

# ANNUAL SYSTEM RELIABILITY REPORT



2015

PREPARED FOR CALIFORNIA PUBLIC UTILITIES  
COMMISSION

**SUMMARY**

The following information contained in this report is for the 2015 Southern California Edison (SCE) reliability information as required by Decision 16-01-008.<sup>1</sup> The information contained in this report is generated from our Outage Database and Reliability Metrics (ODRM) system. The ODRM system was implemented in 2006. Historical data prior to 2006 were maintained in DTOM (Distribution Transmission Outage Menu) system. The data contained in this report are based on reliability indicators, definitions and calculations as defined below.

**Major Event Day:** A day in which the daily system SAIDI exceeds a threshold value. For the purposes of calculating daily system SAIDI, any interruption that spans multiple calendar days is accrued to the day on which the interruption began. Statistically, days having a daily system SAIDI greater than a threshold value are days on which the energy delivery system experienced stresses beyond that normally expected (such as severe weather). Events are excluded based on the “2.5 beta method”. Per IEEE Standard 1366, days are excluded from a given year’s metric if their SAIDI exceeds 2.5 times the standard deviation of the natural logarithm of daily SAIDI over the previous five year period.

**ODRM:** Outage Database and Reliability Metrics

**OMS:** Outage Management System

**Sustained Interruption:** Outage lasting longer than 5 minutes as defined in IEEE Std. 1366-2003

**Momentary Interruption:** Outage lasting 5 minutes or less as defined in IEEE Std. 1366-2003

**SAIDI:** The System Average Interruption Duration Index is the amount of time on average a customer was without power in a year due to sustained interruptions (measured in minutes per customer)

$$SAIDI = \frac{\text{sum of all "sustained" customer interruption durations}}{\text{total number of customers served}}$$

**SAIFI:** The System Average Interruption Frequency Index is the number of times an average customer was without power in a year due to service interruptions lasting more than 5 minutes (measured in interruptions per customer)

$$SAIFI = \frac{\text{sum of total quantity of "sustained" customer interruptions}}{\text{total number of customers served}}$$

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<sup>1</sup> The decision required the report by July 15, 2016. By letter dated July 14, 2016, the Commission’s Executive Director granted the requests of SCE, Pacific Gas and Electric Company, and San Diego Gas & Electric Company for a one month extension.

**MAIFI:** The Momentary Average Interruption Frequency Index is the number of times an average customer was without power in a year due to service interruptions lasting 5 minutes or less (measured in interruptions per customer)

$$\text{MAIFI} = \frac{\text{sum of total quantity of "momentary" customer interruptions}}{\text{total number of customers served}}$$

**Tmed:** The calculated threshold value used to determine a Major Event Day. SCE's Tmed value is calculated at the beginning of each year using SCE's daily SAIDI values for the prior 5 years. SCE's Tmed value for 2015 was 1.736.

In years 2006 - 2010, SAIDI, SAIFI, and MAIFI were calculated per IEEE 1366 with the exception of using five years of historical data in applying the "2.5 beta method" to determine excludable days. Per IEEE 1366, days are excluded from a given year's metric if their SAIDI exceeds 2.5 times the standard deviation of the natural logarithm of daily SAIDI over the previous five-year period. However, complete ODRM data did not exist prior to 2006. Therefore, excludable days for years 2006 and 2007 were both determined based on daily SAIDI data in year 2006. Excludable days for 2008 were determined based on daily SAIDI data in years 2006 and 2007. Excludable days for 2009 were determined based on daily SAIDI data in years 2006, 2007, and 2008. Excludable days for 2010 were determined based on daily SAIDI data in years 2006, 2007, 2008, and 2009. This interim approach is consistent with IEEE 1366.

A summary of the 2015 Performance is as follows:

YEAR	Total System Indices (All Interruptions Included)				Total System Indices (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2015	114.83	0.92	1.42	125.40	100.15	0.86	1.29	116.56
10 Year Avg (2006-2015)	132.91	0.99	1.54	134.55	96.45	0.87	1.36	110.48

The IEEE Major Event Days that were declared in 2015 are shown in the following table:

No.	Date	Event Cause	Excluded per IEEE 1366	SAIDI	SAIFI	Sustained Customer Impact	MAIFI	Momentary Customer Impact
1	07/15/2015	Outages on secondary network	Y	3.987	0.002	10,302	0.004	19,525
2	07/18/2015	Lightning Storm, Repair	Y	2.355	0.014	68,781	0.045	227,709
3	09/09/2015	Broken Pole, Storm	Y	2.107	0.008	38,637	0.018	90,768
4	10/15/2015	Lightning Storm	Y	3.625	0.020	99,628	0.039	197,201
5	12/26/2015	Wind Storm	Y	2.601	0.013	67,094	0.022	110,973
	<b>Total</b>		<b>5</b>	<b>14.675</b>	<b>0.057</b>	<b>284,442</b>	<b>0.128</b>	<b>646,176</b>

The Table of Contents below lists the information that is contained in this report.

<b>Section</b>	<b>NAME</b>	<b>DESCRIPTION</b>
1a	System Indices for the Last 10 Years	2006 - 2015 System SAIDI, SAIFI, MAIFI, and CAIDI with MED Included and Excluded. (Tables) Both Distribution and Transmission.
1b	System Indices for the Last 10 Years	2006 - 2015 System SAIDI, SAIFI, MAIFI and CAIDI Linear trend Chart (MED Excluded) (Charts) Both Distribution and Transmission.
2a	District Reliability Indices for the past 10 years Including and Excluding MED	2006 - 2015 District SAIDI, SAIFI, MAIFI and CAIDI including and excluding MED (Tables)
2b	District Reliability Indices for the past 10 years Including and Excluding MED	2006 - 2015 District SAIDI, SAIFI, MAIFI and CAIDI Linear trend Chart (Charts)
3a	System Indices for the Last 10 Years (With Planned)	2006 - 2015 District SAIDI, SAIFI, MAIFI and CAIDI Including Planned Outages (No planned data available, Same as Section 2a)
3b	System Indices for the Last 10 Years (With Planned)	2006 - 2015 District SAIDI, SAIFI, MAIFI and CAIDI Including Planned Outages Linear trend Chart (No planned data available, Same as Section 2b)
4	Service Territory Map including Districts	Service Territory Map including Districts
5	Top 1% of Worst Performing Circuits (WPC) excluding Major Event Day (MED)	Top 1% of Work Performing Circuits (WPC) excluding Major Event Day (MED)
6	Top 10 major unplanned outage events within a Reporting Year	2015 Top 10 Major Events
7	2015 Summary List of MED per IEEE 1366	Customers w/o Service on MEDs by Outage Duration, the cause and location of Major Events.
8	Historical Ten Largest Unplanned Outage Events for the past 10 Years	Top 10 Major unplanned power outage events for the past 2006-2015
9	The number of customer inquiries on reliability data and the number of days per response	Total customer inquiries for 2015 and the number of response days

## SECTION 1 – System Indices for the Last 10 Years

- a) The calculations contained in the following table are based on the IEEE 1366 method for Major Event Days (MED). Reliability indices are for unplanned outages only. Data captured in the tables below include and exclude MED.

**Table 1 – System Indices<sup>1</sup> (2006-2015)**

YEAR	Total System Indices (All Interruptions Included)				Total System Indices (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2006	142.14	1.05	1.85	135.75	96.59	0.89	1.52	109.03
2007	151.32	1.10	1.74	137.22	85.34	0.88	1.37	97.32
2008	118.91	1.06	1.73	112.33	99.35	0.95	1.56	104.05
2009	105.80	0.90	1.45	117.58	88.77	0.83	1.31	107.17
2010	140.91	1.05	1.69	134.56	98.69	0.82	1.41	120.99
2011	232.39	1.04	1.53	223.75	108.15	0.91	1.36	118.30
2012	108.13	0.89	1.43	121.10	100.70	0.86	1.35	117.76
2013	102.61	0.91	1.20	112.76	94.48	0.88	1.18	107.85
2014	112.10	0.97	1.36	116.04	92.30	0.86	1.23	106.82
2015	114.83	0.92	1.42	125.40	100.15	0.86	1.29	116.56

**Table 2 – Distribution<sup>2</sup> Indices (2006-2015)**

YEAR	Distribution Indices (<50KV) (All Interruptions Included)				Distribution Indices (<50KV) (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2006	138.72	0.99	1.66	140.81	93.73	0.83	1.37	112.73
2007	149.00	1.08	1.69	137.70	85.04	0.87	1.34	98.27
2008	117.05	1.02	1.65	114.62	97.48	0.92	1.48	106.25
2009	103.95	0.84	1.40	123.71	87.12	0.77	1.27	112.85
2010	139.01	1.01	1.61	138.12	97.52	0.79	1.34	124.04
2011	228.08	0.98	1.47	233.02	105.64	0.86	1.31	122.59
2012	105.58	0.88	1.35	120.63	98.30	0.84	1.28	117.06
2013	94.33	0.86	1.14	109.27	92.52	0.85	1.12	108.46
2014	111.08	0.94	1.29	117.64	91.52	0.84	1.17	108.52
2015	111.87	0.88	1.35	127.54	98.34	0.83	1.24	118.88

<sup>1</sup> Please note that in 2015, SCE discovered that a query used to extract outages from our Outage Management System had not identified all reportable outages in 2014. SCE has conducted an assessment of the 2014 outages that were not reported and have calculated the impact on SAIDI, SAIFI, MAIFI and CAIDI. The 2014 system indices have been updated with the new numbers and only reflect a minor impact to the 2014 numbers.

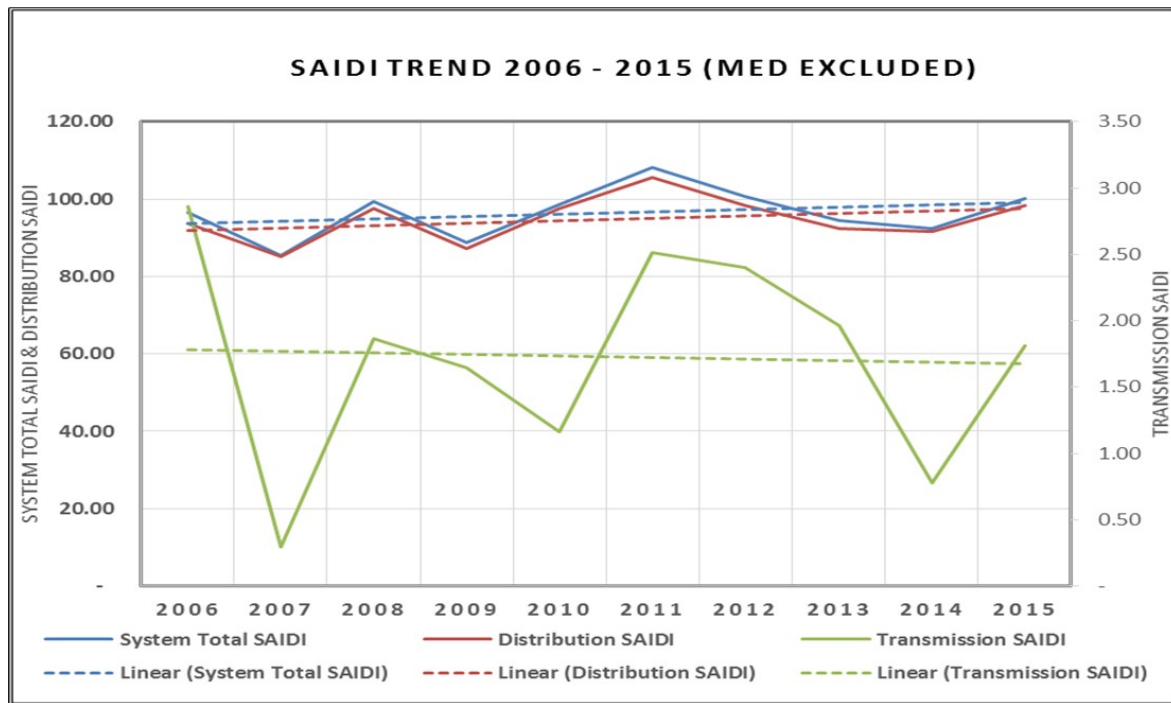
<sup>2</sup> Distribution system outages are defined as outages that are <50kV

**Table 3 – Transmission<sup>3</sup> Indices (2006-2015)**

YEAR	Transmission Indices (>=50 KV) (All Interruptions Included)				Transmission Indices (>=50KV) (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2006	3.42	0.06	0.19	55.23	2.86	0.05	0.15	52.57
2007	2.32	0.02	0.04	112.08	0.30	0.01	0.04	25.75
2008	1.87	0.04	0.09	49.92	1.87	0.04	0.08	49.95
2009	1.85	0.06	0.05	31.08	1.65	0.06	0.05	29.27
2010	1.90	0.04	0.08	46.64	1.16	0.03	0.07	39.54
2011	4.31	0.06	0.07	72.06	2.51	0.05	0.06	47.91
2012	2.56	0.02	0.08	143.93	2.40	0.02	0.07	155.92
2013	8.29	0.05	0.06	177.25	1.97	0.02	0.05	85.29
2014	1.02	0.02	0.07	46.82	0.78	0.02	0.06	37.50
2015	2.96	0.04	0.07	76.68	1.82	0.03	0.05	56.75

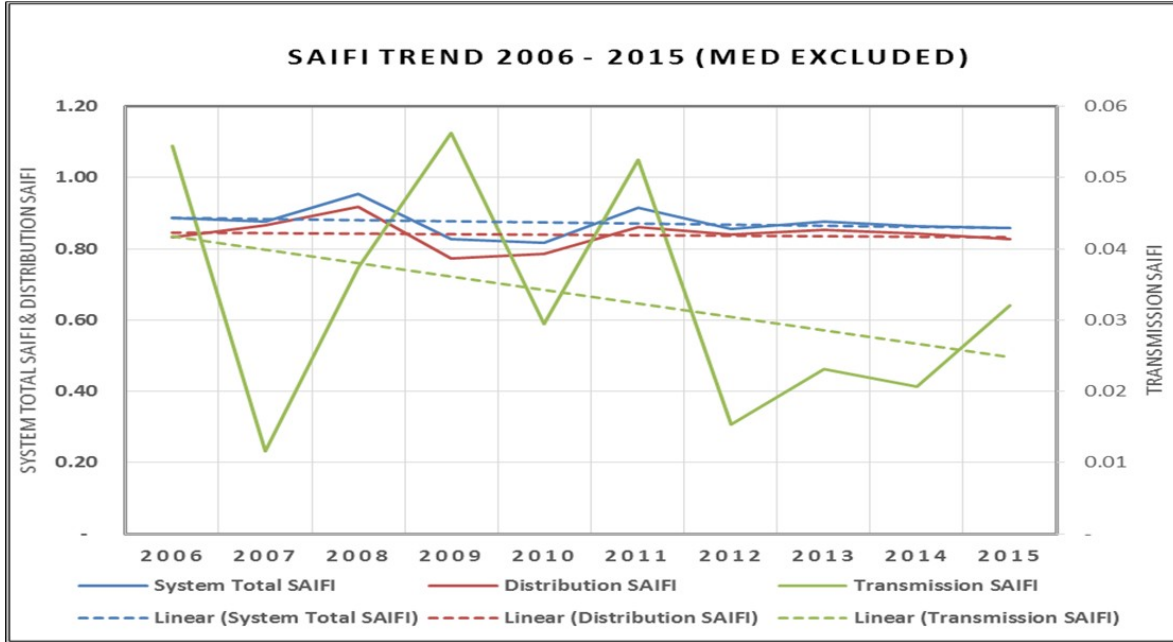
b) The linear charts below shows the past 10 years of SAIDI, SAIFI, MAIFI and CAIDI (MED excluded)

**Chart 1**

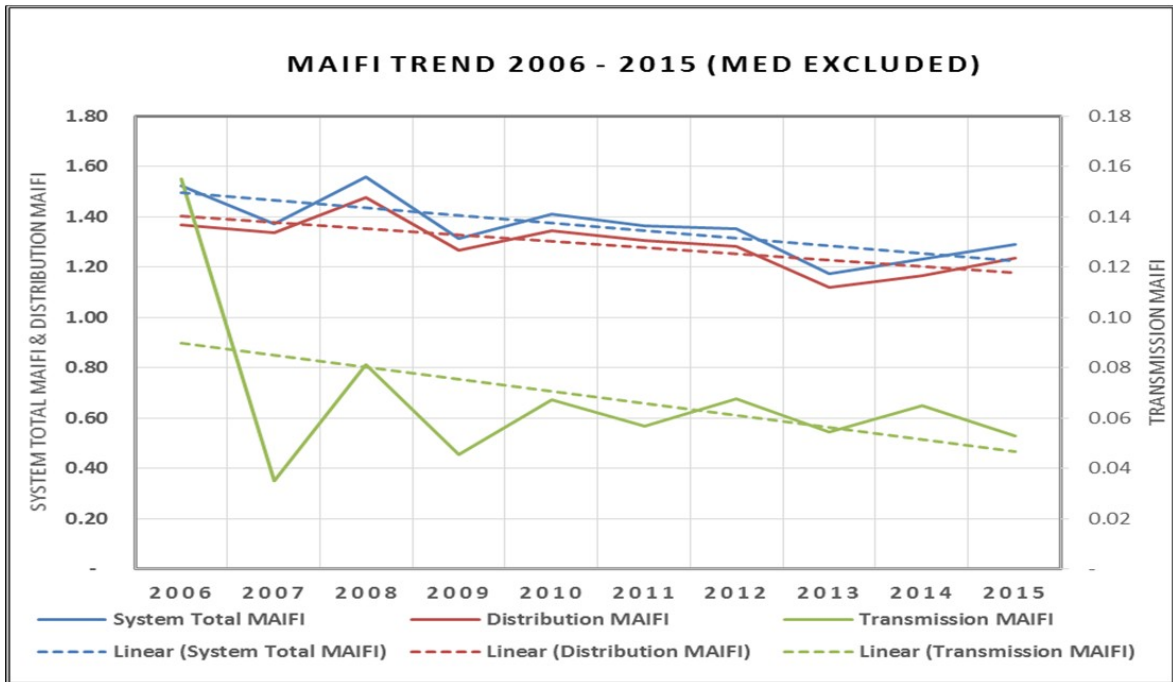


<sup>3</sup> Transmission system outages are defined as outages  $\geq 50$ kV.

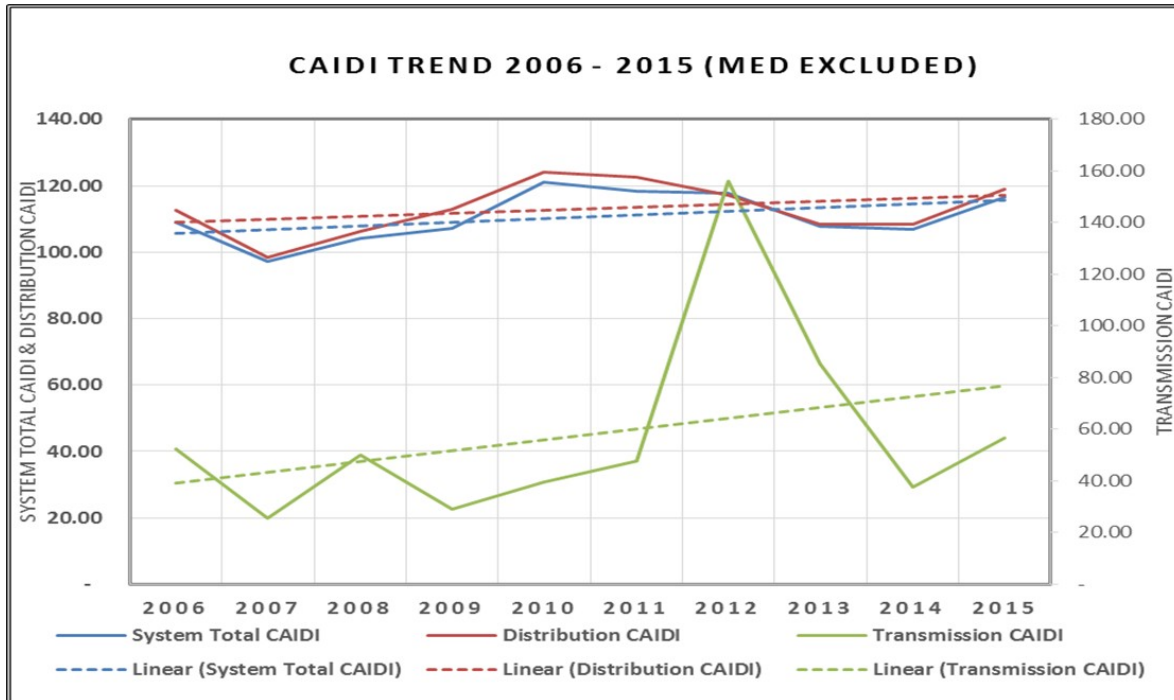
**Chart 2**



**Chart 3**



**Chart 4**





## **SECTION 2 – District Reliability Indices for the past 10 years Including and Excluding MED**

- a) SCE territory is broken out by Districts and in total, SCE has 35 districts. The tables below capture SAIDI<sup>4</sup>, SAIFI, MAIFI and CAIDI for the past 10 years for all 35 districts. The districts are listed in alphabetical order.

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<sup>4</sup> dSAIDI, dSAIFI, dMAIFI and dCAIDI are calculated utilizing the indices calculation and replacing the total number of customers served with the total number of customers for that district.



## 2006 - 2015 District Reliability

## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>ANTELOPE VALLEY</b>								
2006	110.400	1.031	2.833	107.044	66.348	0.770	2.277	86.155
2007	114.501	0.928	2.011	123.364	64.760	0.658	1.506	98.395
2008	92.185	0.956	2.414	96.458	76.570	0.825	2.124	92.802
2009	71.229	0.516	1.631	137.979	68.386	0.492	1.473	139.019
2010	131.063	0.773	2.022	169.484	74.576	0.524	1.321	142.319
2011	208.159	1.247	1.669	166.965	128.137	1.144	1.595	111.981
2012	78.604	0.565	1.428	139.172	76.461	0.549	1.412	139.354
2013	94.416	0.619	1.172	152.621	94.222	0.613	1.166	153.772
2014	50.956	0.593	1.153	85.927	45.595	0.548	1.070	83.156
2015	104.337	0.680	1.838	153.528	70.206	0.601	1.514	116.783
<b>ARROWHEAD</b>								
2006	514.801	2.911	6.881	176.837	221.031	1.957	6.262	112.923
2007	2892.980	2.847	3.221	1016.258	111.494	2.102	2.459	53.043
2008	1239.362	5.427	11.469	228.387	475.902	3.642	6.678	130.682
2009	534.083	3.406	7.385	156.795	440.132	2.842	4.674	154.893
2010	537.400	3.841	18.875	139.895	229.659	1.974	16.782	116.369
2011	792.792	4.403	6.090	180.074	444.698	2.992	5.736	148.605
2012	129.579	1.307	3.972	99.116	89.043	1.043	3.757	85.372
2013	180.586	1.386	5.017	130.286	134.768	1.174	3.637	114.839
2014	193.249	1.590	4.018	121.532	81.968	0.898	3.035	91.277
2015	362.615	3.973	5.595	91.273	186.743	2.755	2.730	67.794
<b>BARSTOW</b>								
2006	145.330	1.320	3.502	110.062	133.710	1.261	2.939	106.019
2007	126.626	1.253	3.641	101.058	101.628	1.052	3.330	96.602
2008	403.157	2.363	4.415	170.643	318.756	1.920	3.625	166.036
2009	153.493	1.139	1.824	134.766	125.148	1.060	1.773	118.040
2010	123.015	1.511	3.041	81.440	96.881	1.190	2.648	81.400
2011	308.760	1.631	6.115	189.288	271.659	1.549	5.735	175.418
2012	184.797	1.152	2.645	160.377	182.786	1.144	2.524	159.819
2013	204.329	1.395	3.284	146.469	185.788	1.286	2.702	144.416
2014	201.526	1.343	2.536	150.058	173.680	1.240	2.410	140.098
2015	187.113	1.174	2.859	159.416	157.379	0.997	2.131	157.841



## 2006 - 2015 District Reliability

## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>BIG CREEK</b>								
2006	854.963	4.867	4.826	175.679	241.409	1.026	1.654	235.217
2007	48.693	0.160	0.542	303.987	48.429	0.157	0.542	309.042
2008	104.921	2.499	2.291	41.977	91.752	2.059	1.466	44.558
2009	259.275	1.441	1.856	179.865	259.275	1.441	1.856	179.865
2010	5700.992	12.891	7.874	442.244	683.925	6.344	3.818	107.812
2011	1667.047	4.222	3.933	394.852	984.340	1.650	2.741	596.466
2012	1184.253	4.523	2.608	261.831	842.662	4.182	1.681	201.512
2013	176.510	3.080	4.987	57.308	176.510	3.080	4.711	57.308
2014	920.254	1.342	4.901	685.961	438.216	0.581	3.960	754.138
2015	422.768	3.415	9.298	123.785	422.768	3.415	9.298	123.785
<b>BISHOP</b>								
2006	265.519	1.061	2.548	250.360	141.148	0.937	1.801	150.658
2007	121.015	0.624	2.542	193.977	121.015	0.624	2.527	193.977
2008	265.070	1.087	1.923	243.782	159.414	0.882	1.777	180.641
2009	143.545	1.362	1.493	105.382	142.174	1.356	1.491	104.869
2010	407.920	2.502	5.664	163.016	293.294	2.332	4.251	125.792
2011	666.064	1.548	2.571	430.339	105.588	1.344	2.247	78.591
2012	463.093	1.248	2.288	371.138	424.766	1.103	2.205	384.980
2013	104.436	0.514	1.267	203.233	104.425	0.514	1.267	203.232
2014	118.793	0.587	1.885	202.475	113.618	0.499	1.706	227.572
2015	298.106	2.218	3.332	134.431	298.106	2.218	3.272	134.431
<b>BLYTHE</b>								
2006	374.135	1.222	4.868	306.290	335.332	1.081	3.955	310.243
2007	299.336	2.145	3.534	139.545	274.065	1.902	3.460	144.099
2008	454.705	3.094	4.795	146.982	454.705	3.094	4.042	146.982
2009	83.884	0.820	1.717	102.296	83.605	0.816	1.482	102.403
2010	1332.781	2.030	2.817	656.668	294.445	1.344	2.641	219.114
2011	378.393	1.402	3.717	269.845	321.050	1.312	3.443	244.767
2012	225.884	1.529	3.749	147.714	221.814	1.498	3.749	148.058
2013	483.127	1.380	5.466	349.971	482.815	1.372	5.382	351.779
2014	707.218	2.417	4.658	292.632	706.974	2.385	4.433	296.395
2015	426.997	1.515	1.396	281.754	331.521	1.129	1.163	293.751



## 2006 - 2015 District Reliability

## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>CATALINA</b>								
2006	0.508	0.046	0.836	11.000	0.508	0.046	0.836	11.000
2007	1030.400	4.784	1.789	215.399	1030.400	4.784	1.789	215.399
2008	29.733	1.357	0.888	21.915	29.733	1.357	0.888	21.915
2009	98.586	2.542	1.235	38.779	98.586	2.542	1.235	38.779
2010	67.227	1.549	0.728	43.391	67.227	1.549	0.728	43.391
2011	65.029	3.454	3.317	18.828	65.029	3.454	3.317	18.828
2012	78.463	0.724	0.765	108.396	78.463	0.724	0.765	108.396
2013	105.939	2.968	3.093	35.691	105.939	2.968	3.093	35.691
2014	97.024	4.170	2.321	23.269	97.024	4.170	2.321	23.269
2015	42.563	2.252	2.885	18.904	42.563	2.252	2.885	18.904
<b>COVINA</b>								
2006	134.470	0.796	1.139	168.870	83.681	0.660	0.942	126.846
2007	109.919	0.825	1.259	133.295	67.746	0.696	1.110	97.388
2008	84.551	0.639	1.358	132.397	74.686	0.582	1.269	128.384
2009	78.043	0.682	1.063	114.418	62.591	0.603	0.959	103.822
2010	117.660	0.810	1.130	145.299	99.323	0.708	0.983	140.232
2011	166.969	0.870	1.181	191.870	86.994	0.736	1.077	118.129
2012	108.732	0.915	1.333	118.824	102.888	0.867	1.267	118.680
2013	100.505	0.856	1.004	117.414	100.297	0.853	0.992	117.582
2014	91.418	0.874	1.257	104.580	81.424	0.804	1.028	101.295
2015	100.085	0.815	1.164	122.866	99.838	0.813	1.152	122.755
<b>DOMINGUEZ HILLS</b>								
2006	108.088	0.744	1.516	145.237	80.816	0.657	1.435	123.052
2007	144.034	0.839	1.735	171.716	65.049	0.637	1.498	102.096
2008	81.303	0.699	1.386	116.316	71.633	0.644	1.313	111.283
2009	89.813	0.681	1.698	131.889	81.227	0.633	1.575	128.322
2010	119.230	0.779	1.578	153.004	88.110	0.585	1.337	150.626
2011	109.414	0.718	1.566	152.338	90.548	0.644	1.433	140.680
2012	117.225	0.824	1.863	142.330	110.077	0.792	1.830	139.031
2013	89.167	0.797	1.938	111.893	89.167	0.797	1.938	111.893
2014	82.192	0.711	1.603	115.553	73.493	0.656	1.560	111.977
2015	130.629	0.967	2.049	135.097	126.046	0.934	1.958	134.903



## 2006 - 2015 District Reliability

## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>FOOTHILL</b>								
2006	121.582	0.951	1.175	127.854	95.208	0.865	1.035	110.023
2007	184.288	1.384	2.401	133.203	94.017	0.969	1.545	96.979
2008	85.539	0.636	1.658	134.423	76.793	0.577	1.605	133.050
2009	94.329	0.620	1.281	152.254	60.566	0.435	1.015	139.105
2010	76.599	0.460	0.975	166.649	64.982	0.405	0.857	160.634
2011	117.405	0.955	1.226	122.901	97.462	0.879	0.896	110.915
2012	91.694	0.903	0.931	101.552	91.479	0.900	0.900	101.608
2013	85.800	0.787	0.987	109.087	85.800	0.787	0.987	109.087
2014	93.337	0.932	1.285	100.140	88.135	0.861	1.249	102.395
2015	109.637	0.947	1.304	115.764	87.796	0.890	1.230	98.673
<b>FULLERTON</b>								
2006	118.858	0.638	1.342	186.174	64.440	0.523	0.993	123.157
2007	133.134	0.824	0.979	161.546	67.052	0.582	0.770	115.246
2008	91.886	0.779	0.967	117.957	87.406	0.738	0.888	118.371
2009	62.350	0.457	0.846	136.512	60.763	0.431	0.773	140.841
2010	135.217	1.186	1.208	113.985	94.282	0.671	0.859	140.606
2011	90.110	0.607	1.076	148.499	88.745	0.604	1.075	146.940
2012	68.992	0.419	0.943	164.469	64.428	0.401	0.878	160.539
2013	90.572	0.793	0.910	114.158	90.572	0.793	0.910	114.158
2014	82.201	0.723	1.004	113.714	69.996	0.649	0.974	107.848
2015	76.586	0.669	1.014	114.471	75.504	0.642	0.995	117.681
<b>HUNTINGTON BEACH</b>								
2006	103.071	0.969	1.470	106.412	91.399	0.914	1.246	99.983
2007	108.026	0.972	1.292	111.100	86.495	0.855	1.101	101.183
2008	84.497	0.776	0.954	108.846	80.194	0.739	0.898	108.503
2009	109.420	1.041	1.191	105.156	97.754	0.881	1.143	111.009
2010	129.496	1.023	1.305	126.636	101.546	0.848	1.029	119.812
2011	122.539	0.956	1.488	128.169	114.519	0.885	1.406	129.457
2012	95.784	0.889	1.046	107.737	94.680	0.882	1.046	107.395
2013	66.507	0.680	0.815	97.833	66.507	0.680	0.815	97.833
2014	76.901	0.738	1.093	104.152	65.367	0.676	0.964	96.710
2015	98.315	0.955	1.217	102.952	94.111	0.929	1.169	101.352



## 2006 - 2015 District Reliability

## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>KERNVILLE</b>								
2006	178.533	2.635	7.483	67.766	150.743	1.907	5.680	79.041
2007	225.015	2.386	2.217	94.288	224.908	2.385	2.217	94.283
2008	590.919	3.898	7.309	151.580	228.916	2.548	4.493	89.833
2009	585.927	2.006	5.688	292.025	559.460	1.854	5.053	301.808
2010	584.742	1.795	4.336	325.686	444.191	1.490	4.011	298.084
2011	165.695	1.025	3.316	161.713	138.134	0.964	2.620	143.346
2012	226.761	1.311	3.636	172.995	160.694	1.066	3.010	150.692
2013	232.181	1.964	4.925	118.189	180.865	1.577	4.824	114.682
2014	178.691	1.987	1.882	89.932	142.946	1.918	1.831	74.541
2015	286.382	0.961	1.630	297.920	231.411	0.857	1.293	270.120
<b>LONG BEACH</b>								
2006	115.214	0.571	0.915	201.866	74.032	0.479	0.627	154.666
2007	87.178	0.733	1.065	118.869	47.569	0.602	0.911	78.958
2008	52.535	0.436	0.640	120.516	48.058	0.409	0.604	117.392
2009	41.503	0.421	0.876	98.539	40.045	0.415	0.851	96.547
2010	72.284	0.633	0.897	114.156	53.982	0.546	0.774	98.809
2011	58.475	0.579	0.894	100.942	52.380	0.562	0.853	93.191
2012	75.830	0.554	1.106	136.864	72.654	0.536	1.059	135.673
2013	75.107	0.699	0.779	107.497	74.628	0.694	0.775	107.551
2014	66.226	0.606	1.168	109.270	57.781	0.548	1.083	105.376
2015	164.463	0.894	1.185	183.904	89.160	0.846	1.168	105.378
<b>MENIFEE</b>								
2006	124.081	1.176	1.956	105.495	92.150	0.994	1.698	92.684
2007	181.198	1.230	2.189	147.261	77.917	0.896	1.367	86.932
2008	111.189	1.570	1.757	70.808	83.826	1.490	1.726	56.272
2009	106.451	1.809	1.026	58.854	97.637	1.743	0.910	56.004
2010	100.653	0.762	1.202	132.119	74.081	0.613	0.903	120.754
2011	100.482	0.891	1.339	112.728	93.705	0.804	1.299	116.607
2012	99.320	0.838	1.736	118.576	98.627	0.824	1.680	119.740
2013	107.388	1.264	0.744	84.979	106.298	1.220	0.725	87.135
2014	156.641	1.323	1.573	118.410	77.367	1.004	1.276	77.030
2015	111.460	0.978	1.302	113.971	85.322	0.876	1.067	97.393



## 2006 - 2015 District Reliability

## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>MONROVIA</b>								
2006	231.714	1.153	2.466	200.885	144.170	0.887	2.051	162.584
2007	142.012	1.051	2.174	135.116	71.658	0.724	1.586	99.022
2008	103.789	0.848	1.881	122.426	95.940	0.761	1.770	126.002
2009	219.773	0.869	2.029	252.948	102.119	0.744	1.614	137.210
2010	124.340	1.078	2.014	115.381	93.507	0.902	1.775	103.624
2011	2414.044	1.891	2.463	1276.874	130.692	1.025	1.740	127.514
2012	108.110	1.126	1.781	95.987	99.185	1.068	1.632	92.910
2013	99.116	1.017	1.322	97.496	98.965	1.015	1.311	97.500
2014	133.311	1.157	1.258	115.176	96.360	1.005	1.069	95.846
2015	96.679	0.881	1.618	109.737	95.327	0.863	1.554	110.466
<b>MONTEBELLO</b>								
2006	125.767	0.836	1.856	150.457	66.579	0.623	1.592	106.870
2007	152.689	0.885	2.433	172.614	62.123	0.618	1.908	100.540
2008	93.833	0.712	1.678	131.832	85.623	0.665	1.633	128.688
2009	192.332	1.191	2.337	161.484	87.243	1.099	2.174	79.370
2010	147.851	1.117	1.987	132.361	118.232	0.972	1.688	121.649
2011	678.332	1.214	2.388	558.556	115.694	0.853	1.821	135.577
2012	131.058	1.127	1.946	116.316	107.511	1.040	1.823	103.423
2013	118.078	1.174	1.890	100.609	117.713	1.169	1.890	100.660
2014	158.316	1.164	1.959	136.010	124.669	1.020	1.763	122.179
2015	150.280	1.183	2.213	126.992	145.303	1.131	2.087	128.462
<b>ONTARIO</b>								
2006	159.405	0.919	1.845	173.522	99.884	0.807	1.490	123.758
2007	153.294	0.961	1.798	159.526	82.715	0.704	1.115	117.505
2008	99.041	0.790	1.449	125.372	92.016	0.738	1.379	124.620
2009	88.186	0.748	1.200	117.973	80.625	0.703	1.098	114.619
2010	90.448	0.811	1.480	111.528	70.279	0.655	1.258	107.242
2011	117.664	0.822	1.317	143.189	96.594	0.749	1.235	128.944
2012	93.087	0.869	1.159	107.130	91.407	0.833	1.140	109.720
2013	77.392	0.791	0.933	97.841	74.037	0.782	0.926	94.728
2014	97.881	0.996	1.160	98.312	86.676	0.902	1.041	96.114
2015	94.043	0.744	0.926	126.432	81.608	0.709	0.867	115.156



