



Liberty Utilities®

**ELECTRIC SYSTEM RELIABILITY
ANNUAL REPORT**

2020

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

-- PUBLIC VERSION --

**Prepared for
California Public Utilities Commission**

June 3rd, 2021

EXECUTIVE SUMMARY

The Electric System Reliability Annual Report for 2020 has been prepared in response to CPUC Decision 16-01-008, which was approved January 20, 2016. Decision 16-01-008 established reliability recording, calculation, and reporting requirements for Liberty Utilities (CalPeco Electric) LLC (“Liberty”).

Liberty does not provide transmission services. Liberty does not have an Open Access Transmission Tariff (OATT). Therefore, data is presented for distribution services only. Statistics and calculations include forced distribution outages. Forced outages are those that are not prearranged. 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.

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 through 2020) of data, which represents the period since Liberty was acquired from NV Energy.

Beginning in 2013, the measurement of each reliability performance indicator excludes IEEE Major Event Days (MED) instead of CPUC Major Events. An IEEE Major Event Day 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).

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1) System Indices for the Last 10 Years (Years Liberty in business)

a. Separate tables with SAIDI, SAIFI, MAIFI and CAIDI (Major Event Day (MED)) included and excluded.

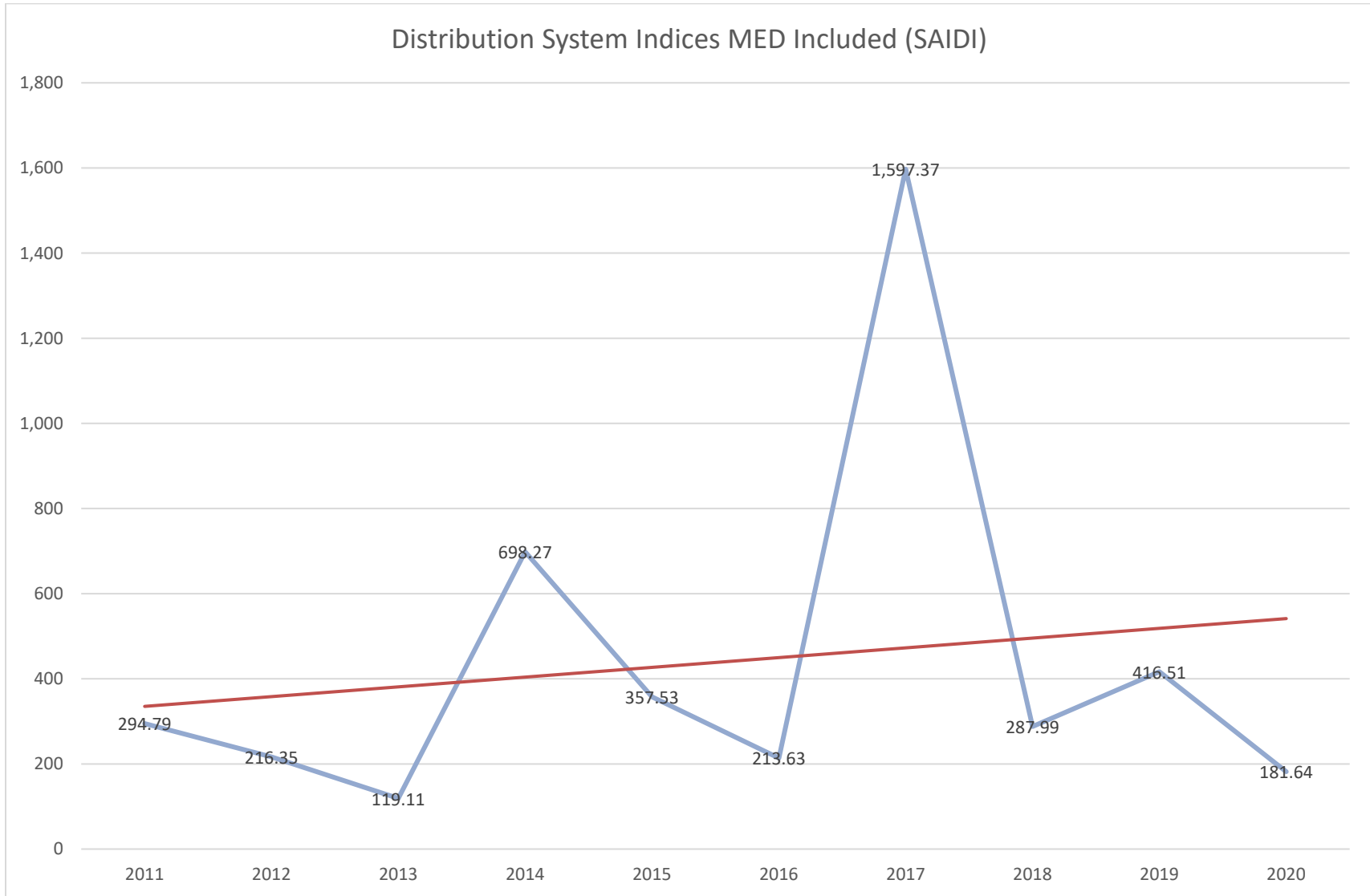
I. Distribution System Indices (Major Event included and excluded)

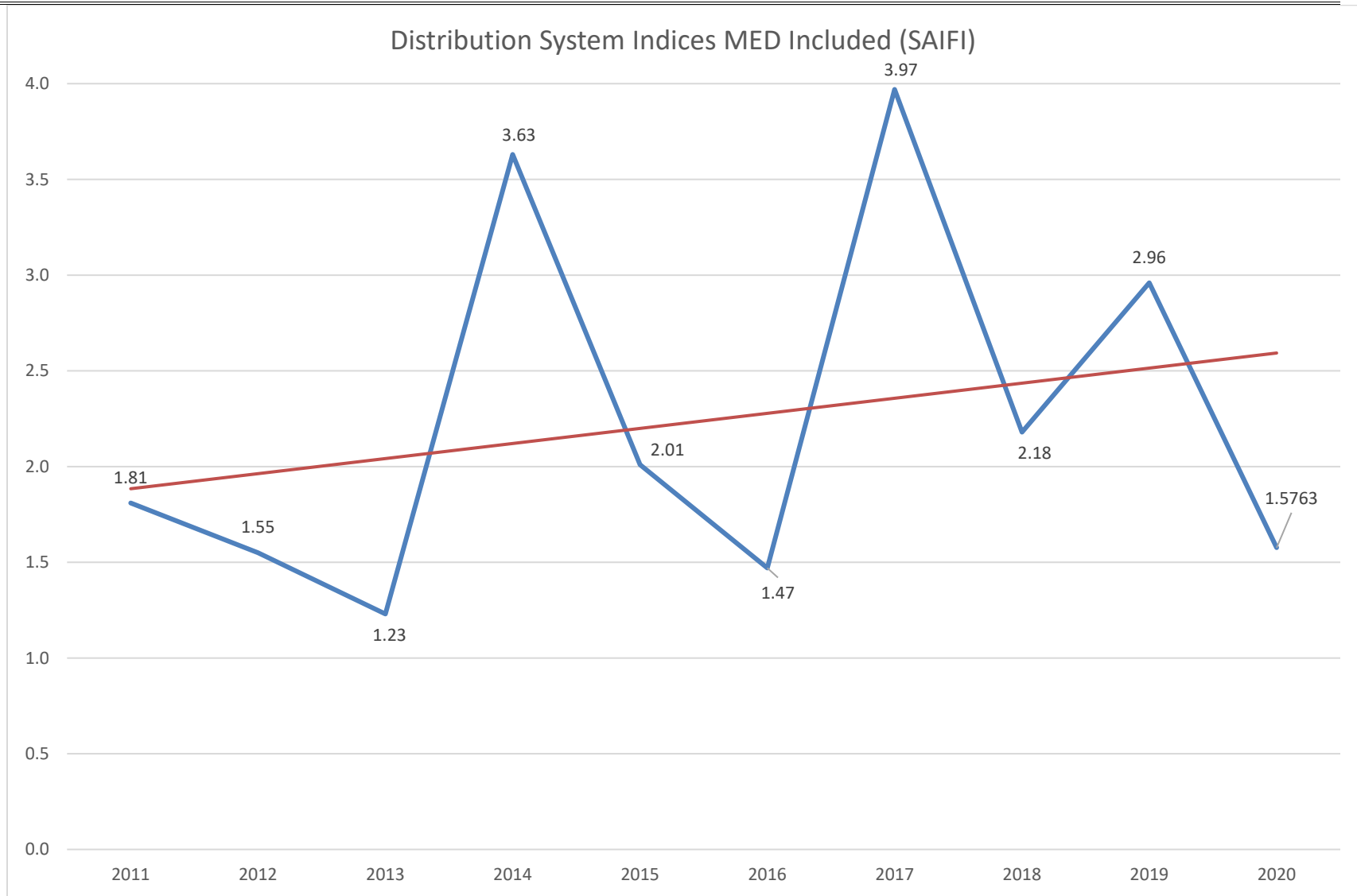
Liberty Utilities (CalPeco Electric) LLC								
<u>Distribution</u> Historical System Reliability Data 10 Years (Years in Business)								
	Major Event Included				Major Event Excluded			
Year	SAIDI	SAIFI	CAIDI	MAIFI	SAIDI	SAIFI	CAIDI	MAIFI
2020	181.64	1.57	115.23	0.07	181.64	1.57	115.23	0.07
2019	416.51	2.96	140.73	0.31	416.51	2.96	140.73	0.31
2018	287.99	2.18	131.82	0.52	287.99	2.18	131.82	0.52
2017	1597.37	3.97	402.06	1.37	772.83	2.86	270.23	1.37
2016	213.63	1.47	144.98	1.08	213.63	1.47	144.98	1.08
2015	357.53	2.01	177.68	1.15	357.53	2.01	177.68	1.15
2014	698.27	3.63	192.44	2.15	352.37	2.40	146.58	2.15
2013	119.11	1.23	96.75	2.08	119.11	1.23	96.79	2.08
2012	216.35	1.55	139.31	2.75	216.35	1.55	139.31	2.75
2011	294.79	1.81	162.60	1.88	192.22	1.25	154.27	1.88

