ELECTRIC SYSTEM RELIABILITY ANNUAL REPORT

2015

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

-- PUBLIC VERSION --

Prepared for

California Public Utilities Commission

July 15, 2016

PUBLIC VERSION - REDACTED

EXECUTIVE SUMMARY

The Electric System Reliability Annual Report for 2015 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.

CalPeco Electric does not provide transmission services. CalPeco Electric does not have an Open Access Transmission Tariff (OATT). Therefore data is presented for the distribution services only. All 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.

CalPeco Electric presents five years (2011 through 2015) of data, which represents the period in which Liberty Utilities purchased CalPeco Electric 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 CalPeco Electric's reliability results. The applicable TMED value is calculated at the end of each year using CalPeco Electric's daily SAIDI values for the prior five years. CalPeco Electric's TMED value for 2015 was 94.35 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

PUBLIC VERSION - REDACTED

1) System Indices for the Last 5 Years (Years CalPeco Electric 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
Distribution Historical System Reliability Data 5 Years (Years in Business)

	Major Event Included				Major Event Excluded			
Year	SAIDI	SAIFI	CAIDI	MAIFI	SAIDI	SAIFI	CAIDI	MAIFI
2015	357.531	2.0122	177.68	1.15	357.53	2.0122	177.68	1.15
2014	698.273	3.6284	192.44	2.15	352.37	2.4039	146.58	2.15
2013	119.109	1.2311	96.75	2.08	119.11	1.2310	96.79	2.08
2012	216.349	1.5530	139.31	2.75	216.35	1.5530	139.31	2.75
2011	294.795	1.8130	162.60	1.88	192.22	1.2460	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 5 years (year in business) with linear trend line (TMED included and excluded).

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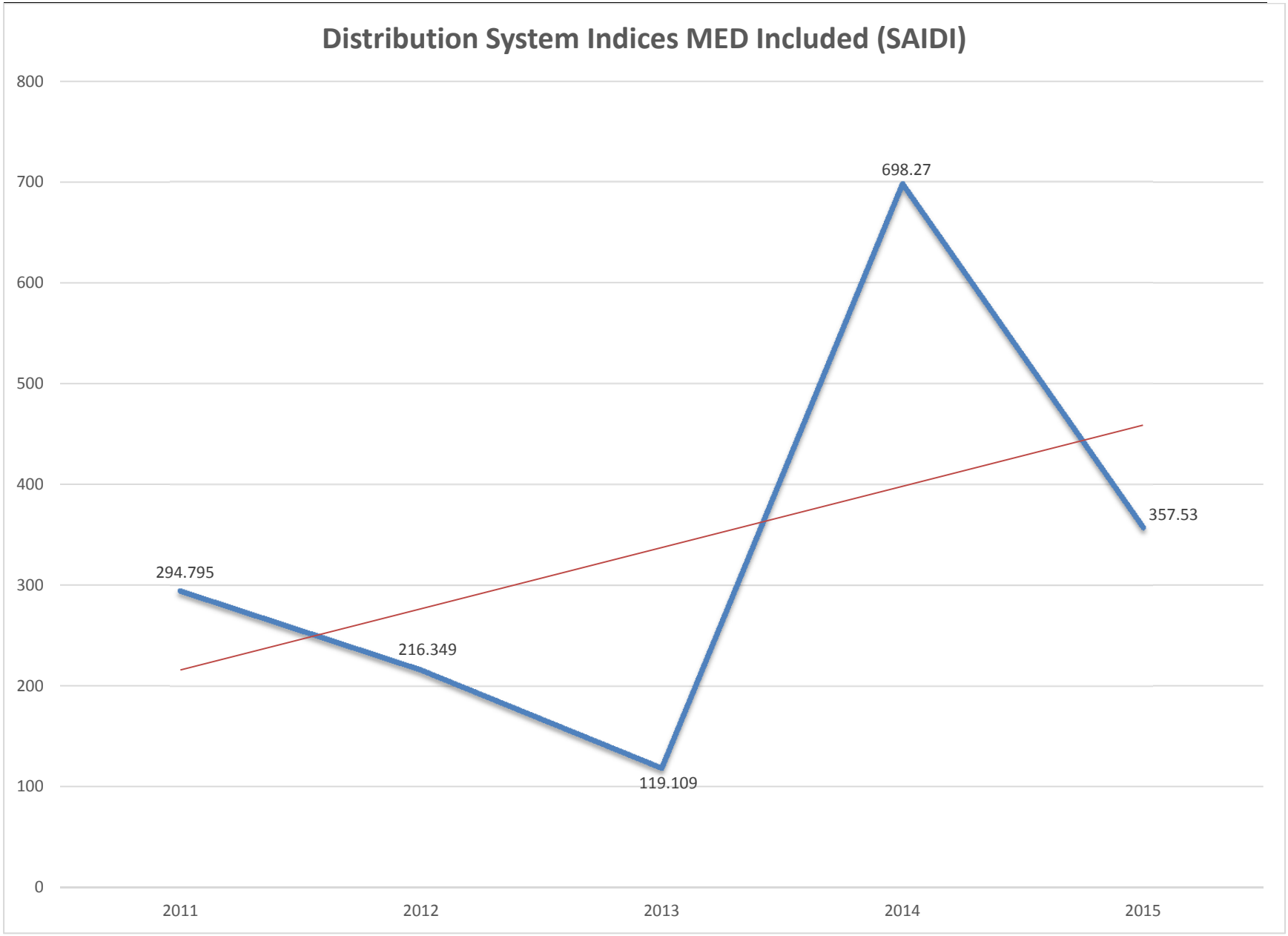

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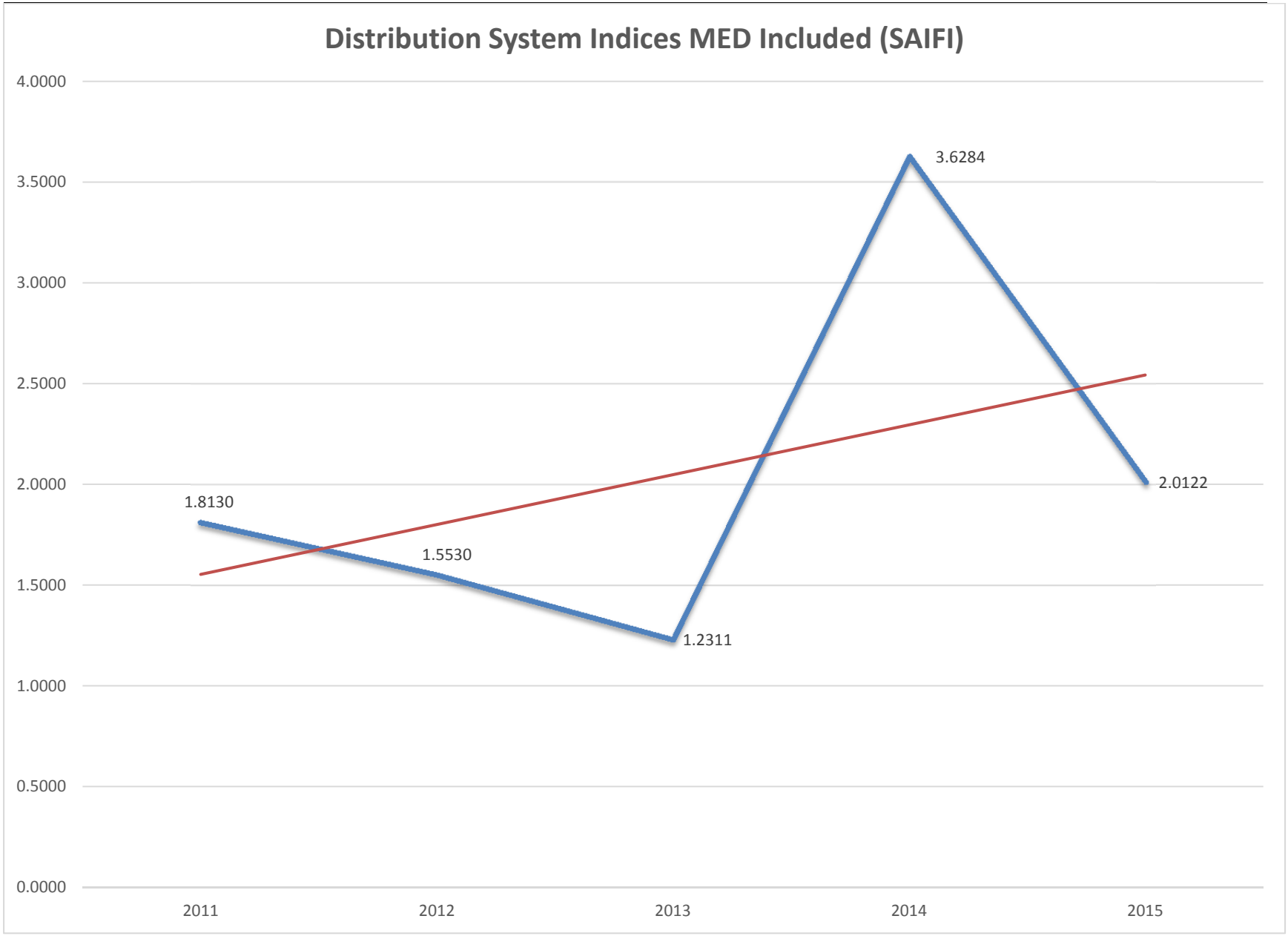