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## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>PALM SPRINGS</b>								
2006	139.239	0.905	1.829	153.877	128.909	0.845	1.773	152.521
2007	179.753	1.235	1.303	145.499	133.823	1.125	1.149	118.977
2008	170.541	1.506	2.405	113.251	144.142	1.400	2.213	102.984
2009	151.662	1.106	1.905	137.079	140.027	1.047	1.824	133.722
2010	180.688	1.039	1.367	173.826	162.059	0.940	1.148	172.391
2011	164.765	0.886	1.182	186.029	144.131	0.842	1.117	171.272
2012	175.916	1.267	1.505	138.814	113.848	1.130	1.236	100.717
2013	112.796	0.774	0.997	145.669	112.193	0.769	0.997	145.815
2014	106.960	0.708	0.941	151.072	95.065	0.667	0.885	142.620
2015	99.542	0.800	1.042	124.376	95.795	0.753	0.949	127.171
<b>REDLANDS</b>								
2006	198.849	1.758	2.553	113.094	122.435	1.470	2.181	83.289
2007	180.766	1.563	2.168	115.679	93.598	1.093	1.533	85.666
2008	103.674	0.911	1.602	113.832	93.720	0.842	1.477	111.282
2009	107.204	0.895	1.469	119.732	87.582	0.807	1.221	108.514
2010	216.759	1.692	3.207	128.121	95.898	1.332	2.692	71.988
2011	253.703	1.630	1.323	155.689	142.273	1.428	1.244	99.628
2012	120.127	1.108	1.600	108.399	114.781	1.068	1.563	107.435
2013	96.481	1.044	0.911	92.410	95.273	1.036	0.908	91.977
2014	154.227	1.040	1.312	148.311	85.520	0.872	1.149	98.024
2015	124.519	1.012	1.467	122.990	102.289	0.935	1.247	109.365
<b>RIDGECREST</b>								
2006	491.644	3.412	5.914	144.074	489.421	3.389	5.137	144.417
2007	82.358	0.724	3.358	113.726	68.306	0.583	3.155	117.120
2008	167.192	1.423	3.184	117.455	163.869	1.414	3.179	115.856
2009	58.339	0.684	3.343	85.234	40.758	0.501	2.586	81.374
2010	153.378	1.410	2.219	108.746	151.176	1.394	1.850	108.443
2011	89.261	0.737	4.140	121.196	67.647	0.528	3.916	128.124
2012	229.646	1.439	3.738	159.634	228.264	1.421	3.711	160.656
2013	161.952	1.122	3.828	144.376	83.920	0.824	3.315	101.793
2014	176.795	1.573	2.193	112.388	167.746	1.509	2.180	111.181
2015	148.895	1.012	2.169	147.145	139.509	0.837	1.514	166.702





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## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>SADDLEBACK</b>								
2006	123.818	0.785	0.591	157.805	82.031	0.592	0.513	138.644
2007	199.589	1.219	0.649	163.703	129.098	0.898	0.495	143.750
2008	89.743	0.925	0.572	97.007	84.923	0.874	0.567	97.138
2009	78.986	0.697	0.486	113.254	77.683	0.686	0.481	113.193
2010	137.236	0.962	0.433	142.663	96.192	0.778	0.373	123.677
2011	75.942	0.547	0.818	138.842	74.783	0.527	0.753	141.934
2012	83.013	0.728	0.766	113.998	81.379	0.715	0.765	113.864
2013	70.688	0.532	0.513	132.957	70.688	0.532	0.513	132.957
2014	99.074	0.745	0.556	133.025	92.899	0.708	0.549	131.230
2015	46.026	0.385	0.379	119.543	45.654	0.384	0.379	118.976
<b>SAN JOAQUIN</b>								
2006	113.051	1.267	2.006	89.201	85.030	1.051	1.839	80.913
2007	104.148	1.692	2.125	61.550	101.996	1.664	2.001	61.299
2008	102.285	1.010	2.105	101.290	93.741	0.984	2.026	95.232
2009	96.592	0.906	2.087	106.555	93.243	0.867	2.030	107.524
2010	126.684	1.043	1.642	121.481	98.341	0.932	1.503	105.567
2011	83.994	0.743	1.387	113.010	75.838	0.712	1.301	106.565
2012	135.897	1.044	1.455	130.115	123.112	1.005	1.290	122.504
2013	244.439	1.448	1.698	168.757	71.744	0.800	1.548	89.668
2014	137.738	1.164	1.519	118.285	93.658	0.997	1.303	93.949
2015	127.502	1.052	1.414	121.240	99.829	0.908	1.106	109.936
<b>SANTA ANA</b>								
2006	108.478	0.873	1.119	124.255	77.244	0.829	0.911	93.147
2007	106.614	0.938	1.416	113.614	57.627	0.543	1.111	106.104
2008	77.542	0.681	0.943	113.881	73.380	0.649	0.852	113.109
2009	67.833	0.600	0.800	113.062	59.543	0.536	0.755	111.017
2010	104.571	0.810	1.012	129.134	69.073	0.610	0.837	113.185
2011	102.008	0.816	1.104	125.033	93.837	0.778	1.068	120.566
2012	78.602	0.554	1.115	141.767	78.305	0.553	1.065	141.491
2013	93.345	0.742	1.019	125.854	93.345	0.742	1.019	125.854
2014	91.651	0.843	1.274	108.710	79.414	0.755	1.179	105.222
2015	67.457	0.706	1.130	95.596	66.452	0.703	1.109	94.562



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## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>SANTA BARBARA</b>								
2006	326.326	2.020	2.862	161.526	138.963	1.476	2.121	94.138
2007	203.183	1.524	2.779	133.333	153.322	1.315	2.595	116.594
2008	535.533	6.309	3.588	84.883	336.797	5.121	2.604	65.764
2009	178.865	1.798	1.371	99.468	173.897	1.756	1.210	99.033
2010	151.187	1.008	2.228	149.999	138.640	0.888	1.887	156.212
2011	104.820	0.866	1.727	121.045	94.368	0.811	1.635	116.427
2012	153.813	1.148	1.673	133.954	149.352	1.127	1.456	132.567
2013	82.001	0.699	1.219	117.302	82.001	0.699	1.219	117.302
2014	181.231	1.335	2.549	135.717	145.165	1.141	2.012	127.238
2015	152.372	1.517	1.577	100.417	143.291	1.338	1.459	107.103
<b>SANTA MONICA</b>								
2006	98.964	0.868	1.367	114.058	81.732	0.822	1.307	99.434
2007	73.447	0.688	1.246	106.823	65.785	0.636	1.148	103.516
2008	60.490	0.800	1.211	75.635	53.518	0.755	1.163	70.847
2009	86.226	0.655	1.187	131.696	82.128	0.629	1.145	130.473
2010	98.323	0.894	1.124	109.948	73.036	0.689	1.054	105.987
2011	95.085	0.583	1.476	162.996	83.791	0.537	1.177	155.914
2012	101.687	0.792	0.911	128.436	98.428	0.769	0.890	127.913
2013	122.783	1.003	0.959	122.447	122.783	1.003	0.959	122.447
2014	110.742	0.992	0.852	111.609	106.656	0.943	0.772	113.131
2015	75.407	0.625	1.069	120.681	64.417	0.577	1.065	111.607
<b>SOUTH BAY</b>								
2006	111.876	0.907	1.715	123.338	79.074	0.762	1.508	103.779
2007	112.887	0.890	1.376	126.844	100.205	0.803	1.201	124.836
2008	110.983	1.074	2.058	103.324	93.443	0.937	1.817	99.722
2009	158.299	1.156	1.814	136.881	135.003	1.007	1.627	134.053
2010	190.924	1.206	1.836	158.299	136.407	0.938	1.533	145.392
2011	178.724	1.347	1.481	132.690	141.550	1.207	1.169	117.293
2012	122.682	1.174	1.713	104.516	120.710	1.153	1.630	104.694
2013	142.153	1.490	1.448	95.391	142.153	1.490	1.448	95.391
2014	125.154	1.390	1.650	90.009	110.254	1.281	1.502	86.094
2015	164.072	1.305	1.660	125.704	160.399	1.272	1.613	126.136



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## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>TEHACHAPI</b>								
2006	203.444	1.812	4.395	112.248	179.605	1.545	2.148	116.271
2007	150.805	1.643	3.564	91.800	136.131	1.150	2.833	118.390
2008	538.562	3.013	2.695	178.746	475.358	2.737	2.517	173.697
2009	168.038	2.010	3.482	83.614	155.009	1.915	3.413	80.957
2010	434.015	3.232	6.291	134.268	220.369	2.573	4.677	85.639
2011	231.229	1.814	3.190	127.454	177.911	1.694	2.582	105.026
2012	117.963	1.434	1.495	82.262	117.963	1.434	1.495	82.262
2013	232.672	1.121	1.661	207.634	232.333	1.102	1.638	210.815
2014	130.704	1.290	2.090	101.348	83.519	1.097	1.783	76.126
2015	298.959	1.215	3.960	246.114	236.807	1.037	2.513	228.329
<b>THOUSAND OAKS</b>								
2006	190.175	1.619	2.325	117.486	131.821	1.305	1.936	101.032
2007	220.594	2.003	2.563	110.107	124.524	1.454	1.973	85.662
2008	129.109	1.418	2.273	91.031	124.425	1.377	2.168	90.364
2009	103.160	0.987	1.850	104.469	98.658	0.948	1.833	104.026
2010	124.263	1.366	1.567	91.002	92.331	0.815	1.435	113.243
2011	146.687	1.145	1.928	128.129	121.175	1.008	1.732	120.168
2012	127.732	1.049	1.196	121.739	118.833	0.991	1.161	119.968
2013	93.860	0.914	1.164	102.735	93.846	0.913	1.154	102.755
2014	104.172	1.102	1.426	94.537	95.331	1.013	1.287	94.150
2015	106.589	0.919	1.893	115.938	103.685	0.889	1.845	116.643
<b>VALENCIA</b>								
2006	227.927	2.243	2.181	101.637	179.961	2.115	1.537	85.092
2007	169.421	1.307	1.789	129.631	121.751	1.152	1.592	105.659
2008	154.448	1.283	1.280	120.341	144.819	1.251	1.209	115.786
2009	101.701	0.812	1.519	125.209	101.368	0.800	1.400	126.765
2010	117.815	0.806	2.195	146.239	103.447	0.698	2.114	148.275
2011	130.855	1.036	1.412	126.276	119.058	0.986	1.379	120.768
2012	62.009	0.462	1.134	134.286	61.595	0.461	1.133	133.738
2013	50.940	0.532	0.683	95.801	50.940	0.532	0.683	95.801
2014	79.216	0.605	0.998	130.876	63.729	0.533	0.935	119.499
2015	72.274	0.611	0.971	118.224	71.053	0.604	0.845	117.624



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## Section 2a

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>VENTURA</b>								
2006	143.342	1.222	2.236	117.271	113.327	1.073	1.826	105.617
2007	169.318	2.122	2.200	79.777	119.020	1.836	1.548	64.814
2008	134.882	1.334	2.421	101.125	118.631	1.162	2.308	102.103
2009	112.422	1.288	1.743	87.292	106.956	1.242	1.651	86.140
2010	182.739	1.720	2.279	106.240	144.070	1.345	2.103	107.099
2011	167.849	2.247	1.561	74.683	139.680	2.112	1.337	66.150
2012	134.807	1.155	1.507	116.752	128.528	1.140	1.469	112.780
2013	100.521	1.210	1.417	83.104	100.504	1.210	1.417	83.093
2014	183.769	1.648	2.215	111.528	151.635	1.386	2.075	109.381
2015	148.848	1.190	1.447	125.112	141.430	1.149	1.375	123.110
<b>VICTORVILLE</b>								
2006	156.076	1.212	3.001	128.828	69.389	0.991	1.943	70.036
2007	76.182	1.022	1.498	74.522	66.404	0.959	1.295	69.233
2008	136.461	1.248	3.540	109.335	110.202	1.111	2.872	99.232
2009	61.926	0.644	1.607	96.147	52.591	0.550	1.384	95.565
2010	96.446	1.008	2.081	95.727	67.510	0.610	1.368	110.738
2011	196.846	1.008	2.153	195.358	82.406	0.791	1.877	104.144
2012	67.698	0.662	1.775	102.224	57.567	0.584	1.606	98.647
2013	61.333	0.632	1.312	97.109	61.010	0.620	1.179	98.380
2014	68.830	0.633	0.896	108.709	67.680	0.620	0.877	109.146
2015	87.026	0.906	1.839	96.063	72.897	0.812	1.551	89.751
<b>WHITTIER</b>								
2006	92.445	0.459	0.780	201.598	63.455	0.413	0.688	153.618
2007	106.778	0.542	1.147	196.856	48.283	0.443	0.953	108.987
2008	85.700	0.643	1.211	133.258	84.682	0.640	1.194	132.415
2009	74.921	0.530	0.987	141.419	64.929	0.499	0.949	129.996
2010	101.330	0.696	1.127	145.626	74.586	0.572	1.023	130.480
2011	99.736	0.749	1.187	133.093	91.881	0.724	1.122	126.855
2012	72.597	0.742	1.383	97.877	72.304	0.719	1.312	100.597
2013	135.043	0.859	1.055	157.172	135.043	0.859	1.055	157.172
2014	87.600	0.704	1.155	124.399	84.188	0.689	1.090	122.157
2015	114.520	0.733	1.084	156.317	104.851	0.704	0.989	148.883



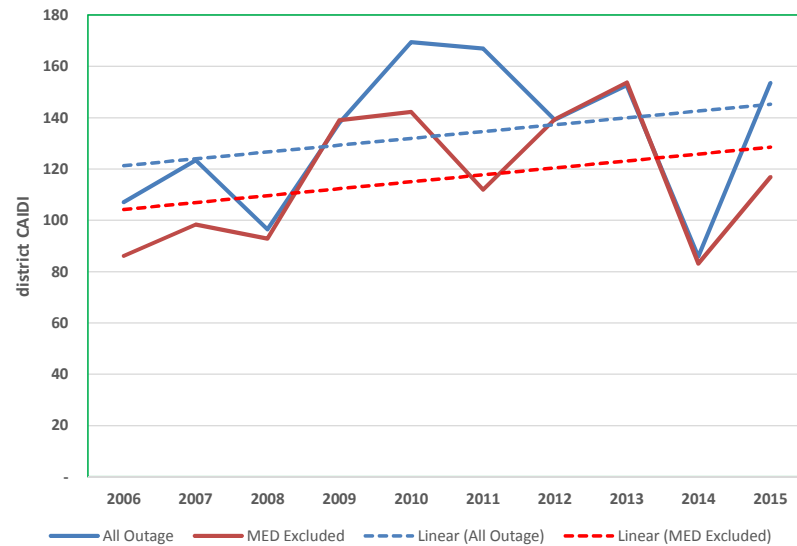
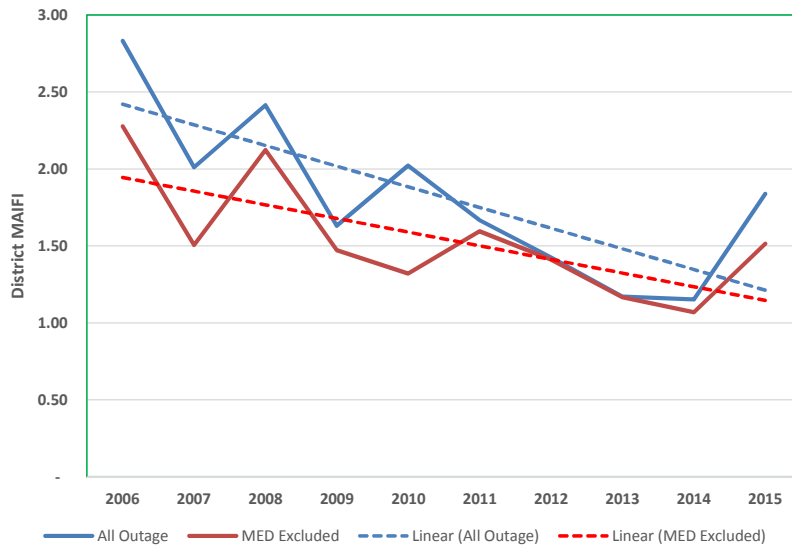
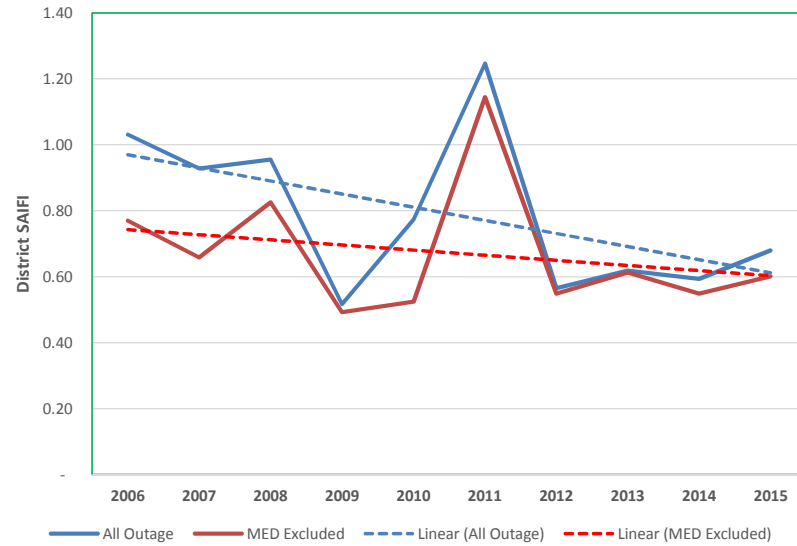
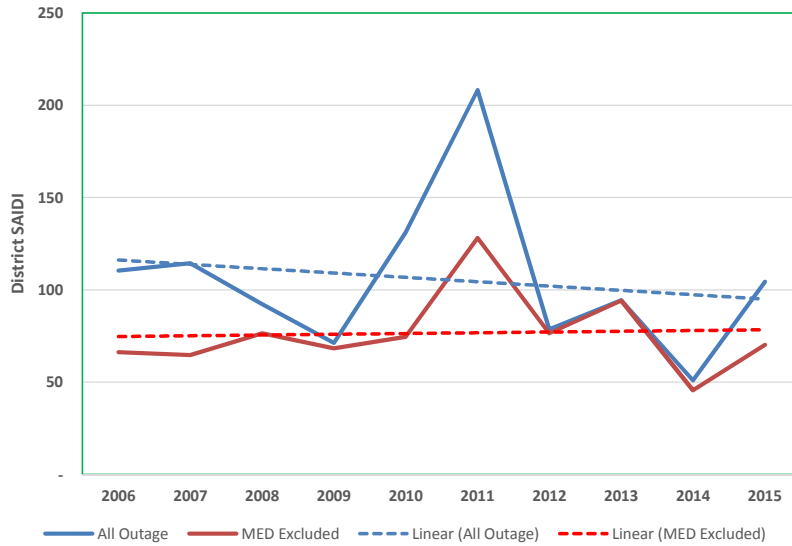
## 2006 - 2015 District Reliability

## Section 2a

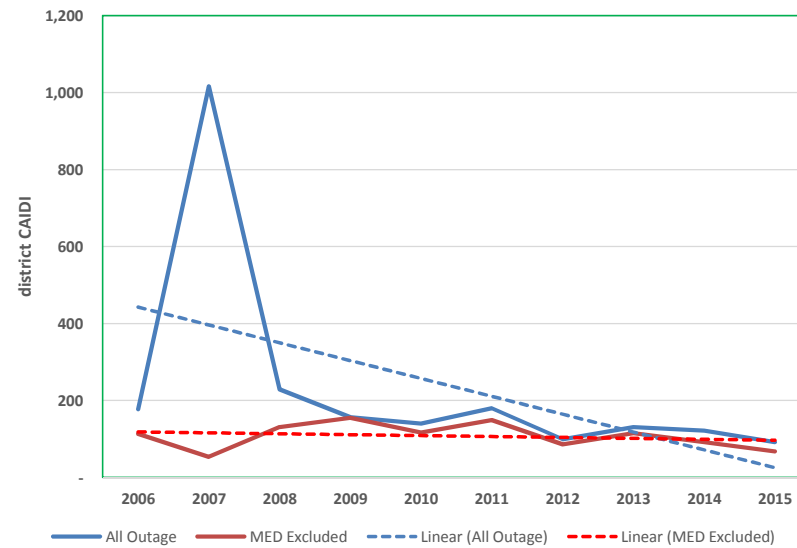
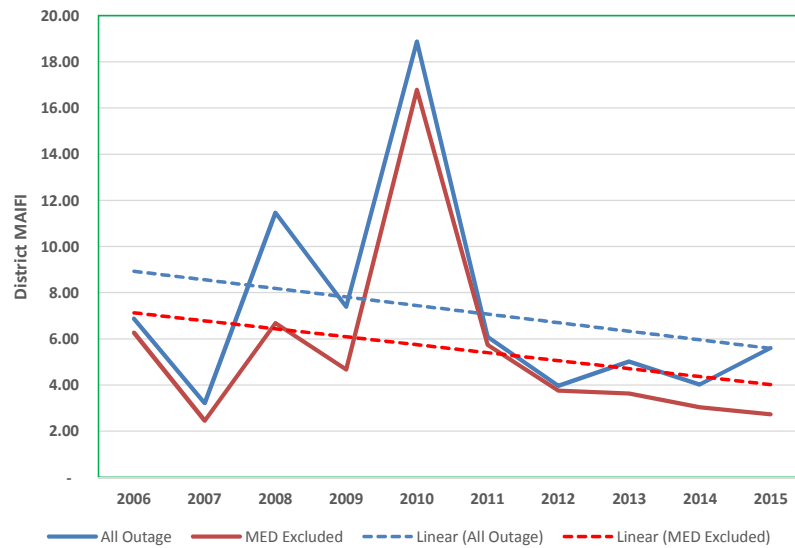
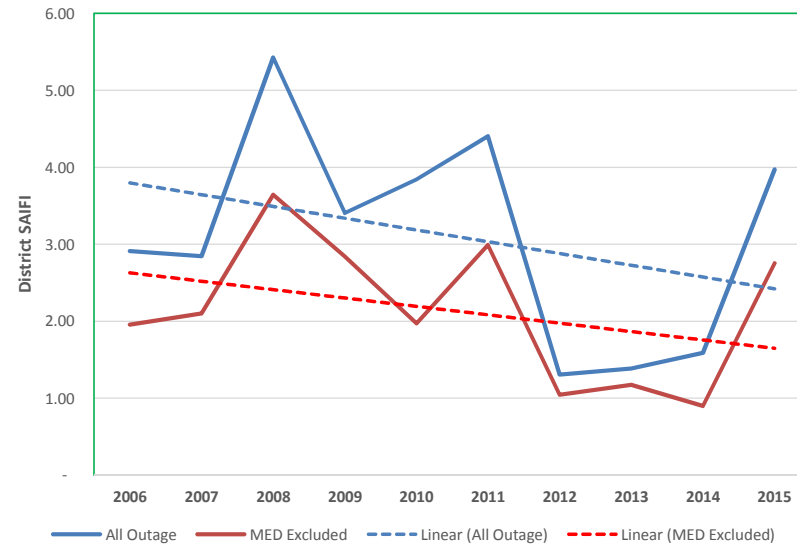
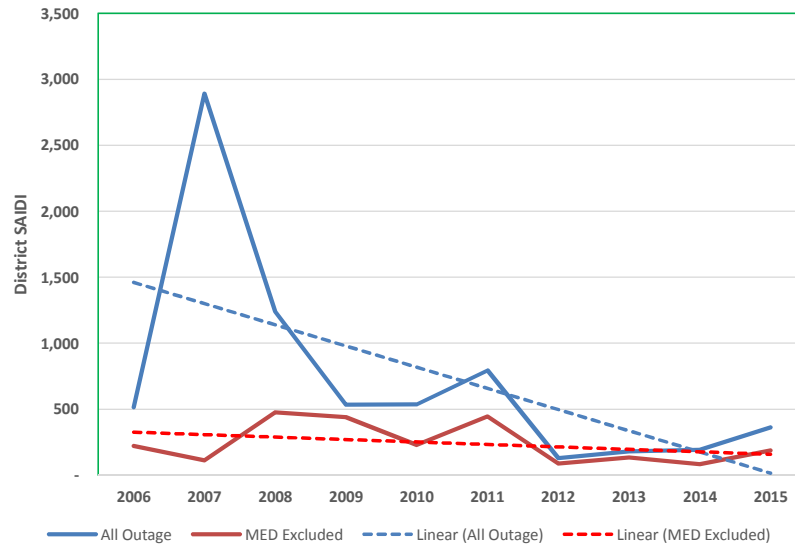
DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
<b>WILDOMAR</b>								
2006	135.570	1.073	1.604	126.359	98.729	0.863	1.297	114.434
2007	79.900	0.650	1.528	122.950	53.080	0.514	0.895	103.294
2008	65.200	0.612	0.908	106.550	58.950	0.556	0.872	105.992
2009	59.707	1.484	0.998	40.246	52.853	1.368	0.839	38.632
2010	127.124	1.122	1.565	113.258	79.888	0.881	1.172	90.656
2011	109.406	1.219	1.225	89.739	108.810	1.210	1.197	89.923
2012	88.539	0.725	0.805	122.193	87.186	0.690	0.756	126.346
2013	40.512	0.555	0.656	72.932	40.122	0.554	0.656	72.407
2014	118.493	0.806	0.743	147.031	112.300	0.772	0.683	145.548
2015	52.699	0.597	1.255	88.256	48.313	0.566	1.054	85.401
<b>YUCCA VALLEY</b>								
2006	243.796	2.579	14.580	94.519	219.338	2.342	11.241	93.666
2007	159.042	1.394	9.133	114.111	119.392	1.210	7.705	98.694
2008	465.373	2.789	10.074	166.836	351.816	2.018	7.137	174.382
2009	192.279	1.158	3.193	165.979	189.316	1.151	3.140	164.451
2010	307.670	3.017	5.167	101.994	235.893	2.370	4.016	99.547
2011	436.441	2.163	6.922	201.767	354.867	1.966	5.598	180.481
2012	319.821	3.413	7.170	93.708	250.377	2.806	5.467	89.239
2013	216.972	1.500	4.983	144.620	216.966	1.500	4.983	144.626
2014	304.182	1.490	4.856	204.146	293.662	1.407	4.851	208.750
2015	389.085	1.804	3.922	215.688	260.176	1.189	2.708	218.766

- b) The linear charts below shows the past 10 years of dSAIDI, dSAIFI, dMAIFI and dCAIDI for all 35 districts. There are separate charts including and excluding MED. The charts shown are listed in district name alphabetical order.

**ANTELOPE VALLEY District Reliability Performance**

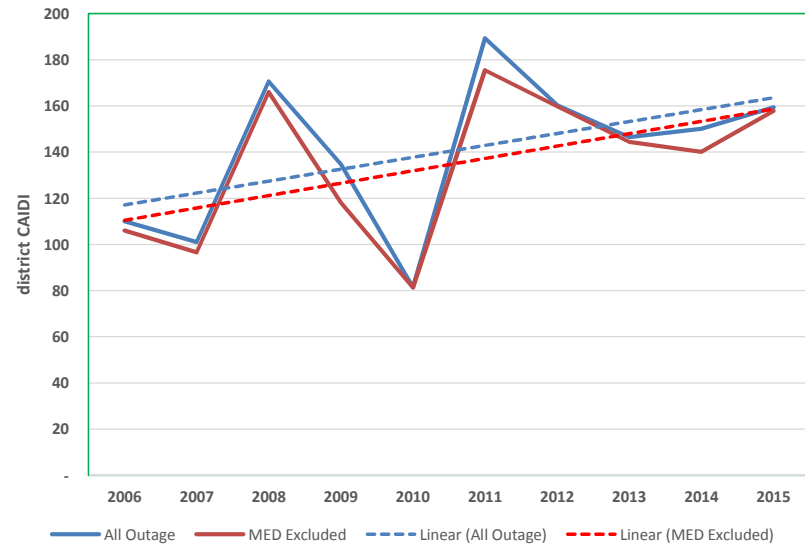
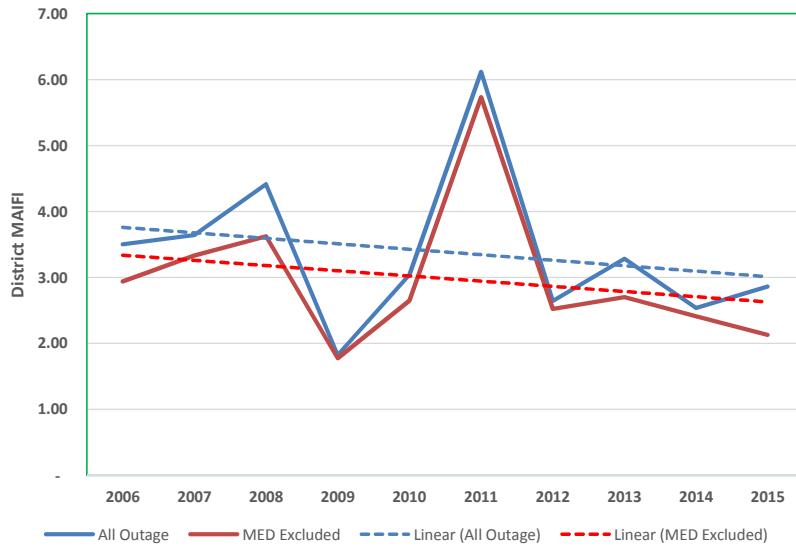
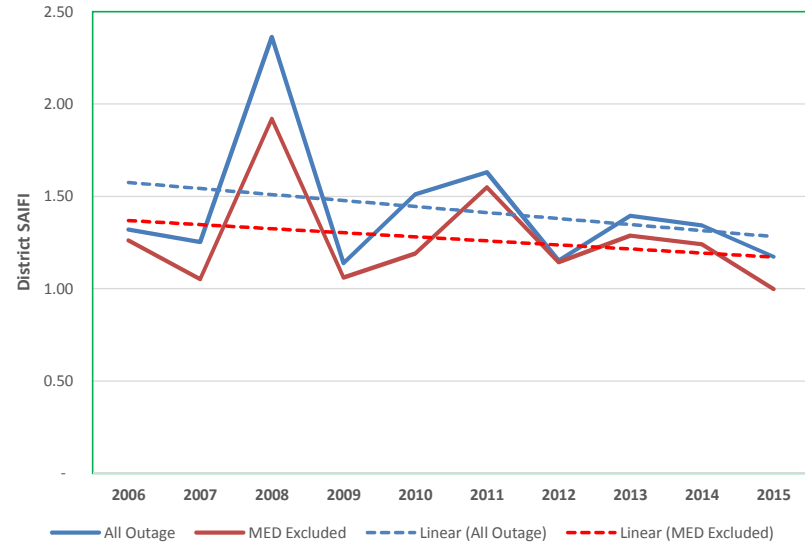
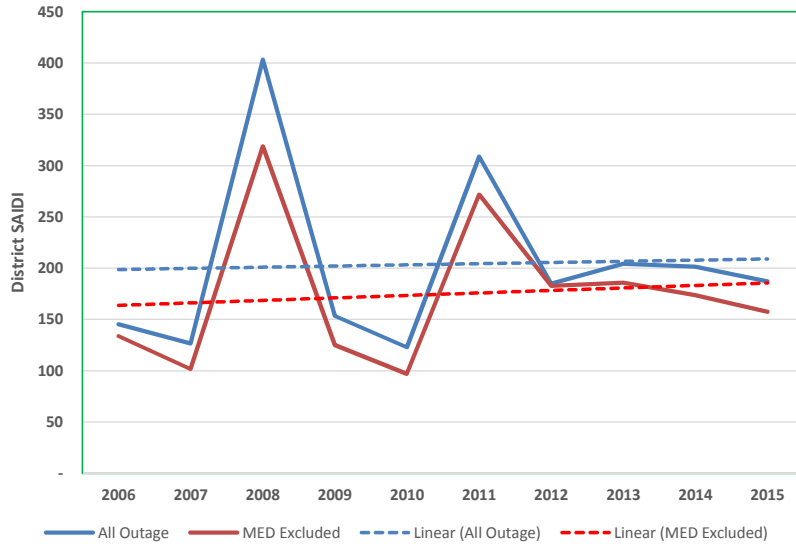


**ARROWHEAD District Reliability Performance**

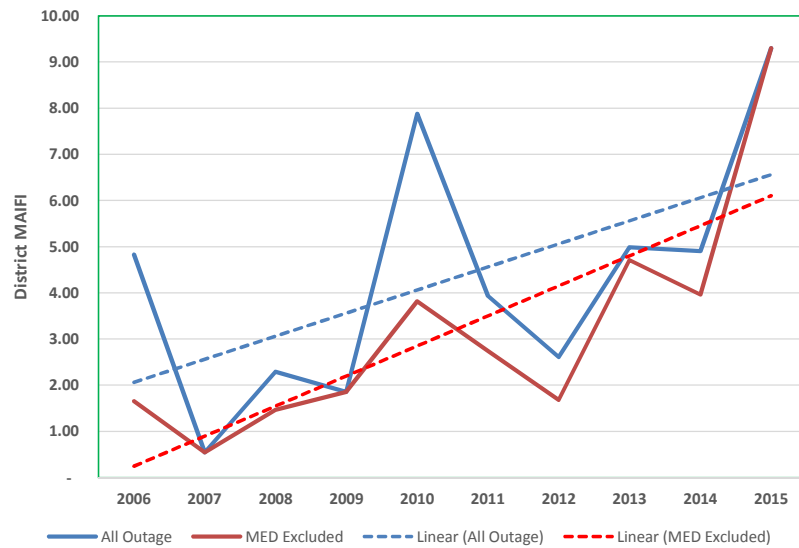
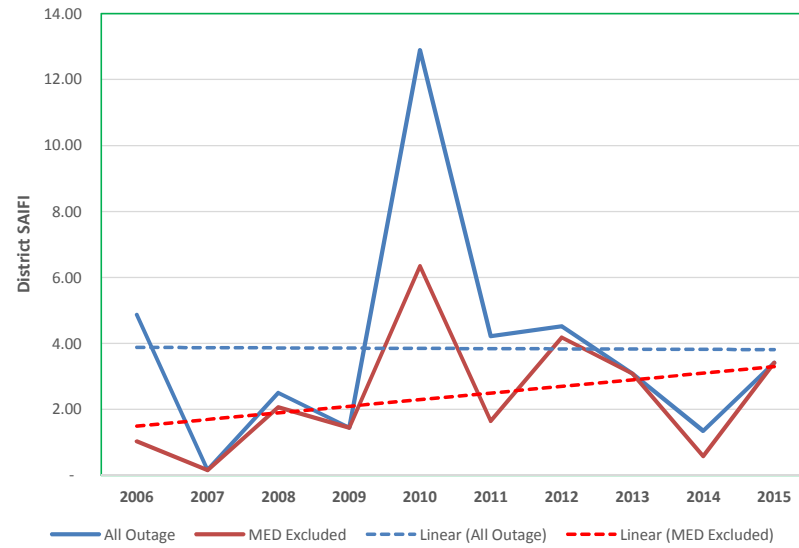
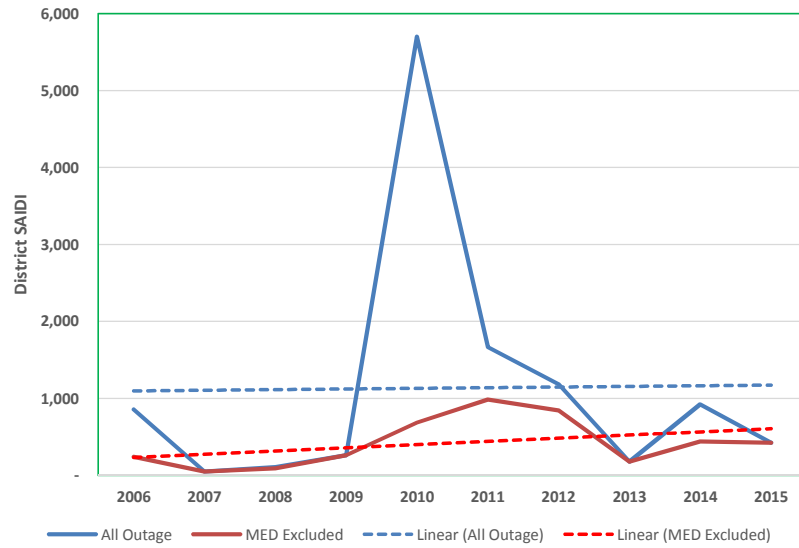




