



ANNUAL ELECTRIC RELIABILITY REPORT

For Year 2020

**PREPARED FOR THE CALIFORNIA PUBLIC
UTILITIES COMMISSION**

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EXECUTIVE SUMMARY

The reliability information contained in this report is for calendar year 2020, as required by California Public Utilities Commission (CPUC, or Commission) Decision 16-01-008. The data includes all outages (planned and unplanned) for distribution customers including and excluding Major Event Days (MEDs). SCE only excludes MEDs from the data where noted, and no other exclusions or exceptions were applied.

Unplanned outages and their calculated reliability indices are captured and calculated from our Outage Database and Reliability Metrics (ODRM) system.

As described in detail below, two metrics that are commonly relied on and reported in the electric utility industry are the System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI). Here, SAIDI measures the amount of time the average SCE customer experienced a power outage or interruption for more than five minutes (called a “sustained outage”) in a given year (with MEDs excluded). SAIFI is the number of times the average SCE customer experienced a sustained outage in a given year (with MEDs excluded). Please see below for detailed discussion and data reporting.

As noted in prior years’ reports, SCE began collecting Smart Meter data for calculating and reporting planned outage reliability indices. Beginning in 2016, SCE provided planned outage reliability indices for this report; 2016 was the first year where the entire year’s planned outage information was available.

The following content contained in this report is based on reliability indicators, definitions and calculations as defined below.

Planned Outage: Scheduled outage to maintain or replace equipment, to prevent an in-service failure which results in the lost of power. The intentional disabling of a component’s capability to deliver power, done at a preselected time, usually for the purposes of construction, preventative maintenance, or repair.

Unplanned Outage: The loss of ability to deliver power due to an unforeseen interruption.

Major Event Day: A day in which the daily system SAIDI exceeds a threshold value. For 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.

SCE uses four indices commonly used in the electric utility industry to measure reliability. The reliability indices that we tracked are as below:

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).

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

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).

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

CAIDI: The Customer Average Interruption Duration Index is the average time to restore service for a sustained outage.

$$\text{CAIDI} = \frac{\text{sum of all "sustained" customer interruption durations}}{\text{sum of total quantity of "sustained" customer interruptions}}$$

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)

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

T_{MED}: The calculated threshold value used to determine a Major Event Day. SCE's T_{MED} value is calculated at the beginning of each year using SCE's daily SAIDI values for the prior 5 years. SCE's T_{MED} value for 2020 was 1.89 min.

In years 2006 - 2010, SCE calculated SAIDI, SAIFI, and MAIFI 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. SCE did not have complete ODRM data prior to 2006.

The interim approach was consistent with IEEE 1366 and excludable days were as follow:

- 2006 and 2007 were both determined based on daily SAIDI data in year 2006.
- 2008 were determined based on daily SAIDI data in years 2006 and 2007.
- 2009 were determined based on daily SAIDI data in years 2006, 2007, and 2008.
- 2010 were determined based on daily SAIDI data in years 2006, 2007, 2008, and 2009.

SCE 2020 Performance Summary

In 2020 SCE experienced a substantial increase in unplanned outages stemming from our wildfire-related enhanced overhead inspections and Public Safety Power Shutoff (PSPS) protocols. It is important to note that PSPS-related outages are classified as “unplanned” because they typically cannot be deferred by SCE as a typical “planned” outage can be. In addition, while enhanced overhead inspections themselves are planned well in advance, they can generate regulatory, compliance-driven mandatory remediations, some of which need to be completed in the very short term. Accordingly, planned inspections can lead to “unplanned” outages.

SCE continues to look for ways to improve its reliability performance, with a particular focus on reducing restoration times by improving processes for operational response, and lessening customer impact through real-time outage diagnostics. Also, SCE continues to enhance infrastructure by automating Remote Re-closer settings and installing Covered Conductor to reduce the risk of wildfire ignition in our service territory.

As part of SCE’s efforts to continuously improve its reliability performance and reporting process, for its 2020 outage data SCE applied quality control measures in addition to the recently established reporting process to generate the outage reliability information. Based on the results obtained using this new process, SCE believes that the 2019 published SAIDI values reported in Section 6, Table 11 (Number of Customers Affected and Longest Individual Customer Interruption) and Section 8, Table 14 (Number of Customers Affected and Longest Individual Customer Interruption) were overstated in the 2019 Annual Reliability Report. These did not have an impact to the overall SAIDI and other reported reliability performance in 2019. SCE will continue to utilize quality control processes to ensure data accuracy for the forthcoming years of this Annual System Reliability Report. SCE can furnish the revised 2019 SAIDI values, if requested.

The table below summarizes SCE’s 2020 performance for unplanned outages including and excluding MED. The table also consists of a 10-year average performance for unplanned outages including and excluding MED for comparison.

YEAR	Total System Indices (All Interruptions Included)				Total System Indices (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2020	201.32	1.06	1.38	190.47	91.40	0.87	1.25	105.51
10 Year Avg (2011-2020)	146.05	1.00	1.45	145.67	95.10	0.87	1.30	109.32

In late 2018 SCE implemented a protocol for proactive de-energizations known as Public Safety Power Shutoff (PSPS). PSPS is an operational protocol that SCE implements as a measure of last resort under extreme weather conditions in order to reduce an imminent threat of wildfires and keep communities safe from potentially dangerous situations. SCE implements PSPS when high fire areas are experiencing adverse weather and public safety is at risk.

During 2020, there were several National Weather Service Red Flag Warnings and High Fire Ignition Fuel indicators that had been identified throughout SCE’s territory. As a result, SCE’s Incident Management Team (IMT) notified appropriate agencies and activated the necessary resources as protocol for early warning response. Because PSPS events may require de-energization of one or more circuits during an IMT activation, this can have a negative impact on SAIDI and SAIFI indices.

Total System Indices excluding MED and PSPS are shown in the below table.

Total Unplanned System Reliability excluding MED and PSPS				
YEAR	SAIDI	SAIFI	MAIFI	CAIDI
2020	86.46	0.86	1.25	100.38

In 2020, SCE experienced outage events across its territory, some of which impacted reliability resulting from MEDs. In total, SCE had 14 MEDs. Please see the below summary table of Major Event Days.¹

No.	Date	Event Cause	SAIDI	SAIFI	Sustained Customer Impacted	MAFI	Momentary Customer Impacted	Excluded per IEEE 1366
1	8/14/2020	UNKNOWN UNDERGROUND EQUIPMENT CABLE	2.812	0.035	179,701	0.005	27,779	Y
2	9/5/2020	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	21.580	0.013	68,387	0.009	46,029	Y
3	9/6/2020	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	7.551	0.020	105,133	0.012	62,902	Y
4	9/9/2020	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	4.118	0.003	13,644	0.002	11,969	Y
5	9/13/2020	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	2.118	0.003	12,984	0.007	36,462	Y
6	9/14/2020	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	2.564	0.001	5,556	0.000	1,504	Y
7	9/18/2020	FIRE STRUCTURE POLE	1.946	0.002	9,713	0.002	12,003	Y
8	10/26/2020	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	20.461	0.044	226,659	0.038	196,760	Y
9	11/26/2020	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY OTHER OH EQUIP-SEE NOTES	2.839	0.007	38,524	0.010	53,309	Y
10	12/2/2020	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	8.541	0.010	53,009	0.006	30,688	Y
11	12/3/2020	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	4.749	0.008	40,195	0.006	33,474	Y
12	12/7/2020	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	23.360	0.020	104,693	0.005	27,357	Y
13	12/23/2020	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	4.989	0.008	38,951	0.002	11,949	Y
14	12/28/2020	OTHER-SEE NOTES OVERHEAD EQUIPMENT TRANSFORMER	3.297	0.018	91,640	0.023	120,304	Y
	Total		110.924	0.191	988,789	0.130	672,489	Y

¹ Not all PSPS de-energization events will result in MEDs.

SECTION 1 – SYSTEM INDICES FOR THE LAST 10 YEARS

a. System Indices Tables

Table 1 below contains the required SAIDI, SAIFI, MAIFI² and CAIDI indices for 2010-2019 including and excluding Major Event Day (MED) for the SCE System unplanned Outages. All calculations contained in the table are based on the IEEE 1366 method for Major Event Day (MED). Reliability indices are for unplanned outages only.

Table 1 – Unplanned Outage System Indices (2011-2020)

YEAR	Total System Indices (All Interruptions Included)				Total System Indices (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
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
2016	134.48	1.10	1.55	122.26	109.98	0.99	1.40	110.69
2017	139.73	1.19	1.84	117.19	91.72	0.87	1.42	105.40
2018	136.82	0.87	1.43	156.61	71.25	0.72	1.27	99.58
2019	177.97	1.04	1.38	171.17	90.75	0.87	1.23	104.75
2020	201.32	1.06	1.38	190.47	91.40	0.87	1.25	105.51

i. Distribution Indices³

Table 2 – Unplanned Outage Distribution Indices (2011-2020)

YEAR	Distribution Indices (< 50KV) (All Interruptions Included)				Distribution Indices (< 50KV) (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
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
2016	129.32	1.05	1.47	123.24	106.29	0.95	1.33	112.03
2017	128.74	0.99	1.56	130.69	89.99	0.84	1.37	106.71
2018	134.87	0.86	1.39	156.34	70.81	0.71	1.23	99.70
2019	193.65	1.01	1.32	169.33	89.33	0.85	1.18	105.37
2020	198.93	1.04	1.32	190.39	89.42	0.85	1.19	104.69

² SCE calculates MAIFI at every individual outage event.

³ Distribution system outages are defined as outages that are <50KV.

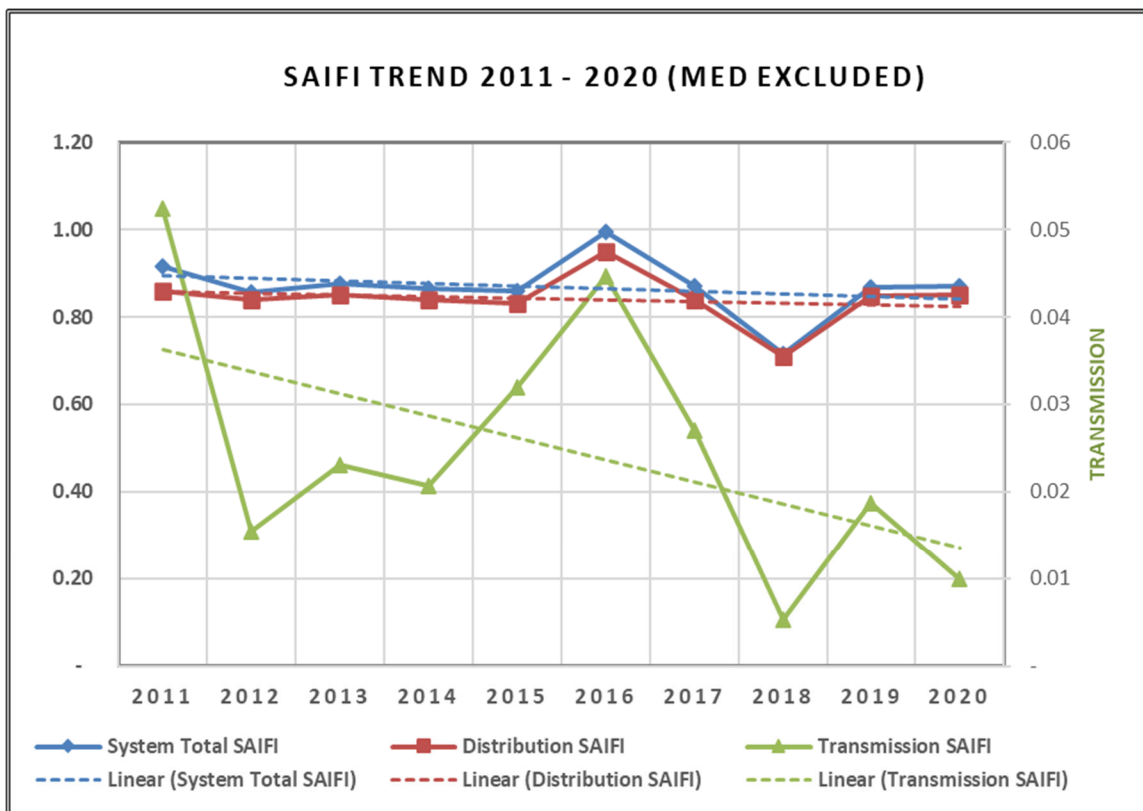
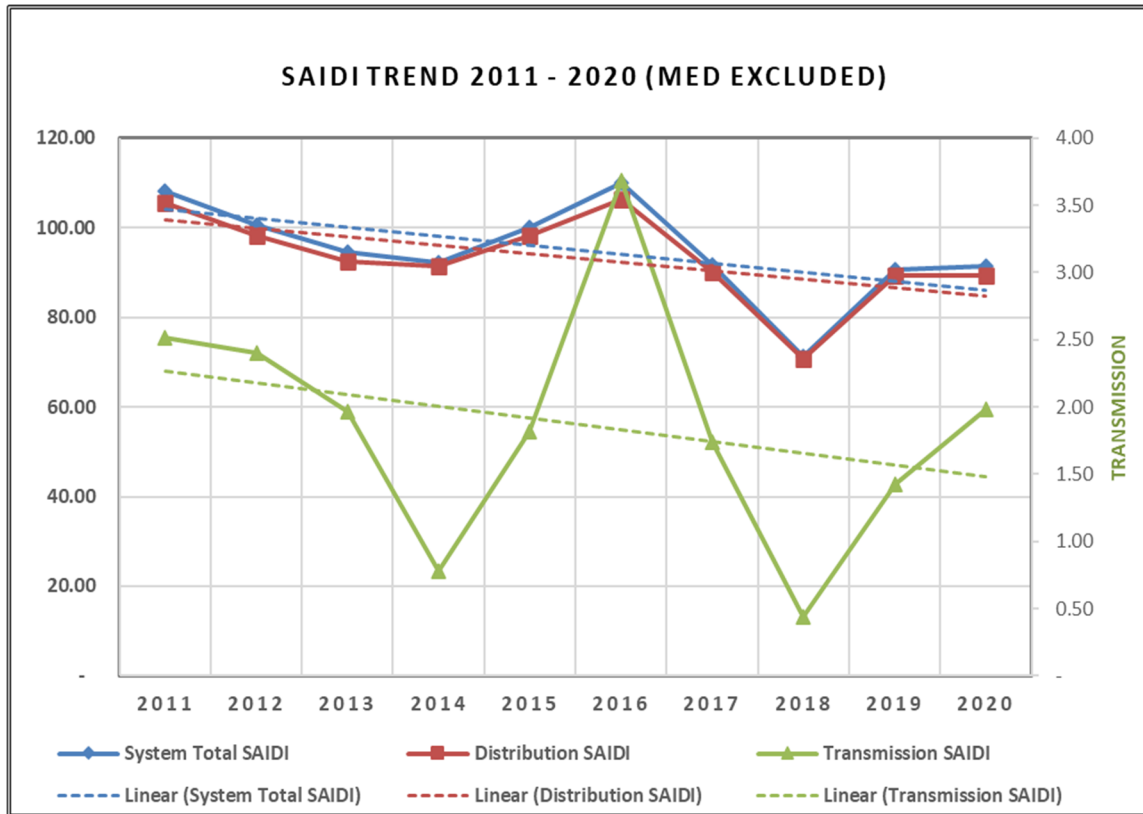
ii. Transmission Indices⁴

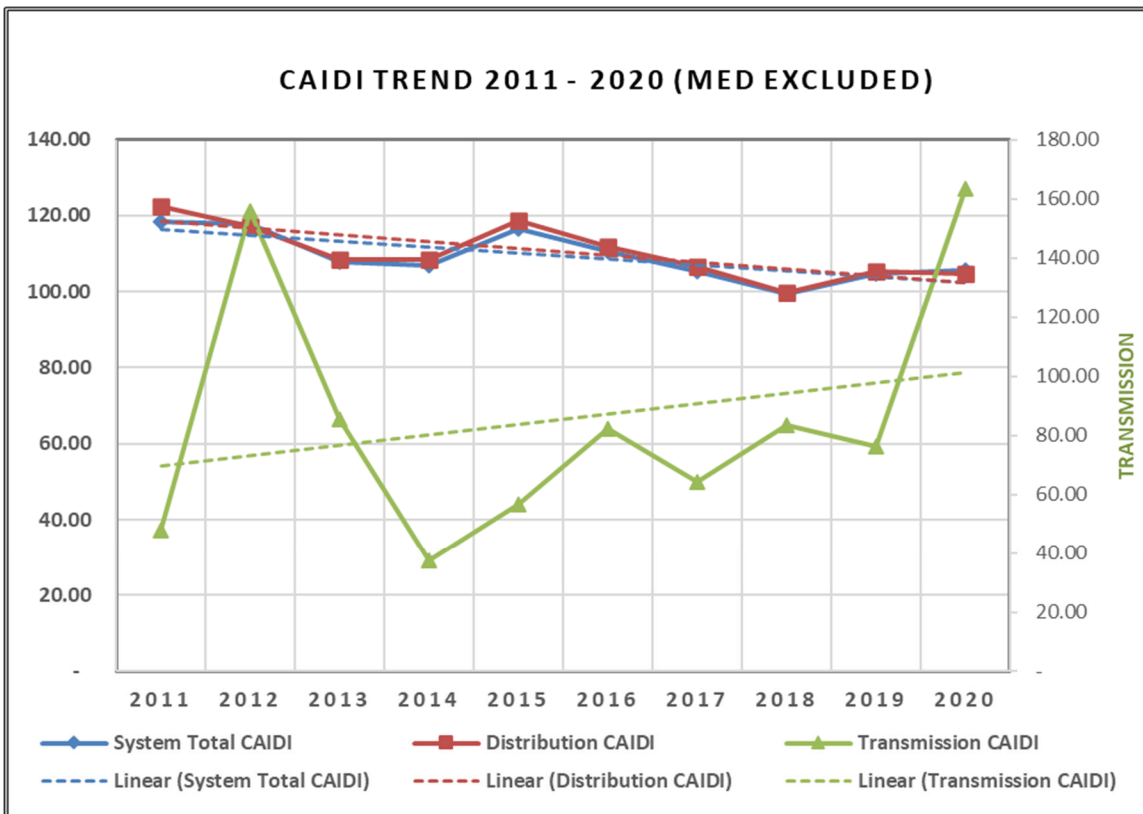
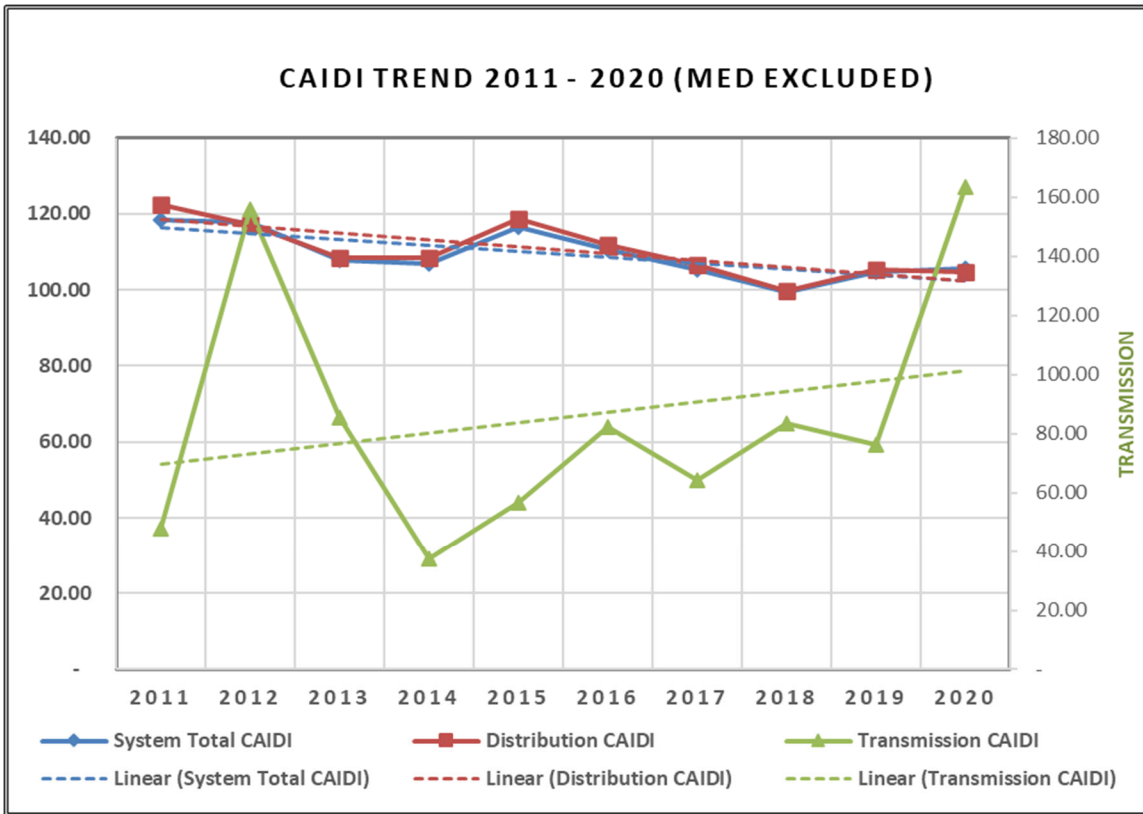
Table 3 – Unplanned Outage Transmission Indices (2011-2020)

YEAR	Transmission Indices (>= 50KV) (All Interruptions Included)				Transmission Indices (>= 50KV) (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
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
2016	5.15	0.05	0.08	101.92	3.68	0.04	0.07	82.39
2017	10.99	0.21	0.27	53.01	1.74	0.03	0.04	64.31
2018	1.95	0.01	0.04	177.73	0.44	0.01	0.03	83.54
2019	7.67	0.03	0.06	225.95	1.43	0.02	0.04	76.39
2020	2.39	0.01	0.06	197.46	1.98	0.01	0.06	163.29

⁴ Transmission system outages are defined as outages ≥ 50kV.

b. Unplanned Outage System Indices Charts (MED Excluded)





SECTION 2 – UNPLANNED OUTAGE DISTRICT RELIABILITY INDICES FOR THE PAST 10 YEARS INCLUDING AND EXCLUDING MED

a. District SAIDI, SAIFI, MAIFI and CAIDI⁵ (including and excluding MED) for unplanned outages

Table 4 – District Indices (2011-2020)⁶

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
ANTELOPE VALLEY								
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
2016	107.670	0.870	1.523	123.791	101.199	0.814	1.430	124.322
2017	103.191	0.873	1.833	118.151	83.352	0.814	1.704	102.390
2018	55.614	0.608	1.258	91.517	50.419	0.534	1.097	94.498
2019	194.754	0.668	1.347	291.498	76.406	0.569	1.249	134.164
2020	288.112	1.157	2.407	249.035	154.993	1.001	2.332	154.892
ARROWHEAD								
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
2016	659.464	2.848	5.951	231.515	200.720	1.883	4.712	106.593
2017	816.518	3.861	7.057	211.496	218.331	3.058	4.093	71.391
2018	68.595	1.527	2.980	44.924	53.422	0.712	2.919	75.065
2019	3630.637	9.592	9.883	378.500	828.270	5.814	6.160	142.452
2020	443.890	2.387	4.269	185.940	205.139	2.064	3.315	99.397
BARSTOW								
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
2016	134.828	1.350	2.296	99.888	130.085	1.340	2.283	97.106
2017	357.468	2.652	4.195	134.806	356.064	2.639	4.132	134.934
2018	116.698	1.373	2.110	84.988	115.274	1.342	2.077	85.929
2019	114.490	0.833	2.586	137.432	95.228	0.798	2.188	119.296
2020	105.062	1.379	2.650	76.169	100.325	1.368	2.523	73.324
BISHOP								
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
2016	168.592	1.216	2.820	138.643	168.530	1.216	2.711	138.603
2017	190.511	1.934	3.223	98.485	172.144	1.877	3.077	91.719
2018	139.695	0.539	1.957	258.986	136.470	0.499	1.820	273.587
2019	1445.727	2.915	3.217	496.014	276.151	1.394	2.878	198.130
2020	318.002	1.935	1.637	164.372	317.830	1.933	1.619	164.423
BLYTHE								
2011	378.393	1.402	3.717	269.845	294.445	1.344	2.641	219.114
2012	225.884	1.529	3.749	147.714	321.050	1.312	3.443	244.767
2013	483.127	1.380	5.466	349.971	221.814	1.498	3.749	148.058
2014	707.218	2.417	4.658	292.632	482.815	1.372	5.382	351.779
2015	426.997	1.515	1.396	281.754	706.974	2.385	4.433	296.395
2016	396.376	2.707	6.342	146.428	331.521	1.129	1.163	293.751
2017	684.484	2.377	3.585	287.955	302.983	1.917	4.848	158.021
2018	277.723	1.571	2.198	176.833	683.564	2.372	3.493	288.176
2019	379.850	1.692	2.769	224.482	255.608	1.321	2.168	193.449
2020	212.376	1.321	1.941	160.718	174.369	1.194	1.791	146.079

⁵ dSAIDI, dSAIFI, dMAIFI and dCAIDI are calculated utilizing the district CMI/district customers.

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
COMPTON								
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
2016	146.384	1.107	2.537	132.203	127.155	1.010	2.229	125.937
2017	123.596	0.826	2.162	149.564	86.630	0.720	1.967	120.388
2018	93.365	0.852	2.447	109.544	66.378	0.718	2.266	92.400
2019	98.658	0.874	2.090	112.865	64.548	0.706	1.721	91.403
2020	171.659	1.236	2.922	138.916	124.726	1.085	2.778	114.952
COVINA								
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
2016	112.134	0.974	1.319	115.182	90.930	0.875	1.145	103.915
2017	117.185	0.933	1.366	125.558	106.094	0.813	1.139	130.523
2018	103.181	0.832	1.455	124.043	73.463	0.700	1.367	104.983
2019	84.296	0.864	0.999	97.598	76.846	0.800	0.923	96.037
2020	138.278	1.398	1.020	98.922	111.573	1.300	0.979	85.846
FOOTHILL								
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
2016	142.807	1.028	1.507	138.926	138.177	1.008	1.483	137.029
2017	110.528	1.118	1.387	98.876	88.001	0.890	1.213	98.910
2018	117.614	0.976	1.202	120.475	78.703	0.782	0.966	100.705
2019	273.472	1.050	1.108	260.359	69.021	0.796	1.069	86.733
2020	218.295	1.202	1.659	181.547	83.326	0.914	1.503	91.164
FULLERTON								
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
2016	92.725	0.760	1.174	122.044	73.772	0.588	0.974	125.369
2017	89.287	0.676	1.211	132.085	74.154	0.584	1.084	126.996
2018	69.447	0.517	1.126	134.276	55.382	0.435	1.041	127.367
2019	82.337	0.776	1.092	106.133	73.013	0.710	1.023	102.844
2020	88.465	0.686	1.178	128.906	50.893	0.508	0.780	100.096
HUNTINGTON BEACH								
2011	121.939	0.982	1.507	124.158	114.002	0.911	1.426	125.083
2012	95.604	0.887	1.043	107.743	94.511	0.880	1.043	107.404
2013	66.914	0.703	0.839	95.123	66.914	0.703	0.839	95.123
2014	77.109	0.774	1.105	99.638	65.695	0.712	0.978	92.256
2015	97.731	0.969	1.235	100.904	93.570	0.942	1.187	99.287
2016	127.358	1.287	1.245	98.938	107.706	1.212	1.184	88.869
2017	98.780	0.972	1.458	101.647	78.932	0.852	1.190	92.648
2018	88.268	0.778	1.376	113.405	74.272	0.696	1.076	106.706
2019	97.176	1.011	1.145	96.129	81.299	0.889	0.973	91.406
2020	90.132	0.865	1.080	104.236	79.155	0.781	1.029	101.384
KERNVILLE								
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
2016	2421.324	3.674	2.928	659.034	909.188	2.839	2.832	320.212
2017	305.533	3.286	4.508	92.982	290.601	3.148	4.210	92.311
2018	184.411	1.141	3.104	161.652	152.818	1.009	3.087	151.390
2019	320.174	1.669	3.964	191.871	317.537	1.663	3.961	190.886
2020	319.009	1.876	2.595	170.012	295.902	1.832	2.587	161.537

⁶ Beginning in the 2019 annual report, Catalina District indices have been combined with Huntington Beach District since the Catalina District operations have been combined with the Huntington Beach District.

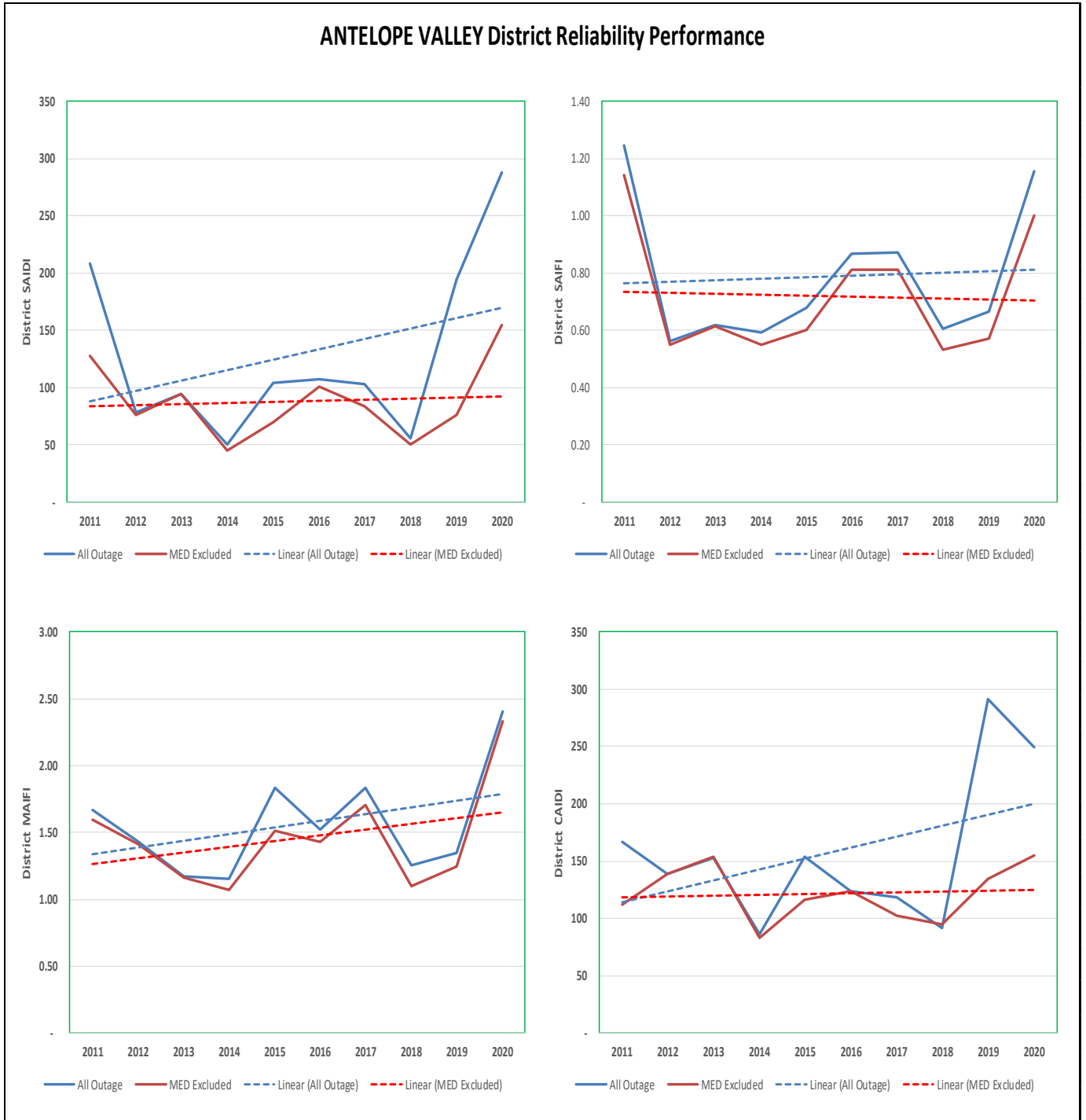
DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
LONG BEACH								
2011	58.475	0.579	0.894	100.942	52.380	0.562	0.853	93.191
2012	75.830	0.554	1.106	136.864	72.654	0.536	1.059	135.673
2013	75.107	0.699	0.779	107.497	74.628	0.694	0.775	107.551
2014	66.226	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
2016	135.163	0.857	1.308	157.701	96.978	0.695	1.095	139.507
2017	77.173	0.708	1.177	108.967	59.503	0.590	1.017	100.881
2018	51.477	0.445	1.223	115.686	42.300	0.400	1.100	105.879
2019	78.184	0.643	0.965	121.652	60.171	0.572	0.818	105.248
2020	65.418	0.687	1.205	95.238	50.001	0.600	1.112	83.372
MENIFEE								
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
2016	156.748	1.311	1.448	119.535	139.005	1.191	1.338	116.738
2017	130.467	0.965	1.311	135.265	72.854	0.765	1.200	95.225
2018	174.057	0.897	1.436	194.002	70.952	0.696	1.270	102.015
2019	99.483	0.859	1.027	115.814	76.890	0.750	0.860	102.488
2020	261.876	1.209	1.123	216.642	84.117	0.892	1.011	94.271
MONROVIA								
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
2016	116.575	0.844	1.652	138.064	93.387	0.772	1.523	121.000
2017	105.003	0.982	1.797	106.955	91.997	0.925	1.699	99.414
2018	243.023	1.427	1.614	170.294	102.583	1.030	1.453	99.573
2019	86.095	0.824	1.399	104.506	75.962	0.724	1.239	104.947
2020	149.082	0.896	1.712	166.402	78.159	0.685	1.504	114.028
MONTEBELLO								
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
2016	133.522	1.166	2.057	114.552	107.263	1.043	1.882	102.871
2017	123.980	0.989	2.181	125.388	96.853	0.877	1.873	110.467
2018	160.883	1.063	2.269	151.313	98.880	0.782	1.859	126.380
2019	127.517	1.176	1.906	108.427	108.382	1.042	1.789	104.046
2020	166.016	1.108	1.793	149.896	104.404	0.919	1.617	113.606
ONTARIO								
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
2016	105.067	0.930	1.282	112.936	86.158	0.803	1.095	107.337
2017	100.432	1.135	1.572	88.514	91.781	1.054	1.422	87.094
2018	80.041	0.723	1.048	110.711	53.434	0.589	0.918	90.776
2019	90.157	0.943	1.211	95.597	76.942	0.864	1.145	89.046
2020	160.074	1.044	1.420	153.267	66.704	0.740	1.035	90.131
PALM SPRINGS								
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
2016	107.581	1.066	1.281	100.909	101.363	1.010	1.133	100.351
2017	119.105	1.022	1.220	116.564	116.436	0.998	1.210	116.632
2018	73.949	0.788	1.426	93.794	60.306	0.726	1.208	83.104
2019	133.770	1.233	1.623	108.492	91.606	0.915	1.298	100.088
2020	120.431	0.895	1.220	134.561	94.070	0.776	1.148	121.149

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
REDLANDS								
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
2016	137.110	0.978	1.475	140.164	118.776	0.883	1.336	134.494
2017	142.591	1.009	1.595	141.350	112.447	0.856	1.407	131.325
2018	88.933	0.973	1.367	91.372	71.012	0.833	1.212	85.242
2019	215.229	1.275	1.407	168.810	104.260	0.970	1.243	107.496
2020	569.596	1.745	1.407	326.475	189.014	1.214	1.246	155.648
RIDGECREST								
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
2016	254.311	1.048	1.283	242.667	249.209	0.941	1.160	264.837
2017	164.281	1.089	3.519	150.868	153.577	1.066	3.447	144.028
2018	254.588	1.099	1.287	231.588	99.802	0.732	1.278	136.389
2019	299.989	2.092	4.915	143.406	296.459	1.807	4.181	164.030
2020	118.671	1.009	1.673	117.615	112.684	0.867	1.540	129.995
SADDLEBACK								
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
2016	65.991	0.646	0.780	102.225	62.466	0.602	0.739	103.695
2017	65.349	0.576	0.695	113.479	48.740	0.482	0.545	101.179
2018	45.805	0.377	0.413	121.548	35.830	0.316	0.364	113.487
2019	134.866	0.669	0.388	201.606	42.994	0.512	0.334	83.924
2020	98.407	0.559	0.238	176.159	60.738	0.447	0.220	136.013
SANTA ANA								
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
2016	97.266	0.995	1.184	97.732	88.311	0.938	1.112	94.132
2017	81.900	0.712	1.269	115.087	67.193	0.609	1.118	110.346
2018	122.093	0.819	1.304	149.091	56.912	0.550	1.093	103.419
2019	62.785	0.564	0.864	111.359	58.439	0.509	0.821	114.857
2020	91.084	0.767	1.190	118.787	65.264	0.631	0.909	103.503
SANTA BARBARA								
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
2016	156.665	1.411	1.464	111.029	130.007	1.269	1.249	102.442
2017	408.433	9.213	13.591	44.334	152.424	1.619	1.206	94.173
2018	172.898	1.022	1.201	169.205	85.566	0.908	1.000	94.285
2019	201.251	1.502	1.750	134.004	179.194	1.389	1.562	129.024
2020	141.355	1.312	1.155	107.737	119.109	1.106	1.127	107.716
SANTA MONICA								
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
2016	91.084	0.948	1.210	96.130	89.110	0.933	1.131	95.493
2017	71.892	0.712	1.168	101.023	66.138	0.678	1.108	97.491
2018	80.242	1.045	1.352	76.789	60.403	0.716	1.320	84.334
2019	104.743	0.896	1.424	116.873	100.349	0.861	1.373	116.489
2020	86.165	1.062	1.242	81.100	76.227	0.979	1.179	77.861

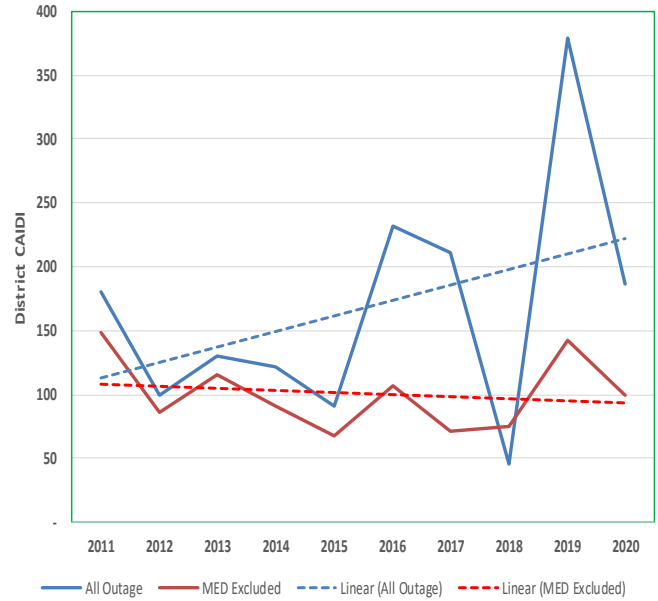
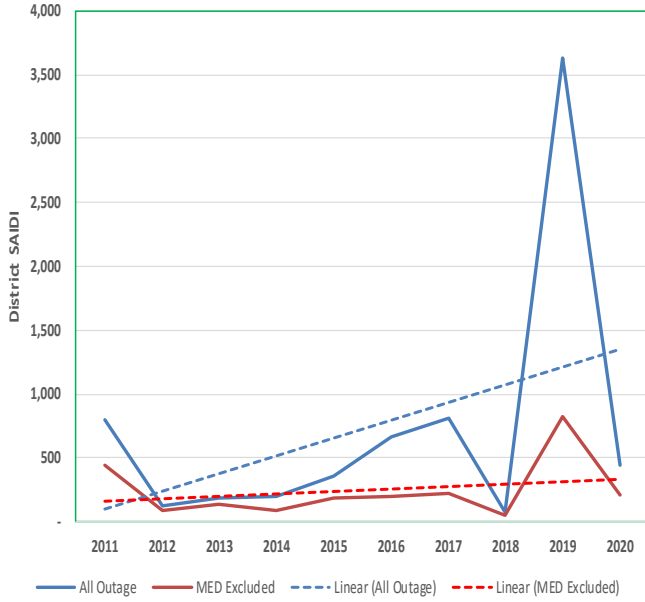
DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
SHAVER LAKE								
2011	1667.047	4.222	3.933	394.852	984.340	1.650	2.741	596.466
2012	1184.253	4.523	2.608	261.831	842.662	4.182	1.681	201.512
2013	176.510	3.080	4.987	57.308	176.510	3.080	4.711	57.308
2014	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
2016	1062.011	4.993	4.157	212.703	773.999	2.795	2.165	276.874
2017	4273.522	7.947	5.220	537.732	676.224	6.039	5.197	111.971
2018	203.429	2.484	6.362	81.887	203.429	2.484	6.362	81.887
2019	1559.973	5.579	7.850	279.614	1504.825	5.206	5.339	289.066
2020	32846.995	6.325	3.654	5193.348	631.950	5.105	3.654	123.785
SOUTH BAY								
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
2016	183.899	1.884	2.020	97.600	150.901	1.752	1.818	86.124
2017	99.194	0.931	1.460	106.532	87.355	0.818	1.328	106.765
2018	90.626	1.090	1.771	83.134	82.272	1.007	1.524	81.666
2019	79.308	1.010	1.398	78.544	71.491	0.950	1.313	75.271
2020	109.975	1.017	1.567	108.188	83.863	0.919	1.526	91.274
TEHACHAPI								
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
2016	97.292	1.132	2.363	85.982	76.426	1.036	1.940	73.781
2017	86.514	1.048	3.126	82.573	77.927	0.890	2.946	87.574
2018	55.989	0.673	2.276	83.199	54.960	0.655	2.146	83.856
2019	2983.876	4.608	2.171	647.599	467.572	2.716	1.776	172.135
2020	1277.446	2.082	3.109	613.574	202.449	1.102	2.969	183.703
THOUSAND OAKS								
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
2016	143.775	1.307	2.585	110.021	128.242	1.227	2.378	104.484
2017	151.735	1.427	3.270	106.304	106.392	1.063	2.903	100.056
2018	1167.537	1.480	1.634	788.966	109.945	0.967	1.354	113.663
2019	517.053	1.723	1.213	300.090	112.978	1.182	1.163	95.561
2020	625.191	1.790	1.048	349.189	139.464	1.156	0.968	120.632
TULARE								
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
2016	108.444	1.091	1.105	99.370	101.822	1.040	1.082	97.895
2017	191.659	1.343	1.198	142.710	105.718	1.282	1.188	82.463
2018	56.234	0.685	1.077	82.150	51.292	0.652	1.017	78.639
2019	72.671	0.745	1.075	97.509	69.696	0.716	1.035	97.356
2020	187.334	0.819	0.854	228.786	73.873	0.741	0.834	99.746
VALENCIA								
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
2016	105.087	0.968	1.549	108.594	97.405	0.846	1.522	115.187
2017	136.618	1.079	1.549	126.671	81.267	0.702	1.283	115.765
2018	92.407	1.063	1.451	86.969	79.329	0.945	1.391	83.982
2019	457.466	1.224	0.965	373.656	101.430	0.914	0.918	111.000
2020	390.939	1.353	1.133	288.959	95.639	0.987	1.111	96.865

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
VENTURA								
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
2016	150.408	1.236	1.679	121.649	107.140	1.019	1.553	105.110
2017	520.897	3.122	2.293	166.846	114.758	1.240	1.542	92.559
2018	136.042	1.438	1.921	94.613	100.385	1.177	1.676	85.301
2019	334.957	1.647	2.610	203.369	133.541	1.364	2.407	97.920
2020	174.559	0.957	1.191	182.362	69.913	0.764	1.080	91.509
VICTORVILLE								
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
2016	79.352	0.917	1.396	86.493	75.943	0.888	1.327	85.547
2017	84.068	0.895	2.353	93.936	73.124	0.808	1.757	90.485
2018	125.922	0.862	1.345	146.015	97.868	0.802	1.270	122.074
2019	82.422	1.102	2.008	74.767	74.675	0.986	1.667	75.770
2020	52.846	0.916	1.496	57.686	48.831	0.866	1.404	56.383
WHITTIER								
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
2016	137.336	0.814	1.416	168.756	90.212	0.616	1.290	146.361
2017	148.909	0.896	1.872	166.103	91.911	0.750	1.655	122.501
2018	87.742	0.666	1.413	131.834	73.659	0.575	1.297	128.006
2019	84.861	0.730	1.379	116.212	73.994	0.624	1.160	118.511
2020	113.236	0.840	1.280	134.805	83.218	0.724	1.152	115.011
WILDOMAR								
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
2016	84.010	0.866	0.951	97.031	79.151	0.839	0.861	94.378
2017	90.151	0.800	1.015	112.679	56.373	0.580	0.933	97.161
2018	60.772	0.747	0.846	81.358	51.890	0.622	0.760	83.373
2019	94.466	0.768	0.738	123.007	53.127	0.610	0.726	87.158
2020	96.507	0.759	0.955	127.133	54.174	0.635	0.955	85.346
YUCCA VALLEY								
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
2016	463.683	3.393	3.875	136.661	440.057	3.257	3.106	135.131
2017	300.331	1.957	1.602	153.472	270.109	1.728	1.509	156.277
2018	353.832	1.937	2.747	182.664	206.580	1.488	1.832	138.842
2019	451.746	2.341	1.930	192.934	401.604	2.067	1.728	194.288
2020	238.185	2.269	2.412	104.954	211.728	2.092	2.361	101.222

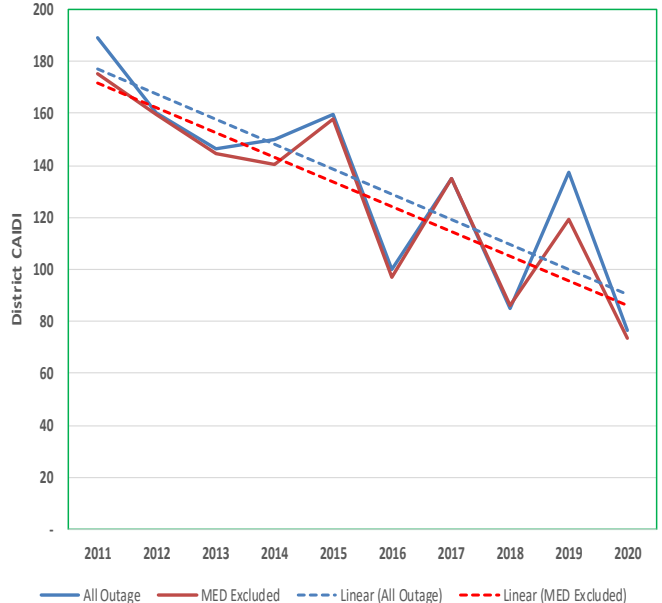
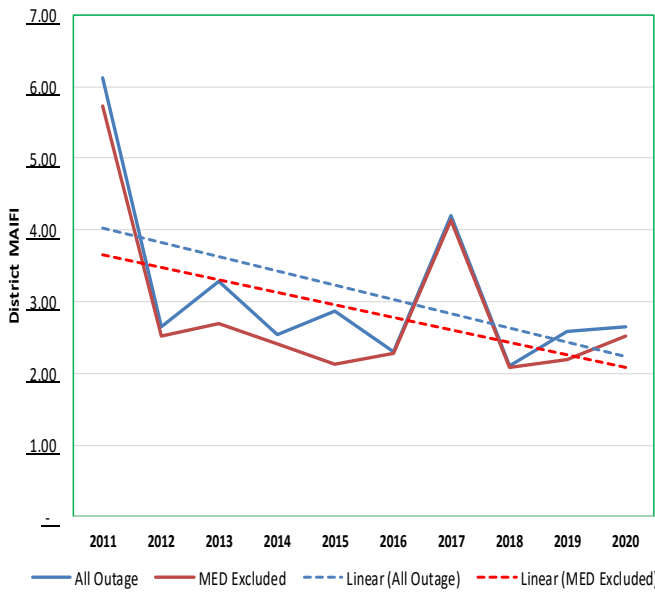
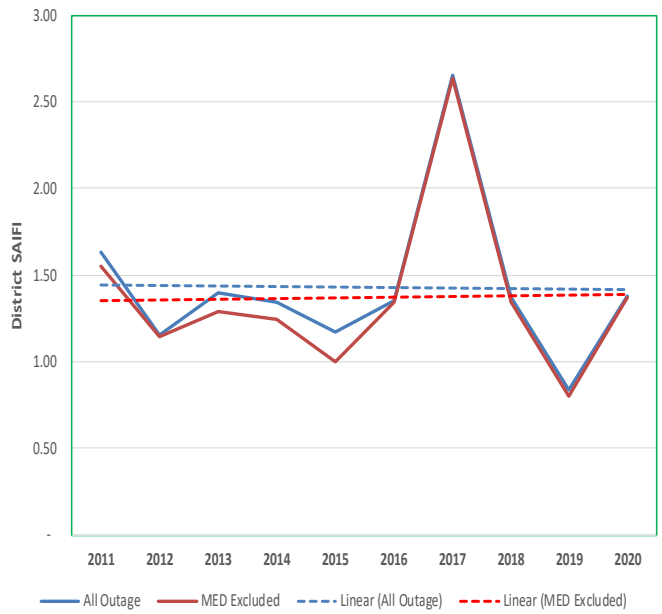
b. The linear charts below show the past 10 years District Reliability Performance from 2011 – 2020 of dSAIDI, dSAIFI, dMAIFI and dCAIDI for all 34 districts. There are separate charts of unplanned outages including and excluding MED. The charts shown are listed in district name in alphabetical order.