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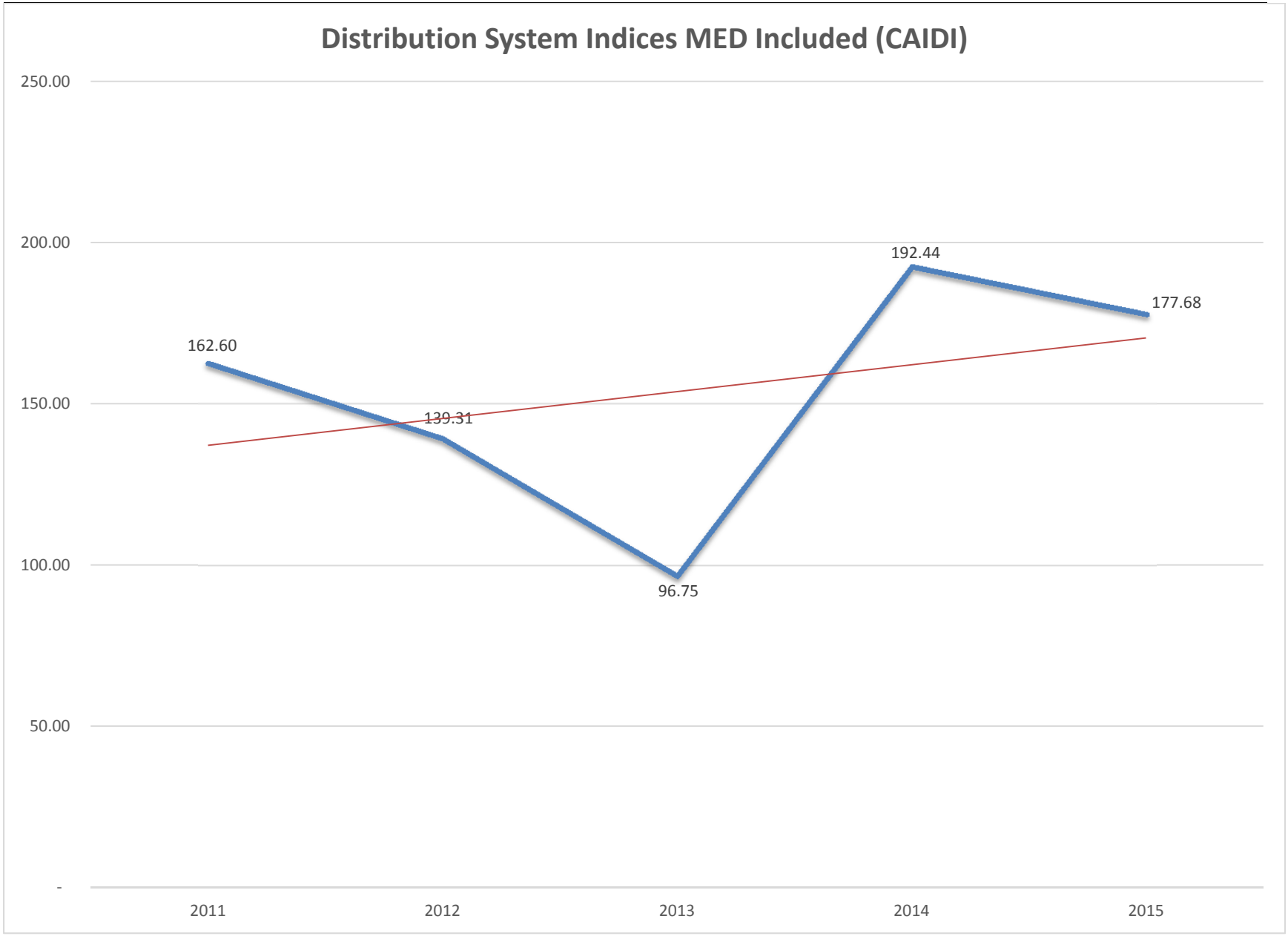

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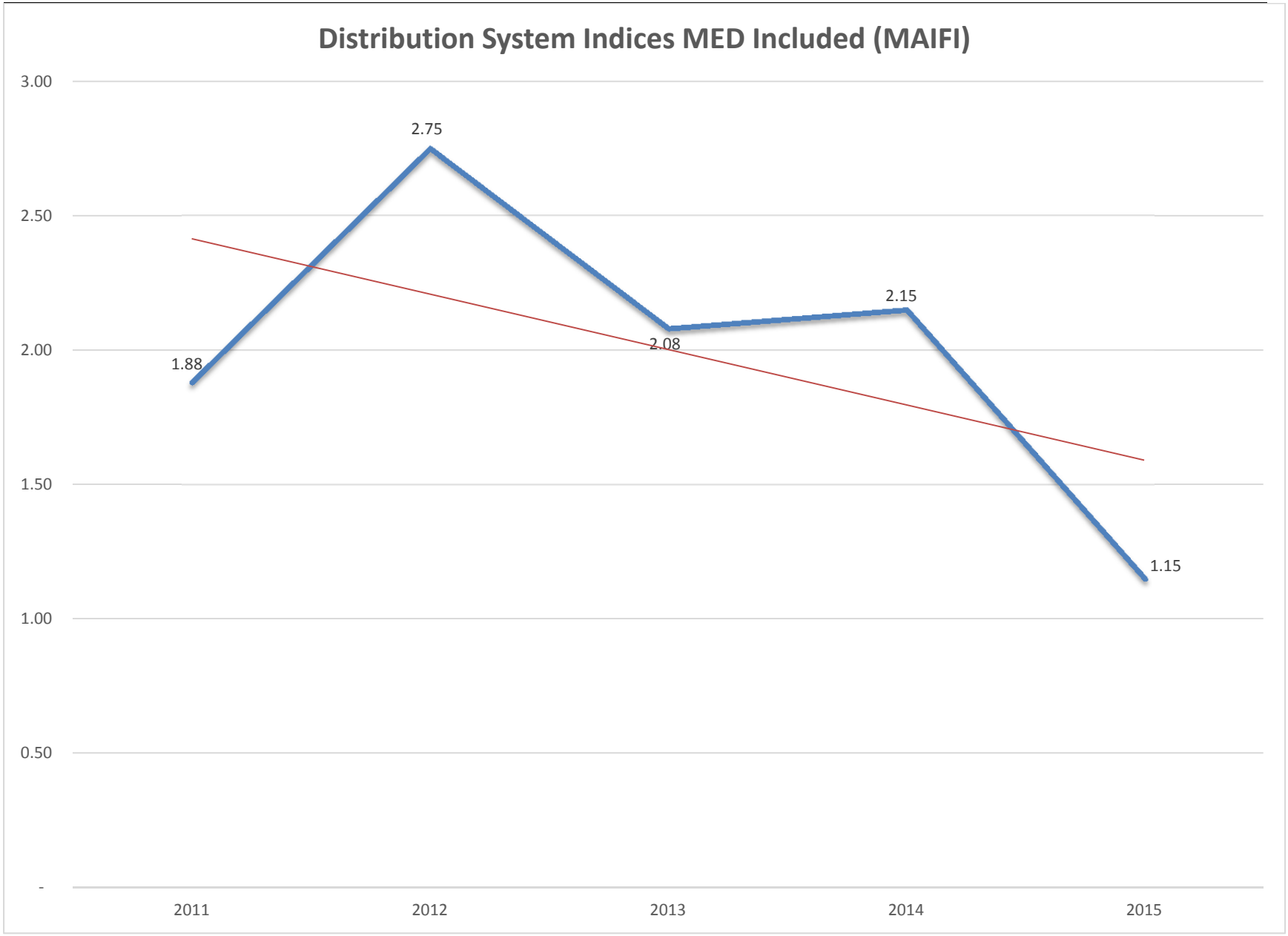

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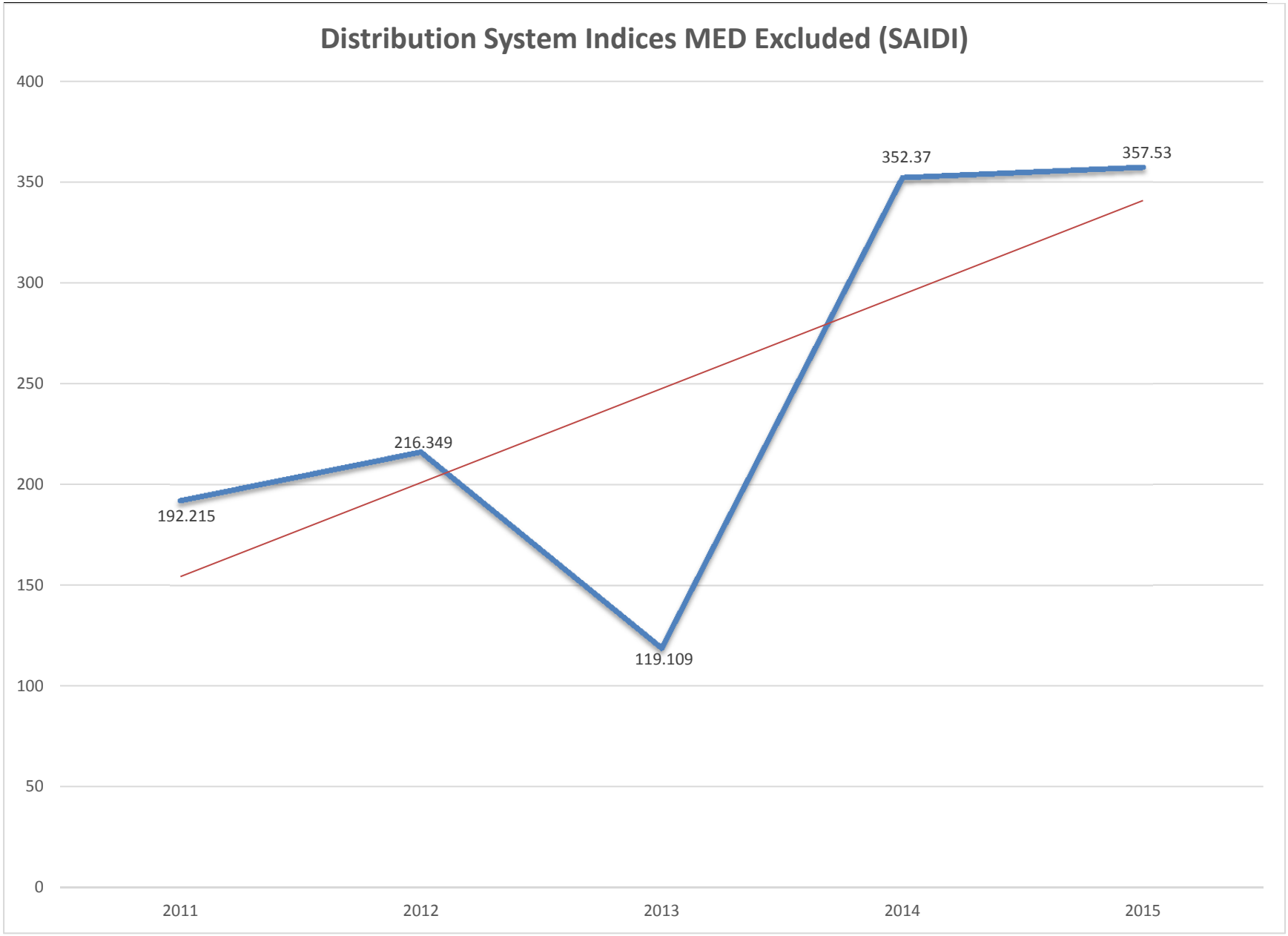