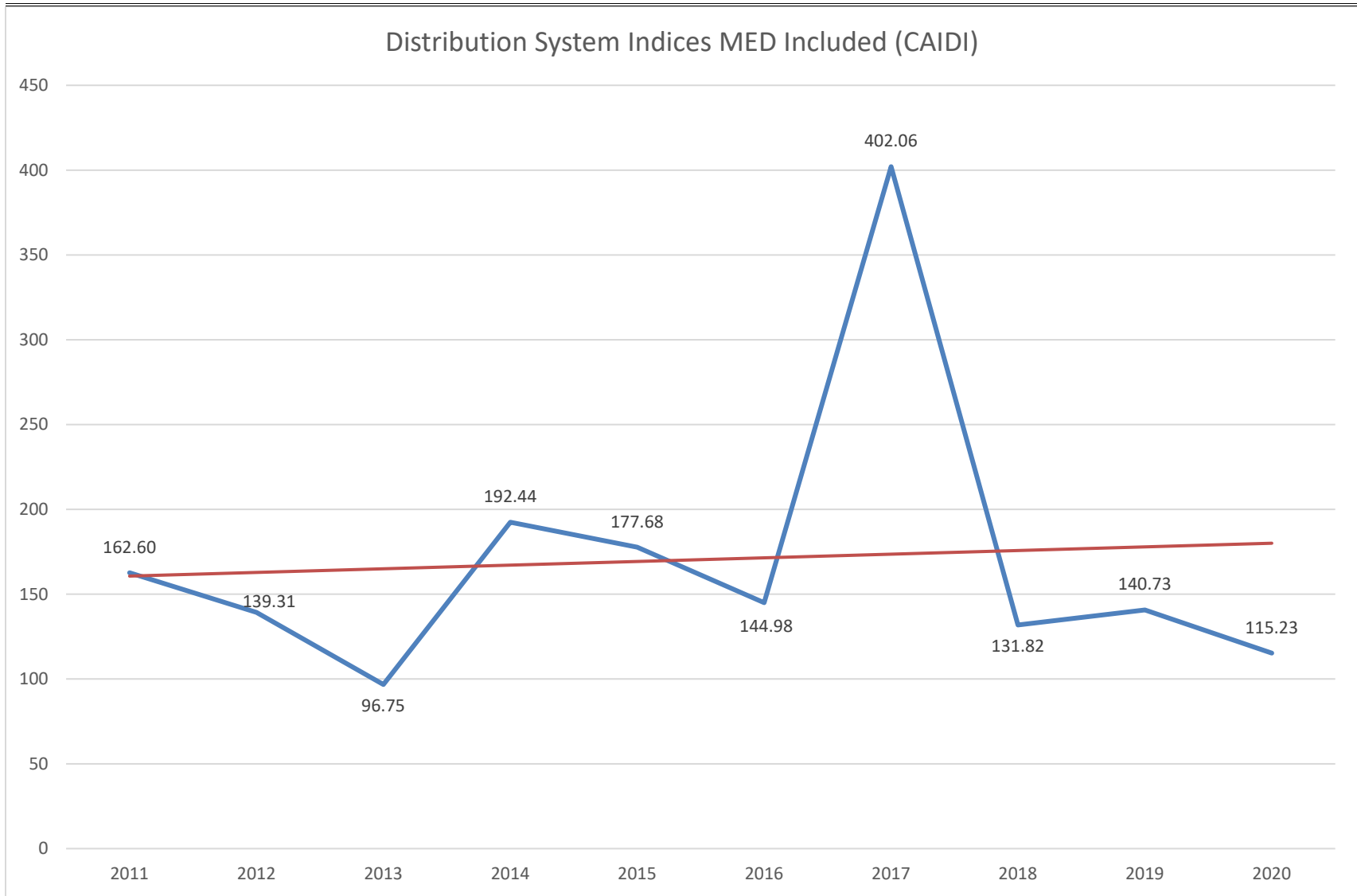
II. Transmission System Indices (MED Included and Excluded)

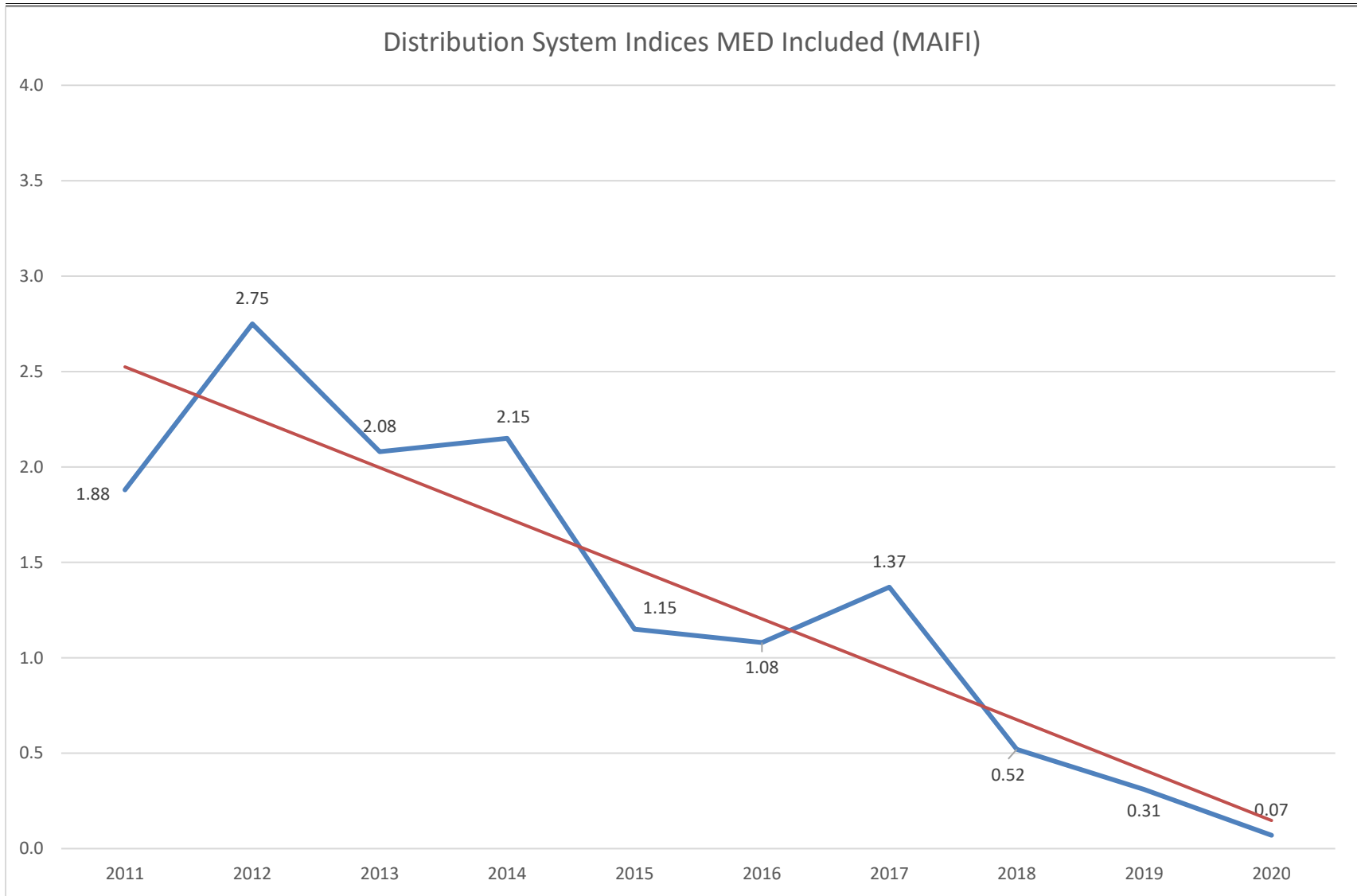
Liberty Utilities (CalPeco Electric) LLC does not own transmission.

