



ANNUAL ELECTRIC RELIABILITY REPORT

For Year 2021

**PREPARED FOR THE CALIFORNIA PUBLIC
UTILITIES COMMISSION**

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EXECUTIVE SUMMARY

The reliability information contained in this report is for calendar year 2021, 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 (MED). 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 MED excluded). SAIFI is the number of times the average SCE customer experienced a sustained outage in a given year (with MED 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.

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.

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).

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

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).

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

CAIDI: The average time required to restore service for a sustained outage.

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

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 2021 was 2.11 min.

SCE 2021 Performance Summary

SCE’s 2021 SAIDI performance improved compared to 2020, largely due to a reduction in unplanned outages stemming from our wildfire-related enhanced overhead inspections and Public Safety Power Shutoff protocols. However, excluding Major Event Days, reliability was impacted in 2021.

The table below summarizes SCE’s 2021 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
2021	179.74	1.11	1.57	161.71	103.77	0.96	1.43	108.09
10 Year Avg (2012-2021)	140.77	1.01	1.46	139.47	94.65	0.87	1.30	108.30

In addition, in late 2018, SCE implemented proactive de-energization known as Public Safety Power Shutoff (PSPS). PSPS is an operational protocol that SCE implements under extreme weather conditions in order to minimize the threat of wildfires and keep communities safe from potentially dangerous situations. During 2021, there were several National Weather Service Red Flag Warnings and High Fire Ignition Fuel indicators that had been identified throughout SCE’s service area. 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
2021	101.75	0.95	1.43	106.66

In 2021, SCE experienced outage events across its service areas, some of which impacted reliability to result in MEDs. In total, SCE had 8 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	1/19/2021	PUB. SAFETY POWER SHUTDOWN,NO CAUSE FOUND,WIND	37.494	0.051	262,788	0.027	141,367	Y
2	8/20/2021	DE-ENERGIZE FOR PUB. AGENCY,UNKNOWN,NO CAUSE FOUND	3.427	0.006	30,321	0.002	9,426	Y
3	10/4/2021	LIGHTNING,NO CAUSE FOUND,UNKNOWN	2.623	0.015	75,788	0.022	114,084	Y
4	11/24/2021	PUB. SAFETY POWER SHUTDOWN,NO CAUSE FOUND,WIND	9.675	0.013	67,937	0.009	45,963	Y
5	11/25/2021	PUB. SAFETY POWER SHUTDOWN,NO CAUSE FOUND,UNKNOWN	13.126	0.026	132,704	0.018	92,892	Y
6	12/14/2021	UNKNOWN,VEGETATION BLOWN,NO CAUSE FOUND	3.348	0.026	136,746	0.047	242,769	Y
7	12/29/2021	UNKNOWN,VEGETATION BLOWN,OTHER-SEE NOTES	3.021	0.004	20,214	0.007	36,487	Y
8	12/30/2021	UNKNOWN,VEGETATION BLOWN,OPEN FOR REPAIRS	3.254	0.012	61,480	0.011	59,093	Y
	Total		75.969	0.151	787,978	0.143	742,081	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 2012-2021 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 (2012-2021)

YEAR	Total System Indices (All Interruptions Included)				Total System Indices (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
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
2021	179.74	1.11	1.57	161.71	103.77	0.96	1.43	108.09

i. Distribution Indices³

Table 2 – Unplanned Outage Distribution Indices (2012-2021)

YEAR	Distribution Indices (< 50KV) (All Interruptions Included)				Distribution Indices (< 50KV) (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
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
2021	177.96	1.08	1.51	164.72	102.10	0.96	1.38	109.67

² SCE calculates MAIFI at every individual outage event.

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

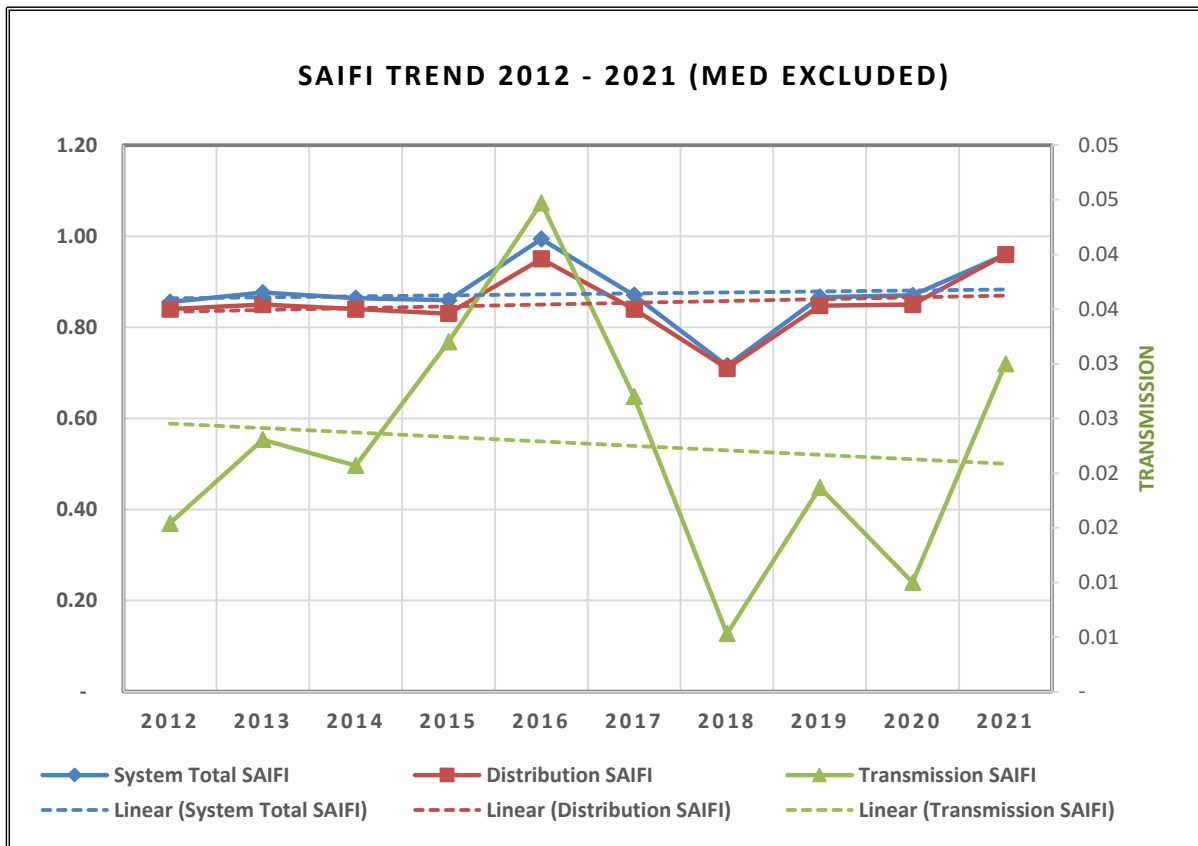
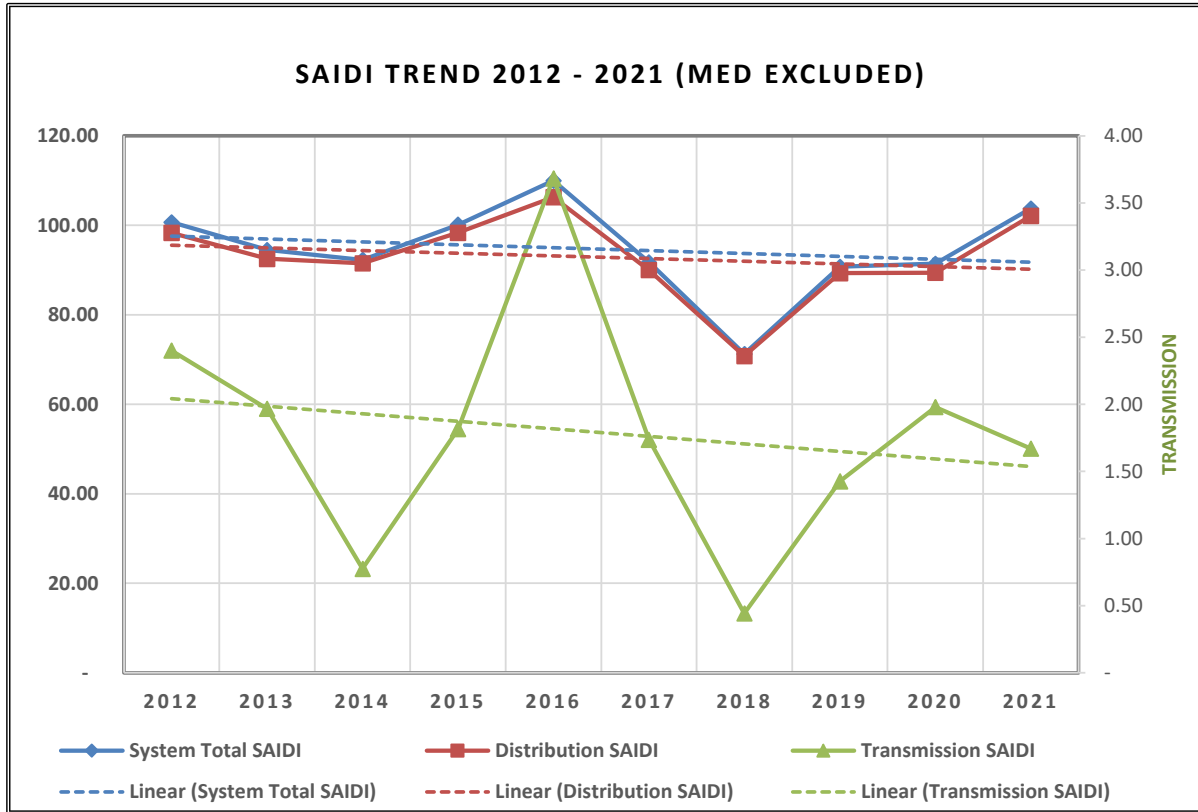
ii. Transmission Indices⁴