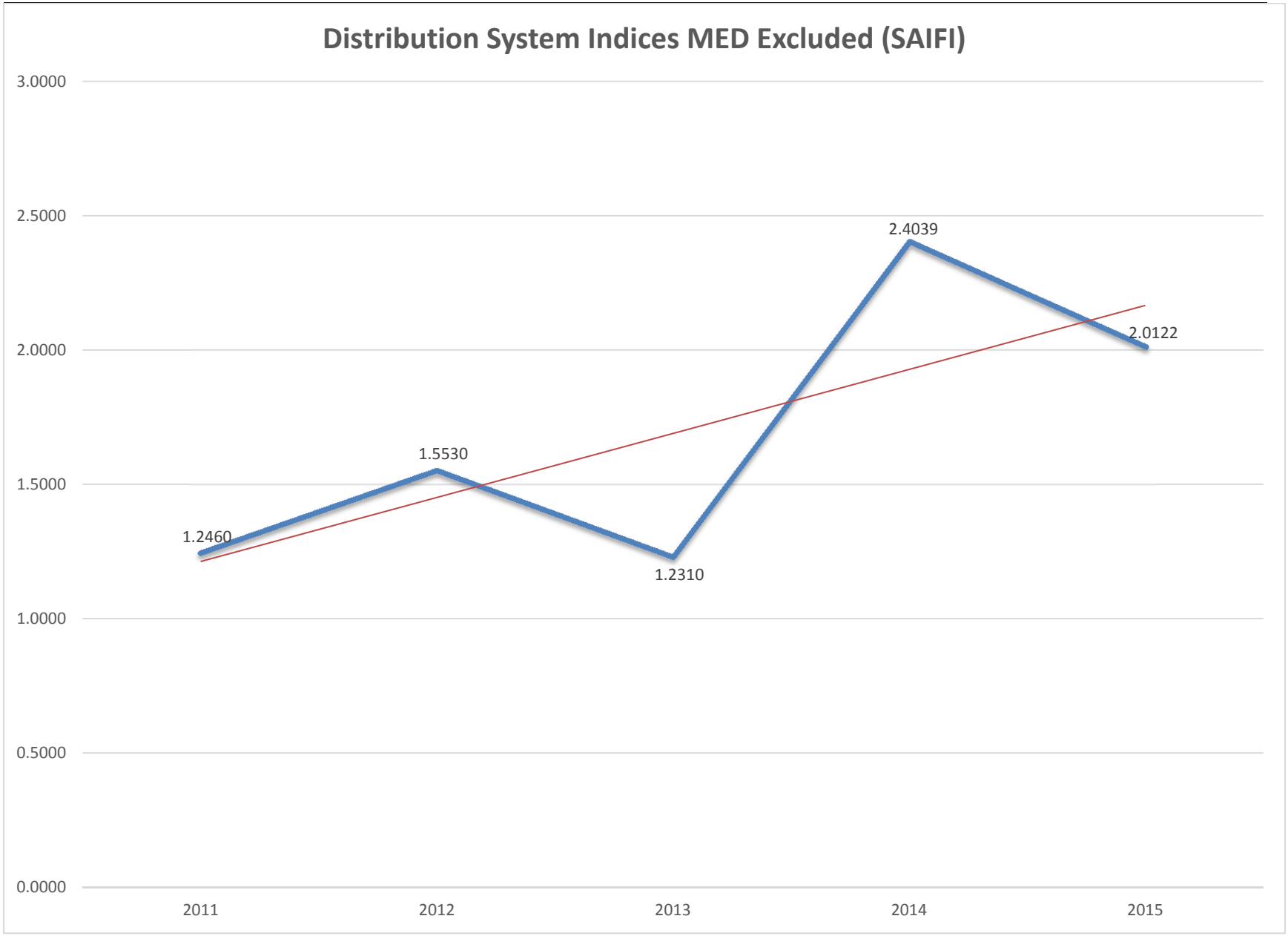

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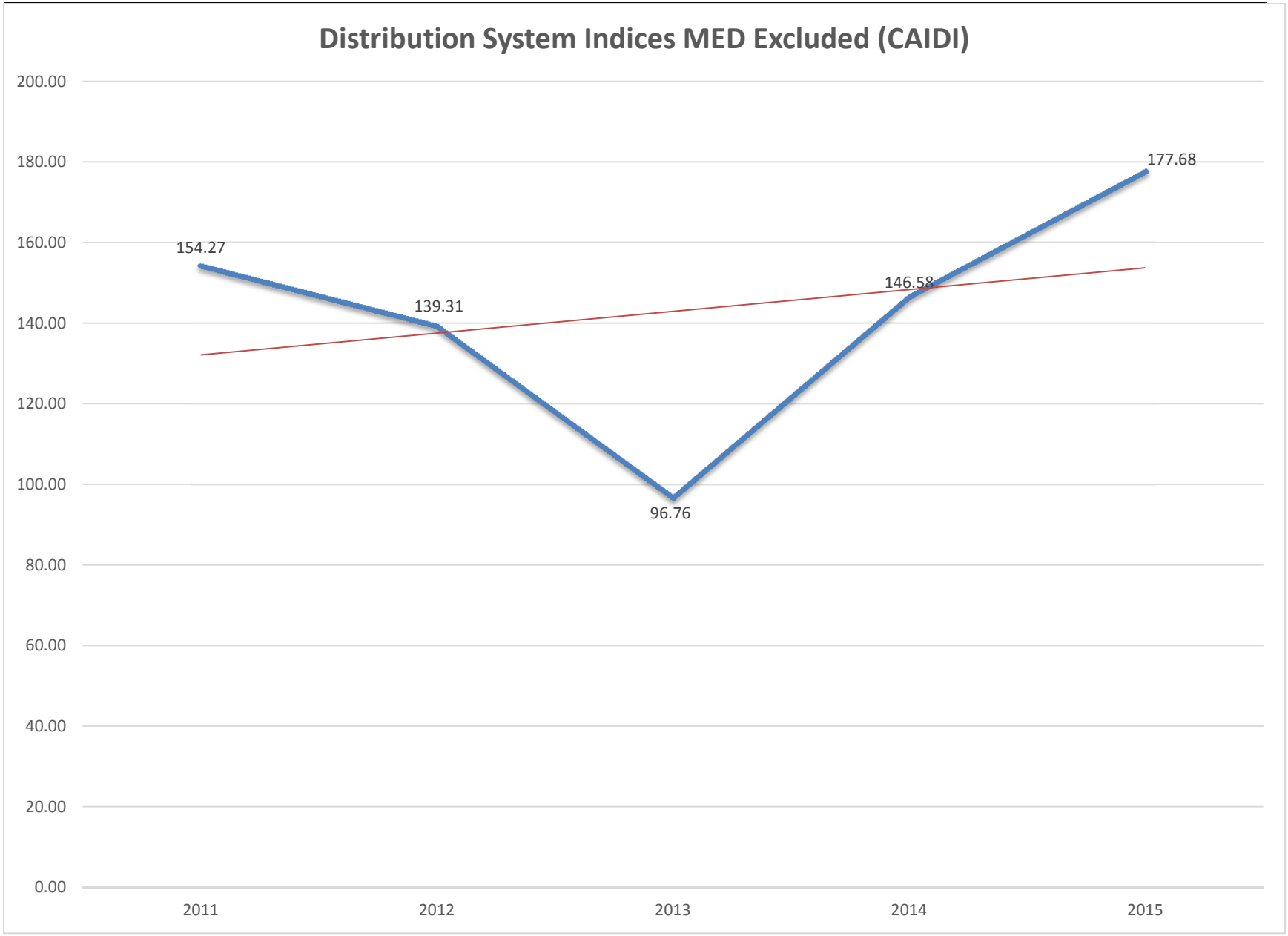