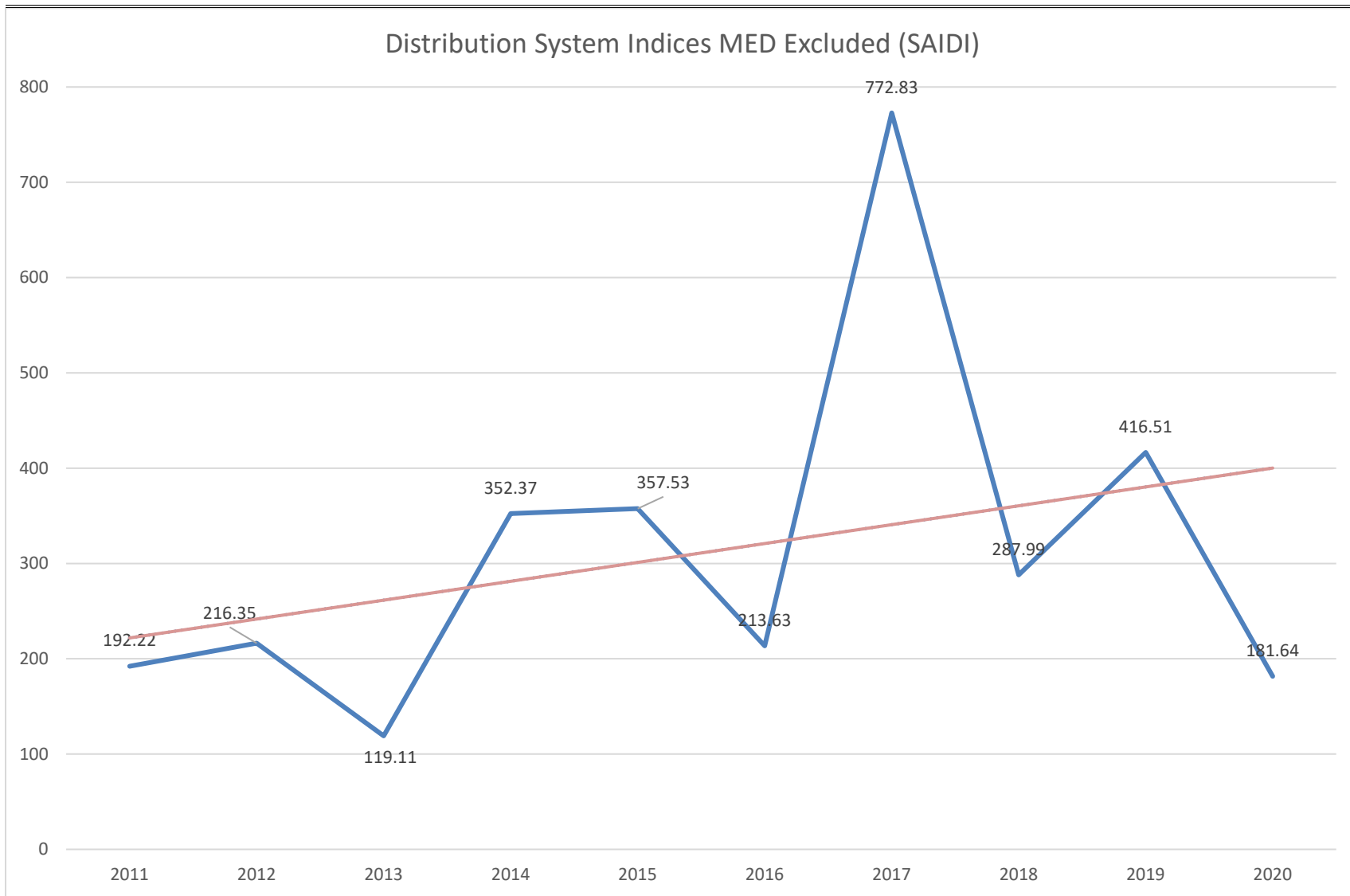
b. Separate charts showing a line graph of distribution system SAIDI, SAIFI, MAIFI, and CAIDI for the past 10 years (years in business) with linear trend line (TMED included and excluded).