Table 3 – Unplanned Outage Transmission Indices (2012-2021)

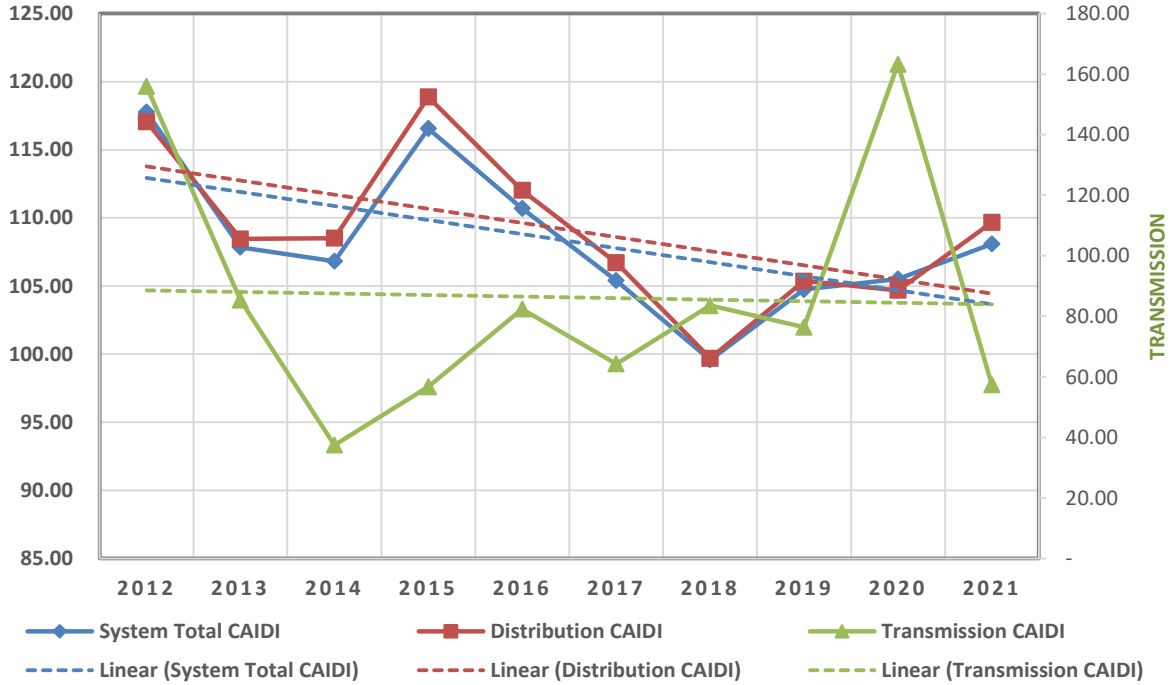
YEAR	Transmission Indices (>= 50KV) (All Interruptions Included)				Transmission Indices (>= 50KV) (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2012	2.56	0.02	0.08	143.93	2.40	0.02	0.07	155.92
2013	8.29	0.05	0.06	177.25	1.97	0.02	0.05	85.29
2014	1.02	0.02	0.07	46.82	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
2021	1.78	0.03	0.06	57.19	1.67	0.03	0.05	57.42

⁴ Transmission system outages are defined as outages \geq 50kV

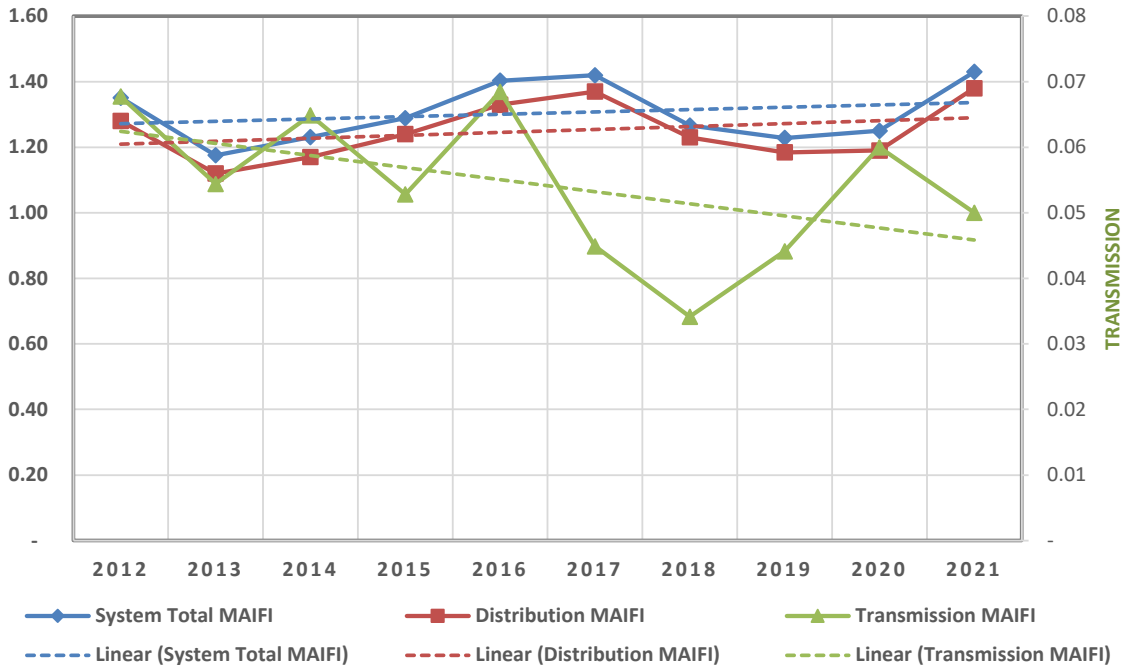
b. Unplanned Outage System Indices Charts (MED Excluded)



CAIDI TREND 2012 - 2021 (MED EXCLUDED)



MAIFI TREND 2012 - 2021 (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 (2012-2021)⁶

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
ANTELOPE VALLEY								
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
2021	162.652	1.305	1.789	124.668	149.371	1.239	1.783	120.547
ARROWHEAD								
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
2021	1565.303	2.875	5.966	544.443	492.173	2.057	4.108	239.241
BARSTOW								
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
2021	215.915	2.677	4.580	80.653	196.992	2.391	4.383	82.400
BISHOP								
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
2021	385.947	2.471	4.783	156.182	355.408	2.404	4.630	147.814
BLYTHE								
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
2021	196.177	1.181	3.755	166.157	195.134	1.176	3.656	165.980

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								
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
2021	110.265	1.249	2.794	88.302	88.176	1.071	2.609	82.366
COVINA								
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
2021	99.734	1.084	1.377	92.012	91.486	1.029	1.258	88.905
FOOTHILL								
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
2021	304.619	1.432	1.936	212.775	137.914	1.096	1.691	125.888
FULLERTON								
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
2021	94.847	0.613	1.222	154.787	82.599	0.574	1.097	144.024
HUNTINGTON BEACH								
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
2021	89.376	0.964	1.444	92.748	79.895	0.877	1.260	91.103
KERNVILLE								
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
2021	1830.210	1.885	2.072	970.864	1059.889	1.550	1.365	683.875

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.