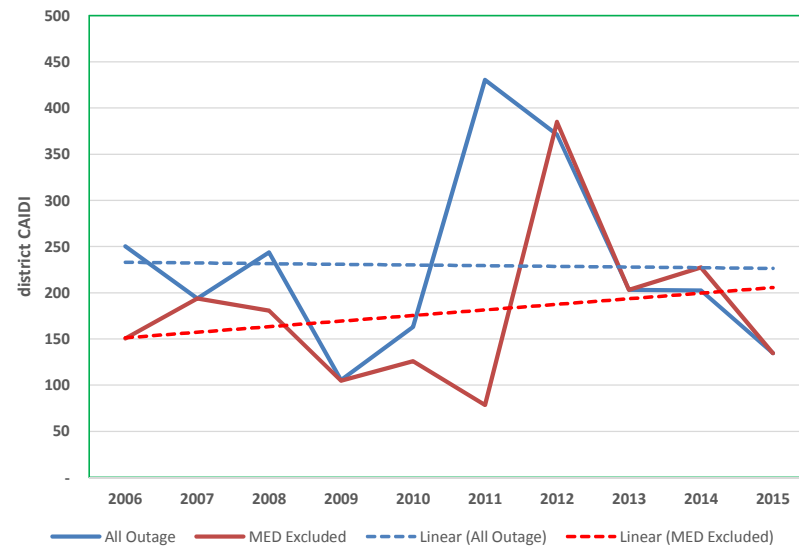
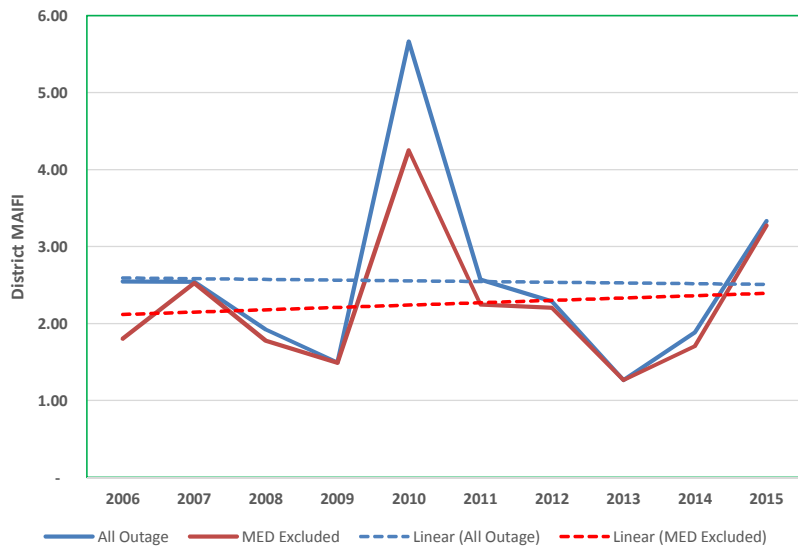
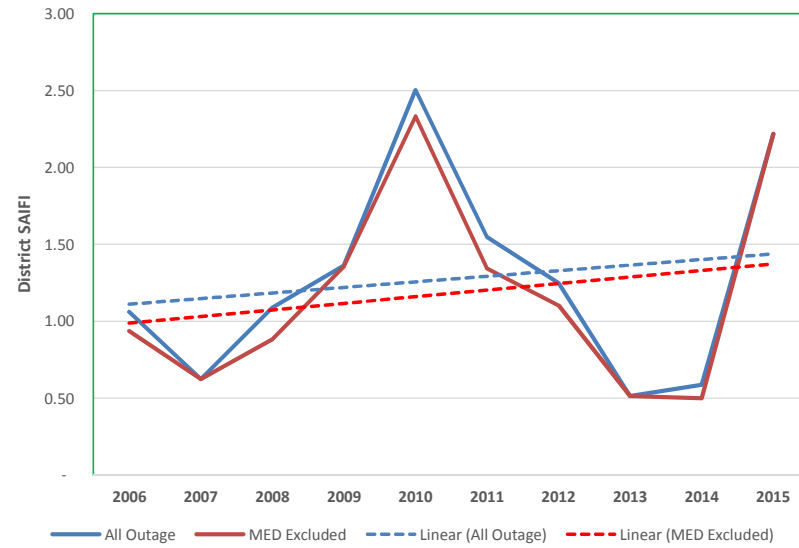
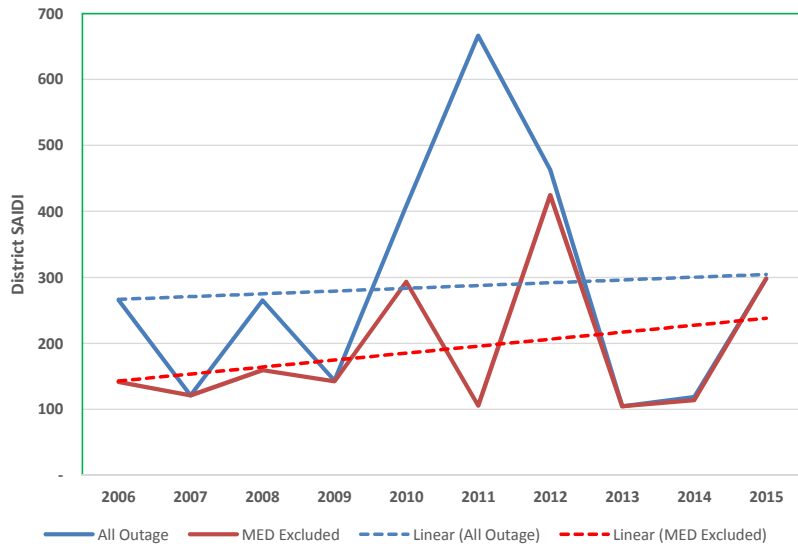
**BARSTOW District Reliability Performance**



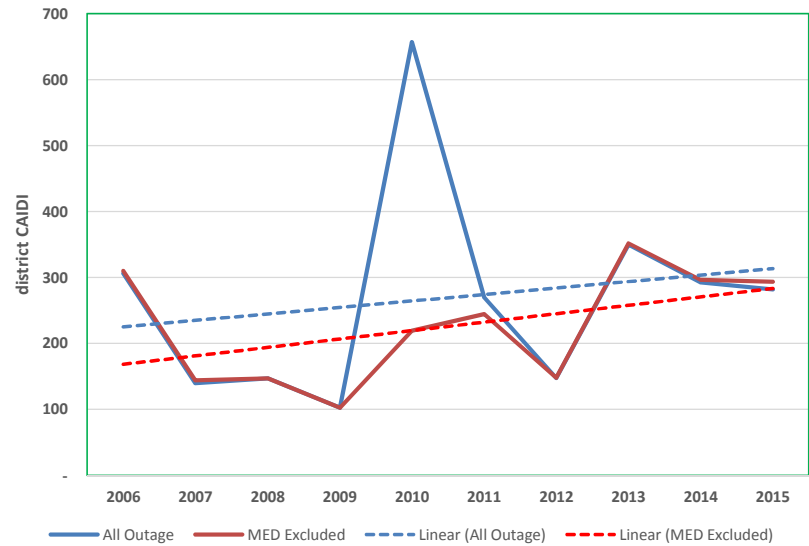
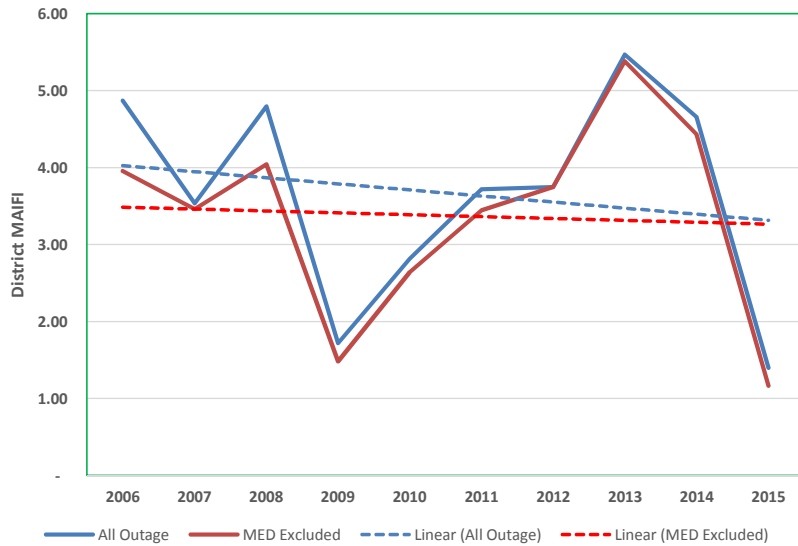
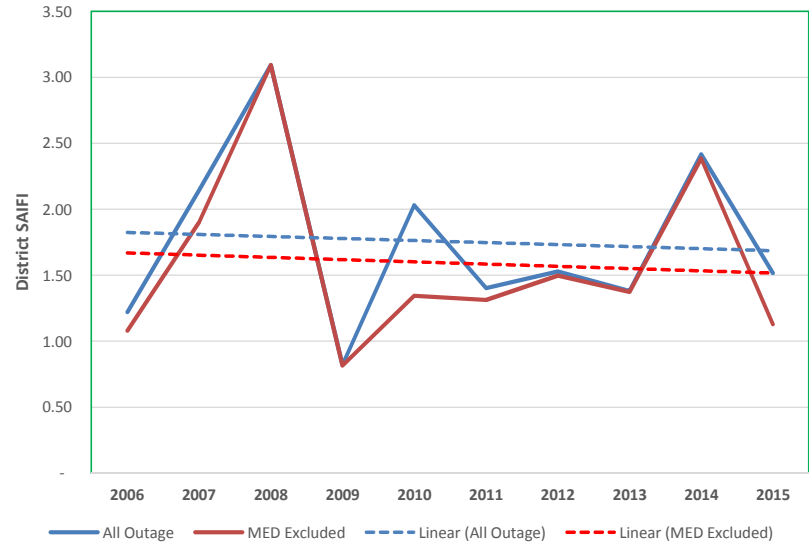
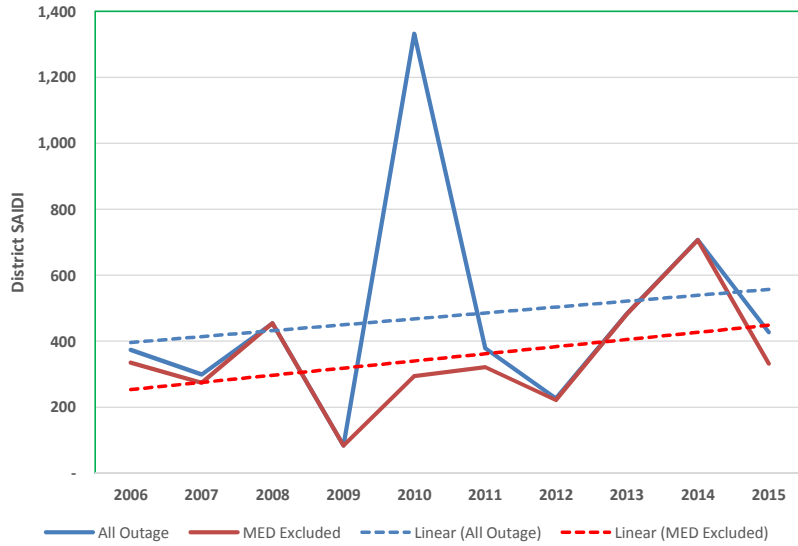
**BIG CREEK District Reliability Performance**



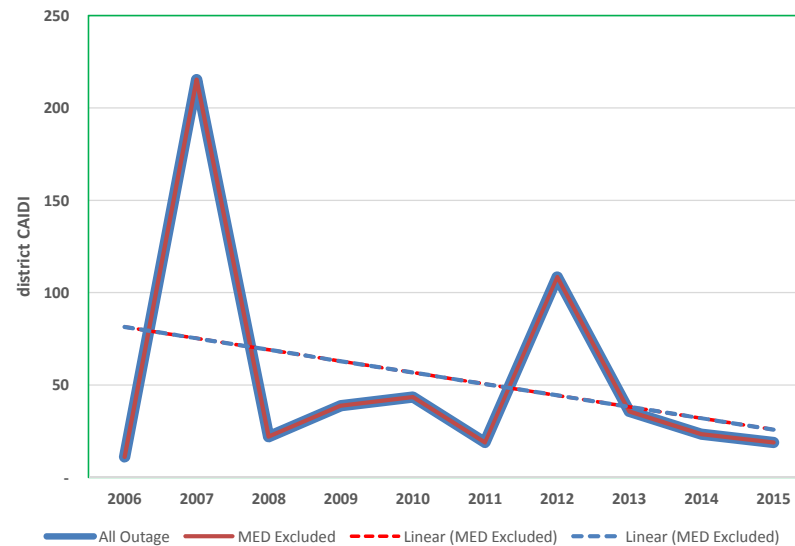
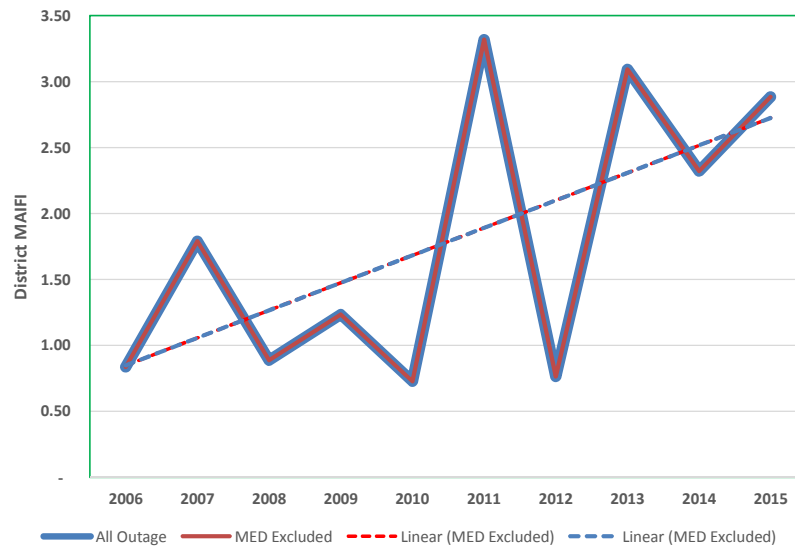
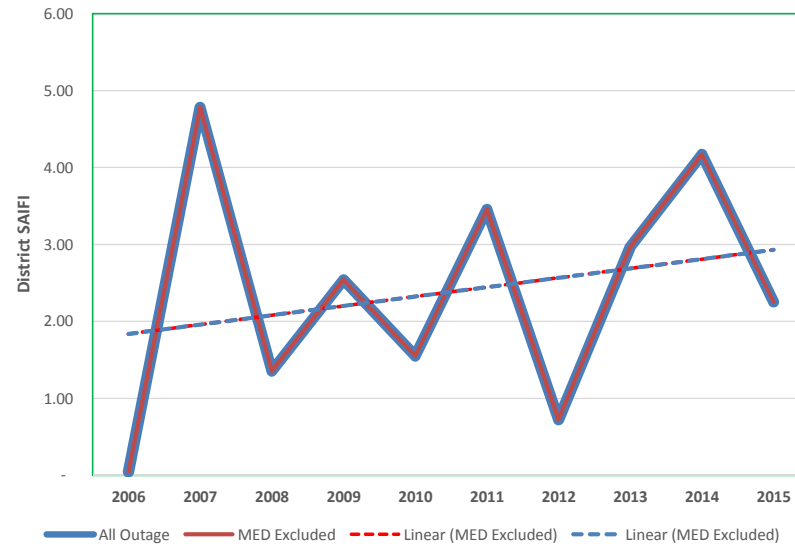
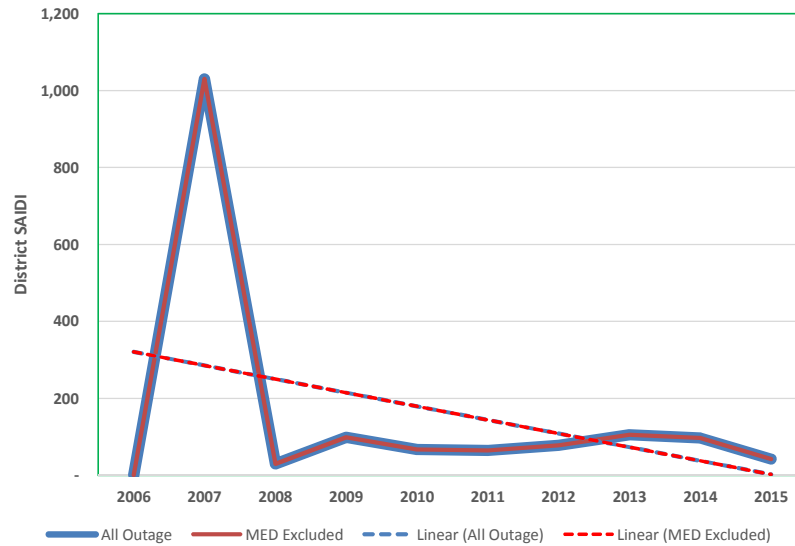
**BISHOP District Reliability Performance**



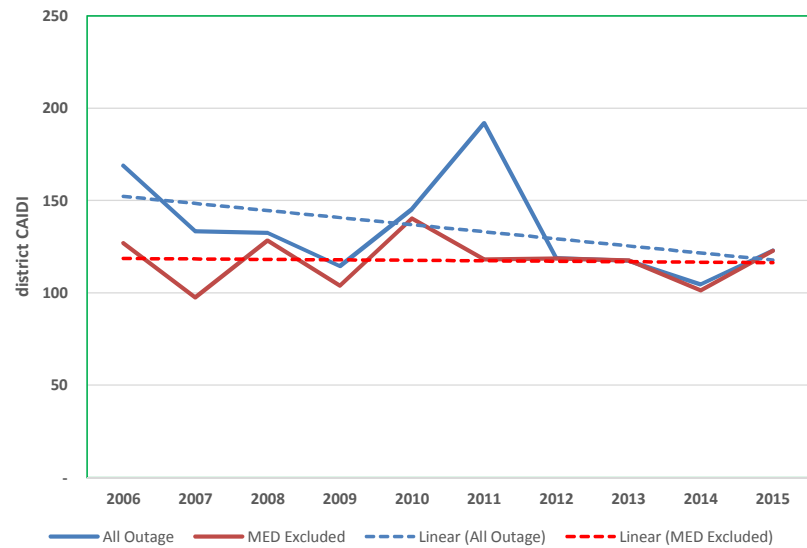
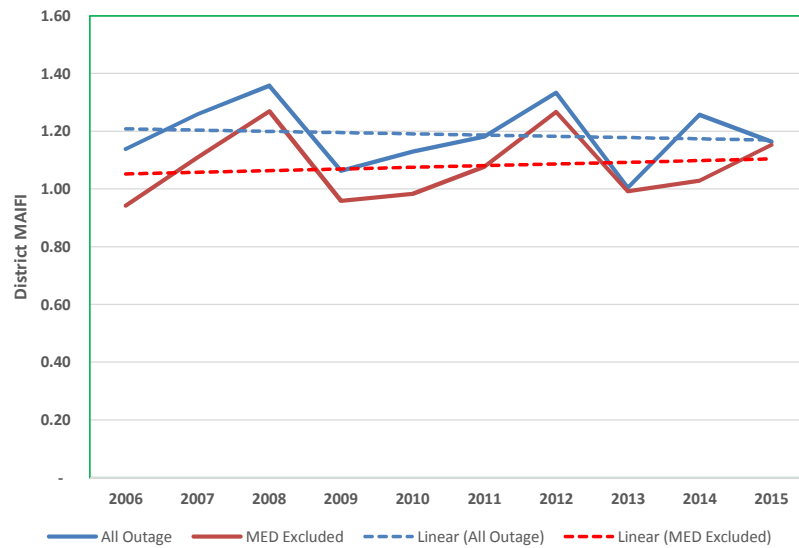
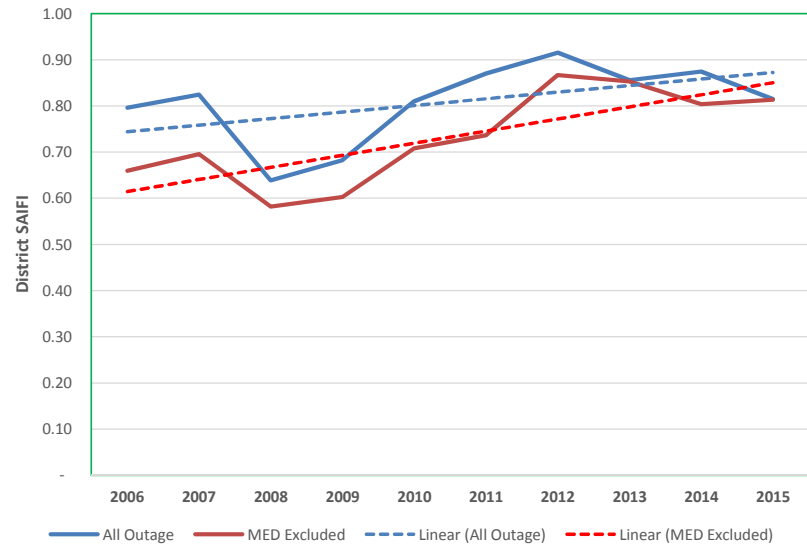
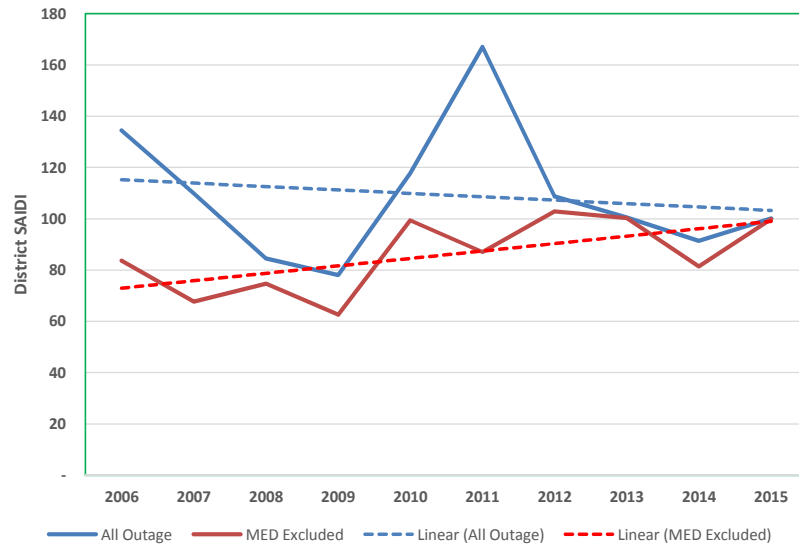
**BLYTHE District Reliability Performance**



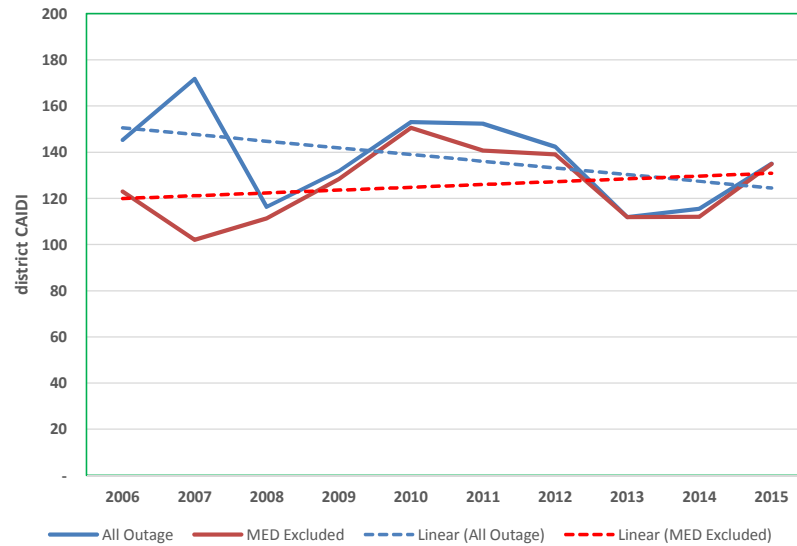
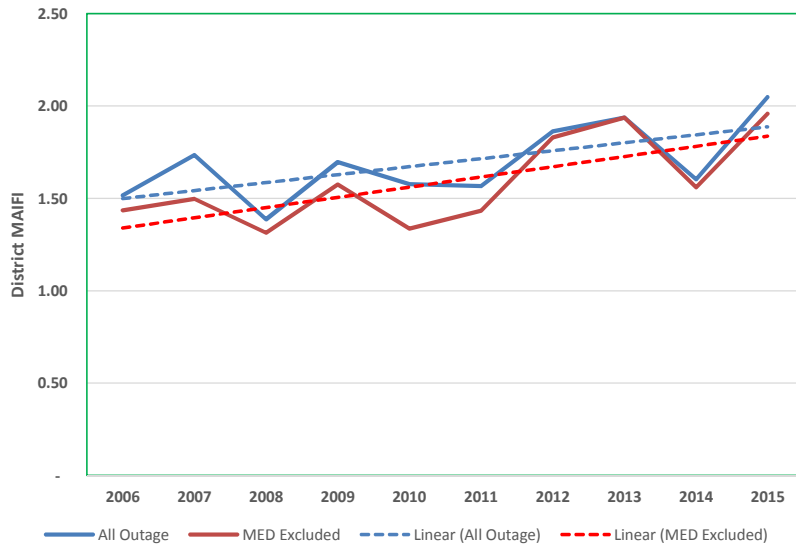
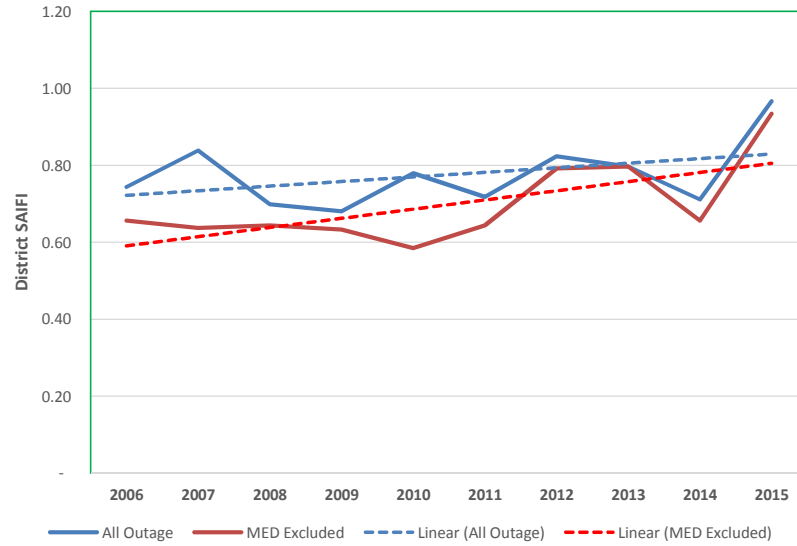
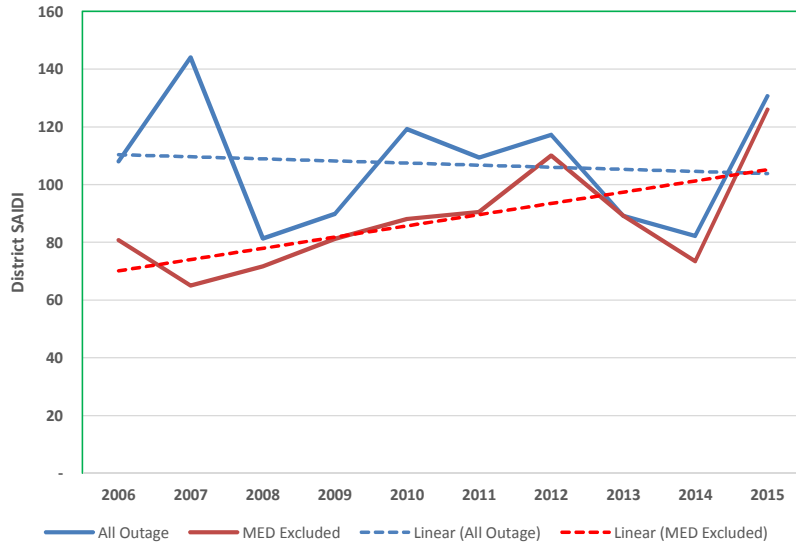
**CATALINA District Reliability Performance**



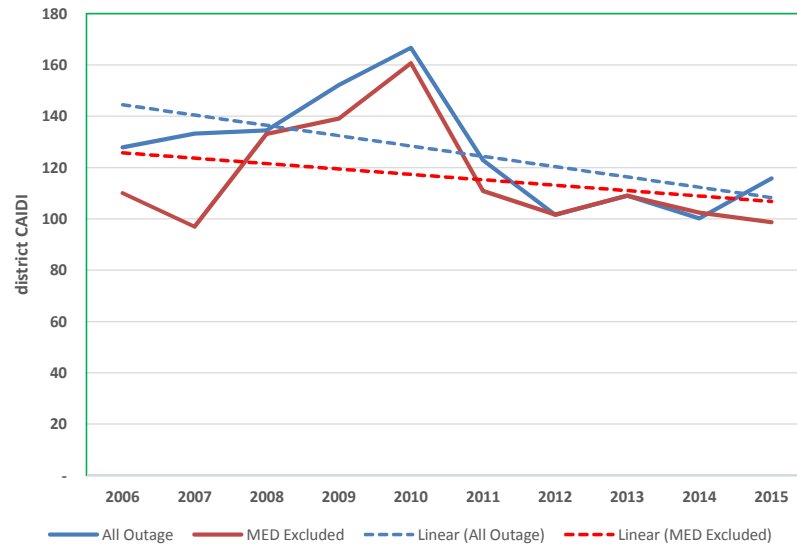
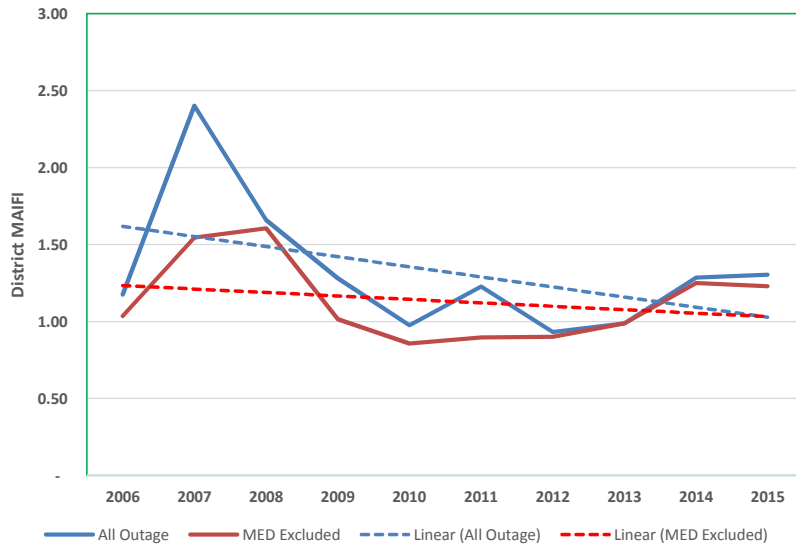
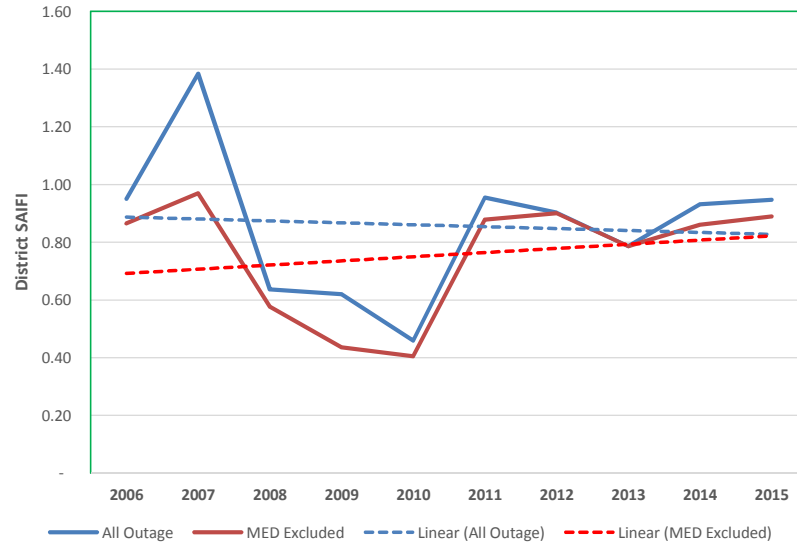
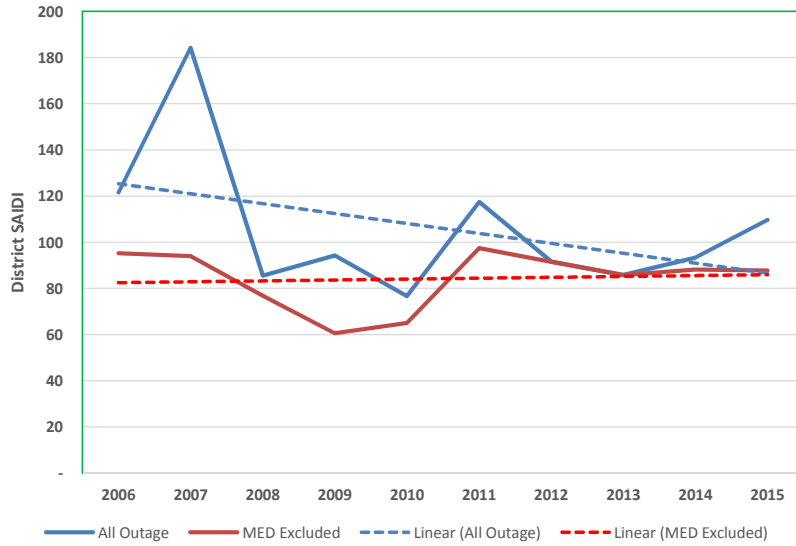
**COVINA District Reliability Performance**



**DOMINGUEZ HILLS District Reliability Performance**

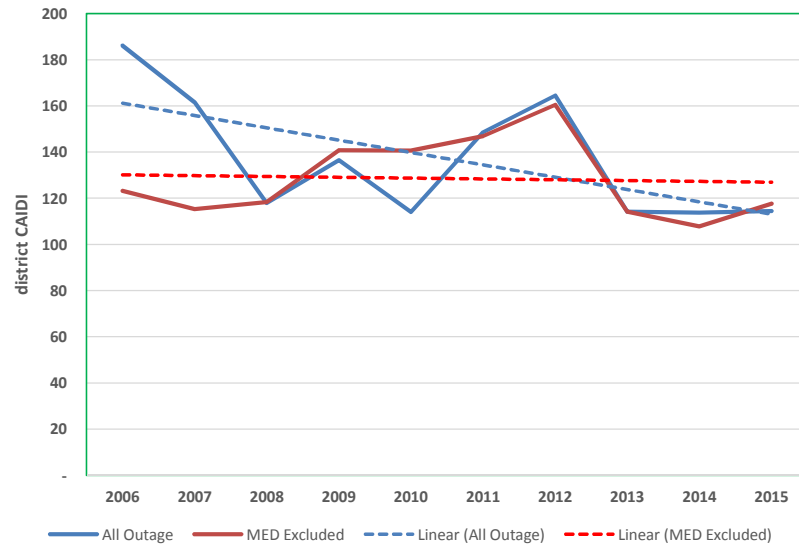
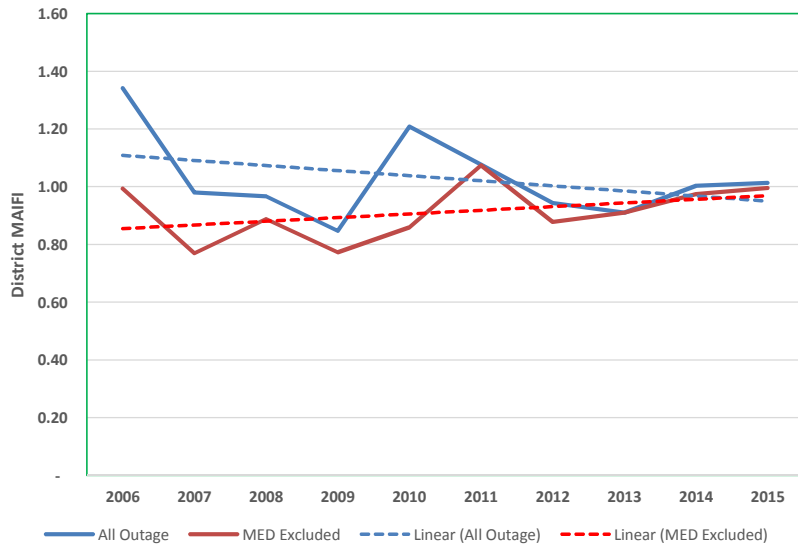
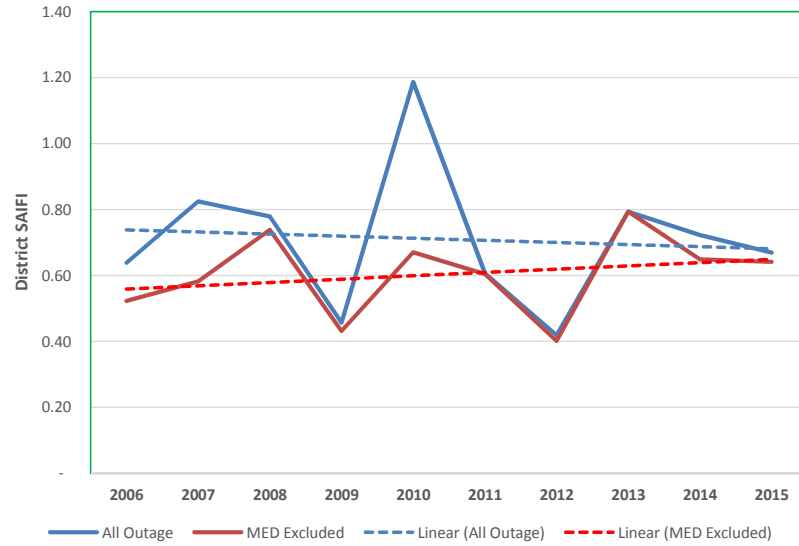
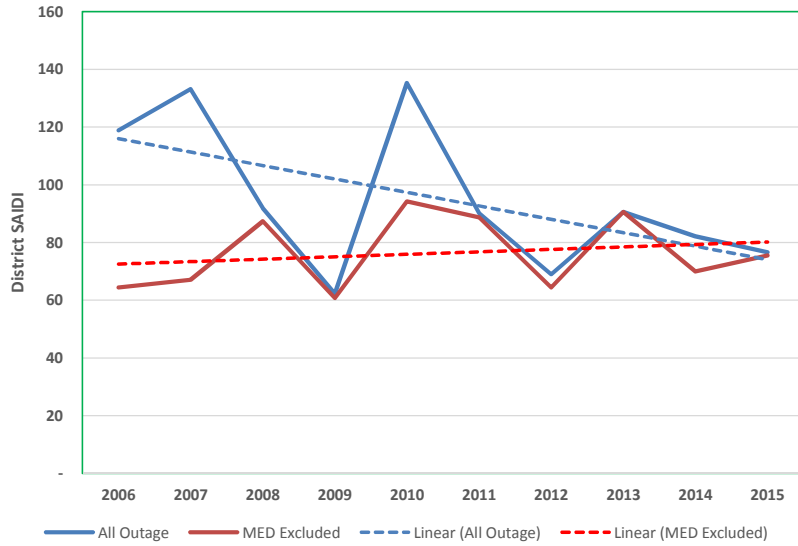