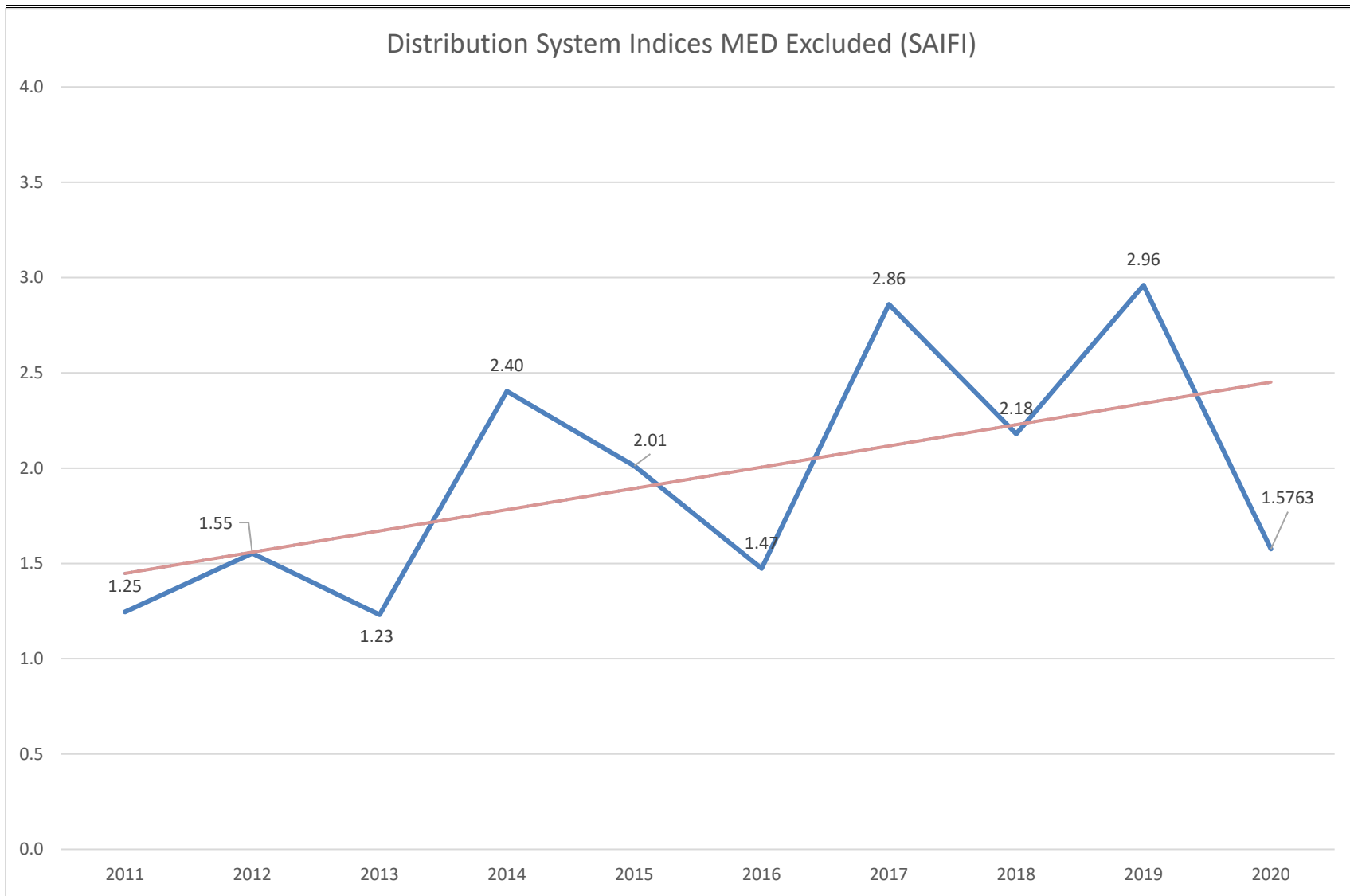


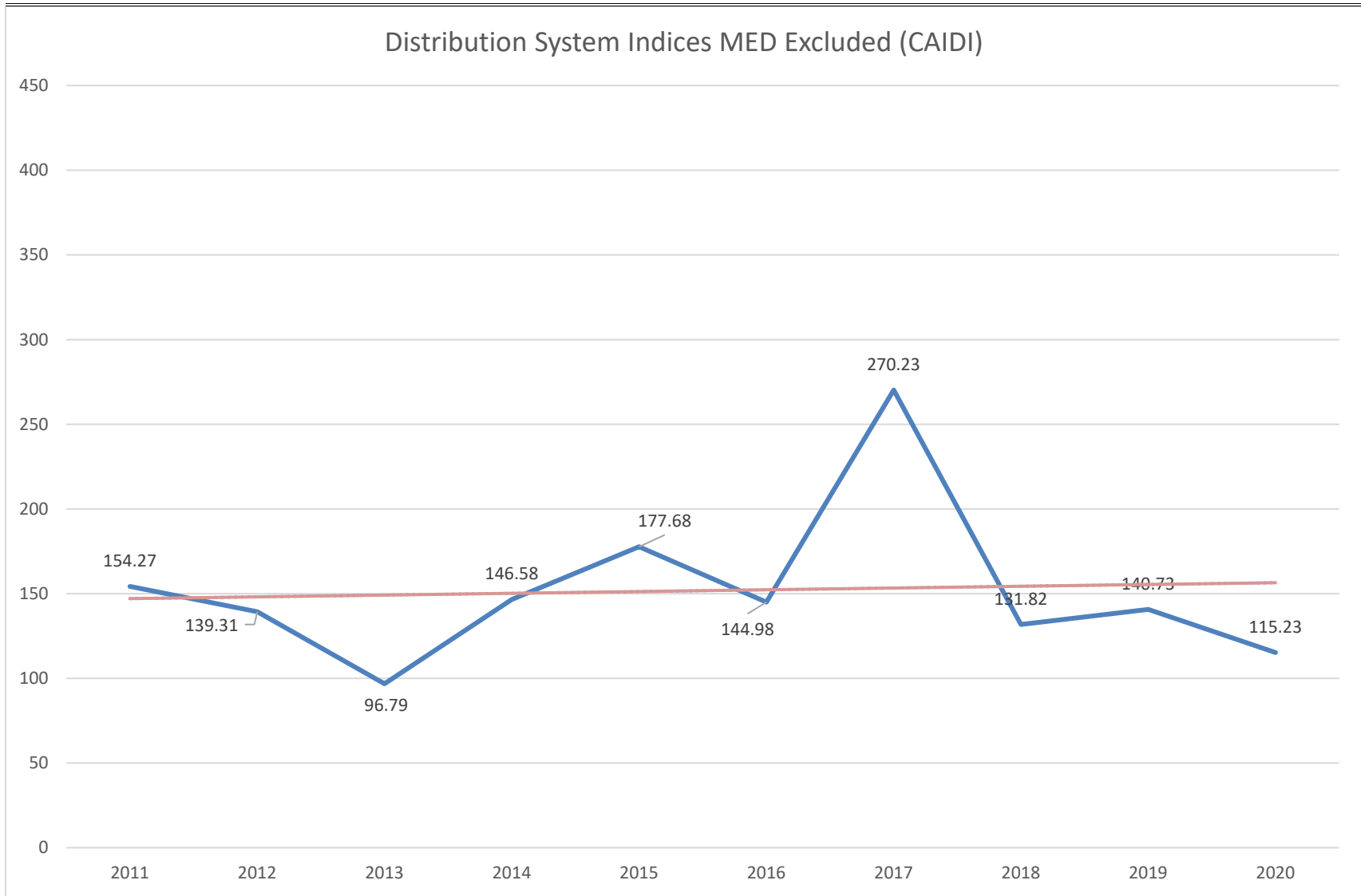


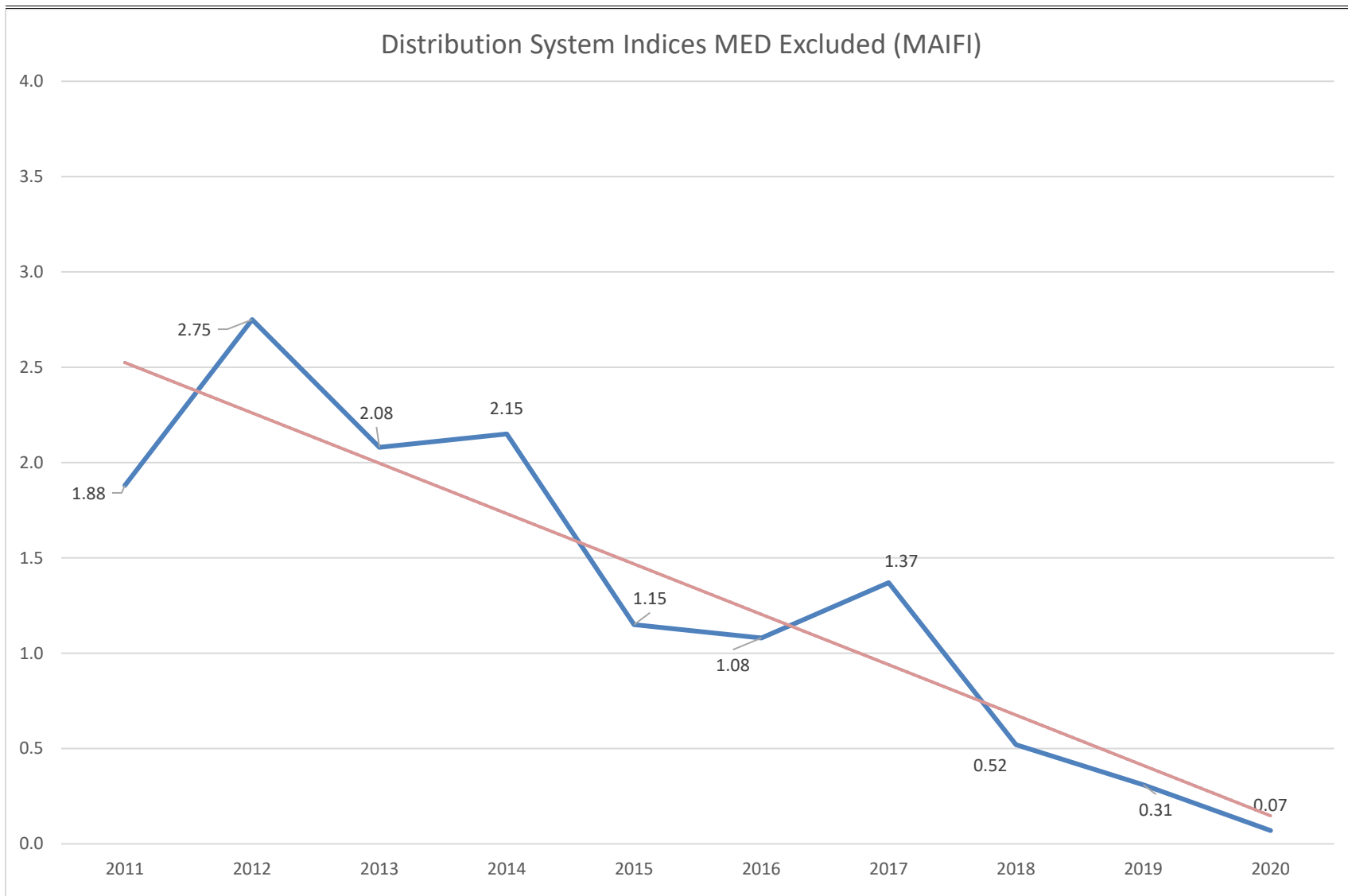












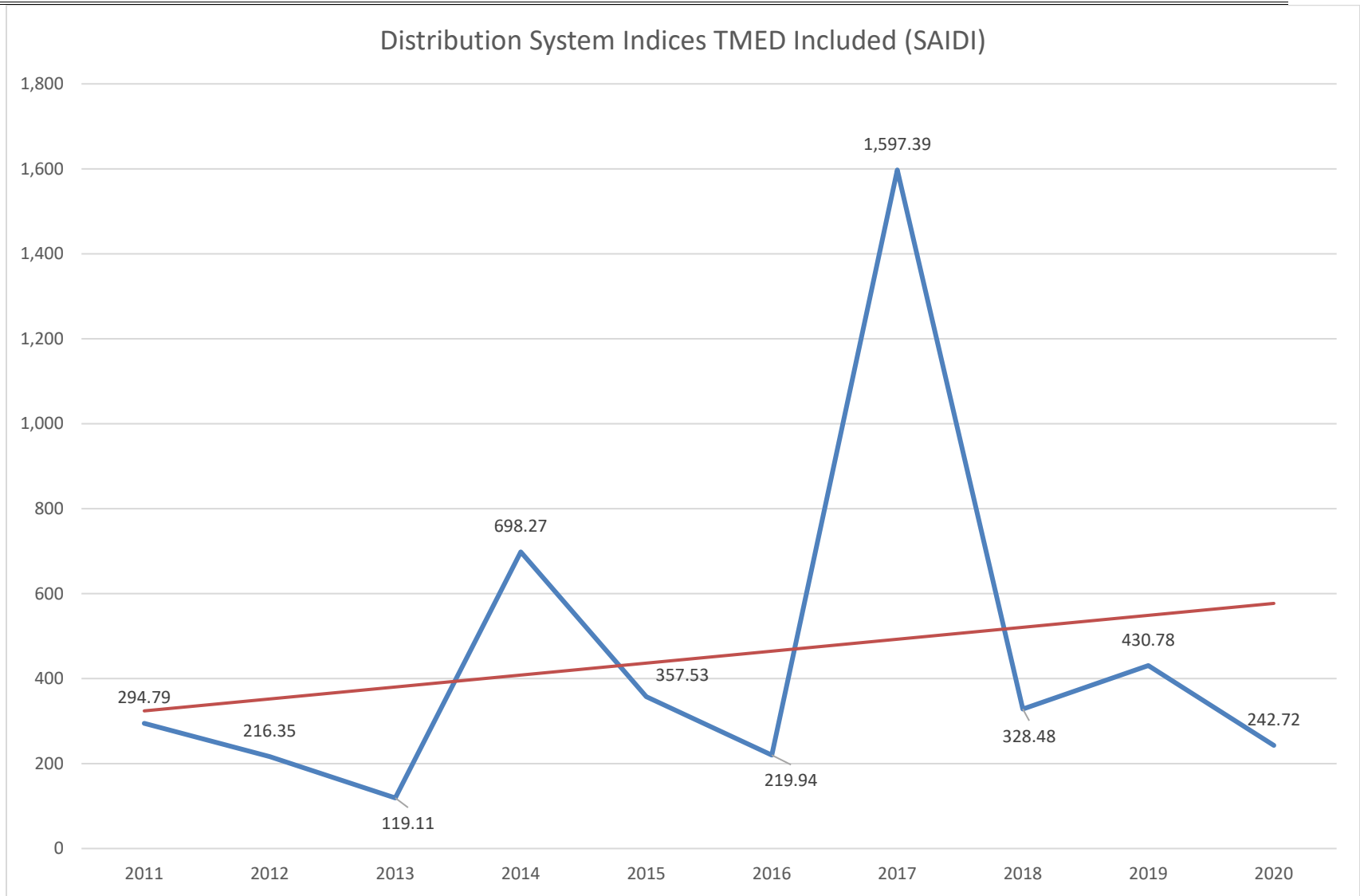
2) Division (or District) Reliability Indices for the past 10 years

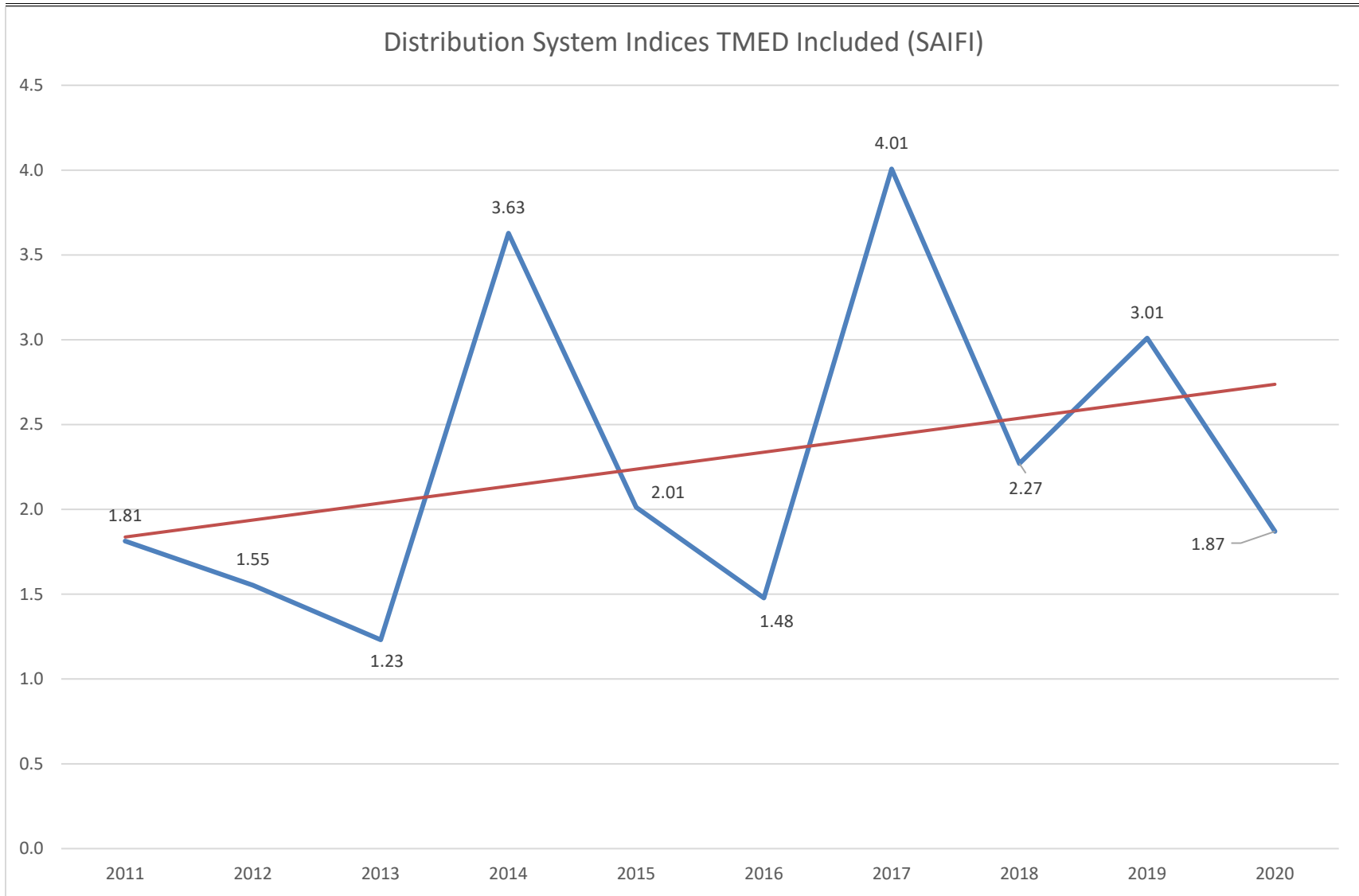