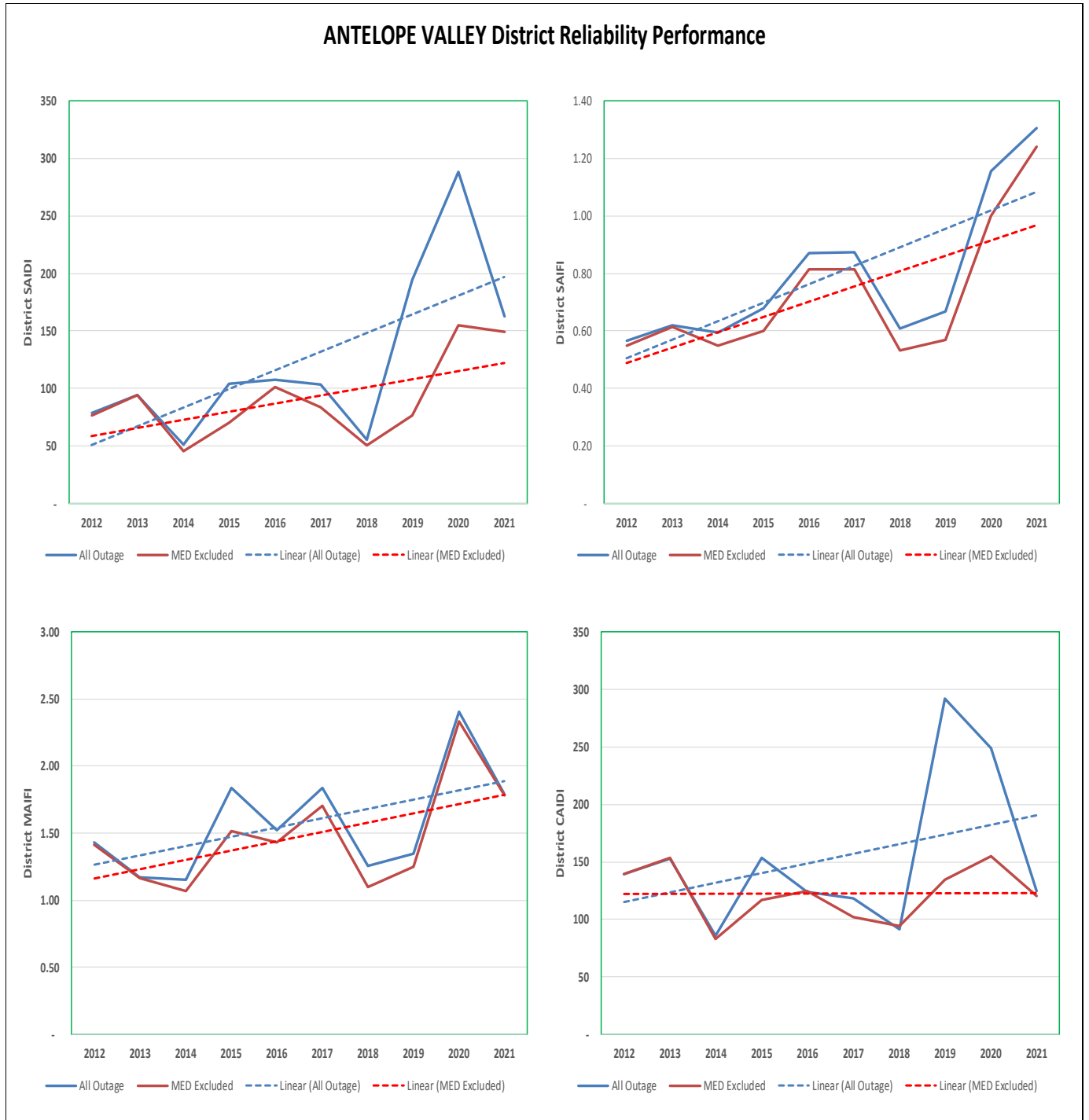
DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
LONG BEACH								
2012	75.830	0.554	1.106	136.864	72.654	0.536	1.059	135.673
2013	75.107	0.699	0.779	107.497	74.628	0.694	0.775	107.551
2014	66.226	0.606	1.168	109.270	57.781	0.548	1.083	105.376
2015	164.463	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
2021	76.168	0.810	1.287	94.014	66.128	0.737	1.138	89.773
MENIFEE								
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
2021	171.816	1.077	0.831	159.506	87.962	0.928	0.728	94.834
MONROVIA								
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
2021	117.879	1.152	1.397	102.292	107.597	1.110	1.295	96.948
MONTEBELLO								
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
2021	126.295	1.041	2.051	121.296	119.771	1.013	1.909	118.273
ONTARIO								
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
2021	104.677	0.982	1.519	106.615	70.552	0.853	1.301	82.684
PALM SPRINGS								
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
2021	83.068	0.903	1.442	92.005	72.808	0.887	1.424	82.046

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
REDLANDS								
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
2021	363.081	2.041	1.855	177.920	213.784	1.705	1.716	125.417
RIDGECREST								
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
2021	163.290	1.227	3.359	133.121	126.249	0.992	3.128	127.215
SADDLEBACK								
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
2021	67.178	0.577	0.779	116.356	52.254	0.500	0.779	104.603
SANTA ANA								
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
2021	95.589	0.761	1.062	125.613	65.017	0.604	0.861	107.663
SANTA BARBARA								
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
2021	225.165	1.503	0.975	149.796	200.203	1.302	0.796	153.772
SANTA MONICA								
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
2021	64.090	0.635	1.120	100.936	61.657	0.612	1.039	100.725