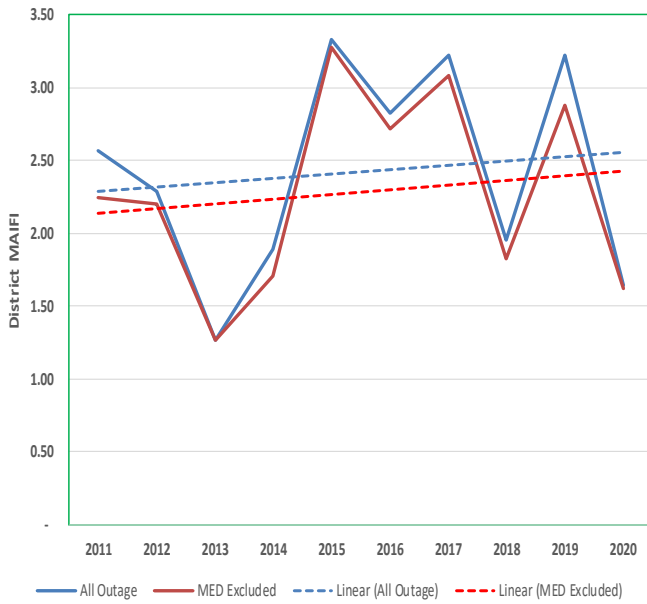
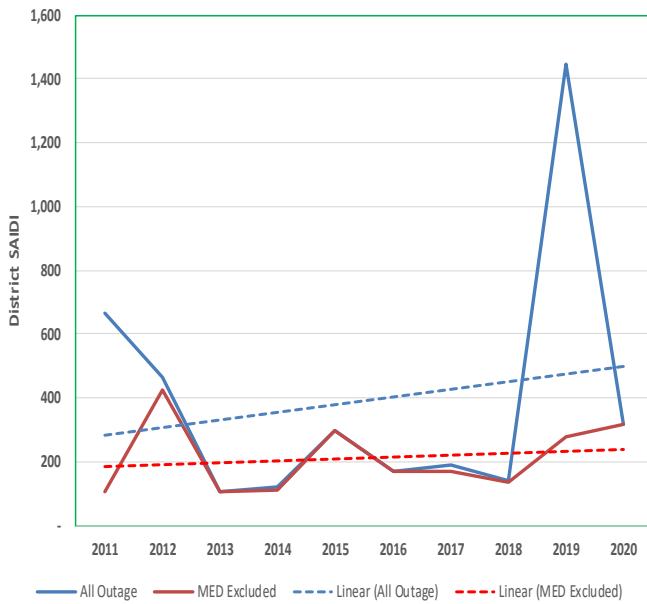
ARROWHEAD District Reliability Performance



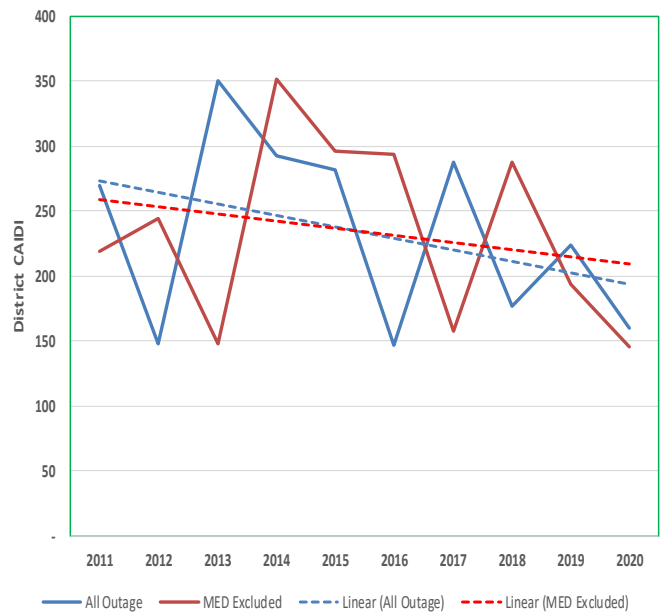
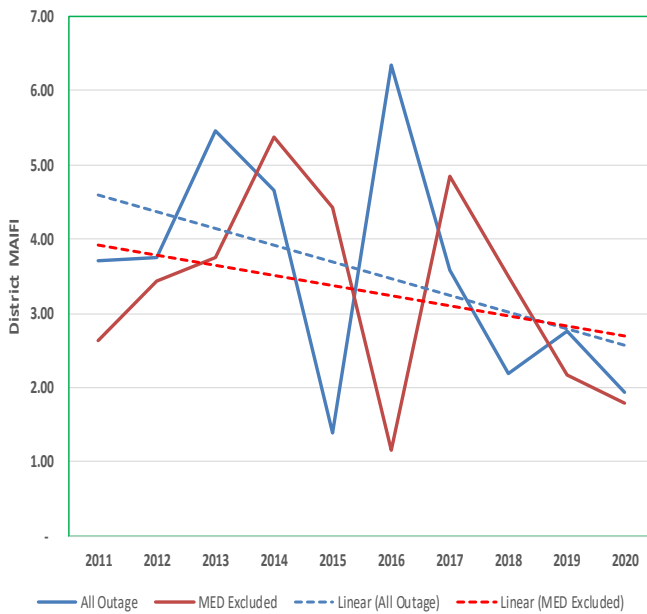
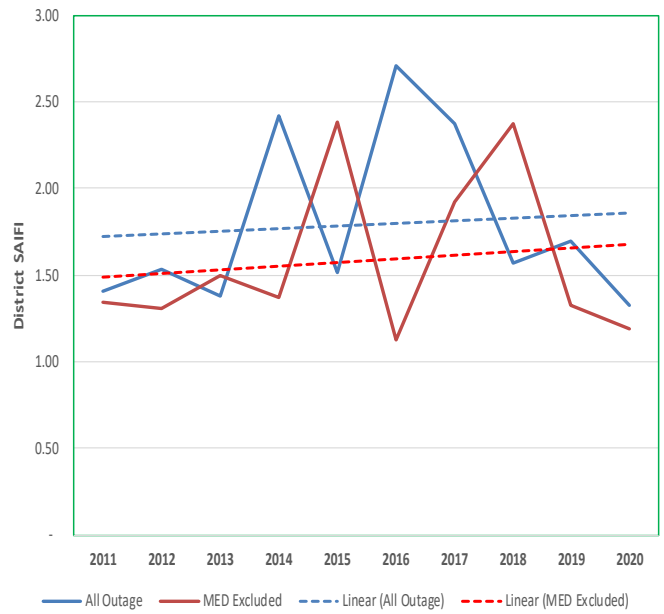
BARSTOW District Reliability Performance



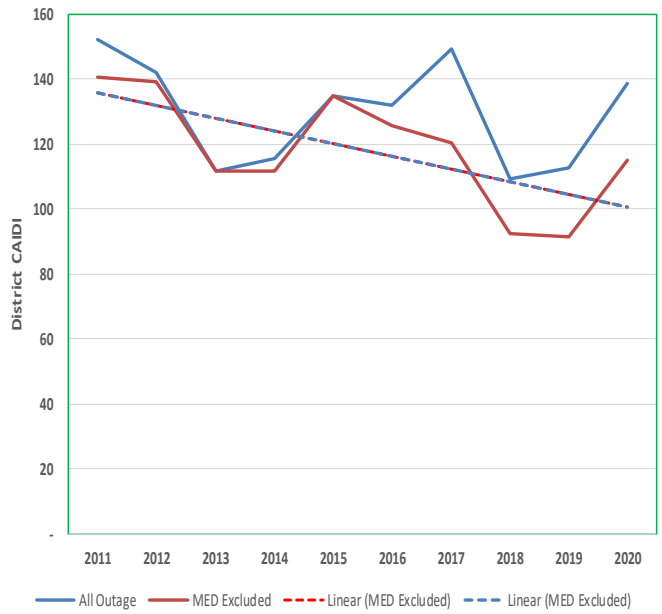
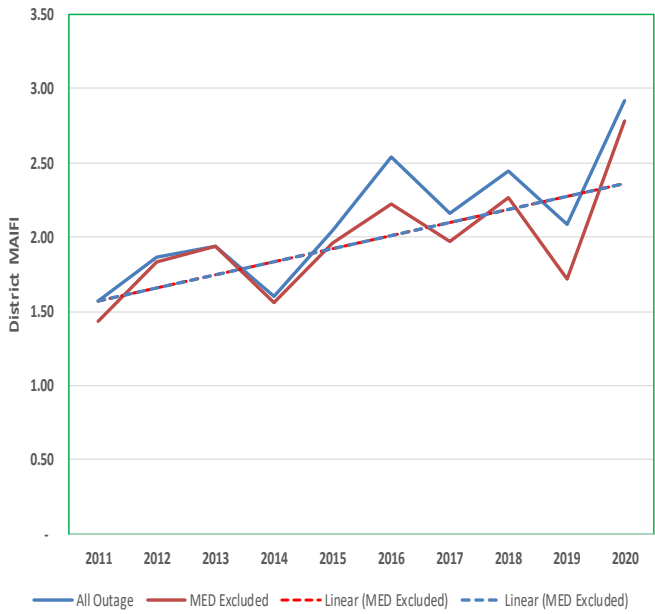
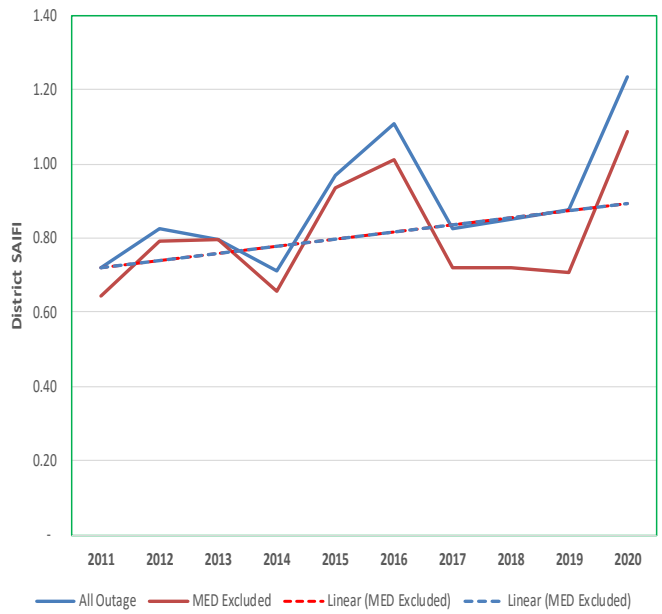
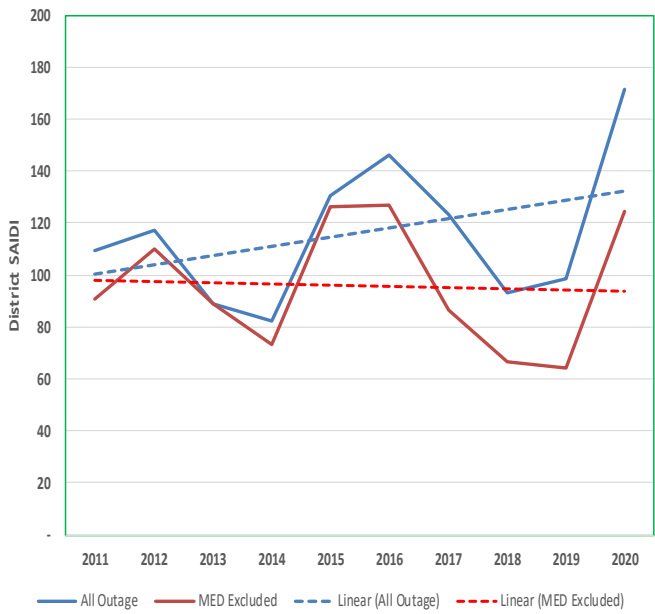
BISHOP District Reliability Performance



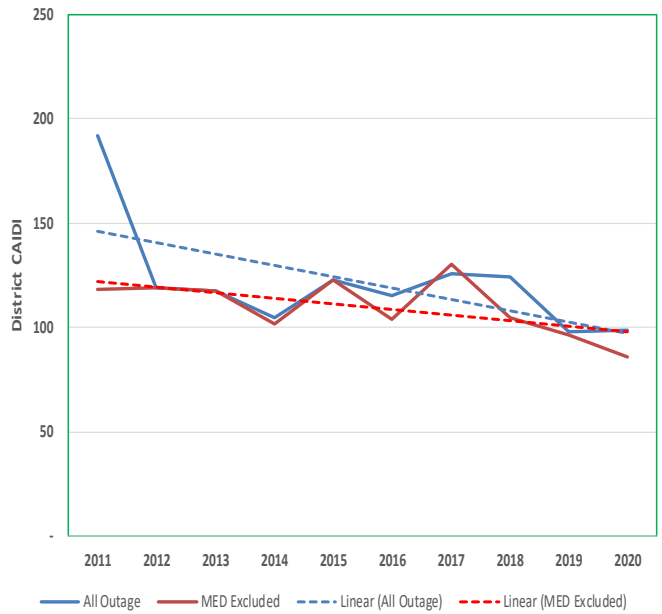
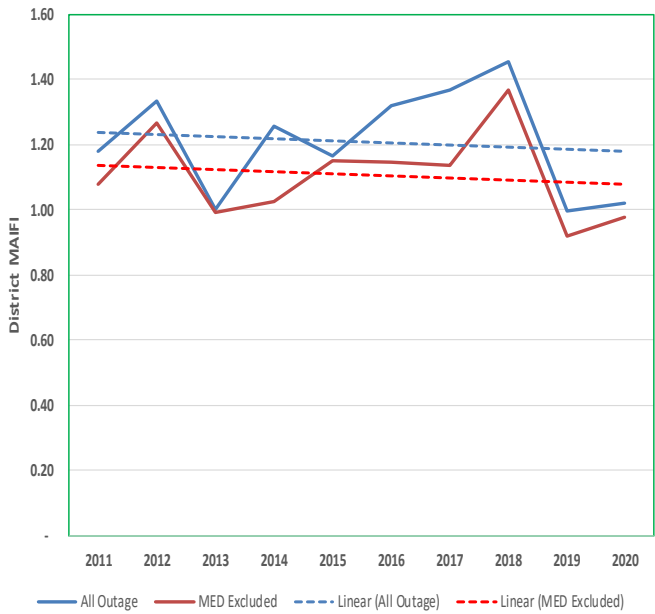
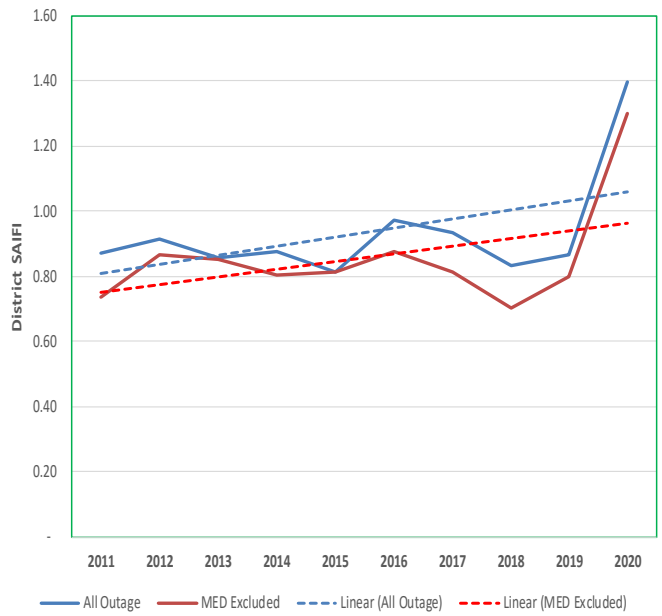
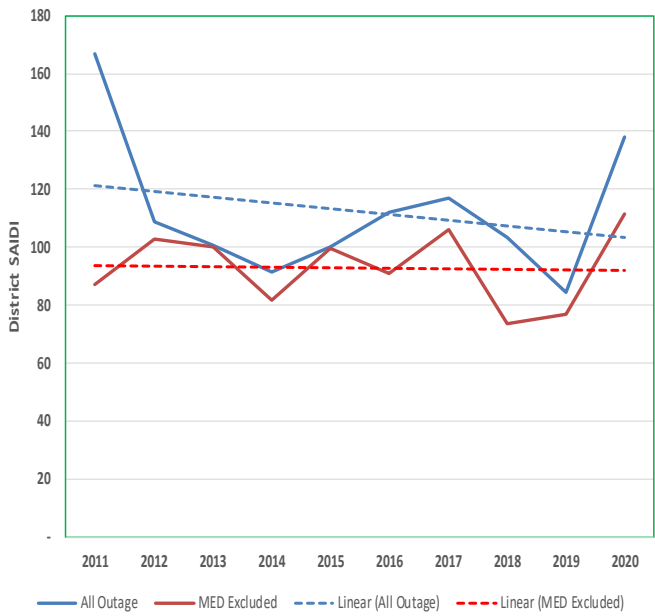
BLYTHE District Reliability Performance



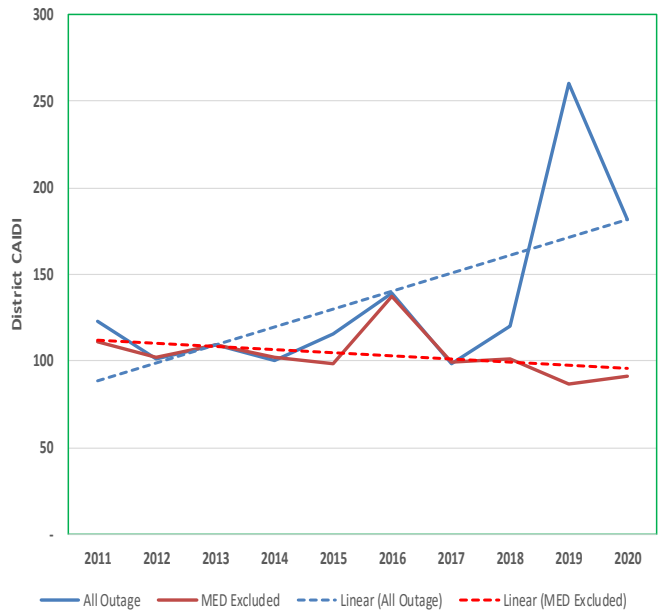
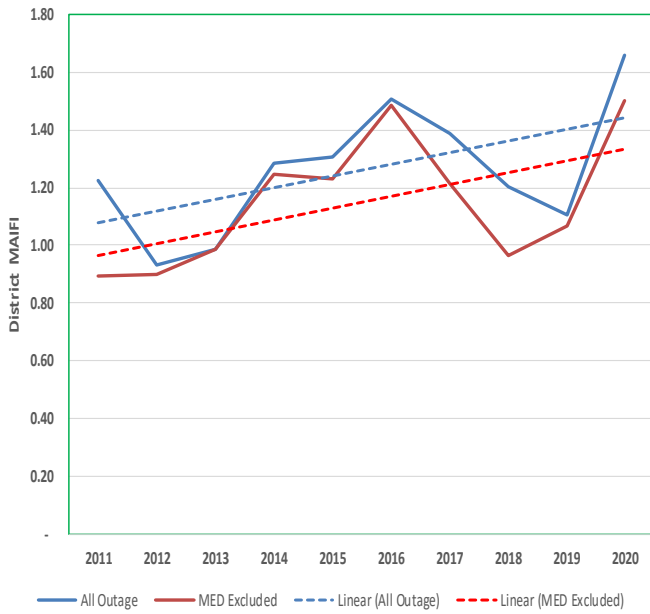
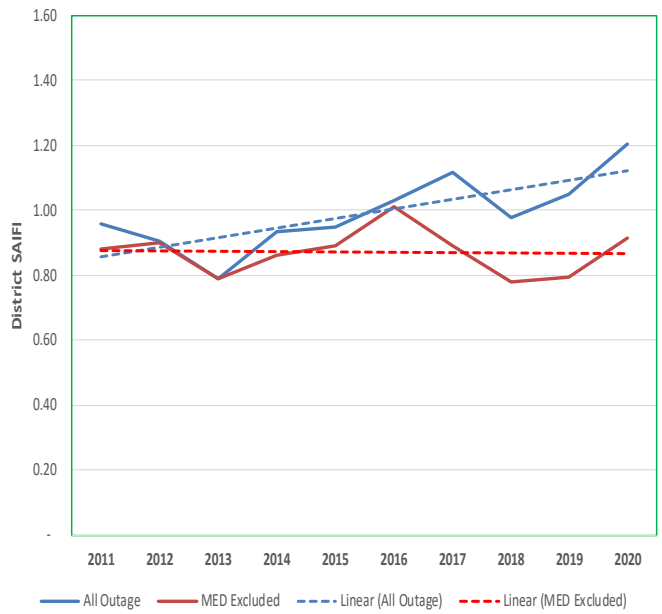
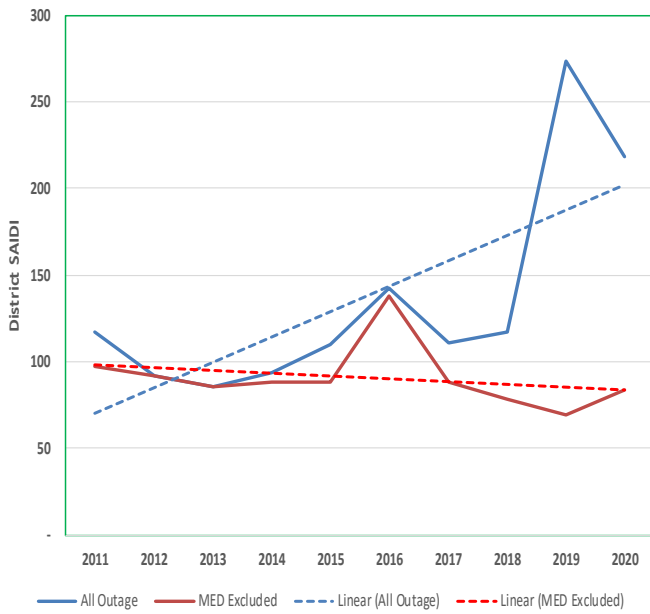
COMPTON District Reliability Performance



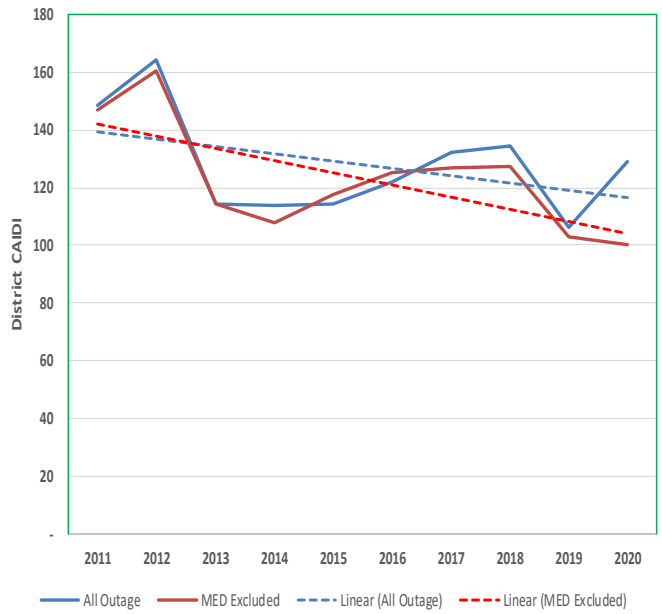
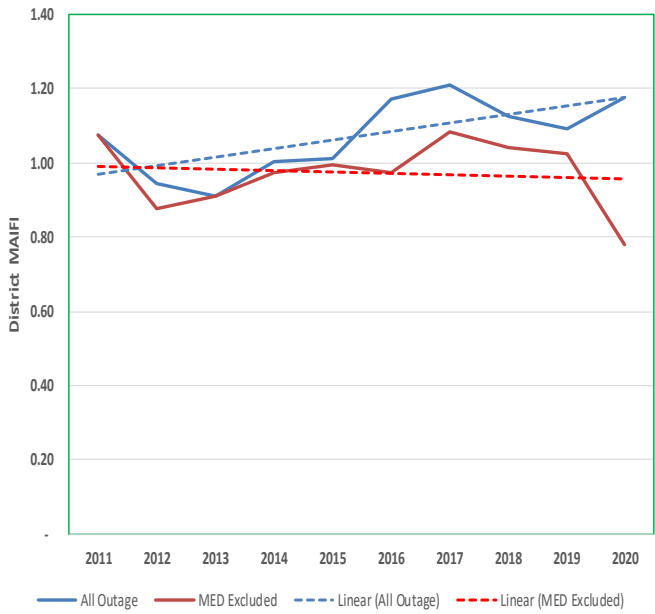
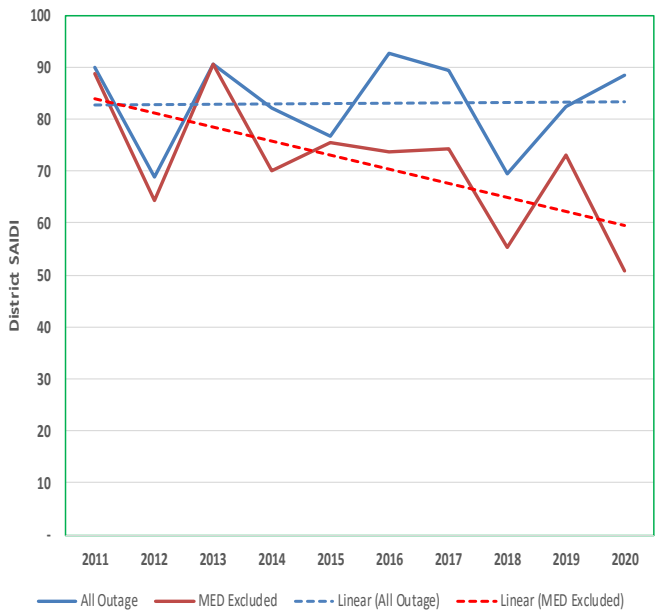
COVINA District Reliability Performance



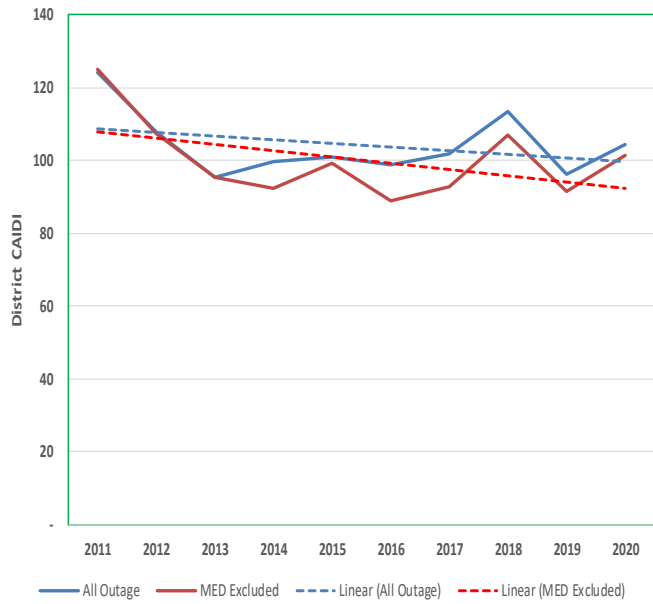
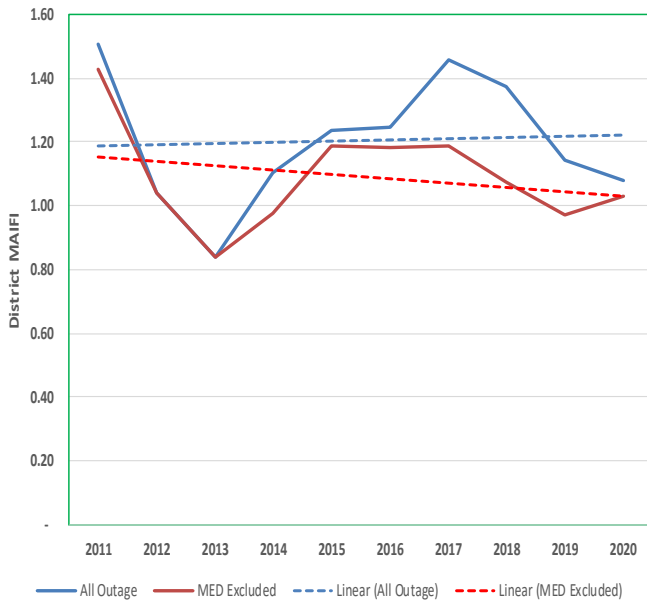
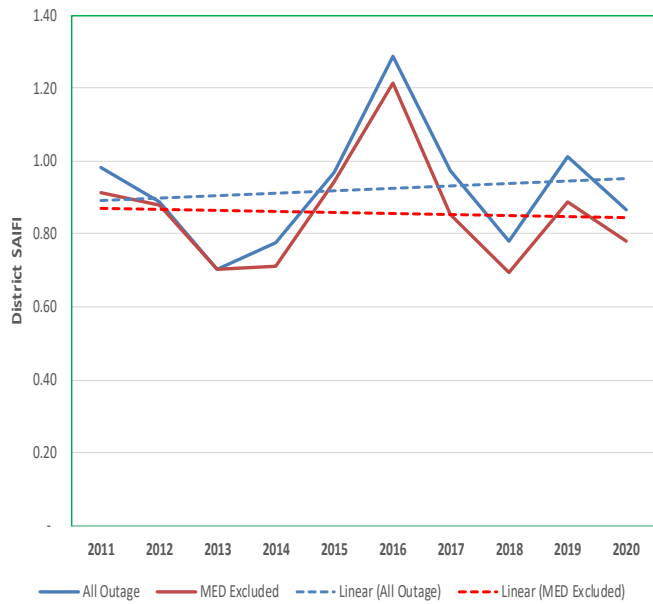
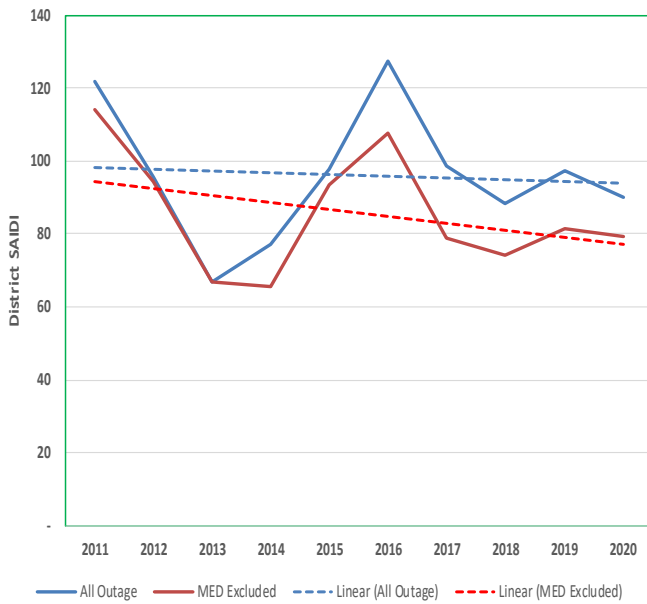
FOOTHILL District Reliability Performance



FULLERTON District Reliability Performance

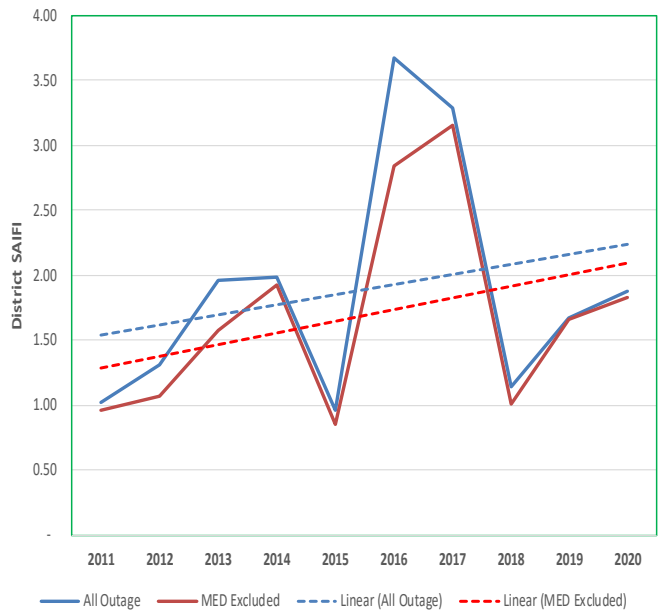
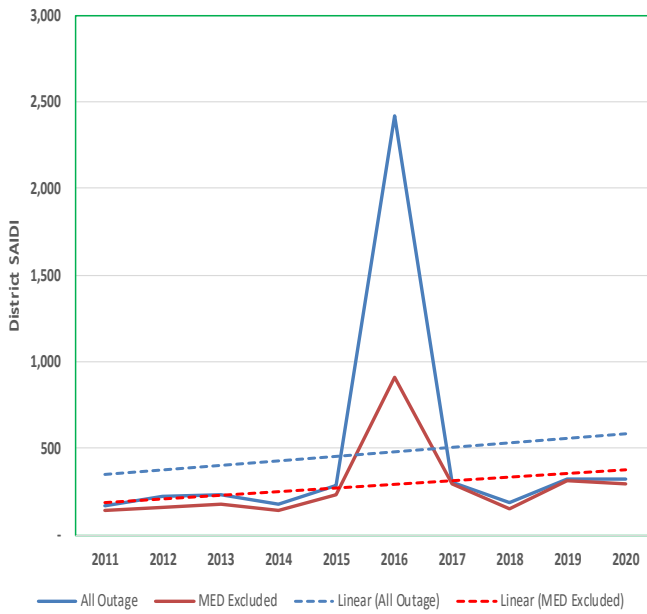


HUNTINGTON BEACH District Reliability Performance ⁷

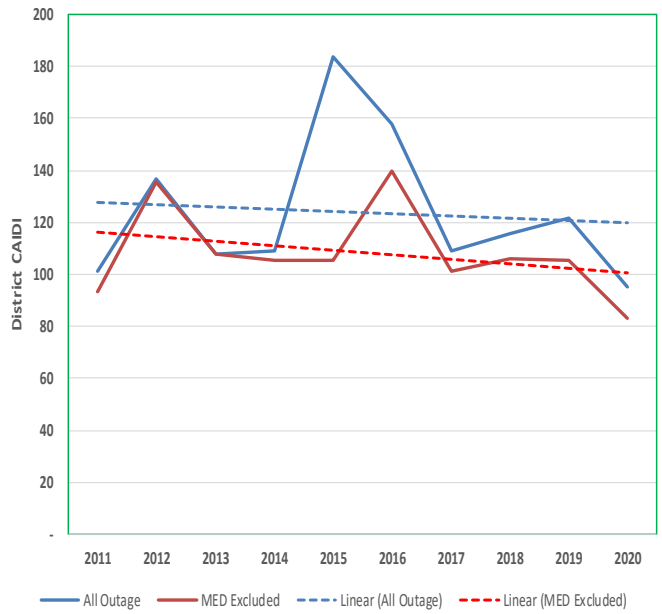
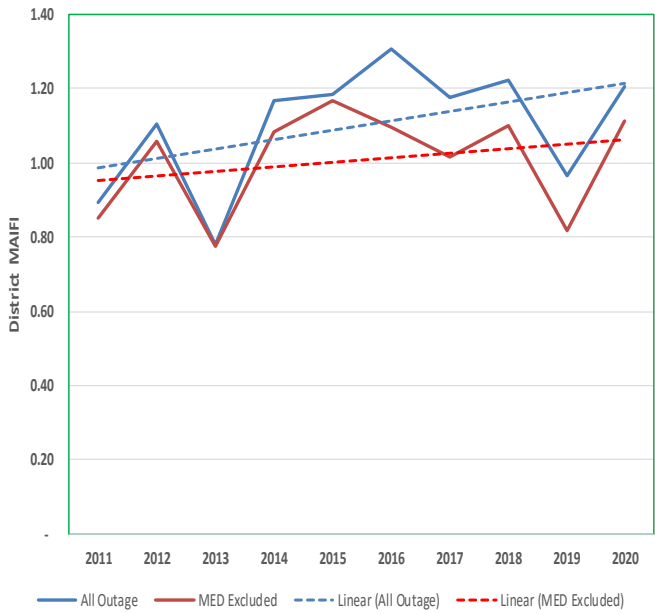
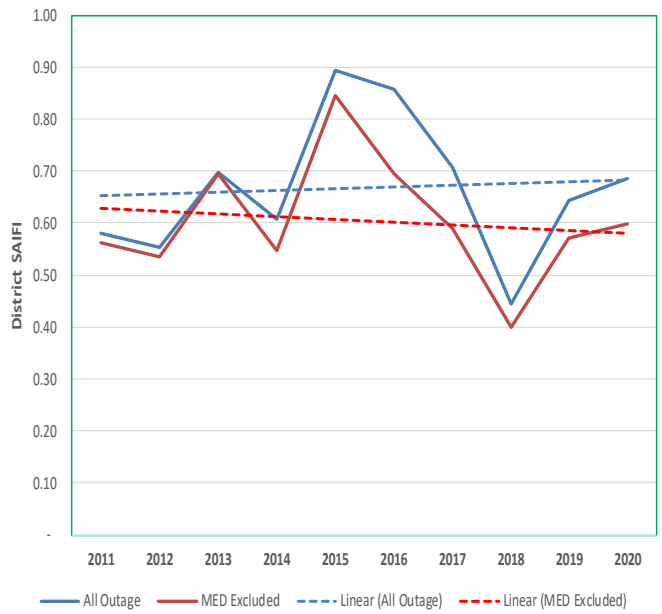
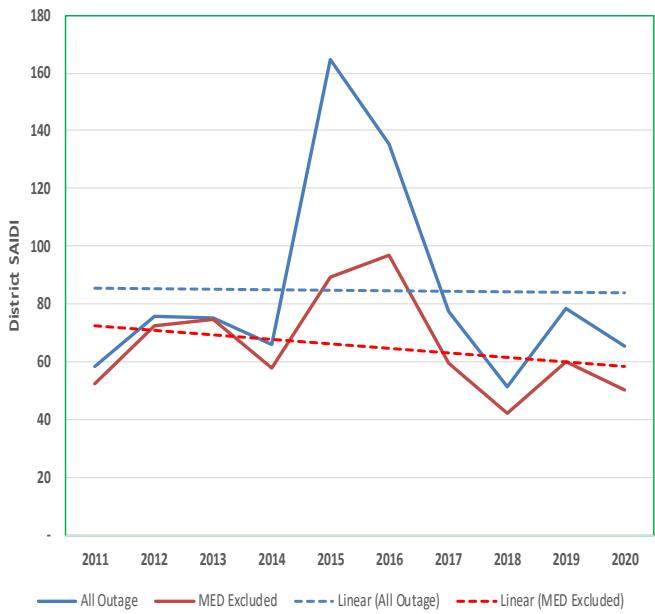


⁷ Beginning in the 2019 annual report, Catalina District charts have been combined with Huntington Beach District, since the Catalina District operations have been combined with the Huntington Beach District.

