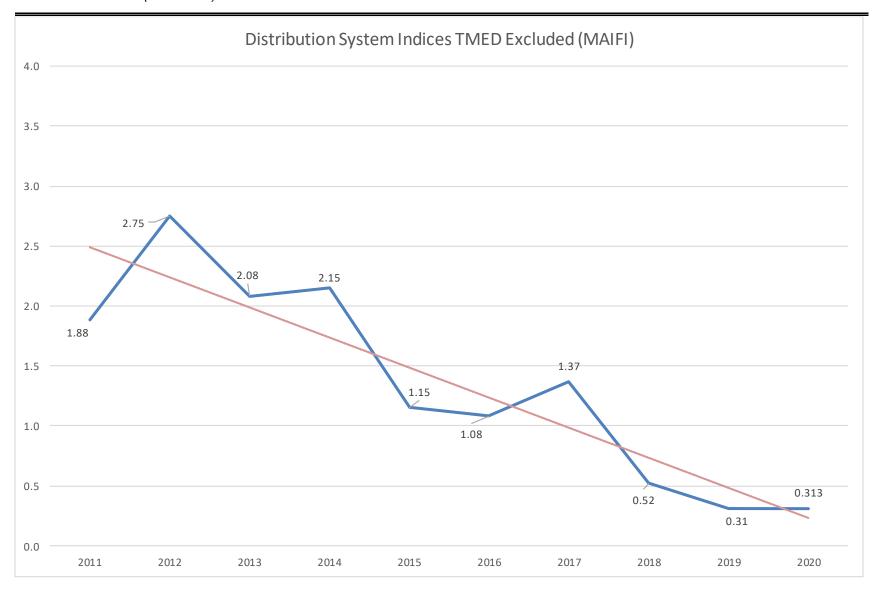










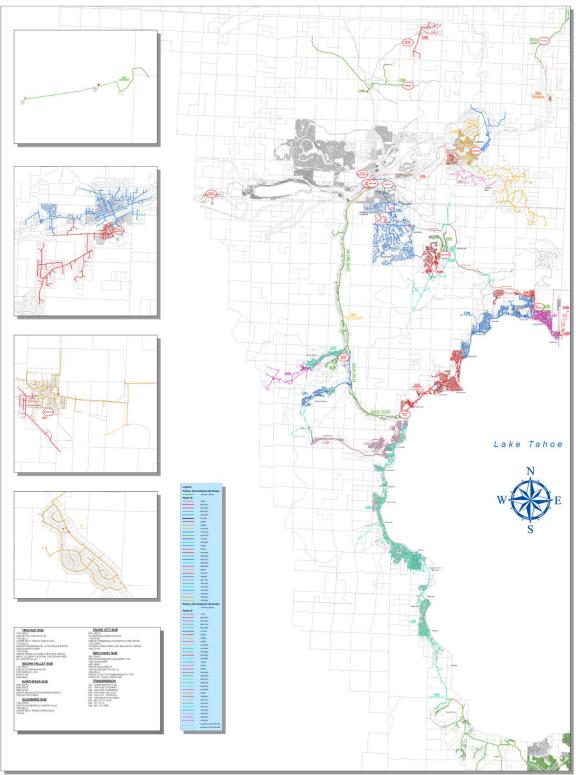


b. The number, date, and location of planned outages

	Number of Planned Outages By Year									
Circuit	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
31	3		1			1				
32	4	1		2	1					
41	6				1					
201			7					1		
204		2			1					
619									1	
650						1			1	
1261	7	1	1							
1296	2		1	2		5	1			
2200		1				1	1			
2300		1	1			1	2		1	
3100	2	8	5	1					1	1
3101	3	3					2	2		
3200	1	3	5			1			1	
3300	3	8	10	2		3			2	
3400	1	2	4	3		5		2	4	
3500	6	15		6		1				
3501		3	3			2	2	4	1	1
4201		1	1		1					
4202	2	5	3	4				2	5	1
5100	1							1	1	
5200	1	5	4	1		4	1	1	3	
5201		8	1	5	5	4	1		1	
7100	4	1	2	1			1	1	4	
7200		1	1			1	1	1	2	
7201	1	1		4	1	2	1			
7202	3	3	1	1		2	3	1		
7203		3	2			2	2	4		
7300	8	20	14	5	6	4	16	4	5	2
7400	1	4	8	2	1	1				1
7600		1	1			1				1
7700	4						1			
7800							2			
7900	2	1								

8200	1	1	2	7	3	2	4			1
8300	1	1	1	2		6			2	
8400	1		7							
8500	2				1			1	2	
8600						4			2	

4) Service territory map including divisions of districts



5) Top two worst performing circuits (WPC) excluding TMED

For each of these circuits each utility shall include the following information in its annual report: 1) Circuit Name;
 District/Division;
 Customer Count;
 Substation name;
 Circuit-miles;
 Percentage underground, or "% UG";
 Percentage overhead or "% OH";
 Number of mainline/feeder/backbone outages resulting in the operation of either a circuit breaker ("CB") or automatic re-closer ("AR"); and,
 its preferred reliability metric.