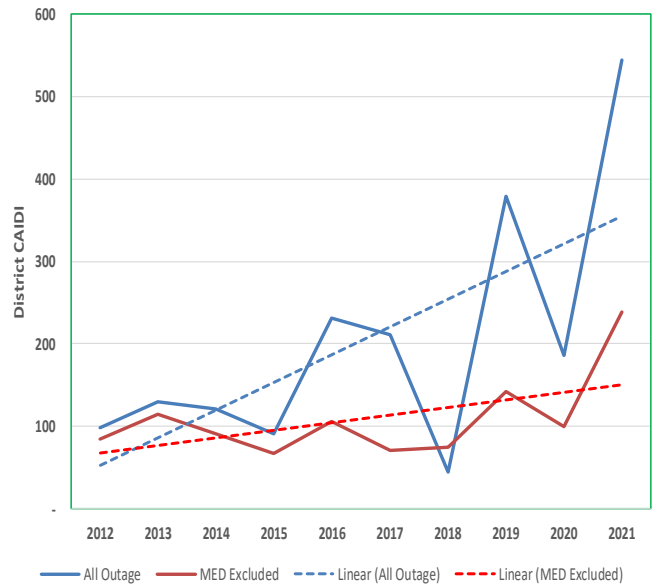
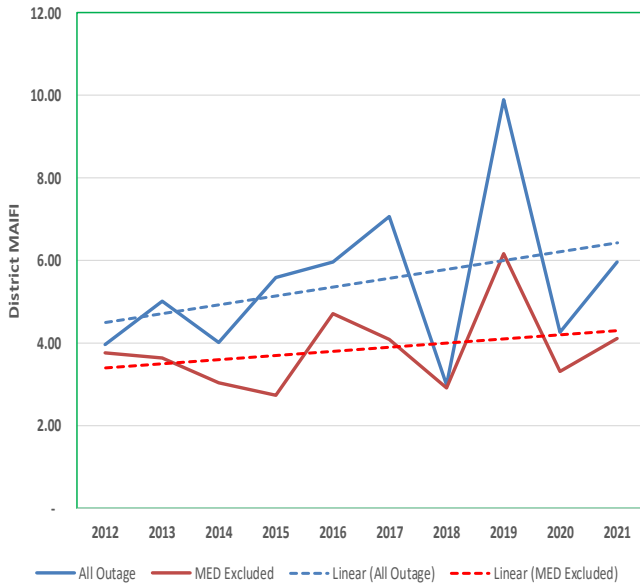
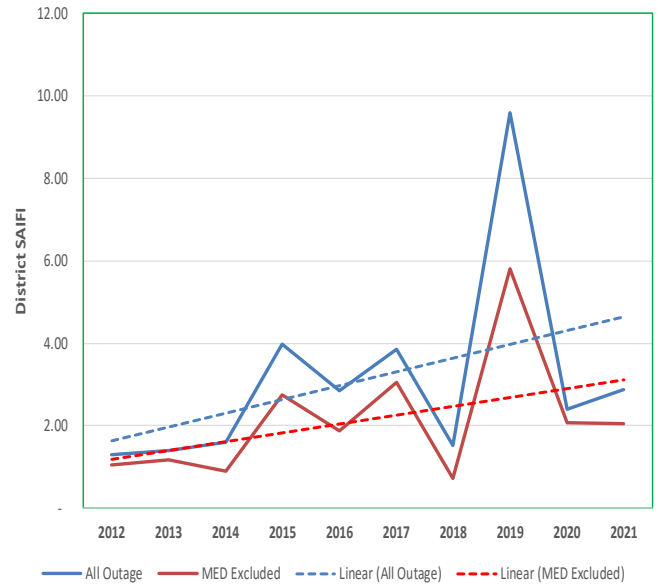
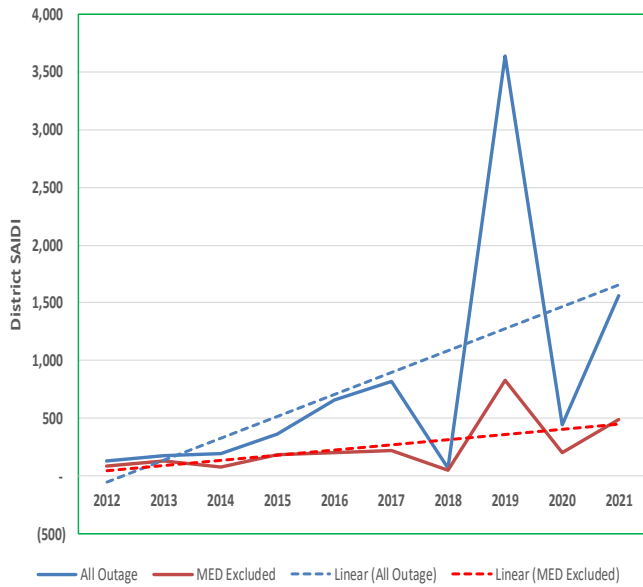
DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
SHAVER LAKE								
2012	1184.253	4.523	2.608	261.831	842.662	4.182	1.681	201.512
2013	176.510	3.080	4.987	57.308	176.510	3.080	4.711	57.308
2014	920.254	1.342	4.901	685.961	438.216	0.581	3.960	754.138
2015	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
2021	295.785	2.188	3.008	135.179	288.244	2.170	3.007	132.808
SOUTH BAY								
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
2021	86.117	0.990	1.832	87.012	78.134	0.919	1.721	85.004
TEHACHAPI								
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
2021	458.534	1.083	0.683	423.514	154.702	0.891	0.649	173.592
THOUSAND OAKS								
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
2021	923.408	2.100	1.410	439.798	149.751	1.344	1.284	111.405
TULARE								
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
2021	104.667	0.838	1.117	124.915	93.032	0.807	1.088	115.278
VALENCIA								
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
2021	417.068	1.221	1.441	341.644	99.986	0.822	1.397	121.665

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
VENTURA								
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
2021	370.432	2.004	2.088	184.846	124.867	1.572	1.683	79.440
VICTORVILLE								
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
2021	83.749	0.895	2.499	93.527	78.552	0.844	2.452	93.041
WHITTIER								
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
2021	88.389	0.803	1.578	110.074	73.757	0.712	1.387	103.523
WILDOMAR								
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
2021	83.683	0.750	0.639	111.627	73.922	0.670	0.561	110.374
YUCCA VALLEY								
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
2021	384.163	2.282	2.223	168.313	351.851	1.999	2.161	176.030

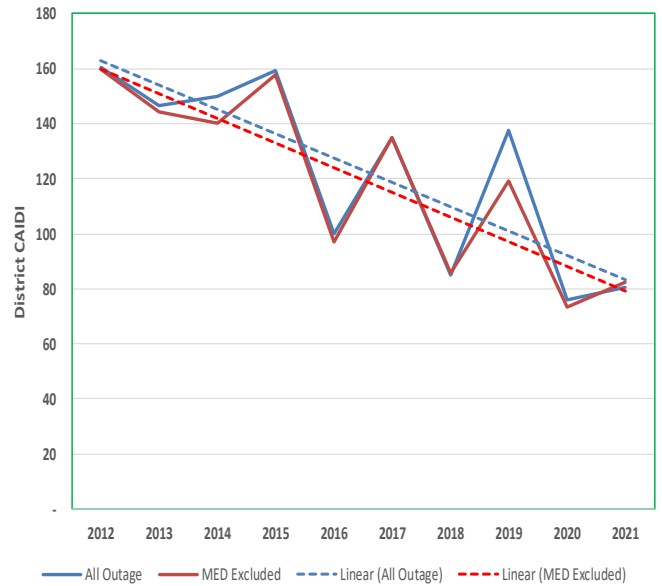
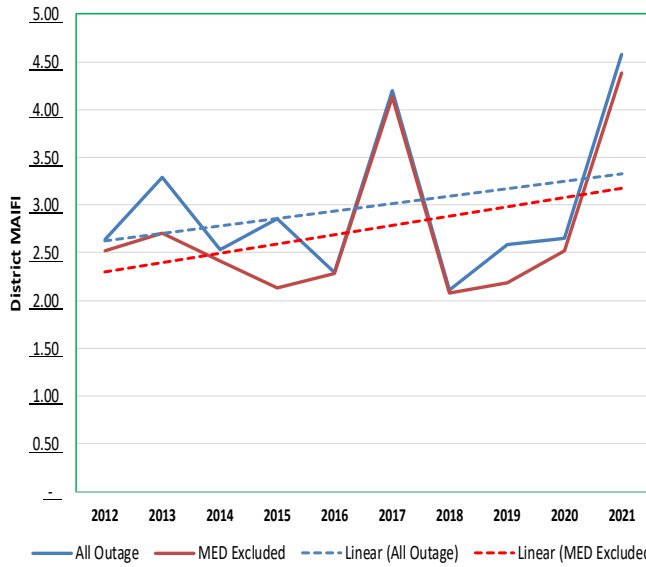
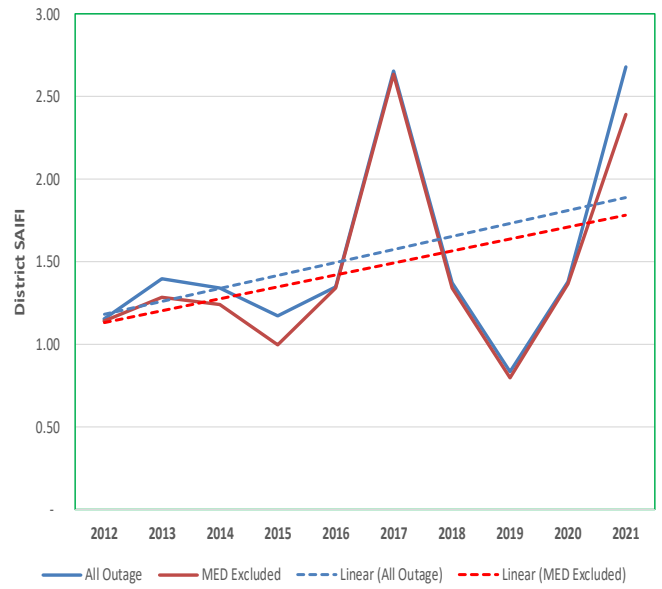
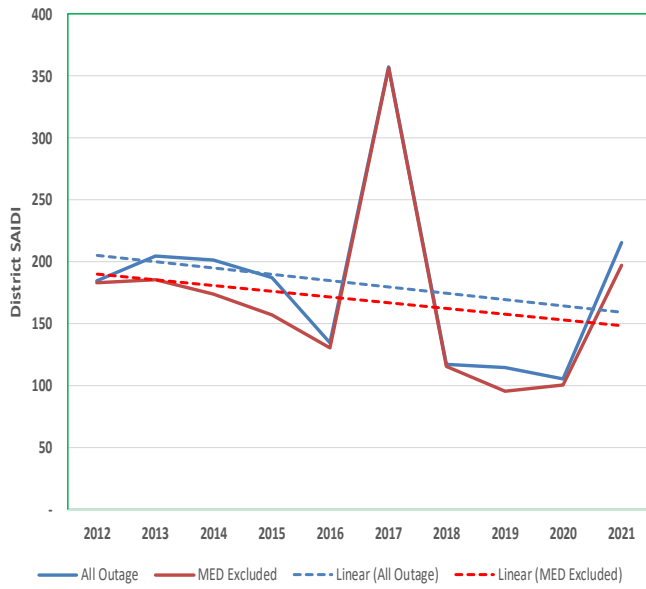
b. The linear charts below show the past 10 years District Reliability Performance from 2012 – 2021 of dSAIDI, dSAIFI, dMAIFI and dCAIDI for all 34 districts. There are separate charts of unplanned outages including and excluding MED. The charts shown are listed in district name in alphabetical order.