Liberty Utilities (CalPeco Electric) LLC has one division, Lake Tahoe. See section 1 for indices.

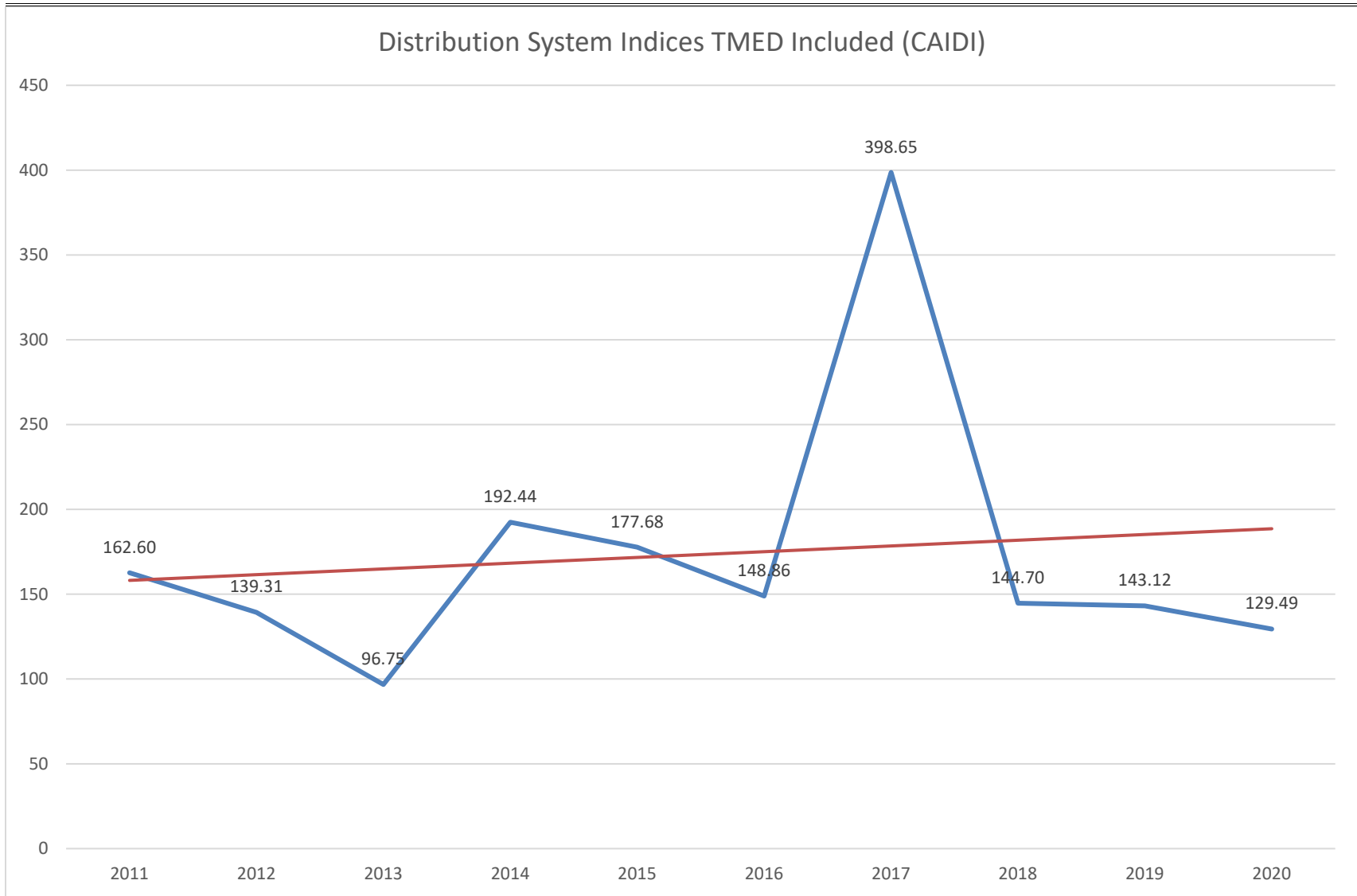
3) System and Division indices based on IEEE 1366 for the past 10 years including planned outages and including and excluding TMED