Circuit	DISTRICT	0	Custome r Count Name Circuit Miles		Facilities		Number of Mainline/	*0:	O'marait.
					ОН	UG	Feeder/Backbone Outages Per Year	*Circuit SAIDI	Circuit SAIFI
1261*	Tahoe	749	Topaz	70.9	76.2%	23.8%	5	2615	5.66
31	Tahoe	671	Portola	15.5	88%	11.9%	2	594	2.82

Note: Preferred Metric is the average of circuit SAIDI over a three-year period.

^{*} A circuit that has been identified as deficient in the previous year's report.

- II. Any circuit appearing on this list of "deficient" WPC circuits that also appeared on the previous year's list would be marked by an asterisk. For each asterisked circuit, each utility shall provide the following information:
 - I. An explanation of why it was ranked as a "deficient" circuit, i.e., the value of the metric used to indicate its performance;
 - II. A historical record of the metric;
 - III. An explanation of why it was on the deficiency list again;
 - IV. An explanation of what is being done to improve the circuit's future performance and the anticipated timeline for completing those activities (or an explanation why remediation is not being planned); and
 - V. A quantitative description of the utility's expectation for that circuit's future performance.

The Topaz 1261 circuit was noted as a deficient circuit in 2018, 2019 and 2020. The three-year average circuit SAIDI score remains high due to an operations error causing an outage on March 22, 2019 that lasted approximately 58 hours, and a fire that occurred on November 17, 2020 causing widespread outages over the circuit that were restored over the course of 12 hours.

There were 22 unplanned outages in 2020 for the 1261 circuit, two were due to weather conditions, three were due to device failure, one was due to fuse operation, six were due to the Coleville fire and the rest were unknown.

The historical metric for Topaz 1261:

- 2020 2,615.2
- 2019 3,040.6
- 2018 2.393.8
- \bullet 2017 -3,004.5
- 2016 1,930.4

There are currently no plans in place that would remedy loss of source outages, which account for majority of the outages experienced by customers on this circuit. The circuit is a radial line, sourced by an NV Energy substation in Nevada.

The circuit performance in 2020 was higher than historical records. The events in 2019 and 2020 were outliers resulting from extreme weather

conditions and do not accurately represent the overall performance of the system.

- III. Language to explain how the IOUs' include a cost effectiveness review as part of their respective internal review processes for circuit remediation projects.
 - I. Definitions of terms, acronyms, limitations, and assumptions;

Definitions

WPC- Worst Performing Circuits

Assumptions

Our analysis excludes planned outages and TMED outages.

II. A clear explanation of the utility's process to determine the worst performing circuits:

The top two Worst Performing Circuits ("WPC") are determined based on the calculated average of circuit SAIDI over a three-year period. This index is calculated on sustained outages by taking the total customer minutes of interruption and dividing by the number of customers on the circuit. Three years of data are included and averaged to account for anomalies and track the impact of phased improvement projects.

III. A clear explanation of the utility's process to determine cost-effective remediation projects. This shall include why the utility may decide to implement a project to address one worst performing circuit issue while deciding to not implement a project to address a different worst performing circuit.

Liberty's regional engineer presents proposals for reliability improvement projects along with a circuit analysis, cost-benefit analysis, and details on customer impact to Liberty's business manager, engineering manager, and vice president of operations. Collectively, the group determines which projects to approve or suggest alternatives and further analysis.

6) Top 10 major unplanned power outage events within a reporting year

- a. The cause of each outage event; and
- b. The location of each outage event.