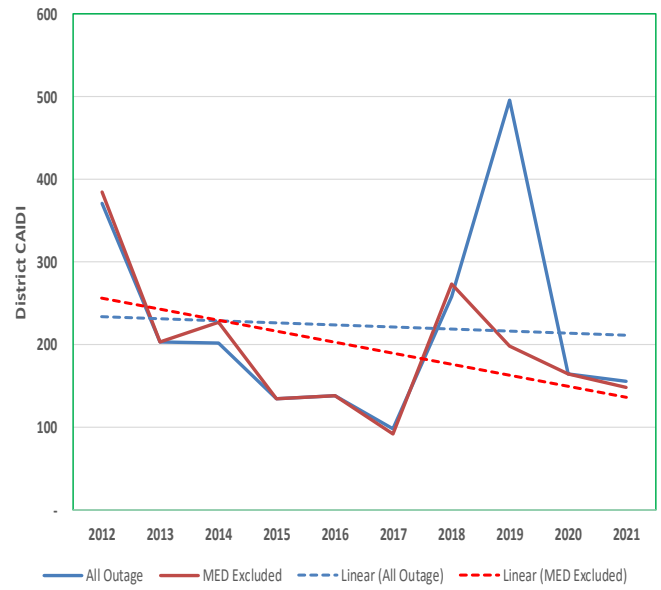
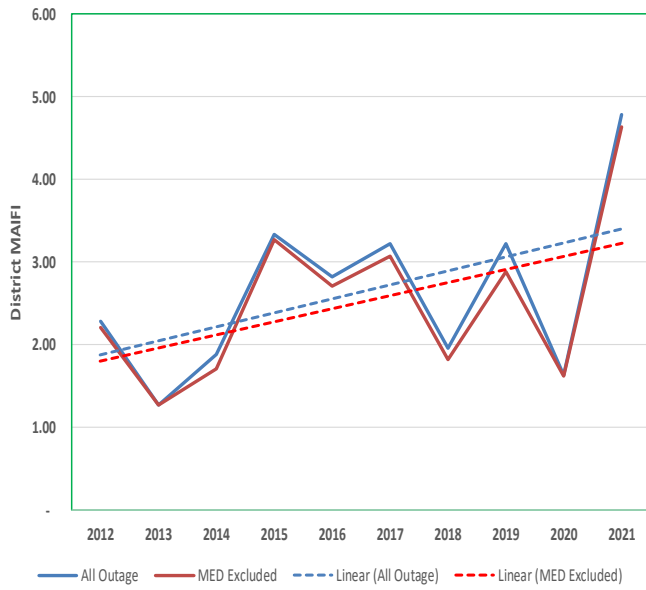
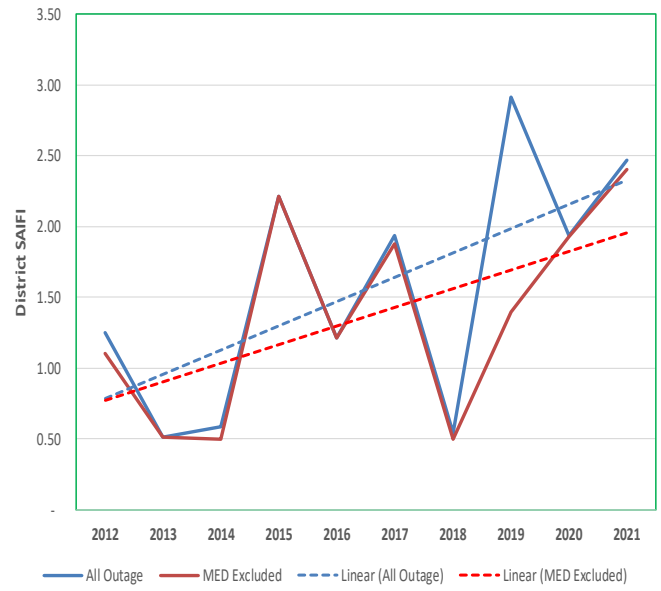
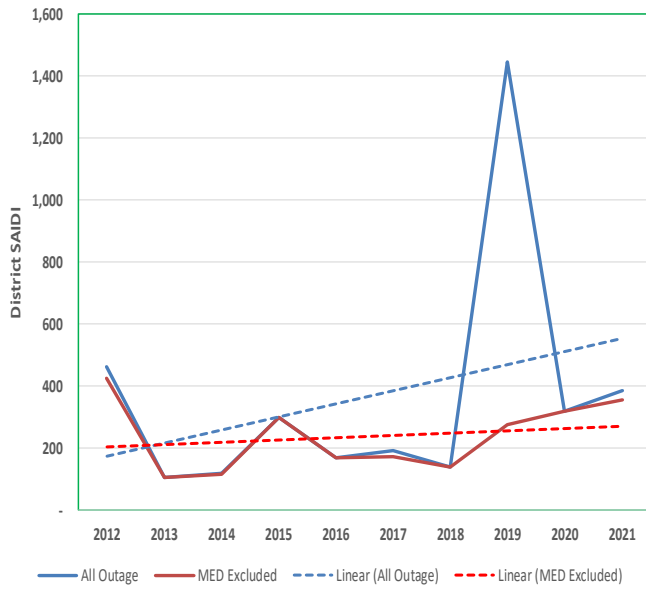
ARROWHEAD District Reliability Performance