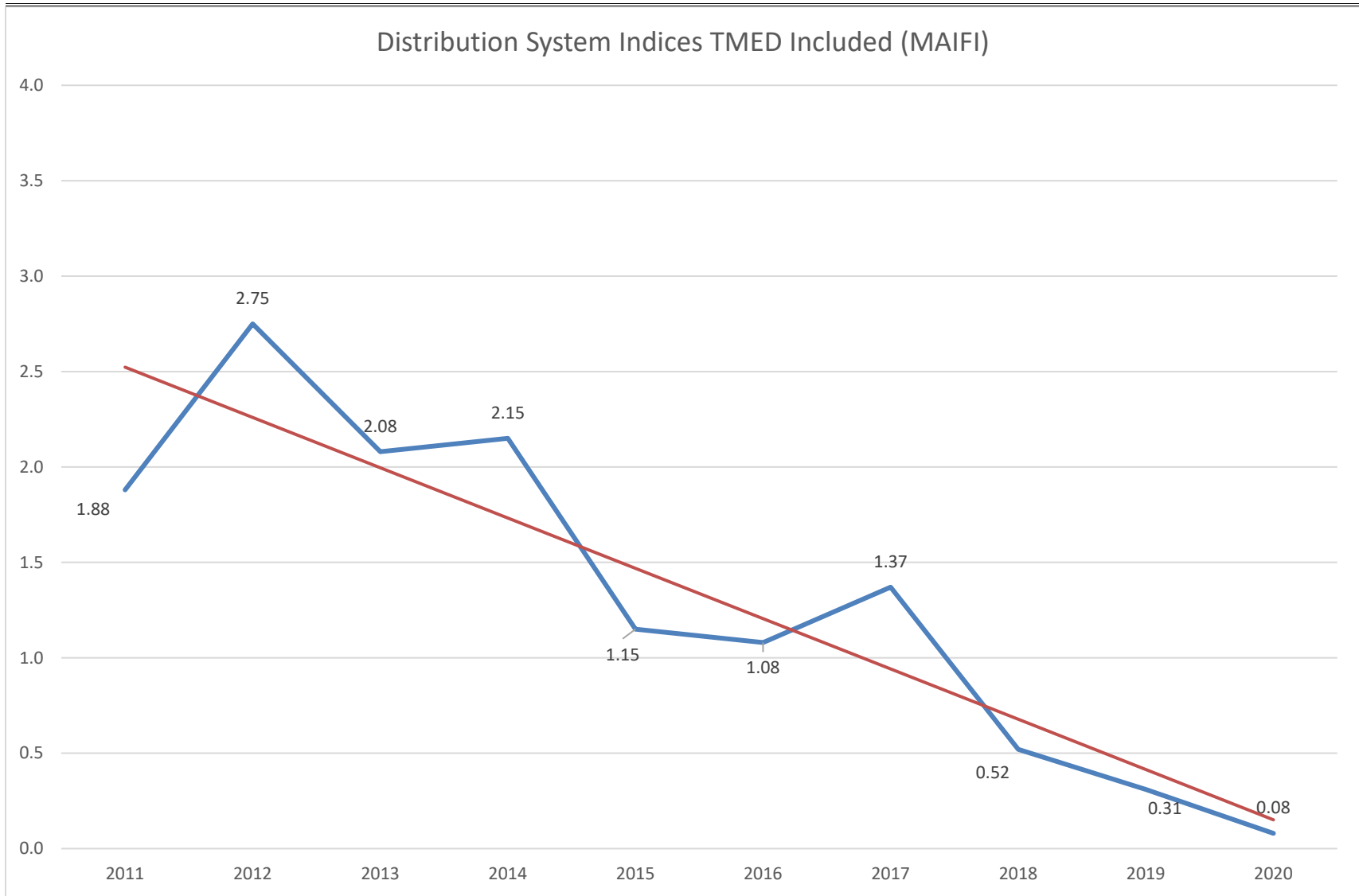
a. SAIDI, SAIFI, MAIFI, and CAIDI Data

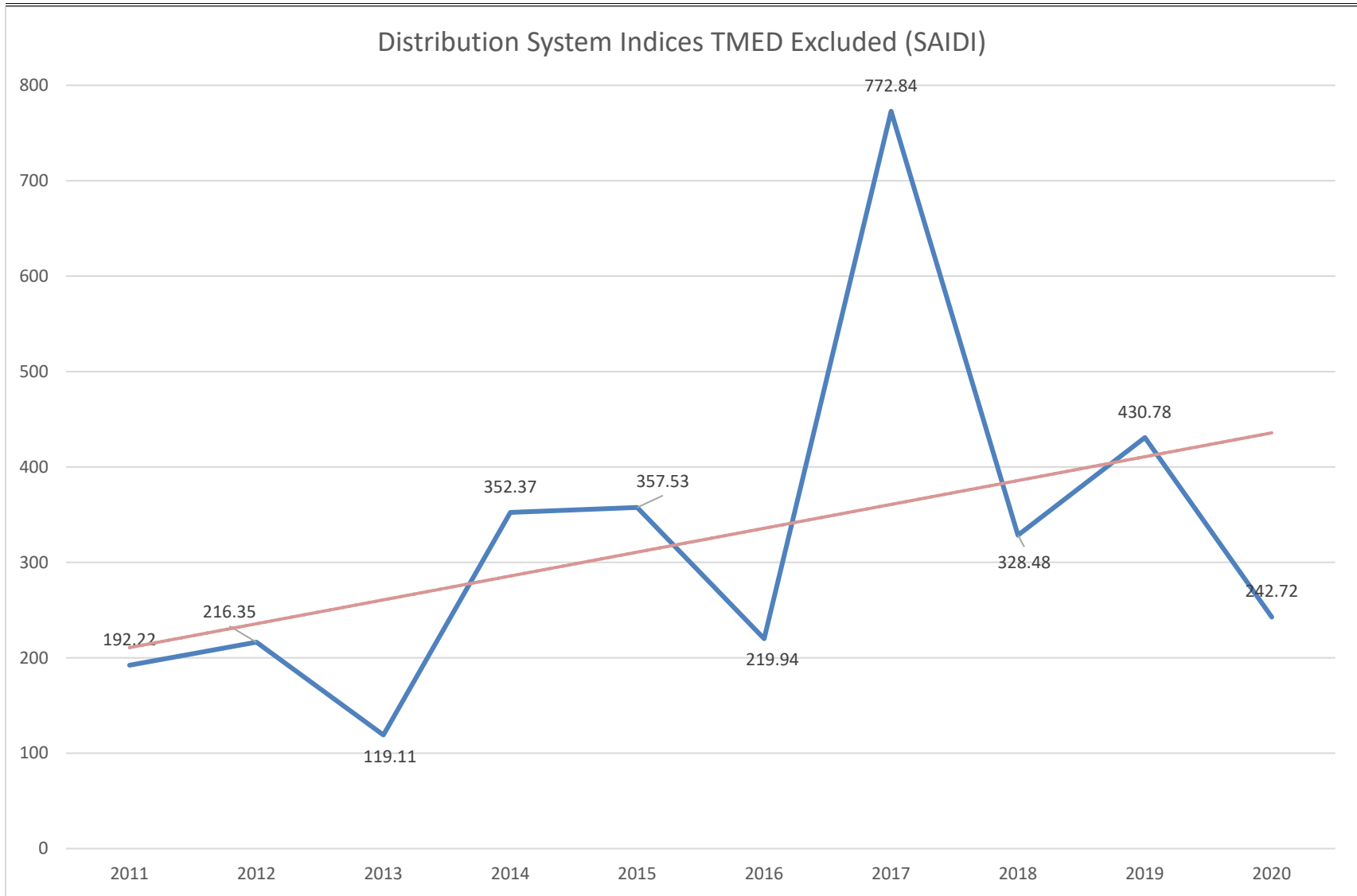
Liberty Utilities (CalPeco Electric) LLC Distribution Historical System Reliability Data 10 Years (Years in Business)								
Year	TMED Included				TMED Excluded			
	SAIDI	SAIFI	CAIDI	MAIFI	SAIDI	SAIFI	CAIDI	MAIFI
2020	242.72	1.87	129.49	0.08	242.72	1.87	129.49	0.08
2019	430.78	3.01	143.12	0.31	430.78	3.01	143.12	0.31
2018	328.48	2.27	144.70	0.52	328.48	2.27	144.70	0.52
2017	1597.39	4.01	398.65	1.37	772.84	2.89	267.42	1.37
2016	219.94	1.48	148.86	1.08	219.94	1.48	148.86	1.08
2015	357.53	2.01	177.68	1.15	357.53	2.01	177.68	1.15
2014	698.27	3.63	192.44	2.15	352.37	2.40	146.58	2.15
2013	119.11	1.23	96.75	2.08	119.11	1.23	96.79	2.08
2012	216.35	1.55	139.31	2.75	216.35	1.55	139.31	2.75
2011	294.79	1.81	162.60	1.88	192.22	1.25	154.27	1.88