Rank	Outage Date	Cause	Location	Customer Impact	SAIDI	SAIFI
1	7/28/2020	Operations Error	Lake Tahoe	5,291	4.43	0.1081
2	8/24/2020	CB Lockout, Lightning possible	Lake Tahoe	3,835	7.68	0.0783
3	11/6/2020	Unknown	Lake Tahoe	3,728	5.94	0.0762
4	8/12/2020	Wind/Debris	Lake Tahoe	3,724	2.58	0.0761
5	9/10/2020	Animal	Lake Tahoe	3,451	1.27	0.0705
6	9/6/2020	Animal	Lake Tahoe	3,266	3.47	0.0667
7	10/23/2020	Animal	Lake Tahoe	3,266	1.13	0.0667
8	7/28/2020	Animal	Lake Tahoe	2,555	1.46	0.0522
9	7/2/2020	Device failure	Lake Tahoe	2,555	2.14	0.0522
10	7/28/2020	Operations Error	Lake Tahoe	2,555	1.38	0.0522

^{*}Based on customer impact

7) Summary list of 2019 TMED per IEEE 1366

- a. The number of customers without service at periodic intervals for each TMED;
- b. The cause of each Major Event (ME); and
- c. The location of each ME.

TMED as of 2019 = 189.04

Liberty did not experience an event in 2020 where the daily SAIDI was higher than the calculated TMED.

8) Historical 10 largest unplanned outage events for the past 8 years*

*Based on Customers Affected

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1	Operations Error	7/28/2020	5,291	0.68	3,597.8	No
2	CB Lockout, Lightning possible	8/24/2020	3,835	1.63	6,251.1	No
3	Unknown	11/6/2020	3,728	1.30	4,846.4	No
4	Wind/Debris	8/12/2020	3,724	0.56	2,085.44	No
5	Animal	9/10/2020	3,451	0.30	1,035.3	No
6	Animal	9/6/2020	3,266	0.86	2,808.7	No
7	Animal	10/23/2020	3,266	0.28	914.5	No
8	Animal	7/28/2020	2,555	0.46	705.8	No
9	Device failure	7/2/2020	2,555	1.43	3,653.6	No
10	Operations Error	7/28/2020	2,555	0.68	1,737.4	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1	Third Party - Contractor Dig In	10/1/2019	10,490	3.88	40,701.2	No
2	Equipment Failure	2/22/2019	8,560	4.42	37,835.2	No
3	Third Party - Contractor Dig In	10/3/2019	7,841	0.18	1,411.4	No
4	Hardware Failure	2/26/2019	4,485	3.50	15,697.5	No

5	Tree	1/18/2019	4,448	1.76	7,828.5	No
6	Hardware Failure	3/6/2019	4,448	0.82	3,647.4	No
7	Animal	11/11/2019	4,245	0.60	2,547.0	No
8	Third Party – Line Contact	9/21/2019	3,712	0.43	1,596.2	No
9	Animal	6/7/2019	3,529	0.47	1,658.6	No
10	Tree	6/7/2019	3,507	1.51	5,295.6	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1	Third Party - Switching	5/17/2018	17,315	2.51	91,301.9	No
2	Loss of Source – External System	12/12/2018	7,552	0.1	755.2	No
3	Trees	10/17/2018	7,398	6.32	14,218.8	No
4	Loss of Source – External System	12/12/2018	7,089	0.1	708.9	No
5	Hardware Failure	10/3/2018	4,678	3.61	6,958.1	No
6	Trees - Major Storm	6/9/2018	4,485	9.38	6,420.1	No
7	Unknown	11/12/2018	4,154	1.76	7,338.7	No
8	Unknown	1/4/2018	3,529	0.2	705.8	No
9	Loss of Source – External System	12/12/2018	3,434	0.1	343.4	No
10	Loss of Source – External System	8/4/2018	2,721	2.96	8,072.3	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1	Loss of Source – External System	1/10/17	22,000	26.12	215,600	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
2	Loss of Source – External System	8/28/2017	8,643	1.15	9,939.5	No
3	Major Storm	1/8/2017	4,497	9.75	43,845.8	No
4	Major Storm	2/8/2017	4,497	2.58	11,617.3	No
5	Trees	4/7/2017	4,497	1.91	8,619.3	No
6	Trees/Major Storm	2/22/2017	4,105	1.68	6,910.1	No
7	Major Storm	1/5/2017	3,517	8.72	30,656.5	No
8	Major Storm	2/21/2017	3,517	0.40	1,406.8	No
9	Underground Fault	5/30/2017	3,486	2.82	9,818.9	No
10	Carp/Pole	6/6/2017	3,486	1.97	6,855.8	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1	Loss of Source – External System	3/13/2016	6,882	0.75	5,046.8	No
2	Wind/Trees	10/16/2016	4,125	1.75	7,150.0	No
3	Underground Fault	10/4/2016	4,125	4.31	17,793.3	No
4	Downed Wire	3/22/2016	4,125	1.70	6,294.8	No
5	Car/Pole	3/13/2016	3,517	1.00	3,957.9	No
6	Failed Overhead Hardware/Material	1/1/2016	3,500	5.50	7,250.0	No
7	Trees	3/1/2016	3,258	0.50	1,683.3	No
8	Underground Fault	6/29/2016	2,859	8.42	3,975.1	No
9	Primary Contact – 3 rd Party	8/23/2016	2,772	5.15	2,693.3	No
10	Trees	6/15/2016	2,732	8.15	3,822.7	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1	Storm	4/25/2015	4,120	6.50	12,380.00	No