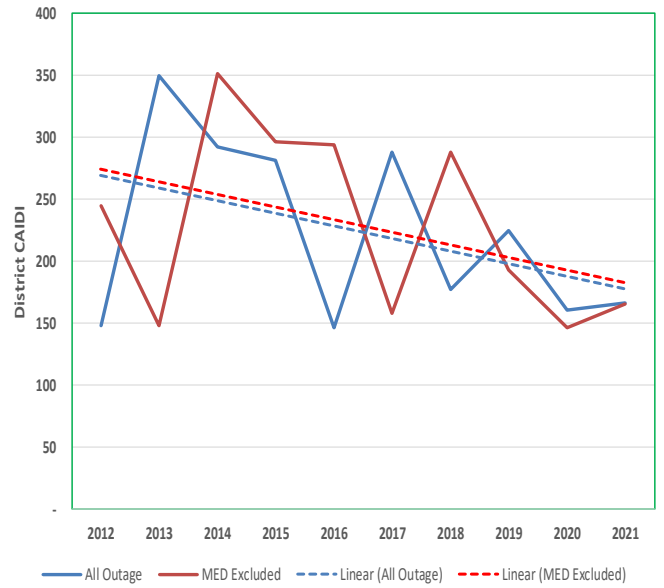
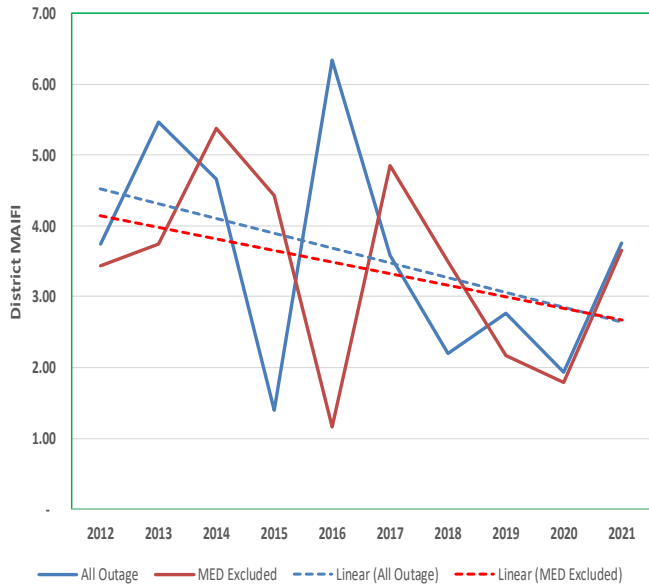
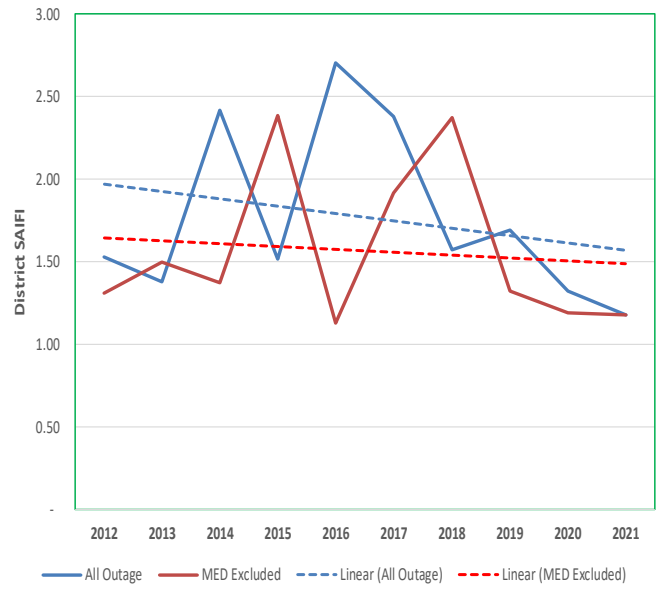
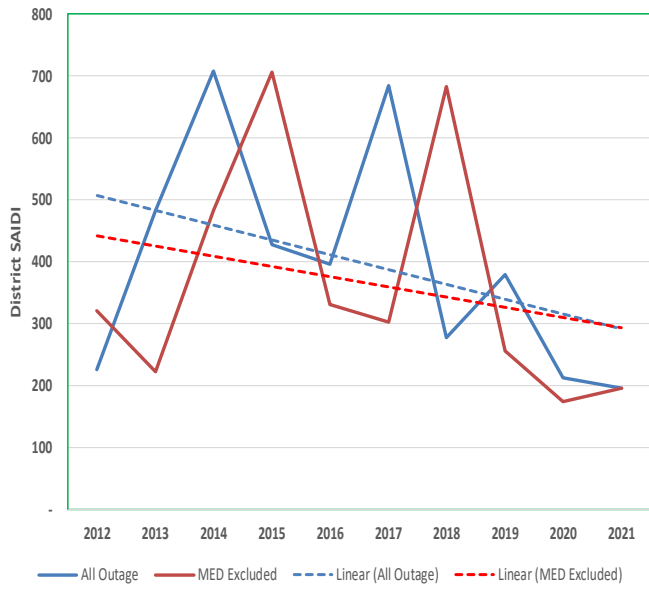
BARSTOW District Reliability Performance



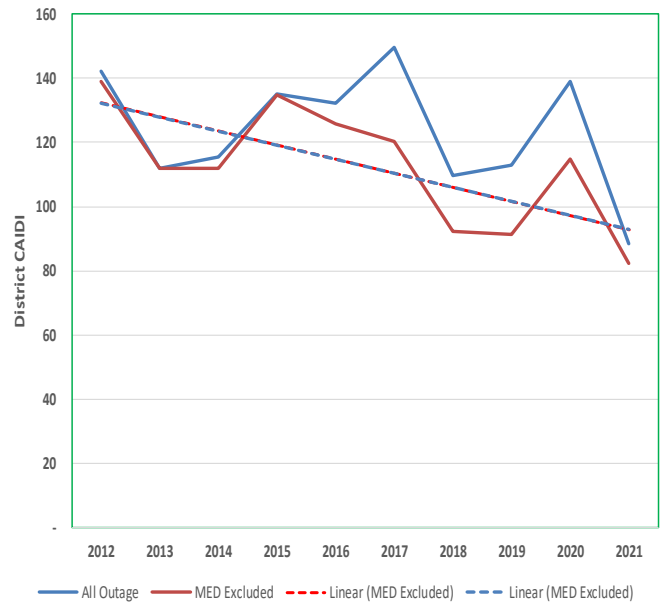
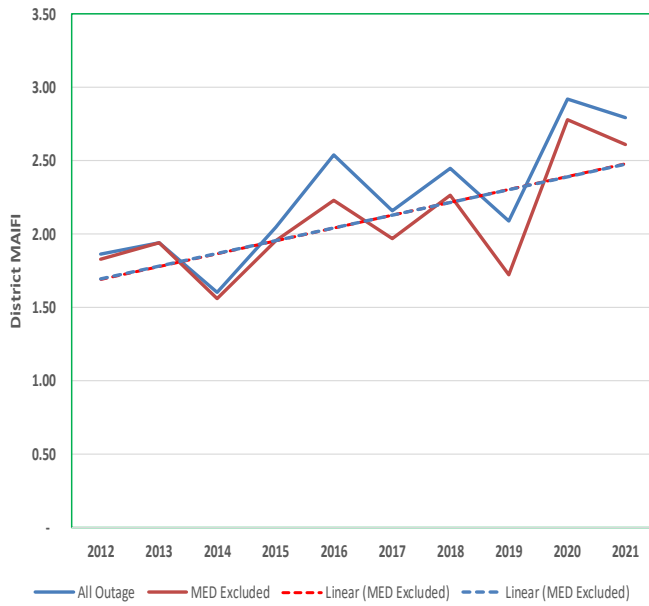
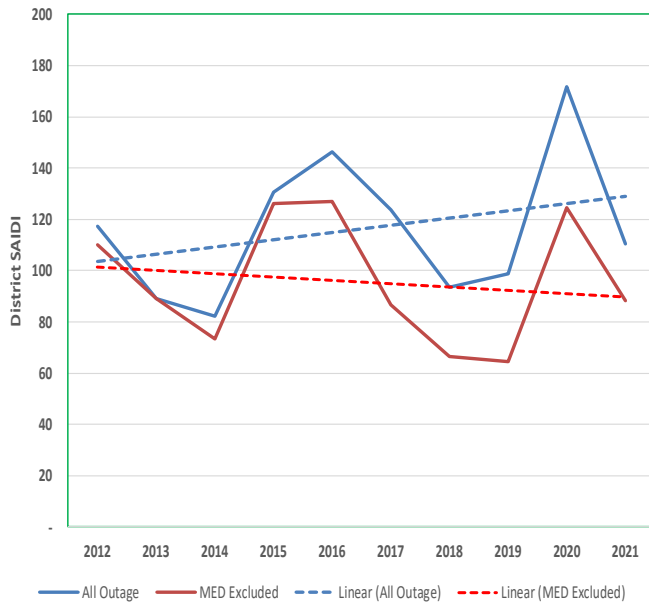
BISHOP District Reliability Performance