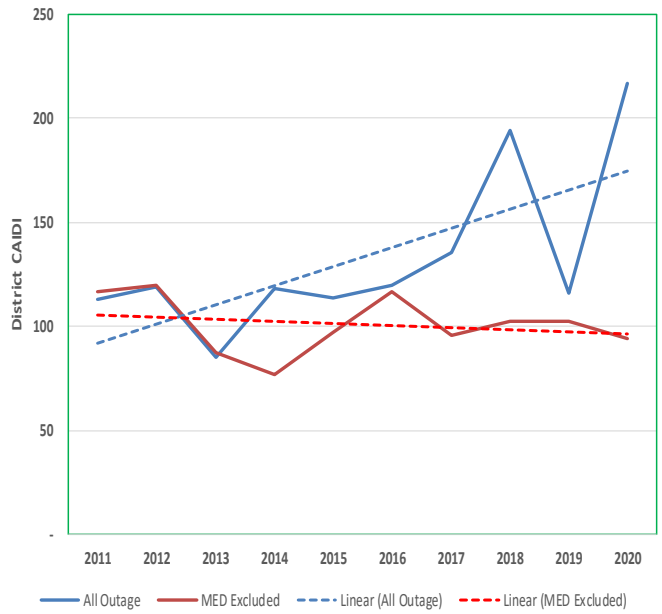
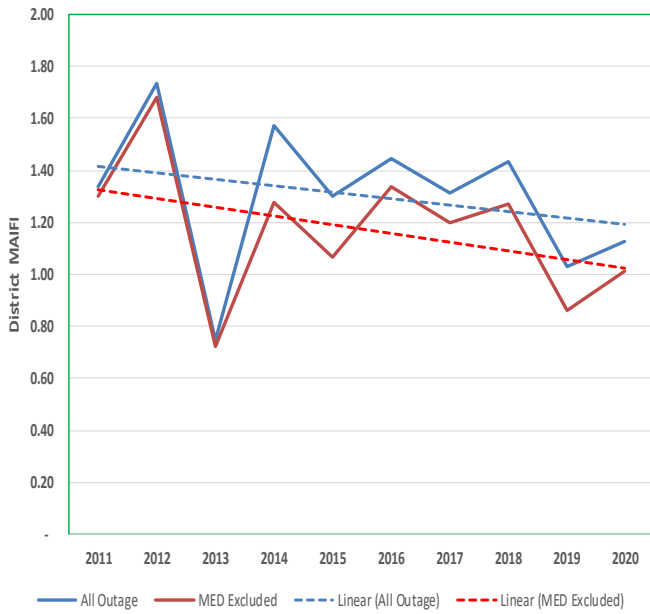
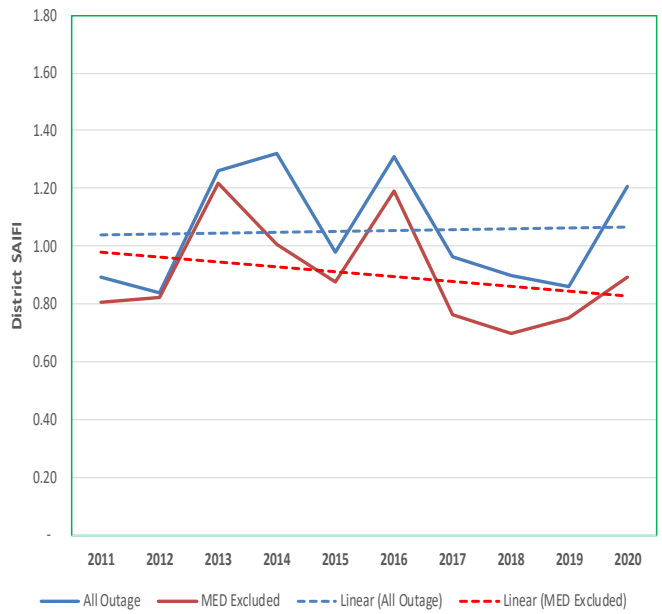
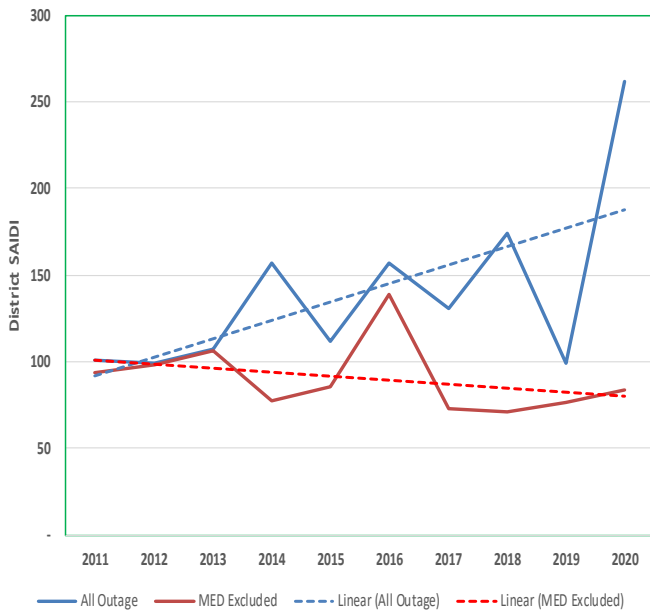
KERNVILLE District Reliability Performance



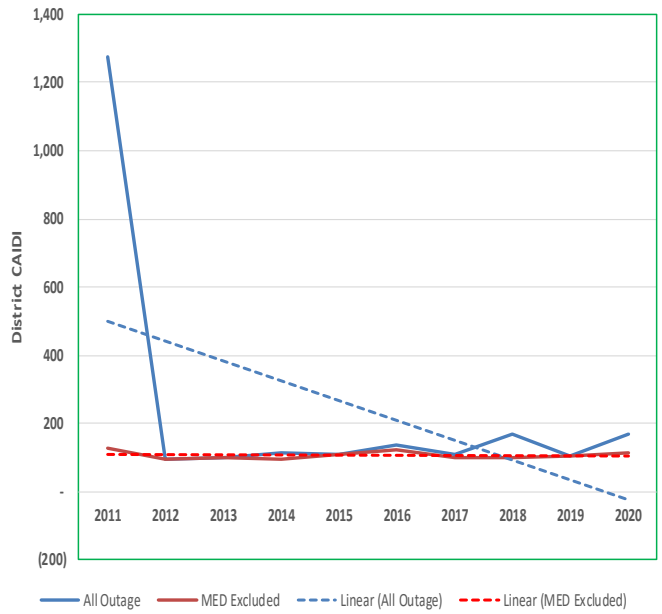
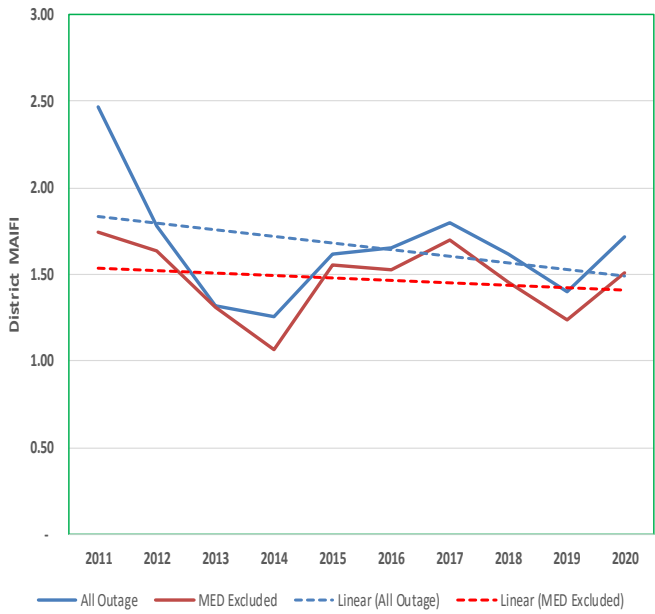
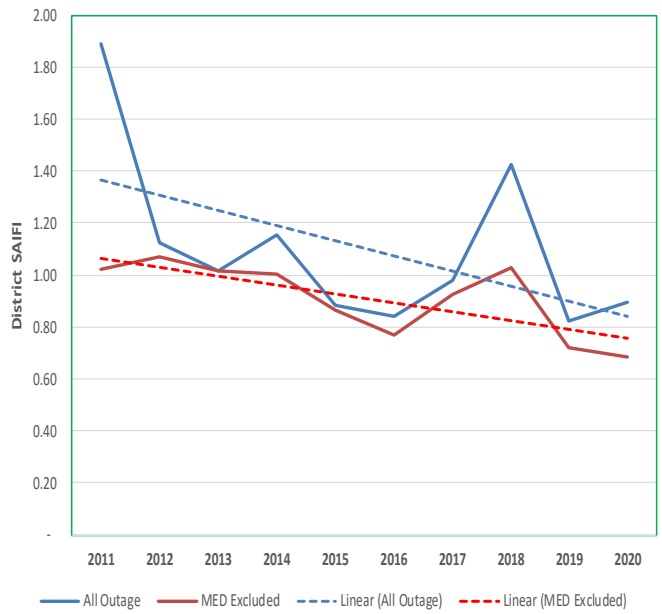
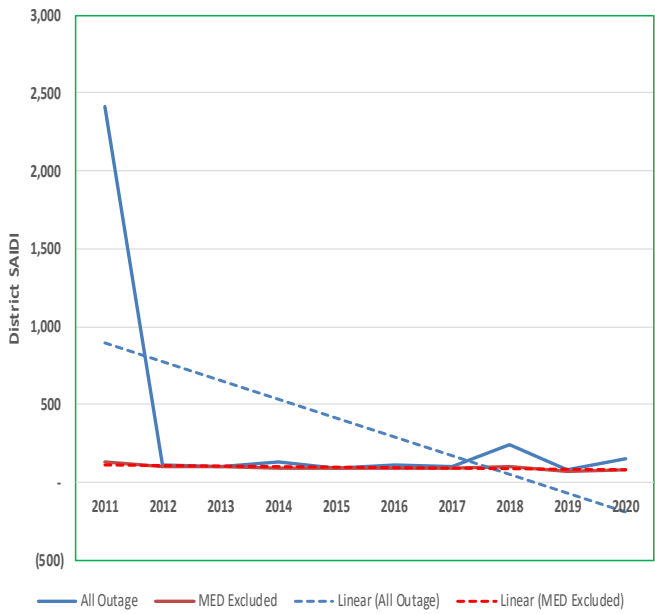
LONG BEACH District Reliability Performance



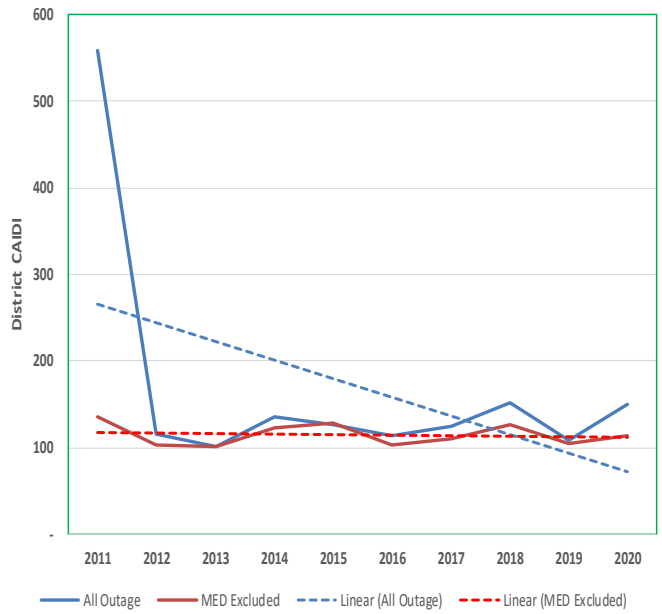
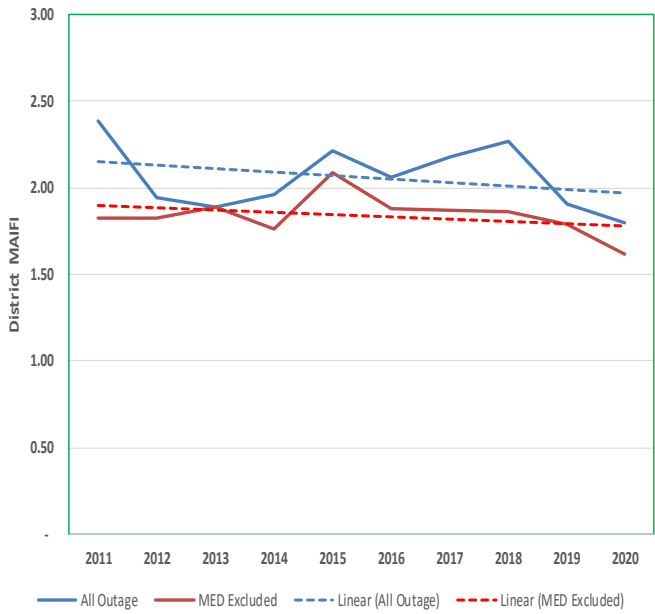
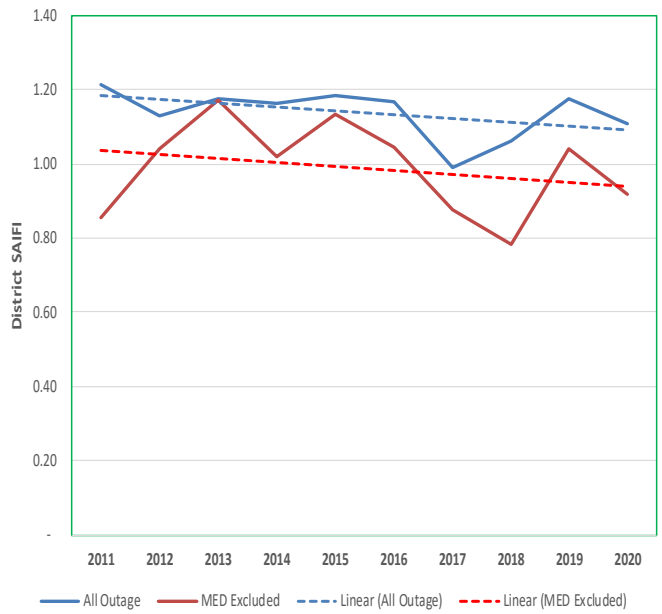
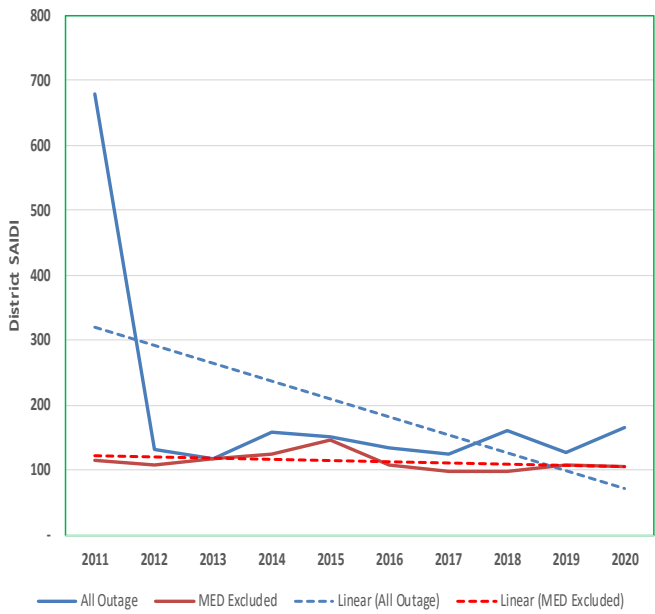
MENIFEE District Reliability Performance



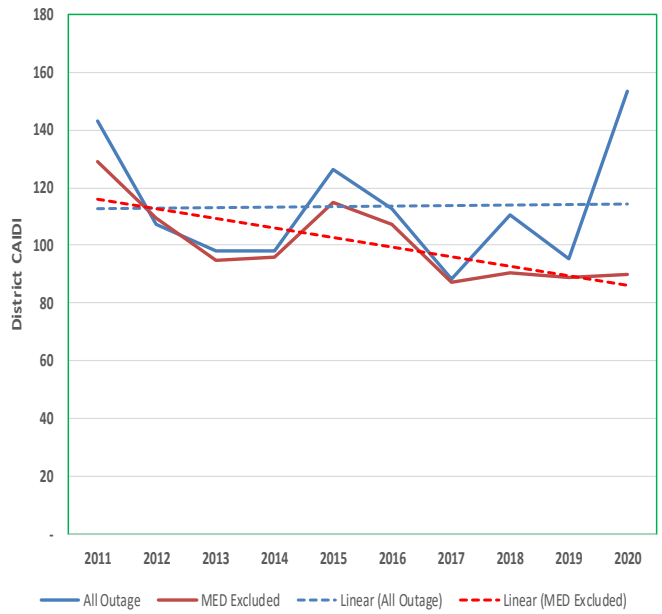
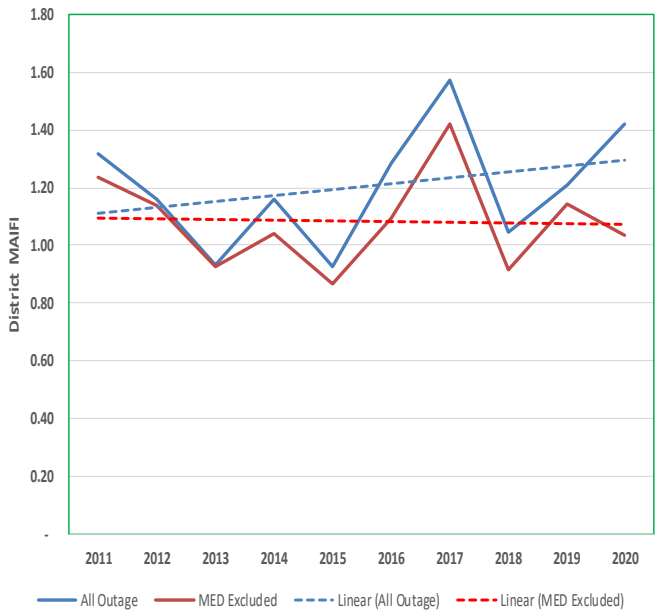
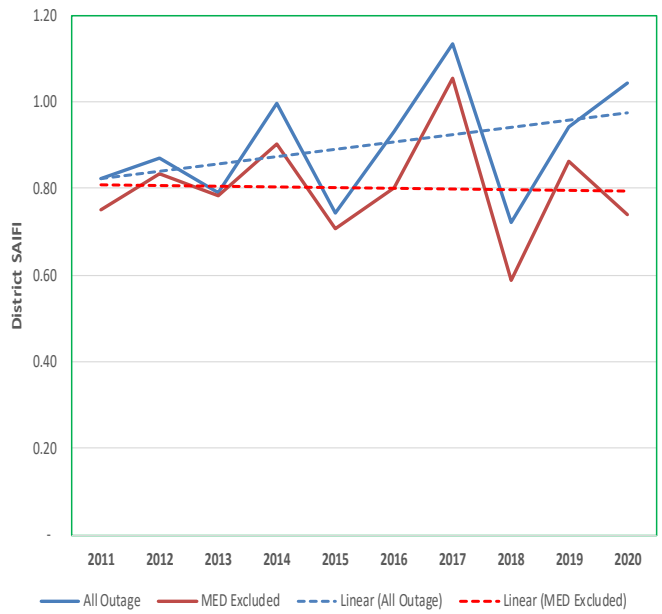
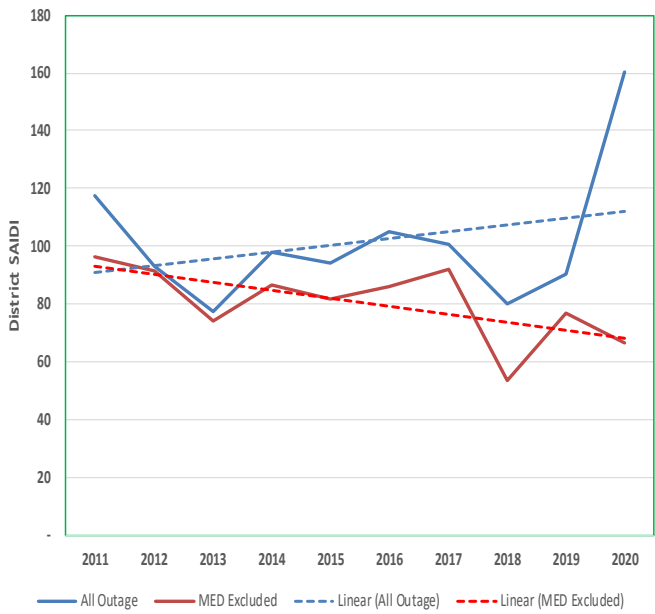
MONROVIA District Reliability Performance



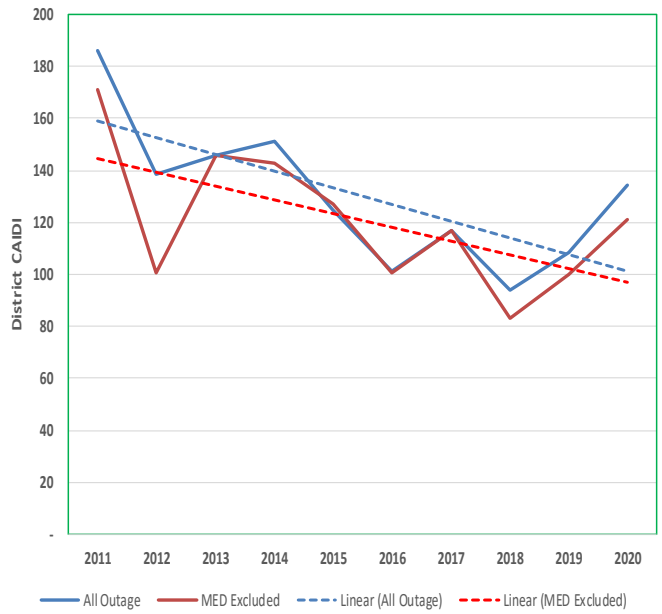
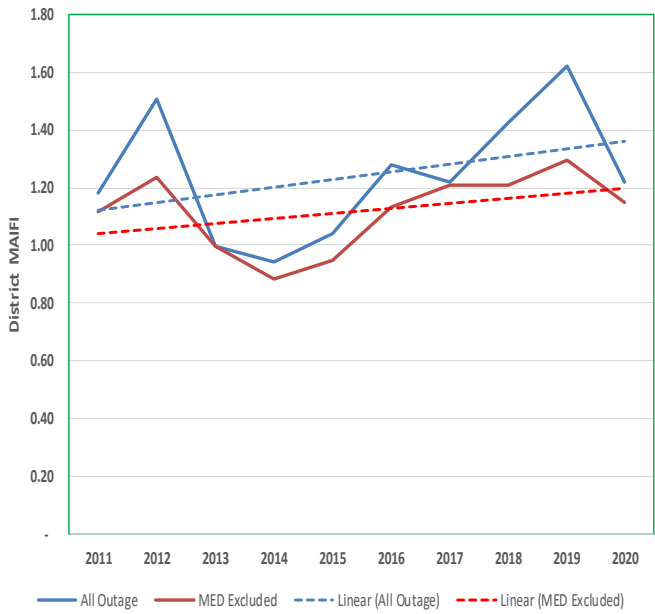
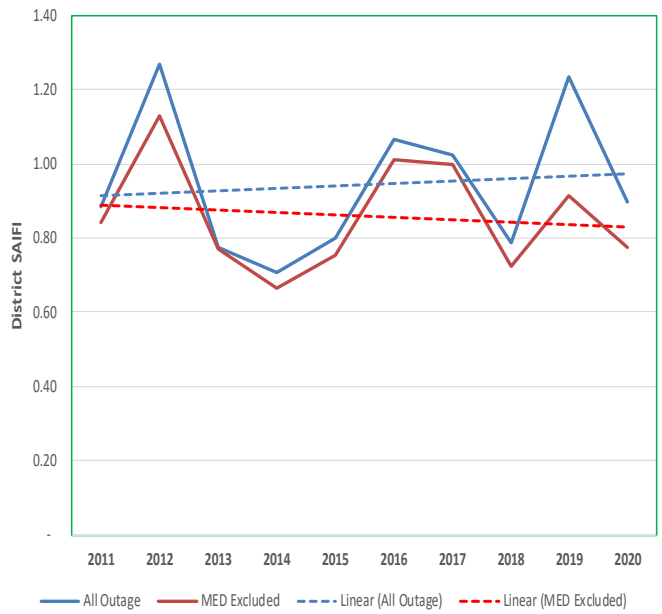
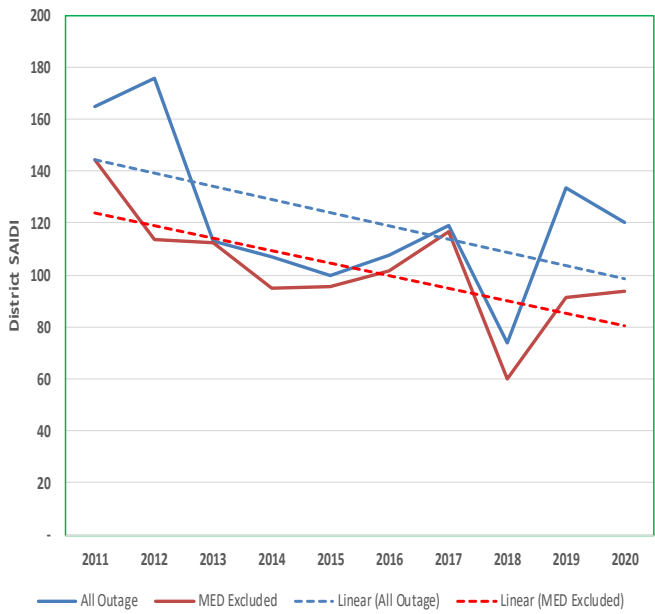
MONTEBELLO District Reliability Performance



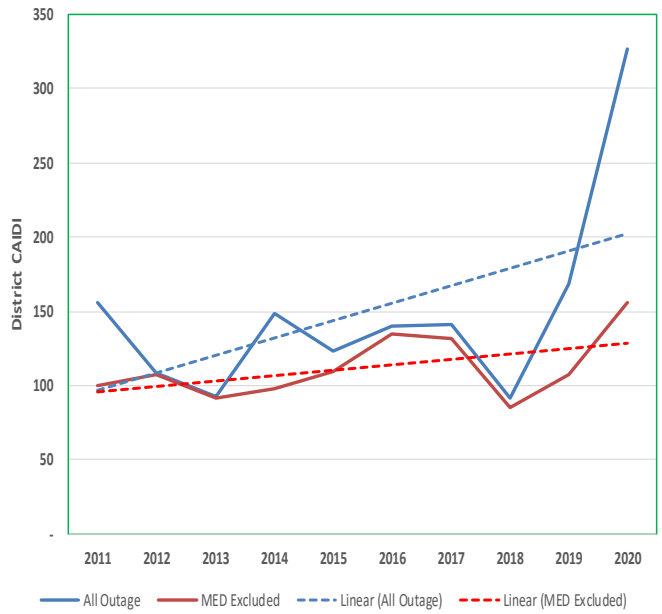
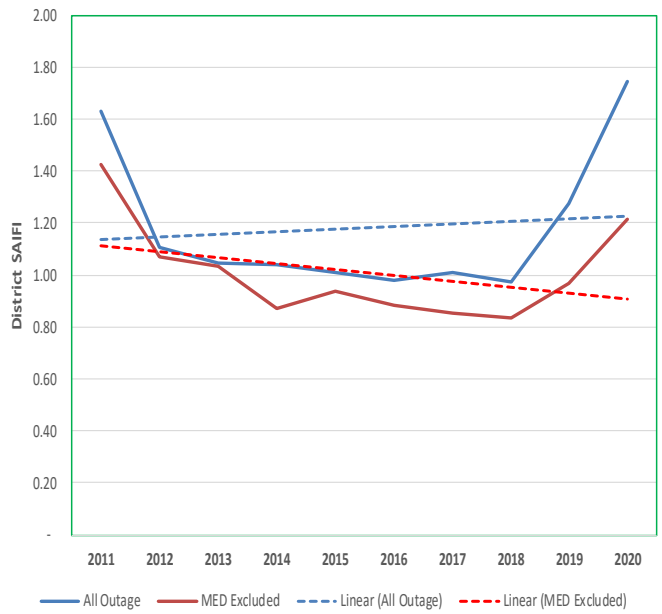
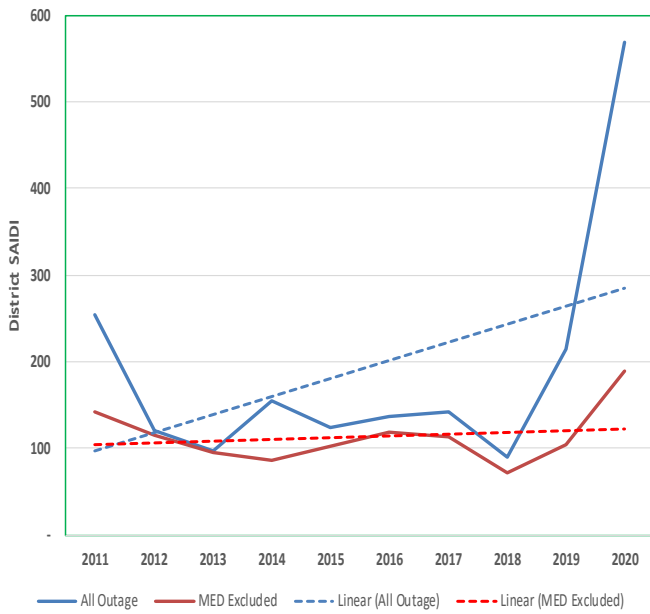
ONTARIO District Reliability Performance



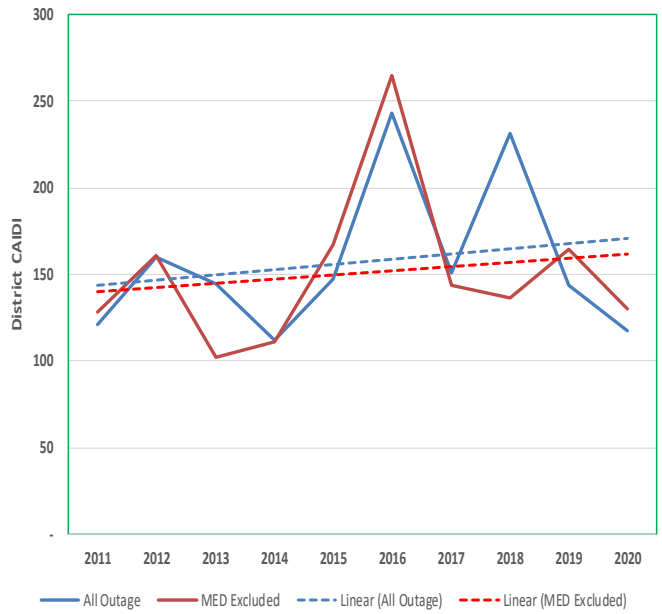
PALM SPRINGS District Reliability Performance



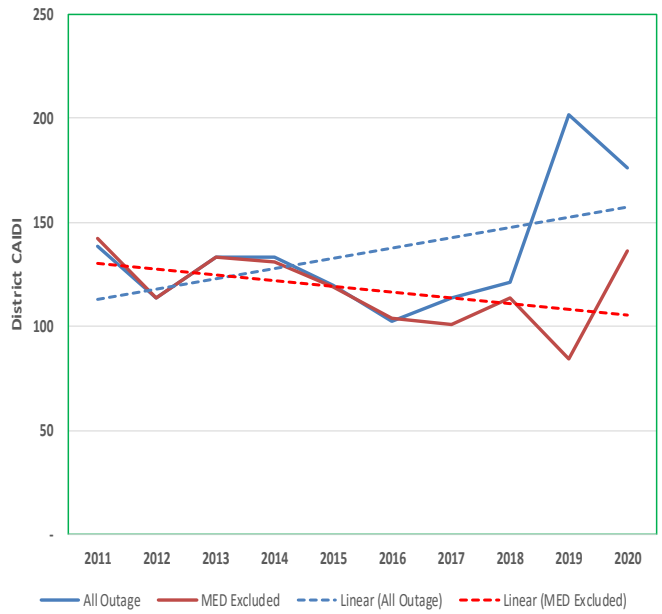
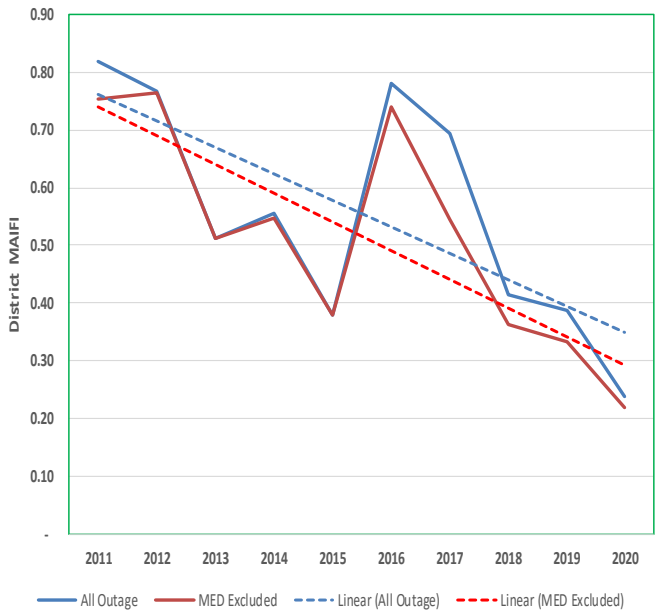
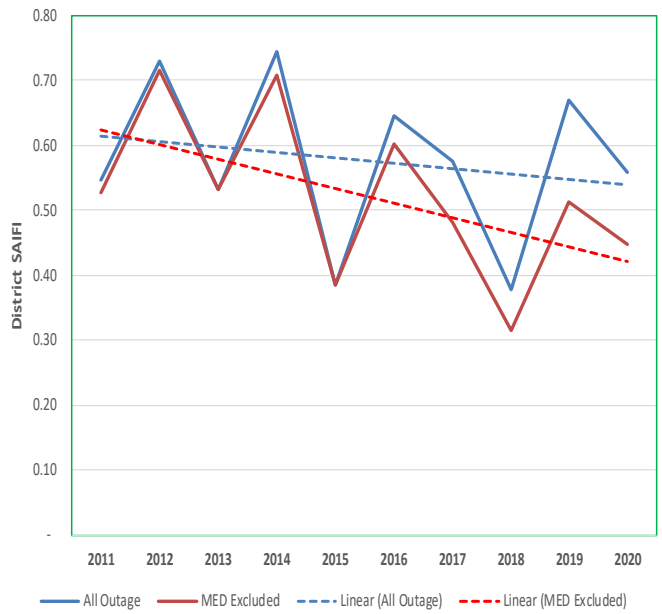
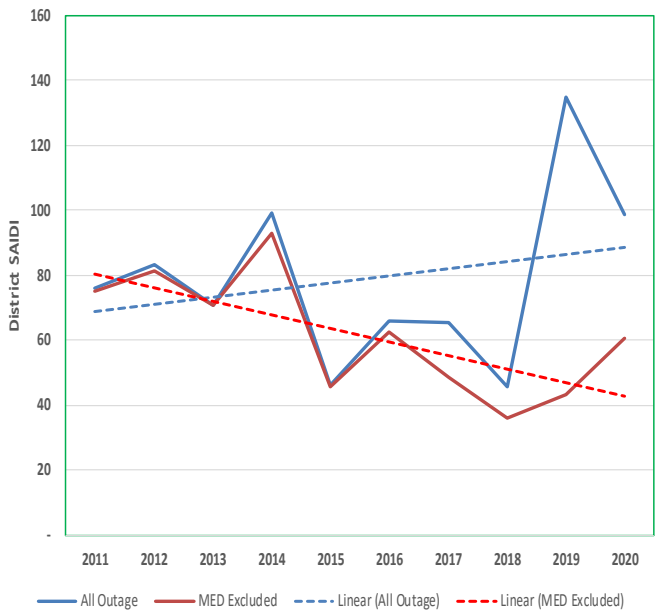
REDLANDS District Reliability Performance



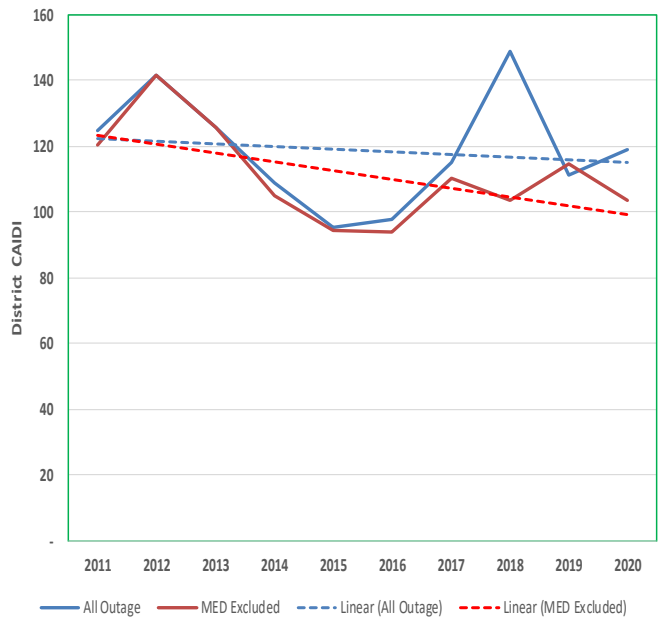
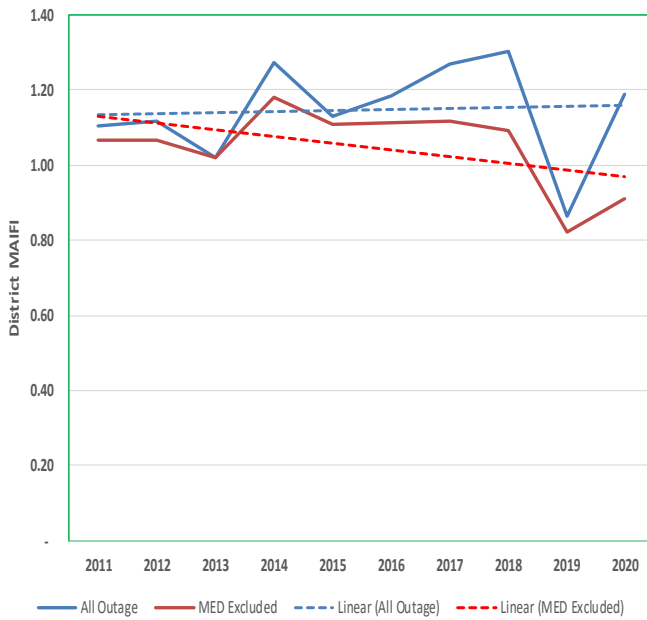
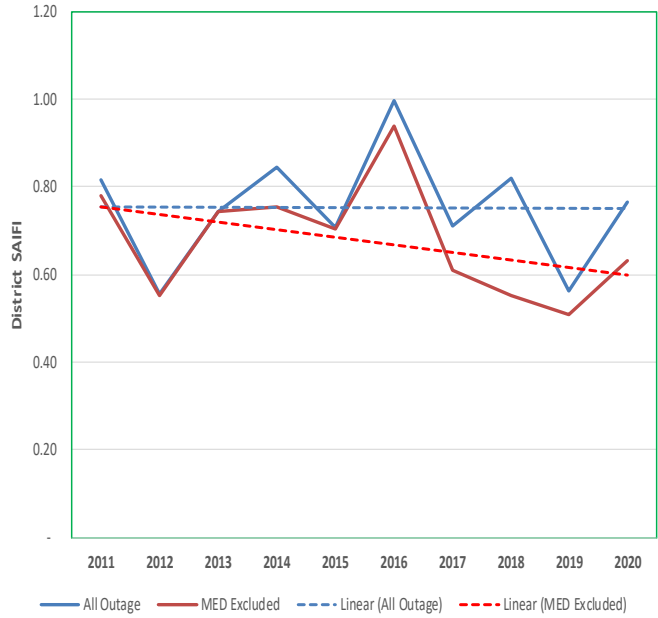
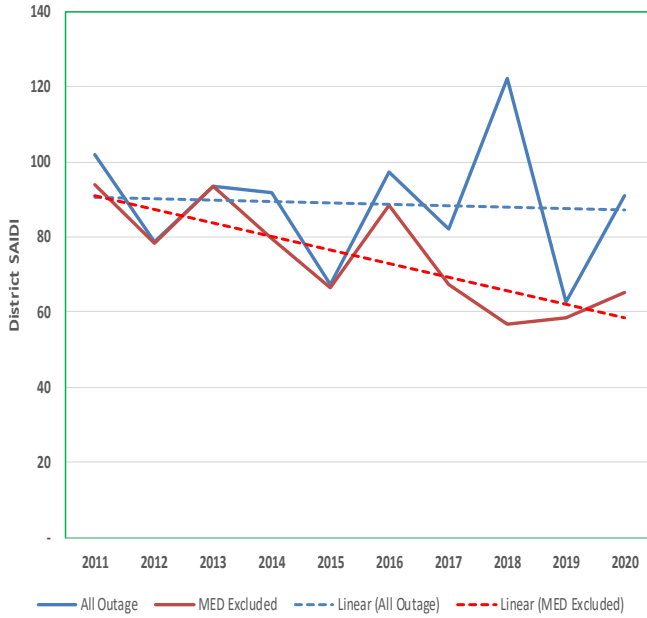
RIDGECREST District Reliability Performance



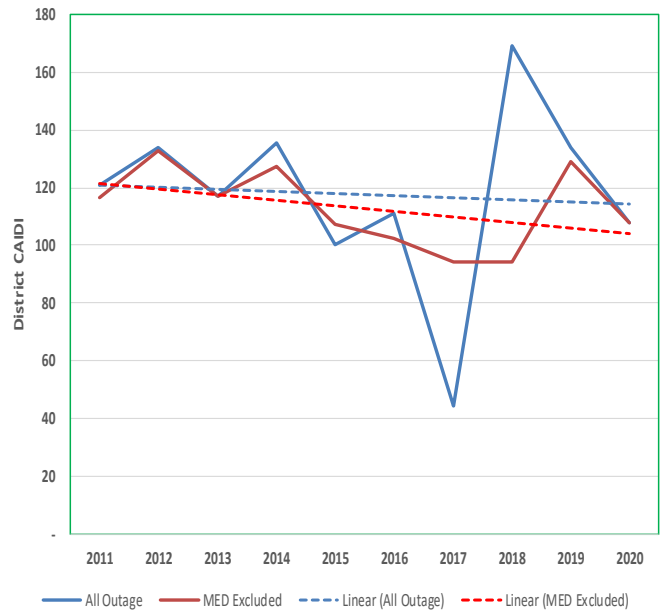
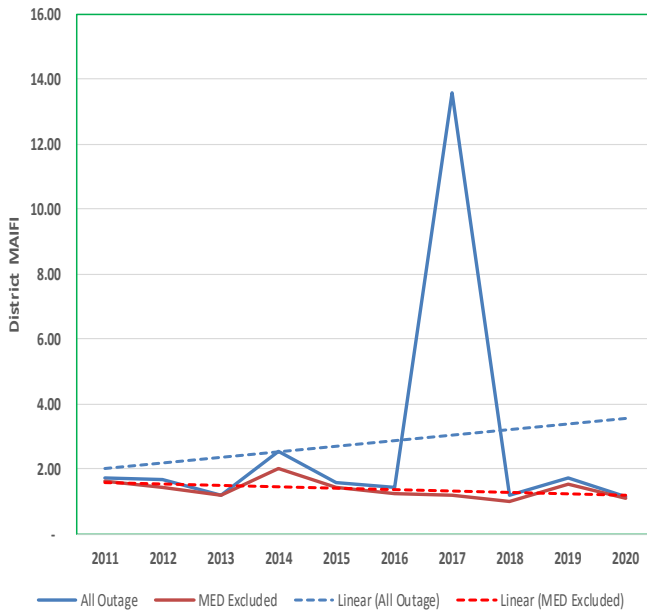
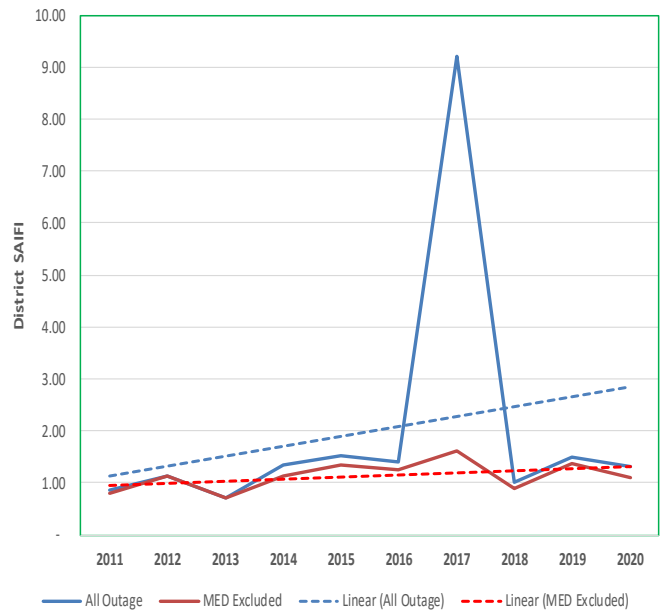
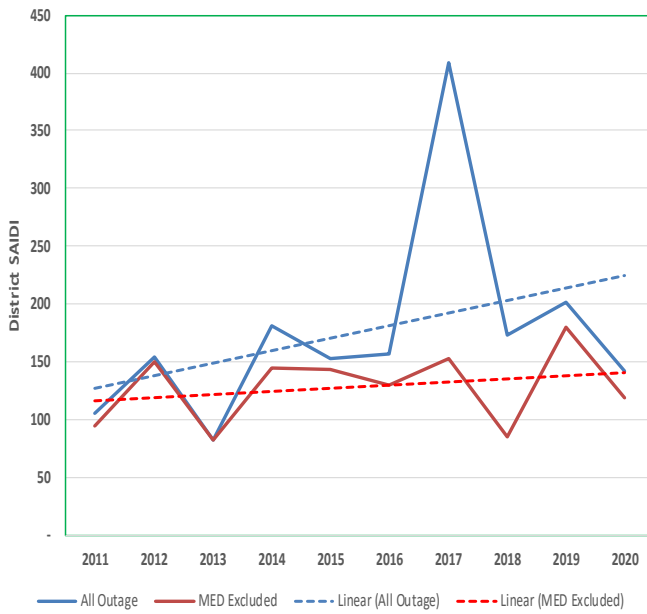
SADDLEBACK District Reliability Performance