Rank	Description	Data	Customers	Longest	Customers-hours	CPUC Major
Kank	Description	Date	Affected	Interruption (hours)	affected	Event?
2	Underground Fault	2/14/2015	3,587	0.50	2,511.00	No
3	Downed Wire	12/11/2015	3,587	10.00	17,251.00	No
4	Trees	2/6/2015	3,548	0.50	1,360.00	No
5	Bird/Animal	5/24/2015	3,000	6.50	12,340.00	No
6	Fire	2/20/2015	3,000	0.50	1,650.00	No
7	Weather/Lightning	7/4/2015	3,000	2.00	5,600.00	No
8	Weather/Lightning	7/7/2015	3,000	0.25	1,000.00	No
9	Operations	8/11/2015	3,000	0.25	750.00	No
10	Weather/Lightning	8/7/2015	3,000	1.75	5,400.00	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1	NV Energy Outage	9/27/2014	27,046	4.27	115,396.27	Yes
2	Flashing	7/20/2014	26,000	5.12	2,690.45	Yes
3	Tree-Green	12/11/2014	15,853	4.03	63,940.43	No
4	Relay Failure	9/23/2014	8,900	0.22	1,928.33	No
5	Trees	3/11/2014	3,587	1.83	6,521.17	No
6	Weather/Lightning	7/20/2014	3,587	0.75	2,690.25	No
7	Trees	8/30/2014	3,587	0.30	1,195.67	No
8	Trees	1/30/2014	3,548	4.25	2,109.00	No
9	Bird/Animal	8/31/2014	3,548	0.50	1,774.00	No
10	Trees	7/20/2014	3,500	5.00	17,266.67	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1	Wire Down Transformer	7/4/2013	5,650	9.82	10,816.02	No
2	Tree Trimming	8/14/2013	4,800	2.35	4,334.50	No
3	Car/Pole	10/25/2013	3,548	0.40	1,419.20	No
4	Cable Failure	8/7/2013	3,475	8.50	4,412.50	No
5	Trees	3/14/2013	3,315	0.30	1,049.75	No

LIBERTY UTILITIES (CALPECO) LLC 2020 ELECTRIC SYSTEM RELIABILITY REPORT

Rank	Rank Description	Date	Customers	Longest	Customers-hours	CPUC Major
			Affected	Interruption (hours)	affected	Event?
6	Hardware Failure	3/6/2013	3,000	8.13	14,740.00	No
7	Weather/Lightning	7/2/2013	3,000	2.10	6,300.00	No
8	Weather/Lightning	7/25/2013	2,042	3.46	911.83	No
9	Bird/Animal	10/5/2013	2,000	4.00	2,108.00	No
10	Unknown Cause	6/30/2013	2,000	0.76	1,533.33	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major Event?
1		8/19/2012	8,677	1.08	9,400.08	No
2	Overhead Hardware/Material	11/29/2012	4,200	0.67	3,488.33	No
3	Trees	4/1/2012	4,120	12.70	37,471.67	No
4	Hardware Failure	4/13/2012	4,120	2.95	12,154.00	No
5	Trees	5/24/2012	4,120	0.73	3,021.33	No
6	Bird/Animal	6/28/2012	3,587	0.47	1,673.93	No
7	Weather/Lightning	7/23/2012	3,548	1.16	909.50	No
8	Car/Pole	7/16/2012	3,315	8.83	2,724.17	No
9	Bird/Animal	5/11/2012	3,201	2.48	7,949.15	No
10	Bird/Animal	6/25/2012	1,967	5.60	11,015.20	No

9) Number of customer inquiries on reliability data and the number of days per response

Liberty did not receive any customer inquiries on reliability data in 2020.