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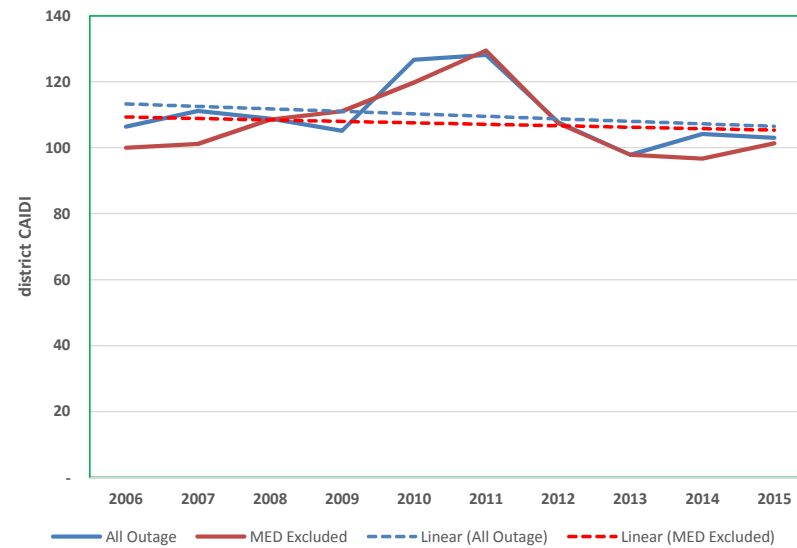
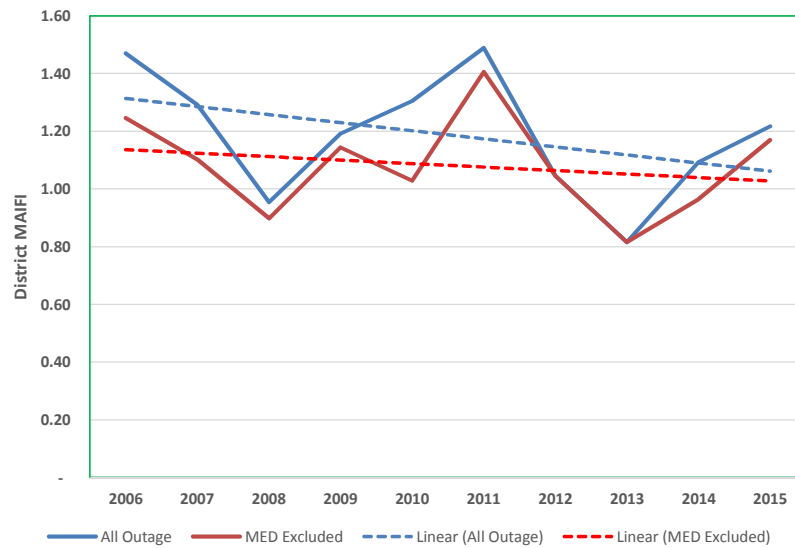
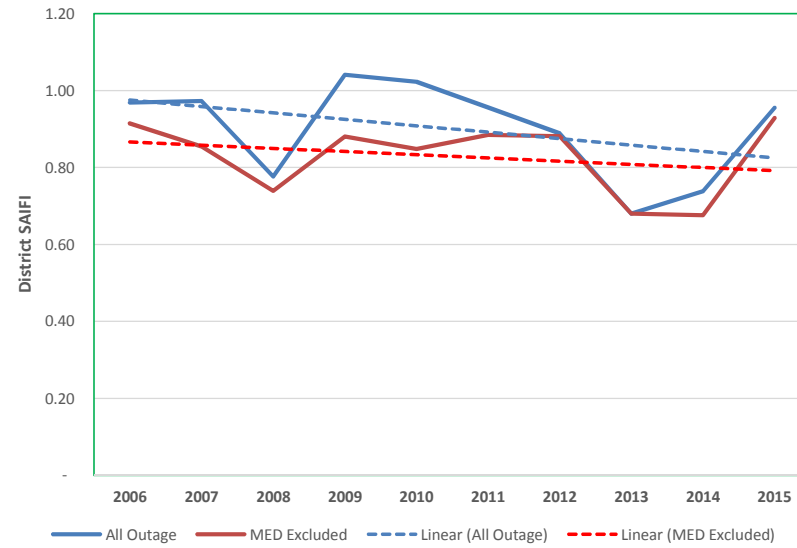
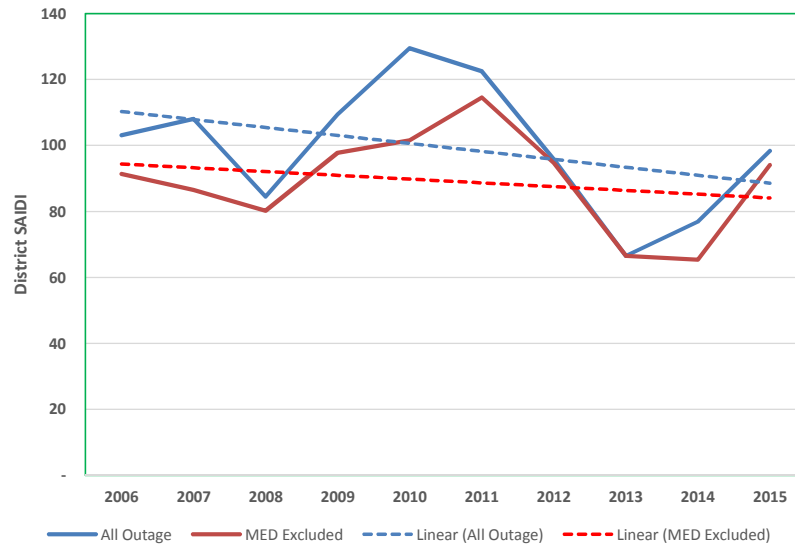




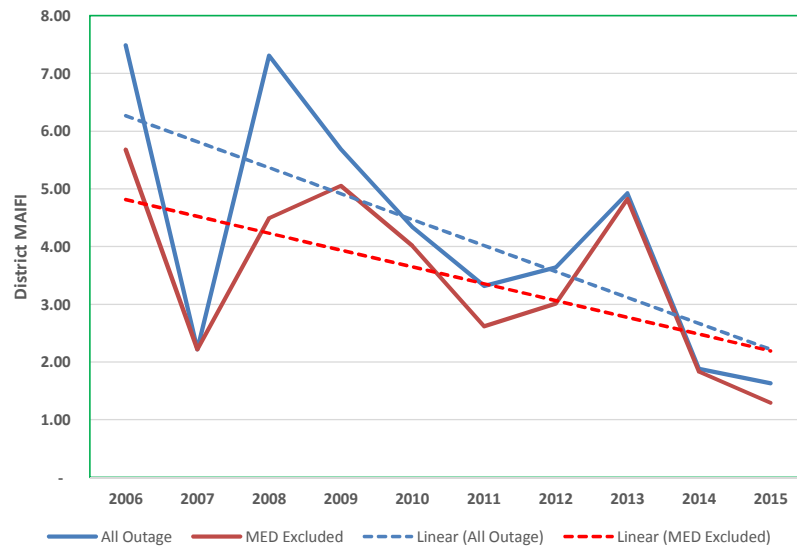
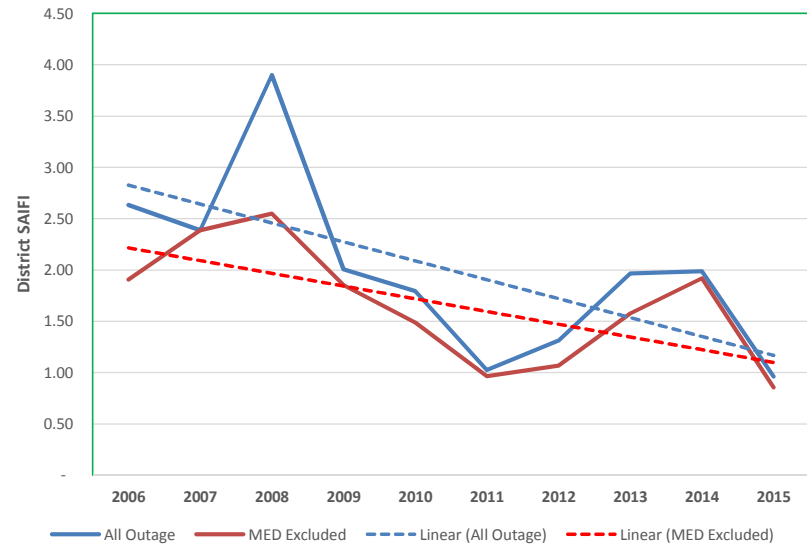
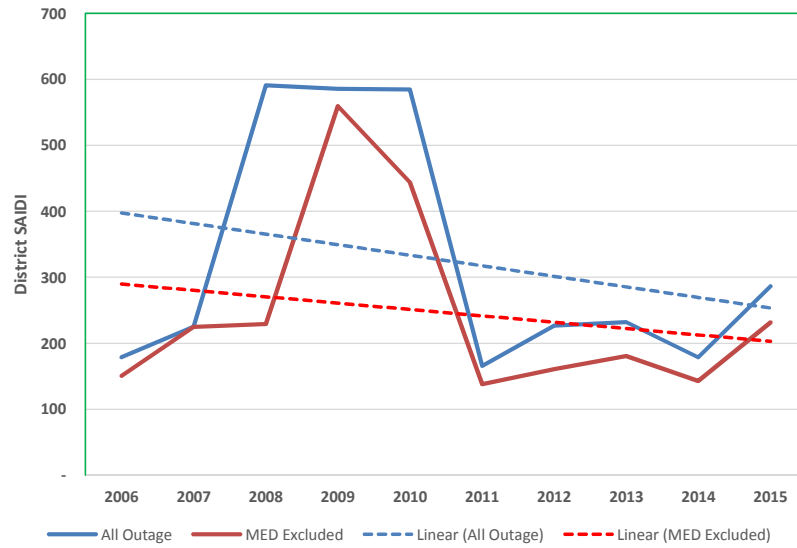
**FULLERTON District Reliability Performance**



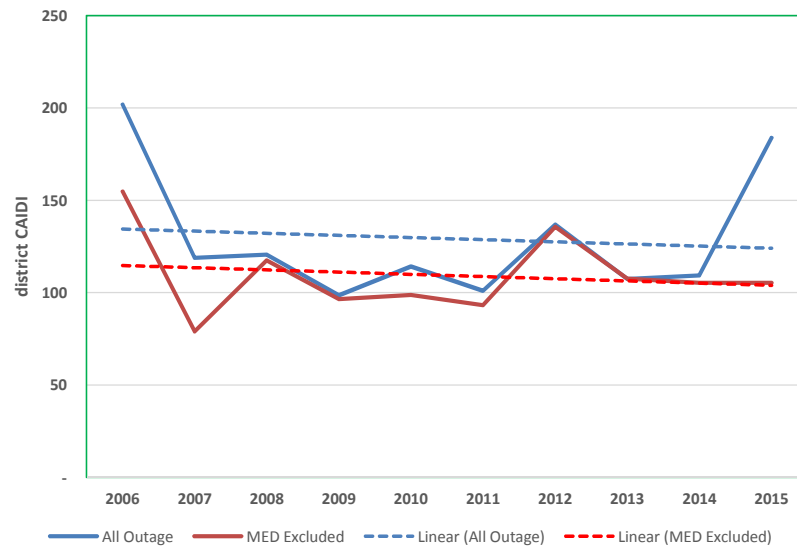
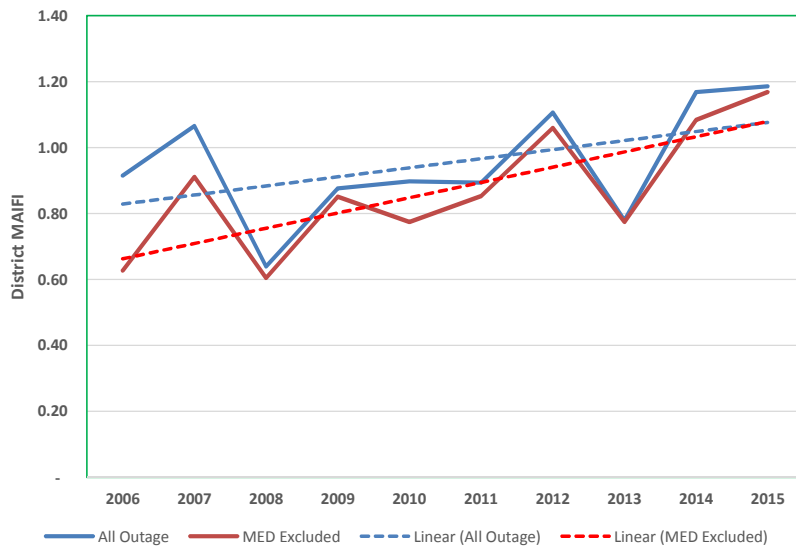
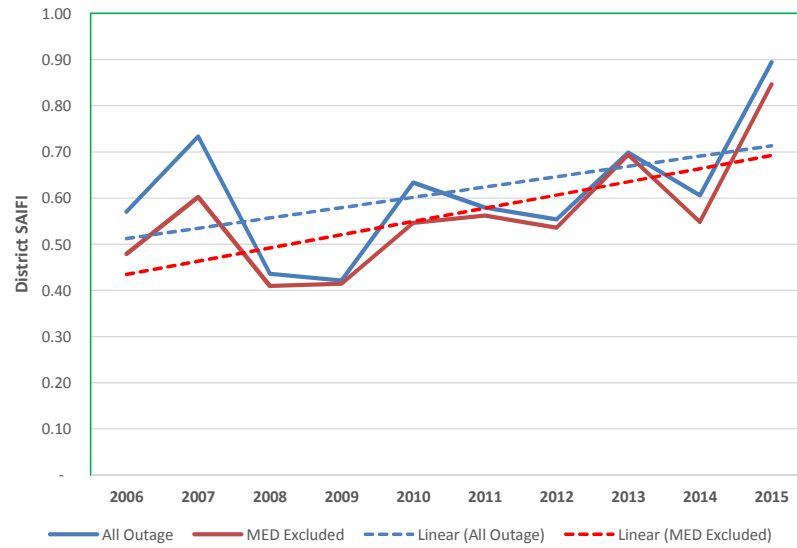
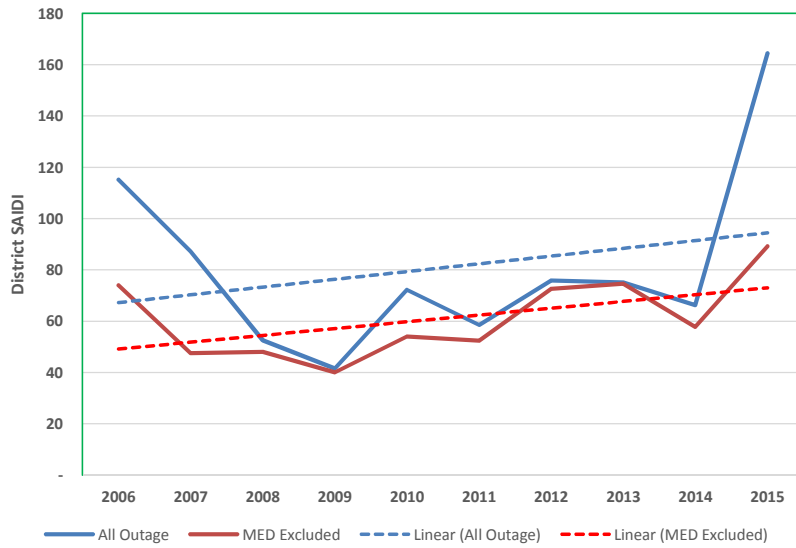
**HUNTINGTON BEACH District Reliability Performance**



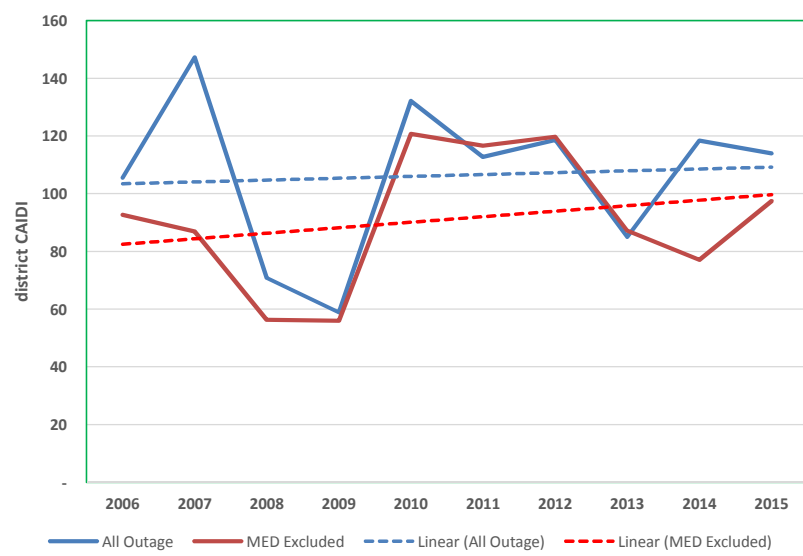
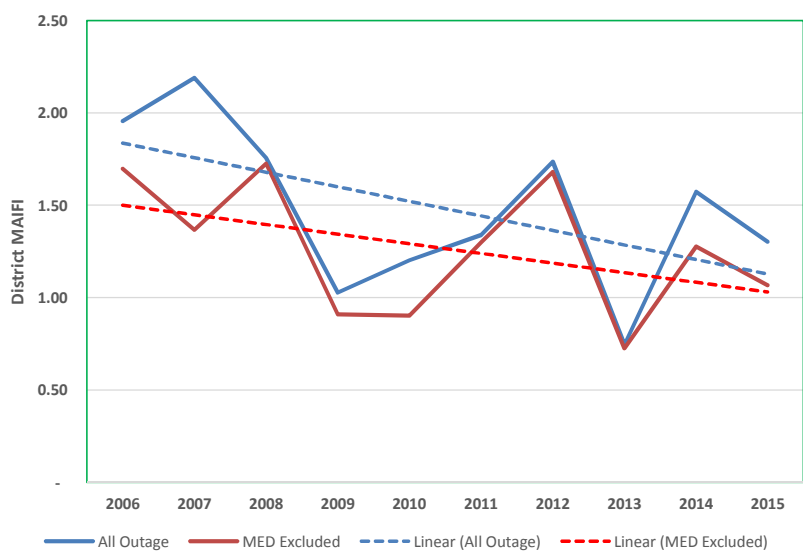
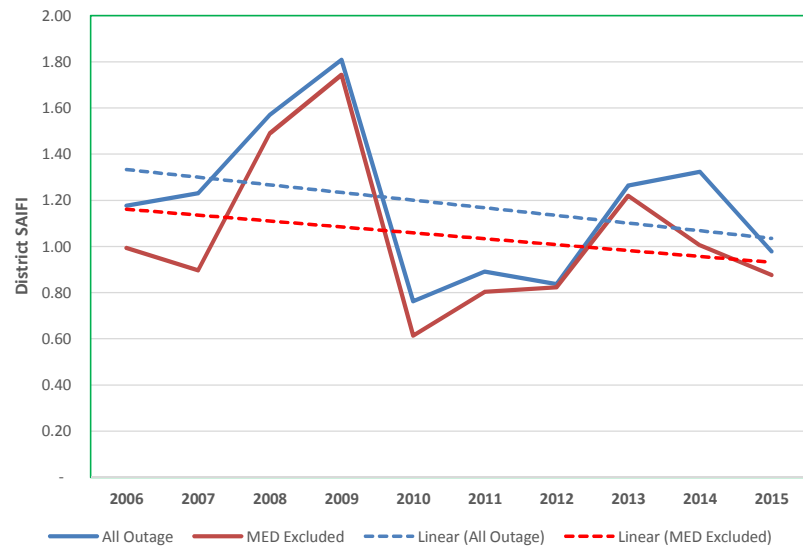
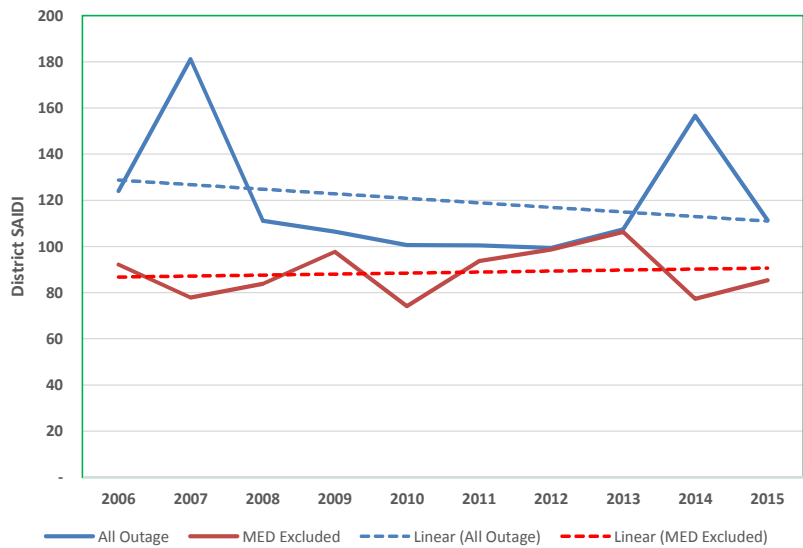
**KERNVILLE District Reliability Performance**



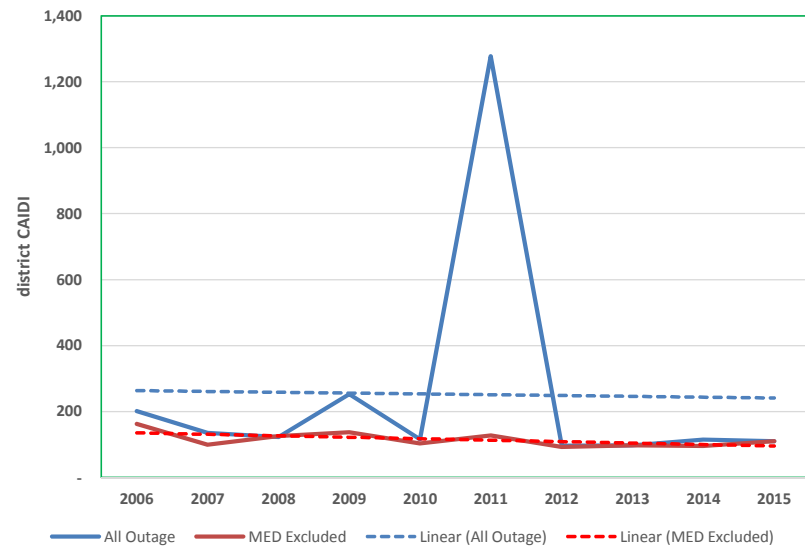
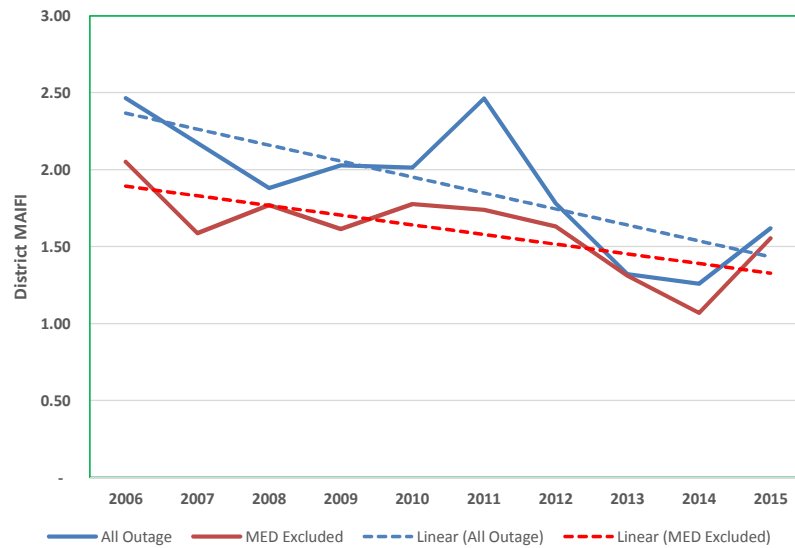
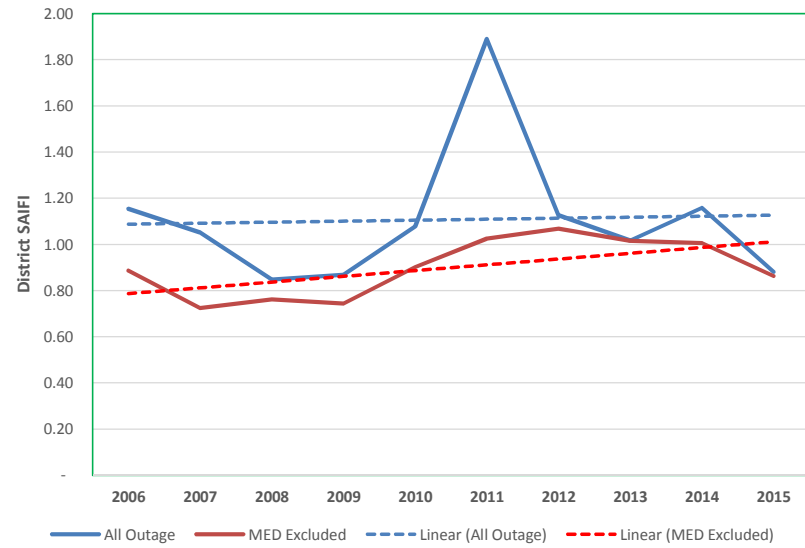
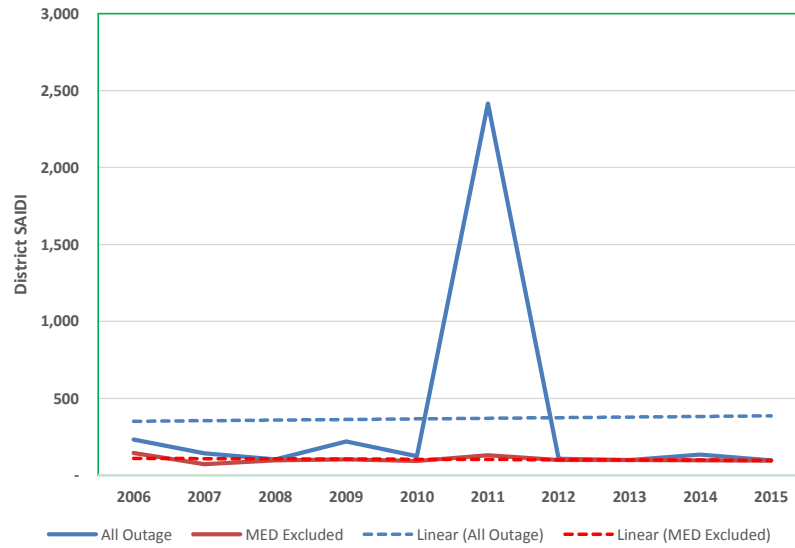
**LONG BEACH District Reliability Performance**



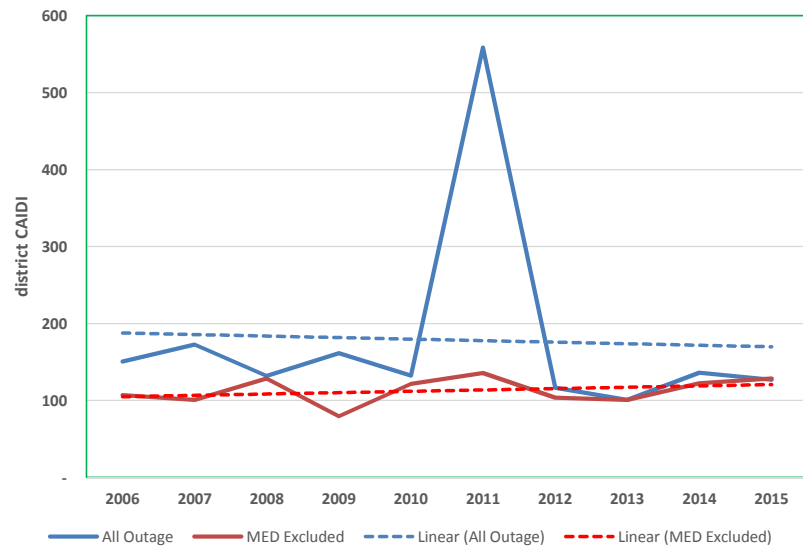
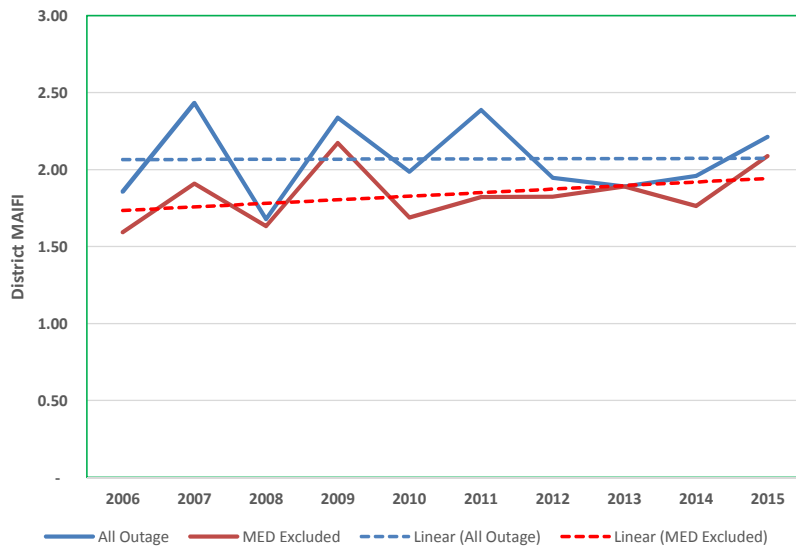
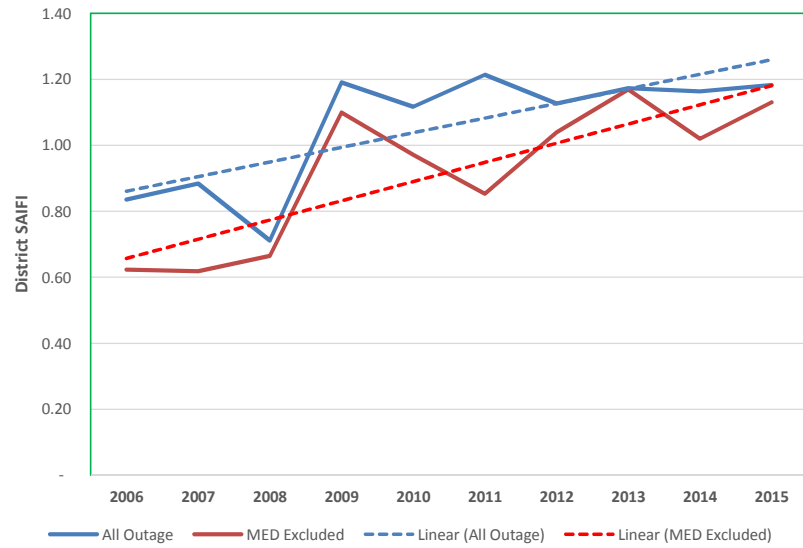
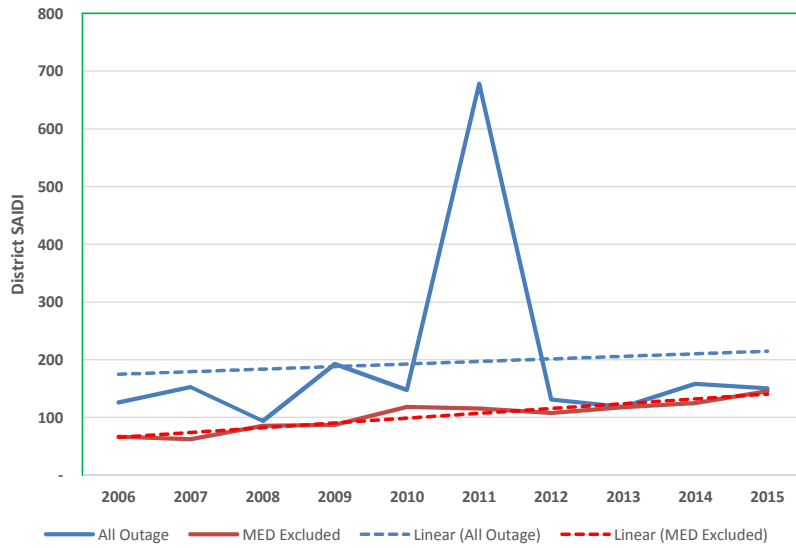
**MENIFEE District Reliability Performance**