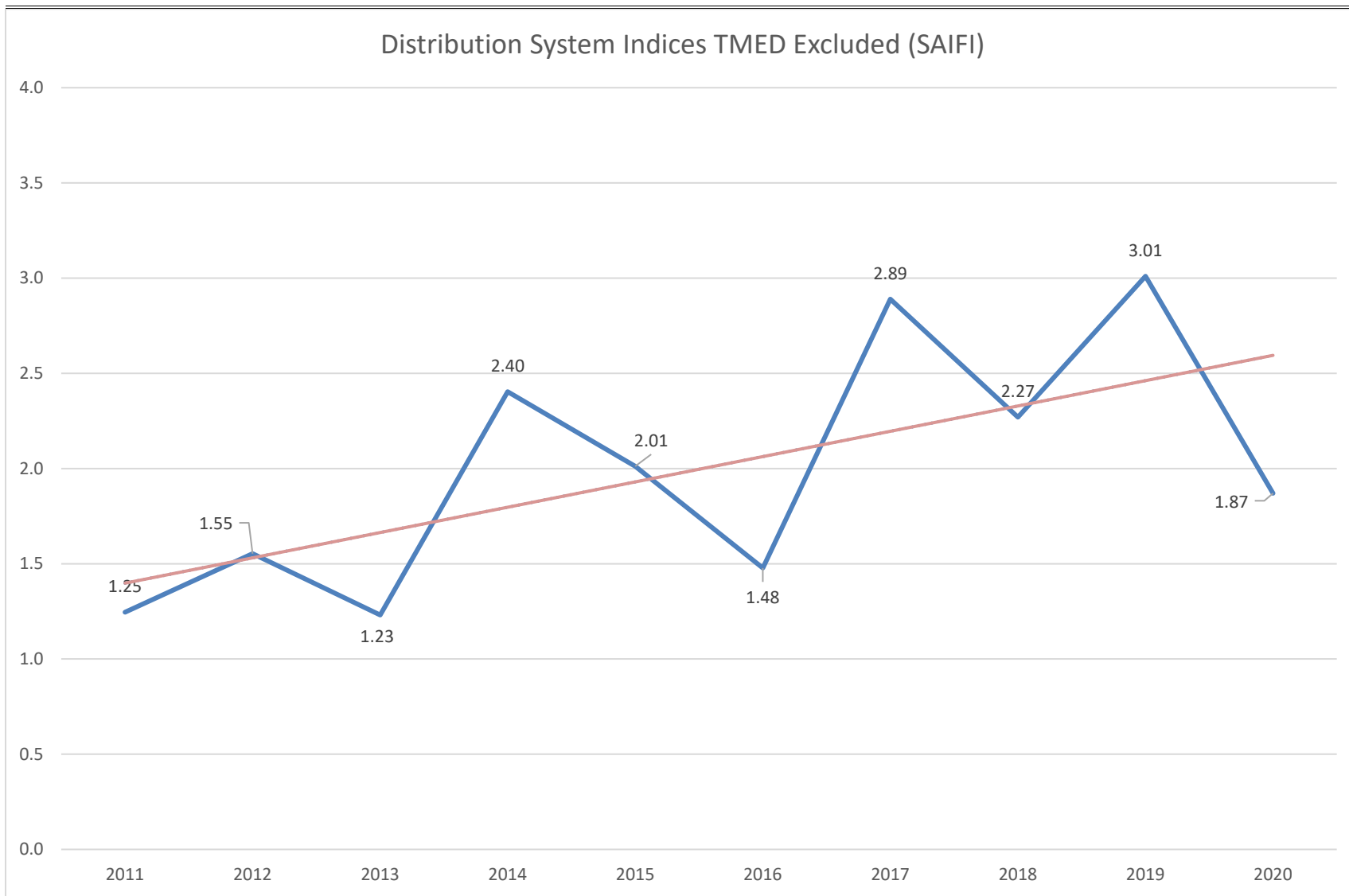


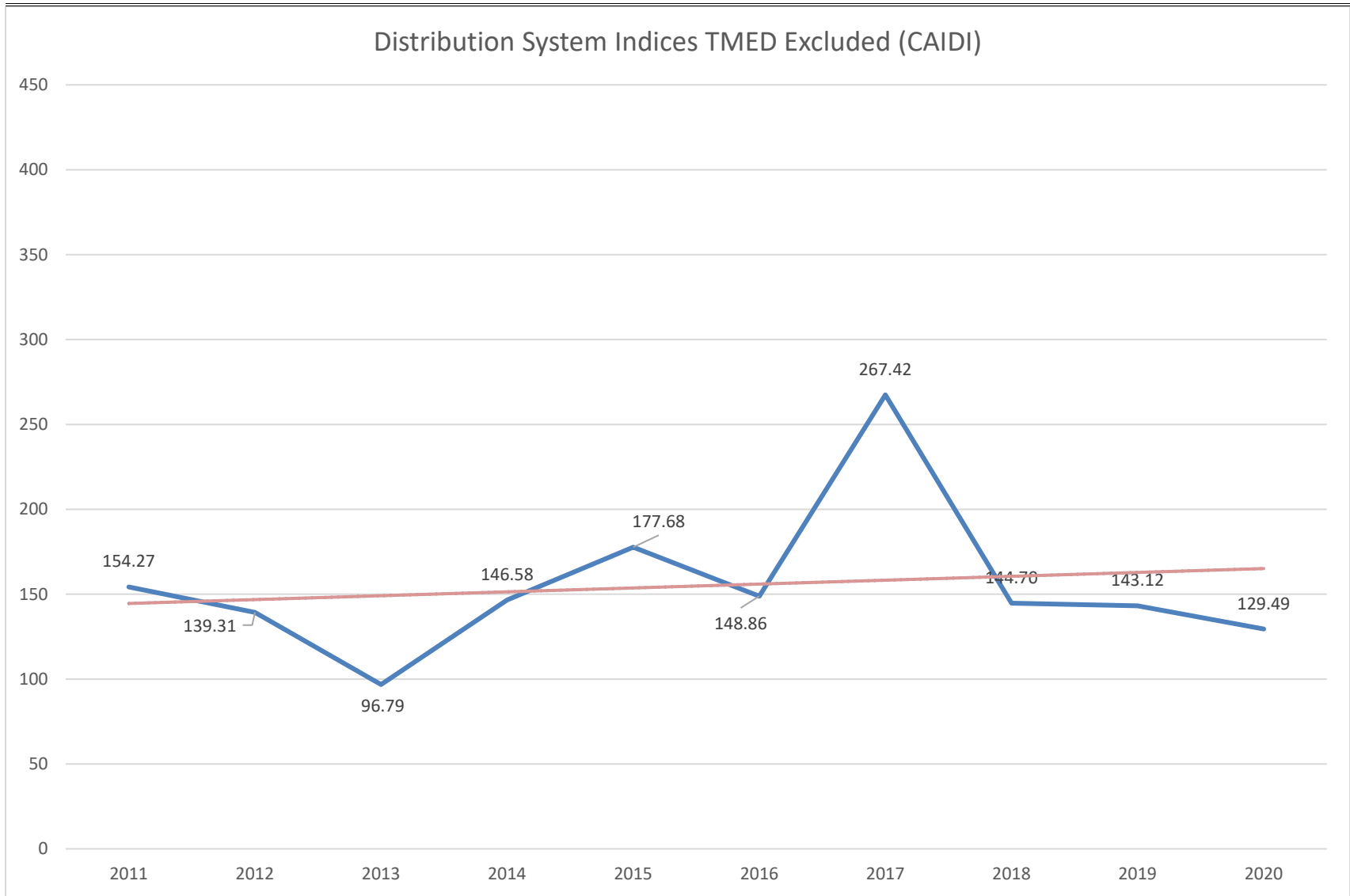


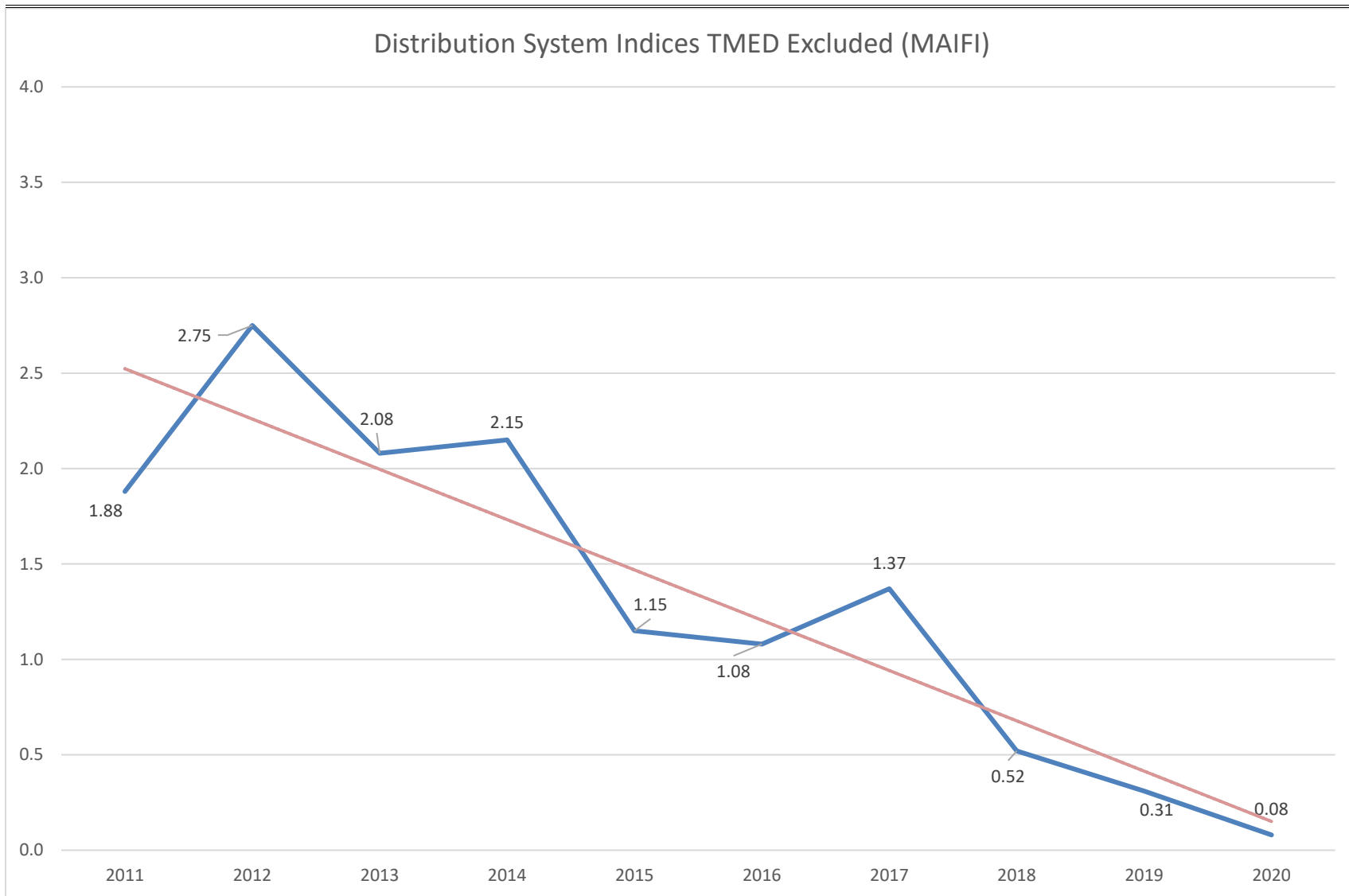












b. The number, date, and location of planned outages

Circuit	Number of Planned Outages By Year									
	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								

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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	

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

- I. For each of these circuits, each utility shall include the following information in its annual report: 1) circuit name; 2) district/division; 3) customer count; 4) substation name; 5) circuit-miles; 6) percentage underground, or “% UG”; 7) percentage overhead or “% OH”; 8) number of mainline/feeder/backbone outages resulting in the operation of either a circuit breaker (“CB”) or automatic re-closer (“AR”); and 9) its preferred reliability metric.

Circuit	District	Customer Count	Substation Name	Circuit Miles	Facilities		Number of Mainline/Feeder/Backbone Outages Per Year	*Circuit SAIDI	Circuit SAIFI
					OH	UG			
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 which 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
- 2017 – 3,004.5
- 2016 – 1930.4

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

Liberty's 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 upon 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' worth of data is included and averaged in order to account for anomalies and tracking 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.

The Regional Engineer presents proposals for reliability improvement projects along with a circuit analysis, cost-benefit analysis, and details on customer impact to the 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	3597.8	No
2	CB Lockout, Lightning possible	8/24/2020	3,835	1.63	6251.05	No
3	Unknown	11/6/2020	3,728	1.3	4846.4	No
4	Wind/Debris	8/12/2020	3,724	0.56	2085.44	No
5	Animal	9/10/2020	3,451	0.3	1035.3	No
6	Animal	9/6/2020	3,266	0.86	2808.7	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	3653.6	No
10	Operations Error	7/28/2020	2,555	0.68	1737.4	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	40701.2	No
2	Equipment Failure	2/22/2019	8,560	4.42	37835.2	No
3	Third Party - Contractor Dig In	10/3/2019	7,841	0.18	1411.38	No