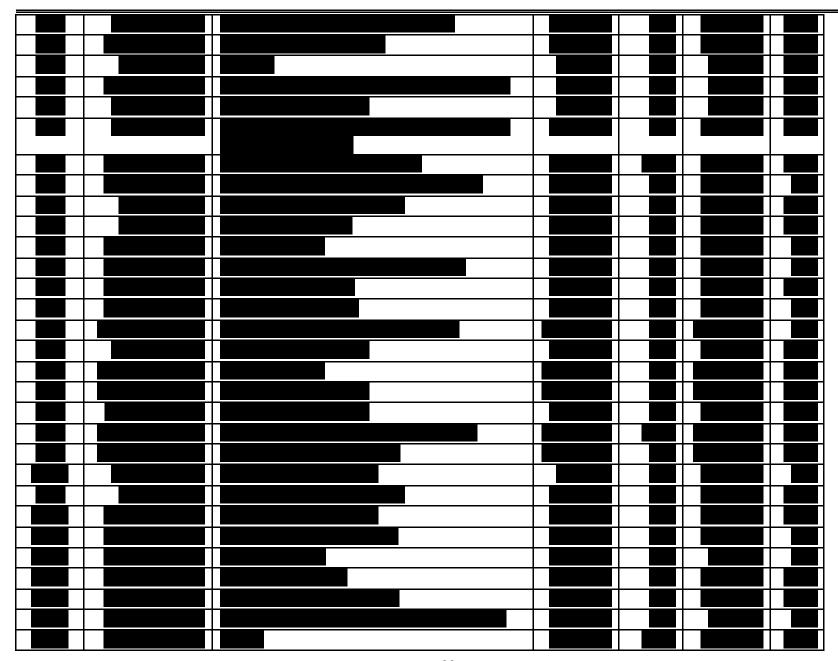
Date Received	Date Responded	Description of Inquiry

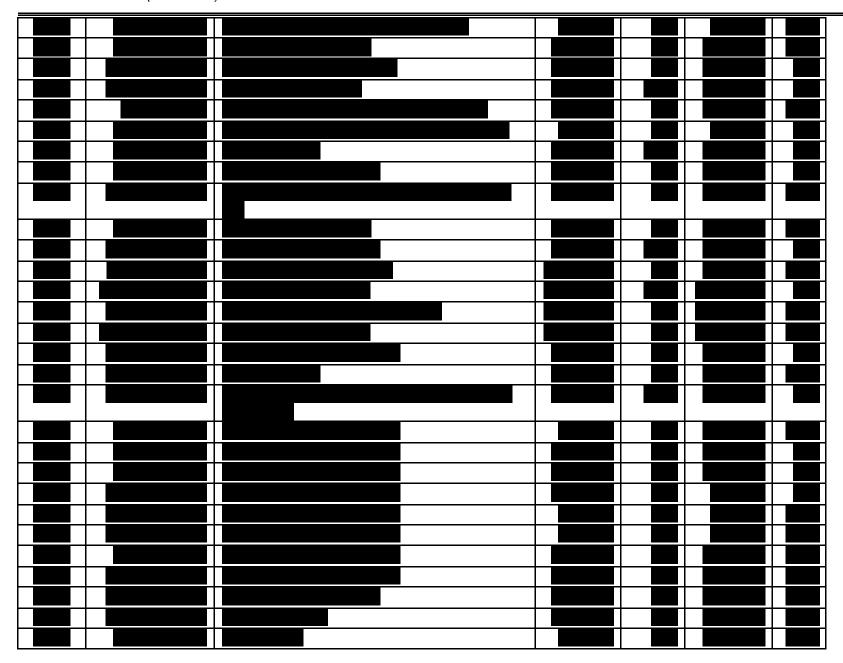
10) List of PSPS's in 2020

Liberty did not have any PSPS events in 2020.