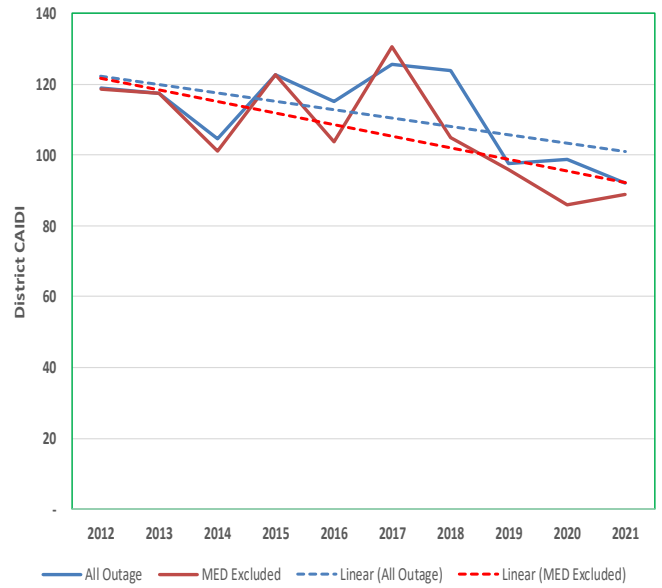
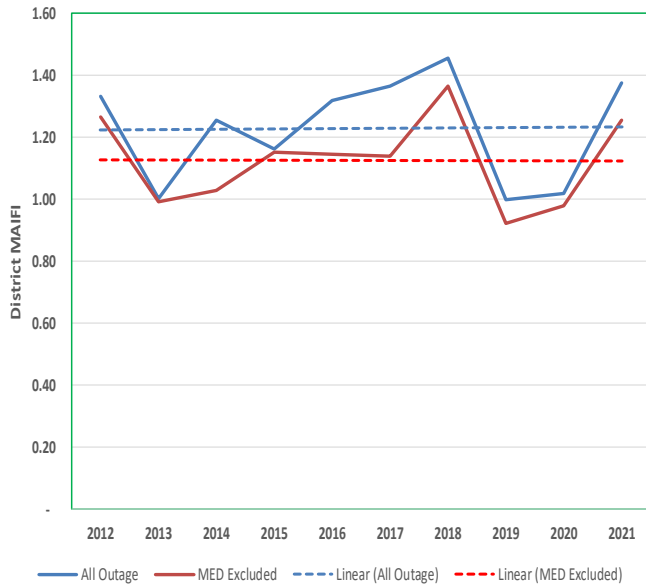
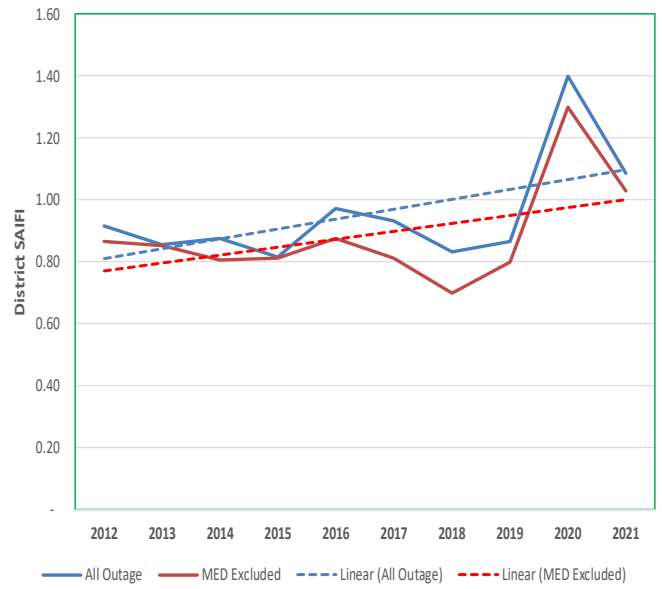
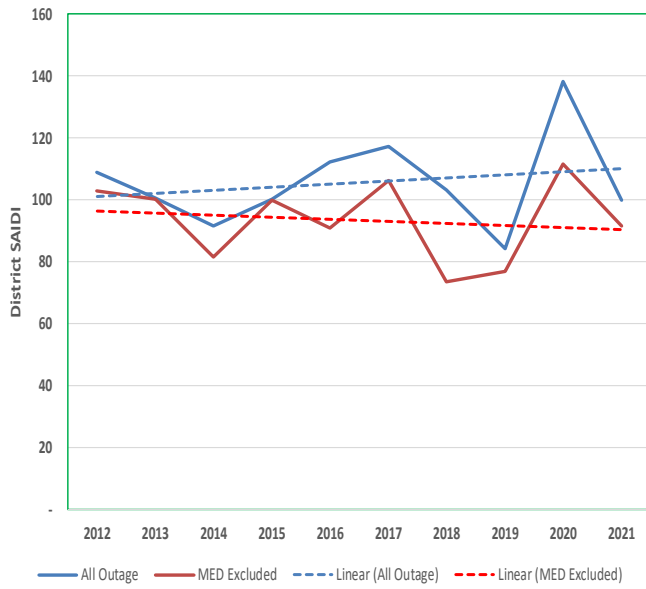
BLYTHE District Reliability Performance