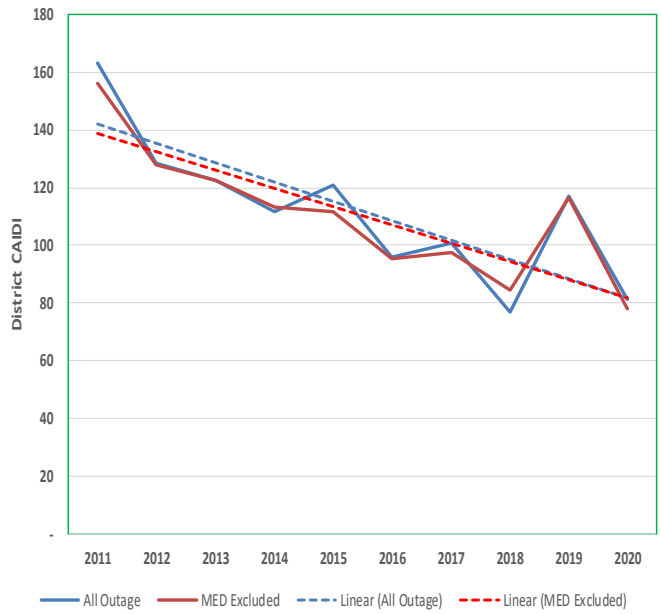
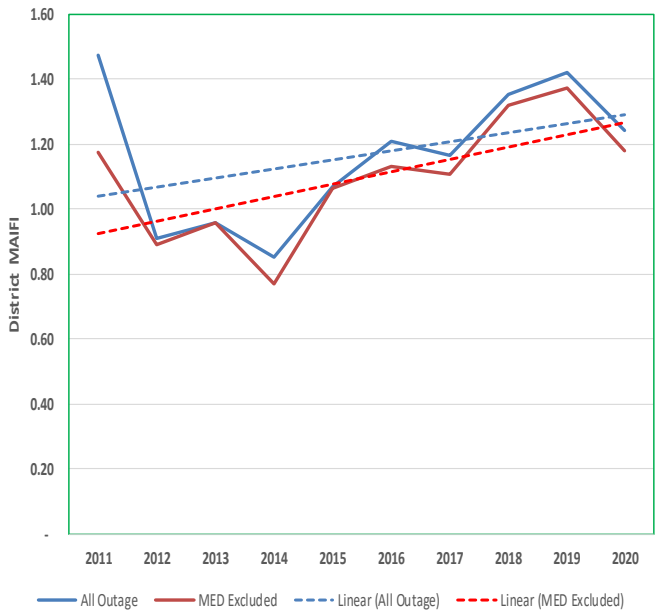
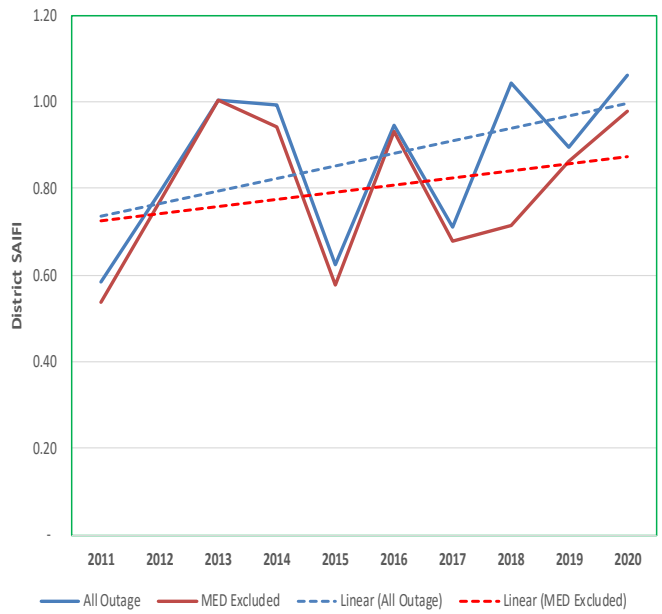
SANTA ANA District Reliability Performance



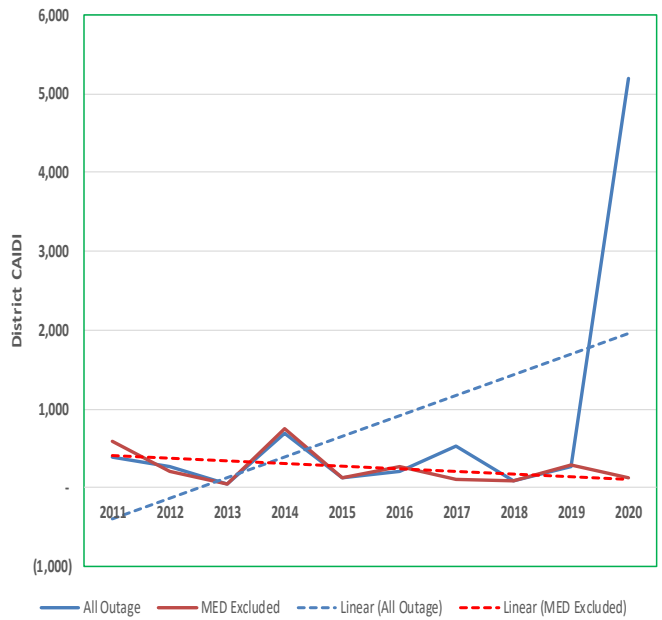
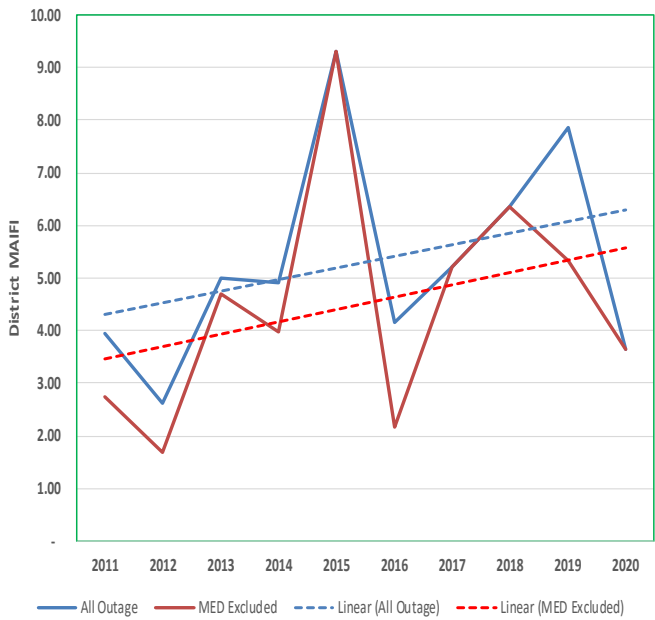
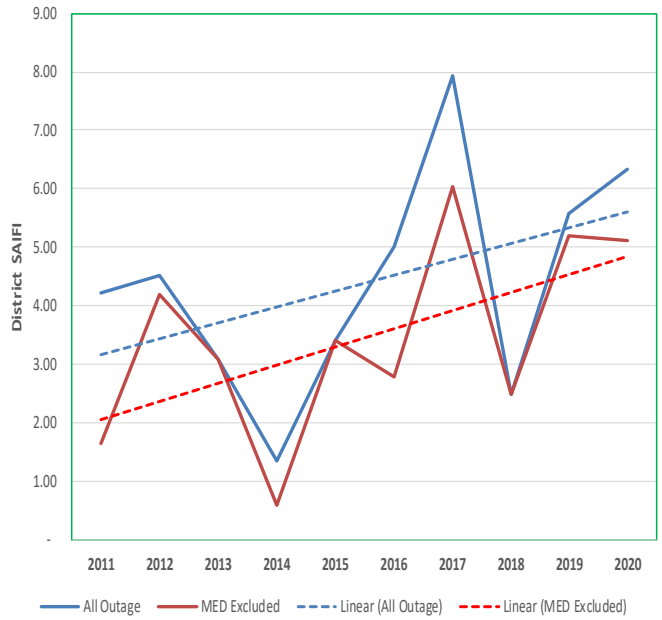
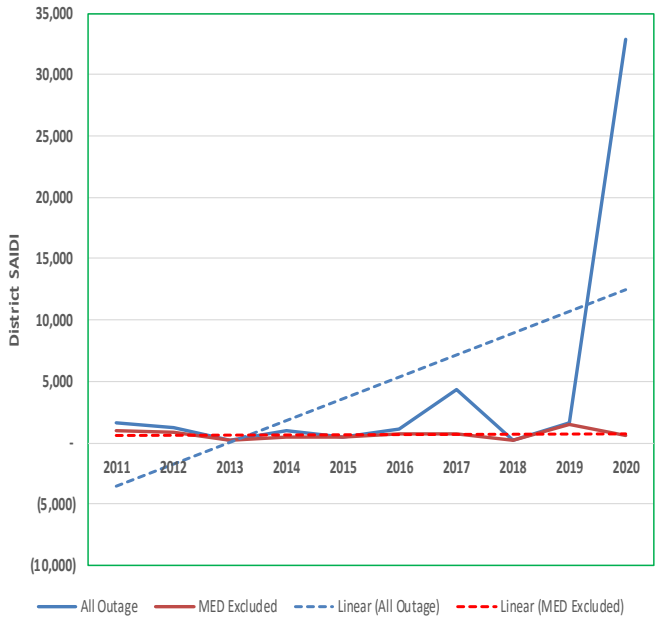
SANTA BARBARA District Reliability Performance



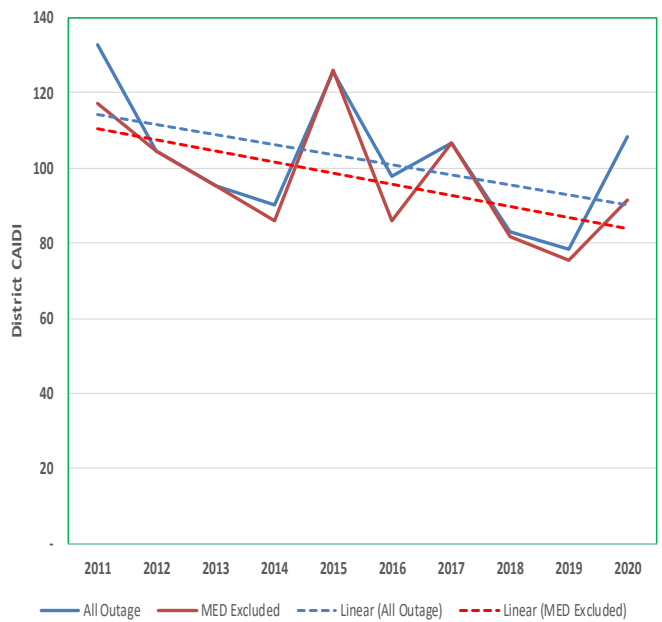
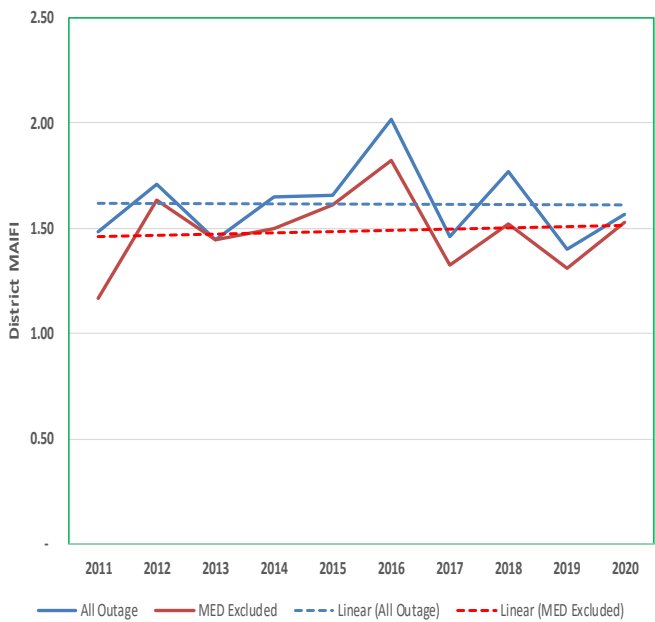
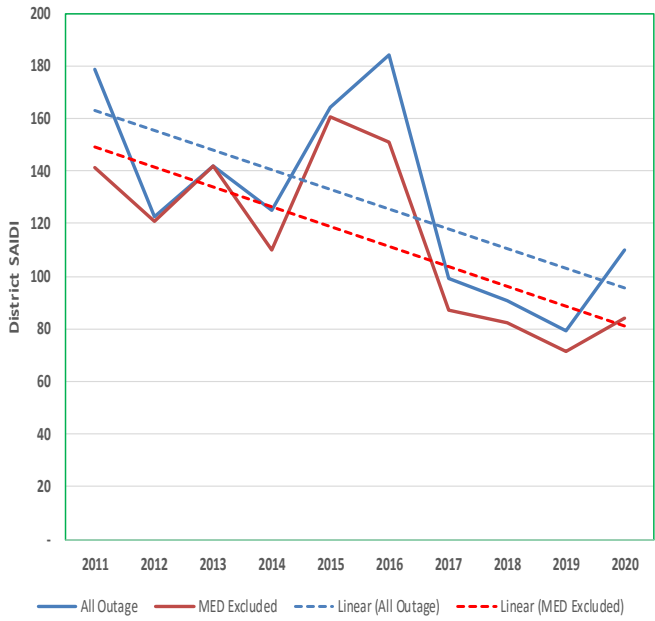
SANTA MONICA District Reliability Performance



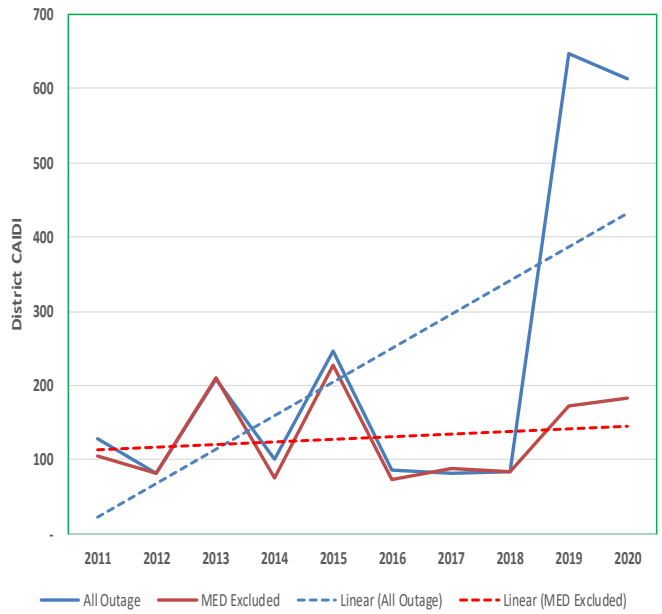
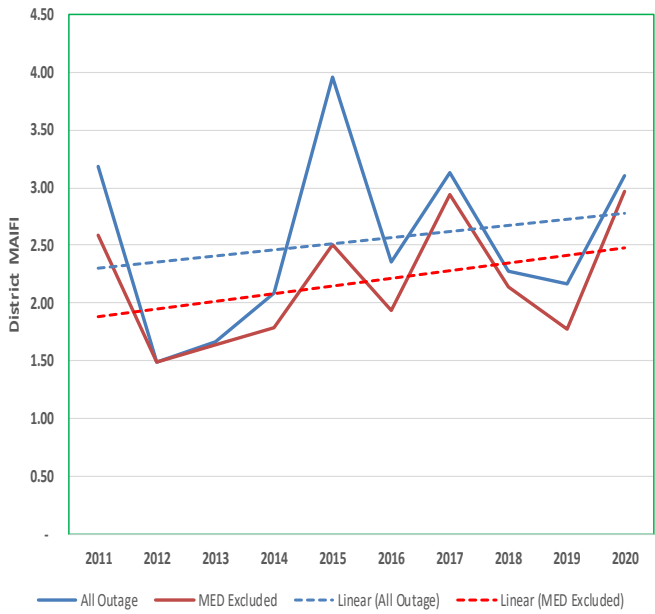
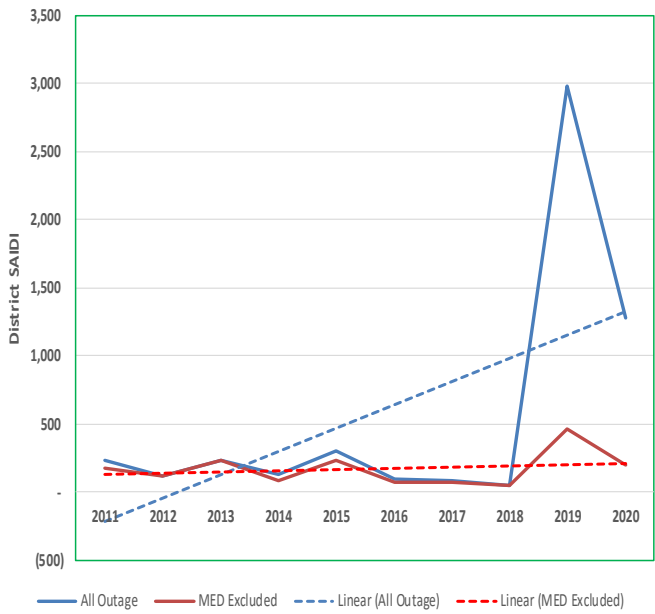
SHAVER LAKE District Reliability Performance



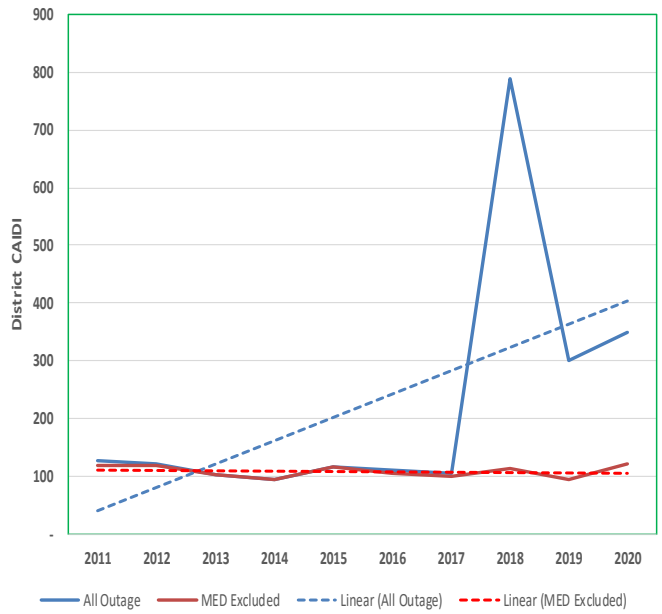
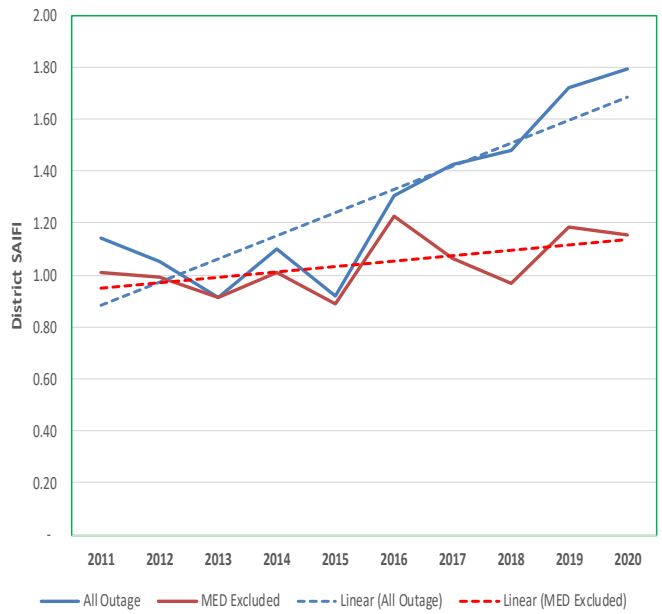
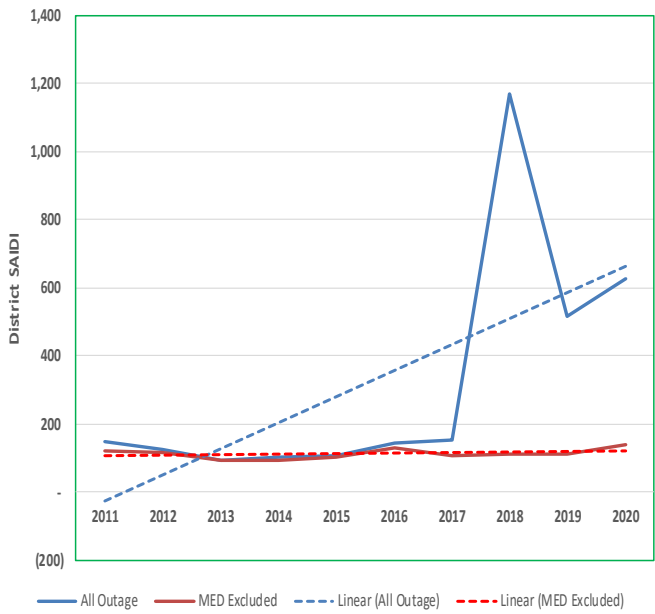
SOUTH BAY District Reliability Performance



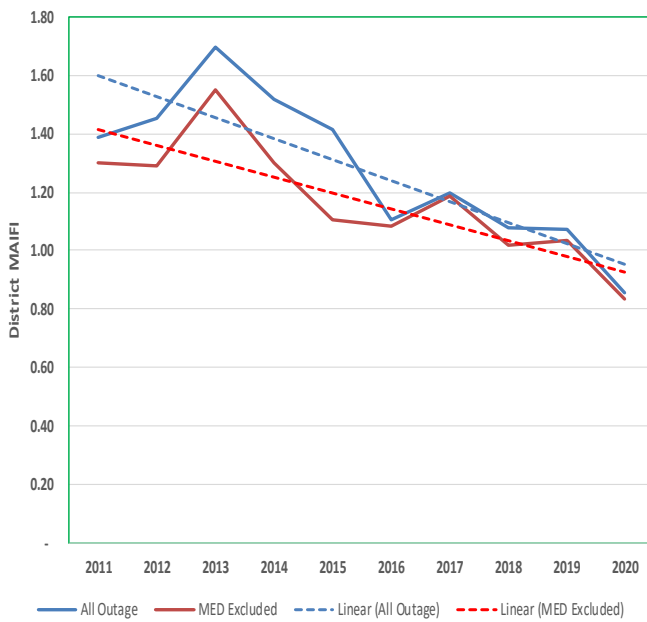
TEHACHAPI District Reliability Performance



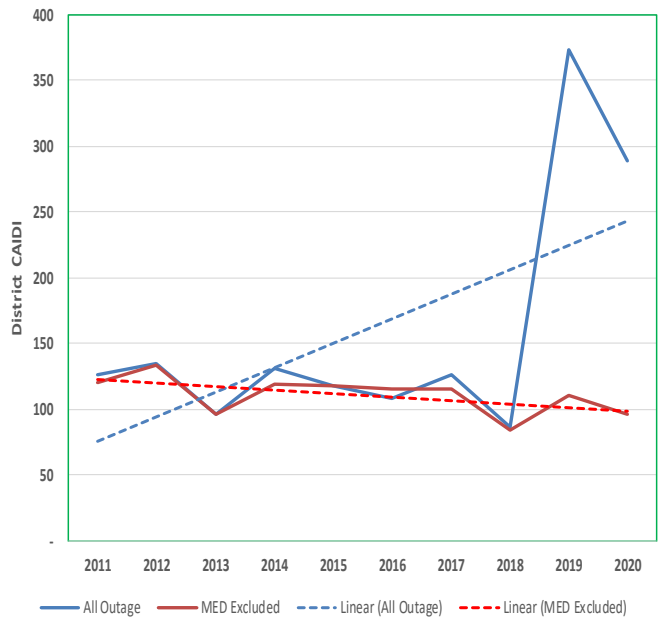
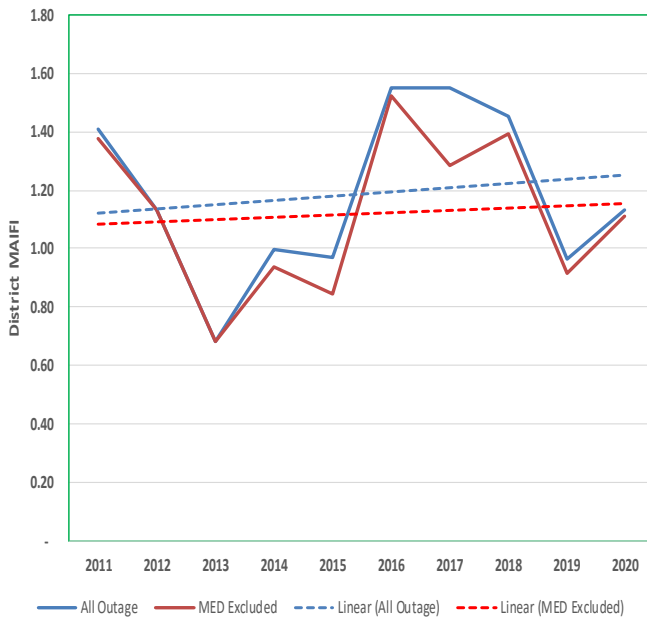
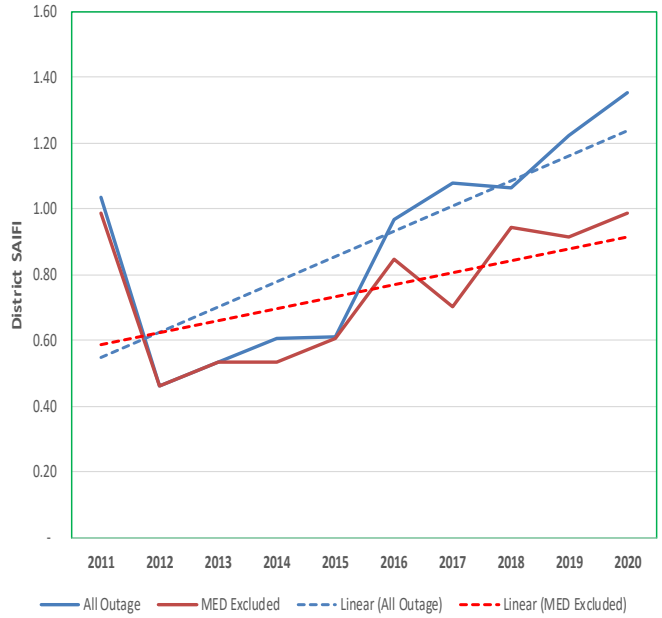
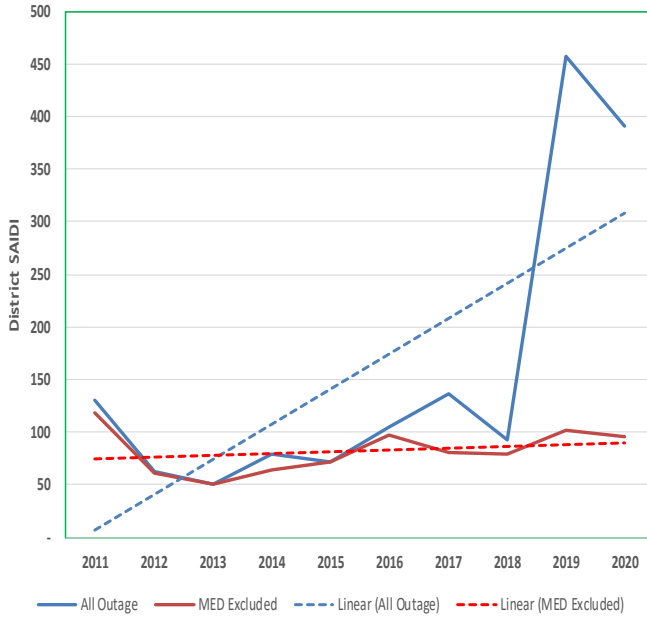
THOUSAND OAKS District Reliability Performance



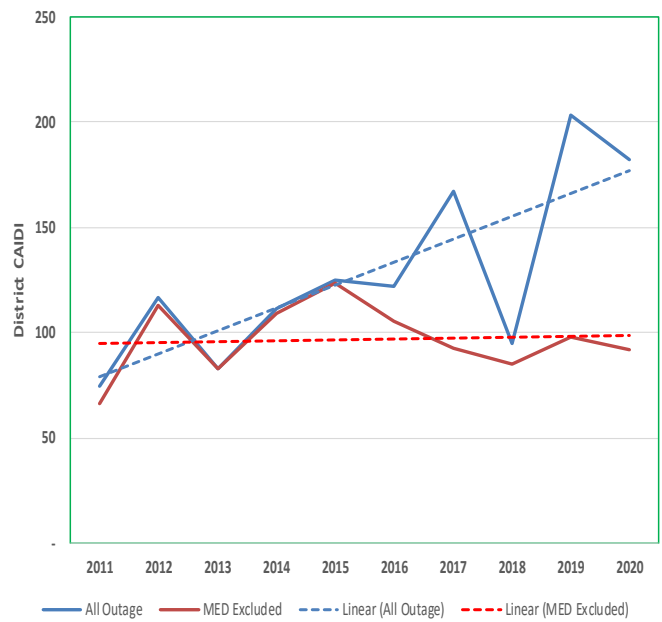
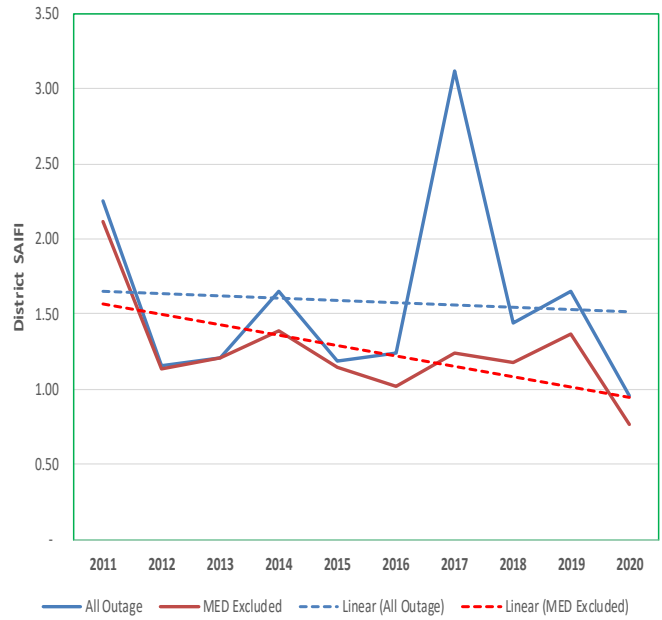
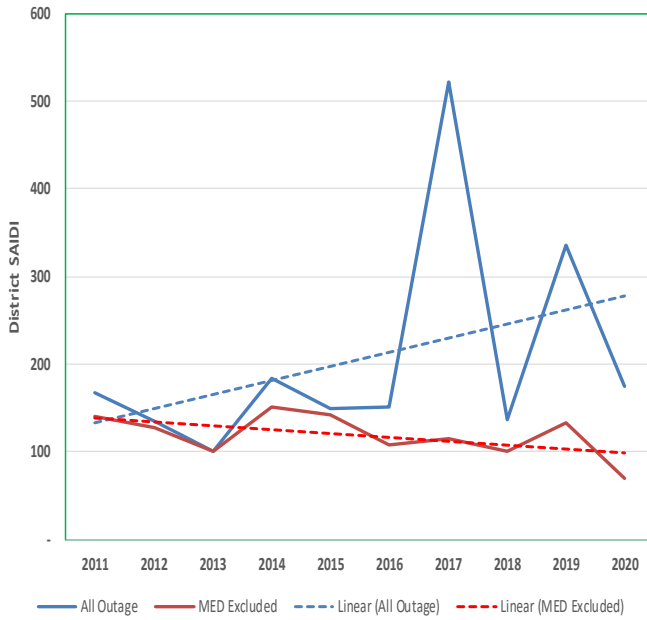
TULARE District Reliability Performance



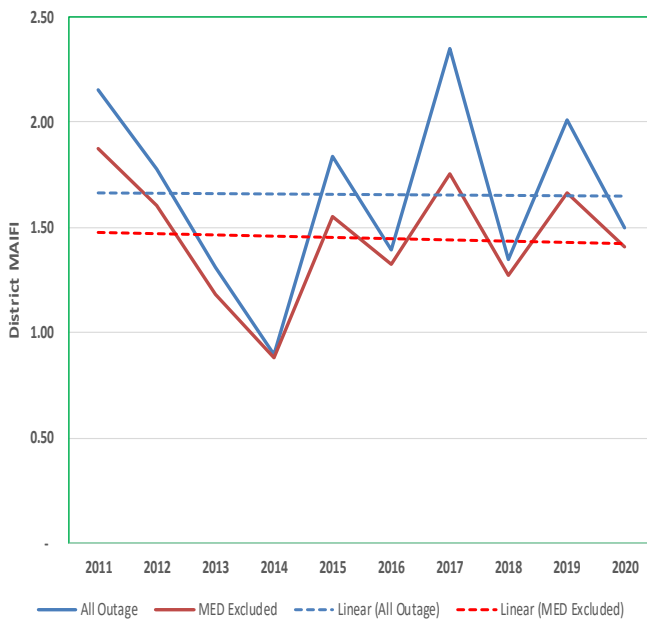
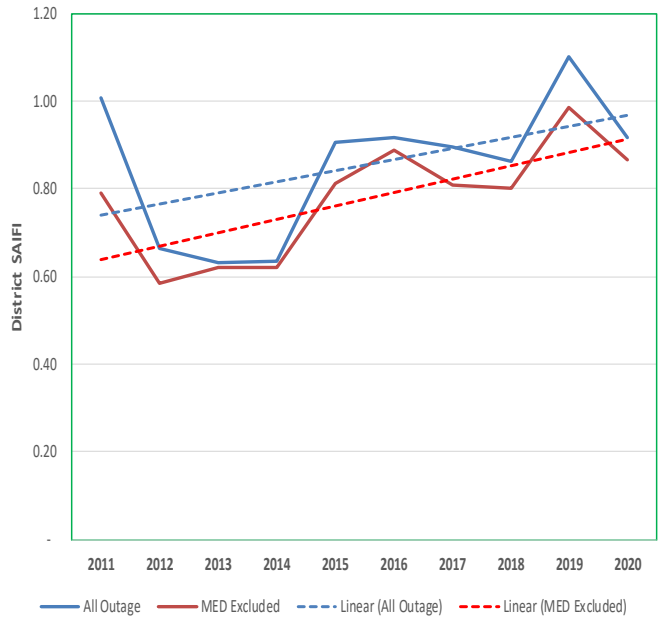
VALENCIA District Reliability Performance



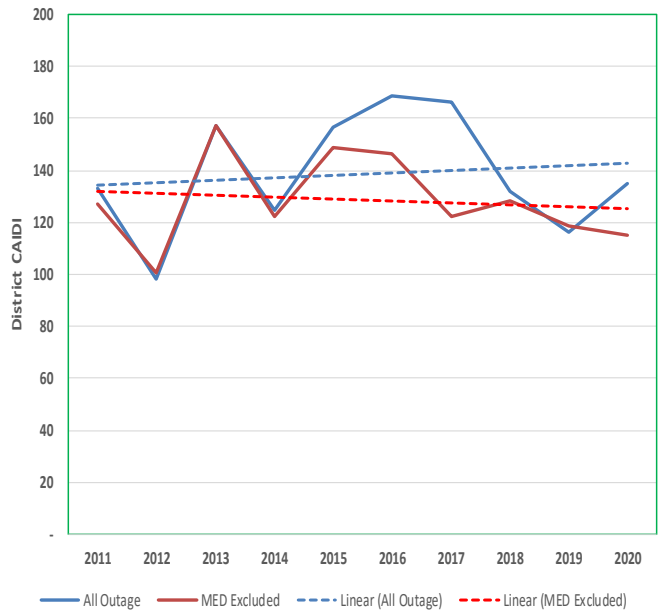
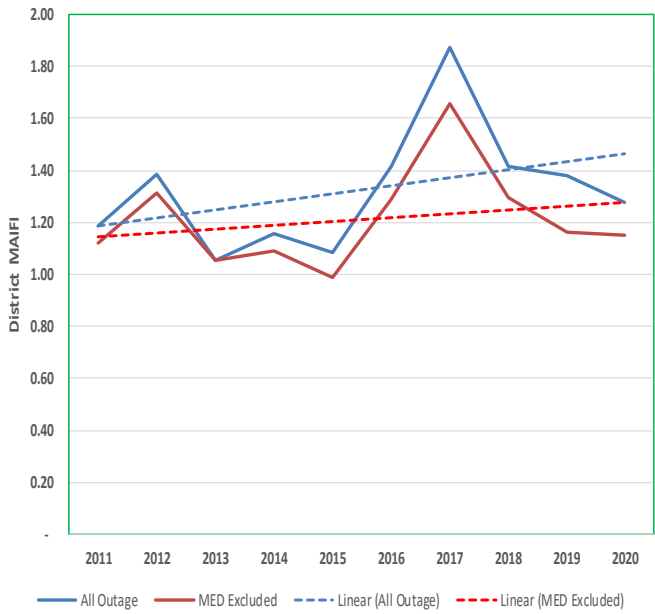
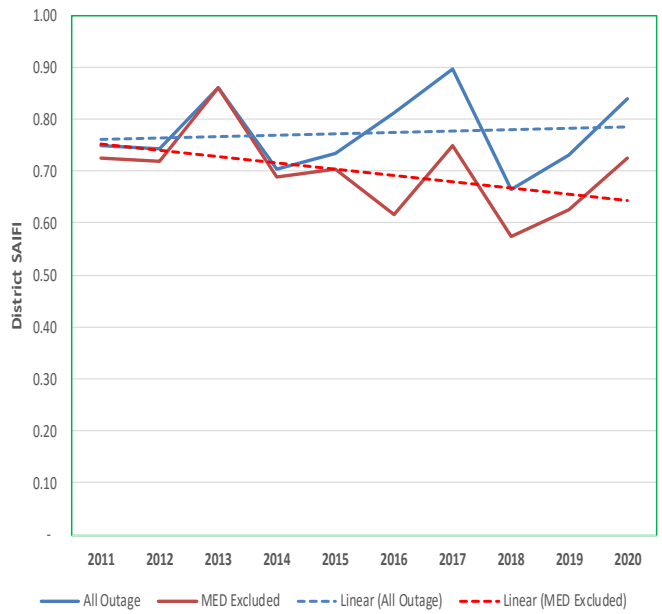
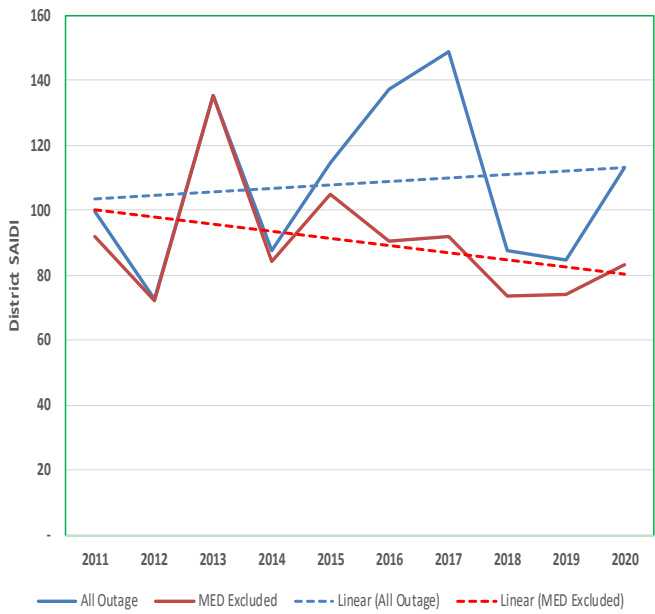
VENTURA District Reliability Performance



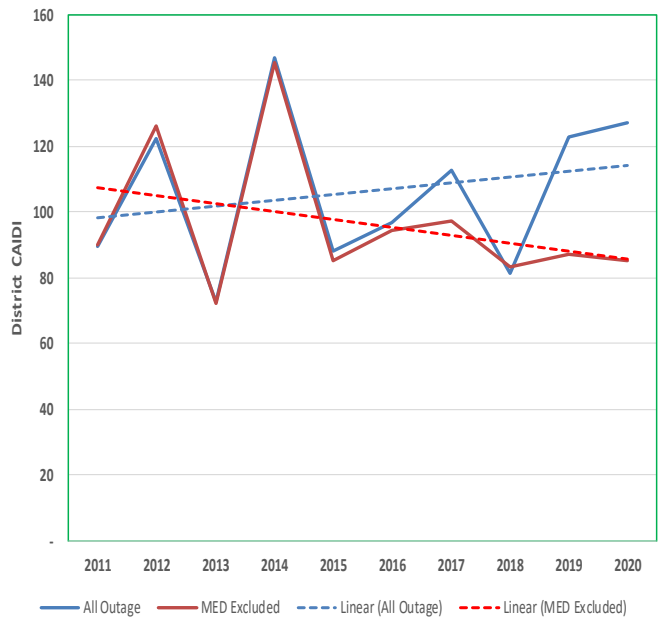
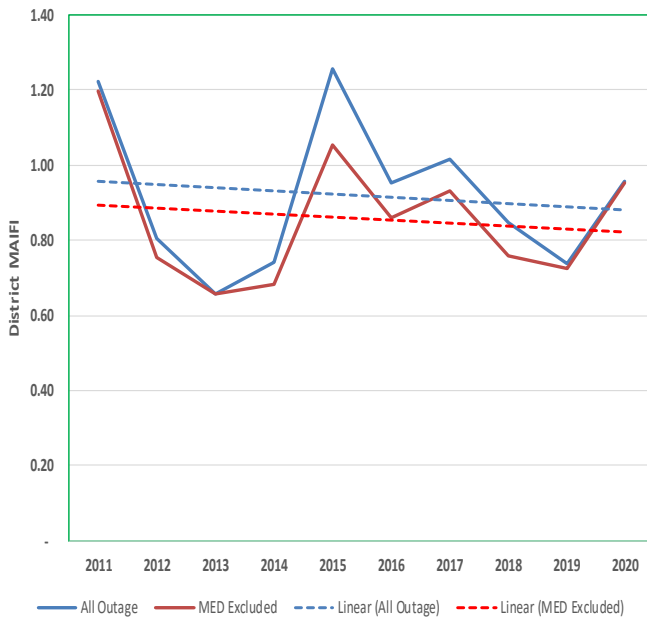
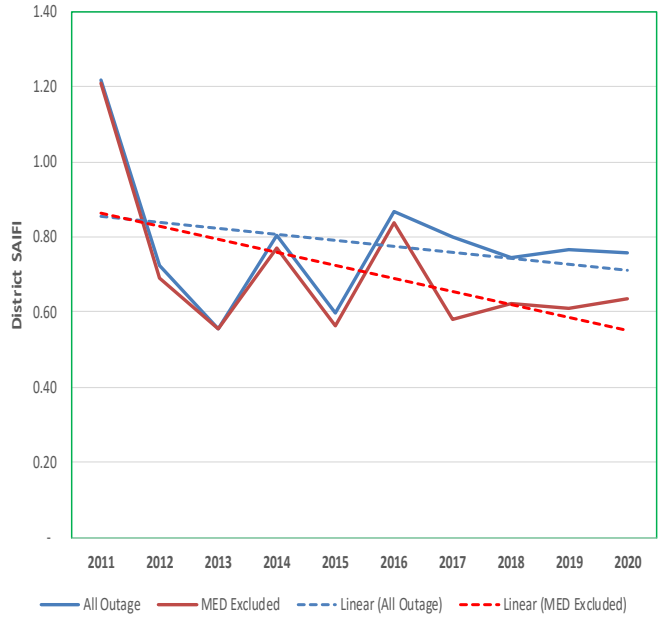
VICTORVILLE District Reliability Performance



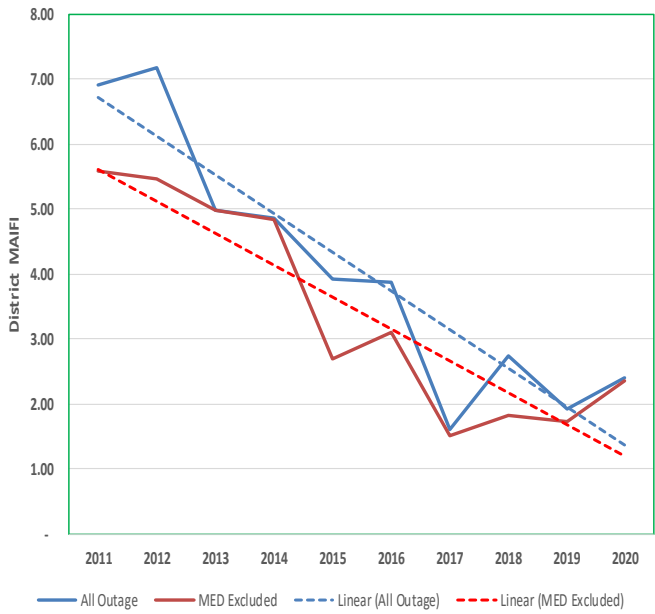
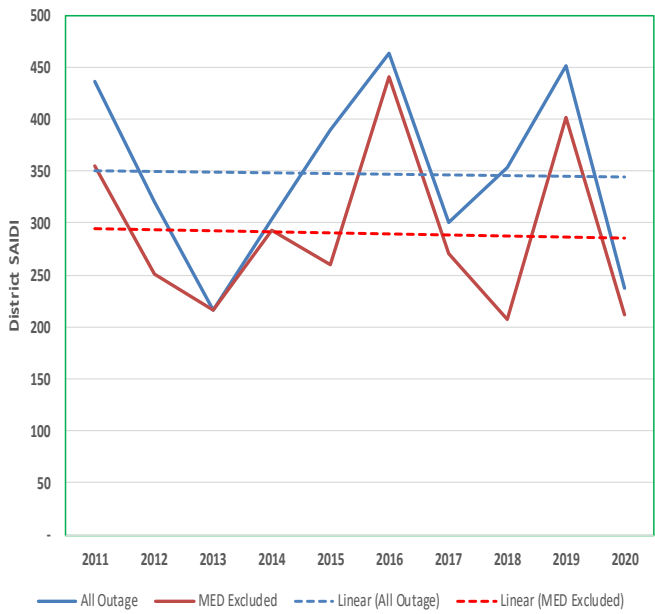
WHITTIER District Reliability Performance



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 AND UNPLANNED OUTAGES AND INCLUDING AND EXCLUDING MED

Table 5 below contains the required SAIDI, SAIFI, MAIFI⁸ and CAIDI indices for 2011-2020 including and excluding Major Event Day (MED) for the SCE System, Planned and Unplanned outages combined. All calculations contained in the table are based on the IEEE 1366 method for Major Event Day (MED).