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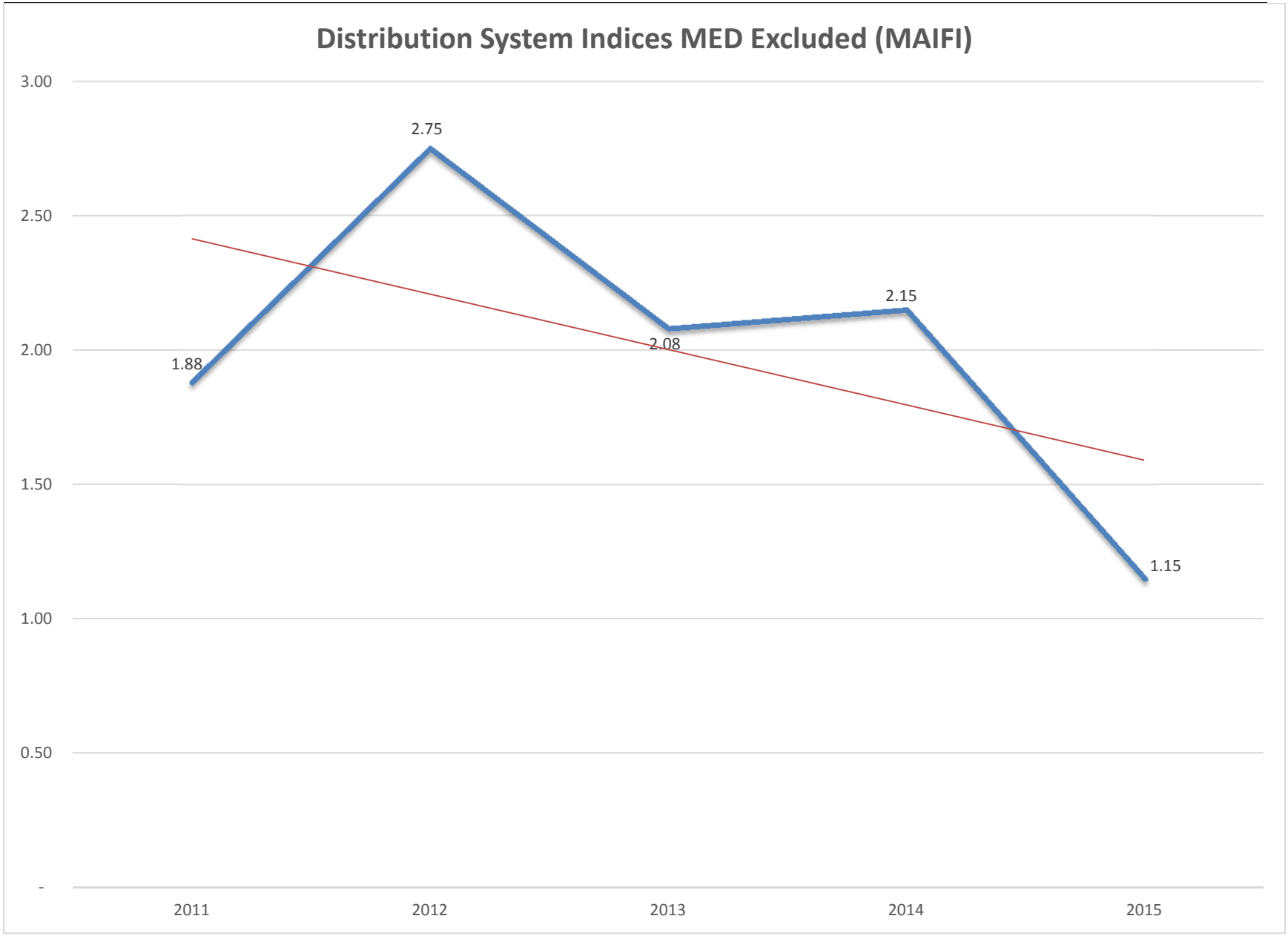

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2) Division (or District) Reliability Indices for the past 10 years

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

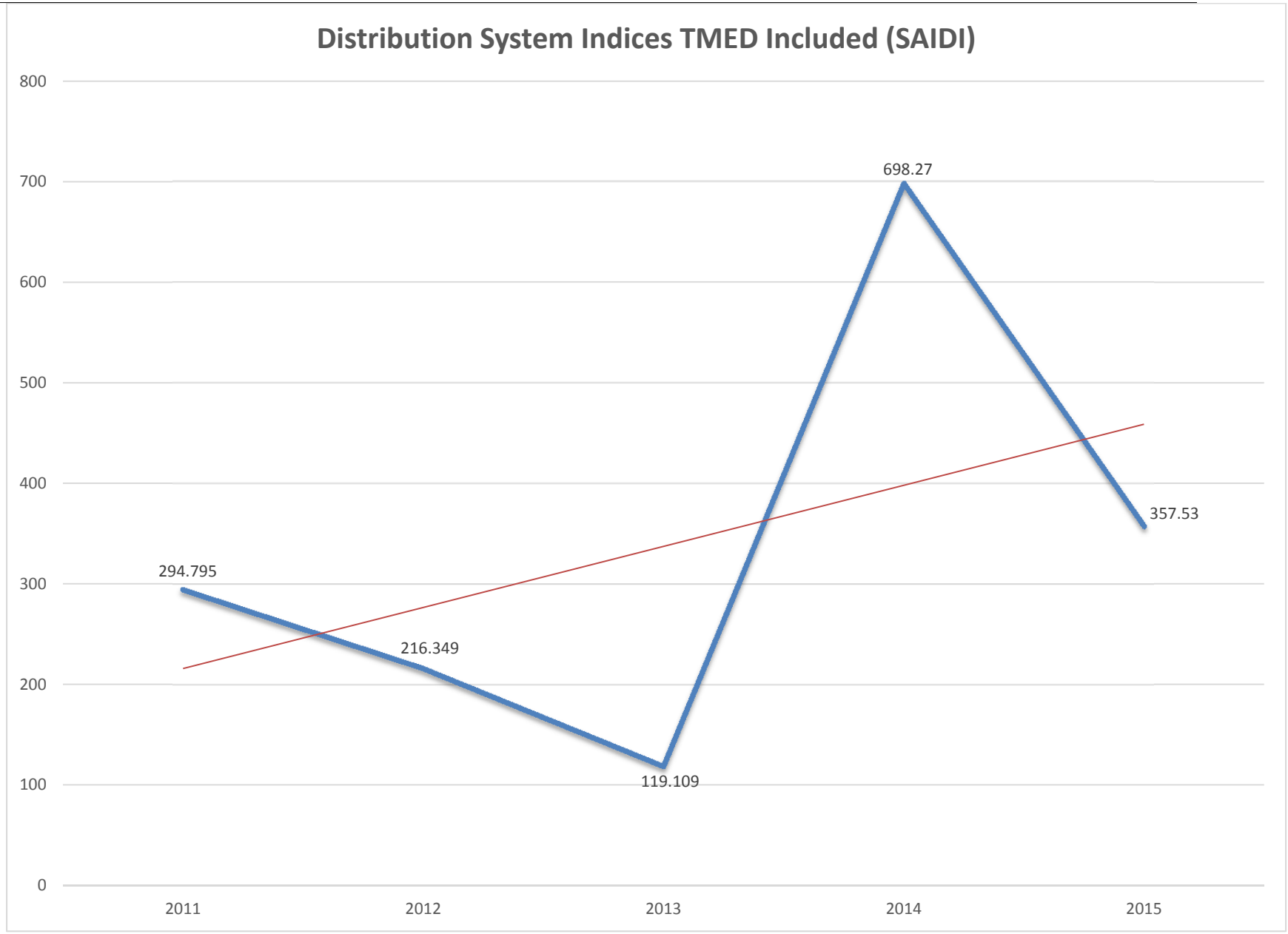
3) System and Division indices based on IEEE 1366 for the past 5 years including planned outages and including and excluding TMED

a. SAIDI, SAIFI, MAIFI, and CAIDI Data

Liberty Utilities (CalPeco Electric), LLC
Distribution Historical System Reliability Data 5 Years (Years in Business)

	TMED Included				TMED Excluded			
Year	SAIDI	SAIFI	CAIDI	MAIFI	SAIDI	SAIFI	CAIDI	MAIFI
2015	357.531	2.0122	177.68	1.15	207.868	1.7409	119.40	1.15
2014	698.273	3.6284	192.44	2.15	323.745	2.2384	144.63	2.15
2013	119.109	1.2311	96.75	2.08	119.168	1.2311	96.79	2.08
2012	216.349	1.5530	139.31	2.75	170.439	1.5490	110.03	2.75
2011	294.795	1.8130	162.60	1.88	147.351	1.3207	111.57	1.88

CalPeco Electric has been in business for 5 years and therefore does not have 10 years of data.