Appendix A: 9 Years of Planned Outage Data -- PUBLIC VERSION --



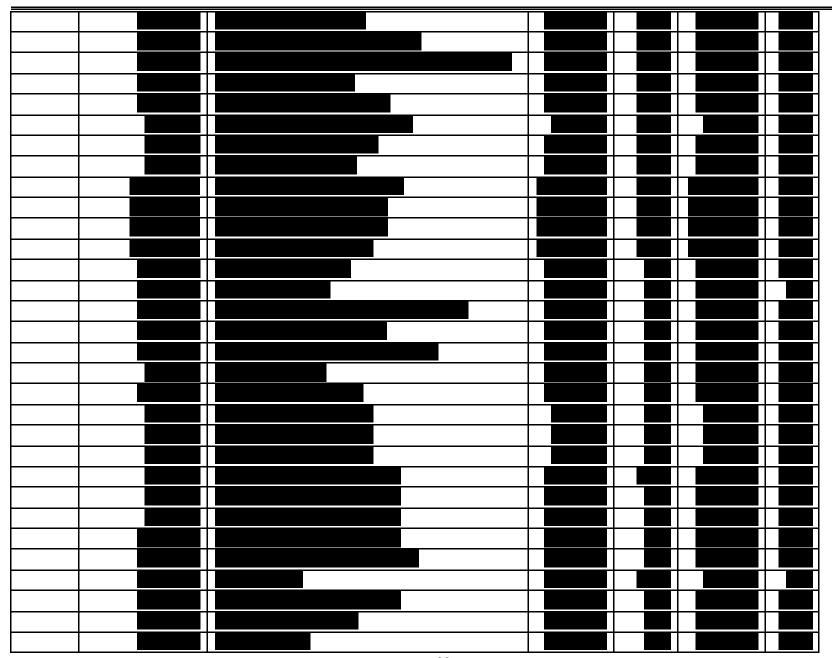


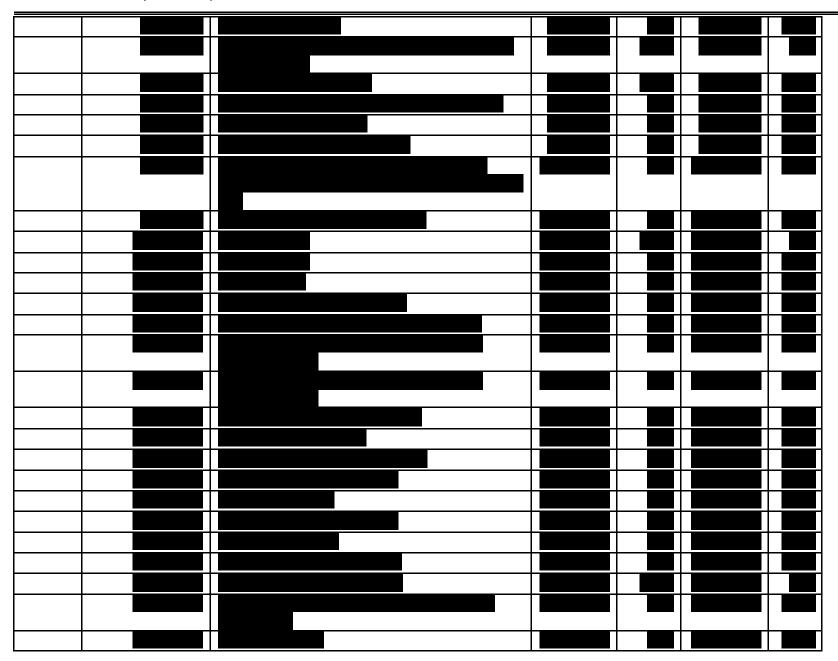