Planned outages are not excluded on Major Event Days.

Table 5 – System Indices (2011-2020) Planned and Unplanned⁹

YEAR	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
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
2016	265.83	1.44	1.56	184.43	241.33	1.33	1.41	180.78
2017	261.24	1.52	1.84	171.33	213.24	1.20	1.43	177.30
2018	248.61	1.19	1.44	209.34	183.05	1.03	1.27	177.80
2019	243.71	1.24	1.39	196.14	156.48	1.07	1.23	146.36
2020	201.17	1.06	1.31	189.78	91.30	0.87	1.20	104.94

⁸ SCE calculates MAIFI at every individual outage event.

⁹ 2016 was the first year SCE included a full year of planned outage reliability indices.

Table 6 below contains the District SAIDI, SAIFI, MAIFI and CAIDI (including and excluding MED).

Table 6 – District Indices (2011-2020) Planned and Unplanned ¹⁰

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
ANTELOPE VALLEY								
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
2016	174.941	1.096	1.528	159.616	168.470	1.040	1.435	161.952
2017	185.114	1.130	1.835	163.840	165.274	1.071	1.706	154.388
2018	119.431	0.807	1.261	147.930	114.236	0.733	1.100	155.803
2019	240.391	0.814	1.348	295.430	122.043	0.715	1.251	170.670
2020	288.084	1.156	2.293	249.208	154.966	1.000	2.218	154.966
ARROWHEAD								
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
2016	753.996	3.192	5.974	236.234	295.253	2.226	4.734	132.620
2017	944.146	4.279	7.078	220.651	345.959	3.476	4.114	99.515
2018	435.669	2.568	3.047	169.674	420.495	1.752	2.987	239.951
2019	4033.976	10.677	9.951	377.810	1231.609	6.899	6.228	178.508
2020	442.288	2.387	4.174	185.290	203.537	2.064	3.220	98.613
BARSTOW								
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
2016	187.771	1.538	2.299	122.114	183.028	1.527	2.286	119.823
2017	408.931	2.815	4.197	145.248	407.527	2.802	4.134	145.417
2018	151.136	1.488	2.113	101.551	149.712	1.457	2.079	102.777
2019	155.541	0.968	2.590	160.692	136.279	0.933	2.192	146.046
2020	105.157	1.380	2.432	76.201	100.421	1.369	2.314	73.354
BISHOP								
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
2016	332.005	1.678	2.830	197.843	331.943	1.678	2.721	197.818
2017	457.095	2.893	3.264	157.984	438.728	2.836	3.118	154.713
2018	343.456	1.074	1.970	319.777	340.230	1.033	1.833	329.211
2019	1557.892	3.240	3.229	480.782	388.315	1.719	2.889	225.840
2020	317.979	1.935	1.489	164.330	317.807	1.933	1.474	164.411
BLYTHE								
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
2016	649.170	3.562	6.349	182.233	555.778	2.773	4.854	200.447
2017	1100.260	3.321	3.586	331.330	1099.341	3.316	3.494	331.554
2018	598.157	2.515	2.421	237.811	576.042	2.266	2.390	254.206
2019	450.954	1.976	2.773	228.239	431.102	1.912	2.680	225.424
2020	211.884	1.318	1.919	160.762	173.876	1.191	1.791	145.992

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
COMPTON								
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
2016	288.090	1.398	2.541	206.024	268.861	1.301	2.232	206.699
2017	237.826	1.064	2.167	223.572	200.861	0.957	1.972	209.891
2018	153.029	0.995	2.448	153.748	126.041	0.861	2.267	146.325
2019	136.345	0.961	2.091	141.813	102.234	0.794	1.722	128.839
2020	171.411	1.235	2.762	138.794	124.487	1.085	2.651	114.735
COVINA								
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
2016	239.474	1.288	1.323	185.960	218.270	1.189	1.149	183.532
2017	204.581	1.183	1.371	172.991	193.489	1.062	1.144	182.171
2018	195.693	1.071	1.458	182.671	165.975	0.939	1.370	176.714
2019	145.040	1.060	1.001	136.874	137.590	0.996	0.925	138.125
2020	138.227	1.398	0.945	98.875	111.522	1.300	0.913	85.786
FOOTHILL								
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
2016	268.951	1.422	1.512	189.100	264.322	1.403	1.488	188.437
2017	233.590	1.562	1.390	149.574	211.063	1.334	1.216	158.270
2018	250.380	1.411	1.208	177.480	211.469	1.216	0.972	173.904
2019	359.350	1.314	1.112	273.389	154.899	1.060	1.072	146.152
2020	218.288	1.202	1.576	181.604	83.318	0.914	1.434	91.158
FULLERTON								
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
2016	204.966	1.107	1.179	185.149	186.013	0.936	0.979	198.795
2017	194.061	0.997	1.212	194.721	178.928	0.905	1.086	197.812
2018	142.016	0.743	1.128	191.051	127.951	0.661	1.043	193.581
2019	115.396	0.897	1.093	128.589	106.071	0.832	1.024	127.560
2020	88.301	0.686	1.090	128.719	50.891	0.508	0.754	100.179
HUNTINGTON BEACH								
2011	128.850	1.028	1.299	125.336	101.190	0.855	1.026	118.377
2012	121.939	0.982	1.507	124.158	114.002	0.911	1.426	125.083
2013	95.604	0.887	1.043	107.743	94.511	0.880	1.043	107.404
2014	66.914	0.703	0.839	95.123	66.914	0.703	0.839	95.123
2015	77.109	0.774	1.105	99.638	65.695	0.712	0.978	92.256
2016	97.731	0.969	1.235	100.904	93.570	0.942	1.187	99.287
2017	252.325	1.686	1.252	149.657	232.673	1.611	1.191	144.450
2018	205.972	1.336	1.466	154.135	186.124	1.216	1.197	153.003
2019	173.878	1.061	1.380	163.906	159.882	0.979	1.080	163.389
2020	90.115	0.865	1.043	104.179	79.138	0.781	0.992	101.329
KERNVILLE								
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
2016	2729.902	4.545	3.102	600.638	1217.766	3.710	3.006	328.213
2017	610.622	4.144	4.587	147.356	595.690	4.006	4.288	148.701
2018	536.123	2.004	3.168	267.559	504.530	1.872	3.152	269.457
2019	612.156	2.474	3.998	247.479	609.519	2.468	3.995	246.932
2020	285.397	1.567	1.807	182.130	262.304	1.522	1.800	172.342

10 Beginning in the 2019 annual report, Catalina District charts have been combined with Huntington Beach District since the Catalina District operations have been combined with the Huntington Beach District.

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
LONG BEACH								
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
2016	258.116	1.151	1.312	224.274	219.930	0.989	1.099	222.387
2017	167.261	0.916	1.180	182.537	149.590	0.798	1.021	187.474
2018	169.862	0.725	1.225	234.380	160.684	0.679	1.102	236.556
2019	137.008	0.818	0.974	167.445	118.994	0.747	0.827	159.244
2020	65.391	0.687	1.149	95.183	49.973	0.600	1.058	83.288
MENIFEE								
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
2016	272.761	1.691	1.450	161.345	255.018	1.570	1.340	162.435
2017	210.646	1.250	1.314	168.458	153.033	1.051	1.203	145.610
2018	267.524	1.242	1.446	215.395	164.418	1.040	1.279	158.045
2019	169.011	1.096	1.031	154.267	146.419	0.987	0.865	148.373
2020	261.794	1.209	1.114	216.538	84.035	0.892	1.002	94.210
MONROVIA								
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
2016	256.395	1.176	1.660	218.071	233.207	1.103	1.531	211.395
2017	271.780	1.370	1.804	198.422	258.774	1.313	1.706	197.034
2018	410.435	1.837	1.632	223.466	269.995	1.440	1.471	187.519
2019	197.053	1.118	1.402	176.237	186.919	1.018	1.242	183.598
2020	148.653	0.896	1.660	165.907	78.115	0.685	1.479	114.036
MONTEBELLO								
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
2016	352.148	1.632	2.066	215.752	325.890	1.509	1.892	215.923
2017	253.609	1.299	2.186	195.262	226.482	1.187	1.878	190.834
2018	302.525	1.397	2.271	216.561	240.523	1.116	1.861	215.502
2019	200.865	1.365	1.908	147.132	181.730	1.231	1.792	147.649
2020	165.809	1.099	1.686	150.873	104.264	0.911	1.516	114.450
ONTARIO								
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
2016	227.939	1.274	1.288	178.977	209.030	1.146	1.101	182.411
2017	207.596	1.448	1.575	143.412	198.946	1.367	1.426	145.565
2018	179.063	1.015	1.051	176.468	152.457	0.880	0.921	173.172
2019	143.316	1.120	1.212	127.952	130.101	1.041	1.146	124.971
2020	159.498	1.037	1.275	153.807	66.128	0.733	0.946	90.216
PALM SPRINGS								
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
2016	258.243	1.521	1.284	169.743	252.026	1.465	1.136	171.990
2017	230.013	1.398	1.228	164.565	227.345	1.374	1.218	165.435
2018	189.052	1.176	1.433	160.817	175.409	1.113	1.215	157.626
2019	207.039	1.474	1.626	140.500	164.874	1.156	1.302	142.645
2020	120.095	0.894	1.173	134.334	93.735	0.776	1.103	120.793

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
REDLANDS								
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
2016	237.564	1.273	1.477	186.559	219.230	1.178	1.339	186.054
2017	243.956	1.325	1.603	184.160	213.812	1.172	1.414	182.408
2018	189.472	1.278	1.371	148.255	171.551	1.138	1.217	150.778
2019	285.937	1.508	1.410	189.660	174.968	1.203	1.246	145.497
2020	572.592	1.746	1.288	327.945	191.385	1.216	1.161	157.389
RIDGECREST								
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
2016	287.217	1.150	1.285	249.712	282.115	1.043	1.162	270.433
2017	316.092	1.432	3.535	220.660	305.387	1.410	3.463	216.606
2018	385.241	1.485	1.311	259.389	230.455	1.118	1.301	206.202
2019	337.998	2.226	4.921	151.865	334.468	1.941	4.186	172.307
2020	118.671	1.009	1.626	117.612	112.684	0.867	1.493	129.970
SADDLEBACK								
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
2016	159.284	0.959	0.781	166.143	155.758	0.916	0.740	170.123
2017	168.934	0.880	0.701	191.956	152.325	0.786	0.552	193.818
2018	127.416	0.629	0.414	202.577	117.442	0.568	0.365	206.817
2019	187.362	0.870	0.402	215.298	95.490	0.714	0.348	133.817
2020	98.281	0.559	0.230	175.816	60.734	0.447	0.212	135.870
SANTA ANA								
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
2016	210.964	1.315	1.187	160.413	202.009	1.258	1.115	160.572
2017	157.257	0.957	1.271	164.245	142.549	0.855	1.121	166.774
2018	182.258	0.999	1.306	182.354	117.077	0.731	1.095	160.191
2019	105.309	0.718	0.865	146.593	100.963	0.663	0.822	152.197
2020	91.020	0.766	1.084	118.825	65.204	0.630	0.858	103.498
SANTA BARBARA								
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
2016	355.518	1.829	1.477	194.407	328.861	1.687	1.263	194.963
2017	805.014	10.181	13.621	79.068	549.005	2.587	1.236	212.198
2018	586.424	2.087	1.244	280.962	499.093	1.973	1.043	252.974
2019	322.568	1.840	1.766	175.295	300.511	1.727	1.577	173.992
2020	141.329	1.312	1.112	107.720	119.083	1.106	1.096	107.670
SANTA MONICA								
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
2016	180.178	1.196	1.217	150.691	178.204	1.181	1.138	150.850
2017	235.009	1.096	1.172	214.420	229.254	1.063	1.112	215.714
2018	199.328	1.356	1.364	146.947	179.489	1.028	1.332	174.645
2019	153.471	1.020	1.425	150.499	149.077	0.985	1.375	151.351
2020	85.961	1.062	1.222	80.943	76.198	0.979	1.168	77.832

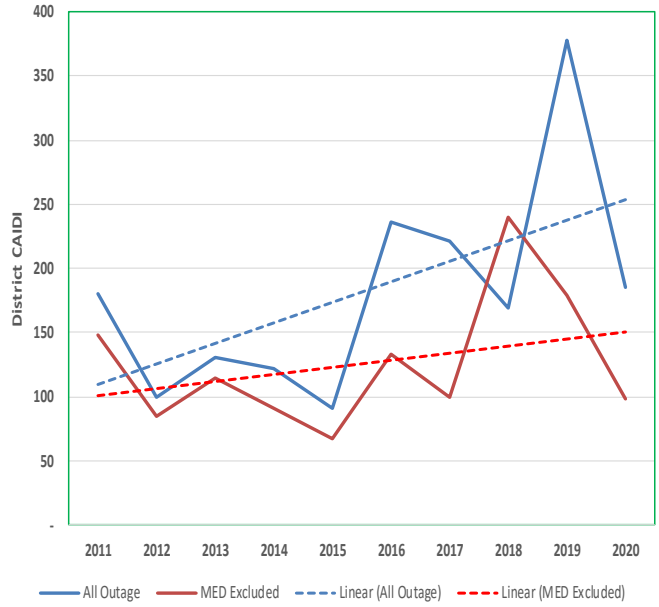
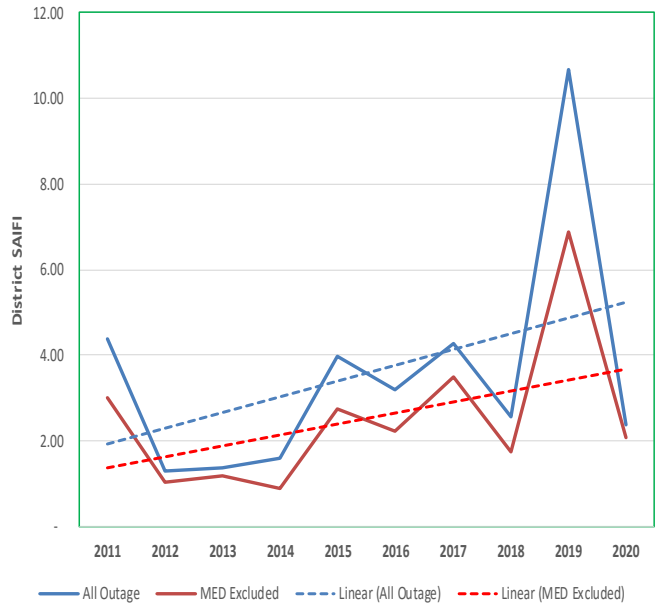
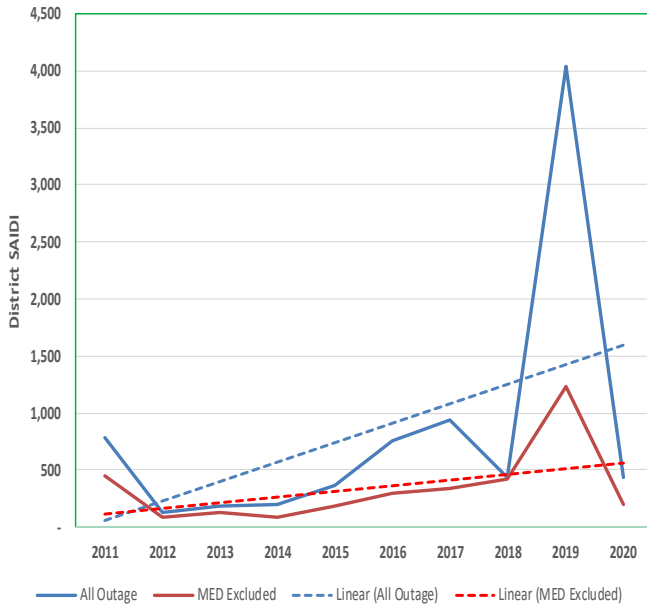
DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
SHAVER LAKE								
2011	1667.047	4.222	3.933	394.852	984.340	1.650	2.741	596.466
2012	1184.253	4.523	2.608	261.831	842.662	4.182	1.681	201.512
2013	176.510	3.080	4.987	57.308	176.510	3.080	4.711	57.308
2014	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
2016	1672.107	7.236	4.232	231.067	1384.095	5.039	2.241	274.676
2017	5503.024	11.011	5.301	499.772	1905.726	9.103	5.278	209.351
2018	2012.829	6.742	6.660	298.567	2012.829	6.742	6.660	298.567
2019	2291.536	7.382	8.555	310.427	2236.388	7.009	6.043	319.088
2020	32846.995	6.325	3.654	5193.348	631.950	5.105	3.654	123.785
SOUTH BAY								
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
2016	335.018	2.229	2.024	150.313	302.021	2.097	1.822	144.043
2017	268.368	1.330	1.467	201.767	256.529	1.217	1.335	210.758
2018	227.260	1.450	1.773	156.710	218.906	1.367	1.526	160.078
2019	163.727	1.227	1.400	133.424	155.910	1.167	1.315	133.579
2020	109.696	1.013	1.540	108.288	83.642	0.918	1.499	91.113
TEHACHAPI								
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
2016	235.751	1.536	2.384	153.517	214.885	1.440	1.961	149.228
2017	159.036	1.488	3.149	106.881	150.449	1.330	2.968	113.113
2018	211.711	1.111	2.292	190.535	210.682	1.094	2.162	192.651
2019	3137.906	5.086	2.181	617.008	621.602	3.194	1.786	194.592
2020	206.860	1.011	2.344	204.609	44.377	0.783	2.237	56.676
THOUSAND OAKS								
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
2016	387.439	1.782	2.600	217.455	371.906	1.702	2.392	218.476
2017	309.183	1.874	3.292	165.021	263.840	1.510	2.924	174.779
2018	1364.456	1.981	1.668	688.934	306.864	1.468	1.387	209.037
2019	604.000	2.020	1.239	299.043	199.926	1.479	1.189	135.172
2020	625.131	1.790	1.016	349.235	139.404	1.156	0.955	120.592
TULARE								
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
2016	259.232	1.367	1.121	189.694	252.610	1.315	1.099	192.043
2017	310.041	1.581	1.218	196.148	224.100	1.520	1.207	147.467
2018	146.131	0.910	1.111	160.550	141.189	0.878	1.051	160.826
2019	94.032	0.837	1.089	112.347	91.057	0.808	1.049	112.751
2020	187.334	0.819	0.854	228.786	73.873	0.741	0.834	99.746
VALENCIA								
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
2016	181.251	1.245	1.552	145.575	173.569	1.123	1.525	154.560
2017	195.045	1.271	1.558	153.426	139.695	0.895	1.292	156.129
2018	170.785	1.307	1.453	130.666	157.708	1.189	1.394	132.628
2019	544.300	1.494	0.968	364.370	188.263	1.183	0.921	159.101
2020	390.712	1.350	1.127	289.416	95.569	0.985	1.105	97.024

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
VENTURA								
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
2016	334.355	1.697	1.687	196.992	291.088	1.480	1.561	196.652
2017	704.536	3.609	2.307	195.237	298.397	1.726	1.555	172.839
2018	349.065	1.982	1.938	176.086	313.409	1.721	1.693	182.074
2019	442.937	1.968	2.624	225.109	241.522	1.684	2.422	143.388
2020	174.455	0.957	1.161	182.294	69.882	0.764	1.073	91.469
VICTORVILLE								
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
2016	143.745	1.102	1.397	130.401	140.336	1.073	1.328	130.835
2017	178.268	1.159	2.360	153.853	167.325	1.072	1.764	156.104
2018	185.541	1.098	1.347	168.956	157.487	1.037	1.272	151.797
2019	116.599	1.248	2.010	93.450	108.852	1.131	1.670	96.255
2020	52.920	0.917	1.576	57.710	48.907	0.867	1.492	56.409
WHITTIER								
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
2016	296.179	1.143	1.420	259.097	249.056	0.946	1.294	263.363
2017	315.766	1.220	1.879	258.770	258.768	1.074	1.662	240.925
2018	152.992	0.834	1.415	183.422	138.909	0.744	1.300	186.710
2019	168.769	0.885	1.379	190.610	157.902	0.780	1.160	202.554
2020	112.692	0.840	1.166	134.157	83.131	0.723	1.071	114.981
WILDOMAR								
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
2016	145.671	1.092	0.954	133.411	140.811	1.065	0.865	132.249
2017	160.508	1.031	1.016	155.709	126.730	0.811	0.934	156.273
2018	105.497	0.936	0.848	112.657	96.615	0.812	0.762	119.004
2019	142.416	0.967	0.742	147.330	101.078	0.808	0.730	125.060
2020	96.407	0.759	0.942	127.018	54.075	0.635	0.941	85.157
YUCCA VALLEY								
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
2016	694.456	3.917	3.894	177.297	670.831	3.780	3.125	177.445
2017	411.497	2.306	1.609	178.470	381.275	2.077	1.516	183.553
2018	376.985	2.036	2.757	185.130	229.733	1.587	1.842	144.746
2019	517.135	2.537	1.941	203.824	466.994	2.263	1.738	206.382
2020	238.145	2.269	2.321	104.956	211.688	2.092	2.270	101.189

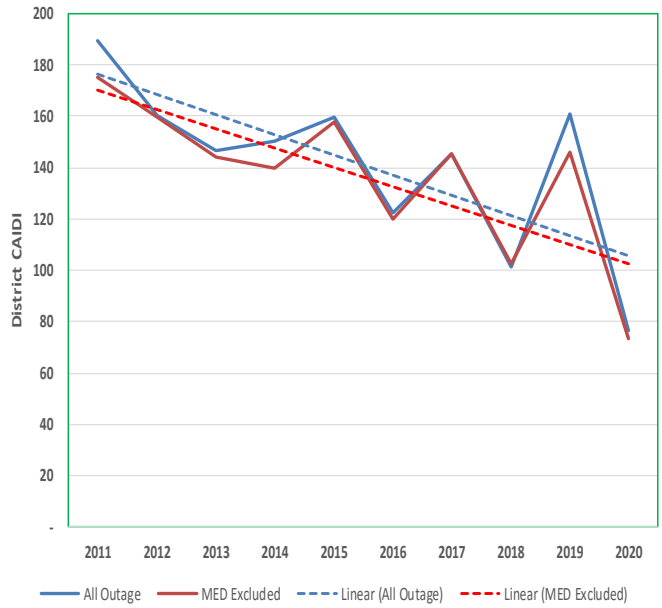
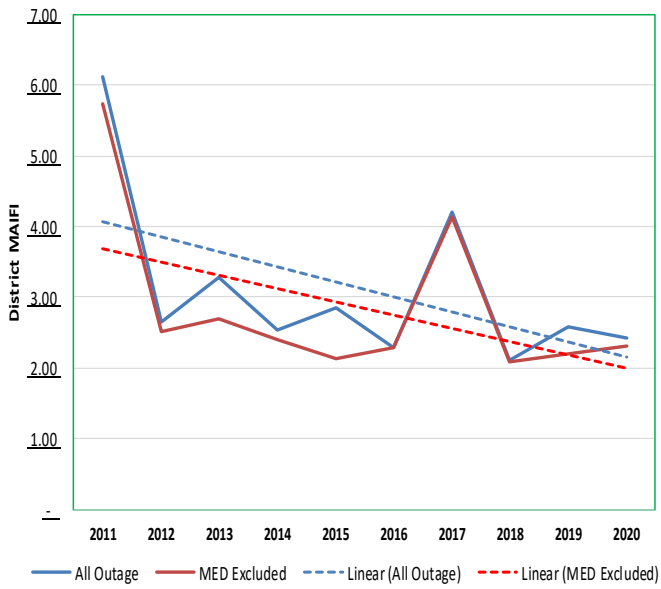
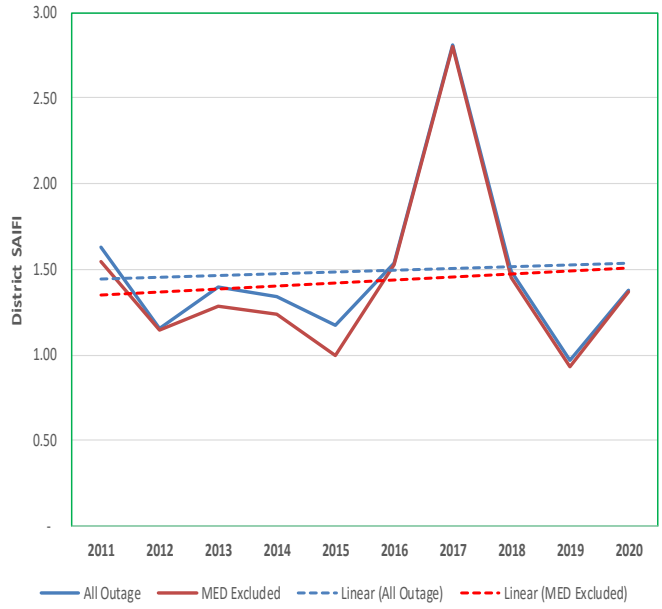
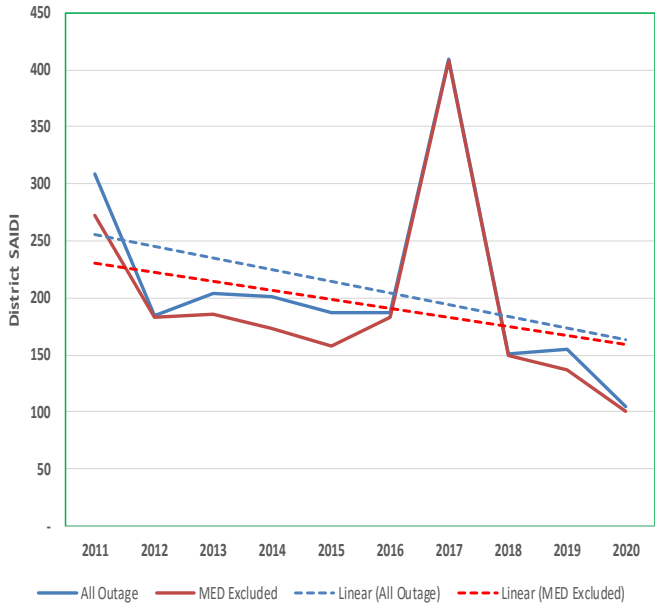
- a. The linear charts below show the past 10 years District Reliability Performance from 2011 – 2020 of dSAIDI, dSAIFI, dMAIFI and dCAIDI for all 34 districts. There are separate charts including and excluding MED. The charts shown are listed in alphabetical order by the district name.



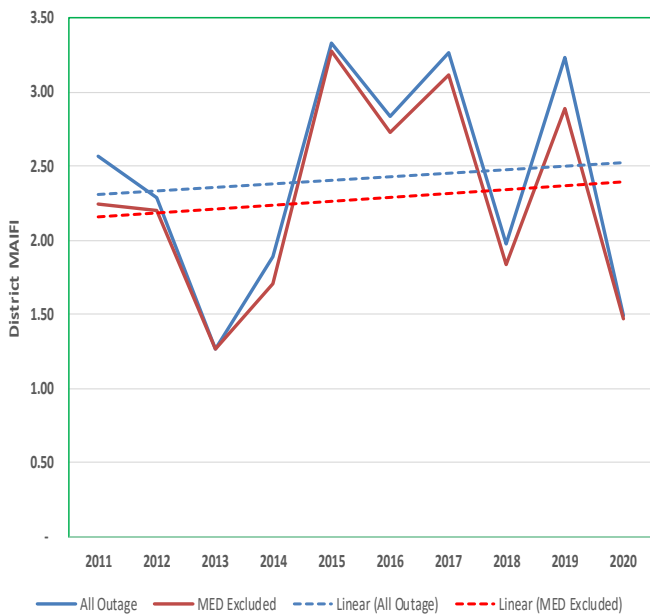
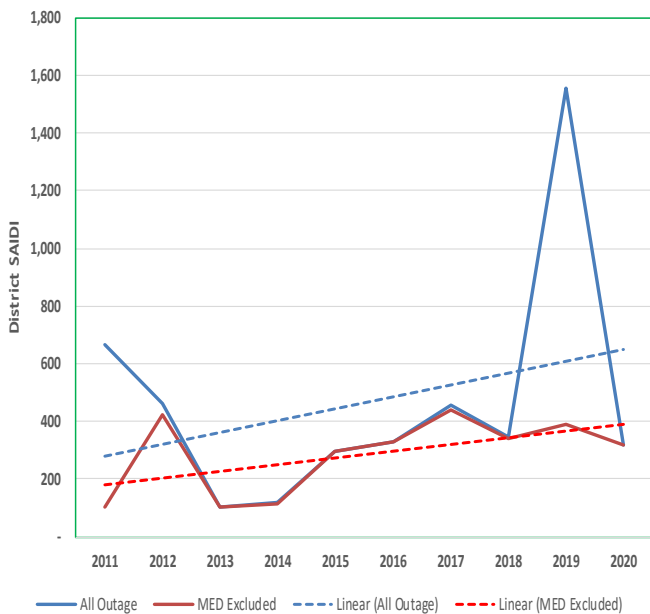
ARROWHEAD District Reliability Performance



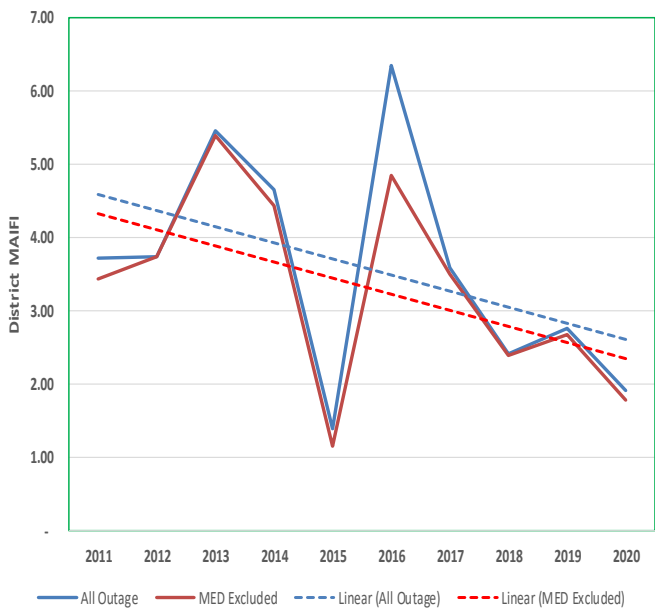
BARSTOW District Reliability Performance



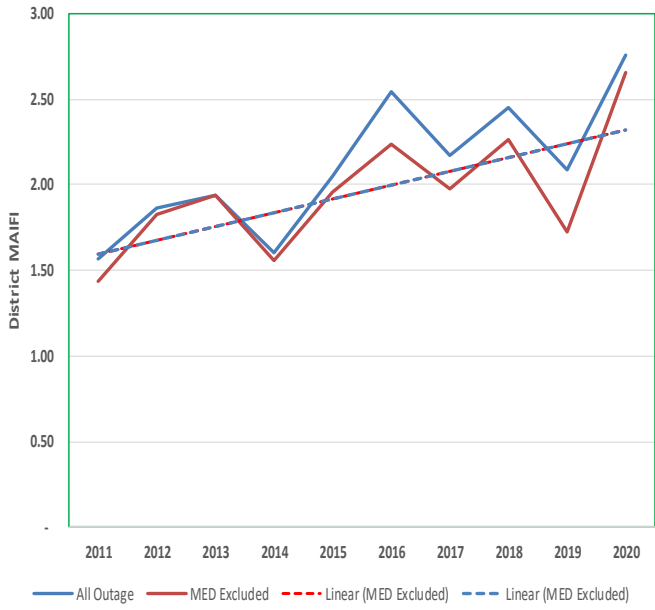
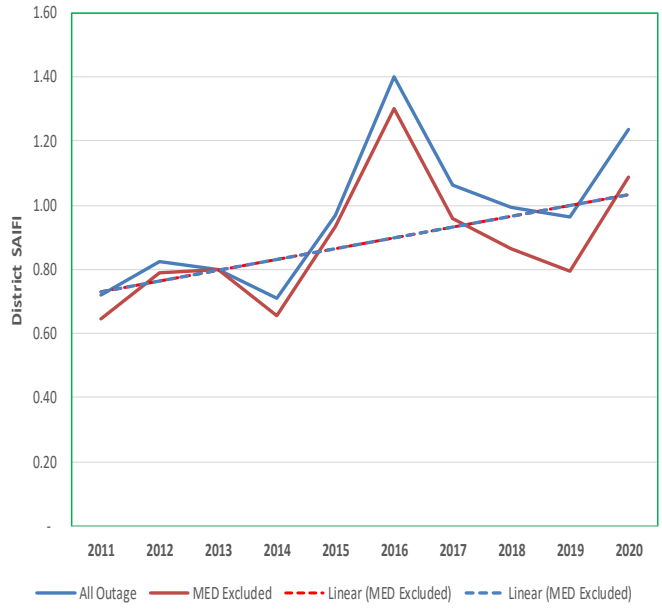
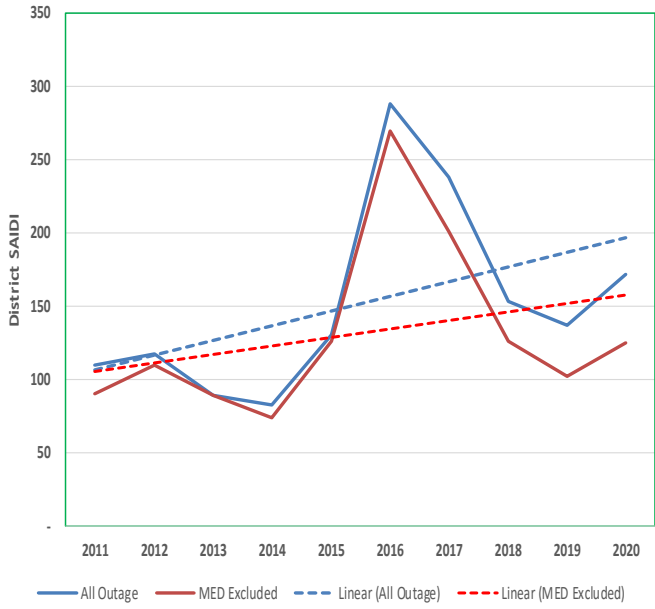
BISHOP District Reliability Performance



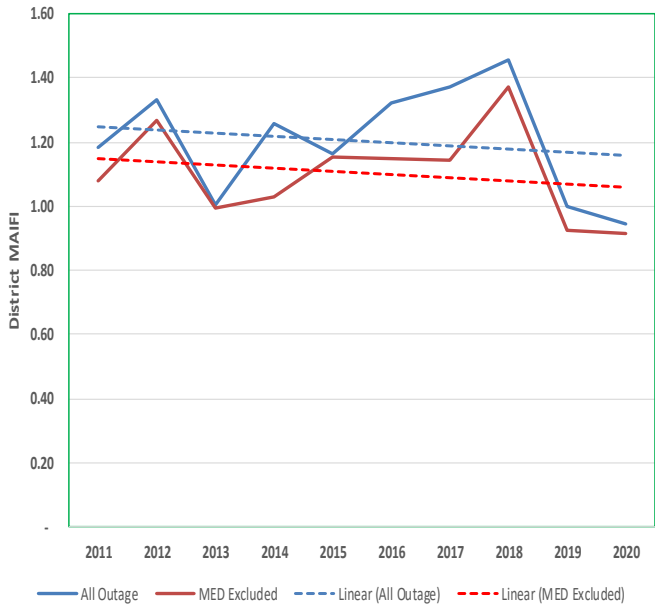
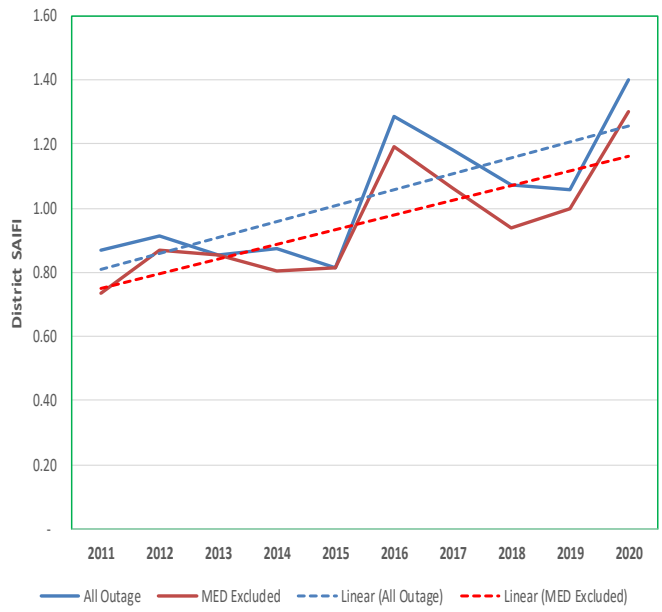
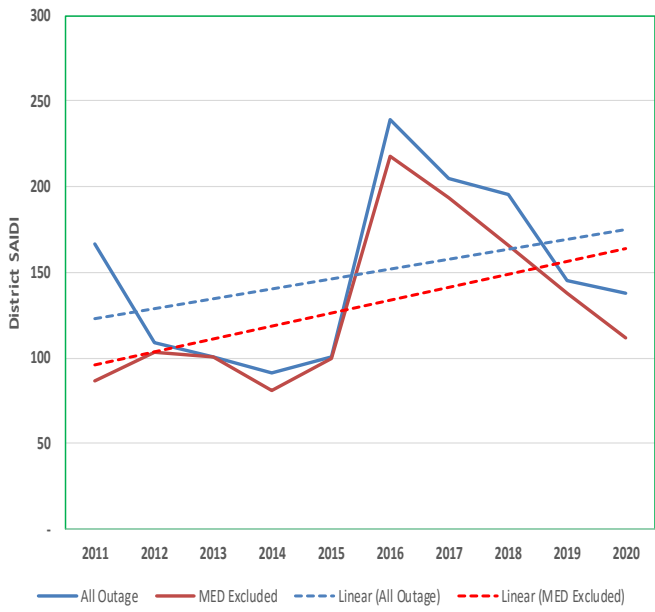
BLYTHE District Reliability Performance



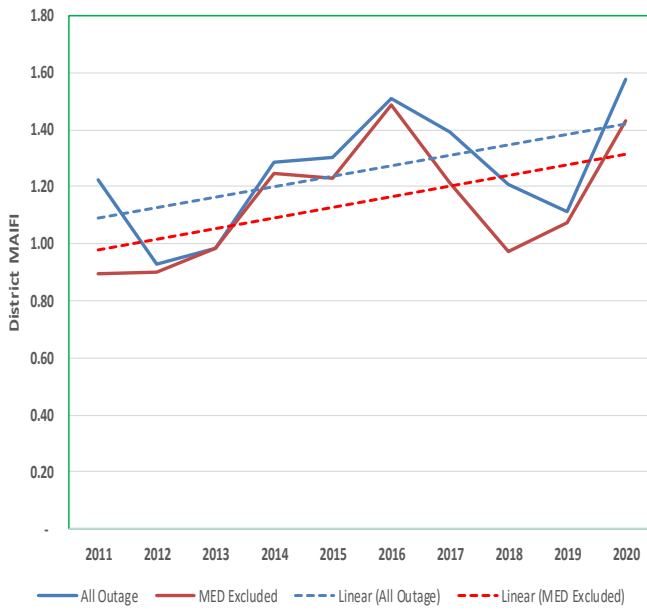
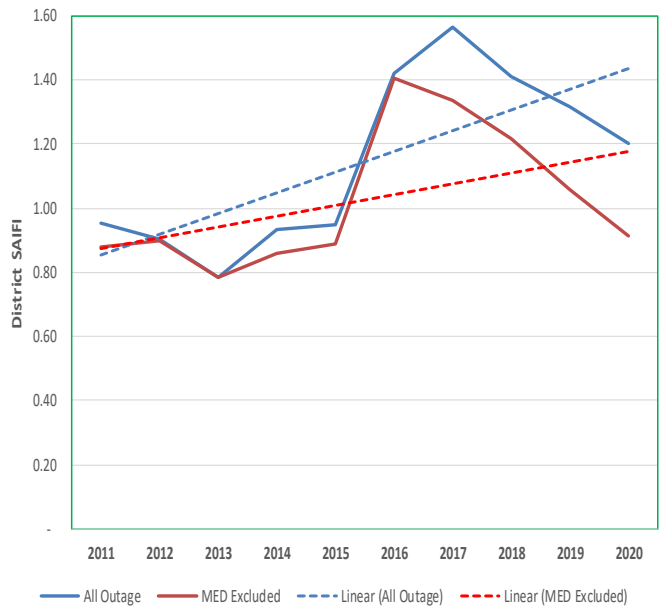
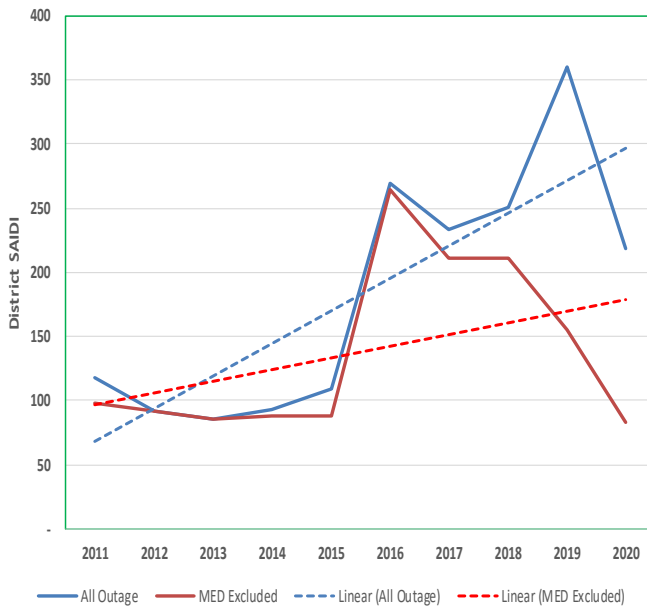
COMPTON District Reliability Performance



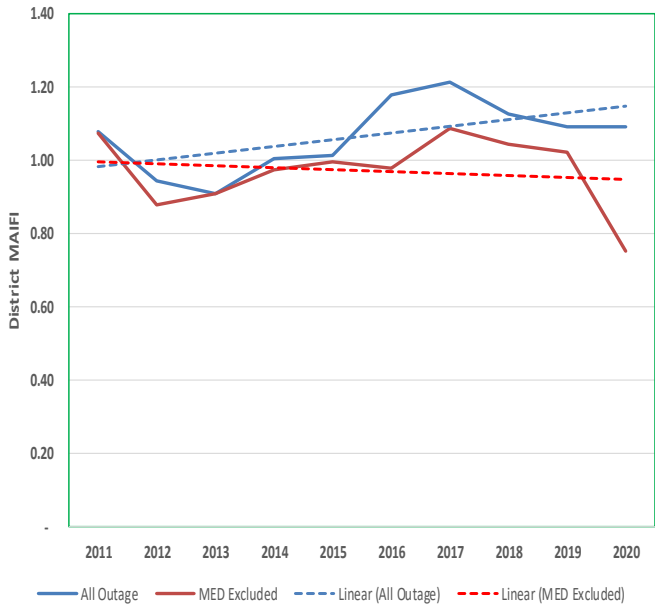
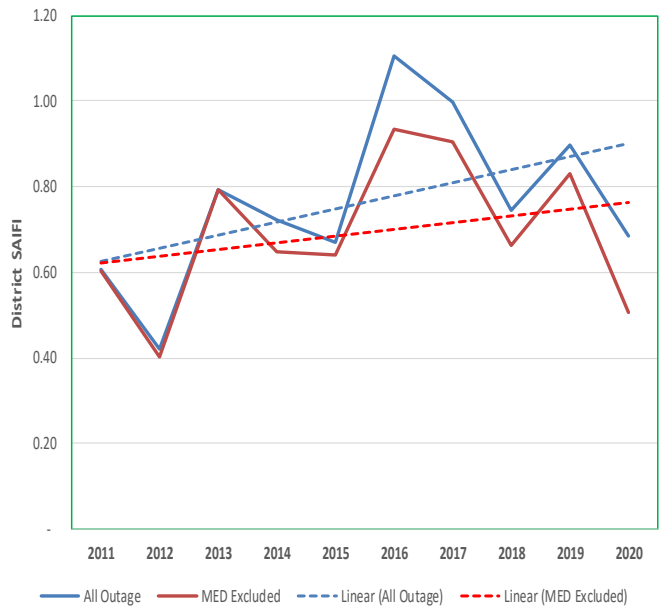
COVINA District Reliability Performance