4	Hardware Failure	2/26/2019	4,485	3.5	15697.5	No

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5	Tree	1/18/2019	4,448	1.76	7828.48	No
6	Hardware Failure	3/6/2019	4,448	0.82	3647.36	No
7	Animal	11/11/2019	4,245	0.6	2547	No
8	Third Party – Line Contact	9/21/2019	3,712	0.43	1596.16	No
9	Animal	6/7/2019	3,529	0.47	1658.63	No
10	Tree	6/7/2019	3,507	1.51	5295.57	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	91301.9	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	14218.8	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	6958.1	No
6	Trees - Major Storm	6/9/2018	4,485	9.38	6420.1	No
7	Unknown	11/12/2018	4,154	1.76	7338.7	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	8072.3	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	5,745,66.7	No

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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	0.4	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	5,046.80	No
2	Wind/Trees	10/16/2016	4,125	1.75	7,150.00	No
3	Underground Fault	10/4/2016	4,125	4.31	17,793.30	No
4	Downed Wire	3/22/2016	4,125	1.70	6,294.80	No
5	Car/Pole	3/13/2016	3,517	1.00	3,957.90	No
6	Failed Overhead Hardware/Material	1/1/2016	3,500	5.50	7,250.00	No
7	Trees	3/1/2016	3,258	0.50	1,683.30	No
8	Underground Fault	6/29/2016	2,859	8.42	3,975.10	No
9	Primary Contact – 3 rd Party	8/23/2016	2,772	5.15	2,693.25	No
10	Trees	6/15/2016	2,732	8.15	3,822.70	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

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Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major 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

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Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers-hours affected	CPUC Major 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	.067	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 reliability inquiries in 2020.

Date Received	Date Responded	Description of Inquiry

10) List of PSPSs in 2020

Liberty did not have any PSPS events in 2020.

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

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

LIBERTY UTILITIES (CALPECO ELECTRIC) LLC 2020 ELECTRIC SYSTEM RELIABILITY REPORT

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