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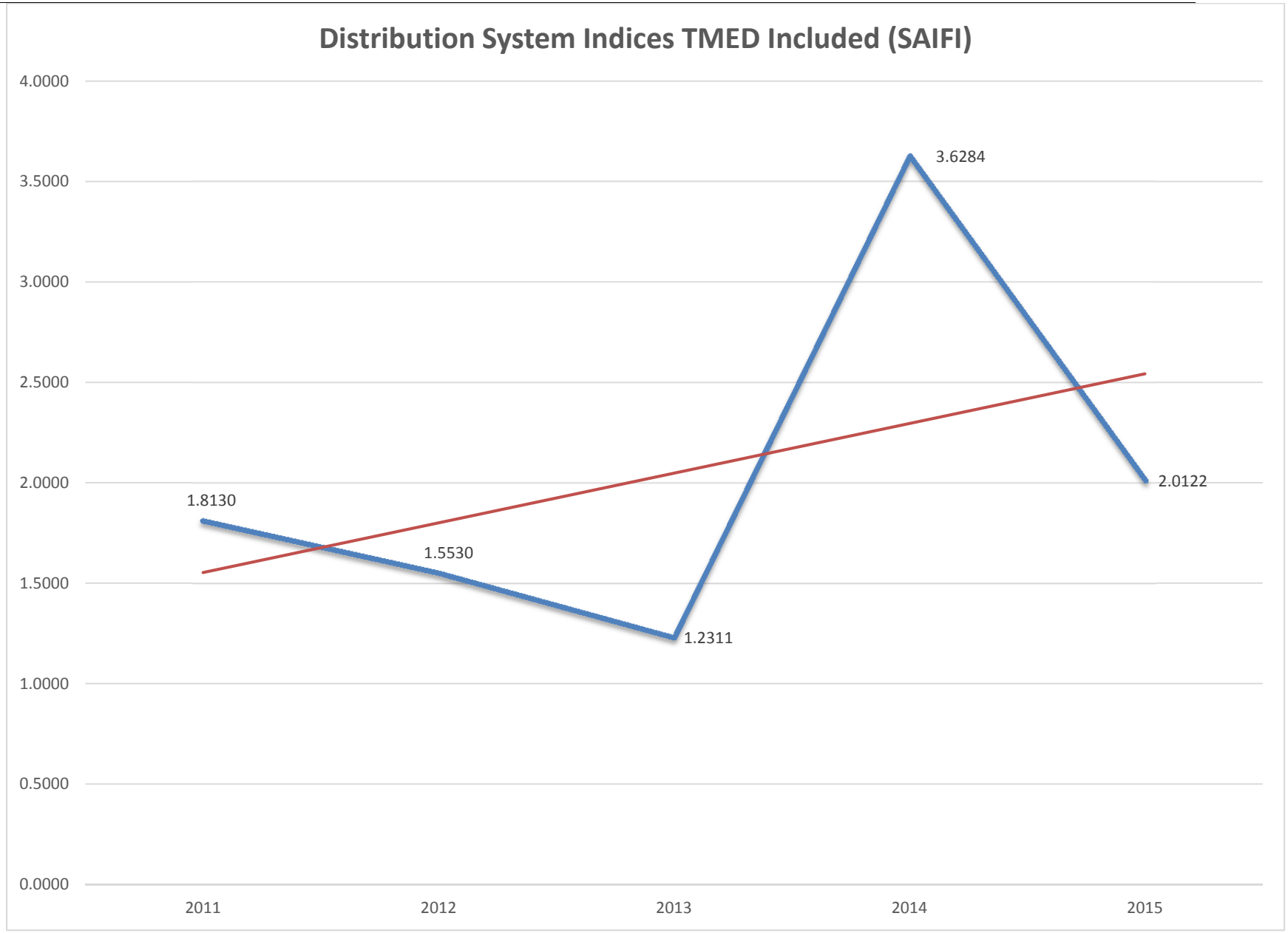

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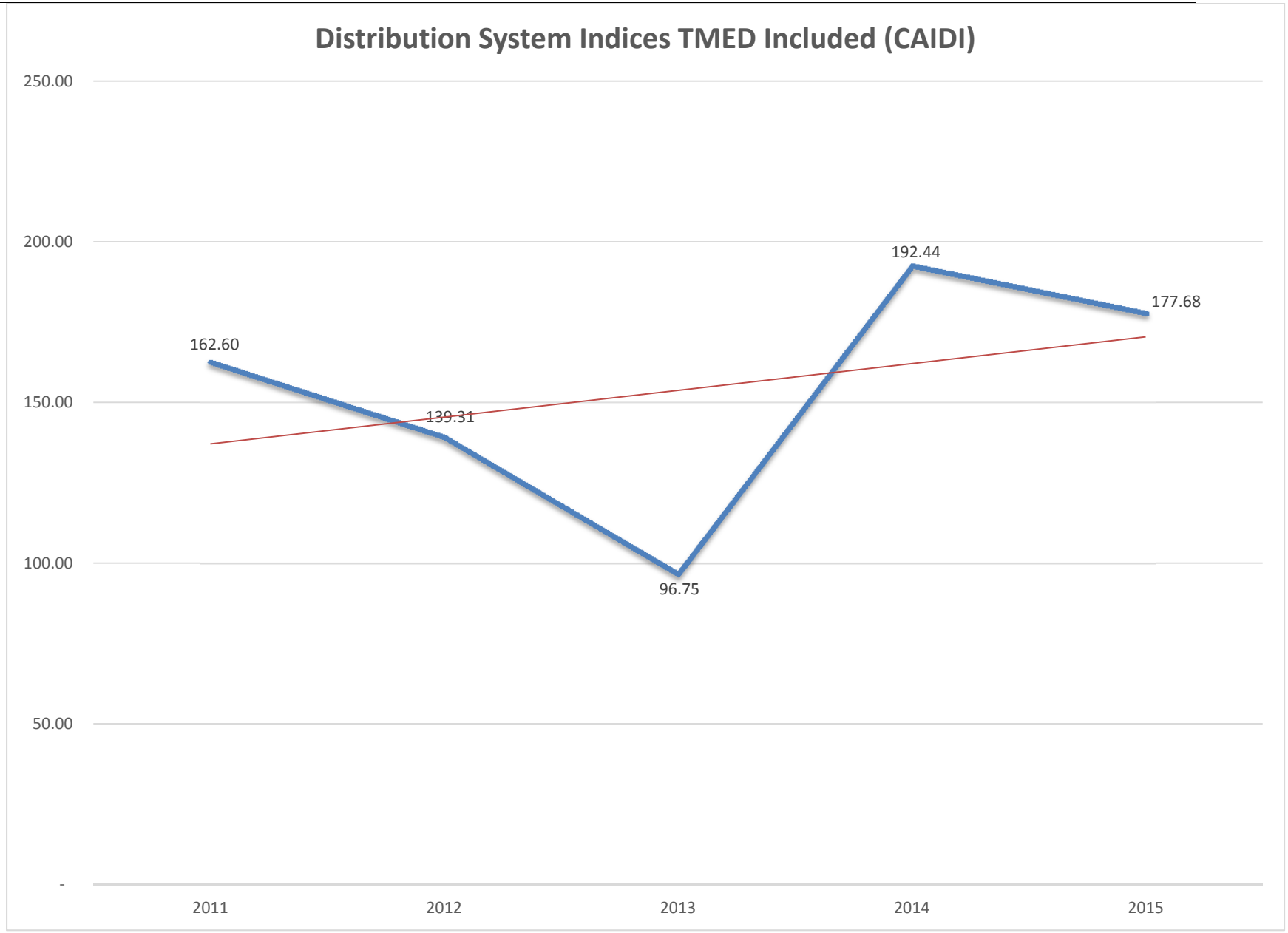

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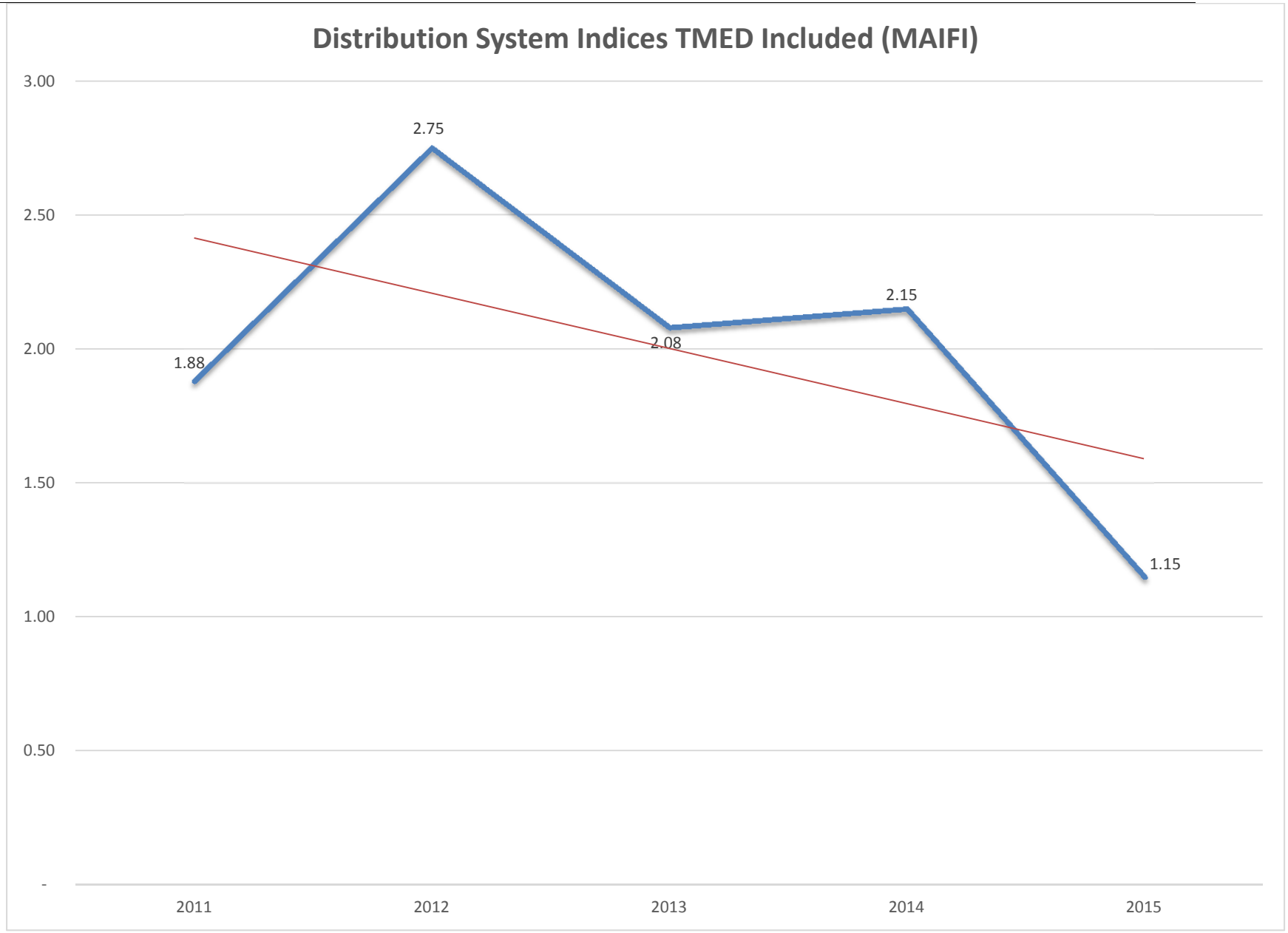