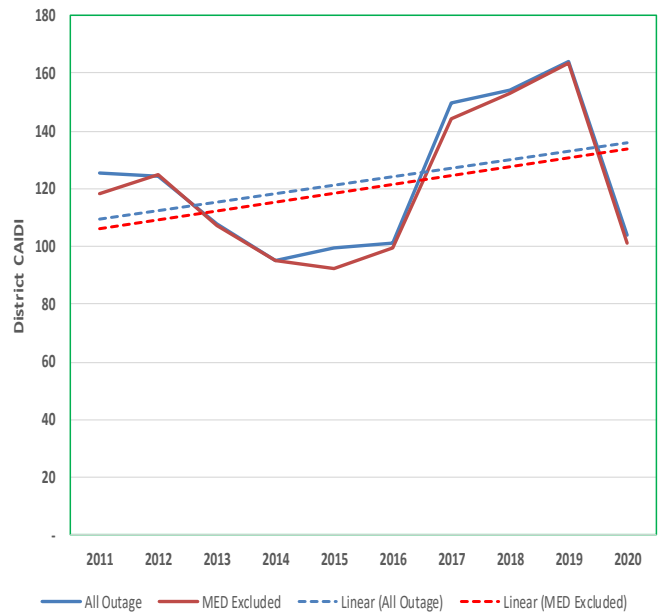
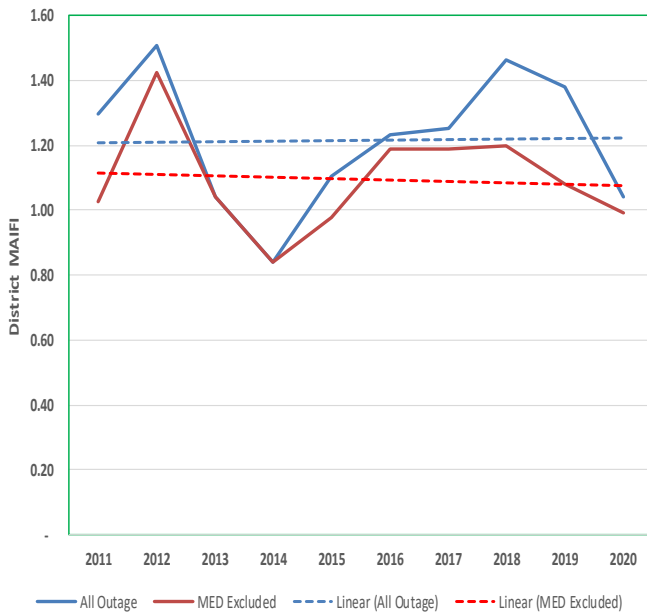
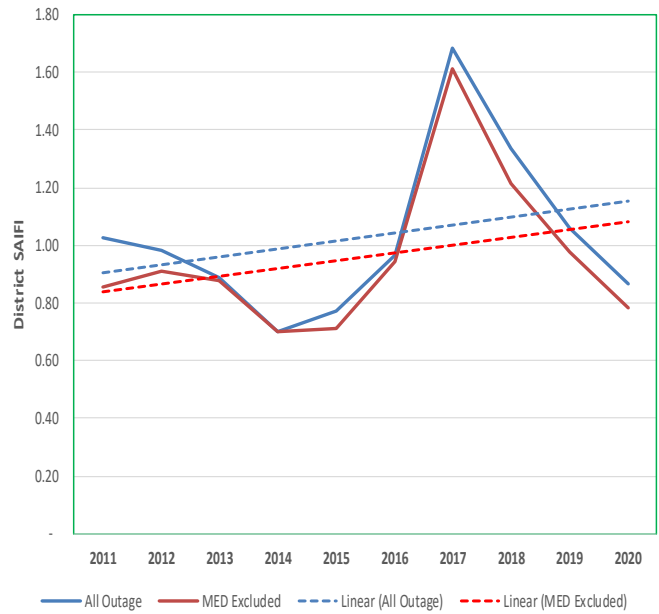
FOOTHILL District Reliability Performance



FULLERTON District Reliability Performance

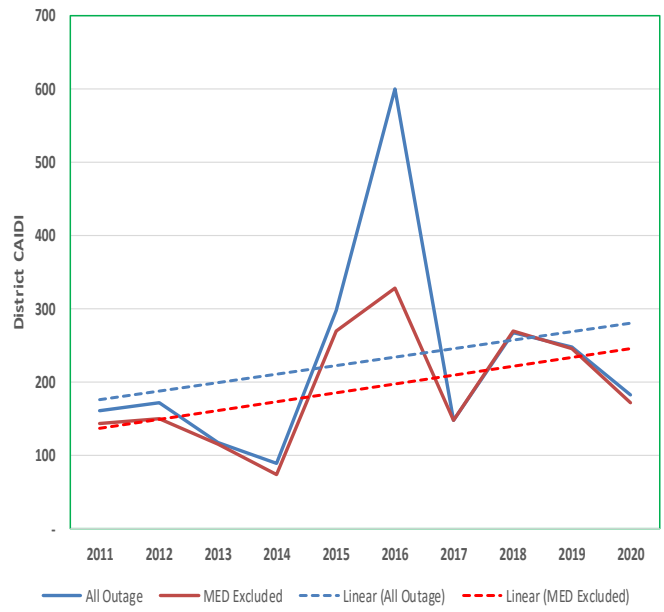
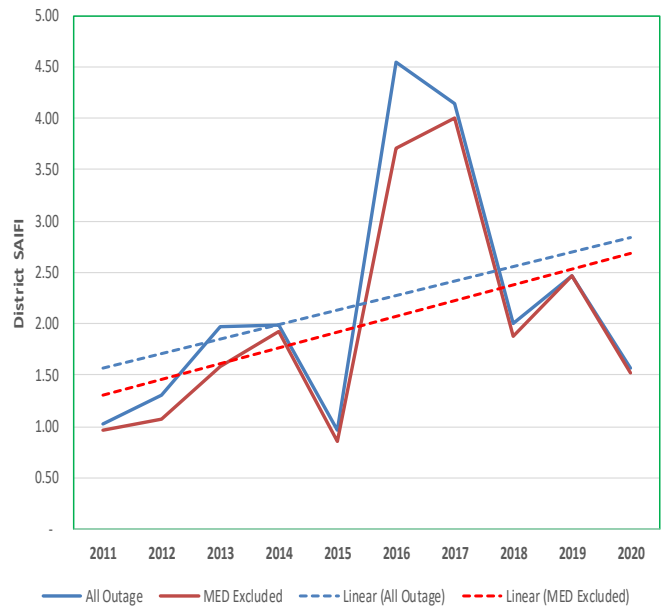


HUNTINGTON BEACH District Reliability Performance¹¹

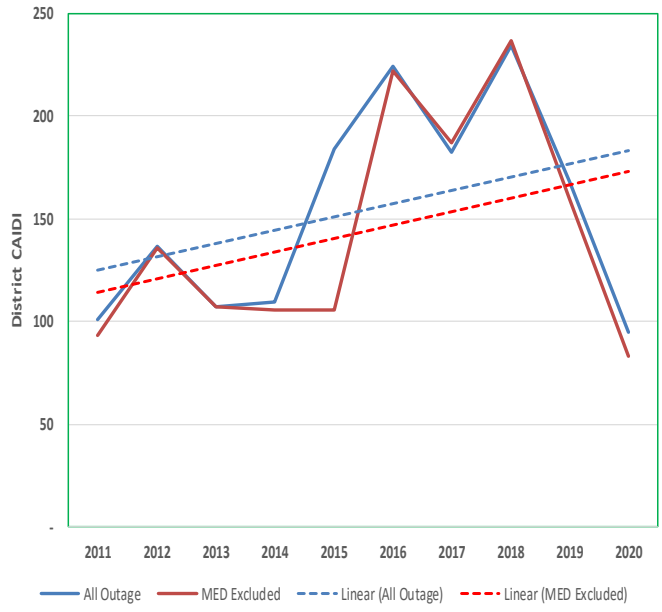
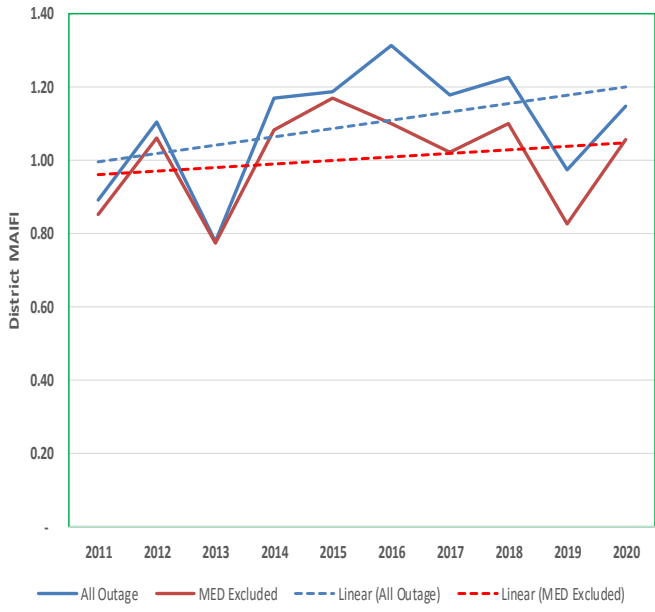
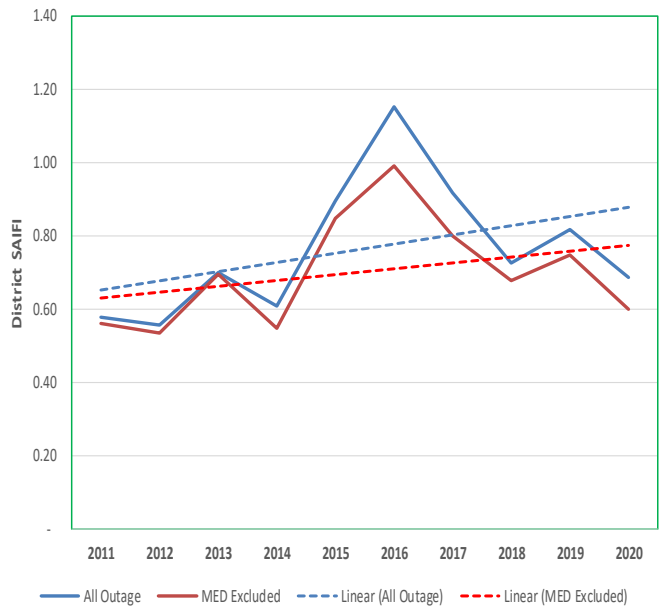


¹¹ Beginning in the 2019 annual report, Catalina District charts have been combined with Huntington Beach District, since the Catalina District operations have been combined with the Huntington Beach District.

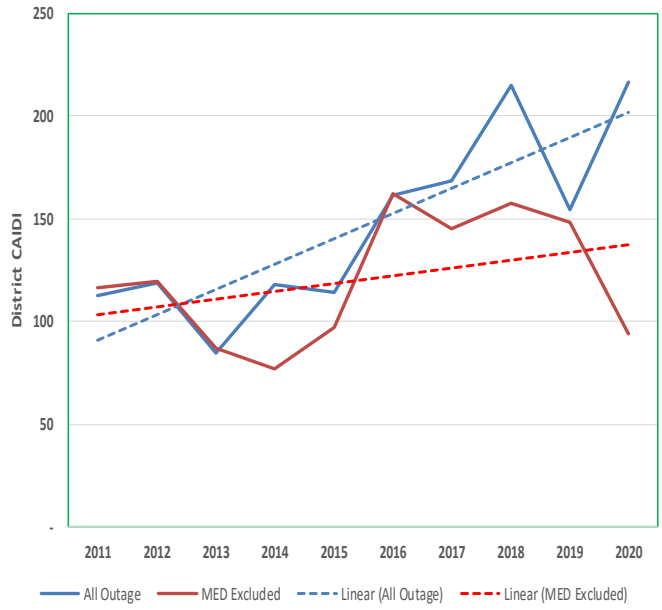
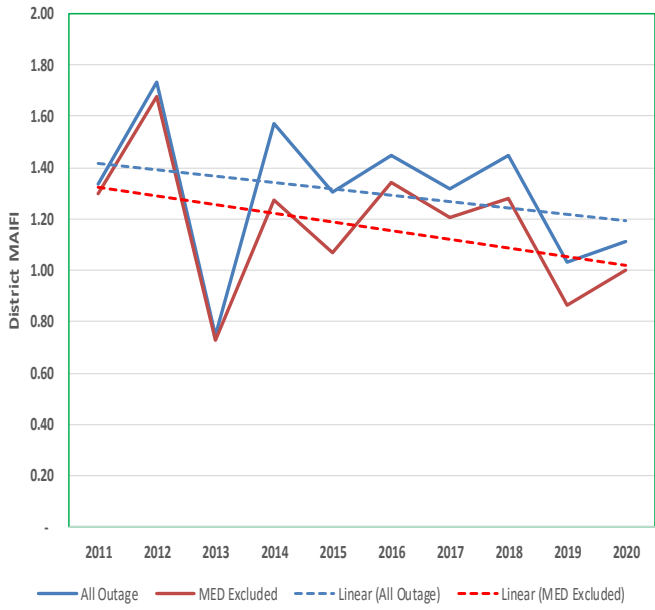
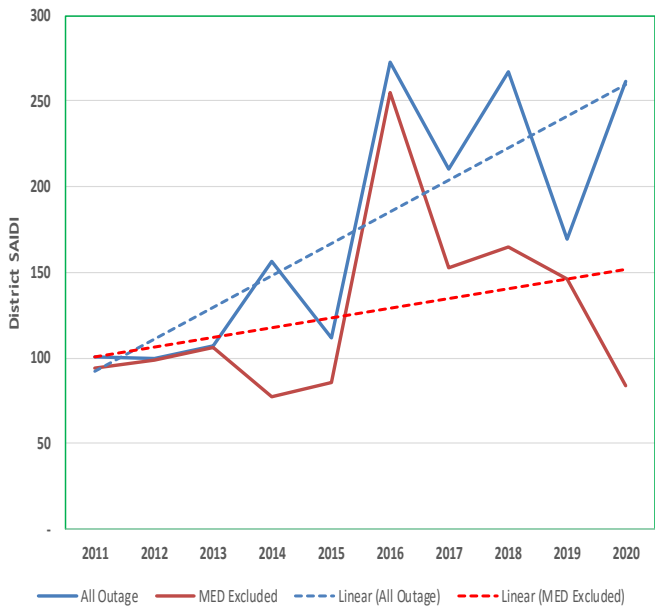
KERNVILLE District Reliability Performance



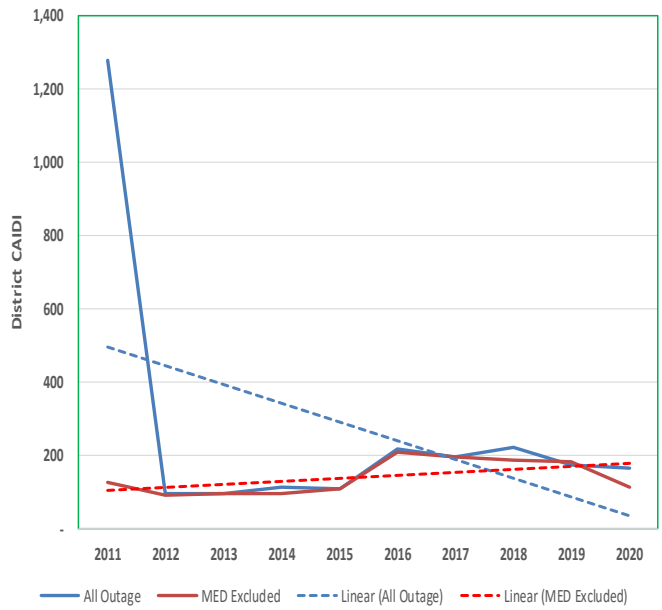
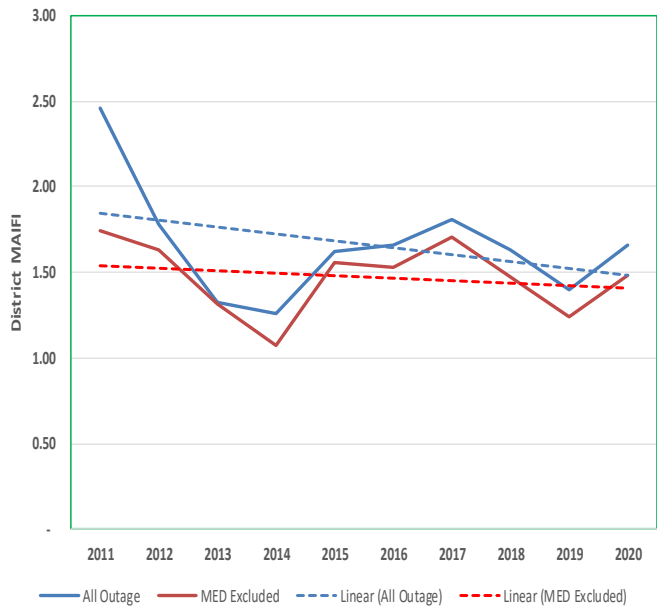
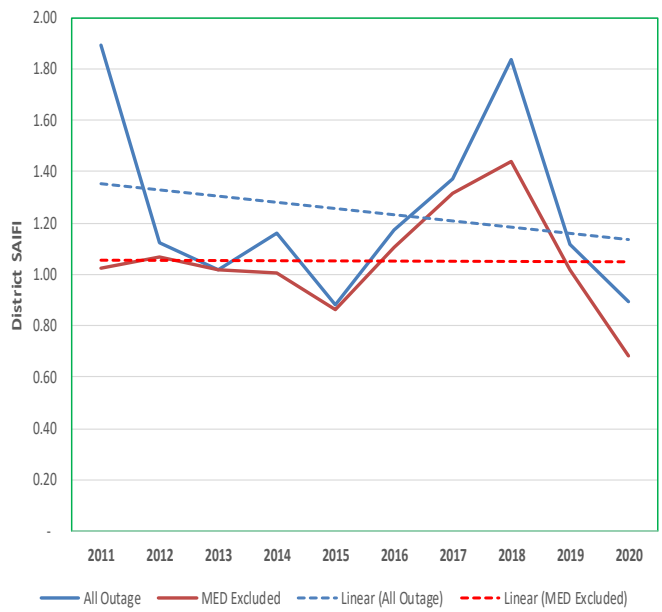
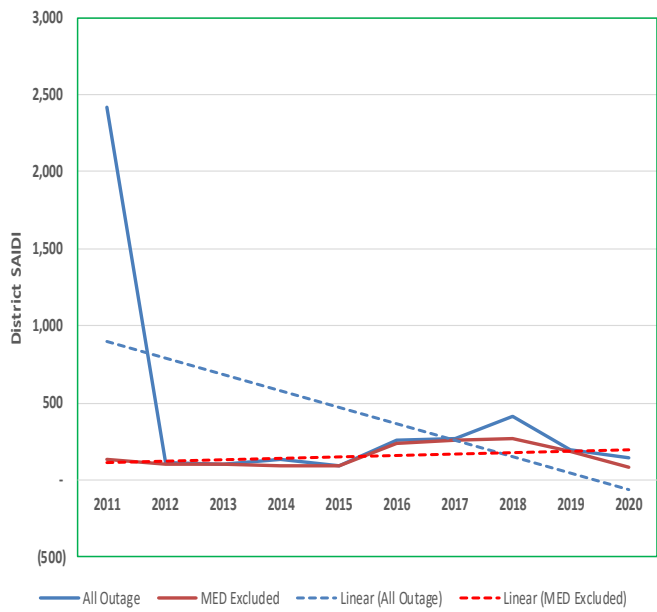
LONG BEACH District Reliability Performance



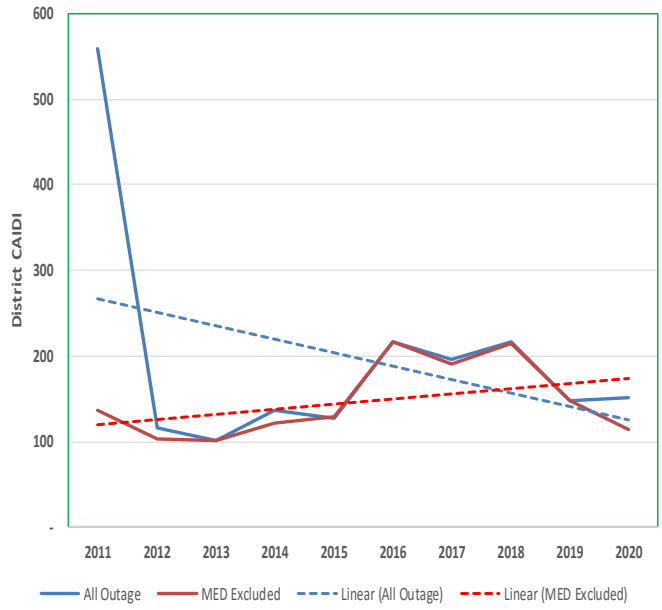
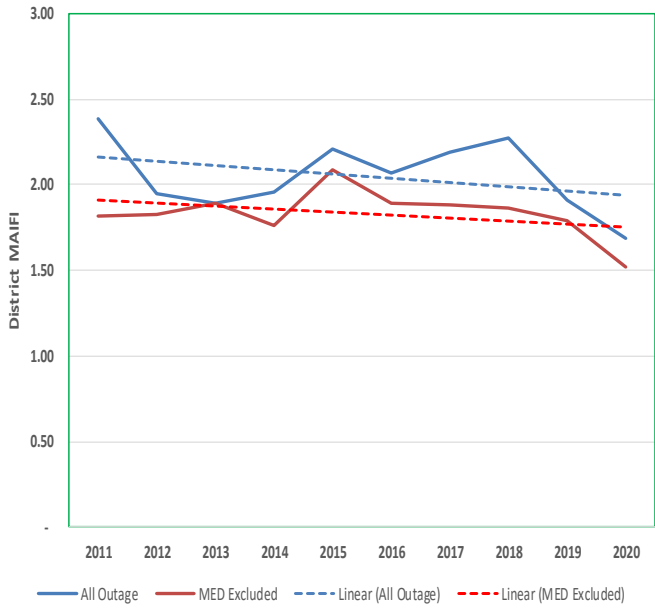
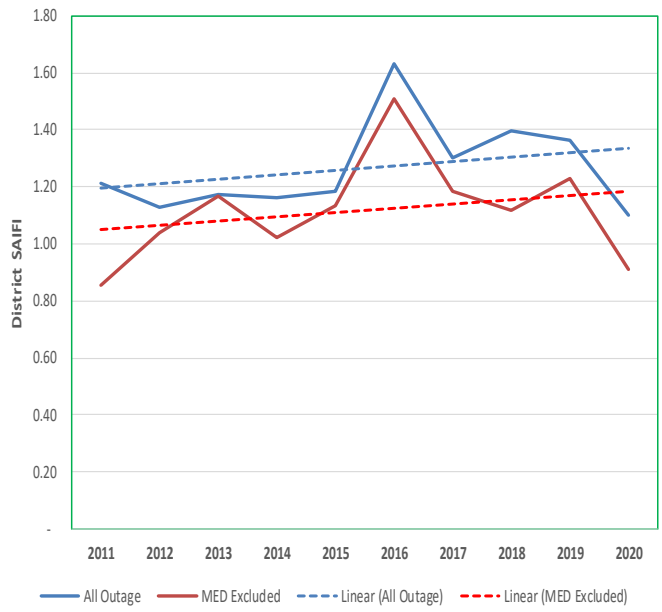
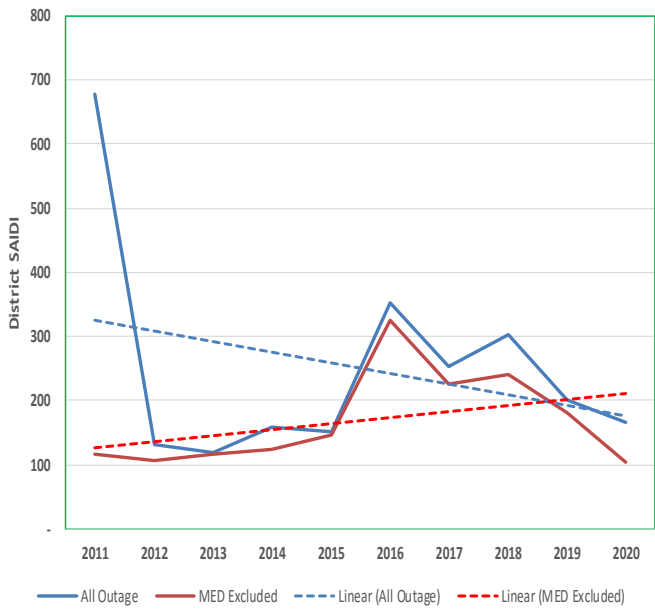
MENIFEE District Reliability Performance



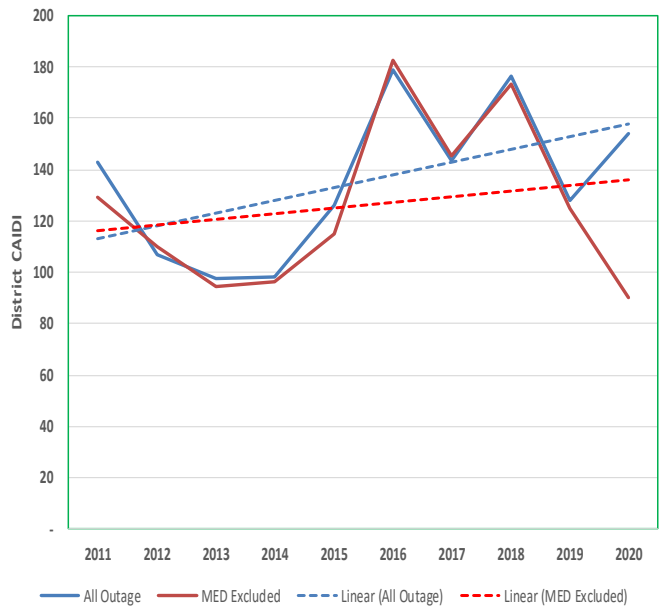
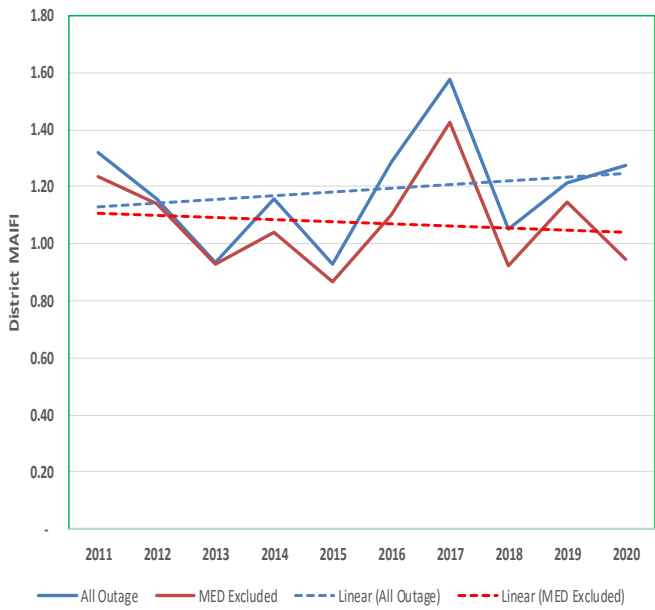
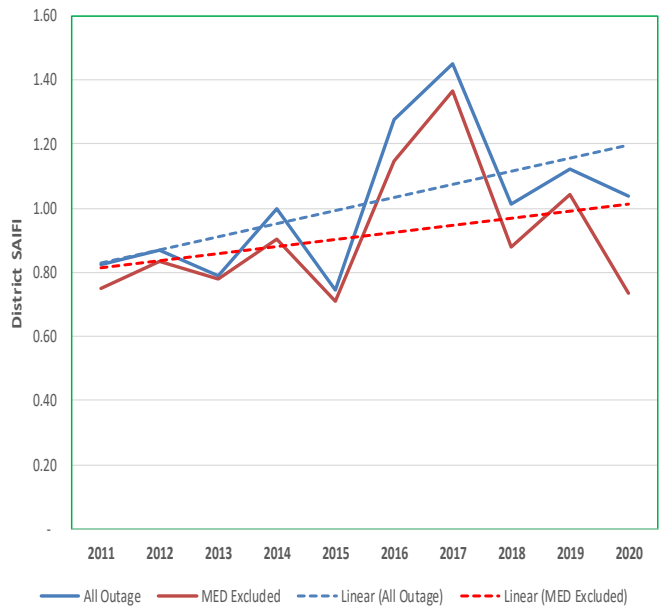
MONROVIA District Reliability Performance



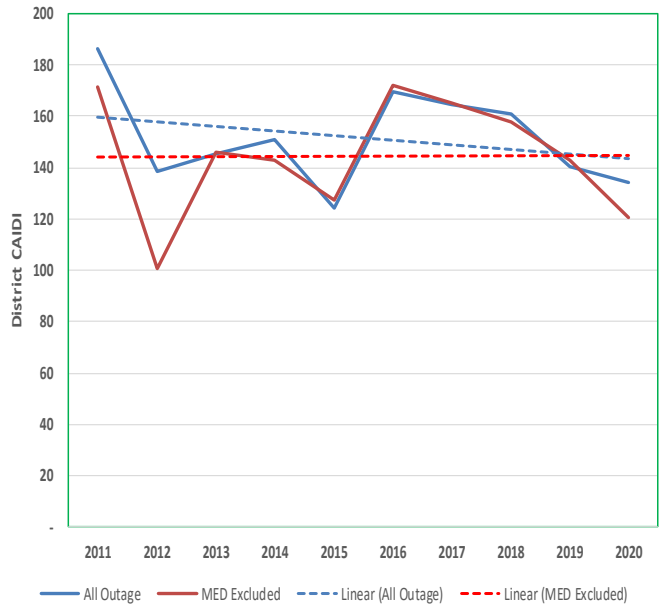
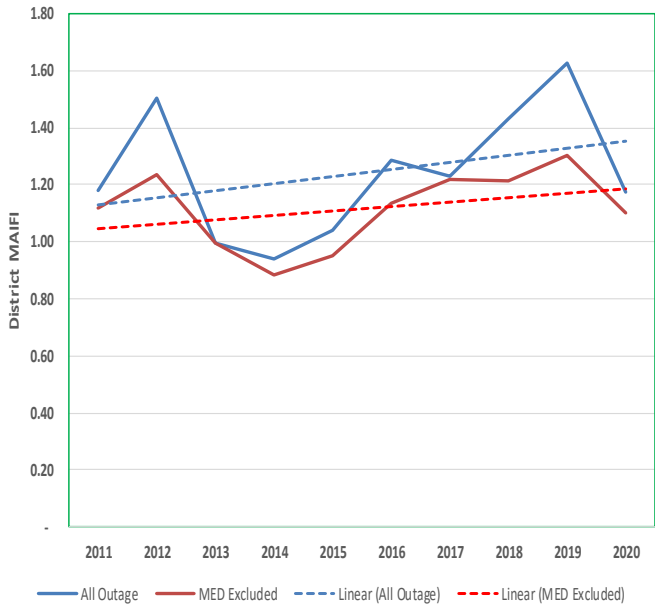
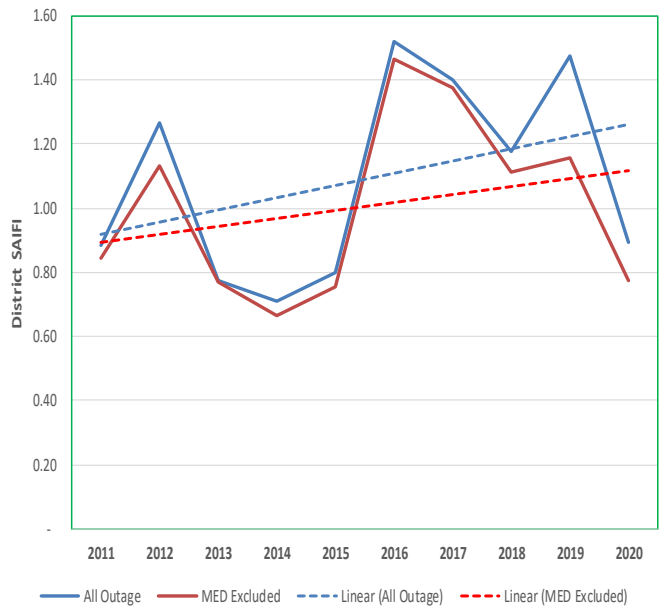
MONTEBELLO District Reliability Performance



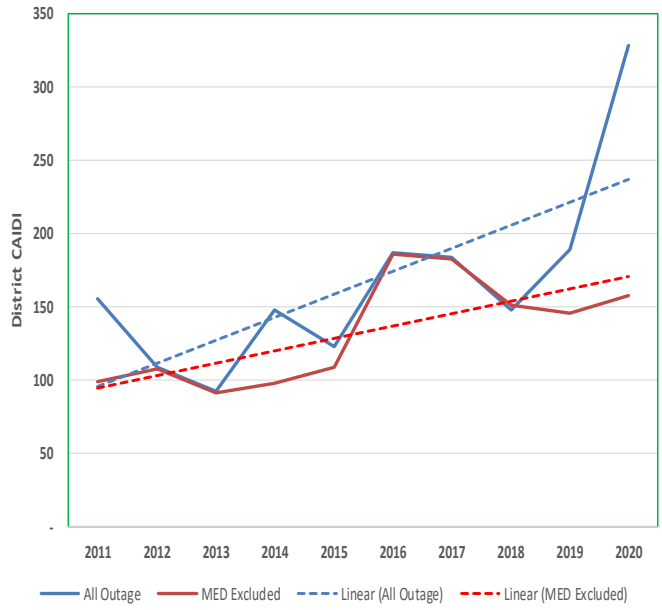
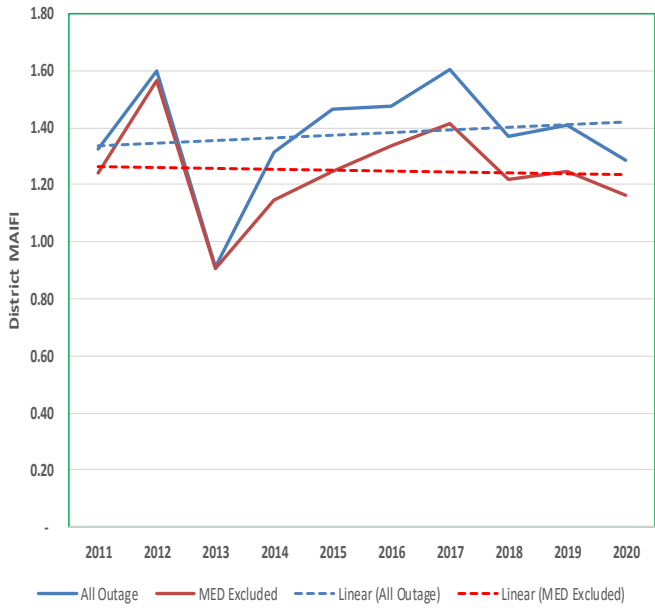
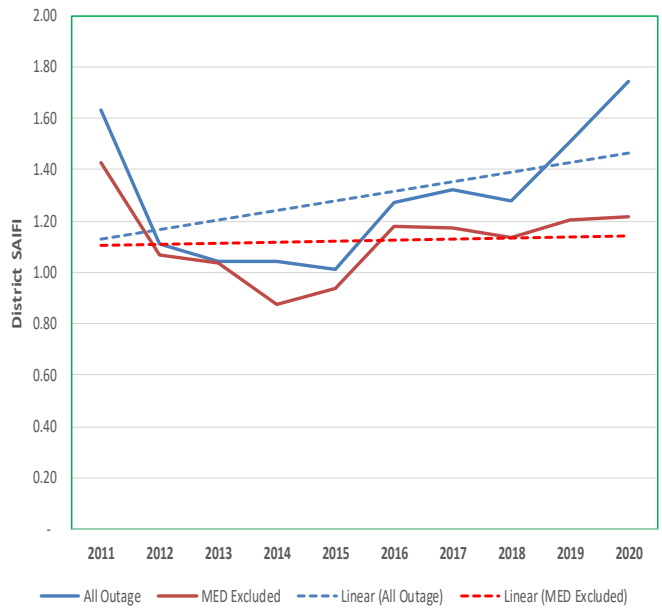
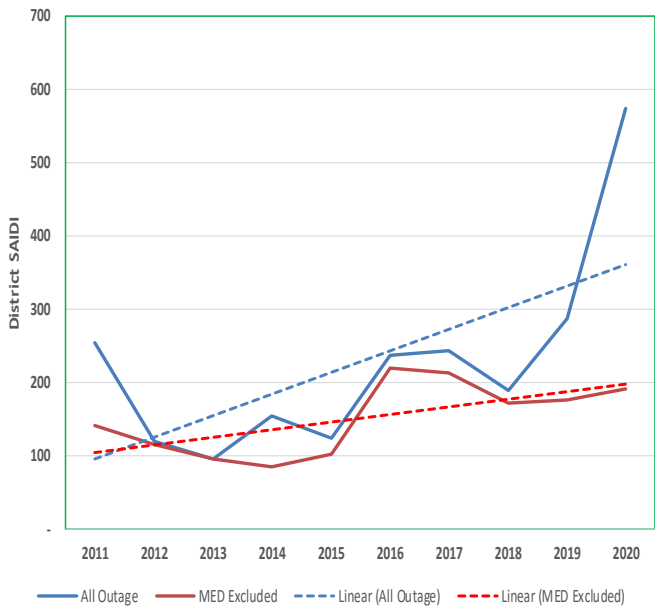
ONTARIO District Reliability Performance



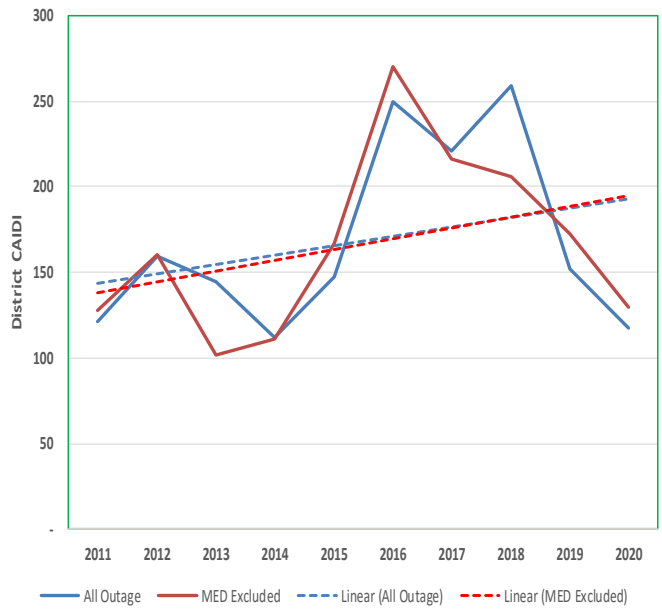
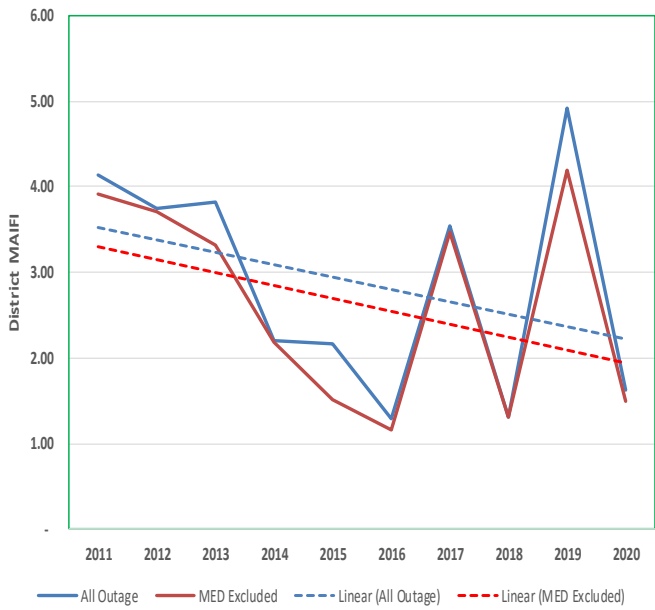
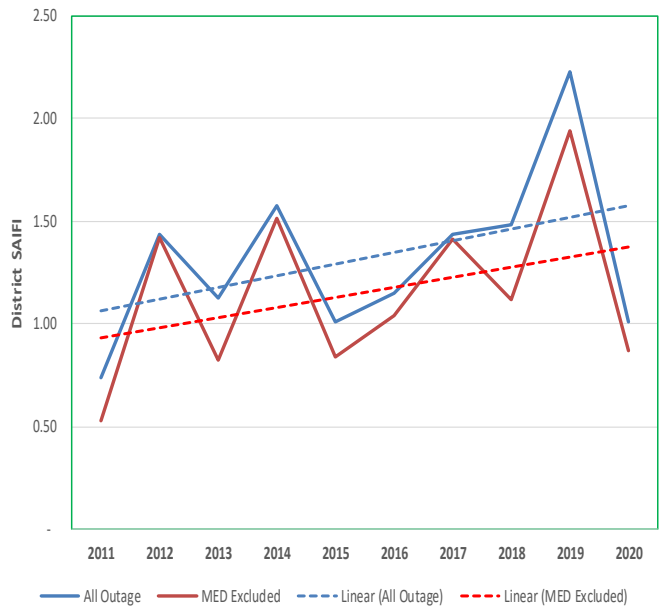
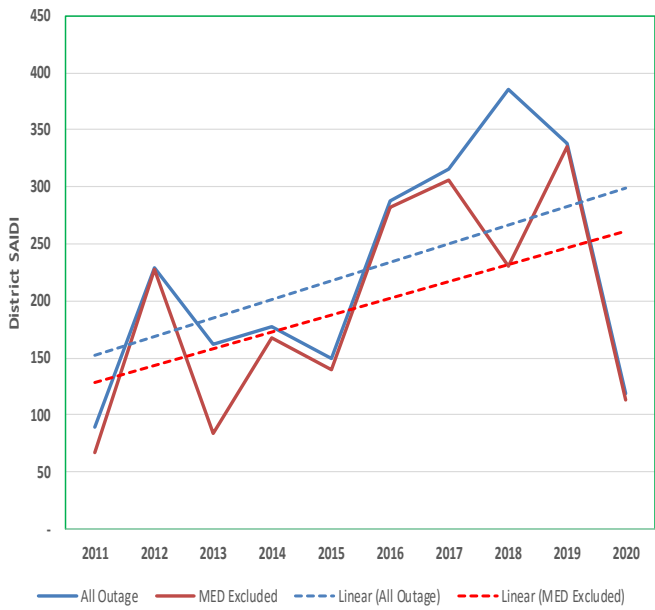
PALM SPRINGS District Reliability Performance



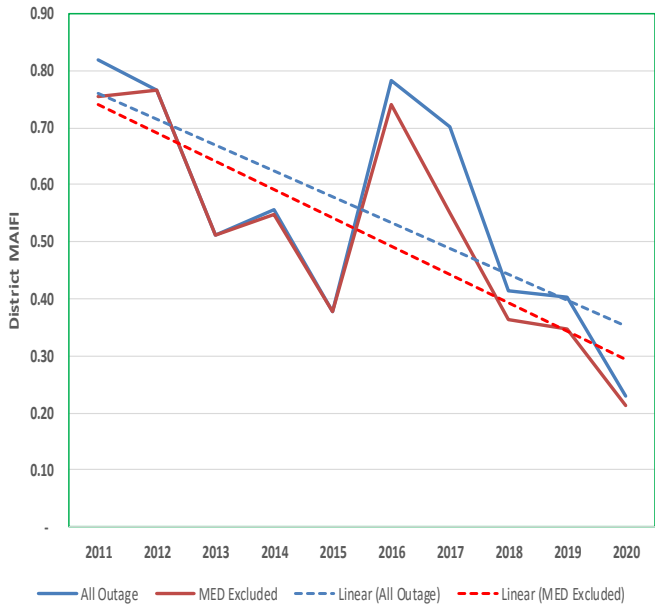
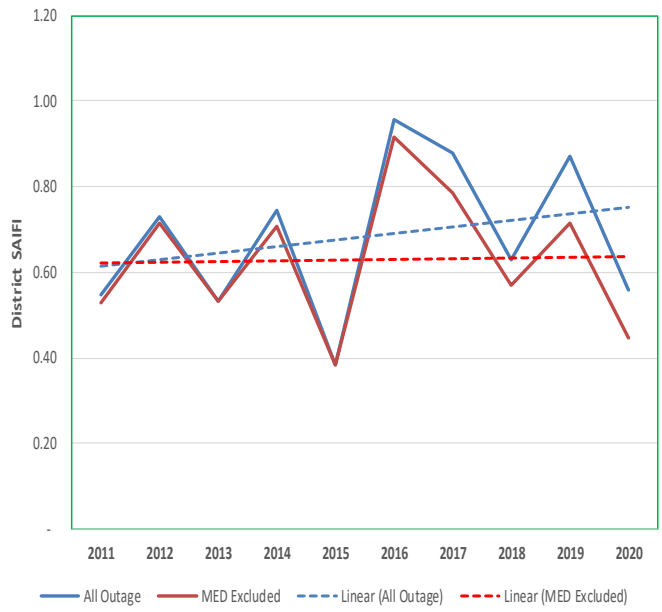
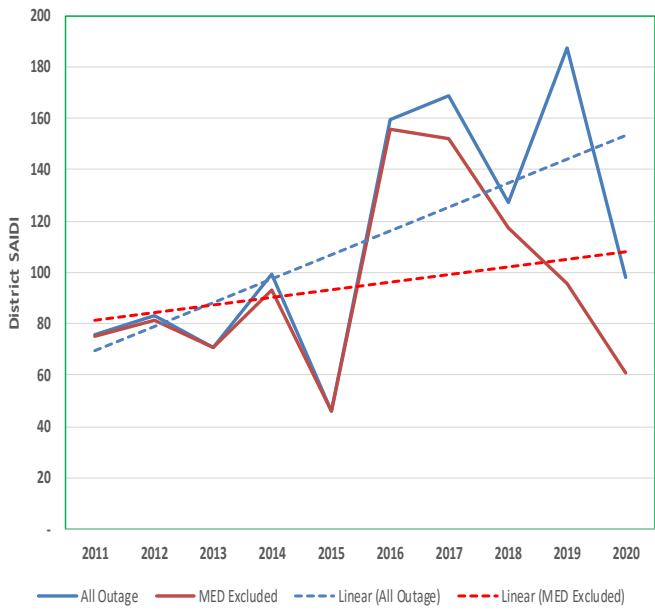
REDLANDS District Reliability Performance