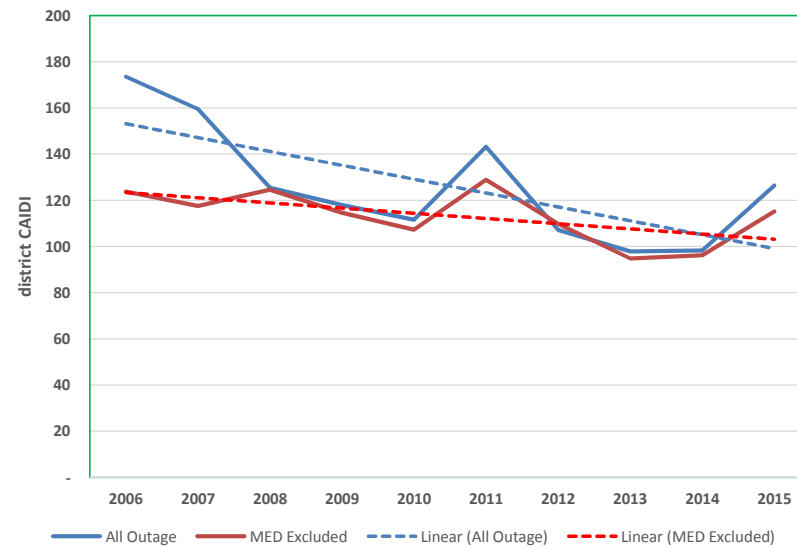
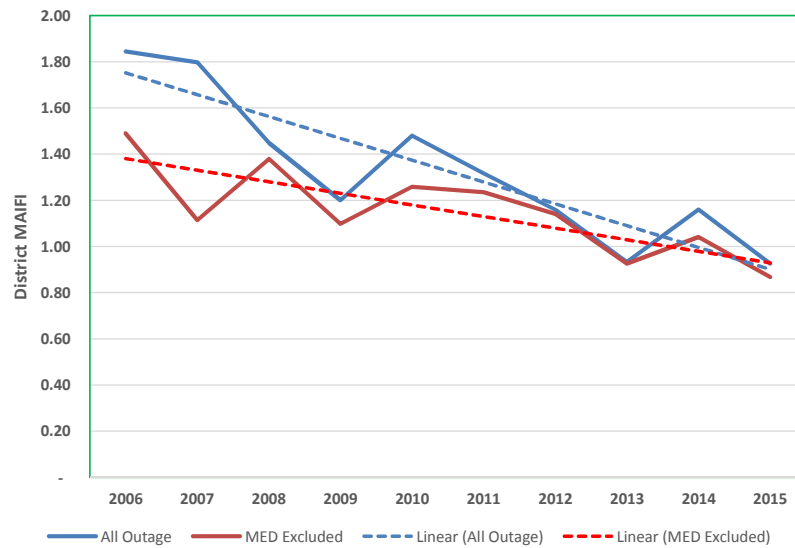
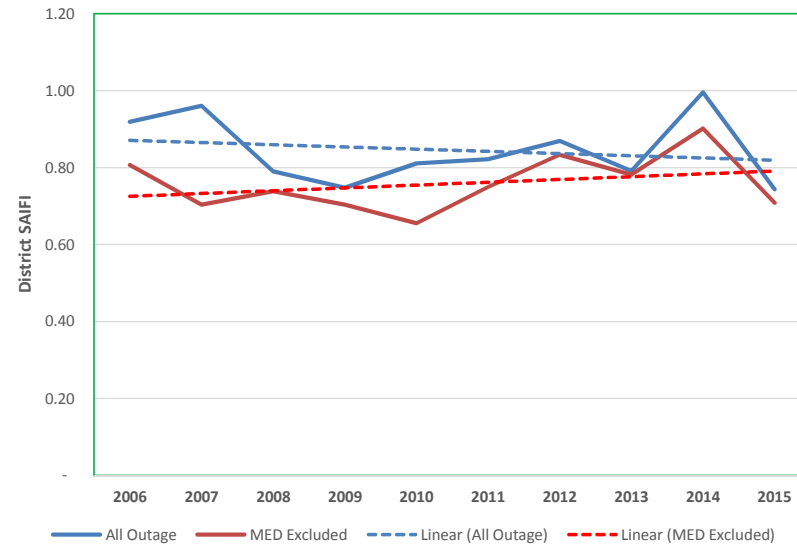
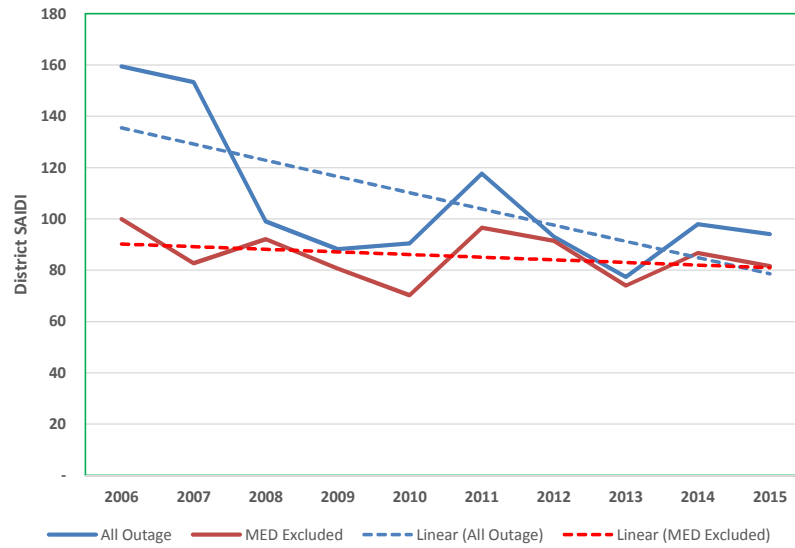
**MONROVIA District Reliability Performance**



**MONTEBELLO District Reliability Performance**

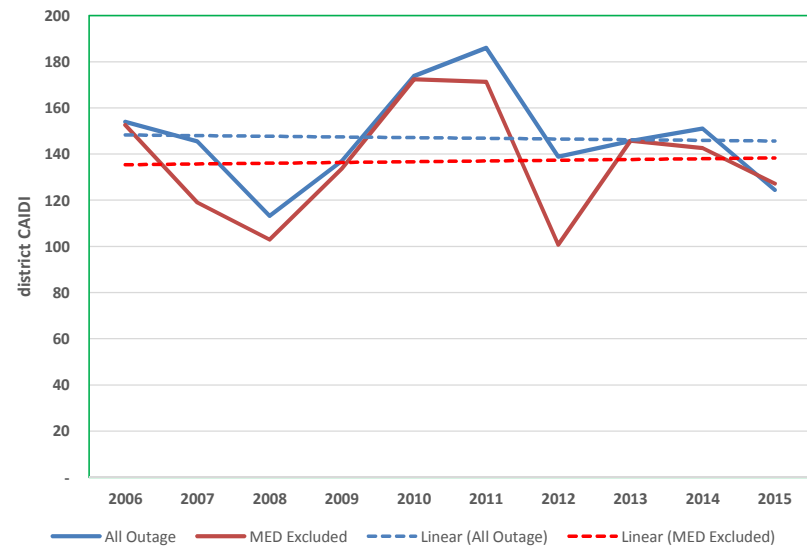
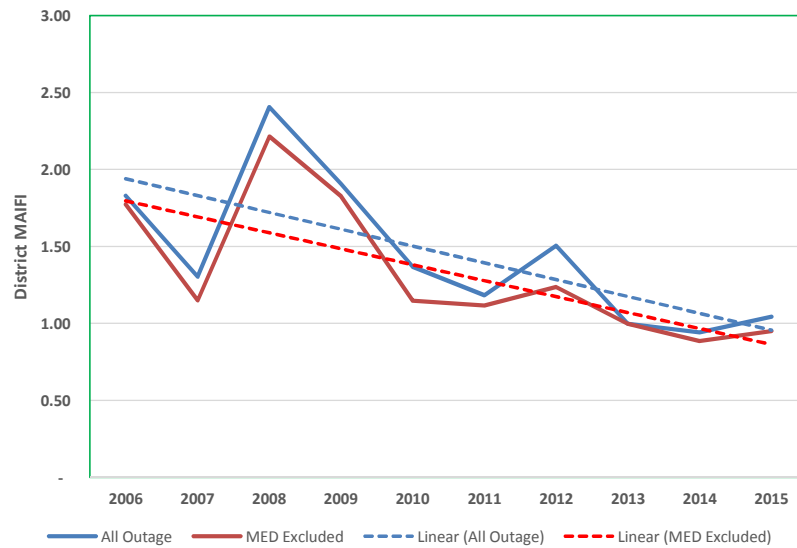
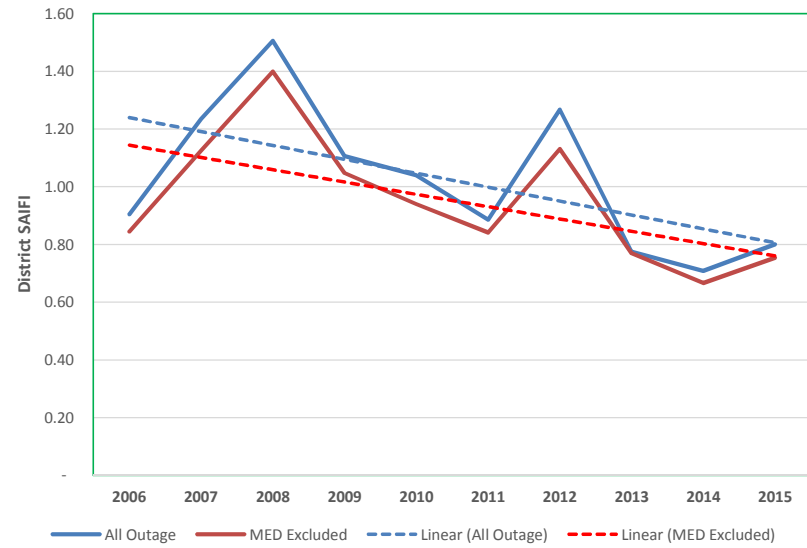
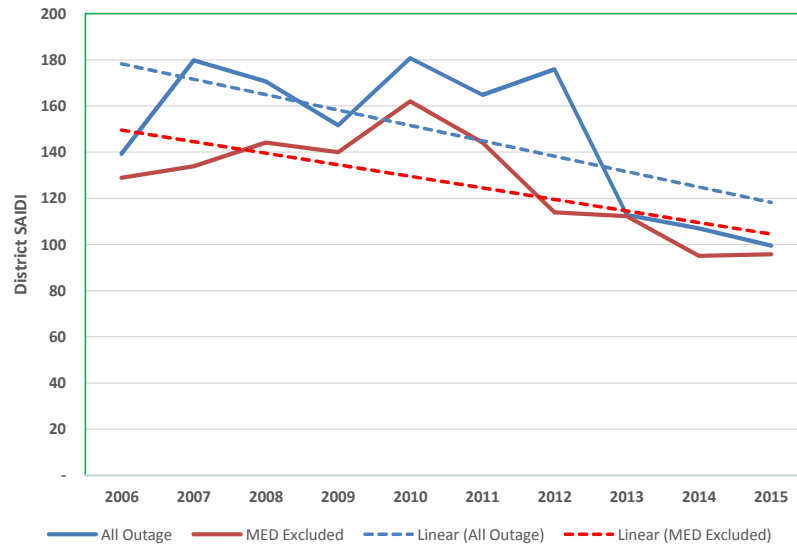


**ONTARIO District Reliability Performance**

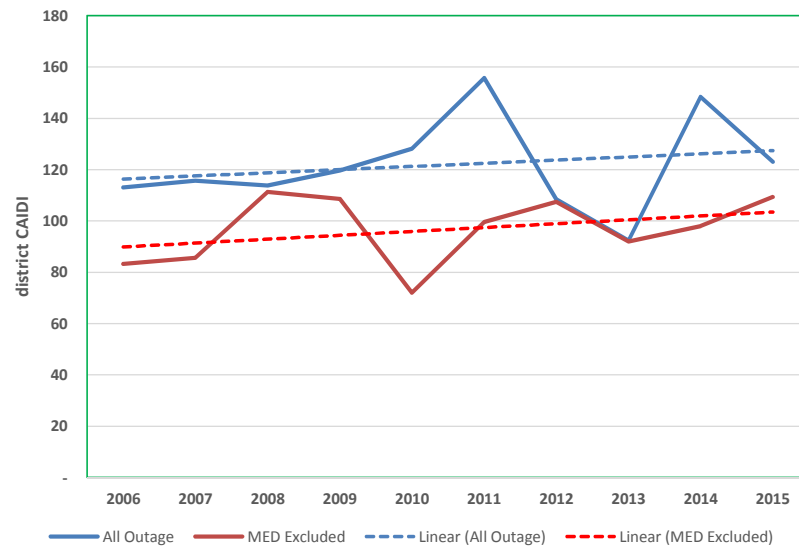
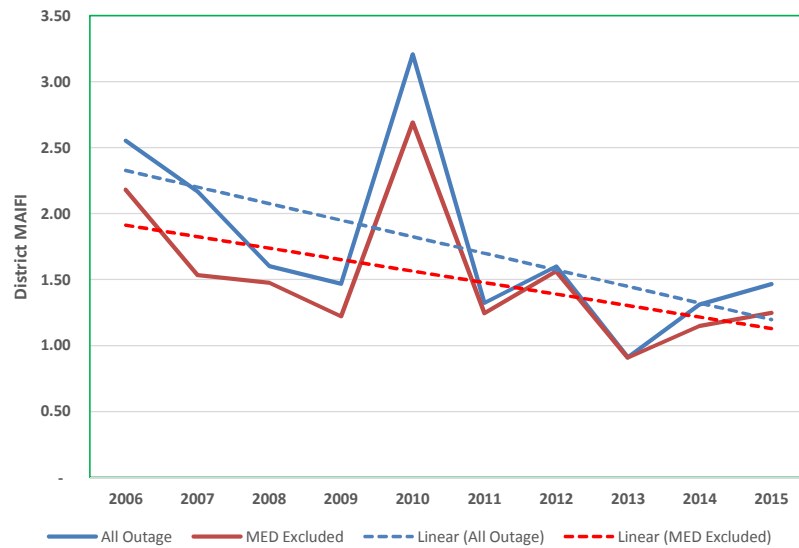
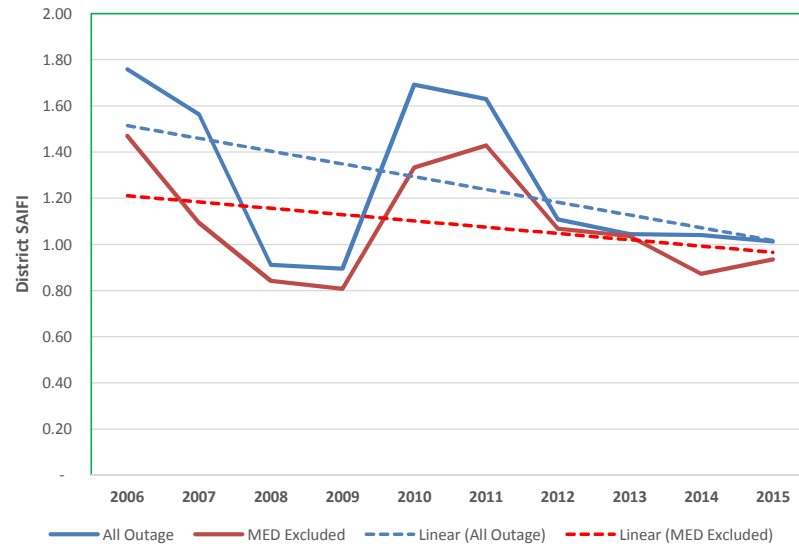
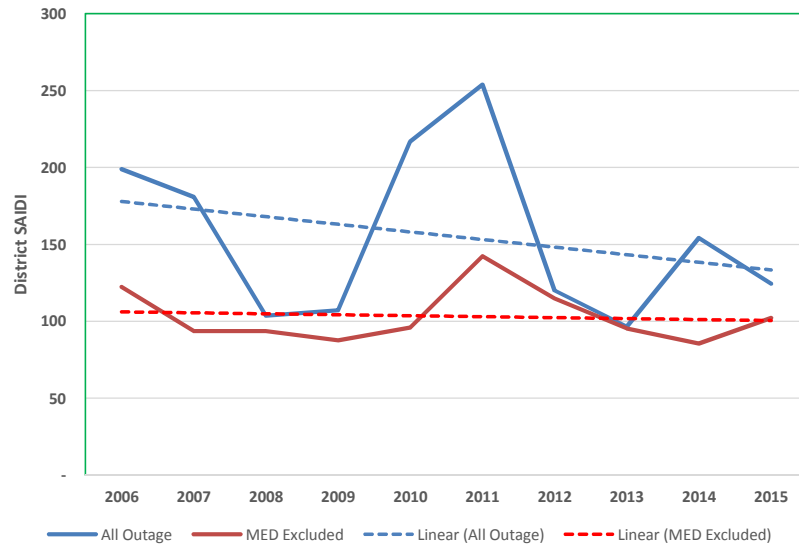




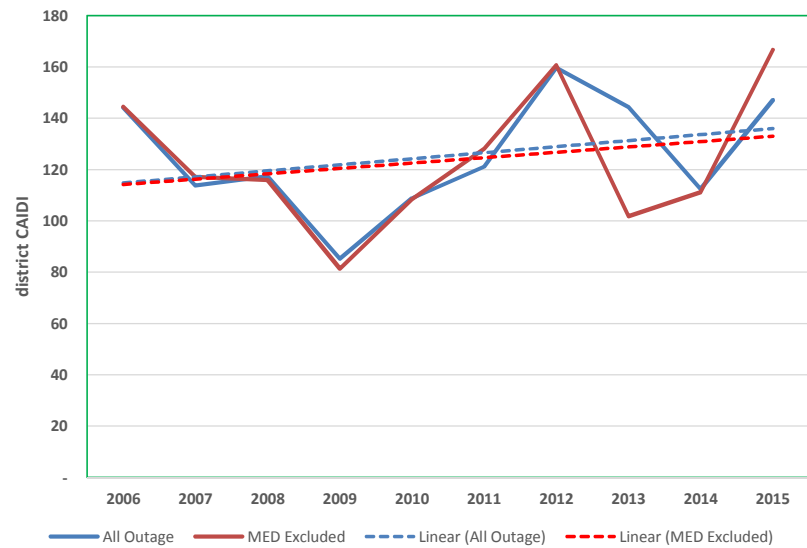
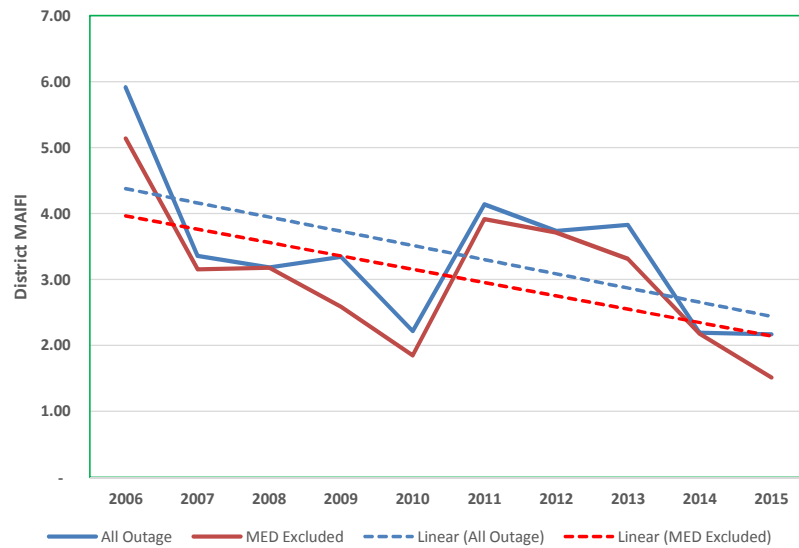
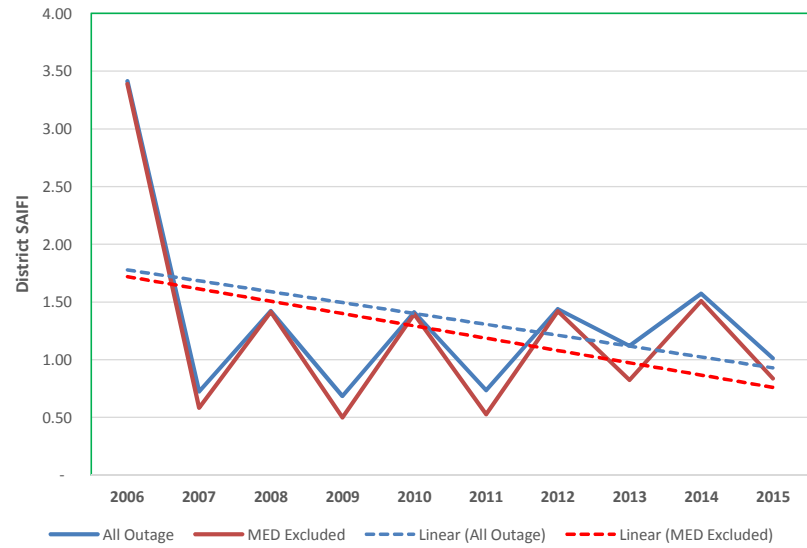
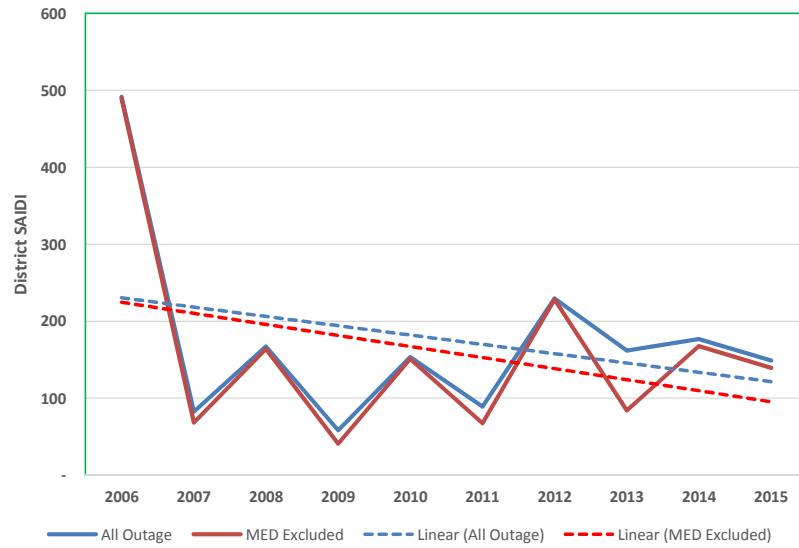
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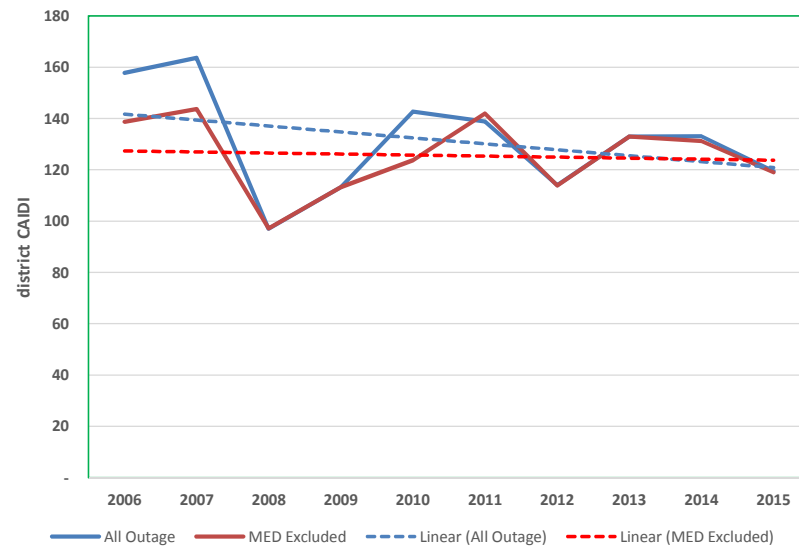
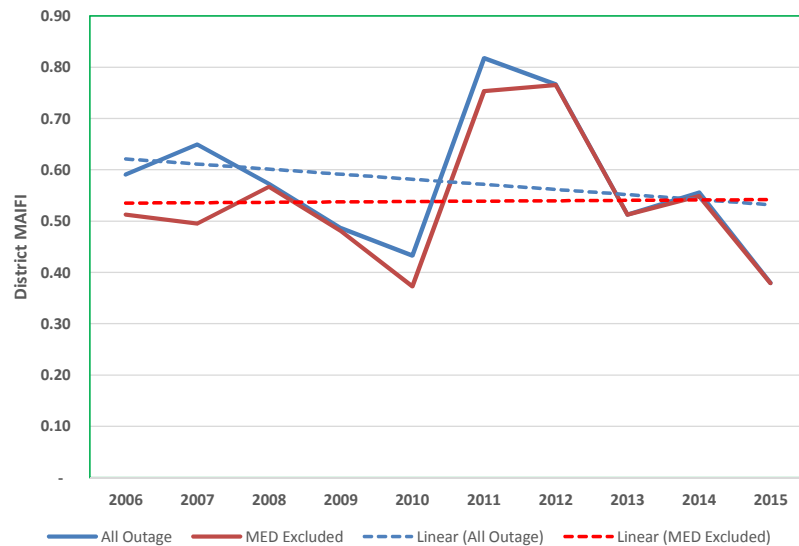
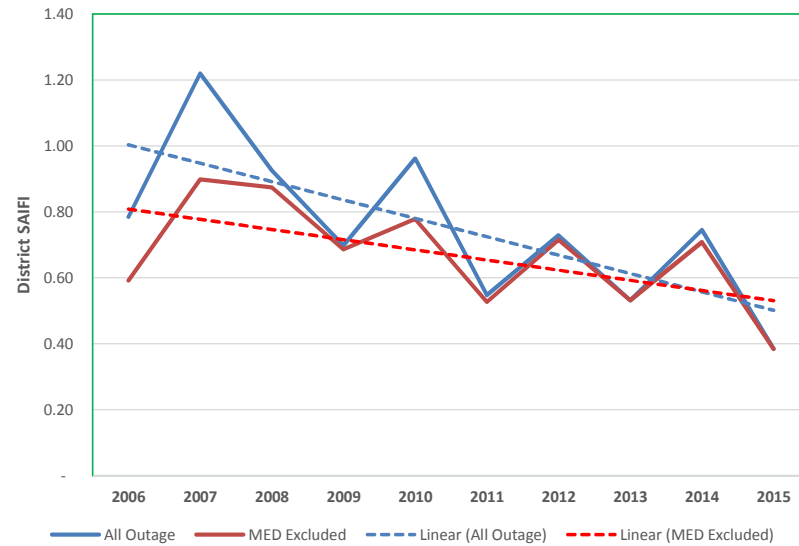
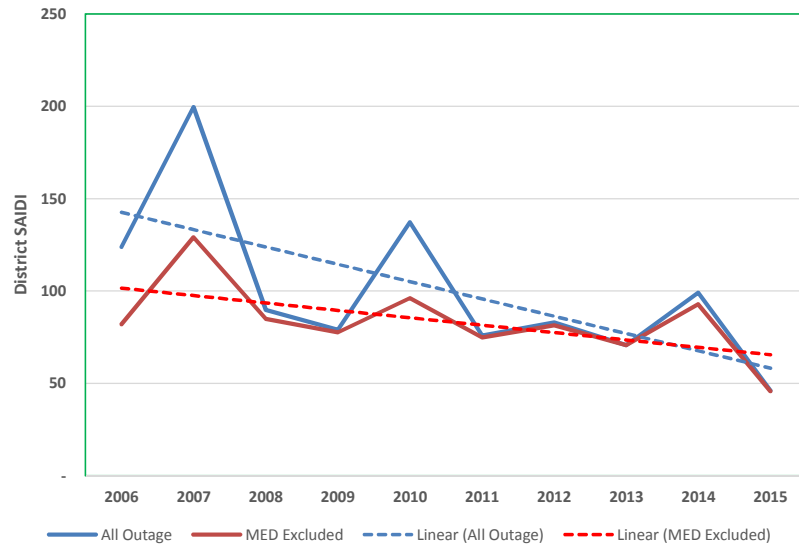
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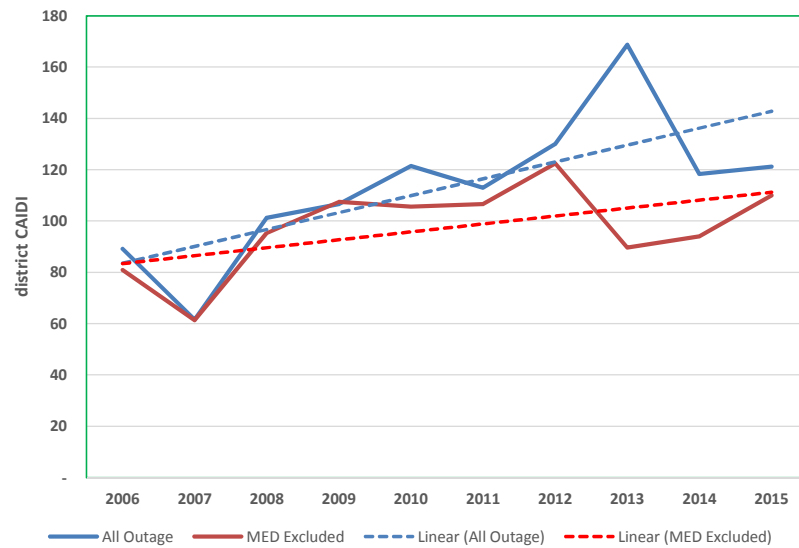
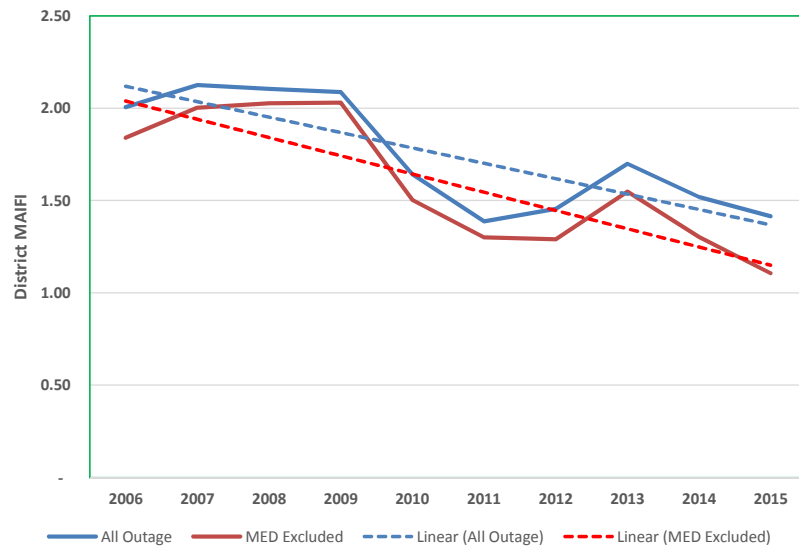
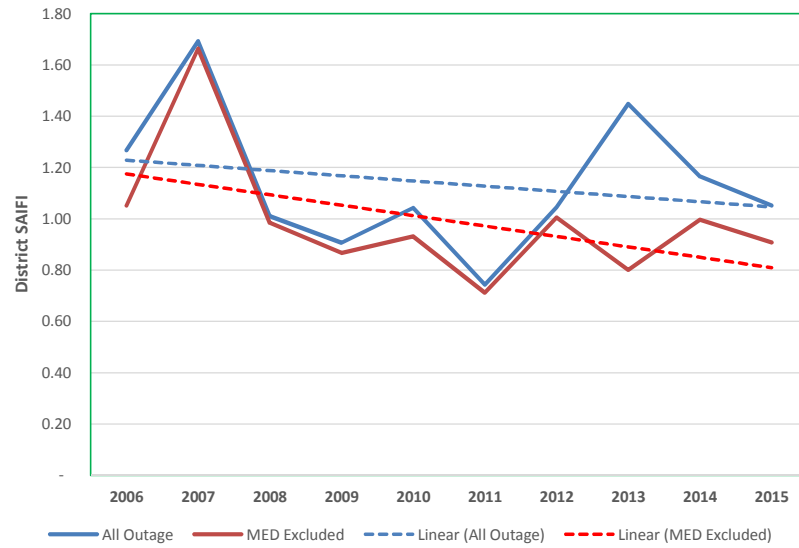
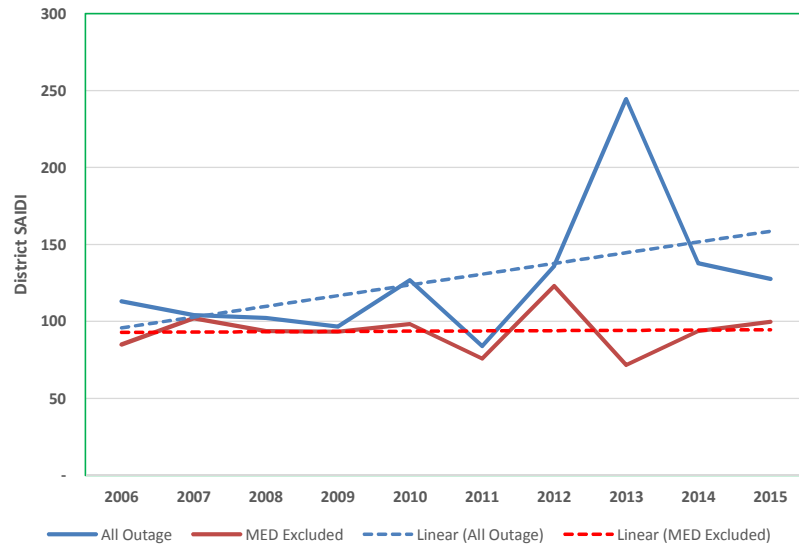
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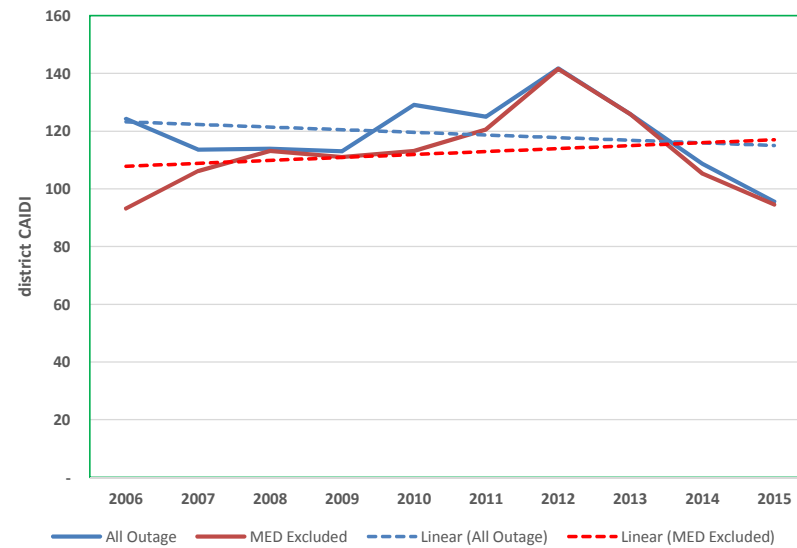
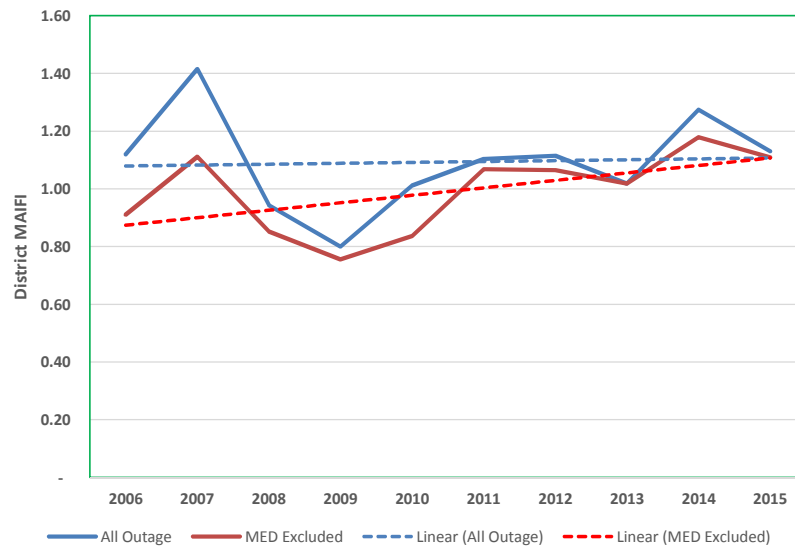
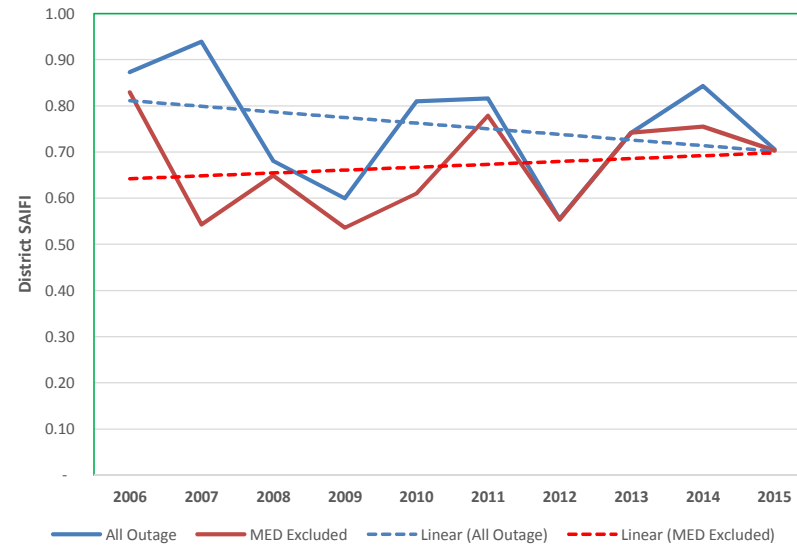
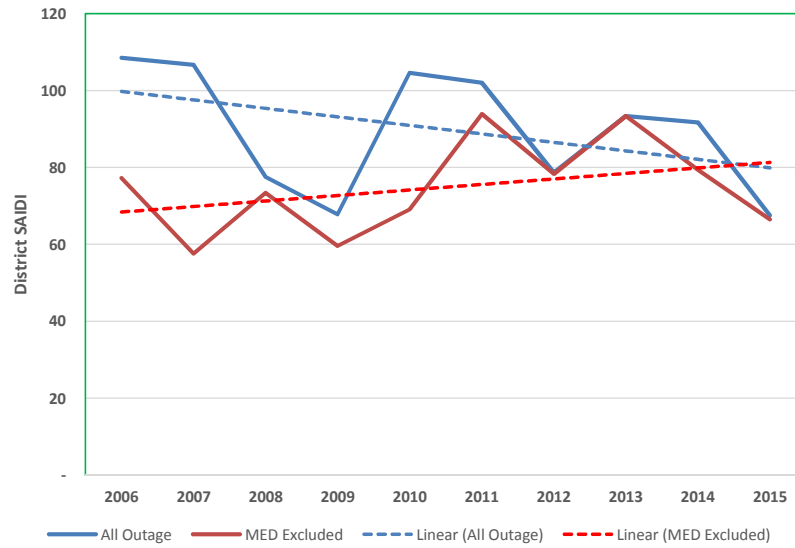
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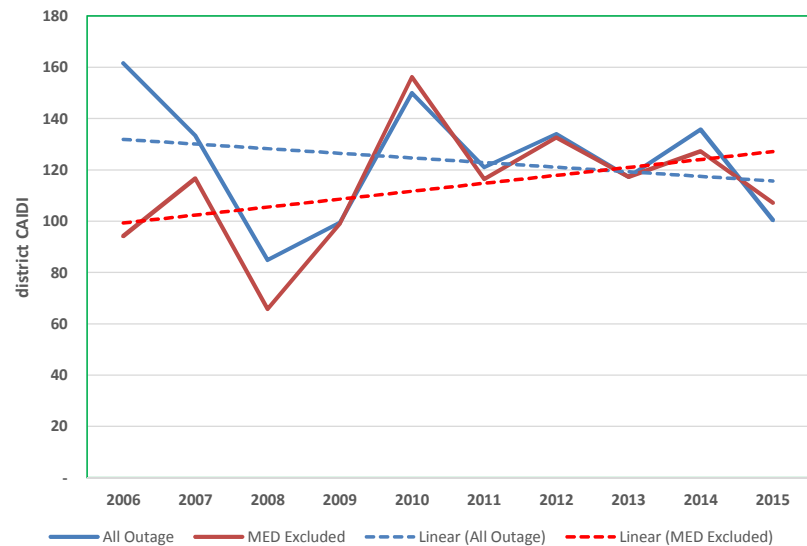
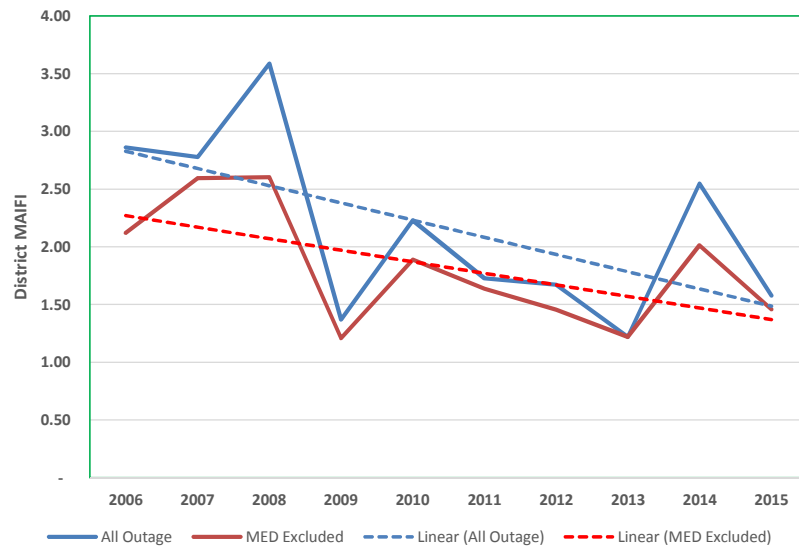
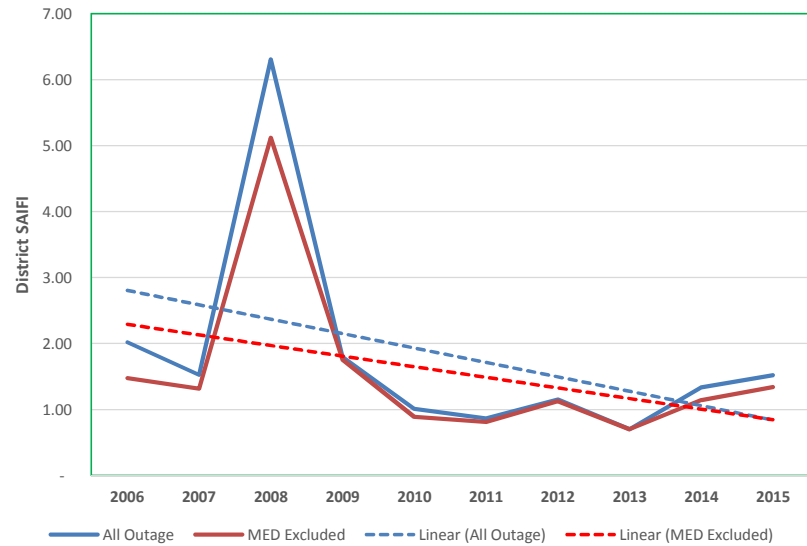
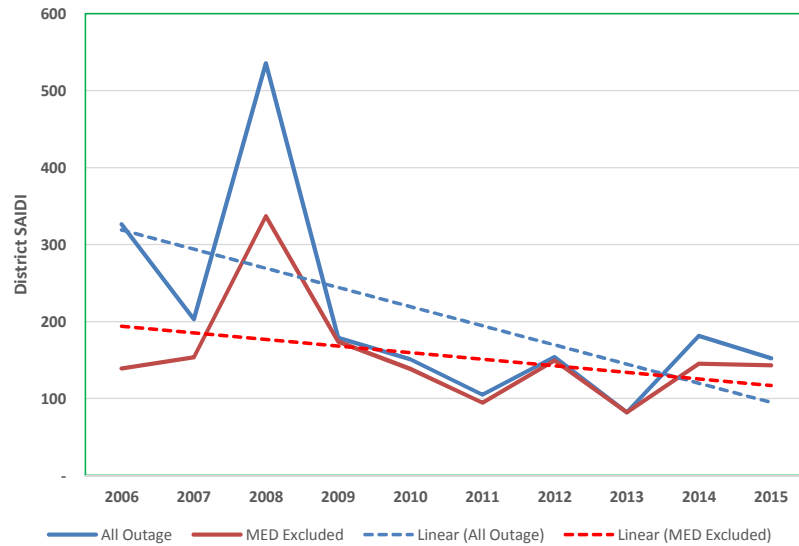
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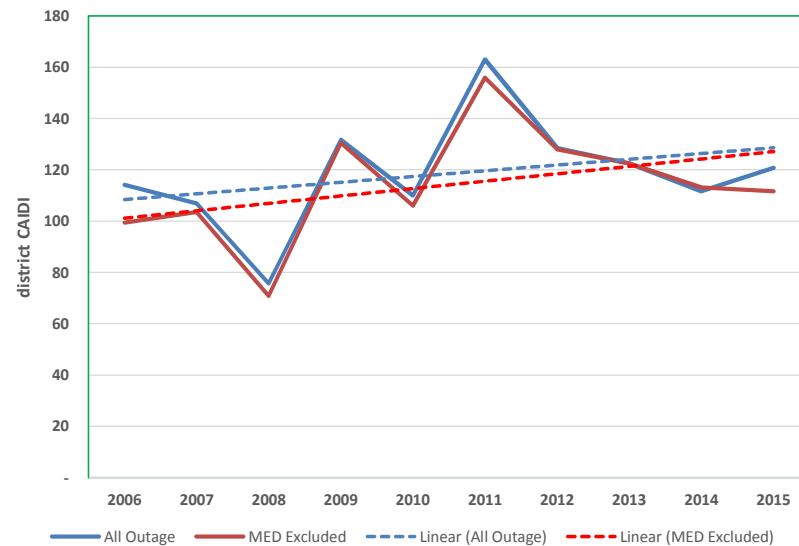
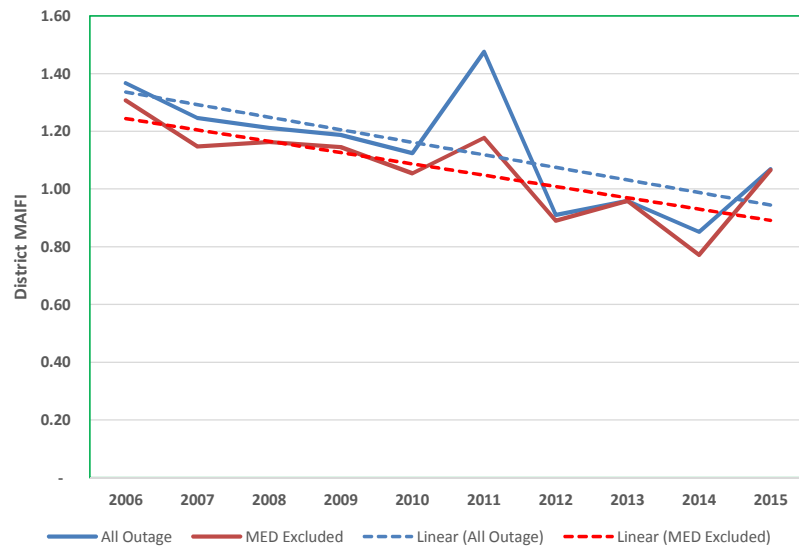
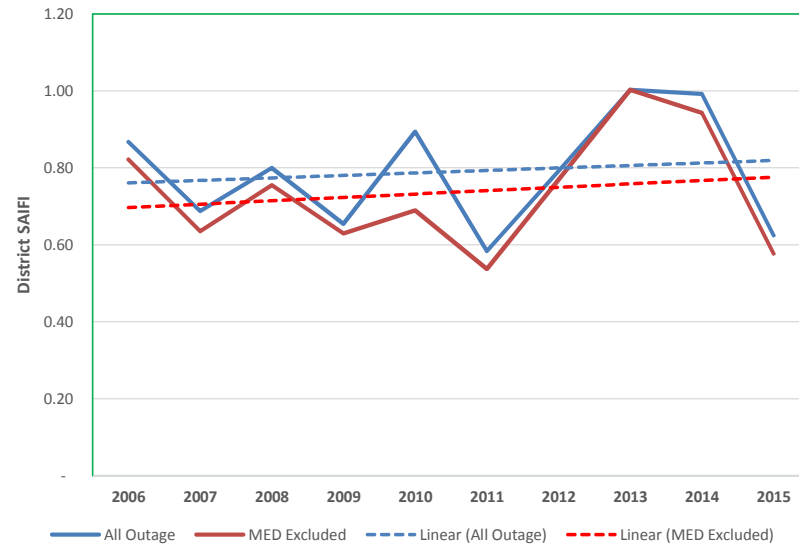
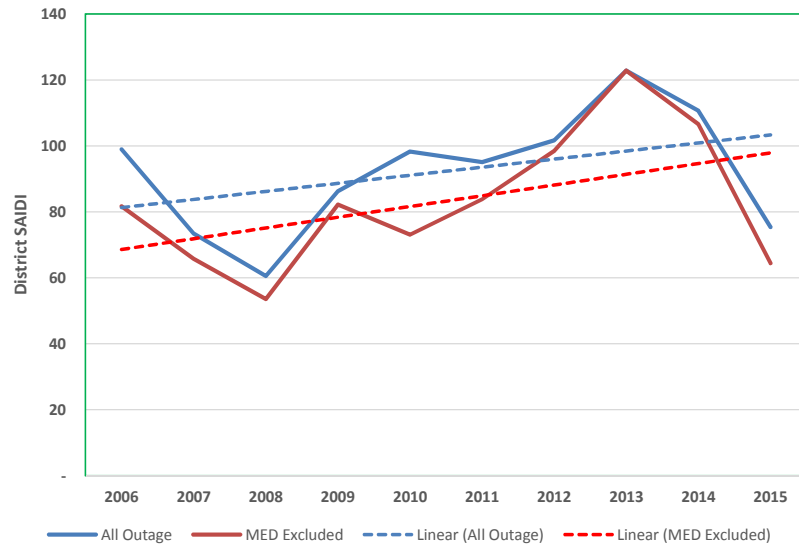
**SANTA ANA District Reliability Performance**