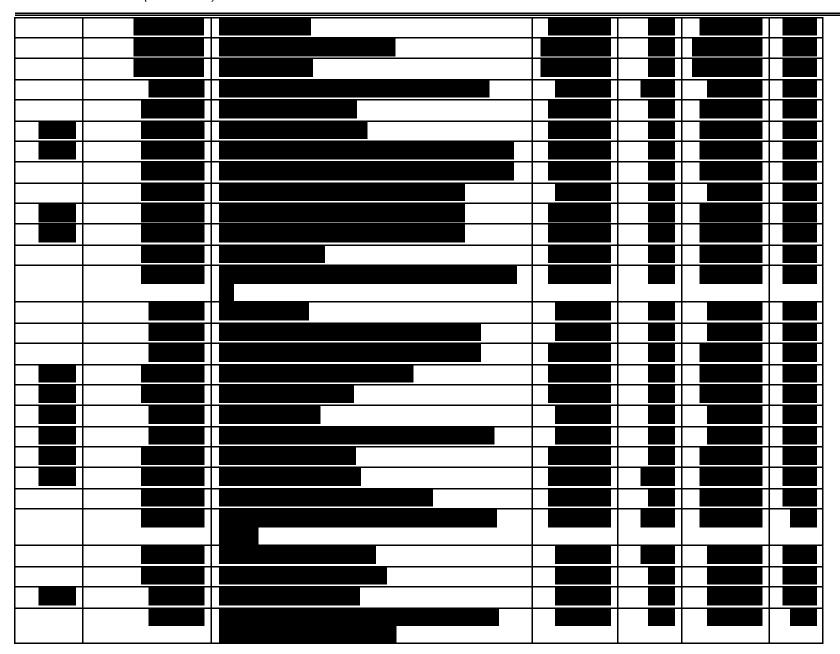


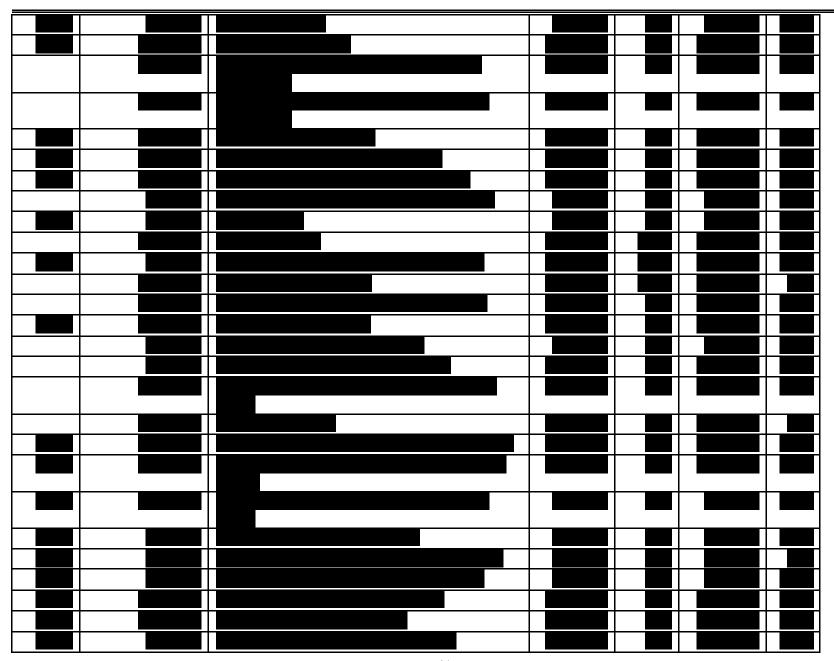




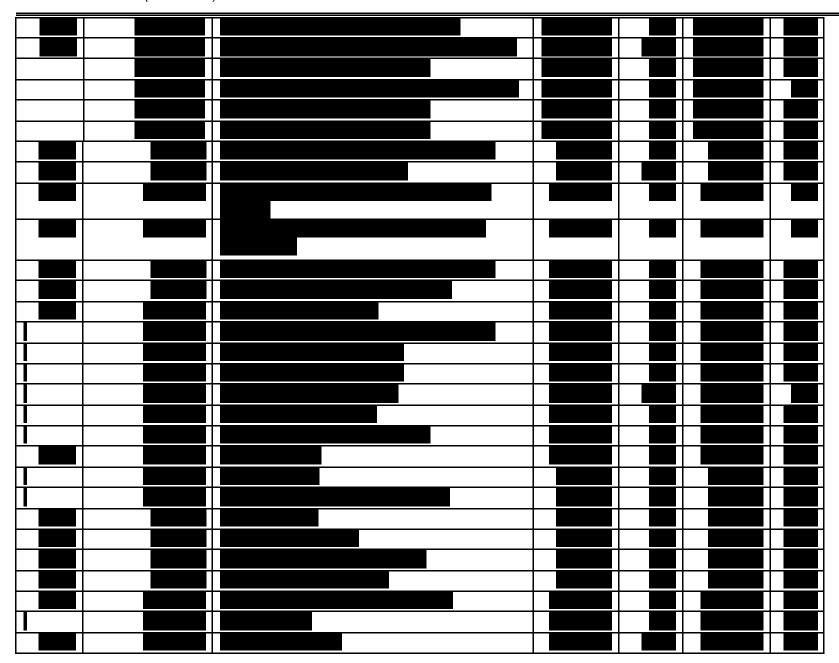


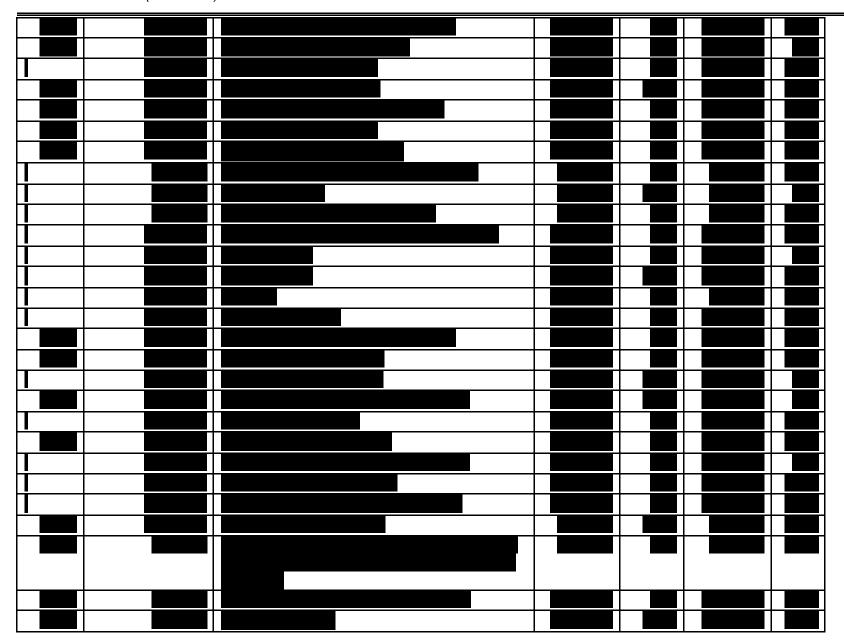