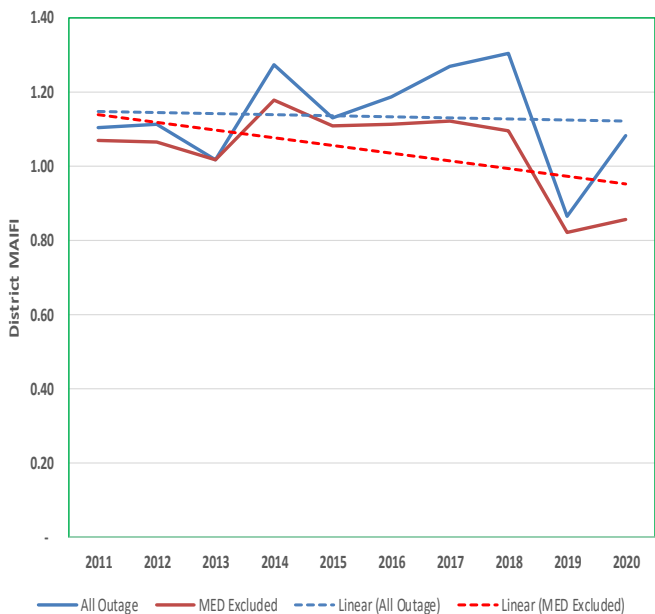
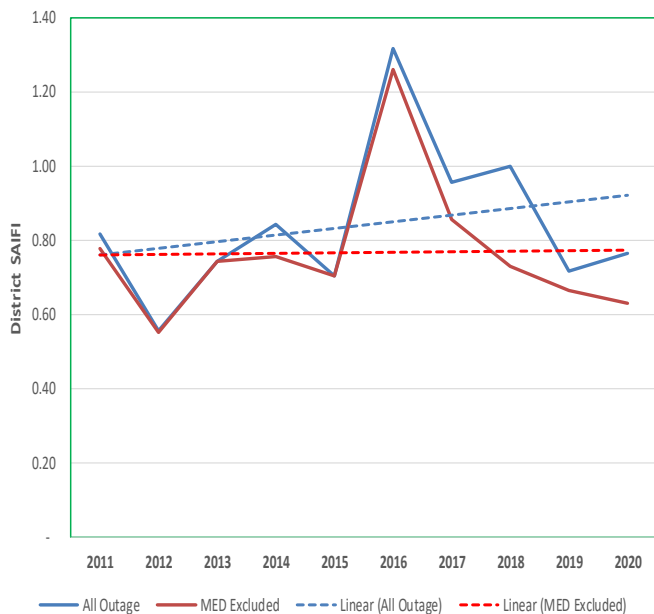
RIDGECREST District Reliability Performance



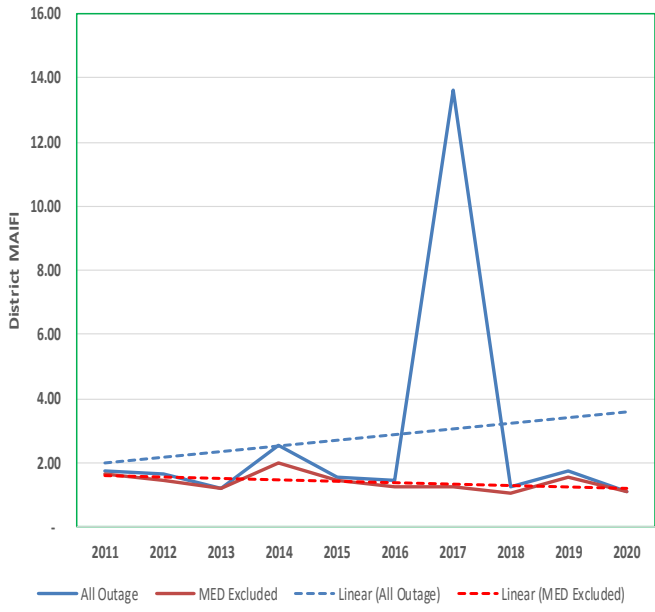
SADDLEBACK District Reliability Performance



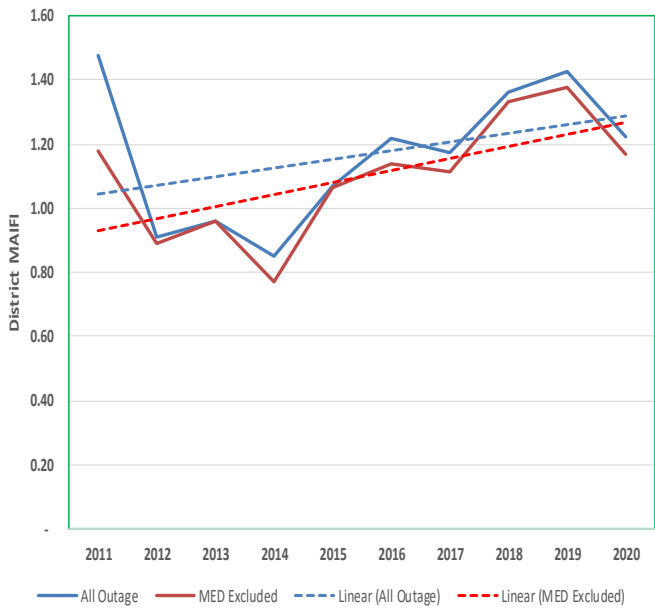
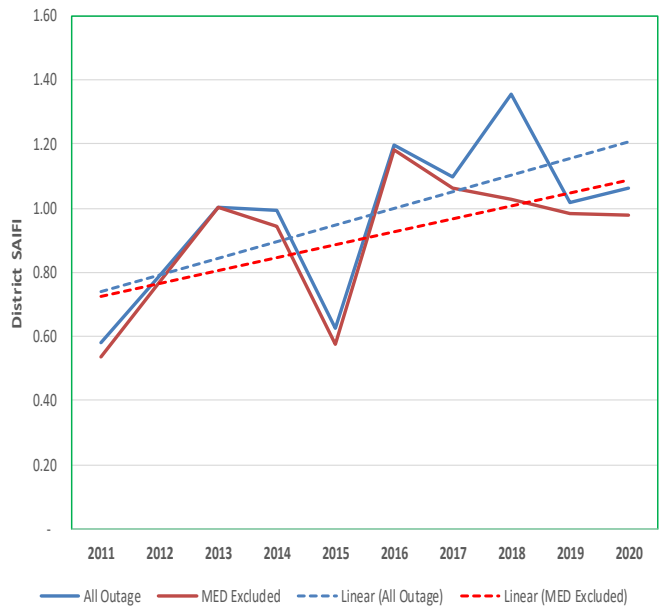
SANTA ANA District Reliability Performance



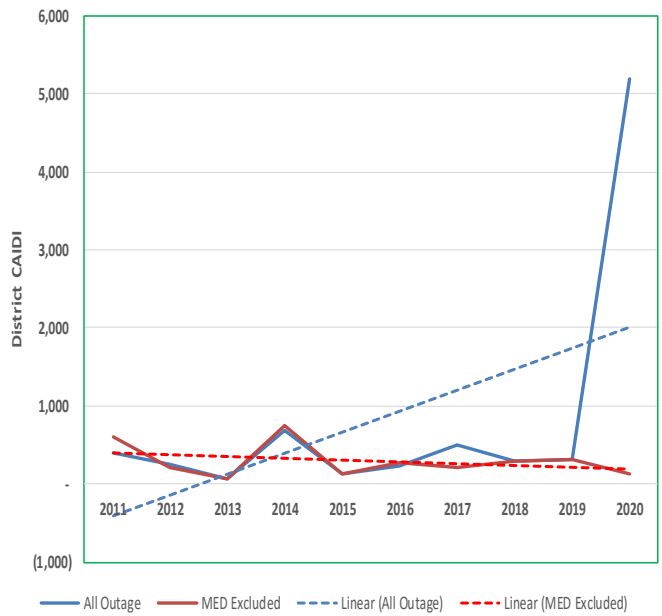
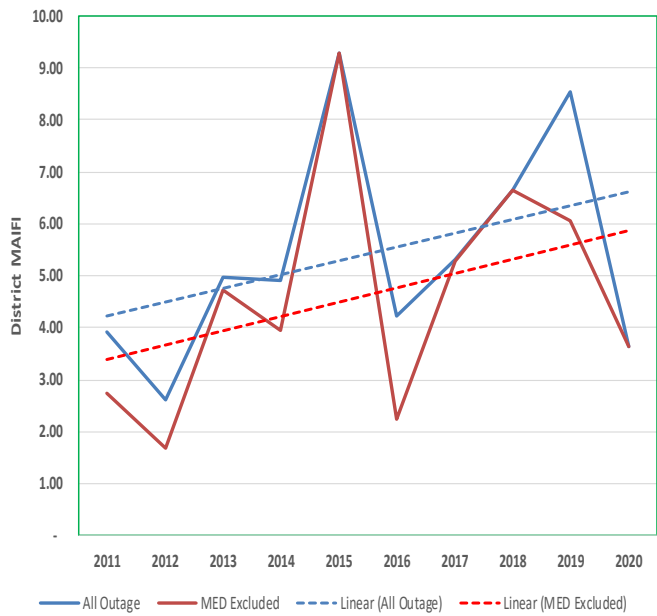
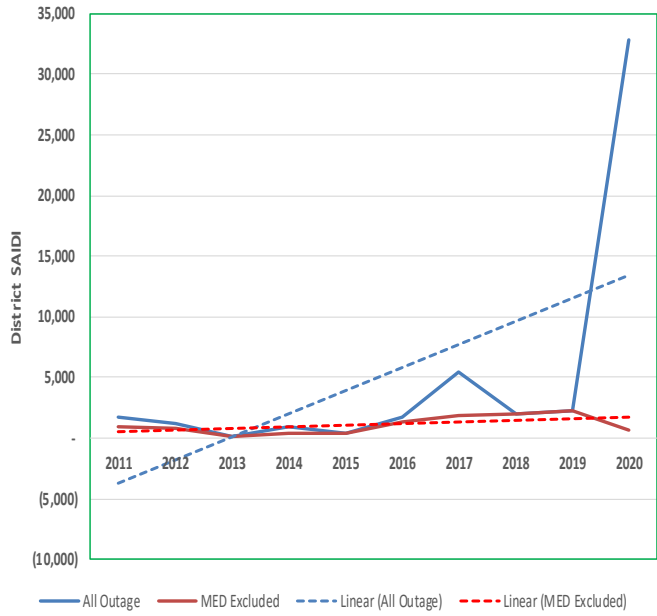
SANTA BARBARA District Reliability Performance



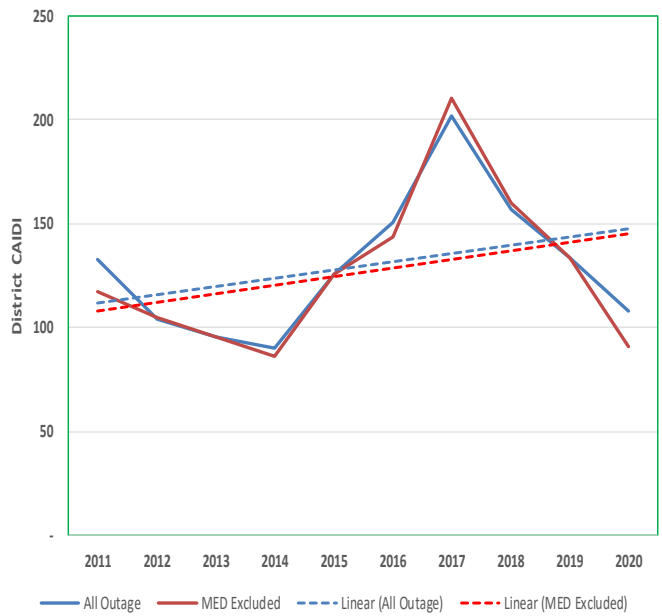
SANTA MONICA District Reliability Performance



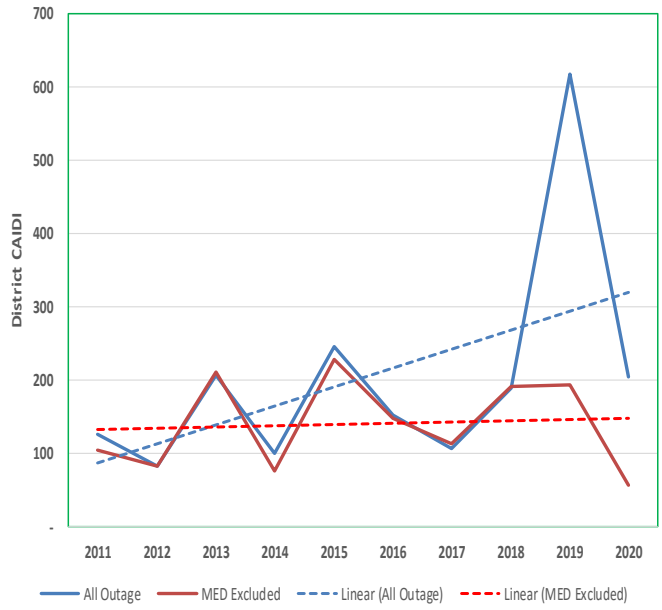
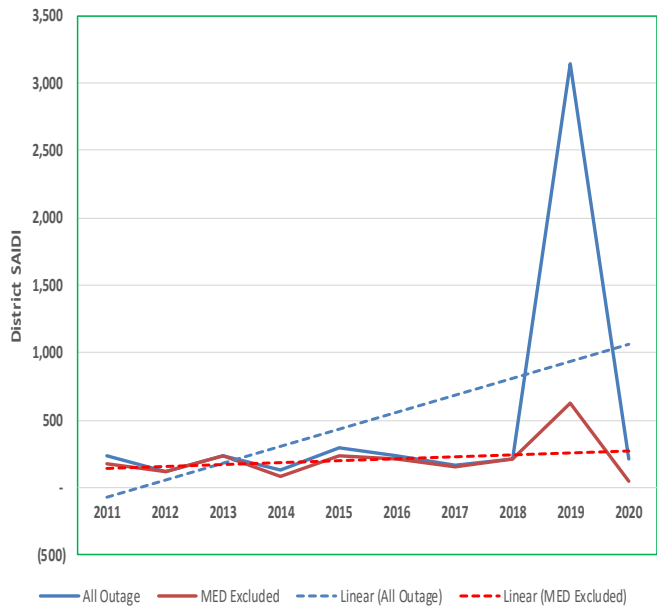
SHAVER LAKE District Reliability Performance



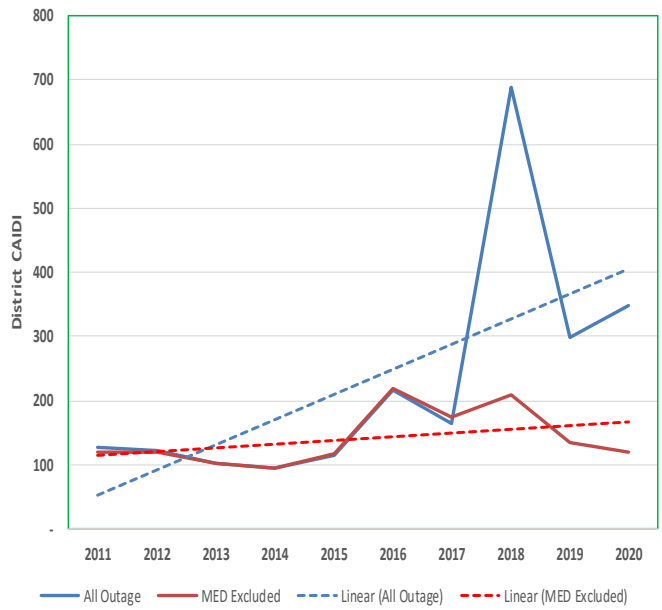
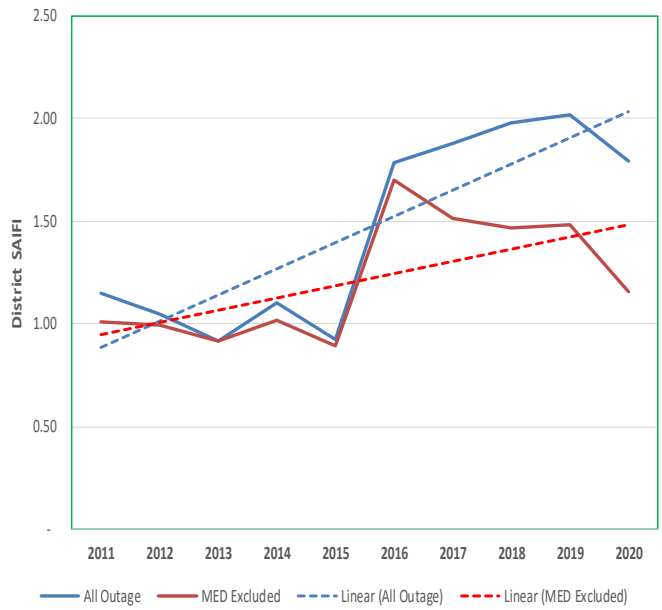
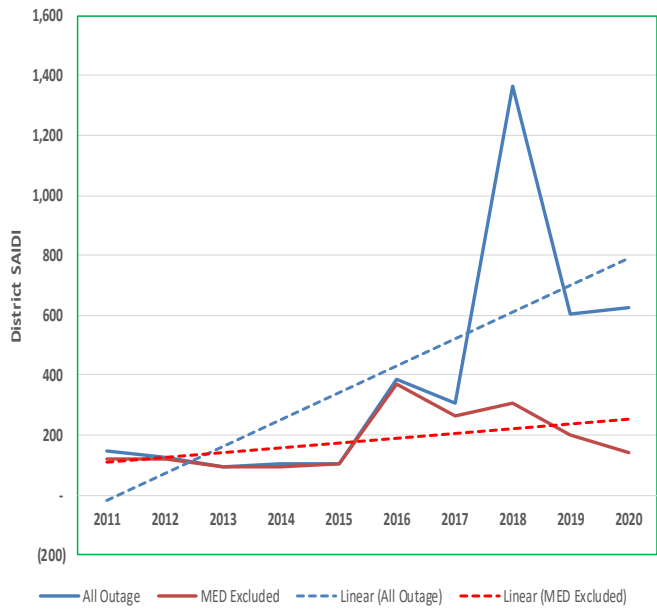
SOUTH BAY District Reliability Performance



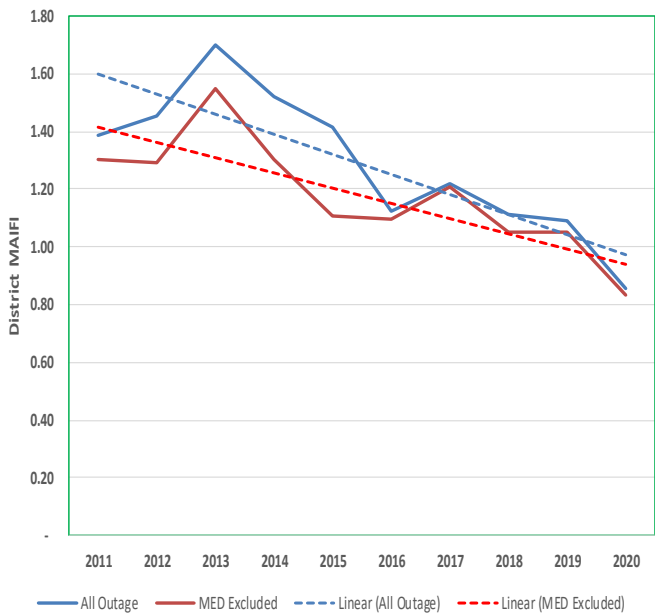
TEHACHAPI District Reliability Performance



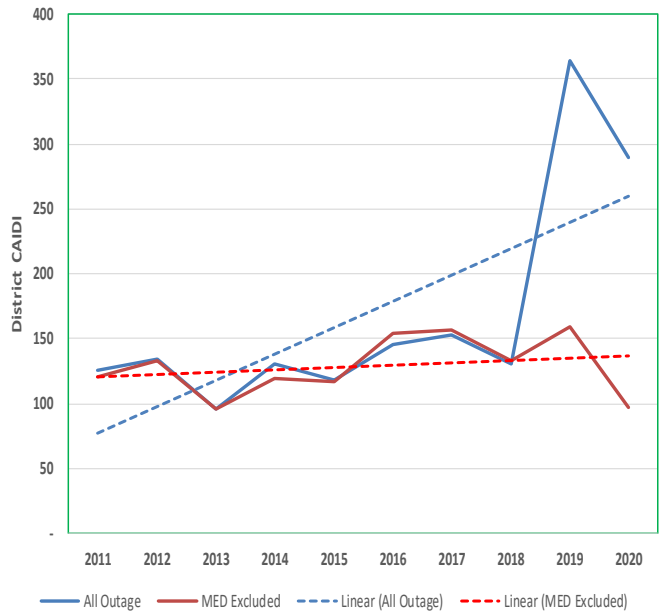
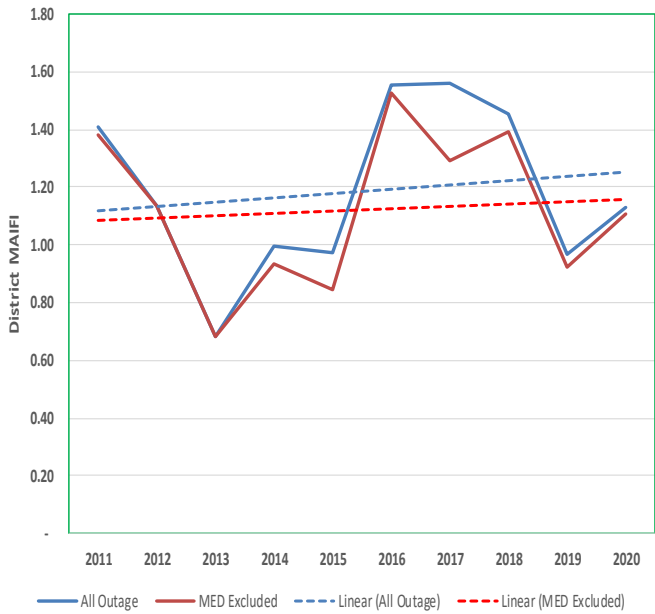
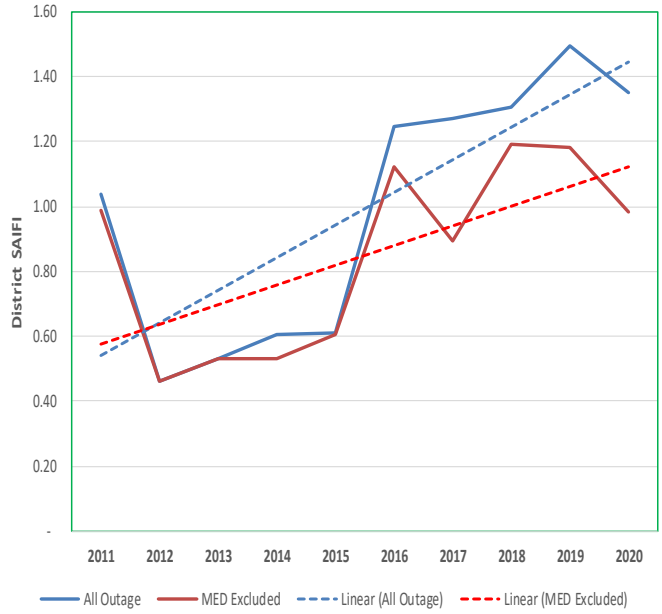
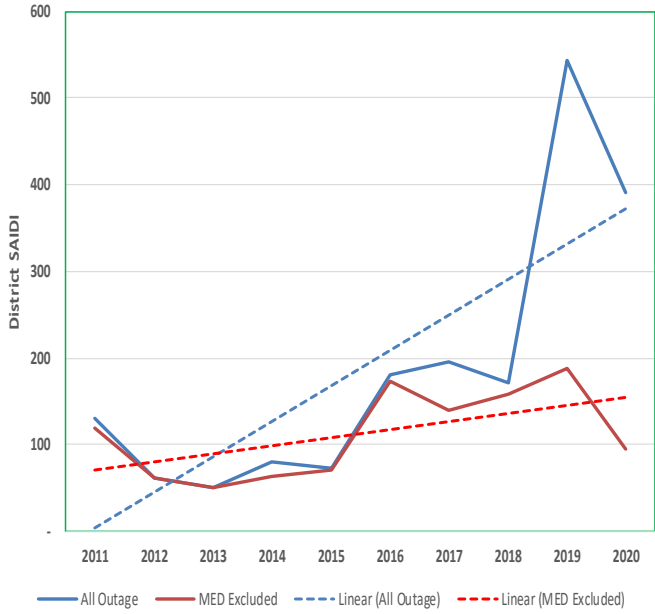
THOUSAND OAKS District Reliability Performance



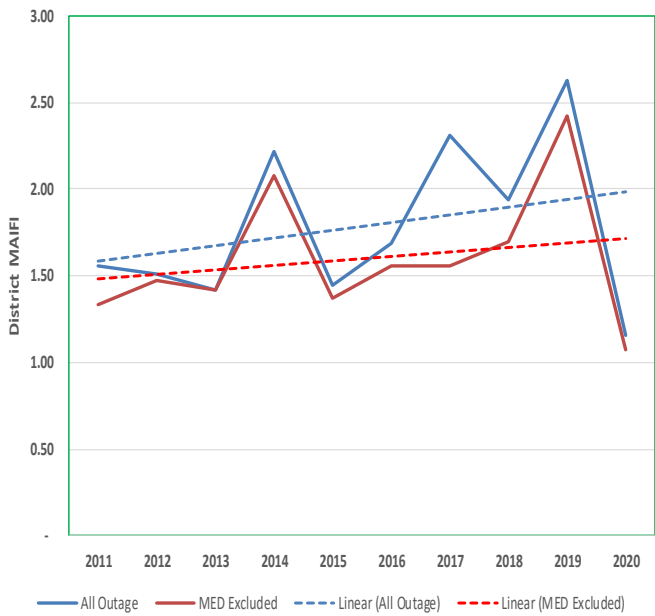
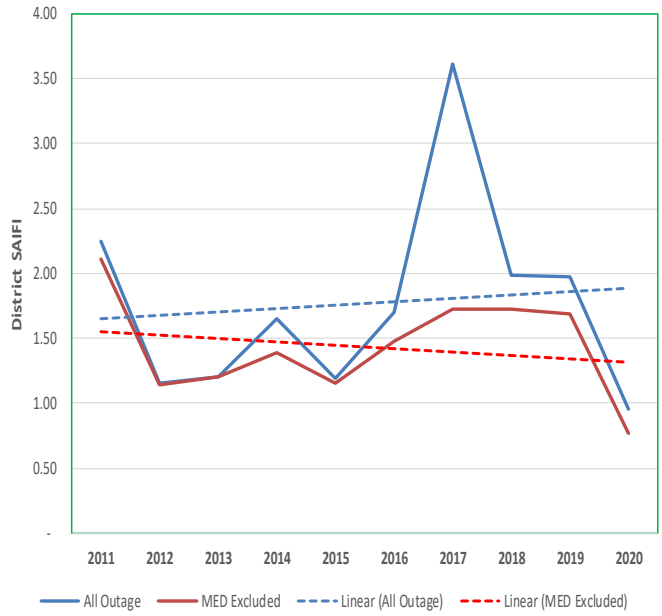
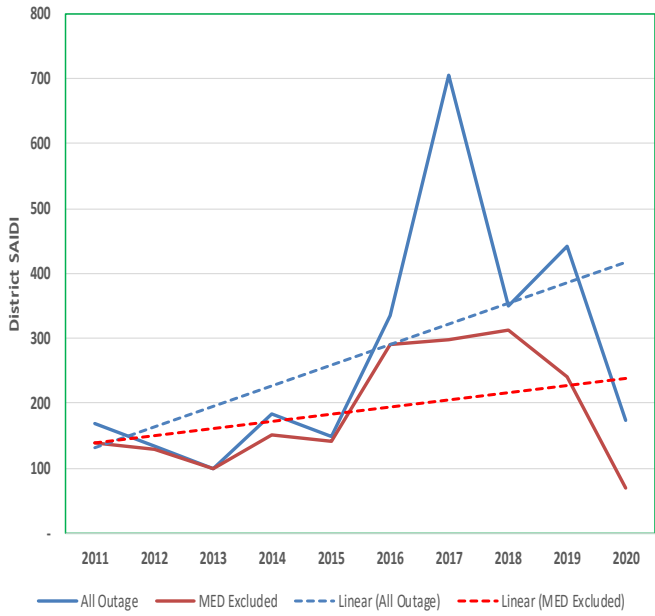
TULARE District Reliability Performance



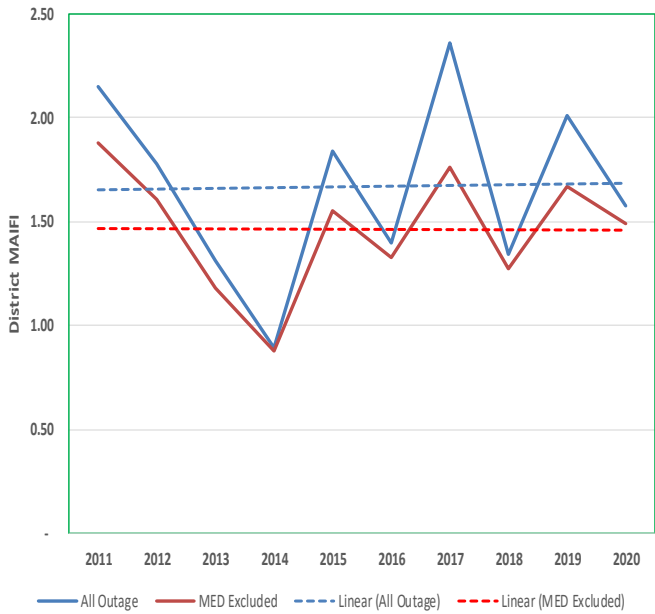
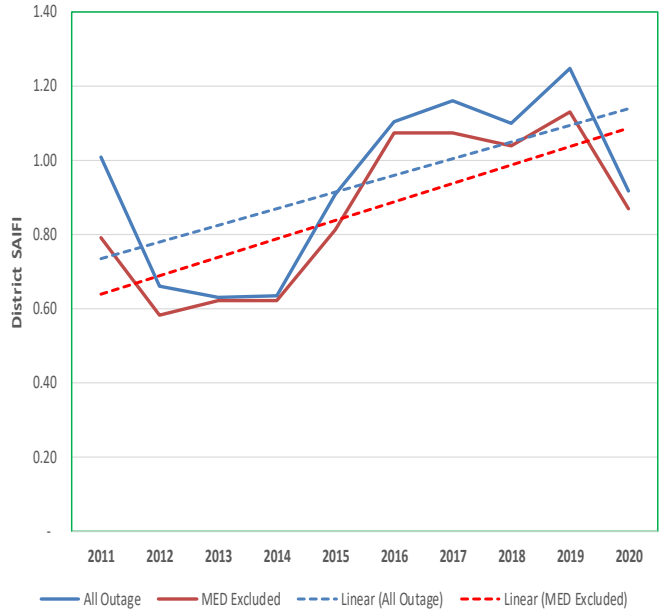
VALENCIA District Reliability Performance



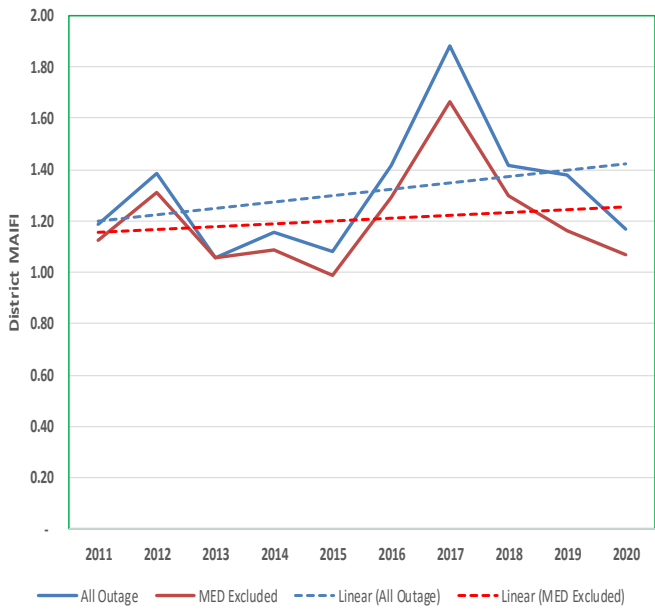
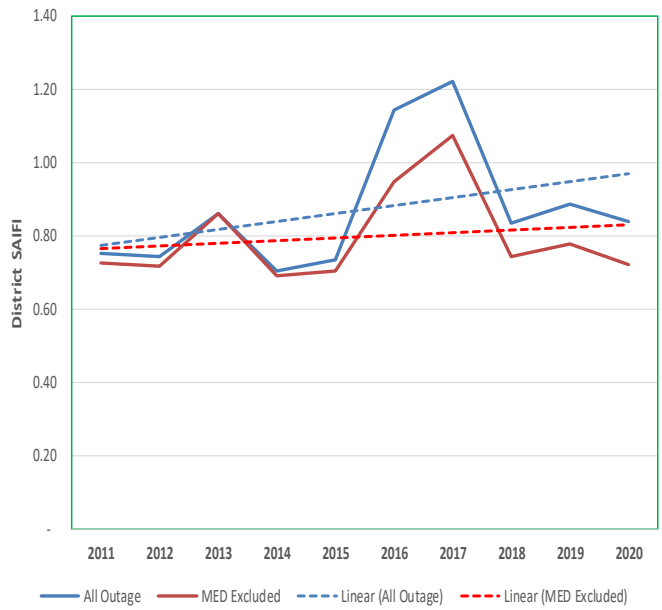
VENTURA District Reliability Performance



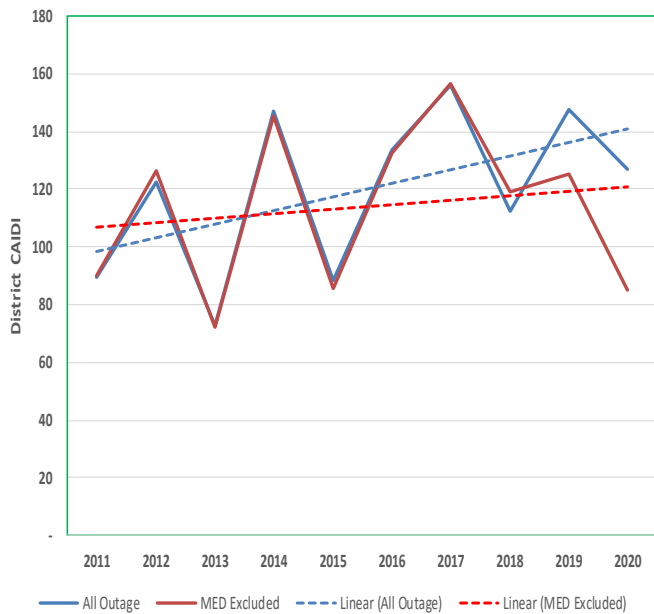
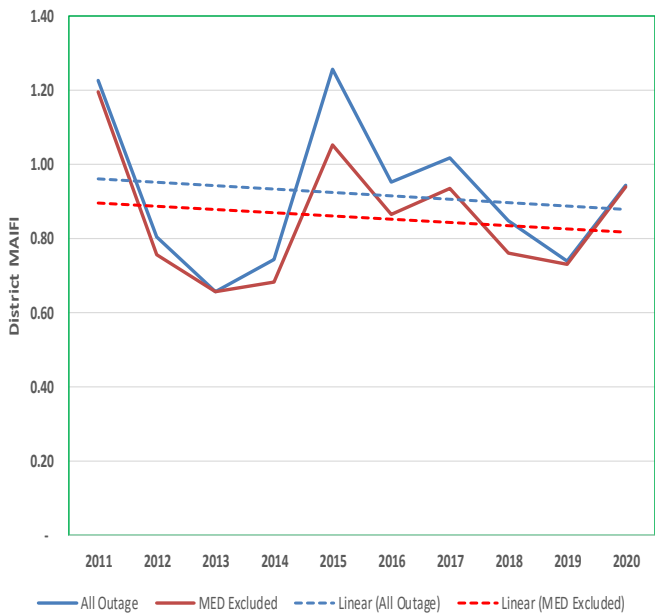
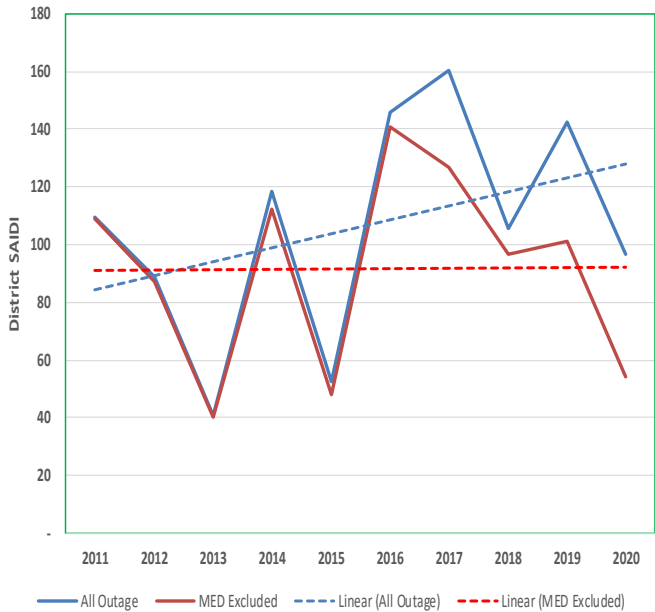
VICTORVILLE District Reliability Performance



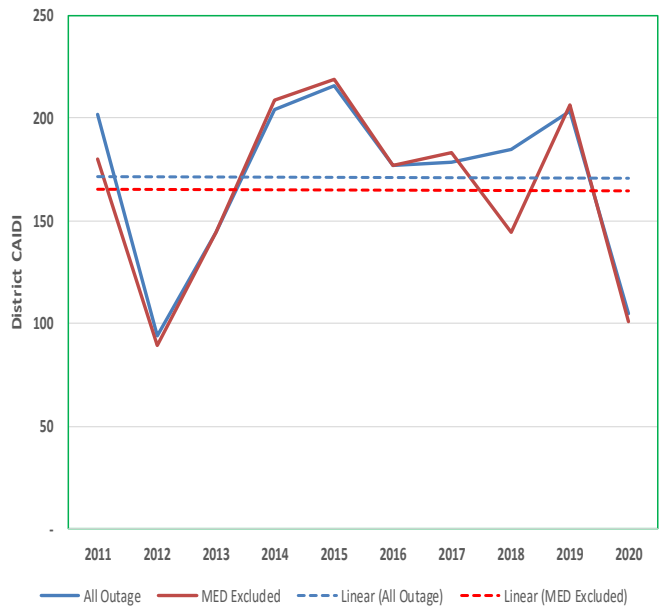
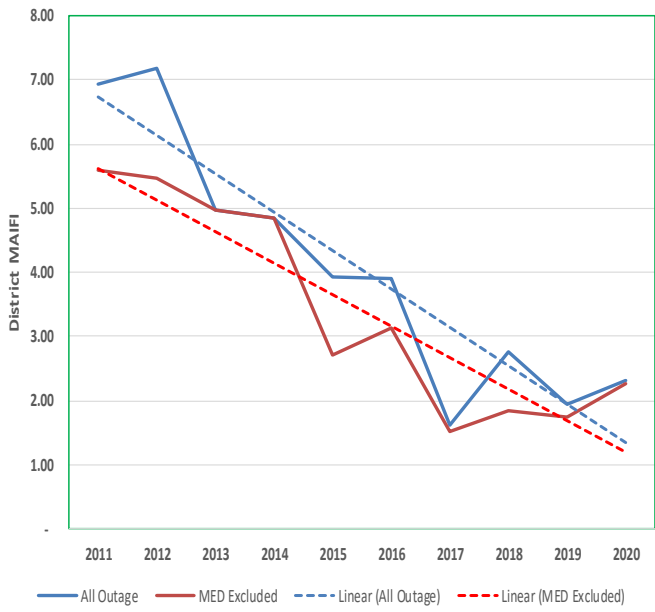
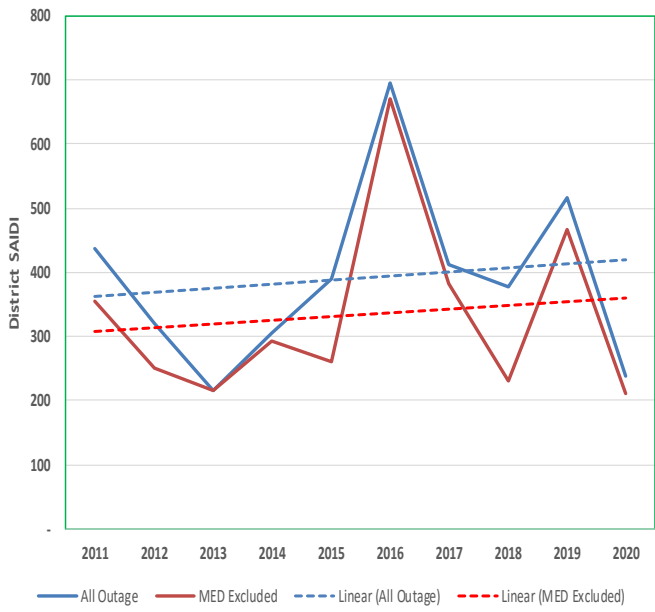
WHITTIER District Reliability Performance



WILDOMAR District Reliability Performance



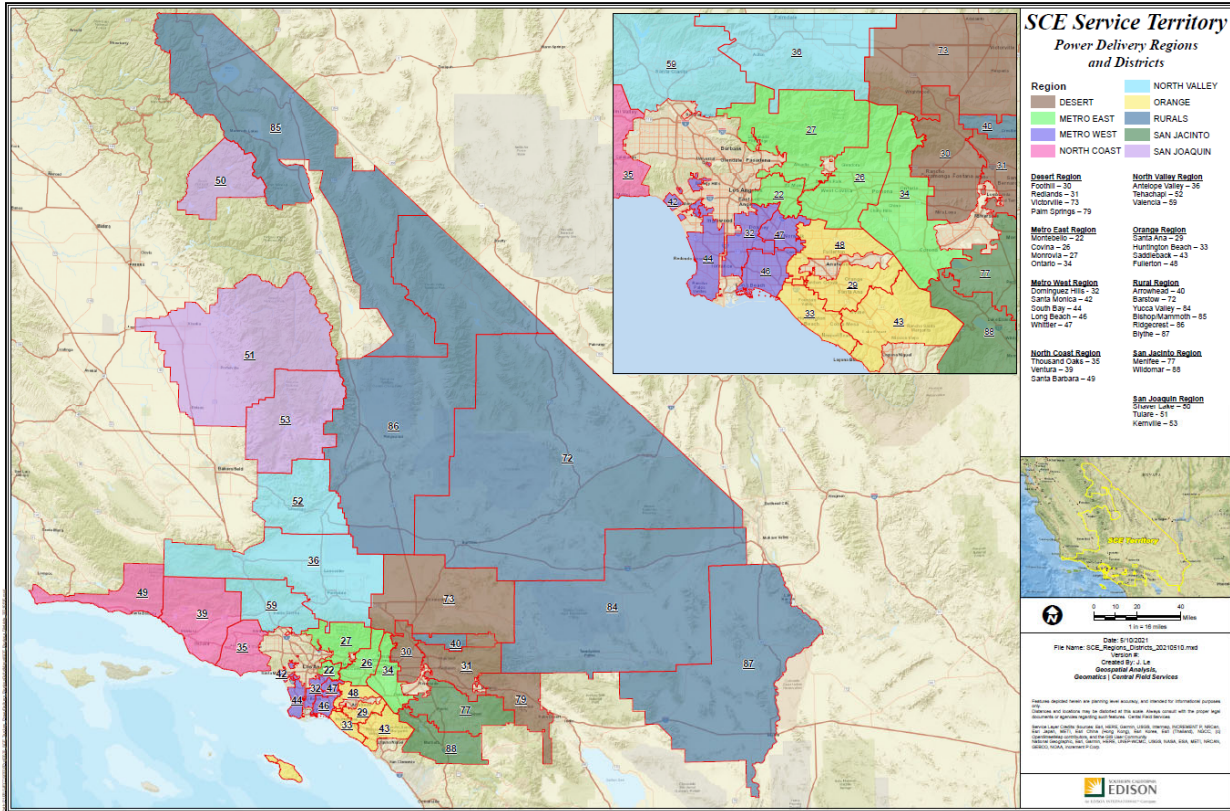
YUCCA VALLEY District Reliability Performance



b. The information on the number, date, and location of planned outages are provided under seal in a separate report to the Directors of the Energy Division and the Safety Enforcement Division.