**SANTA BARBARA District Reliability Performance**

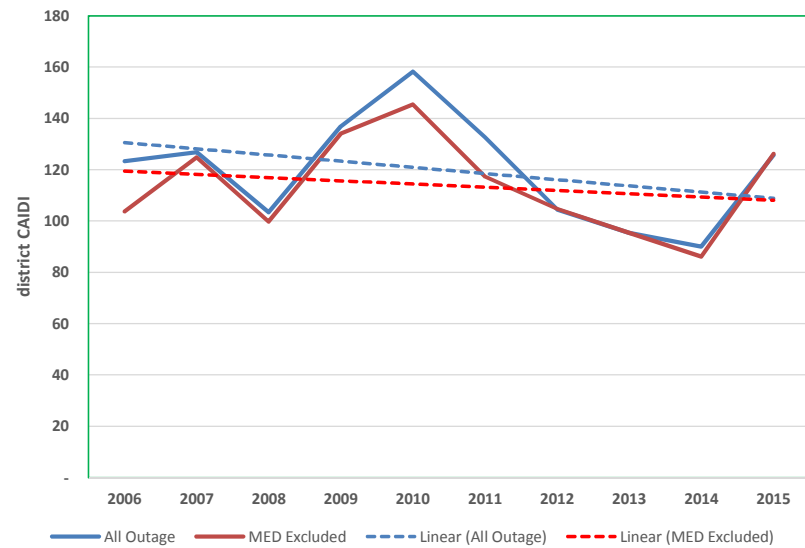
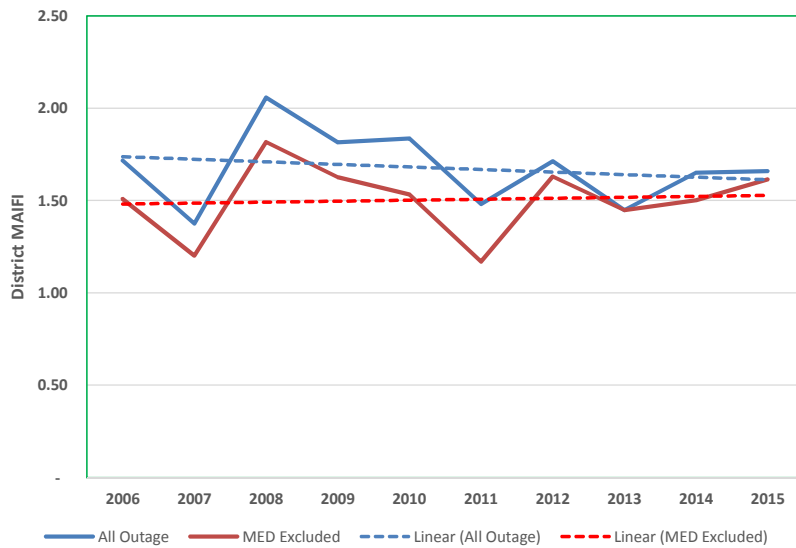
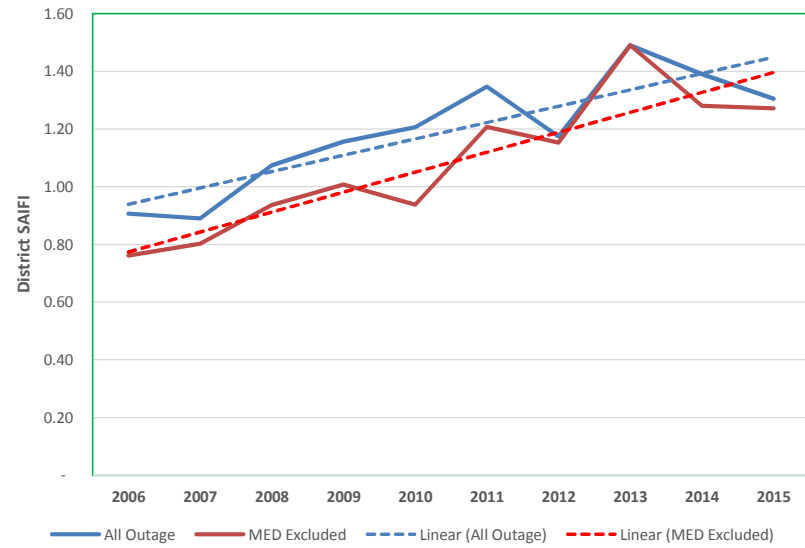
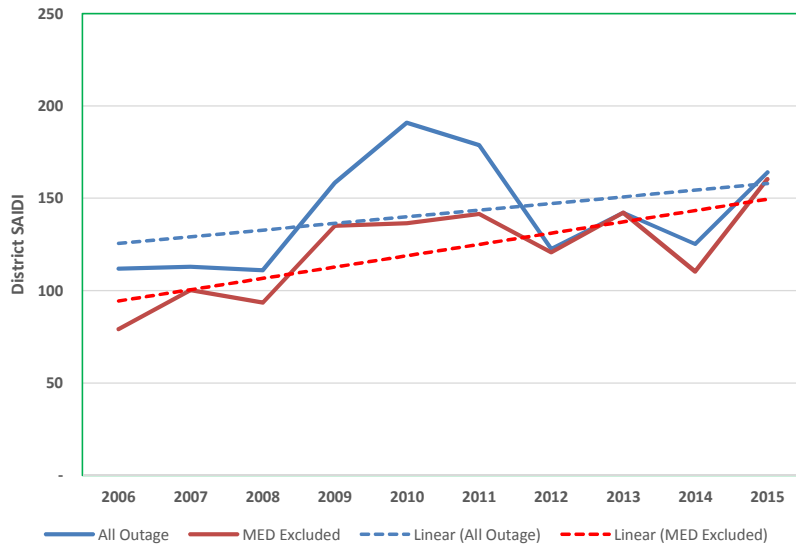


**SANTA MONICA District Reliability Performance**

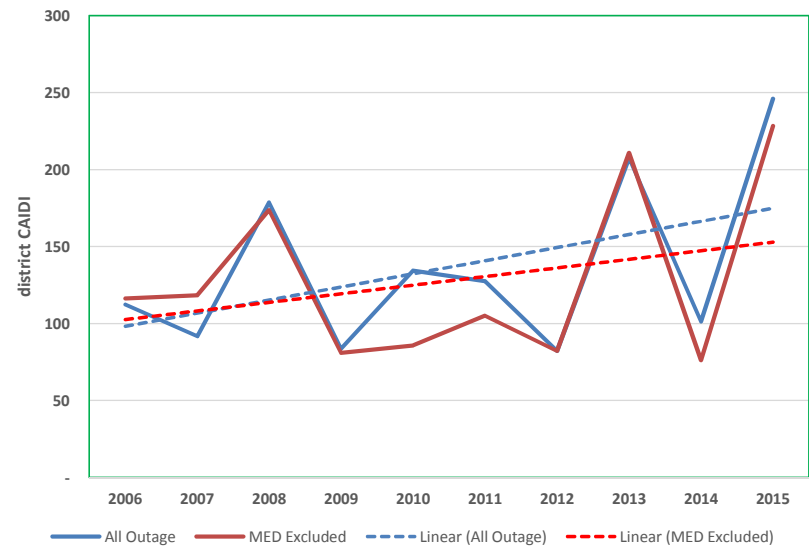
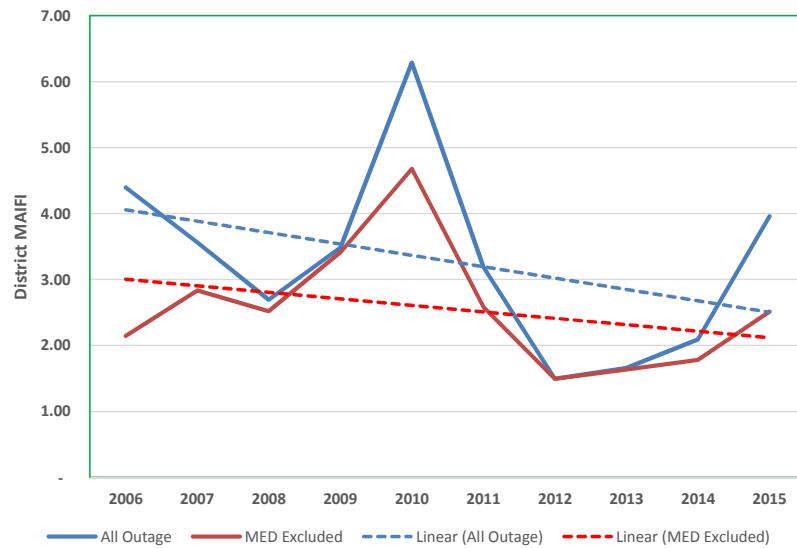
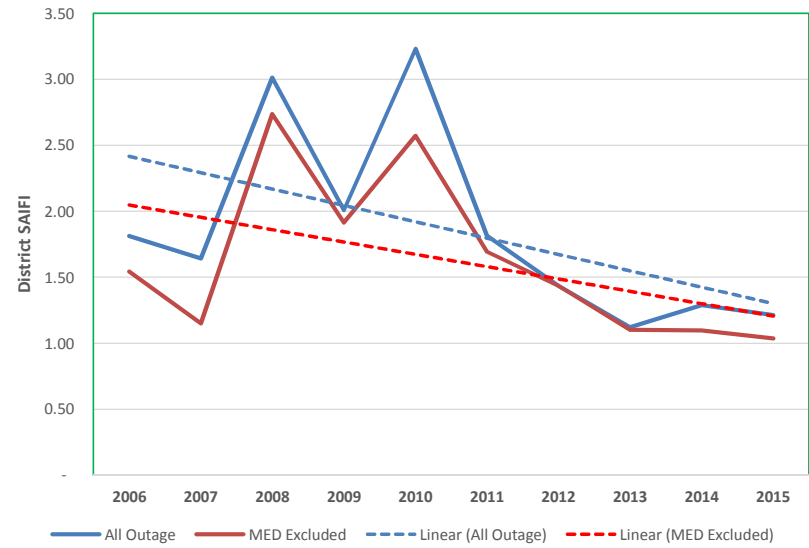
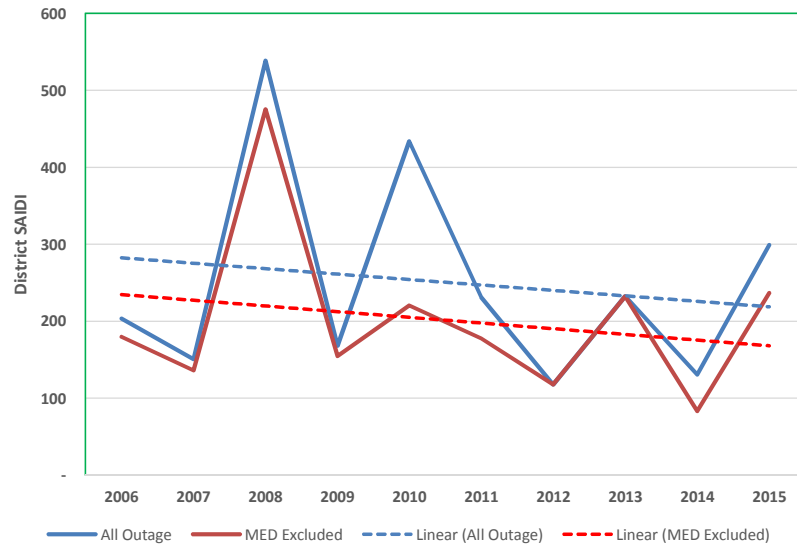




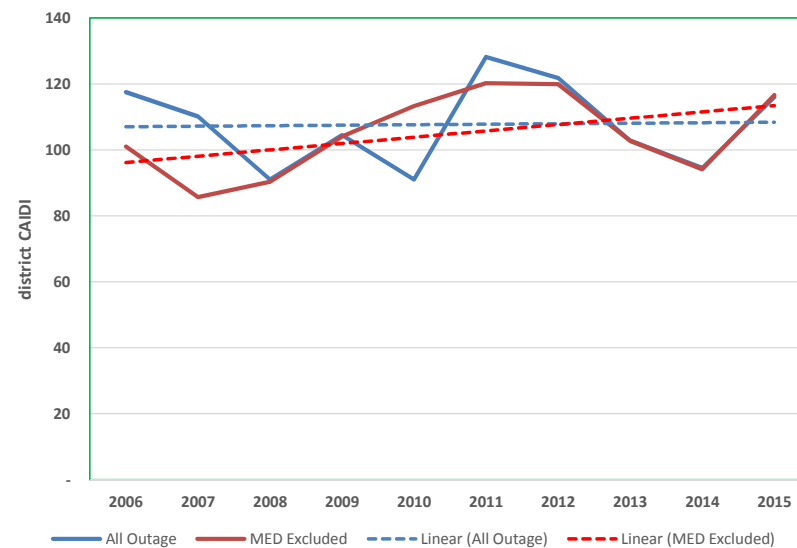
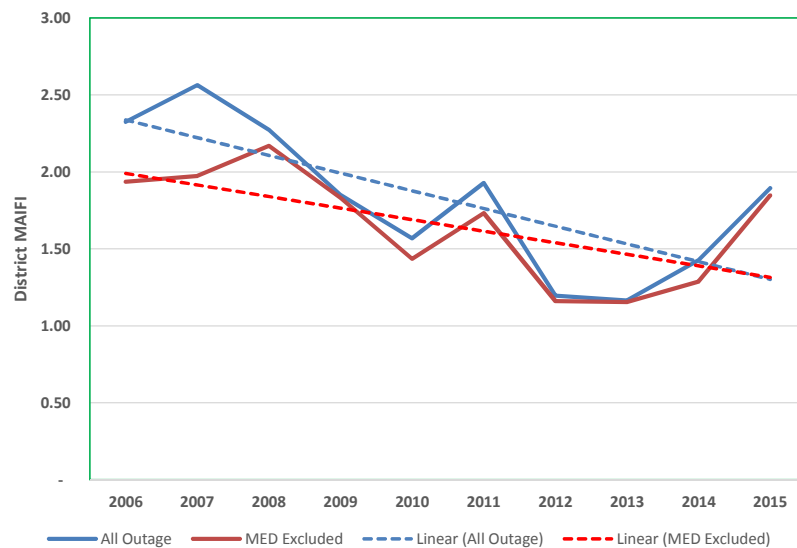
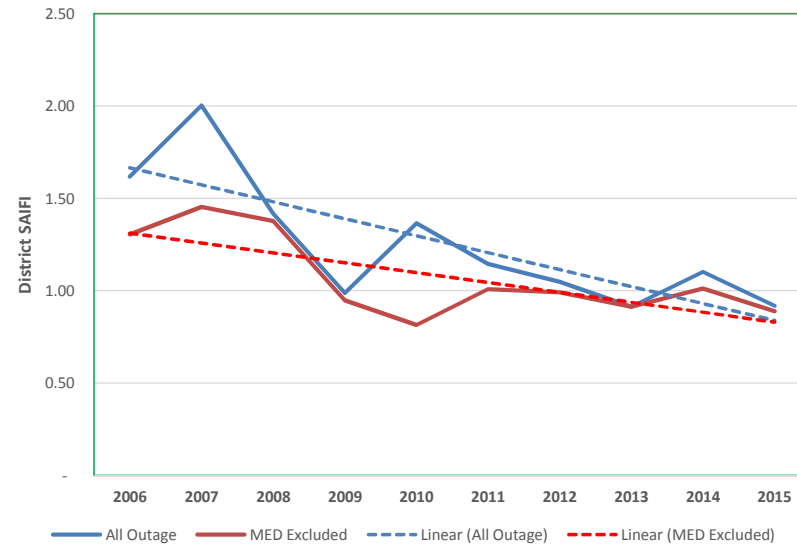
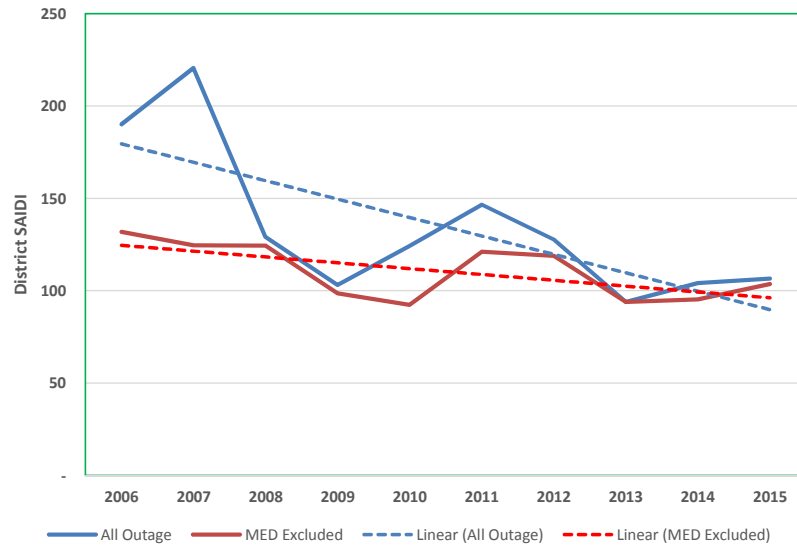
**SOUTH BAY District Reliability Performance**



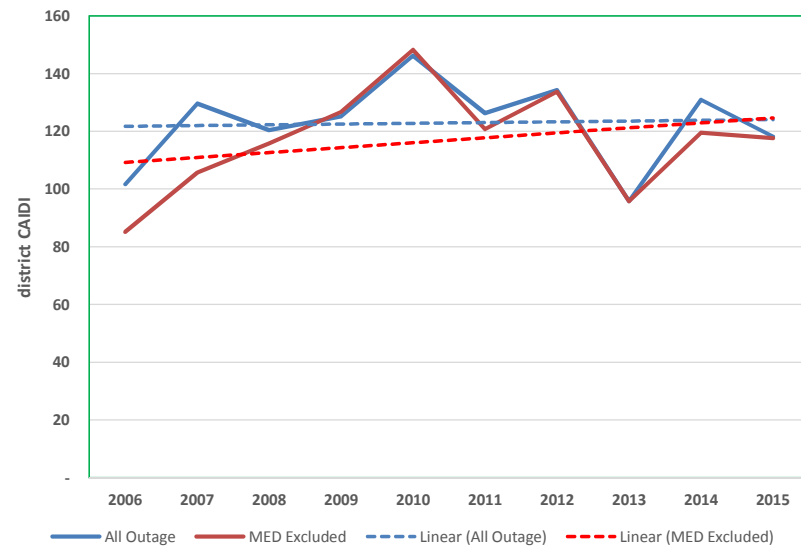
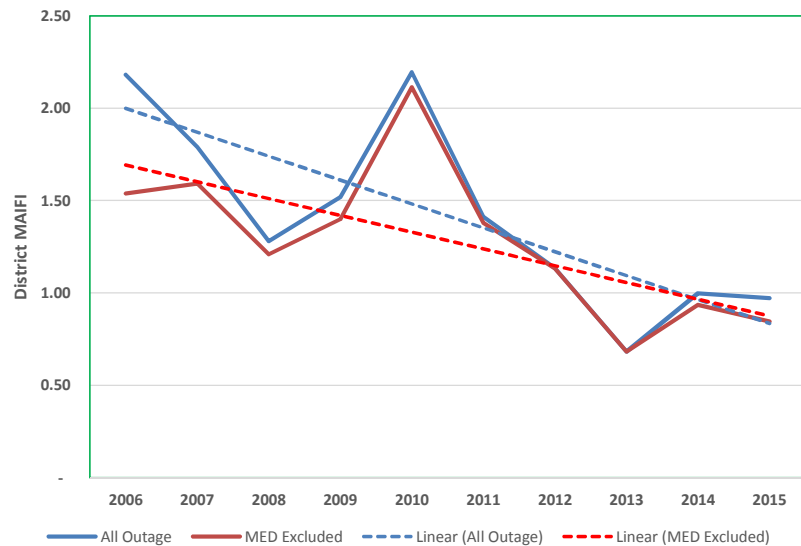
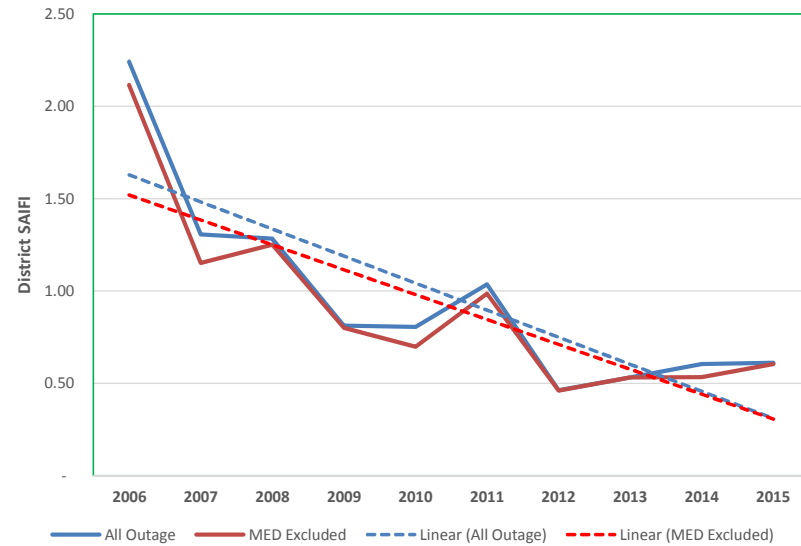
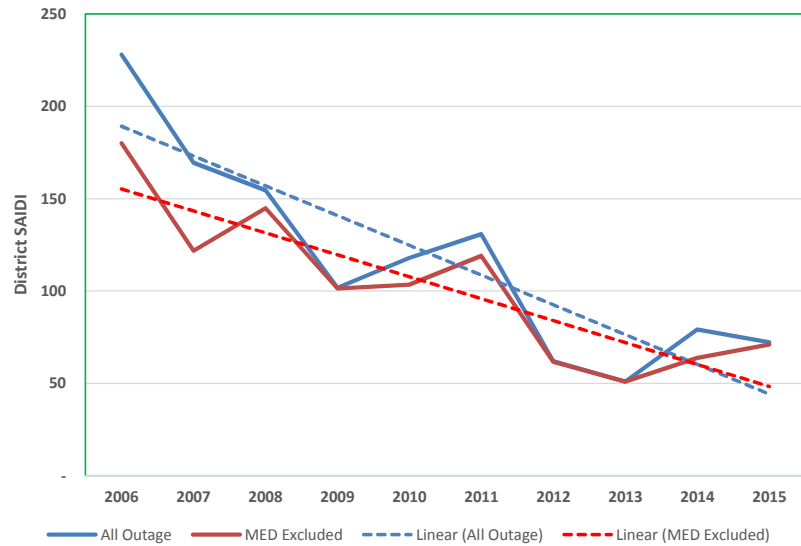
**TEHACHAPI District Reliability Performance**



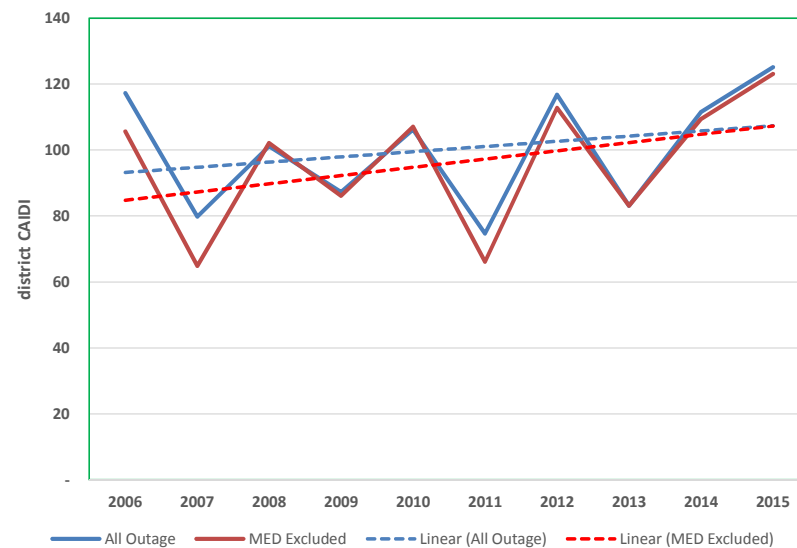
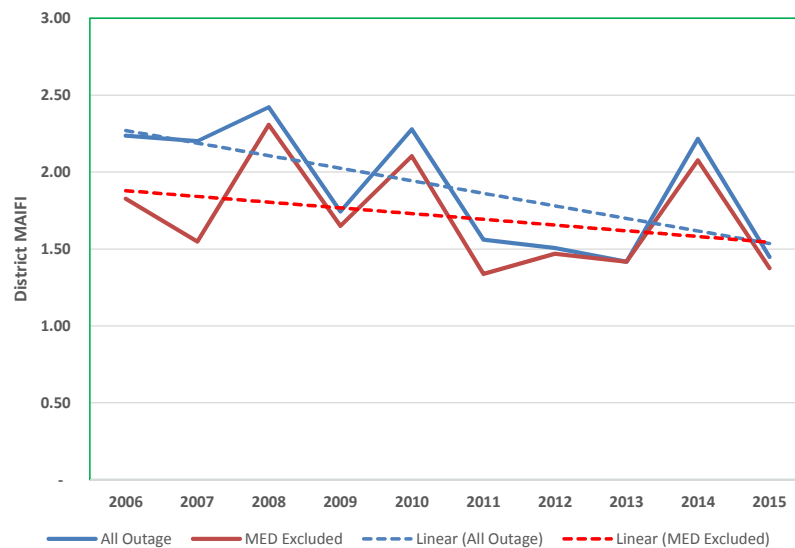
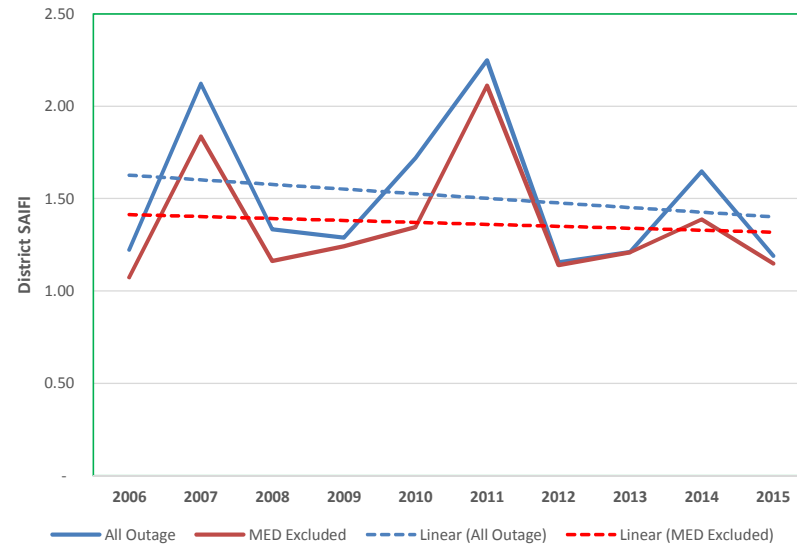
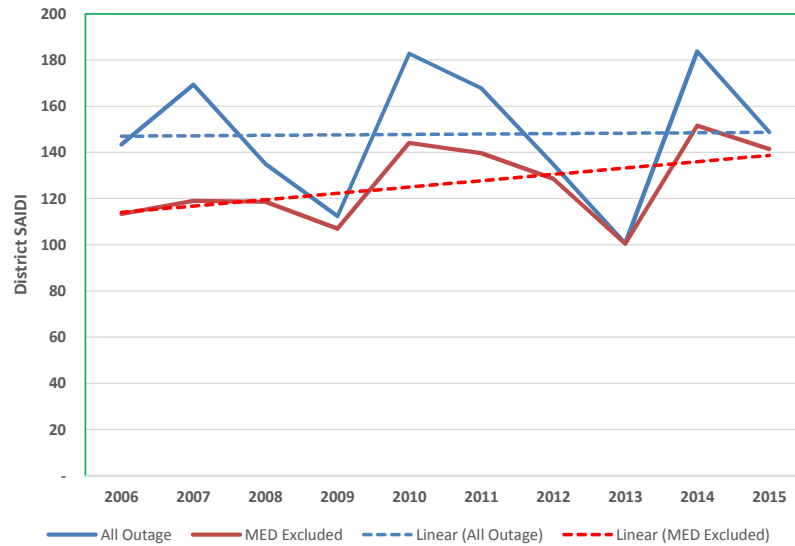
**THOUSAND OAKS District Reliability Performance**