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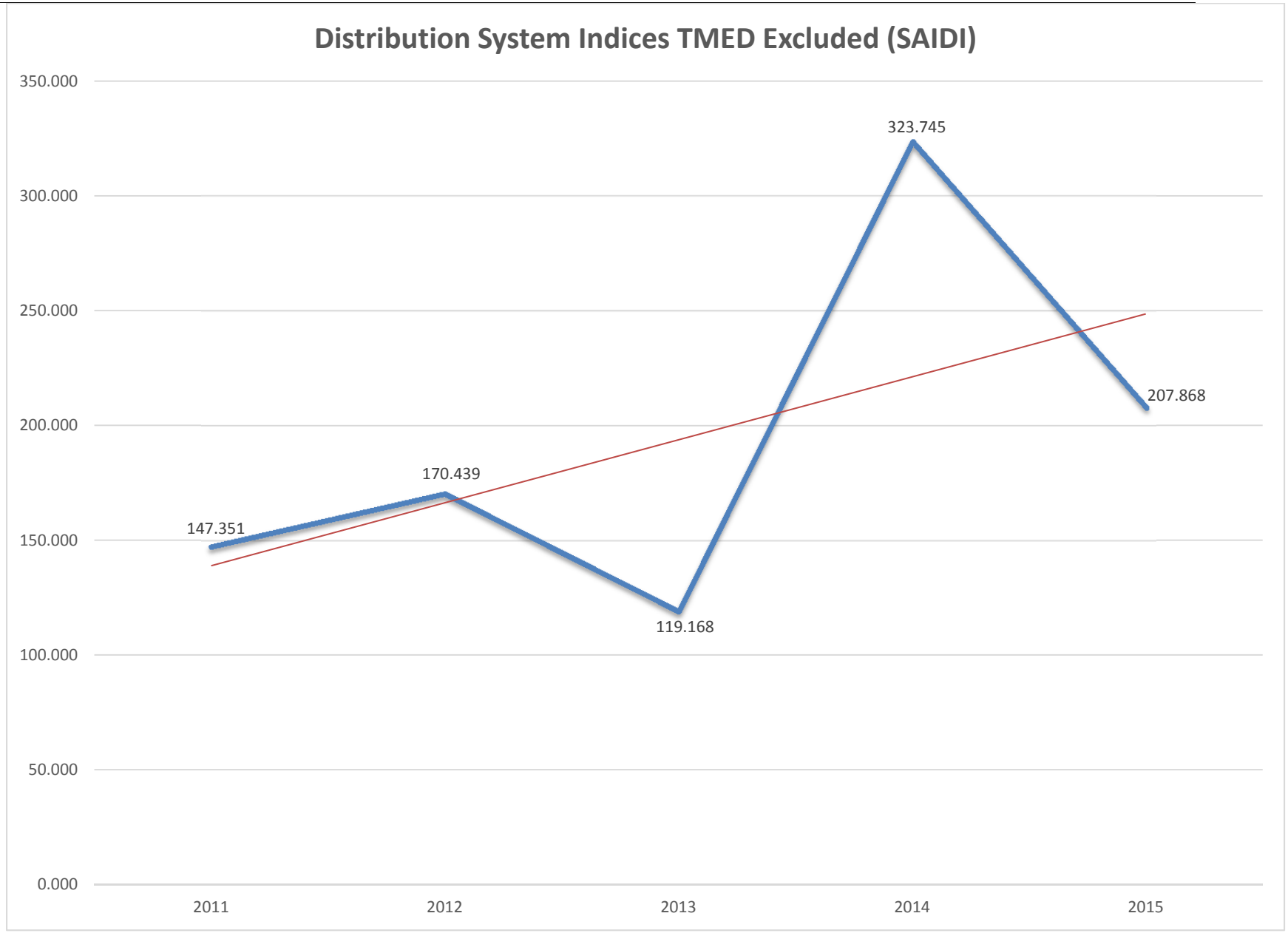

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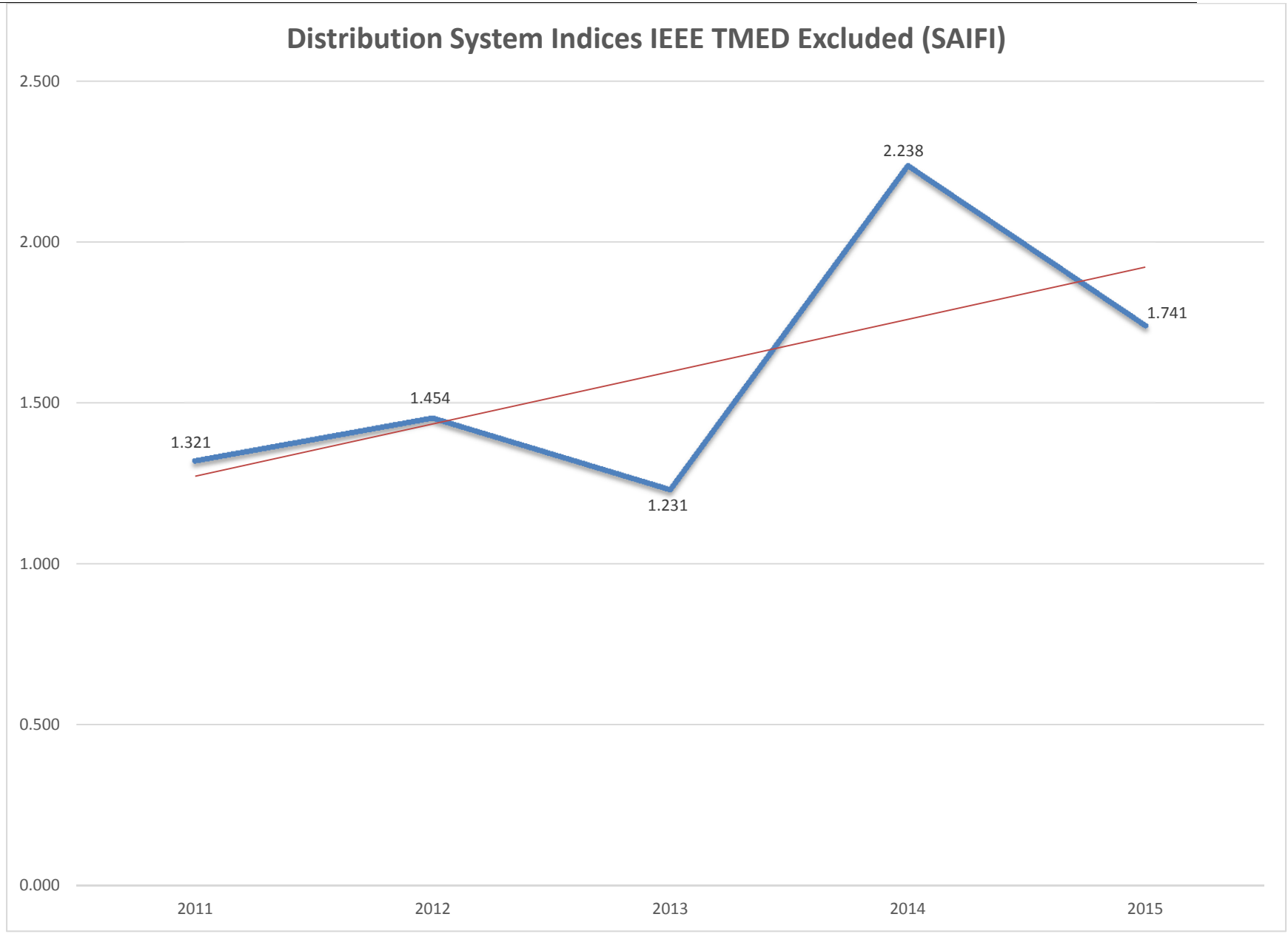

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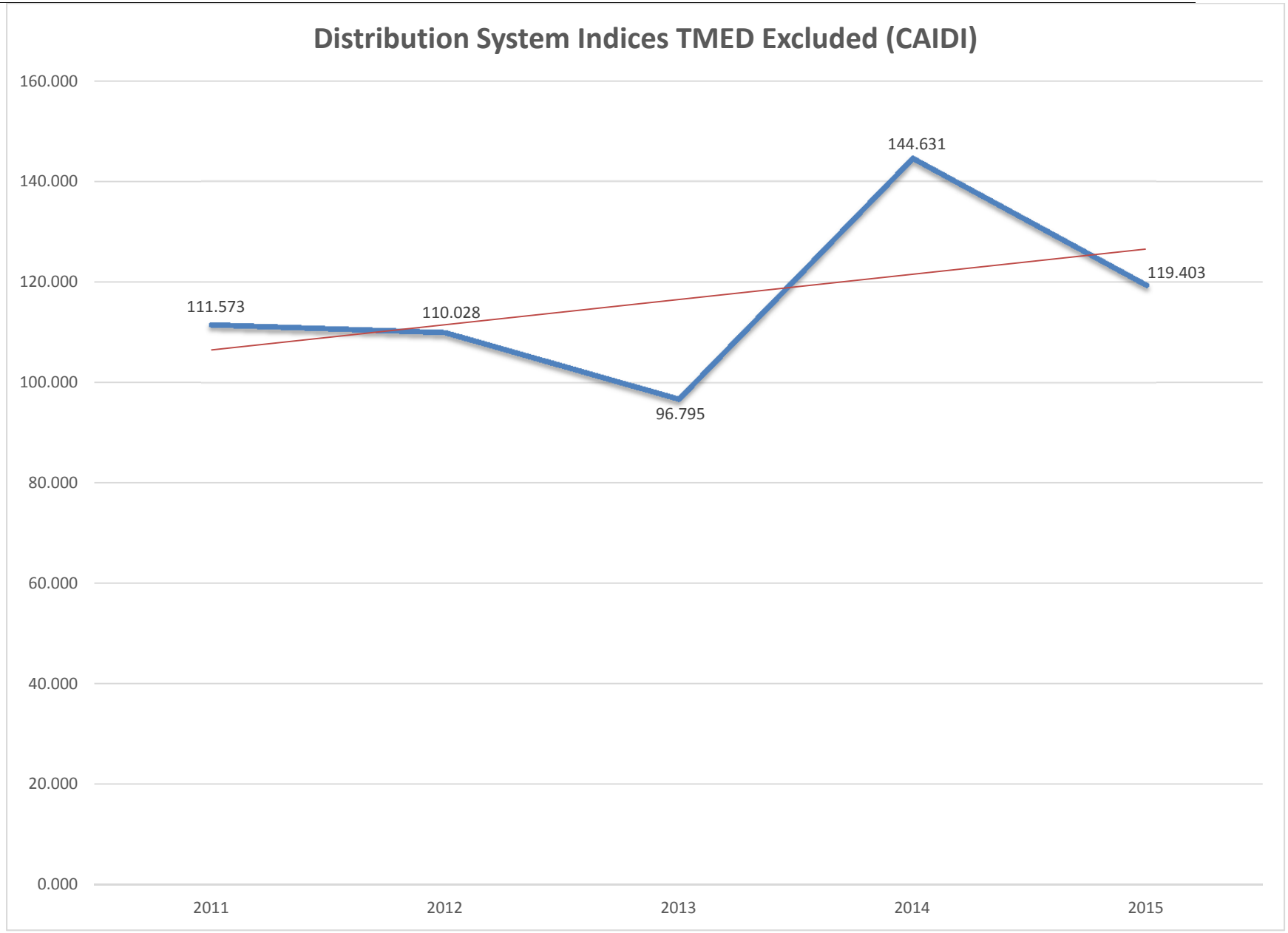