SECTION 4 – SERVICE TERRITORY MAP

The following is SCE Service Territory with Power Delivery Regions and Districts Map. The map contains both SCE district boundaries and county boundaries. SCE has 9 regions and 34 districts.¹²



¹² Beginning in the 2019 annual report, Catalina District operations have been combined with the Huntington Beach District. SCE no longer show Catalina as a standalone District and Region in SCE's territory map.

SECTION 5 – TOP 1% OF WORST PERFORMING CIRCUITS (WPC) EXCLUDING MAJOR EVENT DAY (MED)

SCE's Worst Performing Circuits (WPC) activity is part of the Worst Circuit Rehabilitation (WCR) program and it targets the top 1% worst performing circuits, measured using IEEE indices SAIDI and SAIFI. The Worst Circuit Rehabilitation (WCR) program, used to maintain SCE's system reliability, is broken into two major activities: Worst Performing Circuits (WPC) and proactive Cable Replacement. For the purposes of this report, only the WPC portion of the WCR program will be covered.

SCE's WPCs are identified by using three years of System outage history excluding Major Event Days (MEDs) and planned events. A weighted factor is applied to the System outage data (e.g., SAIDI and SAIFI), where the most recent year's performance receives a higher weighted factor than the subsequent previous years, as follows: 61%, 28%, and 11%, respectively. The weighted results are summed per circuit and then ranked. SCE reports the top 46 WPCs between SAIDI and SAIFI and as such, naturally some circuits overlap between indices. SCE identified 72 unique WPCs where 31 WPCs were noted with an asterisk (*) indicating they were repeated WPCs that appeared on the previous year's WPC list also.

The below Table 7 and Table 8 capture the top 1% WPC. Table 7 contains the Top 1% WPC using the SAIDI metric and Table 8 contains the Top 1% WPC using the SAIFI metric. The tables provide (1) circuit name, (2) district, (3) customer count, (4) substation name, (5) circuit miles, (6) %UG, (7) %OH, (8) number of mainline outages resulting in the operation of a circuit breaker or automatic re-closer, (9) System Level reliability metric, and (10) Circuit Level reliability metric.

Table 7 – Top 1% Worst Performing Circuits Based on SAIDI (Excluding MED)

1	2	3	4	5	6	7	8	9	9	10	10
Circuit	District	2020 Customer Count	Substation	Circuit Miles (a)	%UG	%OH	Circuit Breaker or Auto-Recloser Operation (b)	Sys-SAIDI Rank	Sys-SAIDI (c)	Ckt-SAIDI Rank	Ckt SAIDI (d)
Tenneco 12kV*	36	4,356	Frazier Park	123.79	0.21	0.79	68	1	0.917034551	72	1,130
Atento 12kV	43	2,061	Viejo	55.38	0.46	0.54	66	2	0.622692755	64	1,244
Cuthbert 16kV	35	2,068	Latigo	41.47	0.39	0.61	26	3	0.5973713	50	1,431
Trochu 16kV	32	1,704	Bullis	16.30	0.20	0.80	33	4	0.543300734	49	1,470
Firmona 16kV	44	1,736	La Fresa	7.66	0.16	0.84	11	5	0.535953679	51	1,430
Camp Angelus 2.4kV	31	291	Camp Angelus P.T.	4.30	-	1.00	8	6	0.408804991	9	8,061
Mahogany 12kV	51	154	Tule (Pgae)	20.65	0.00	1.00	10	7	0.36093034	11	7,286
Jenks Lake 12kV	31	161	Converse Flats	16.58	0.02	0.98	22	8	0.344554437	7	11,907
Energy 16kV*	35	1,327	Chatsworth	47.28	0.25	0.75	41	9	0.313109461	100	932
Rim 12kV*	40	1,771	Burnt Mill	29.68	0.22	0.78	44	10	0.31050132	110	842
Kay 16kV*	22	2,055	Alhambra	14.87	0.28	0.72	18	11	0.297187631	131	702
Fantail 16kV	42	4,109	Tahiti	12.82	0.87	0.13	29	12	0.283250185	565	195
Hughes Lake 12kV	36	1,136	Del Sur	120.46	0.10	0.90	40	13	0.281654258	84	1,019
Eastmont 4kV	22	1,456	Bicknell	5.00	0.05	0.95	19	14	0.270225621	91	970
January 12kV*	33	4,092	Lafayette	20.29	0.89	0.11	40	15	0.251977652	371	284
Concepcion 16kV	49	212	Gaviota	63.62	0.50	0.50	12	16	0.245795739	14	5,528
Cachuma 16kV*	49	3,735	Vegas	72.20	0.16	0.84	28	17	0.229723371	297	350
Salmon 16kV	44	2,124	El Nido	18.25	0.42	0.58	27	18	0.223958261	276	374
Roi-Tan 12kV*	31	2,571	Shandin	28.17	0.31	0.69	34	19	0.220733479	243	409
Kuehner 16kV	35	2,858	Santa Susana	24.18	0.77	0.23	43	20	0.216295179	255	396
Campanula 25kV*	84	1,750	Nugget	136.50	0.07	0.93	91	21	0.212210912	168	564
Gardea 16kV*	22	3,182	Amador	18.42	0.21	0.79	15	22	0.21011515	291	356
Castro 16kV*	39	2,276	Wakefield	47.58	0.07	0.93	26	23	0.198150326	224	439
Heisman 12kV	26	2,152	Trophy	22.58	1.00	-	14	24	0.193807258	152	601
Sundown 12kV*	73	2,690	Helendale	61.66	0.73	0.27	30	25	0.189322794	303	342
Scow 12kV*	33	2,495	Bolsa	26.34	0.82	0.18	14	26	0.188489601	476	230
Corsica 16kV*	39	4,892	Gonzales	45.75	0.61	0.39	7	27	0.186960103	834	145
Farms 12kV	36	2,172	Oasis	25.83	0.73	0.27	8	28	0.183973025	162	587
Big Rock 16kV	35	1,731	Chatsworth	29.25	0.43	0.57	13	29	0.17850204	292	356
Butane 16kV	44	4,064	Sepulveda	17.16	0.18	0.82	14	30	0.1775685	771	153
Asteroid 16kV*	22	3,918	Alhambra	20.22	0.36	0.64	23	31	0.175488416	524	210
Daleside 16kV	44	3,234	Brighton	9.66	0.17	0.83	22	32	0.174209181	422	256
Himo 33kV	84	2	Hi Desert	21.31	0.31	0.69	8	33	0.173898205	1	450,680
Cimarron 16kV	44	3,563	Inglewood	15.49	0.17	0.83	30	34	0.171301979	458	237
Barbossa 12kV	26	1,826	Cortez	12.13	0.36	0.64	13	35	0.170216257	214	459
Poultry 12kV	31	1,826	Yucaipa	44.14	0.28	0.72	29	36	0.16873579	235	420
Hollywood 16kV*	42	2,437	Fairfax	11.61	0.67	0.33	5	37	0.164724183	442	248
Vicasa 16kV	35	1,835	Valdez	70.99	0.29	0.71	61	38	0.164628786	284	364
Erskine 12kV	53	2,882	Isabella	71.61	0.05	0.95	28	39	0.160655457	358	290
Negel 4kV	32	971	Somerset	7.08	0.16	0.84	8	40	0.160161037	92	969
Morongo 12kV*	84	597	Morongo P.T.	36.37	0.03	0.97	32	41	0.159892541	97	944
Robinson Creek 12kV	85	236	Bridgeport	17.70	0.06	0.94	21	42	0.158731044	19	3,708
Condor 12kV	52	1,080	Banducci	63.70	0.10	0.90	25	43	0.157888836	129	710
Oak Glen 12kV	31	1,394	Yucaipa	42.86	0.25	0.75	43	44	0.157773254	164	582
Turnbull 12kV*	26	765	Walnut	15.73	0.37	0.63	20	45	0.155454921	179	541
Agate 12kV	43	3,554	Morro	35.18	0.70	0.30	15	46	0.155114003	627	180

Circuits that have appeared in this report that were in last year's report are marked with an asterisk (*) per D. 16-01-008 Annual Electric Report.

- (a) Beginning in the 2020 annual report, Circuit Miles use Geospatial data since SCE transition from the legacy software.
- (b) Includes Sustained and Momentary outages that affected the Circuit Breaker.
- (c) SAIDI is based on a three-year weighted average.
- (d) Ckt SAIDI is based on a three-year weighted factor (Average Customer experience on Circuit).

Table 8 – Top 1% Worst Performing Circuits Based on SAIFI (Excluding MED)

1	2	3	4	5	6	7	8	9	9	10	10
Circuit	District	2020 Customer Count	Substation	Circuit Miles (a)	%UG	%OH	Circuit Breaker or Auto-Recloser Operation (b)	Sys-SAIFI Rank	Sys-SAIFI (c)	Ckt-SAIFI Rank	Ckt SAIFI (d)
Corsica 16kV*	39	4,892	Gonzales	45.75	0.61	0.39	7	1	0.00371	199	2.867
Fantail 16kV*	42	4,109	Tahiti	12.82	0.87	0.13	29	2	0.00365	291	2.465
Salmon 16kV*	44	2,124	El Nido	18.25	0.42	0.58	27	3	0.00353	37	5.722
Sundown 12kV*	73	2,690	Helendale	61.66	0.73	0.27	30	4	0.00291	44	5.220
Kuehner 16kV	35	2,858	Santa Susana	24.18	0.77	0.23	43	5	0.00278	48	5.113
Tenneco 12kV*	36	4,356	Frazier Park	123.79	0.21	0.79	68	6	0.00262	153	3.186
Cimarron 16kV*	44	3,563	Inglewood	15.49	0.17	0.83	30	7	0.00261	106	3.606
Campanula 25kV	84	1,750	Nugget	136.50	0.07	0.93	91	8	0.00234	29	6.314
January 12kV	33	4,092	Lafayette	20.29	0.89	0.11	40	9	0.00230	250	2.598
Daleside 16kV	44	3,234	Brighton	9.66	0.17	0.83	22	10	0.00226	142	3.318
Roi-Tan 12kV*	31	2,571	Shandin	28.17	0.31	0.69	34	11	0.00215	85	3.989
Big Rock 16kV*	35	1,731	Chatsworth	29.25	0.43	0.57	13	12	0.00206	77	4.075
Jeep 12kV*	40	2,101	Arrowhead	27.02	0.22	0.78	37	13	0.00202	43	5.257
Otis 16kV*	32	2,807	Cudahy	21.99	0.31	0.69	20	14	0.00198	186	2.932
Butane 16kV	44	4,064	Sepulveda	17.16	0.18	0.82	14	15	0.00196	629	1.696
Cachuma 16kV*	49	3,735	Vegas	72.20	0.16	0.84	28	16	0.00192	139	3.327
Spinnaker 16kV*	39	4,180	Channel Island	33.75	0.28	0.72	9	17	0.00180	537	1.873
Gardea 16kV*	22	3,182	Amador	18.42	0.21	0.79	15	18	0.00173	191	2.908
Trochu 16kV	32	1,704	Bullis	16.30	0.20	0.80	33	19	0.00172	61	4.641
Eringer 16kV	35	2,495	Royal	20.98	0.41	0.59	35	20	0.00166	179	2.966
Cienigita 16kV	49	1,872	Santa Barbara	15.33	0.39	0.61	35	21	0.00165	298	2.451
Campbell 12kV*	51	1,804	Porterville	57.37	0.24	0.76	27	22	0.00162	129	3.384
Kwis 12kV	26	2,002	Walnut	28.68	0.55	0.45	35	23	0.00159	90	3.881
Test 16kV*	22	2,972	Alhambra	18.72	0.27	0.73	20	24	0.00158	356	2.278
Eastmont 4kV	22	1,456	Bicknell	5.00	0.05	0.95	19	25	0.00154	39	5.484
Asteroid 16kV	22	3,918	Alhambra	20.22	0.36	0.64	23	26	0.00153	524	1.887
Moritz 12kV*	40	1,947	Huston	30.49	0.26	0.74	15	27	0.00150	80	4.049
Hot Springs 16kV	49	3,369	Santa Barbara	32.11	0.51	0.49	33	28	0.00150	490	1.948
Rim 12kV*	40	1,771	Burnt Mill	29.68	0.22	0.78	44	29	0.00149	76	4.108
Norwich 16kV	42	4,467	Fairfax	8.81	0.44	0.56	11	30	0.00149	526	1.885
Salvador 16kV	39	2,428	San Miguel	22.90	0.84	0.16	32	31	0.00146	172	3.020
Ottowa 12kV	27	2,441	Rio Hondo	21.41	0.34	0.66	17	32	0.00145	196	2.884
Windjammer 16kV*	39	5,245	Channel Island	41.19	0.52	0.48	21	33	0.00143	1,287	1.064
Cottonmouth 16kV	59	2,983	North Oaks	24.74	1.00	0.00	17	34	0.00142	402	2.137
Kay 16kV*	22	2,055	Alhambra	14.87	0.28	0.72	18	35	0.00141	146	3.303
Sidewinder 16kV	39	2,579	Estero	36.03	0.37	0.63	33	36	0.00139	252	2.595
Tri City 16kV	22	2,015	Alhambra	14.30	0.30	0.70	18	37	0.00139	272	2.521
Erin 12kV	77	1,491	Mayberry	19.08	0.31	0.69	28	38	0.00137	104	3.612
Ricardo 16kV*	39	2,209	San Miguel	23.48	0.37	0.63	30	39	0.00137	322	2.387
Bolton 16kV*	32	2,601	Jersey	23.36	0.11	0.89	13	40	0.00136	439	2.060
Crane 4kV	32	1,489	Compton	9.49	0.05	0.95	13	41	0.00135	51	5.095
Oilers 12kV	33	3,307	Slater	24.44	0.88	0.12	21	42	0.00135	445	2.047
Snead 12kV*	33	2,311	Lafayette	20.09	0.78	0.22	24	43	0.00135	530	1.880
Mcbean 16kV	59	2,662	Newhall	21.29	0.72	0.28	20	44	0.00134	349	2.297
Hoss 16kV*	35	2,707	Royal	29.88	0.80	0.20	11	45	0.00131	168	3.032
Schooner 16kV	39	5,039	Channel Island	33.35	0.90	0.10	7	46	0.00131	967	1.317

Circuits that have appeared in this report that were in last year's report are marked with an asterisk (*) per D. 16-01-008 Annual Electric Report.

- (a) Beginning in the 2020 annual report, Circuit Miles use Geospatial data since SCE transition from the legacy software.
- (b) Includes Sustained and Momentary outages that affected the Circuit Breaker.
- (c) SAIFI is based on a three-year weighted average.
- (d) Ckt SAIFI is based on a three-year weighted factor (Average Customer experience on Circuit).

Tables 9 and 10 below identify the circuits that are the top 1% WPC (by SAIDI or SAIFI this year) *and* were top 1% circuits by SAIDI or SAIFI on SCE's WPC list in 2019. These tables provide the following information:

- i) An explanation of why it was ranked as a "deficient" circuit, i.e., the value of the metric used to indicate its performance.
- ii) A historical record of the metric.
- iii) An explanation of why it was on the deficiency list again.
- iv) An explanation of what is being done to improve the circuit's future performance and the anticipated timeline for completing those activities (or an explanation why remediation is not being planned).
- v) A quantitative description of the utility's expectation for that circuit's future performance.

Table 9 – (SAIDI Preferred Metric – “Repeat Deficient” List)

Circuit	i.		ii.		iii. Explanation of Repeat Deficiency	Submitted	iv.	
	2020 Sys-SAIDI Rank	2020 Sys-SAIDI	2019 Sys-SAIDI Rank	2019 Sys-SAIDI			Engineering Scope	Anticipated Completion Year
Tenneco 12kV*	1	0.91703	7	0.28685	Project scheduled for construction, awaiting reliability improvements from project.	7/31/2018	13 OH Switches	2021
Energy 16kV*	9	0.31311	22	0.19643	Existing inflight project identified with reliability benefits.	3/8/2021	25 Conductor Miles of Covered Conductor RAR	2022
Rim 12kV*	10	0.31050	1	0.53455	Existing inflight project identified with reliability benefits.	12/1/2020	.84 Conductor Miles of Covered Conductor	2022
Kay 16kV*	11	0.29719	42	0.16167	Existing inflight project identified with reliability benefits.	1/19/2021	2 Automated Switches	2022
January 12kV*	15	0.25198	8	0.26167	Existing inflight project identified with reliability benefits.	1/1/2020	Automated Switch	2021
Cachuma 16kV*	17	0.22972	4	0.38172	Project scheduled for construction, awaiting reliability improvements from project.	10/31/2017	8 BLFs 1 Automated Switch 6 OH Switches	2021
Roi-Tan 12kV*	19	0.22073	23	0.18904	Project scheduled for construction, awaiting reliability improvements from project.	10/31/2017	21 BLFs 6 OH Switches	2021
Campanula 25kV*	21	0.21221	6	0.30457	Project completed in 2020. 2020 leading interruptions for deficiency 2 Source Lost due from 33kV feeder being interrupted and PPS event. Existing inflight project identified with reliability benefits.	9/8/2020	Evaluated 2020 interruptions, determined source feed 33kV was leading cause of interruptions. In flight Grid Resiliency project, with reliability benefits. .5 Conductor Miles of Covered Conductor on Pinto 33kV	2022
Gardea 16kV*	22	0.21012	19	0.21407	Existing inflight project identified with reliability benefits.	7/31/2018	5.4 Conductor Miles of OH Conductor	2022
Castro 16kV*	23	0.19815	3	0.39137	Project identified, but not yet constructed.	4/30/2018	27 BLFs 20 OH Switches 4 RFIs 2 Automated Switches	2022
Sundown 12kV*	25	0.18932	24	0.18719	Project completed in 2019. 2020 leading interruptions for deficiency 2 Source Lost and 2 UG Equipment failures. Existing inflight project identified with reliability benefits.	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, inflight project to extend Sundown 12kV to Armijo 12kV, and portion of Sundown 12kV will be transferred to Armijo 12kV.	2021
Scow 12kV*	26	0.18849	26	0.18438	Project completed in 2019. 2020 leading interruptions for deficiency 2 UG equipment failures. Remediation scope identified; project not yet initiated due to resource constraints (due to prioritization of Grid Resiliency mitigation efforts).	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, determined padmount switches with automation may reduce duration. Circuit feeds customers near the shore, access to equipment is a challenge.	N/A
Corsica 16kV*	27	0.18696	2	0.40519	Project identified, but not yet constructed.	10/31/2017	2 Cond Miles of UG Cable 5 FIs 3 Automated Switches 20 BLFs 8 OH Switches	2022
Asteroid 16kV*	31	0.17549	15	0.23404	Project completed in 2019. 2020 leading interruptions for deficiency 2 OH equipment failures. Existing inflight project identified with reliability benefits.	7/31/2018	5.5 Conductor Miles of OH Conductor	2022
Hollywood 16kV*	37	0.16472	5	0.33118	Project identified, but not yet constructed.	7/31/2018	5.6 Cond MI of UG Cable 2 OH Switches	2022
Morongo 12kV*	41	0.15989	30	0.17278	Project scheduled for construction, awaiting reliability improvements from project.	5/31/2018	2 Automated Switches 2 OH Switches 21 BLFs	2021
Turnbull 12kV*	45	0.15545	11	0.24954	Remediation scope identified; project not yet initiated due to resource constraints (due to prioritization of Grid Resiliency mitigation efforts)	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, determined fusing small radial branches and re-conductoring areas with frequent objects in the lines with covered conductor may reduce customers impacted by outages caused by overhead equipment. Circuit enhancements such as FI would assist with locating fault and reduce the outage duration time.	N/A

V. SCE does not have a quantitative description for its circuit future performance since SCE designs reliability improvements for WCR projects at the system level rather than at the individual circuit level.

WPC projects are initiated from three years of System outage data which are weighted then ranked. Per CPUC guidance, the top 1% circuits are SCE's WPC and assigned to the area Distribution Engineer to evaluate. The WPC evaluation begins by reviewing outages exceeding thresholds of 100,000 Customer Minutes of Interruption (CMI) or 1,100 Customer Interrupted (CI). These thresholds are used to identify the severity of the outage and target specific areas with reliability concerns. Outage Logs, repair orders, and ODRM reports are used as part of the outage evaluation and provide additional details on switching procedures and operational obstacles such as access to structures to operate equipment. After the outages have been evaluated, Distribution Engineering can start determining WPC scopes.

The Distribution Engineer organization reviews the outages using interruption logs or repair orders to determine scope to improve isolation or reduce duration of outage. Distribution Engineering focuses on proposing the most cost-effective overhead (OH) and/or underground (UG) enhancements to improve the customer experience by limiting outage impact and by installing equipment to improve isolation capabilities or reduce outage durations. Distribution Engineering's initial review may propose additional overhead BLFs to minimize impact of outage to a small subset of customers or FIs to improve operation response time. These solutions are inexpensive and can be constructed quick if field conditions allow. The next layer of circuit improvement is overhead automation which cost more than BLFs and FIs but can greatly reduce duration of the outage by converting sustain interruption into momentary events. Underground improvements or OH re-conductoring tend to be costly and have longer lead times than the previous two options described, but can add more reliability benefits. The underground and OH re-conductoring option require a lot of resources to plan and construct. Planning needs to field verify proposed locations to determine if work can be constructed and construction needs multiple crews to construct these type of projects.

As mentioned in the 2021 Infrastructure Replacement (IR) GRC, SCE's resources have shifted towards Grid Resiliency projects and have, therefore, impacted the ability to execute projects for IR programs such as WCR-WPC.

Table 10 – (SAIFI Preferred Metric – “Repeat Deficient” List)

Circuit	i.		ii.		iii. Explanation of Repeat Deficiency	Submitted	iv.	
	2020 Sys-SAIFI Rank	2020 Sys-SAIFI	2019 Sys-SAIFI Rank	2019 Sys-SAIFI			Engineering Scope	Anticipated Completion Year
Corsica 16kV*	1	0.003712	1	0.008202	Project identified, but not yet constructed.	10/31/2017	2 Cond Miles of UG Cable 5 FIs 3 Automated Switches 20 BLFs 8 OH Switches	2022
Salmon 16kV*	3	0.003533	9	0.002362	Project completed in 2019. 2020 leading interruptions for deficiency 3 OH equipment failures. Remediation scope identified; project not yet initiated due to resource constraints (due to prioritization of Grid Resiliency mitigation efforts)	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, determined fusing small radial branches and re-conductoring areas with frequent objects in the lines with covered conductor may reduce customers impacted by outages caused by overhead equipment. Circuit enhancements such as FI would assist with locating fault and reduce the outage duration time.	N/A
Fantail 16kV*	2	0.00365	23	0.001666	Project completed in 2018. 2020 leading interruptions for deficiency 3 UG equipment failures. Remediation scope identified; project not yet initiated due to resource constraints (due to prioritization of Grid Resiliency mitigation efforts)	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, determined padmount switches with automation may reduce duration. Circuit feeds customers near the shore, access to equipment is challenging.	N/A
Sundown 12kV*	4	0.002909	2	0.003423	Project completed in 2019. 2020 leading interruptions for deficiency 2 source lost from 33kV feeder and 2 UG equipment failures. Existing inflight project identified with reliability benefits.	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, inflight project to extend Sundown 12kV to Armijo 12kV, and portion of Sundown 12kV will be transferred to Armijo 12kV.	2021
Cimarron 16kV*	7	0.002609	36	0.001447	Project completed in 2018. 2020 leading interruptions for deficiency, UG equipment failure, OH equipment failure, mylar balloon, and 2 vehicle hit poles. Existing inflight project identified with reliability benefits.	12/31/2017	8 Conductor Miles of Covered Conductor	2021
Tenneco 12kV*	6	0.00262	26	0.001591	Project scheduled for construction, awaiting reliability improvements from project.	7/31/2018	13 OH Switches	2021
Campanula 25kV*	8	0.002337	17	0.00177	Project completed in 2020. 2020 leading interruptions for deficiency 2 source lost due from 33kV feeder being interrupted and PPS event. Existing inflight project identified with reliability benefits.	9/8/2020	Evaluated 2020 interruptions, determined source feed 33kV was leading cause of interruptions. In flight Grid Resiliency project, with reliability benefits. .5 Conductor Miles of Covered Conductor on Pinto 33kV	2022
Roi-Tan 12kV*	11	0.002152	14	0.002003	Project scheduled for construction, awaiting reliability improvements from project.	10/31/2017	21 BLFs 6 OH Switches	2021
Jeep 12kV*	13	0.002021	13	0.002149	Project identified, but not yet constructed.	10/31/2018	5.1 Cond Mi of UG Cable 26 OH Switches 4 FIs 2 UG Switches	2022
Spinnaker 16kV*	17	0.001797	3	0.002752	Project identified, but not yet constructed.	10/27/2016	4 Automated Switches 22 BLFs 2.9 Cond Mi of OH Conductor	2022
Big Rock 16kV*	12	0.002063	22	0.001685	Existing inflight project identified with reliability benefits.	12/1/2020	11 Conductor Miles of Covered Conductor	2021
Cachuma 16kV*	16	0.001919	11	0.002221	Project scheduled for construction, awaiting reliability improvements from project.	10/31/2017	8 BLFs 1 Automated Switch 6 OH Switches	2021
Gardea 16kV*	18	0.001733	4	0.002721	Existing inflight project identified with reliability benefits.	7/31/2018	5.4 Conductor Miles of OH Conductor	2022
Otis 16kV*	14	0.00198	39	0.001322	Project identified, but not yet constructed.	10/31/2017	6 OH Switches 8 BLFs	2021
Moritz 12kV*	27	0.001501	7	0.002405	Existing inflight project identified with reliability benefits.	7/31/2019	25.4 Conductor Miles of Covered Conductor	2022
Windjammer 16kV*	33	0.001431	12	0.002175	Project completed in 2020. 2020 leading interruptions for deficiency 2 mylar balloon. Remediation scope identified; project not yet initiated due to resource constraints (due to prioritization of Grid Resiliency mitigation efforts)	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, determined fusing small radial branches and re-conductoring areas with frequent objects in the lines with covered conductor may reduce customers impacted by outages caused by overhead equipment.	N/A
Test 16kV*	24	0.001579	21	0.001685	Project completed in 2020. 2020 leading interruptions for deficiency mylar balloon and animal contact. Remediation scope identified; project not yet initiated due to resource constraints (due to prioritization of Grid Resiliency mitigation efforts)	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, determined critter guards on overhead equipment may reduce animal contact. Additional overhead switches may help Operations to sectionalize problematic sections.	N/A
Campbell 12kV*	22	0.001617	34	0.001495	Project completed in 2020. 2020 leading interruptions for deficiency vehicle hit pole and failed RTU. Remediation scope identified; project not yet initiated due to resource constraints (due to prioritization of Grid Resiliency mitigation efforts)	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, determined fusing small radial branches and re-conductoring areas with frequent objects in the lines with covered conductor may reduce customers impacted by outages caused by overhead equipment. Circuit enhancements such as FI would assist with locating fault and reduce the outage duration time.	N/A

Circuit	i.		ii.		iii.	iv.		
	2020 Sys-SAIFI Rank	2020 Sys-SAIFI	2019 Sys-SAIFI Rank	2019 Sys-SAIFI		Explanation of Repeat Deficiency	Submitted	Engineering Scope
Rim 12kV*	29	0.001491	20	0.001713	Existing in-flight project identified with reliability benefits.	12/1/2020	84 Conductor Miles of Covered Conductor	2022
Hoss 16kV*	45	0.001314	25	0.001609	Remediation scope identified; project not yet initiated due to resource constraints (due to prioritization of Grid Resiliency mitigation efforts)	Not yet submitted as SCE is monitoring performance for further action	Evaluated 2020 interruptions, determined fusing small radial branches and re-conductoring areas with frequent objects in the lines with covered conductor may reduce customers impacted by outages caused by overhead equipment. Circuit enhancements such as FI would assist with locating fault and reduce the outage duration time.	N/A
Kay 16kV*	35	0.001408	41	0.001316	Existing in-flight project identified with reliability benefits.	1/19/2021	2 Automated Switches	2022
Ricardo 16kV*	39	0.001366	46	0.001288	Existing in-flight project identified with reliability benefits.	1/19/2021	2 Automated Switches	2022
Bolton 16kV*	40	0.001357	15	0.001948	Existing in-flight project identified with reliability benefits.	11/30/2017	1.1 Conductor Miles of OH Conductor	2022

v. SCE does not have a quantitative description for its circuit future performance since SCE designs reliability improvements for WCR projects at the system level rather than at the individual circuit level.

WPC projects are initiated from three years of System outage data which are weighted then ranked. Per CPUC guidance, the top 1% circuits are SCE's WPC and assigned to the area Distribution Engineer to evaluate.

The WPC evaluation begins by reviewing outages exceeding thresholds of 100,000 Customer Minutes of Interruption (CMI) or 1,100 Customer Interrupted (CI). These thresholds are used to identify the severity of the outage and target specific areas with reliability concerns. Outage Logs, repair orders, and ODRM reports are used as part of the outage evaluation and provide additional details on switching procedures and operational obstacles such as access to structures to operate equipment. After the outages have been evaluated, Distribution Engineering can start determining WPC scopes.

The Distribution Engineer organization reviews the outages using interruption logs or repair orders to determine scope to improve isolation or reduce duration of outage. Distribution Engineering focuses on proposing the most cost-effective overhead (OH) and/or underground (UG) enhancements to improve the customer experience by limiting outage impact and by installing equipment to improve isolation capabilities or reduce outage durations. Distribution Engineering's initial review may propose additional overhead BLFs to minimize impact of outage to a small subset of customers or FIs to improve operation response time. These solutions are inexpensive and can be constructed quick if field conditions allow. The next layer of circuit improvement is overhead automation which cost more than BLFs and FIs but can greatly reduce duration of the outage by converting sustain interruption into momentary events. Underground improvements or OH re-conductoring tend to be costly and have longer lead times than the previous two options described, but can add more reliability benefits. The underground and OH re-conductoring option require a lot of resources to plan and construct. Planning needs to field verify proposed locations to determine if work can be constructed and construction needs multiple crews to construct these type of projects.

As mentioned in the 2021 Infrastructure Replacement (IR) GRC, SCE's resources have shifted towards Grid Resiliency projects and have, therefore, impacted the ability to execute projects for IR programs such as WCR-WPC.

SECTION 6 – TOP 10 MAJOR UNPLANNED POWER OUTAGE EVENTS WITHIN A REPORTING YEAR

Table 11 below captures the top 10 major unplanned outage events for 2020 including the cause and location of the outage. Table 12 captures the number of customers without power in hourly intervals for the 2020 Top 10 outages.

Table 11 – Top 10 Major Unplanned Outage Events (2020)

Rank	System Outage ID	Switching Center	Cause Description	SAIDI	Date	Number of Customers Affected	Longest Individual Customer Interruption (minutes)
1	368680	RECTOR	PSPS Pub. Safety Switch/Disconnect/Ar	16.141	9/5/2020	5,036	169,347
2	366672	VISTA	Fire Overhead Equip. Conductor/Wire	3.295	9/9/2020	786	28,063
3	368697	RECTOR	Fire Overhead Equip. Conductor/Wire	1.914	9/13/2020	98	125,503
4	367130	VALLEY	PSPS Pub. Safety Switch/Disconnect/Ar	1.878	12/7/2020	4,125	3,043
5	366833	VINCENT	PSPS Pub. Safety Switch/Disconnect/Ar	1.795	12/7/2020	5,239	1,983
6	366519	RECTOR	Fire Structure Pole	1.646	9/5/2020	800	113,097
7	362801	RECTOR	PSPS Pub. Safety Switch/Disconnect/Ar	1.483	9/14/2020	572	13,476
8	364540	VISTA	PSPS Pub. Safety Switch/Disconnect/Ar	1.308	9/10/2020	531	22,077
9	367731	MIRA LOMA	Lost Source Substation	1.304	12/13/2020	130,528	121
10	366862	VINCENT	PSPS Pub. Safety Switch/Disconnect/Ar	1.273	12/7/2020	2,841	2,323

Table 12 – Number of Customers without Power in Hourly Intervals

Ranking	1	2	3	4	5	6	7	8	9	10
System Outage ID	368680	366672	368697	367130	366833	366519	362801	364540	367731	366862
Outage Start Hour	9/5/2020 9:33:00 AM	9/9/2020 12:36:00 PM	9/13/2020 9:48:00 AM	12/7/2020 8:49:00 AM	12/7/2020 7:16:01 AM	9/5/2020 1:04:00 AM	9/14/2020 8:01:00 AM	9/10/2020 1:21:00 AM	12/13/2020 6:46:00 AM	12/7/2020 7:09:00 AM
0 - 1 Hour	5036	786	98	4125	840	800	572	531	130528	2841
1 - 2 Hour	5036	786	98	4125	840	800	572	531	2505	2841
2 - 3 Hour	5036	786	98	4125	840	800	572	531	878	2841
3 - 4 Hour	5036	786	98	4125	840	800	572	531	0	2841
4 - 5 Hour	5036	786	98	4125	5239	800	572	531	0	2841
5 - 6 hour	5036	786	98	4125	5239	800	572	531	0	2841
6 - 7 Hour	5036	786	98	4125	5239	83	572	531	0	2841
7 - 8 Hour	5036	786	98	4125	5239	83	572	531	0	2841
8 - 9 Hour	5036	786	98	4125	5239	83	572	531	0	2841
9 - 10 Hour	5036	786	98	4125	5239	78	572	531	0	2841
10 - 11 Hour	5036	786	98	4125	5239	78	572	531	0	2841
11 - 12 Hour	5036	786	98	4125	5239	78	572	531	0	2841
12 - 13 Hour	5036	786	98	4125	5239	78	572	531	0	2841
13 - 14 Hour	5036	786	98	4125	5239	78	572	531	0	2841
14 - 15 Hour	5036	786	98	4125	5239	78	572	531	0	2841
15 - 16 Hour	5036	786	98	4125	5239	78	572	531	0	2841
16 - 17 Hour	5036	786	98	4125	5239	78	572	531	0	2841
17 - 18 Hour	5036	786	98	4125	5239	78	572	531	0	2841
18 - 19 Hour	5036	786	98	4125	5239	78	572	531	0	2841
19 - 20 Hour	5036	786	98	4125	5239	78	572	531	0	2841
20 - 21 Hour	5036	786	98	4125	5239	78	572	531	0	2841
21 - 22 Hour	5036	786	98	4125	5239	78	572	531	0	2841
22 - 23 Hour	5036	786	98	4125	5239	78	572	531	0	2841
23 - 24 Hour	5036	786	98	4125	5239	78	572	531	0	2841
After 24Hour (includes interruptions started at later days/Hours)	5036	786	98	4125	5239	78	572	531	0	2841

SECTION 7 – SUMMARY LIST OF MED PER IEEE 1366

Table 13 below captures all MED occurring in 2020 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.

Table 13 – Summary list of MED Per IEEE (2020)

Cause	Other, No Cause Found, Veg	Unknown, Other, No Cause Found	Other, Wind, No Cause Found	Other, Lost, Unknown	Other, Unknown, PSPS	Unknown, Other, Balloon	Other, PSPS, No Cause Found	Other, PSPS, Veg	Other, PSPS, Operations	Other, No Cause Found, Operations
Location	ME, MW, NC	MW, O, R	MW, ME, NC	O, D, SJC	D,O,R	ME, MW, R	D, NC, R	D, NC, R	D, NC, R	D, MW, R
Outage Duration	8/14/2020	9/5/2020	9/6/2020	9/9/2020	9/13/2020	9/14/2020	9/18/2020	10/26/2020	11/26/2020	12/2/2020
0 to 1 hour	42,668	63,717	105,537	18,159	43,439	3,744	16,094	248,901	64,583	42,569
1 to 5 hours	161,015	34,963	36,615	5,905	5,766	2,322	4,137	72,819	18,108	13,432
5 to 10 hours	1,296	6,699	8,017	443	68	112	249	42,154	1,362	1,451
10 to 15 hours	1,090	1,634	4,923	352	56	53	36	21,184	752	280
15 to 20 hours	270	1,113	2,835	25	16	-	364	13,641	499	1,676
20 to 24 hours	1,052	736	1,625	-	3	2	198	5,648	1,912	6,023
1 to 2 days	49	1,995	7,289	-	-	-	39	17,865	4,567	18,210
2 to 3 days	-	625	1,153	20	-	64	-	1,189	46	56
3 to 4 days	-	74	17	-	-	-	95	-	-	-
4 to 5 days	-	-	-	-	-	-	63	18	-	4
5 to 6 days	-	-	-	-	-	6	-	-	-	-
6 to 7 days	-	1,936	2	-	-	-	31	-	-	-
>= 7 days	40	924	22	709	98	757	410	-	-	-
Total	207,480	114,416	168,035	25,613	49,446	7,060	21,716	423,419	91,833	83,697

Cause	PSPS, Other, Veg	Other, No Cause Found, Unknown	Other, Veg, No Cause Found	Unknown, Other, No Cause Found
Location	D, NC, R	D, MW, R	D, SJC, R	D, NC, R
Outage Duration	12/3/2020	12/7/2020	12/23/2020	12/28/2020
0 to 1 hour	43,928	46,215	22,471	157,191
1 to 5 hours	3,149	13,524	10,805	34,012
5 to 10 hours	6,848	2,315	938	11,082
10 to 15 hours	5,435	8,275	1,329	8,485
15 to 20 hours	10,815	13,809	4,312	813
20 to 24 hours	1,334	8,894	239	83
1 to 2 days	2,135	37,179	10,806	278
2 to 3 days	24	1,839	-	-
3 to 4 days	-	-	-	-
4 to 5 days	-	-	-	-
5 to 6 days	-	-	-	-
6 to 7 days	-	-	-	-
>= 7 days	1	-	-	-
Total	73,669	132,050	50,900	211,944

Note:

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

Table 14 below captures the ten largest unplanned outage events for each of the years from 2011 - 2020.

Table 14 – Historical Top 10 Outage Events (2020)

Rank	Cause Description	System Outage ID	Date	SAIDI	Number of Customers Affected	Longest Individual Customer Interruption (minutes)	Location
							Switching Center
2020							
1	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	368680	9/5/2020	16,141	5,036	169,347	RECTOR
2	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	366672	9/9/2020	3,295	786	28,063	VISTA
3	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	368697	9/13/2020	1,914	98	125,503	RECTOR
4	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	367130	12/7/2020	1,878	4,125	3,043	VALLEY
5	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	366833	12/7/2020	1,795	5,239	1,983	VINCENT
6	FIRE STRUCTURE POLE	366519	9/5/2020	1,646	800	113,097	RECTOR
7	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	362801	9/14/2020	1,483	572	13,476	RECTOR
8	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	364540	9/10/2020	1,308	531	22,077	VISTA
9	REMEDIAL ACTION SCHEME STANDARD OPERATION OPERATOR/CREW	367731	12/13/2020	1,304	130,528	121	MIRALOMA
10	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	366862	12/7/2020	1,273	2,841	2,323	VINCENT
2019							
1	LOST SOURCE SUBSTATION	336358	8/2/2019	4,620	37,714	6,348	ORANGE COUNTY
2	LOST SOURCE SUBSTATION	338863	9/16/2019	2,291	13,242	40,884	CONTROL
3	WIND OVERHEAD EQUIPMENT CONDUCTOR/WIRE	344450	12/26/2019	2,202	8,970	15,027	VISTA
4	NO CAUSE FOUND UNKNOWN PATROLLED	342810	11/28/2019	1,644	14,106	21,127	VISTA
5	UNKNOWN TRANSMISSION EQUIPMENT CONDUCTOR	339320	10/5/2019	1,608	16,311	13,149	CONTROL
6	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	340707	10/30/2019	1,421	2,462	9,039	VISTA
7	LOST SOURCE SUBSTATION	344416	12/26/2019	1,294	40,765	11,642	VISTA
8	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	340669	10/30/2019	1,201	2,932	2,113	VINCENT
9	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	340627	10/30/2019	1,101	3,105	12,038	VINCENT
10	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	340690	10/30/2019	1,049	2,288	2,361	VISTA
2018							
1	LOST SOURCE SUBSTATION	320389	11/13/2018	7,577	2,828	47,832	VENTURA
2	FIRE STRUCTURE POLE	320287	11/12/2018	4,159	914	44,776	VENTURA
3	PUBLIC AGENCY DENIED ACCESS POLE	320225	11/9/2018	3,703	2,141	8,867	VENTURA
4	LOST SOURCE SUBSTATION	320091	11/11/2018	2,743	833	31,785	VENTURA
5	LOST SOURCE SUBSTATION	320324	11/15/2018	2,463	2,492	46,234	VENTURA
6	PUBLIC AGENCY DENIED ACCESS POLE	320390	11/9/2018	2,421	2,085	5,954	VENTURA
7	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	313579	7/25/2018	2,199	7,732	4,189	VALLEY
8	LOST SOURCE SUBSTATION	319319	11/9/2018	2,063	1,743	27,656	VENTURA
9	LOST SOURCE DISTRIBUTION LINE	318316	10/15/2018	1,306	5,475	2,021	VALLEY
10	LOST SOURCE SUBSTATION	319972	11/9/2018	0,933	2,313	30,448	VENTURA
2017							
1	LOST SOURCE SUBSTATION	303349	12/4/2017	4,998	181,830	1,377	VENTURA
2	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	298030	8/29/2017	3,023	1,008	32,392	RECTOR
3	FIRE STRUCTURE POLE	303217	12/4/2017	2,259	6,841	16,826	VENTURA
4	TOPPLED/BROKEN STRUCTURE POLE	286230	1/22/2017	2,045	5,236	10,393	RECTOR
5	FIRE STRUCTURE POLE	303315	12/5/2017	1,849	4,640	19,065	VENTURA
6	FIRE TRANSMISSION EQUIPMENT CONDUCTOR	303350	12/4/2017	1,450	85,545	262	VENTURA
7	LOST SOURCE SUBSTATION	301515	12/7/2017	0,923	2,824	1,940	VALLEY
8	FIRE TRANSMISSION EQUIPMENT CONDUCTOR	302696	12/10/2017	0,898	84,977	66	VENTURA
9	BALLOON OVERHEAD EQUIPMENT POTHEAD	290334	4/30/2017	0,740	12,818	797	VISTA
10	LOST SOURCE SUBSTATION	302693	12/4/2017	0,622	175,978	18	VENTURA
2016							
1	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	272685	4/29/2016	1,507	40,012	451	VALLEY
2	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	278786	8/19/2016	1,298	1,238	18,457	RECTOR
3	FIRE STRUCTURE POLE	276042	6/23/2016	1,171	7,608	3,666	RECTOR
4	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	267639	1/7/2016	0,979	12,812	2,424	VISTA
5	OVERLOAD/FATIGUE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	275066	6/20/2016	0,928	16,162	1,572	LIGHTHIPE
6	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	276005	6/23/2016	0,880	1,678	9,359	RECTOR
7	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	276561	6/23/2016	0,840	664	11,716	RECTOR
8	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	275884	6/23/2016	0,830	440	9,546	RECTOR
9	SUBSTATION MAINTENANCE ERROR DURING ROUTINE WORK	280501	10/11/2016	0,694	103,448	304	EL NIDO
10	BALLOON OVERHEAD EQUIPMENT CONDUCTOR/WIRE	269108	2/15/2016	0,640	8,220	696	EL NIDO
2015							
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	MIRALOMA
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

Rank	Cause Description	System Outage ID	Date	SAIDI	Number of Customers Affected	Longest Individual Customer Interruption (minutes)	Location
							Switching Center
2014							
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/RACK	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
2013							
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
2012							
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
2011							
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

SECTION 9 – THE NUMBER OF CUSTOMER INQUIRIES ON RELIABILITY DATA AND THE NUMBER OF DAYS PER RESPONSE.

In 2020, SCE received a total of 53 customer inquiries relating to circuit outage history or reliability data. SCE responded to 51% of the inquiries within 7 days, 21% of the inquiries within 15 days and 28% in a time frame greater than 15 business days.

APPENDIX

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.