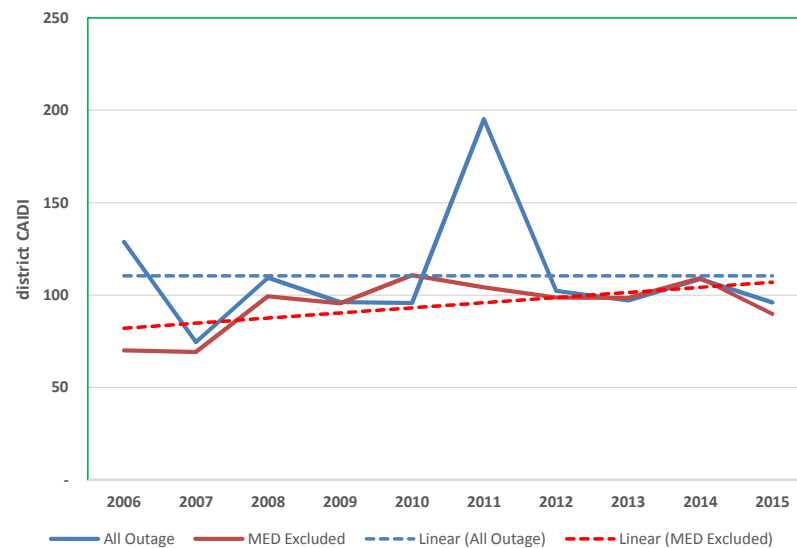
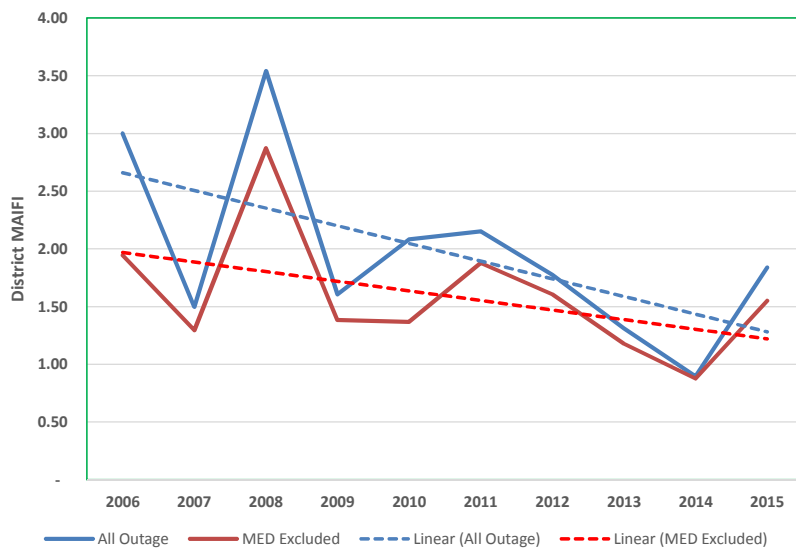
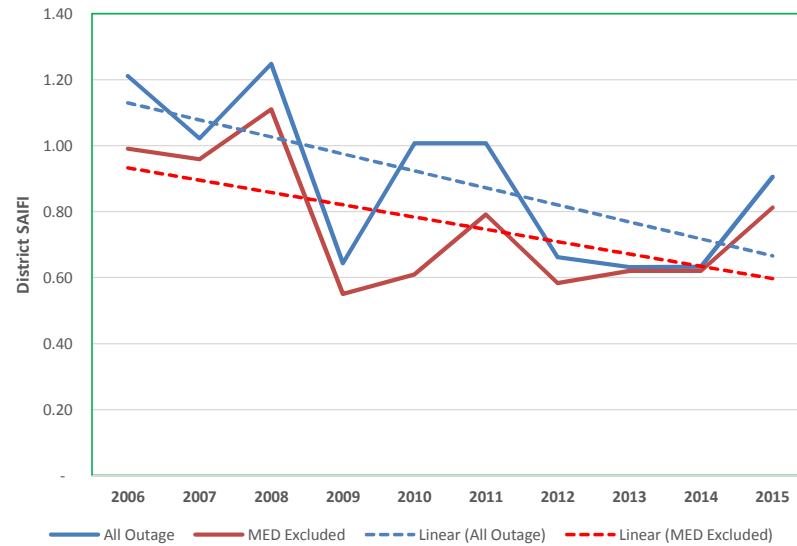
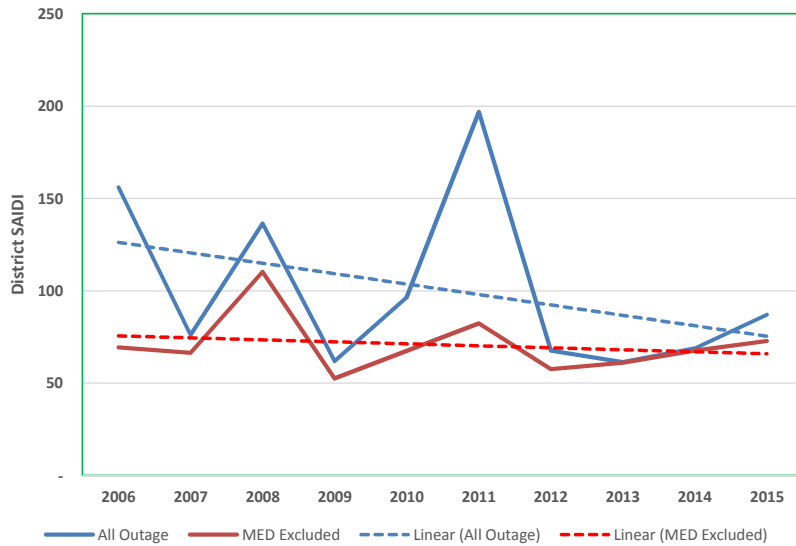
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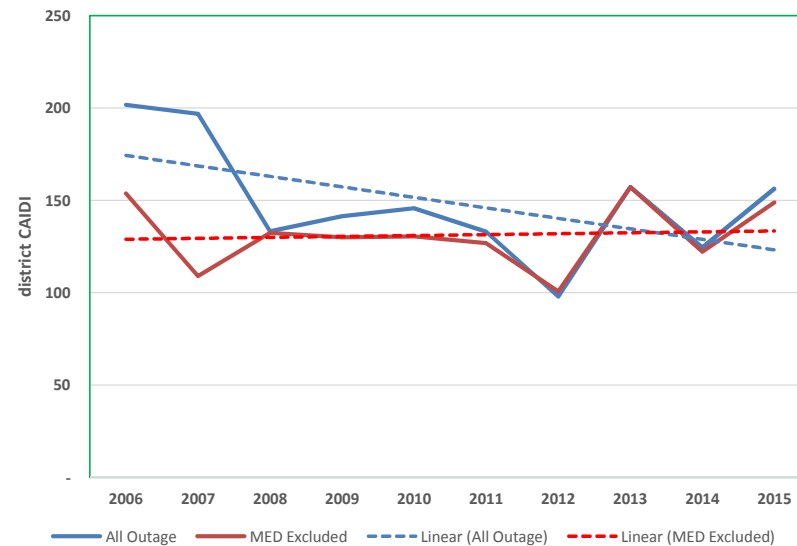
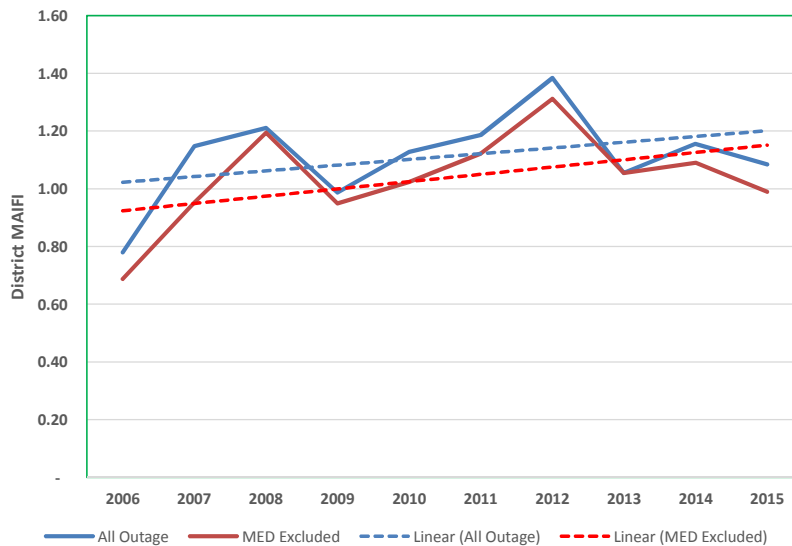
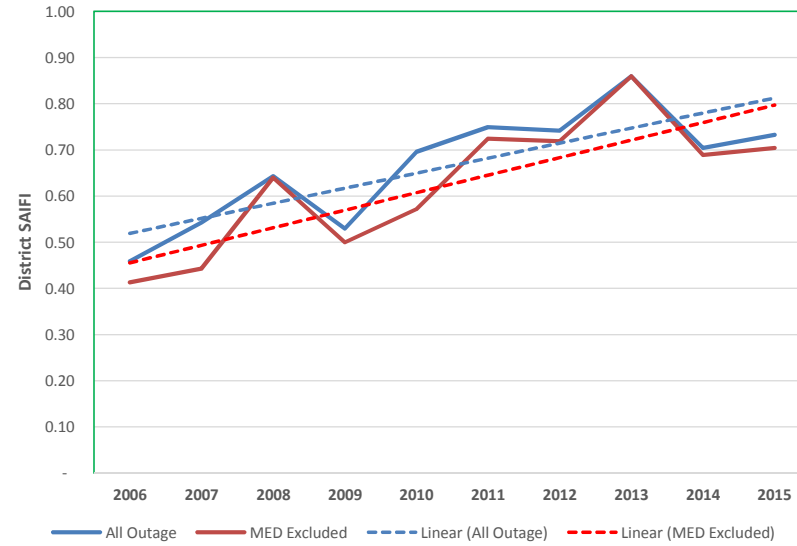
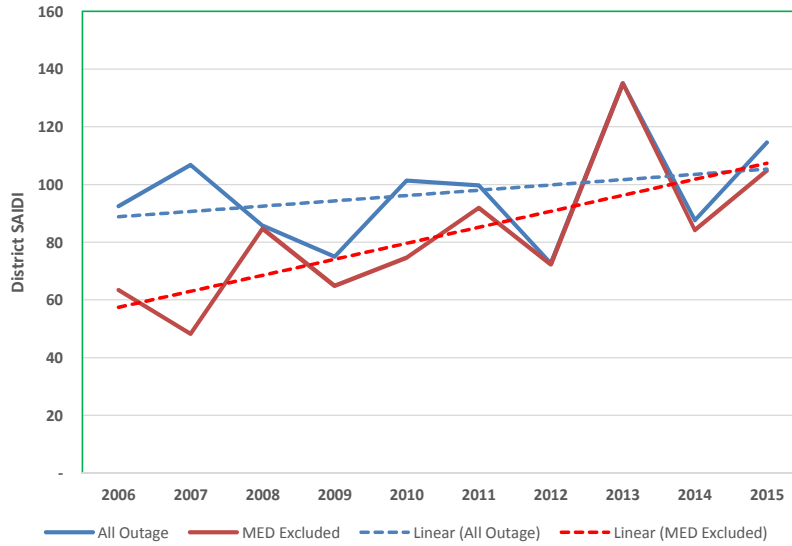
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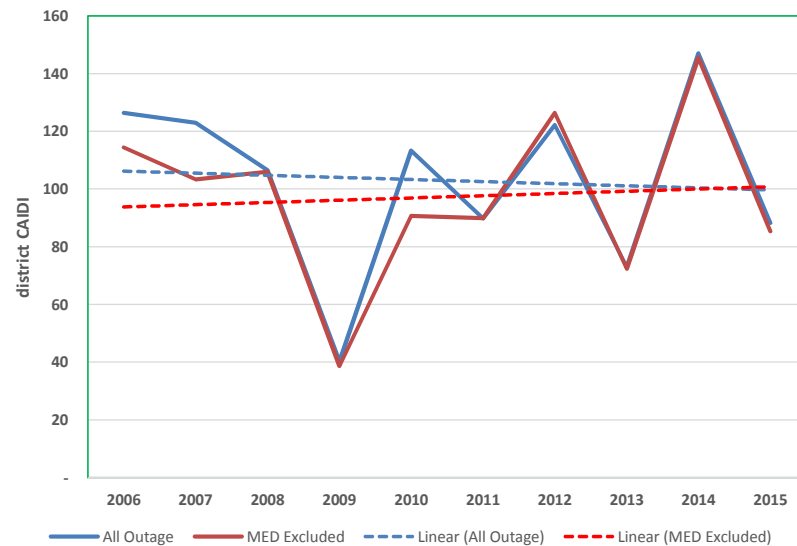
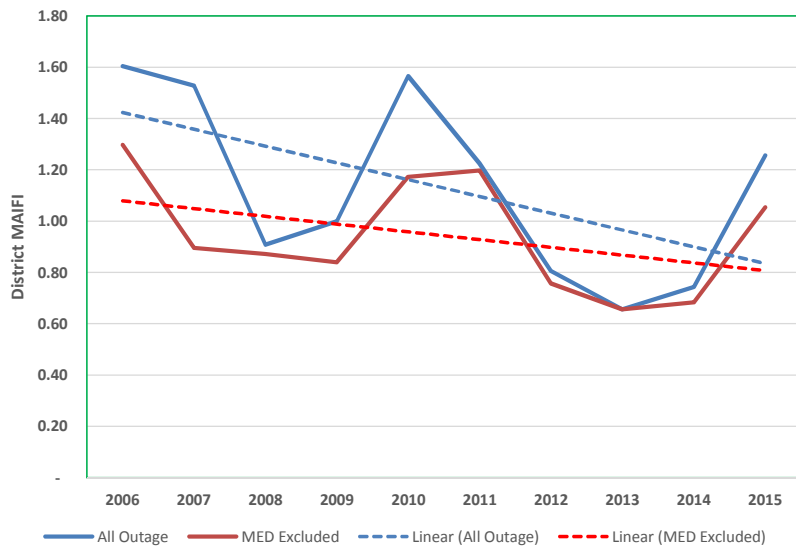
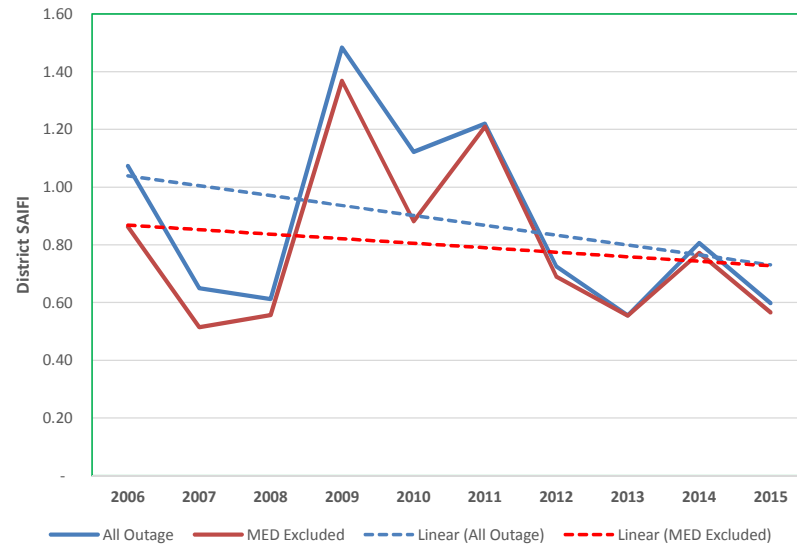
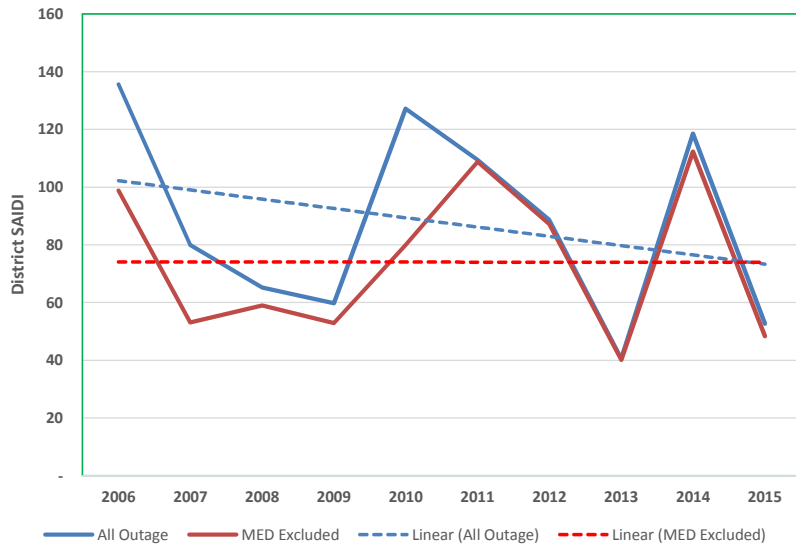
**VICTORVILLE District Reliability Performance**



**WHITTIER District Reliability Performance**

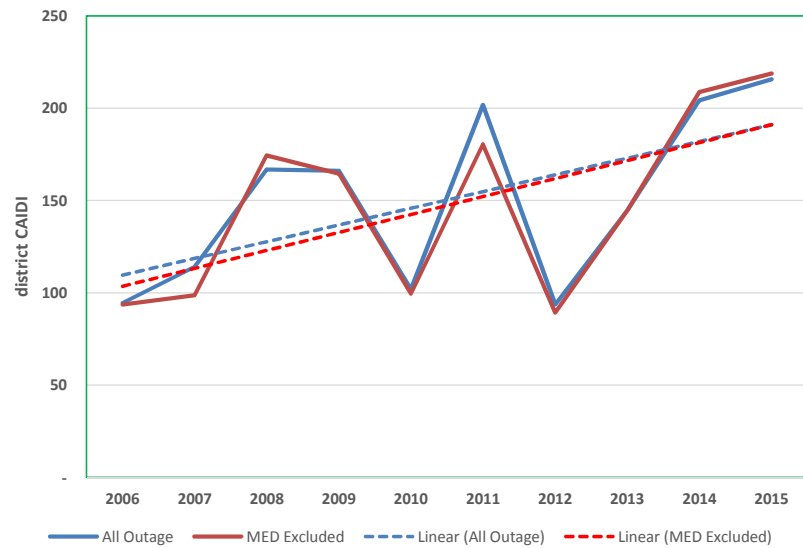
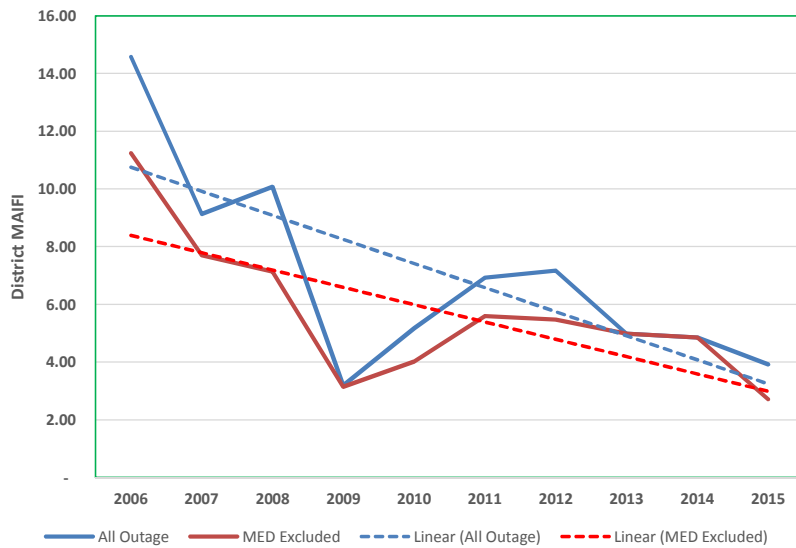
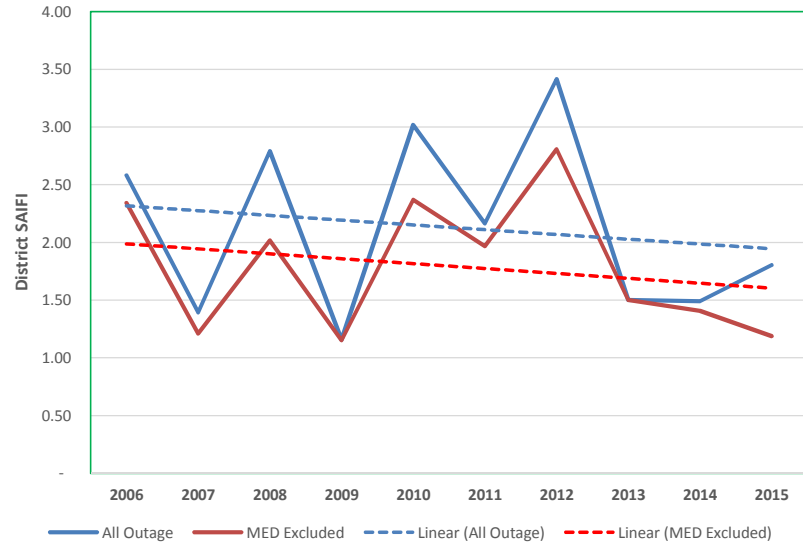
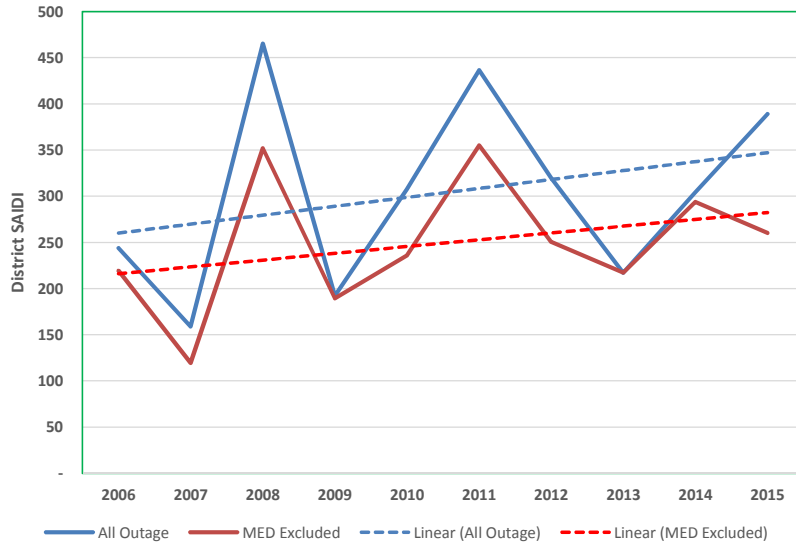


**WILDOMAR District Reliability Performance**





**YUCCA VALLEY District Reliability Performance**



### **SECTION 3 – System and District Indices Based on IEEE 1366 for the past 10 years Including Planned Outages and Including and Excluding MED**

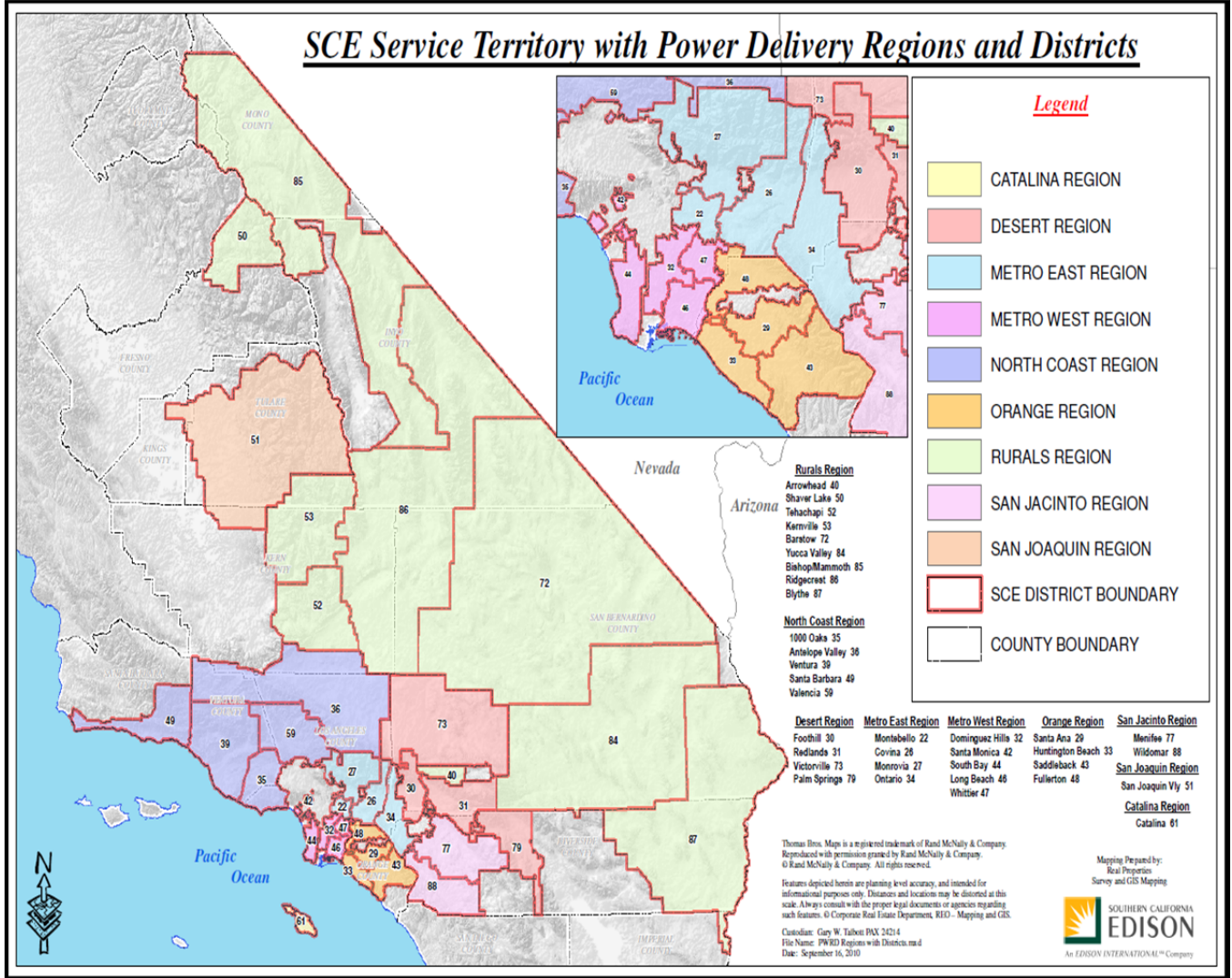
SCE does not have ten years of planned outage data and the associated reliability indices. On September 10, 2015, SCE's Comments on the Administrative Law Judge's Ruling included this statement: "SCE does not calculate the standard reliability indices (SAIDI, SAIFI, MAIFI and CAIDI) for planned outages, so does not have that data for the past 10 years and could not comply with this requirement." On December 7, 2015 (Comments on Proposed Decision), and December 14, 2015 (Reply to Comments on PD), SCE reiterated that we do not have the planned outage data and could not comply with this requirement. In response to those comments, D.16-01-008, Appendix B, modified the Proposed Decision by adding the following footnote: "A utility that is unable to provide 10 years of planned outage data should provide its best available data even if it is not fully refined and a detailed explanation in the annual report and the reports to the Commission under seal."

For this 2016 report, SCE's best available data is unplanned outage data (See Section 2). Prior to October 2015, information regarding a planned outage (e.g., start time, expected duration, number of customers affected) was entered into SCE's Outage Management System (OMS), which is used to monitor, identify, and manage electrical system outages on SCE's distribution system. However, this planned outage information was not entered into OMS for the purpose of calculating reliability metrics.

In October 2015, SCE began tracking planned outage data that is extracted from Smart Meters. A full year of planned outage data will not be available until year-end 2016. Beginning with the 2017 annual reliability report, SCE will be able to provide standard reliability indices for the planned outages that occurred in 2016. For each annual reliability report thereafter, SCE will be able to report one additional year's planned outage data.

**SECTION 4 – Service Territory Map including Districts**

The following is the SCE Service Territory with Power Delivery Regions and Districts Map. The map contains both SCE district boundaries and county boundaries. SCE has 8 regions and 35 districts.



## **SECTION 5 – Top 1% of Worst Performing Circuits (WPC) excluding Major Event Day (MED)**

The following describes Southern California Edison’s (SCE) process to address Worst Performing Circuits (WPC’s) in 2015 under the 2018 Worst Circuit Rehabilitation (WCR) program. WCR does typically take two years to complete. This accounts for Engineering to identify the WCR and develop a scope package which is submitted to Technical Planning, overseen by project management. Once Technical Planning completes the work package, project management releases the project to be constructed.

### **2018 WCR Process**

#### **A. Budget Allocation**

The 2018 WCR budget was developed by Distribution Engineering based on an approved five year operating plan. The budget was based on each region’s contribution to the three year average of equipment outages from 2013 through 2015. Seventy percent of the budget was allocated based on SAIFI contribution, and 30% on SAIDI contribution.

#### **B. WCR Circuit Ranking and Selection**

The 2018 WCR circuit ranking was produced using circuit performance over the 2013 to 2015 time period. Circuit performance in 2015 was weighted by a factor of 61%, 2014 by 28%, and 2013 by 11%.

Additional categories were added in an effort to target additional reliability concerns. These include Source Loss, CEM16, Circuits experiencing 4 or more cable failures, and Circuits experiencing greater or equal to 20 equipment failures and one year of data. **(See Appendix-A)**

Circuits are selected in ascending order starting with System SAIFI, then System SAIDI, followed by the circuit-level indices. Selected circuits are grouped by substation and the engineer has complete oversight of the area allowing them to develop comprehensive reliability solutions.

A worst circuit rehabilitation typically begins with identification of each circuit’s most risk-significant mainline cable, and then additional enhancements are identified to improve the overall circuit reliability. These circuit enhancements include equipment such as automation, automatic reclosers, branch line fuses, and fault indicators wherever judged to be cost effective.

Please see below Table 1 and Table 2 that capture the top 1% WPC. Table 1 contains the Top 1% WPC using the preferred metric SAIDI. Table 2 contains the Top 1% WPC using the preferred metric SAIFI.