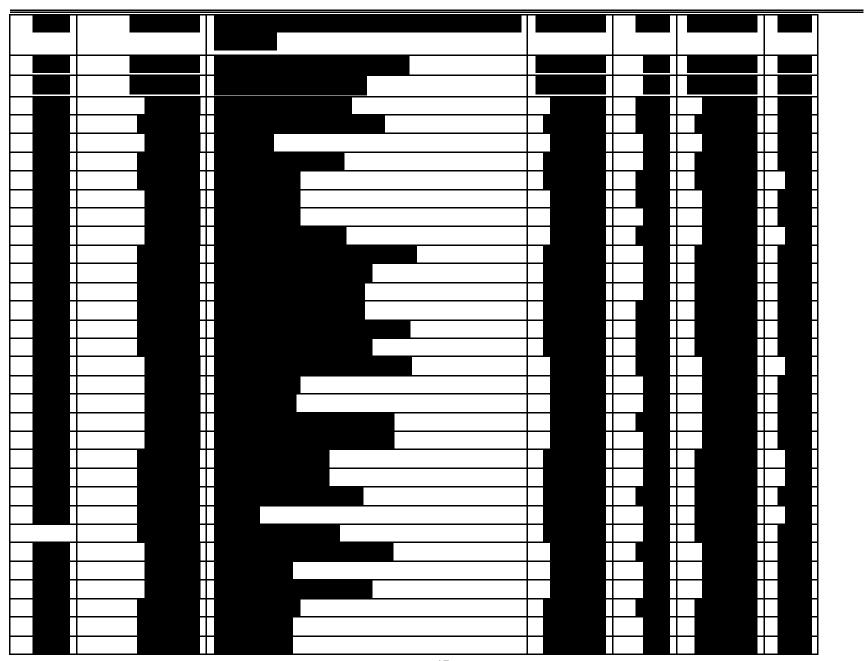


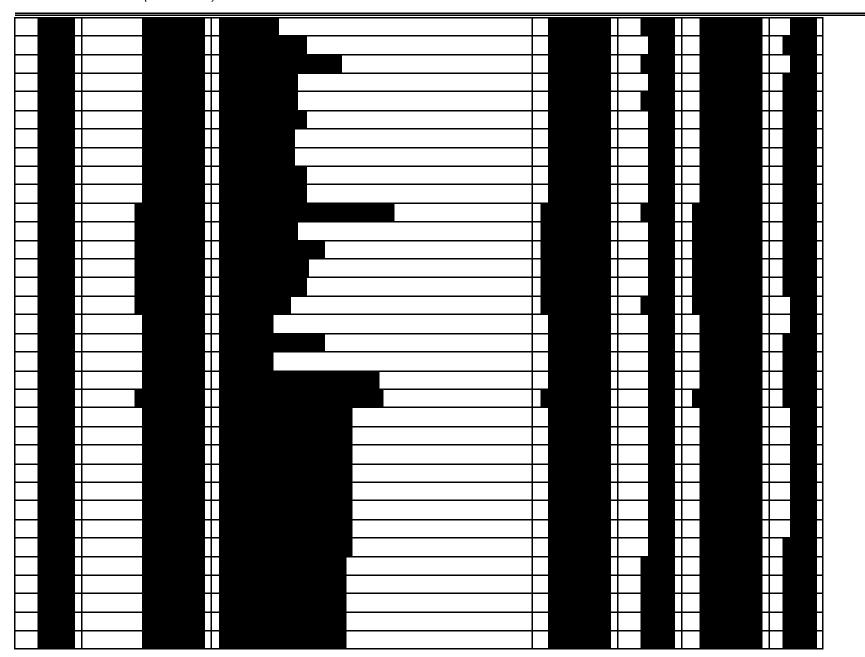












LIBERTY UTILITIES (CALPECO) LLC 2020 ELECTRIC SYSTEM RELIABILITY REPORT