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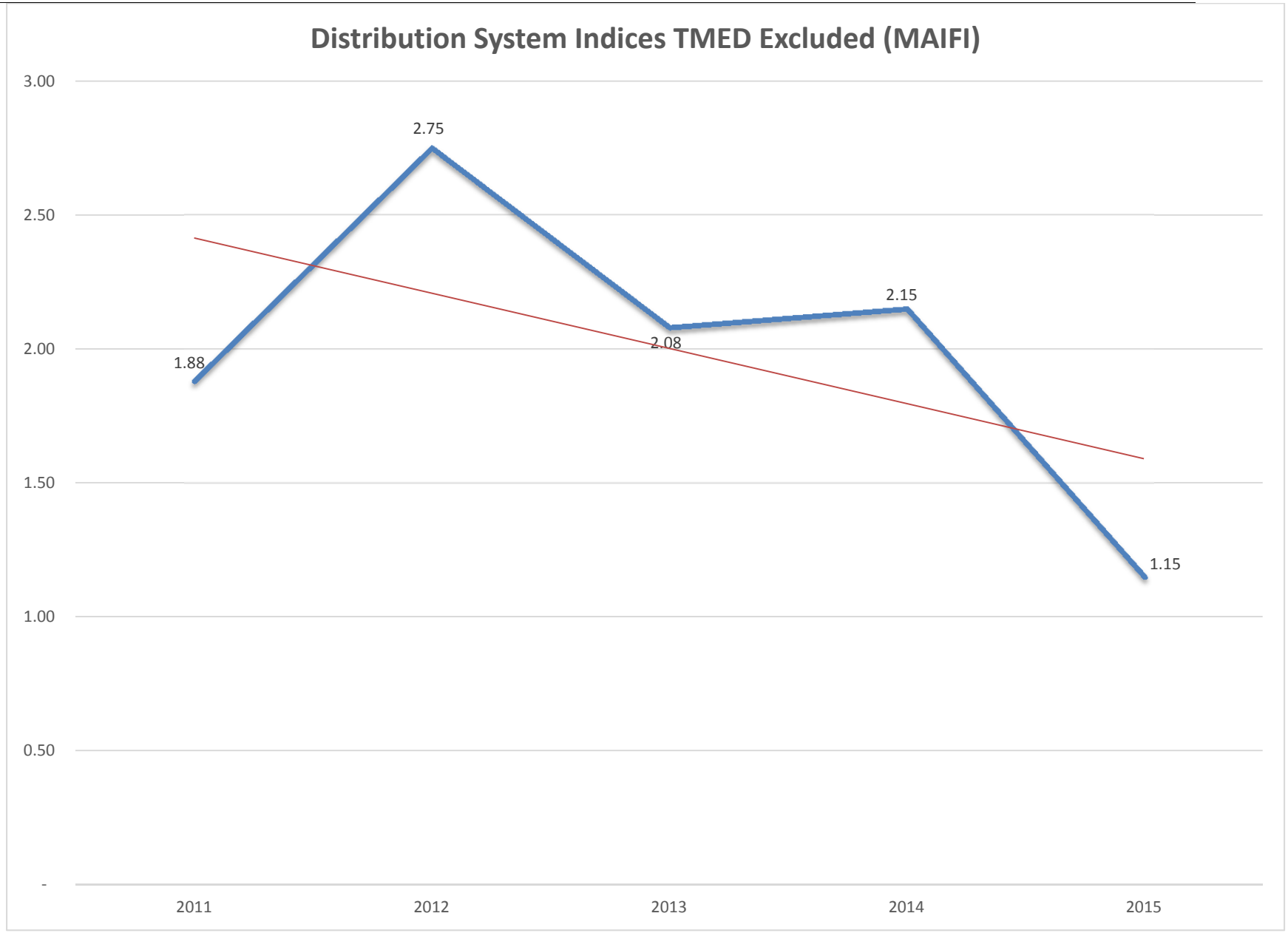

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b. The number, date, and location of planned outages

Circuit	District	Number of Planned Outages By Year				
		2015	2014	2013	2012	2011
[redacted]						

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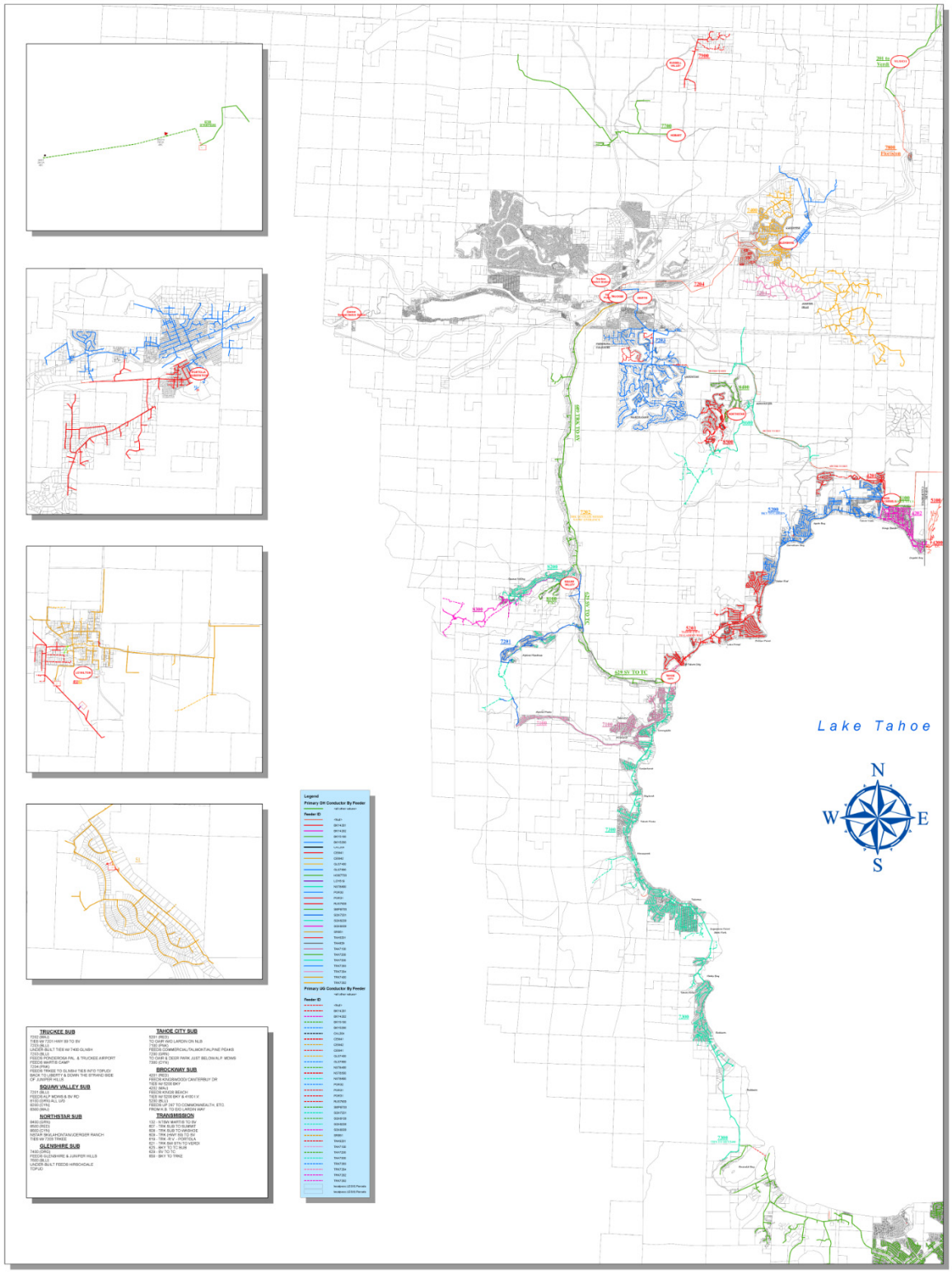
4) Service territory map including divisions of districts



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	*Circuit SAIDI	Circuit SAIFI
					OH	UG			
1261	Tahoe	744	Muller	75.5	90.7%	9.3%	3	3003	0.016
1296	Tahoe	622	Topaz	70.9	76.2%	23.8%	8	1065	0.016

Note: Preferred Metric is Circuit SAIDI

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.