**Table 1 – Top 1% SAIDI WPC (Excluding MED)**

Circuit	District	2015 Customer Count	Substation	Circuit-Miles	% UG	% OH	# of Circuit Breaker or Automatic Re-Closer Operation <sup>1</sup> 2015	Sys. SAIDI RANK	Sys. SAIDI <sup>2</sup>
Surfside 16kV	39-Ventura	5,601	Channel Island 66/16 (D)	32.39	66%	34%	18	1	0.405
Cresta 16kV	22-Montebello	3,714	Alhambra 66/16 (D)	10.85	49%	51%	15	2	0.394
Landers 25kV	84-Yucca Valley	1,769	Nugget 33/25 (D)	141.2	1%	99%	42	3	0.348
Coastal 12kV	33-Huntington Beach	3,476	Crown 66/12 (D)	21.12	80%	20%	6	4	0.335
Bryce 16kV	22-Montebello	2,809	Amador 66/16 (D)	21.65	39%	61%	12	5	0.327
Pawnee 12kV	77-Menifee	2,497	Gavilan (115) 33/12 (D)	103.6	13%	87%	18	6	0.324
Arvana 16kV	44-South Bay	3,432	Victoria 66/16 (D)	19.79	55%	45%	13	7	0.316
Deborah 16kV	44-South Bay	2,821	Felton 66/16 (D)	11.63	12%	88%	9	8	0.315
Piston 16kV	44-South Bay	4,289	Ditmar 66/16 (D)	18.02	48%	52%	8	9	0.298
Telstar 16kV	22-Montebello	2,819	Rosemead 66/16 (D)	14.79	18%	82%	14	10	0.287
Tiros 16kV	39-Ventura	1,137	Estero 66/16 (D)	29.35	16%	84%	23	11	0.283
Campanula 25kV	84-Yucca Valley	1,951	Nugget 33/25 (D)	134.2	8%	92%	22	12	0.271
Rhumba 16kV	44-South Bay	3,987	Brighton 66/16 (D)	16.57	42%	58%	8	13	0.253
Ramp 12kV	46-Long Beach	4,401	Stadium 66/12 (D)	21.19	58%	42%	9	14	0.241
Grapevine 12kV	86-Ridgecrest	18	Grapevine P.T. 25/12 (A)	7.035	1%	99%	3	15	0.239
Gizmo 16kV	39-Ventura	4,288	Channel Island 66/16 (D)	28.27	90%	10%	13	16	0.236
Asteroid 16kV	22-Montebello	4,253	Alhambra 66/16 (D)	20.49	42%	58%	16	17	0.235
Margaret 16kV	44-South Bay	5,130	Felton 66/16 (D)	15.11	32%	68%	9	18	0.223
Test 16kV	22-Montebello	2,953	Alhambra 66/16 (D)	18.74	44%	56%	12	19	0.222
Alma 4.16kV	32-Compton	1,019	Woodruff 12/4.16 (D)	8.541	6%	94%	3	20	0.221
King 16kV	44-South Bay	3,910	Victoria 66/16 (D)	14.7	51%	49%	16	21	0.220
Fairhaven 16kV	44-South Bay	3,132	Inglewood 66/16 (D)	18.83	62%	38%	19	22	0.218
Guernsey 12kV	51-San Joaquin Valley	1,157	Tulare 66/12 (D)	14.43	75%	25%	5	23	0.215
Azores 12kV	26-Covina	1,915	Puente 66/12 (D)	20	16%	85%	5	24	0.213
Melody 25kV	84-Yucca Valley	1,876	Hi Desert 33/25 (D)	314.5	0%	100%	52	25	0.213
Duffer 16kV	49-Santa Barbara	3,614	San Marcos 66/16 (D)	22.34	41%	59%	9	26	0.208
Cimarron 16kV	44-South Bay	3,812	Inglewood 66/16 (D)	15.47	23%	77%	13	27	0.206
Sago 16kV	44-South Bay	3,725	Torrance 66/16 (D)	17.26	37%	63%	13	28	0.205
Enterprise 16kV	39-Ventura	3,096	Levy 66/16 (D)	32.96	60%	40%	20	29	0.201
Fantail 16kV	42-Santa Monica	4,514	Tahiti 66/16 (D)	15.25	89%	11%	4	30	0.201
Jarvis 12kV	27-Monrovia	766	Dalton 66/12 (D)	48.11	8%	92%	12	31	0.193
Sundown 12kV	73-Victorville	2,898	Helendale 33/12 (D)	57.74	77%	23%	11	32	0.191
Crosson 16kV	39-Ventura	5,509	Camarillo 66/16 (D)	44.24	51%	49%	23	33	0.190
Aha 12kV	87-Blythe	596	Aha P.T. 33/12 (A)	10.93	11%	89%	3	34	0.189
Winnebago 12kV	30-Foothill	1,543	West Riverside 33/12 (D)	16.97	50%	50%	10	35	0.184
Big Pines 12kV	36-Antelope Valley	2,234	Little Rock 66/12 (D)	65.04	50%	50%	8	36	0.181
Rosa 16kV	39-Ventura	4,811	Camarillo 66/16 (D)	48.97	91%	9%	12	37	0.176
Ponderosa 16kV	39-Ventura	3,617	Colonia 66/16 (D)	39.88	74%	26%	16	38	0.175
Octane 16kV	44-South Bay	3,424	Yukon 66/16 (D)	11.52	25%	75%	5	39	0.175
Alamo 12kV	46-Long Beach	701	Seabright 66/12 (D)	4.883	100%	0%	1	40	0.174
Canoe 12kV	33-Huntington Beach	3,165	Bolsa 66/12 (D)	19.74	65%	35%	10	41	0.174
Encanto 16kV	49-Santa Barbara	3,252	Isla Vista 66/16 (D)	29.95	59%	41%	9	42	0.172
Ditch 16kV	39-Ventura	2,885	Gonzales 66/16 (D)	26.95	84%	16%	7	43	0.170
Highway 16kV	39-Ventura	4,971	Saticoy 66/16 (D)	35.19	57%	43%	12	44	0.169
Arapaho 12kV	77-Menifee	1,106	Gavilan (115) 33/12 (D)	21.29	7%	93%	6	45	0.168
Evita 16kV	39-Ventura	2,563	Camarillo 66/16 (D)	26.14	86%	14%	8	46	0.165

In future reports, repeat circuits from this WPC list will be marked with an asterisk (\*) per D.16-01-008 Annual Electric Reliability Report

<sup>1</sup> Includes Sustain and Momentary outages that affected the Circuit Breaker

<sup>2</sup> SAIDI is based on a three year weighted factor

<sup>3</sup> List is a base case year

**Table 2 – Top 1% SAIFI WPC (Excluding MED)**

Circuit	District	2015 Customer Count	Substation	Circuit-Miles	% UG	% OH	# of Circuit Breaker or Automatic Re-Closer Operation <sup>1</sup> 2015	Sys. SAIFI RANK	Sys. SAIFI <sup>2</sup>
Surfside 16kV	39-Ventura	5,601	Channel Island 66/16 (D)	32.39	66%	34%	18	1	0.004
Cresta 16kV	22-Montebello	3,714	Alhambra 66/16 (D)	10.85	49%	51%	15	2	0.003
Bryce 16kV	22-Montebello	2,809	Amador 66/16 (D)	21.65	39%	61%	12	3	0.003
Margaret 16kV	44-South Bay	5,130	Felton 66/16 (D)	15.11	32%	68%	9	4	0.003
Gizmo 16kV	39-Ventura	4,288	Channel Island 66/16 (D)	28.27	90%	10%	13	5	0.002
Sago 16kV	44-South Bay	3,725	Torrance 66/16 (D)	17.26	37%	63%	13	6	0.002
Fairhaven 16kV	44-South Bay	3,132	Inglewood 66/16 (D)	18.83	62%	38%	19	7	0.002
Sundown 12kV	73-Victorville	2,898	Helendale 33/12 (D)	57.74	77%	23%	11	8	0.002
Rhumba 16kV	44-South Bay	3,987	Brighton 66/16 (D)	16.57	42%	58%	8	9	0.002
Bluegill 16kV	44-South Bay	3,152	El Nido 66/16 (D)	14.31	29%	71%	14	10	0.002
Highway 16kV	39-Ventura	4,971	Saticoy 66/16 (D)	35.19	57%	43%	12	11	0.002
Cimarron 16kV	44-South Bay	3,812	Inglewood 66/16 (D)	15.47	23%	77%	13	12	0.002
Crosson 16kV	39-Ventura	5,509	Camarillo 66/16 (D)	44.24	51%	49%	23	13	0.002
Asteroid 16kV	22-Montebello	4,253	Alhambra 66/16 (D)	20.49	42%	58%	16	14	0.002
Rosa 16kV	39-Ventura	4,811	Camarillo 66/16 (D)	48.97	91%	9%	12	15	0.002
Grizzley 16kV	44-South Bay	3,006	El Nido 66/16 (D)	15.64	56%	44%	9	16	0.002
Arvana 16kV	44-South Bay	3,432	Victoria 66/16 (D)	19.79	55%	45%	13	17	0.002
Mapes 12kV	46-Long Beach	4,475	Eric 66/12 (D)	21.39	14%	86%	6	18	0.002
Elder 12kV	30-Foothill	1,730	Rialto 33/12 (D)	14.72	44%	56%	10	19	0.002
Willard 16kV	27-Monrovia	2,938	Ravendale 66/16 (D)	16.22	36%	64%	7	20	0.002
Atlas 12kV	34-Ontario	2,310	Francis 66/12 (D)	21.63	41%	59%	11	21	0.002
Spinnaker 16kV	39-Ventura	4,835	Channel Island 66/16 (D)	28.49	40%	60%	20	22	0.002
Malden 16kV	32-Compton	5,199	Vail 66/16 (D)	23.67	32%	68%	7	23	0.002
Deborah 16kV	44-South Bay	2,821	Felton 66/16 (D)	11.63	12%	88%	9	24	0.002
Guthrie 12kV	31-Redlands	2,622	Del Rosa 66/12 (D)	16.15	37%	63%	7	25	0.002
Coastal 12kV	33-Huntington Beach	3,476	Crown 66/12 (D)	21.12	80%	20%	6	26	0.002
Telstar 16kV	22-Montebello	2,819	Rosemead 66/16 (D)	14.79	18%	82%	14	27	0.002
Ponderosa 16kV	39-Ventura	3,617	Colonia 66/16 (D)	39.88	74%	26%	16	28	0.002
Greyhound 12kV	43-Saddleback	4,017	Moulton 66/12 (D)	18.37	100%	0%	7	29	0.002
Duffer 16kV	49-Santa Barbara	3,614	San Marcos 66/16 (D)	22.34	41%	59%	9	30	0.002
Test 16kV	22-Montebello	2,953	Alhambra 66/16 (D)	18.74	44%	56%	12	31	0.001
Satellite 12kV	34-Ontario	3,931	San Antonio 66/12 (D)	30.78	31%	69%	6	32	0.001
Albacore 16kV	44-South Bay	1,910	El Nido 66/16 (D)	14	51%	49%	15	33	0.001
Salmon 16kV	44-South Bay	3,239	El Nido 66/16 (D)	12.8	57%	43%	12	34	0.001
King 16kV	44-South Bay	3,910	Victoria 66/16 (D)	14.7	51%	49%	16	35	0.001
Galahad 16kV	35-Thousand Oaks	2,249	Latigo 66/16 (D)	80.92	36%	64%	24	36	0.001
Hooligan 16kV	35-Thousand Oaks	3,490	Newbury 66/16 (D)	46.26	85%	14%	21	37	0.001
Yellowtail 12kV	33-Huntington Beach	3,825	Bayside 66/12 (D)	24.24	52%	48%	12	38	0.001
Locksley 16kV	27-Monrovia	4,107	Ravendale 66/16 (D)	18.45	47%	53%	8	39	0.001
Blocker 16kV	44-South Bay	4,492	Walteria 66/16 (D)	21.94	22%	78%	11	40	0.001
Ditch 16kV	39-Ventura	2,885	Gonzales 66/16 (D)	26.95	84%	16%	7	41	0.001
Pearcy 12kV	43-Saddleback	3,740	Cabrillo 66/12 (D)	26.17	100%	0%	8	42	0.001
Evita 16kV	39-Ventura	2,563	Camarillo 66/16 (D)	26.14	86%	14%	8	43	0.001
Cerveza 16kV	22-Montebello	3,280	Mesa 66/16 (D)	21.32	34%	66%	7	44	0.001
Winnebago 12kV	30-Foothill	1,543	West Riverside 33/12 (D)	16.97	50%	50%	10	45	0.001
Oriole 12kV	29-Santa Ana	2,786	Talbert 66/12 (D)	17.2	37%	63%	11	46	0.001

In future reports, repeat circuits from this WPC list will be marked with an asterisk (\*) per D.16-01-008 Annual Electric Reliability Report

<sup>1</sup> Includes Sustain and Momentary outages that affected the Circuit Breaker

<sup>2</sup> SAIFI is based on a three year weighted factor

<sup>3</sup> List is a base case year

Tables 3 and 4 below identify the circuits that are top 1% WPC (by SAIDI or SAIFI this year) **and** were top 1% circuits by SAIDI or SAIFI on SCE's WCR program last year. The information contained in the tables captures 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)

**Table 3 (SAIDI Preferred Metric – “Repeat Deficient” List)**

Circuit	i.		ii.		iii.	Submitted	iv. Engineering Scope	Anticipated Completion year
	2013-2015 Sys. SAIDI RANK	2013-2015 Sys. SAIDI	2012-2014 Sys. SAIDI RANK	2012-2014 Sys. SAIDI	Explanation of Repeat Deficiency			
Surfside 16kV	1	0.405	2	0.334	Project identified, but not yet constructed.	8/29/2014	2016 WCR 3.77 Cond Mi UG Cable 3 UG switches Civil	2016
Deborah 16kV	8	0.315	1	0.478	Project identified, but not yet constructed.	12/29/2015	2017 WCR 4.75 Cond Mi UG Cable 5 UG Switches 2 FI's 2 OH Switches Civil 2 Structures	2017
Piston 16kV	9	0.298	22	0.201	Project identified, but not yet constructed.	4/29/2016	2017 WCR 0.39 Cond Mi UG Cable 15 FI's 3 Tie RCS 10 BLF's Civil	2017
Campanula 25kV	12	0.271	4	0.326	Project identified, but not yet constructed.	12/12/2014	2016 WCR 7 RAR's 93 BLF's 3 OH SW	2016
Gizmo 16kV	16	0.236	33	0.172	Project completed in 2014 - Post project performance still being evaluated	4/10/2013	2014 WCR 1 BLF 1 OH switch 1 FI	7/28/2014
Asteroid 16kV	17	0.235	44	0.160	Project completed in 2015 - Post project performance still being evaluated	12/31/2013	2015 WCR 1.10 Con Mi UG Cable 6 FI's 3 BLF's 1 RCS Civil	11/17/2015
King 16kV	21	0.220	30	0.179	Project identified, but not yet constructed.	2/29/2016	2017 WCR 6.98 Cond Mi Cable 13-UG Switches 6-FI 2-RCS 7-OH Switches Civil	2017
Enterprise 16kV	29	0.201	31	0.174	Project completed in 2015 - Post project performance still being evaluated	1/14/2013	2014 WCR 1.1 Cond Mi UG Cable 4 BLF's 6 FI's	12/1/2015
Sundown 12kV	32	0.191	18	0.209	Project completed in 2015 - Post project performance still being evaluated	1/31/2014	2015 WCR 14.2 Cond Mi UG Cable 12 UG Switches 1 Fused BURD 1 OH Switch Civil	1/19/2015
Aha 12kV	34	0.189	3	0.329	Project identified, but not yet constructed.	12/29/2015	Scope on Mc Coy 33kV 2017 WCR 2 OH-RCS 1 OH Switch	2017
Big Pines 12kV	36	0.181	45	0.159	Project completed in 2014 - Post project performance still being evaluated	1/14/2013	2014 WCR 1 FI 4 RCS 2 OH switches 1 BLF	8/28/2014
Rosa 16kV	37	0.176	12	0.234	Project identified, but not yet constructed.	8/31/2015	2017 WCR 6.23 Cond Mi UG Cable 4 UG Switches 3 FI's	2017
Ponderosa 16kV	38	0.175	27	0.187	Project completed in 2013.	12/15/2011	2013 WCR 1 Cond Mi UG Cable 4 UG Switches	11/1/2013



**Table 4 (SAIFI Preferred Metric – “Repeat Deficient” List)**


Circuit	i.		ii.		iii.	iv.		
	2013-2015 Sys. SAIFI RANK	2013-2015 Sys. SAIFI	2012-2014 Sys. SAIFI RANK	2012-2014 Sys. SAIFI	Explanation of Repeat Deficiency	Submitted	Engineering Scope	Anticipated Completion year
Surfside 16kV	1	0.004	1	0.005	Project identified, but not yet constructed.	8/29/2014	2016 WCR 3.77 Cond Mi UG Cable 3 UG switches 4 structures	2016
Margaret 16kV	4	0.003	24	0.002	Project identified, but not yet constructed.	10/31/2014	2016 WCR 2.76 Cond Mi UG Cable 2 UG Switches 1.2 Cond.Mi OH Conductor 4 FI's 22 BLF's 25 Poles	2016
Gizmo 16kV	5	0.002	43	0.001	Project completed in 2014 - Post project performance still being evaluated.	4/10/2013	2014 WCR 1 BLF 1 OH switch 1 FI	7/28/2014
Fairhaven 16kV	7	0.002	22	0.002	Project identified, but not yet constructed.	12/29/2015	2017 WCR 2.17 Cond. Mi 1-Padmout Transformer	2017
Sundown 12kV	8	0.002	4	0.002	Project completed in 2015 - Post project performance still being evaluated	1/31/2014	2015 WCR 14.2 Cond Mi UG Cable 12 UG Switches 1 Fused BURD 1 OH Switch Civil	1/19/2015
Rhumba 16kV	9	0.002	25	0.002	Project identified, but not yet constructed.	4/29/2016	2017 WCR 1.45 miles of UG cable 7 Fis 2 tie RCSs, 7 OH switch upgrading 2 UG strutures.	2017
Bluegill 16kV	10	0.002	13	0.002	Project identified, but not yet constructed.	10/30/2015	2017 WCR 1.31Cond Mi UG Cable 1 UG Switches 2 Fis 1 RCS 13 BLF's 1 OH Switch	2017
Rosa 16kV	15	0.002	5	0.002	Project identified, but not yet constructed.	8/31/2015	2017 WCR 6.23 Cond Mi UG Cable 4 UG Switches 3 FI's	2017
Grizzley 16kV	16	0.002	3	0.002	Project identified, but not yet constructed.	2/29/2016	2017 WCR 1.13 Cond Mi UG Cable 3 UG Switches 4 FI's 2 RCS 4 BLF's 5 OH Switches	2017
Elder 12kV	19	0.002	6	0.002	Project identified, but not yet constructed.	10/2/2014	Scope on Fonri 33kV 2016 WCR 1 RCS 1 OH Switch 1 FI	2016
Spinnaker 16kV	22	0.002	31	0.002	Project identified, but not yet constructed.	8/29/2014	2016 WCR 2 Cond Mi UG Cable 3 UG Switches 2 FI's 2 RCSs 1 BLF 2 OH Switches	2016

Deborah 16kV	24	0.002	2	0.003	Project identified, but not yet constructed.	12/29/2015	2017 WCR 4.75 Cond Mi UG Cable 5 UG Switches 2 FI's 2 OH Switches Civil 2 Structures	2017
Guthrie 12kV	25	0.002	38	0.002	Project identified, but not yet constructed.	8/29/2014	2016 WCR 7 BLF's 4 OH-SW 3 FI's	2016
Telstar 16kV	27	0.002	34	0.002	Project identified, but not yet constructed.	3/11/2015	2016 OCP Reconductor 8,900' of small wire to 336A Reconductor 6,300' of small wire to 1/0A 3 phase Reconductor 3,600' of small wire to 1/0A 1 phase phase balance circuit when complete	2016
Duffer 16kV	30	0.002	20	0.002	Project completed in 2014 - Post project performance still being evaluated.	3/8/2013	2014 WCR 2 OH switches 2 FI's	7/21/2014
Test 16kV	31	0.001	39	0.001	Project identified, but not yet constructed.	1/30/2015	2016 OCP Reconductor approximately 17,000' of conductor smaller than 1/0A to 1/0A and approximately 450' of 1/0A to 336A. Install approximately 33 BLF's	2016
Albacore 16kV	33	0.001	46	0.001	Project identified, but not yet constructed.	10/31/2014	2016 WCR 2.24 Cond Mi UG Cable 1-UG Switch 3-FI's 1-OH Switch	2016
King 16kV	35	0.001	28	0.002	Project identified, but not yet constructed.	2/29/2016	2017 WCR 6.98 Cond Mi 13-UG Switches 6-FI 2-RCS 7-OH Switches Civil	2017
Galahad 16kV	36	0.001	16	0.002	Project identified, but not yet constructed.	8/29/2014	2016 WCR 2 Fis 11 Fuses 1 OH switch	2016
Hooligan 16kV	37	0.001	7	0.002	Project identified, but not yet constructed.	10/30/2015	2017 WCR 2.52 Cond Mi UG Cable 1 UG Switches 1 FI's 1 RAR 3 BLFs Civil	2017
Locksley 16kV	39	0.001	32	0.002	Project completed in 2015 - Post project performance still being evaluated	12/14/2012	2014 WCR .8 Cond Mis 2 UG Switches	9/28/2015
Ditch 16kV	41	0.001	42	0.001	Project completed in 2014 - Post project performance still being evaluated.	11/8/2012	2014 WCR 2.8 cond mi of UG Cable 6 UG Switches 4 BLFs 4 FI's	11/18/2014
Evita 16kV	43	0.001	23	0.002	Project identified, but not yet constructed.	10/31/2014	2016 WCR 5.41 Cond Mi UG Cable 2 UG Switches Civil	2016

v. Historically, SCE has projected reliability improvements for WCR projects at the system level, not at the individual circuit level. For additional details, see discussion in SCE’s 2015 General Rate Case testimony, SCE-03 Volume 04, pages 24-27 (“quantitative benefits”).

## SECTION 6 – Top 10 Major Unplanned Outage Events Within a Reporting Year

The table below captures the top 10 major unplanned outage events for 2015 including the cause and location of the outage.

		2015 Top 10 Outage events					Section 6	
		Rank	Cause Description	System Outage ID	Date	SAIDI	Number of Customers Affected	Longest Individual Customer Interruption (minutes)
1	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	257095	7/15/2015	2.316	3,849	3,035	LIGHTHIPE	
2	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	257307	7/15/2015	0.783	1,329	3,372	LIGHTHIPE	
3	UNKNOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	258625	8/13/2015	0.611	5,884	1,136	DEVERS	
4	TOPPLED/BROKEN   STRUCTURE   POLE	261130	9/9/2015	0.467	4,301	7,215	MIRA LOMA	
5	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	257337	7/15/2015	0.452	1,801	3,539	LIGHTHIPE	
6	OTHER-SEE NOTES   STRUCTURE   POLE	257205	7/19/2015	0.446	3,906	1,247	VALLEY	
7	N/A   UNKNOWN   NOT PATROLLED	262924	10/15/2015	0.436	10,130	581	VISTA	
8	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	261743	9/19/2015	0.411	4,024	906	ORANGE COUNTY	
9	UNKNOWN   SUBSTATION EQUIPMENT   CIRCUIT BREAKER	261051	9/15/2015	0.387	17,282	135	LIGHTHIPE	
10	LANDSLIDE/MUDSLIDE   STRUCTURE   POLE	267353	10/18/2015	0.382	18	106,745	ELDORADO	

Note: Location of outage event may occur at more than one switching center and is identified by commas if it occurs

**SECTION 7 – Summary List of MED per IEEE 1366**

The table below captures all MED occurring in 2015 per IEEE 1366 definition of MED. The information includes the number of customers without service at periodic intervals, the cause and the location of each Major Event.

Cause	Outages on secondary network	Lightning Storm, Repair	Broken Pole, Storm	Lightning Storm	Wind Storm
Location	MW	NC, R, D, SJQ, MW	MW, ME, NC, SJC	D, R, SJQ	R, SJC, D
Outage Duration	7/15/2015	7/18/2015	9/9/2015	10/15/2015	12/26/2015
0 to 1 hour	19,822	254,080	104,775	242,276	145,128
1 to 5 hours	2,293	32,593	14,203	35,812	22,542
5 to 10 hours	1,409	5,294	5,297	12,996	4,623
10 to 15 hours	12	3,231	3,346	3,023	2,597
15 to 20 hours	21	504	833	542	335
20 to 24 hours	5	260	392	883	482
1 to 2 days	458	471	537	1,253	2,326
2 to 3 days	5,807	51	14	41	20
3 to 4 days		2			
4 to 5 days		1		3	14
5 to 6 days		3	2		
6 to 7 days					
>= 7 days			6		
<b>Total</b>	<b>29,827</b>	<b>296,490</b>	<b>129,405</b>	<b>296,829</b>	<b>178,067</b>

<b>Note:</b>	
D	- DESERT
ME	- METRO EAST
MW	- METRO WEST
NC	- NORTH COAST
O	- ORANGE
R	- RURALS
SJC	- SAN JACINTO
SJQ	- SAN JOAQUIN

## SECTION 8 – Historical Ten Largest Unplanned Outage Events for the Past 10 Years

The table below captures the ten largest unplanned outage events for each of the years from 2006-2015.

SOUTHERN CALIFORNIA EDISON An EDISON INTERNATIONAL Company		2006 - 2015 Top 10 Outage Events					Section 8	
Rank	Cause Description	System Outage ID	Date	SAIDI	Number of Customers Affected	Longest Individual Customer Interruption (minutes)	Location Switching Center	
<b>2015</b>								
1	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	257095	7/15/2015	2.316	3,849	3,035	LIGHTHIPE	
2	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	257307	7/15/2015	0.783	1,329	3,372	LIGHTHIPE	
3	UNKNOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	258625	8/13/2015	0.611	5,884	1,136	DEVERS	
4	TOPPLED/BROKEN   STRUCTURE   POLE	261130	9/9/2015	0.467	4,301	7,215	MIRA LOMA	
5	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	257337	7/15/2015	0.452	1,801	3,539	LIGHTHIPE	
6	OTHER-SEE NOTES   STRUCTURE   POLE	257205	7/19/2015	0.446	3,906	1,247	VALLEY	
7	N/A   UNKNOWN   NOT PATROLLED	262924	10/15/2015	0.436	10,130	581	VISTA	
8	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	261743	9/19/2015	0.411	4,024	906	ORANGE COUNTY	
9	UNKNOWN   SUBSTATION EQUIPMENT   CIRCUIT BREAKER	261051	9/15/2015	0.387	17,282	135	LIGHTHIPE	
10	LANDSLIDE/MUDSLIDE   STRUCTURE   POLE	267353	10/18/2015	0.382	18	106,745	ELDORADO	
<b>2014</b>								
1	BUSHING   SUBSTATION EQUIPMENT   CIRCUIT BREAKER	247325	12/22/2014	2.155	20,314	741	VISTA	
2	LOST   SOURCE   SUBSTATION	239280	7/24/2014	0.808	29,678	345	ORANGE COUNTY	
3	TOPPLED/BROKEN   STRUCTURE   POLE	236393	5/14/2014	0.739	5,694	1,033	VALLEY	
4	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	247704	12/31/2014	0.464	1,308	4,188	VALLEY	
5	UNKNOWN   OVERHEAD EQUIPMENT   POTHEAD	245855	11/23/2014	0.401	1,395	1,440	DEVERS	
6	OTHER-SEE NOTES   STRUCTURE   SUBSTATION STRUCTURE/BANK	239913	7/30/2014	0.399	6,895	503	MESA	
7	OVERLOADED   SUBSTATION EQUIPMENT   TRANSFORMER BANK	243293	10/2/2014	0.384	51,167	293	VENTURA	
8	TOPPLED/BROKEN   STRUCTURE   POLE	245458	11/16/2014	0.365	785	2,329	DEVERS	
9	LOST   SOURCE   SUBSTATION	232941	2/28/2014	0.351	25,087	87	VENTURA	
10	TESTING/TROUBLESHOOTING   STANDARD OPERATION   OPERATOR/CREW	246973	12/15/2014	0.348	2,423	2,398	ORANGE COUNTY	
<b>2013</b>								
1	LOST   SOURCE   SUBSTATION	224692	8/19/2013	6.316	125,876	1,729	RECTOR	
2	UNKNOWN   TRANSMISSION EQUIPMENT   CONDUCTOR	226855	9/15/2013	1.500	107,741	381	EL NIDO	
3	SUDDEN PRESSURE DEVICE   SUBSTATION EQUIPMENT   TRANSFORMER BANK	221685	6/28/2013	1.111	64,709	164	LIGHTHIPE	
4	UNKNOWN   OVERHEAD EQUIPMENT   TRANSFORMER	217672	4/9/2013	0.801	5,613	1,453	LIGHTHIPE	
5	LIGHTNING   SUBSTATION EQUIPMENT   CIRCUIT BREAKER	215922	2/8/2013	0.728	30,145	883	LIGHTHIPE	
6	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	223292	7/26/2013	0.618	5,904	1,443	ORANGE COUNTY	
7	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	229947	12/15/2013	0.543	1,572	1,867	EL NIDO	
8	VANDALISM   SUBSTATION EQUIPMENT   BUS/CONDUCTOR	218242	4/24/2013	0.519	22,217	304	VALLEY	
9	PULLED APART   OVERHEAD EQUIPMENT   SPLICE/CONNECTOR/TAP	214695	1/1/2013	0.440	4,979	1,395	MESA	
10	UNKNOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	218132	4/26/2013	0.437	2,911	1,483	LIGHTHIPE	
<b>2012</b>								
1	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	200972	2/3/2012	0.923	31	147,812	CONTROL	
2	UTILITY CONTACT   TRANSMISSION EQUIPMENT   INSULATOR	206814	8/21/2012	0.711	815	4,320	RECTOR	
3	UNKNOWN   SUBSTATION EQUIPMENT   RELAY	195706	2/14/2012	0.570	21,253	181	ORANGE COUNTY	
4	VEGETATION BLOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	211557	11/10/2012	0.491	7,670	1,202	VENTURA	
5	DETERIORATION   STRUCTURE   POLE	201705	6/5/2012	0.490	5,117	978	VINCENT	
6	UNKNOWN   STRUCTURE   CROSSARM	212445	12/11/2012	0.477	15,674	170	VISTA, DEVERS	
7	OTHER-SEE NOTES   SUBSTATION EQUIPMENT   TRANSFORMER BANK	207499	9/15/2012	0.443	3,320	1,320	MESA, MIRA LOMA	
8	LOST   SOURCE   SUBSTATION	206078	8/23/2012	0.427	17,529	189	RECTOR	
9	LIGHTNING   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	210892	10/11/2012	0.410	3,687	1,981	MESA	
10	UNKNOWN   UNDERGROUND EQUIPMENT   CABLE	199511	4/20/2012	0.352	3,559	4,022	LIGHTHIPE	
<b>2011</b>								
1	TOPPLED/BROKEN   STRUCTURE   POLE	193063	11/30/2011	3.000	6,321	8,373	MESA	
2	VEGETATION BLOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	193495	11/30/2011	2.917	3,722	8,575	MESA	
3	WIND   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	193921	11/30/2011	2.810	4,118	3,379	MESA	
4	TOPPLED/BROKEN   STRUCTURE   POLE	193361	11/30/2011	2.654	4,566	8,337	MESA	
5	VEGETATION BLOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	192988	11/30/2011	2.498	4,068	8,072	MESA	
6	TOPPLED/BROKEN   STRUCTURE   POLE	193802	11/30/2011	2.203	2,062	7,552	MESA	
7	VEGETATION BLOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	192826	12/1/2011	2.166	2,429	8,105	MESA	
8	ICE/SNOW   TRANSMISSION EQUIPMENT   CONDUCTOR HARDWARE	176231	3/20/2011	1.970	15,135	6,305	VINCENT	
9	WIND   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	193447	12/1/2011	1.796	2,324	7,165	MESA	
10	N/A   UNKNOWN   PATROLLED	182898	1/1/2011	1.742	33	260,236	CONTROL	
<b>2010</b>								
1	TOPPLED/BROKEN   STRUCTURE   POLE	135650	1/21/2010	1.207	2,651	6,142	DEVERS	
2	VEGETATION BLOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	135801	1/20/2010	1.038	2,011	13,285	RECTOR	
3	UNKNOWN   OVERHEAD EQUIPMENT   SPLICE/CONNECTOR/TAP	137790	2/27/2010	0.813	6,878	1,128	EL NIDO	
4	LIGHTNING   SUBSTATION EQUIPMENT   BUS/CONDUCTOR	163903	10/1/2010	0.797	113,070	1,479	ORANGE COUNTY	
5	VEGETATION BLOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	136464	1/21/2010	0.765	479	8,718	VISTA	
6	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	145558	6/7/2010	0.758	387	996	DEVERS	
7	UNKNOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	136448	1/22/2010	0.742	562	12,184	VISTA	
8	TOPPLED/BROKEN   STRUCTURE   POLE	135277	1/21/2010	0.675	1,679	8,438	DEVERS	
9	EXTERNAL COMPONENT   OVERHEAD EQUIPMENT   SWITCH/DISCONNECT/AR	135727	1/23/2010	0.673	1,918	1,727	RECTOR	
10	PROTECTION   SUBSTATION EQUIPMENT   CIRCUIT BREAKER	164418	10/19/2010	0.585	77,652	145	VENTURA	

Note: Location of outage event may occur at more than one switching center and is identified by commas if it occurs

		2009					
1	OTHER-SEE NOTES   STRUCTURE   SUBSTATION STRUCTURE/RACK	125285	8/31/2009	3,536	9,102	2,774	MESA
2	FIRE   STRUCTURE   POLE	133178	8/27/2009	2,007	54	181,485	MESA
3	FIRE   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	127698	8/29/2009	1,125	117	62,056	MESA
4	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	116570	5/20/2009	1,102	12,400	3,346	RECTOR
5	OVERLOADED   OVERHEAD EQUIPMENT   SPLICE/CONNECTOR/TAP	123338	7/10/2009	0.739	3,710	973	ORANGE COUNTY
6	OTHER-SEE NOTES   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	128583	10/15/2009	0.667	4,075	1,979	EL NIDO
7	FIRE   STRUCTURE   POLE	133358	8/30/2009	0.547	197	177,730	VINCENT
8	VEHICLE HIT   STRUCTURE   POLE	107726	2/7/2009	0.504	842	3,296	EL NIDO
9	OVERLOADED   OVERHEAD EQUIPMENT   SPLICE/CONNECTOR/TAP	112977	4/20/2009	0.504	13,464	474	MESA
10	TOPPLED/BROKEN   STRUCTURE   POLE	112798	4/3/2009	0.458	1,650	2,841	DEVERS
		2008					
1	FIRE   TRANSMISSION EQUIPMENT   CONDUCTOR	95472	7/2/2008	1,980	83,116	869	VENTURA
2	FIRE   TRANSMISSION EQUIPMENT   CONDUCTOR	95488	7/2/2008	1,131	39,023	325	VENTURA
3	FIRE   TRANSMISSION EQUIPMENT   CONDUCTOR	95625	7/3/2008	0.815	45,604	87	VENTURA
4	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	90296	6/16/2008	0.768	19,568	194	MESA
5	FIRE   TRANSMISSION EQUIPMENT   CONDUCTOR	95867	7/7/2008	0.723	45,670	77	VENTURA
6	UNKNOWN   STRUCTURE   SUBSTATION STRUCTURE/RACK	78460	1/24/2008	0.632	1,116	4,343	VISTA
7	UNKNOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	104308	12/17/2008	0.504	3,327	5,703	VALLEY
8	OTHER-SEE NOTES   STRUCTURE   SUBSTATION STRUCTURE/RACK	76338	1/7/2008	0.489	7,523	417	VINCENT
9	UNKNOWN   OVERHEAD EQUIPMENT   SPLICE/CONNECTOR/TAP	79988	2/23/2008	0.468	4,136	733	EL NIDO
10	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	77991	1/24/2008	0.453	22,147	6,183	VISTA
		2007					
1	OTHER-SEE NOTES   STANDARD OPERATION   OPERATOR/CREW	72159	10/22/2007	4,745	4,578	15,556	VISTA
2	OTHER-SEE NOTES   STANDARD OPERATION   OPERATOR/CREW	72138	10/22/2007	3,879	1,277	21,702	VISTA
3	OTHER-SEE NOTES   STANDARD OPERATION   OPERATOR/CREW	72178	10/22/2007	2,001	1,610	20,334	VISTA
4	VEGETATION BLOWN   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	72038	10/22/2007	1.943	4,113	20,980	VISTA
5	OTHER-SEE NOTES   STRUCTURE   TOWER	47041	3/27/2007	1.715	18,853	3,044	LIGHTHIPE, MESA
6	INTERNAL COMPONENT   UNDERGROUND EQUIPMENT   CABLE SPLICE	62678	8/31/2007	0.818	4,130	1,009	DEVERS
7	OPEN FOR REPAIRS   STANDARD OPERATION   OPERATOR/CREW	75439	10/22/2007	0.702	1,867	11,218	ORANGE COUNTY
8	OTHER-SEE NOTES   STANDARD OPERATION   OPERATOR/CREW	72158	10/22/2007	0.650	714	10,080	VISTA
9	WIND   OVERHEAD EQUIPMENT   CONDUCTOR/WIRE	72299	10/21/2007	0.634	5,536	3,507	VALLEY
10	OVERLOAD   STANDARD OPERATION   PROTECTIVE DEVICE	61617	9/1/2007	0.620	4,790	2,770	VINCENT
		2006					
1	OPENED FOR PUBLIC SAFETY	19091	5/12/2006	1,343	14,694	443	LUGO
2	BRUSH FIRE FAULTED	32561	10/2/2006	1,241	137,839	190	VINCENT, VENTURA
3	EQUIPMENT FAILURE DUE TO STORM	30022	7/23/2006	0.982	1,377	3,433	MIRA LOMA
4	UNKNOWN NOT PATROLLED (STORM)	40502	12/28/2006	0.968	3,235	1,441	VISTA
5	OPEN DISTRICT ORDER STORM	36030	7/20/2006	0.819	5,561	1,482	LUGO
6	CONVENTIONAL LINE TRANSFORMER FAILED	26282	7/18/2006	0.710	5,666	1,445	LIGHTHIPE
7	C.T. OR P.T. TRANSFORMER FAILED	12788	2/14/2006	0.583	29,892	156	LIGHTHIPE
8	OPENED - DISTRICT ORDERS	26291	7/22/2006	0.576	965	2,883	LIGHTHIPE
9	WIND STORM - NO CAUSE FOUND	40452	12/27/2006	0.565	1,887	1,441	VENTURA
10	UNDERGROUND CABLE FAILED	30838	8/24/2006	0.479	4,579	1,960	MIRA LOMA

## **SECTION 9 – The Number of Customer Inquiries on Reliability Data and the Number of Days per Response**

D16-01-008 Ordering Paragraph 6 requires all California electric utilities to publish on their internet websites or provide to customers via U.S. mail, procedures for making requests about electric circuits that serve their homes or businesses. SCE is currently working to provide customers, via [sce.com](http://sce.com), with the procedure to request a circuit-level reliability report. We expect to implement this procedure by December 31, 2016. With this established procedure, SCE will have a centralized location that can intake and track all customer inquiries including reliability and outage requests and respond to the inquiries in a timely fashion.

Currently customer inquiries relating to outages and reliability data can be sent to various SCE organizations and we currently do not track these inquiries. We do, however, have a process to track customer inquiries to our Field Engineering group within the Transmission and Distribution Organizational Unit. This process is primarily for responding to routine<sup>5</sup> customer inquiry requests relating to outages and reliability data. Routine requests are customer inquiries regarding their circuit outage history which is provided within a 15 day turnaround time.

In 2015 SCE Field Engineering received 71 inquiries, on reliability data and the average response time was 10 days. However, for 4 of those 71 inquiries, SCE's turnaround time exceeded 15 days.

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<sup>5</sup> Commercial customers seeking outage history for multiple sites are not included as part of the definition of a routine request. These types of requests are considered large scale requests. Commercial customer requests can and may exceed the 15 day response time due to the level of effort to research and investigate the outage history.

## **Appendix-A**

### *Circuit SAIFI*

The number of times the average customer on the circuit experienced an outage lasting more than 5 minutes

### *Circuit SAIDI*

The amount of time the average customer on the circuit was without power due to outages lasting longer than 5 minutes

### *Frequency \*Peak Load/#Customers*

The number of outages (AR or CB, sustained +momentary) multiplied by the peak load in the past year all divided by the number of customers

### *Source Loss*

Circuits that caused other circuits/circuits to experience an outage will have the CI and CMI rolled up into them and ranked. This ranking is based on all distribution outages from 2012 through 2015.

### *Circuits experiencing $\geq 4$ cable failures*

Any circuit experiencing greater or equal to 4 sustained cable failures will be flagged in the circuit rankings. This ranking is based on all distribution outages from 2011 through 2015.

### *Circuits experiencing $>20$ equipment failures*

Any circuit experiencing greater or equal to 20 sustained equipment failures will be flagged in the circuit rankings. This ranking is based on all distribution outages from 2011 through 2015.

### *CEMI6*

Any circuit where a customer has experienced greater or equal to 6 outages in 2015 will be flagged in the circuit rankings.