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

CB- Circuit Breaker

AR- Automatic re-closer

<u>Assumptions</u>

- 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 2 Worst Performing Circuits (WPC) are determined based upon the calculated Circuit SAIDI. 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.

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 and Planning 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	4/25/2015	Trees / Snow Storm	Lake Tahoe	4,120	17.148	0.0951
2	2/14/2015	NV Energy Outage	Lake Tahoe	3,587	3.478	0.0828
3	12/11/2015	Wire Down	Lake Tahoe	3,587	23.895	0.0828
4	2/6/2015	Trees	Lake Tahoe	3,548	1.884	0.0819
5	8/11/2015	Line Maintenance Issue	Lake Tahoe	3,000	1.039	0.0693
6	2/20/2015	Switching	Lake Tahoe	3,000	2.285	0.0693
7	5/24/2015	NV Energy Outage: Birds/Animals	Lake Tahoe	3,000	17.092	0.0693
8	7/4/2015	NV Energy Outage: Lightning / Blow Fuse	Lake Tahoe	3,000	7.7575	0.0693
9	7/7/2015	NV Energy Outage: Lightning / Blow Fuse	Lake Tahoe	3,000	1.385	0.0693
10	7/7/2015	NV Energy Outage: Lightning / Blow Fuse	Lake Tahoe	3,000	0.416	0.0693

*Based on customer impact

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7) Summary list of 2015 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 2015 = 94.35

Date of Outage		**2/6/2015**								
Description of Outage		NV Energy Outage – High Winds			Trees – High Winds					
Location		Lake Tahoe (Truckee)	Lake Tahoe (Muller)	Lake Tahoe (Truckee)	Lake Tahoe (Tahoe City)	Lake Tahoe (Tahoe City)	Lake Tahoe (Meyers)	Lake Tahoe (Topaz)	Lake Tahoe (Portola)	Lake Tahoe (Truckee)
Total Number of Customers Out of Service		1,100	878	2,600	8	2,000	3,548	425	1,100	93
Customers Interrupted - Hours Into the Event Day *	**0**	1,100	878	2,600	8	2,000	3,548	425	1,100	93
	0.5	**150**	878	2,600	8	2,000		425	1,100	93
	1		878	2,600	8	2,000		425	1,100	93
	1.5		878	2,600	8	2,000		425	1,100	93
	2		878	2,600		2,000		425		93
	3		878	2,600		2,000		425		93
	3.5		878	2,600		2,000		425		93
	4		878	2,600		2,000		425		93
	4.5		878	2,600		2,000		425		93
	5		878	2,600		2,000		425		93

Date of Outage		**2/6/2015**								
Description of Outage		NV Energy Outage – High Winds			Trees – High Winds					
Location		Lake Tahoe (Truckee)	Lake Tahoe (Muller)	Lake Tahoe (Truckee)	Lake Tahoe (Tahoe City)	Lake Tahoe (Tahoe City)	Lake Tahoe (Meyers)	Lake Tahoe (Topaz)	Lake Tahoe (Portola)	Lake Tahoe (Truckee)
	5.5		878	2,600		2,000		425		93
	6		878	2,600		2,000		425		93
	6.5		878	2,600		2,000		425		93
	7		878	2,600		2,000		425		93
	7.5		878	2,600		1,500		425		93
	8			2,600		1,500		425		93
	8.5			2,600		1,500		425		93
	9			2,600		1,500		425		93
	9.5			2,600		1,500		425		93
	10			2,600		1,500		425		93
	10.5			2,600		1,500		425		93
	11			2,600				425		93
	11.5			2,600				425		93
	12			2,600				425		93
	12.5			2,600				425		93
	13			2,600				425		93
	13.5			2,600				425		93
	14			2,600				425		93
	14.5			2,600				425		93
	15			2,600				425		93
	15.5			2,600				425		93
	16			2,600				425		93
	16.5			2,600				425		93

Date of Outage		**2/6/2015**								
Description of Outage		NV Energy Outage – High Winds			Trees – High Winds					
Location		Lake Tahoe (Truckee)	Lake Tahoe (Muller)	Lake Tahoe (Truckee)	Lake Tahoe (Tahoe City)	Lake Tahoe (Tahoe City)	Lake Tahoe (Meyers)	Lake Tahoe (Topaz)	Lake Tahoe (Portola)	Lake Tahoe (Truckee)
	17			2,600				425		93
	17.5			2,600				425		93
	18			2,600				425		93
	18.5			2,600				425		93
	19			2,600				425		93
	19.5			2,600				425		93
	20			2,600				425		93
	20.5			2,600				425		93
	21			2,600				425		93
	21.5			2,600				425		93
	22			2,600				425		93
	22.5			2,600				425		93
	23			2,600				425		93
	23.5			2,600				425		93
	24			2,600				425		93
2/7/2015	**0.5**			2,600				425		93
	1			2,600				425		93
	1.5			2,600				425		93
	2			2,600				425		93
	2.5			2,600				425		93
	3			2,600				425		93
	3.5			2,600				425		93
	4			2,600				425		93

Date of Outage		**2/6/2015**								
Description of Outage		NV Energy Outage – High Winds			Trees – High Winds					
Location		Lake Tahoe (Truckee)	Lake Tahoe (Muller)	Lake Tahoe (Truckee)	Lake Tahoe (Tahoe City)	Lake Tahoe (Tahoe City)	Lake Tahoe (Meyers)	Lake Tahoe (Topaz)	Lake Tahoe (Portola)	Lake Tahoe (Truckee)
	4.5			2,600				425		93
	5			2,600				425		93
	5.5			2,600				425		93
	6			2,600				425		93
	6.5			2,600				425		93
	7			2,600				425		93
	7.5			2,600				425		93
	8			2,600				425		93
	8.5			2,600				425		93
	9			2,600				425		93
	9.5			2,600				425		93
	10			2,600				425		93
	10.5			2,600				425		93
	11			2,600				425		93
	11.5			2,600				425		93
	12							425		93
	12.5							425		93
	13							425		93
	13.5							425		93
	14							425		93
	14.5							425		93
	15							425		93
	15.5							425		93

Date of Outage		**2/6/2015**								
Description of Outage		NV Energy Outage – High Winds			Trees – High Winds					
Location		Lake Tahoe (Truckee)	Lake Tahoe (Muller)	Lake Tahoe (Truckee)	Lake Tahoe (Tahoe City)	Lake Tahoe (Tahoe City)	Lake Tahoe (Meyers)	Lake Tahoe (Topaz)	Lake Tahoe (Portola)	Lake Tahoe (Truckee)
	16							425		93
	16.5							425		93
	17							425		93
	17.5							425		
	18							425		
	18.5							425		
	19							425		
	19.5							425		
	20							425		
	20.5							425		
	21							425		
	21.5							425		
	22							425		
	22.5							425		
	23							425		
	23.5							6		
	24							6		
2/8/2015	**0.5**							6		
	1							6		
	2							6		
	3							6		
	4							6		
	5							6		

Date of Outage		**2/6/2015**								
Description of Outage		NV Energy Outage – High Winds			Trees – High Winds					
Location		Lake Tahoe (Truckee)	Lake Tahoe (Muller)	Lake Tahoe (Truckee)	Lake Tahoe (Tahoe City)	Lake Tahoe (Tahoe City)	Lake Tahoe (Meyers)	Lake Tahoe (Topaz)	Lake Tahoe (Portola)	Lake Tahoe (Truckee)
	6							6		
	7							6		
	8							6		
	9							6		
	10							6		
	11							6		
	12							6		
	13							6		
	14							6		
	15							6		
	16							6		
	17							6		
	18							6		
	19							6		
	20							6		
	21							6		
	22							6		
	23							6		
	24							6		
2/9/2015	**1**							6		
	2							6		
	3							6		
	4							6		

Date of Outage		**2/6/2015**								
Description of Outage		NV Energy Outage – High Winds			Trees – High Winds					
Location		Lake Tahoe (Truckee)	Lake Tahoe (Muller)	Lake Tahoe (Truckee)	Lake Tahoe (Tahoe City)	Lake Tahoe (Tahoe City)	Lake Tahoe (Meyers)	Lake Tahoe (Topaz)	Lake Tahoe (Portola)	Lake Tahoe (Truckee)
	5							6		
	6							6		
	7							6		

* Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

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

*Based on Customers Affected

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
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	2.0	5,600.00	No
8	Weather/Lightning	7/7/2015	3,000	0.25	1,000.00	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers -hours affected	CPUC Major Event?
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	5.0	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	8.5	4,412.50	No
5	Trees	3/14/2013	3,315	0.30	1,049.75	No
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

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

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers -hours affected	CPUC Major Event?
1	NV Energy Outage	5/9/2011	24,550	3.02	74,059.17	Yes
2	Relays	2/17/2011	8,005	3.40	12,738.90	No
3	Overcurrent	3/20/2011	4,396	0.98	4,396.00	No
4	Trees	5/25/2011	4,120	10.23	21,658.83	No
5	Trees	11/18/2011	4,120	21.50	15,792.33	No

Rank	Description	Date	Customers Affected	Longest Interruption (hours)	Customers -hours affected	CPUC Major Event?
6	Lateral Fuse	3/16/2011	3,957	2.96	11,739.10	No
7	Bird/Animal	9/24/2011	3,885	0.25	769.50	No
8	Hardware Failure	9/12/2011	3,475	1.12	2,780.42	No
9	Relays	1/25/2011	3,201	1.68	5,388.35	No
10	Trees	6/29/2011	3,200	4.35	11,786.67	No

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

There have been zero customer inquiries on reliability data to date.

Appendix A: 5 Years of Planned Outage Data -- PUBLIC VERSION --