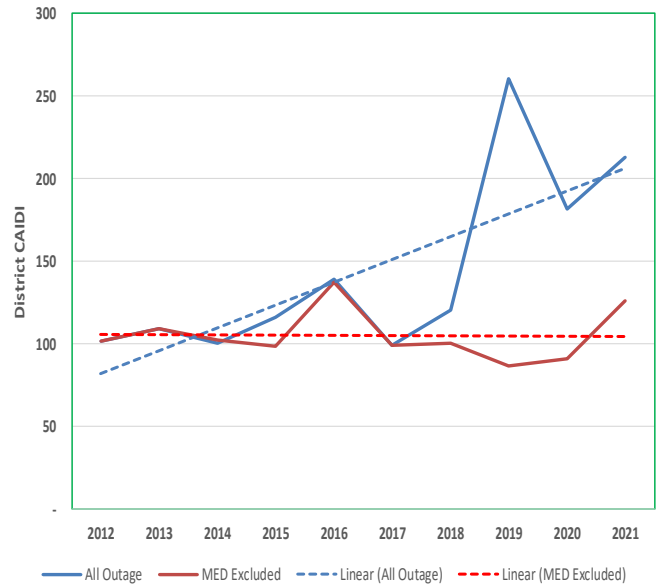
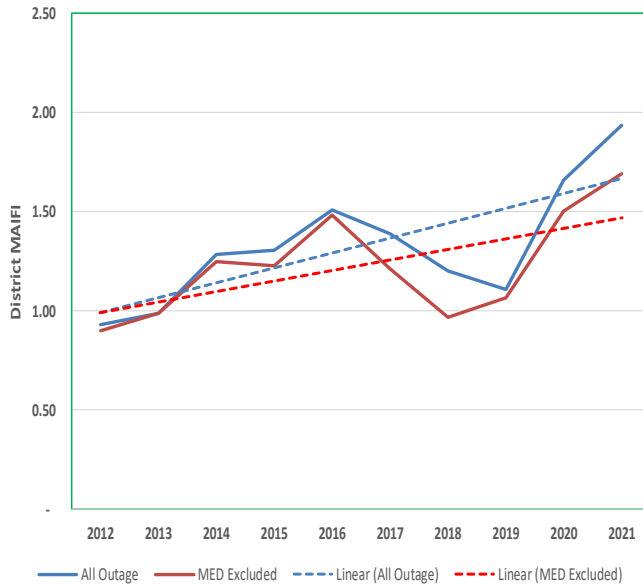
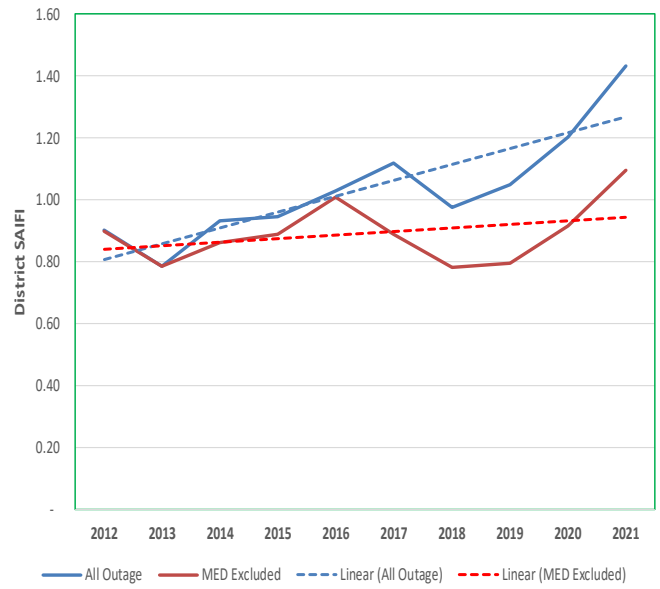
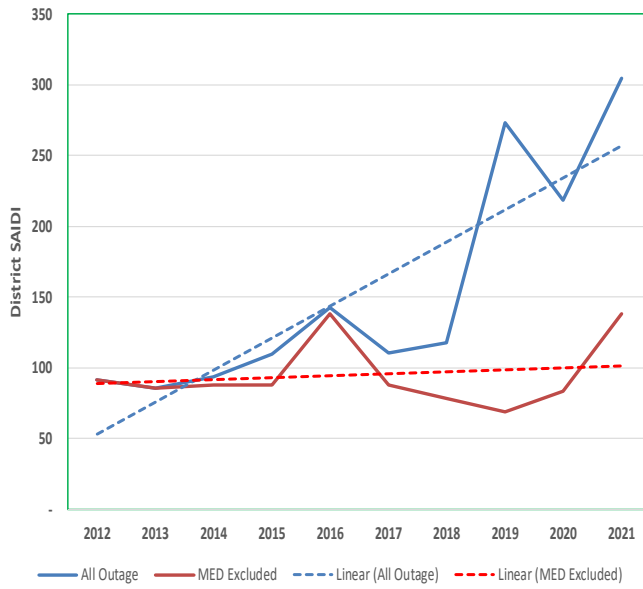
COMPTON District Reliability Performance



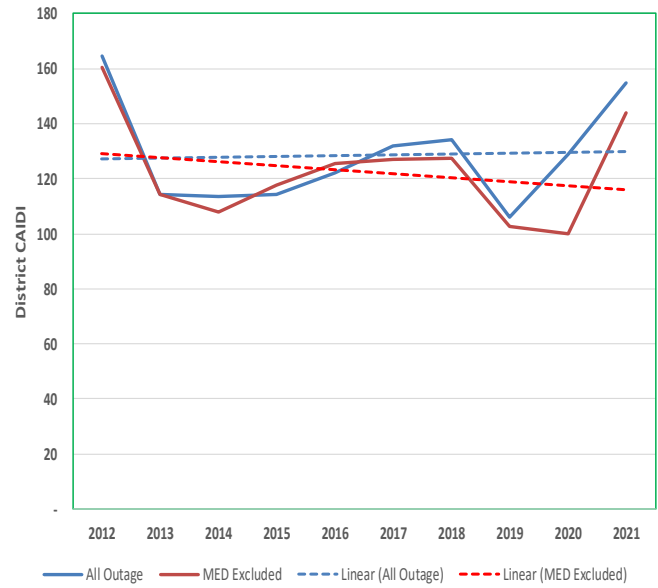
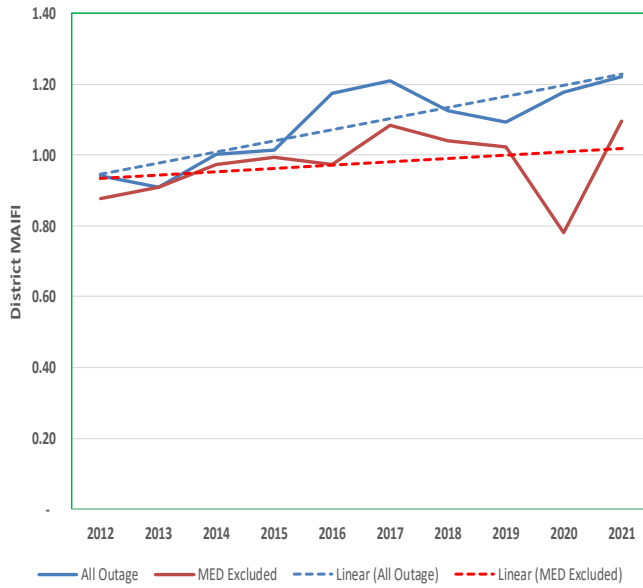
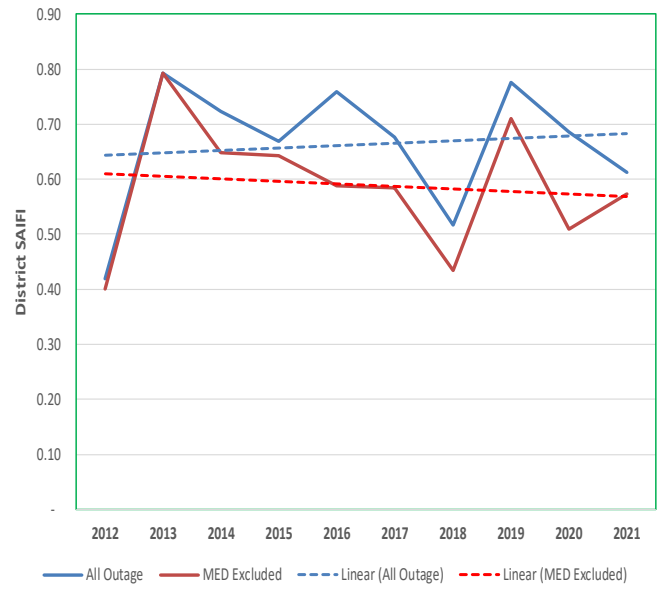
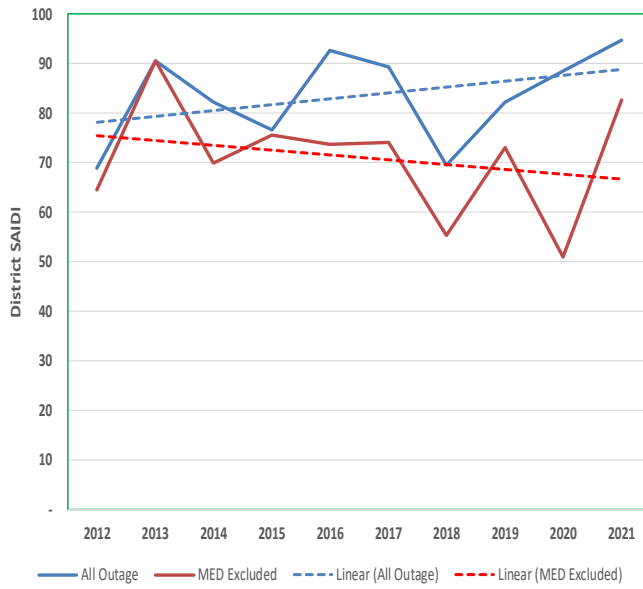
COVINA District Reliability Performance



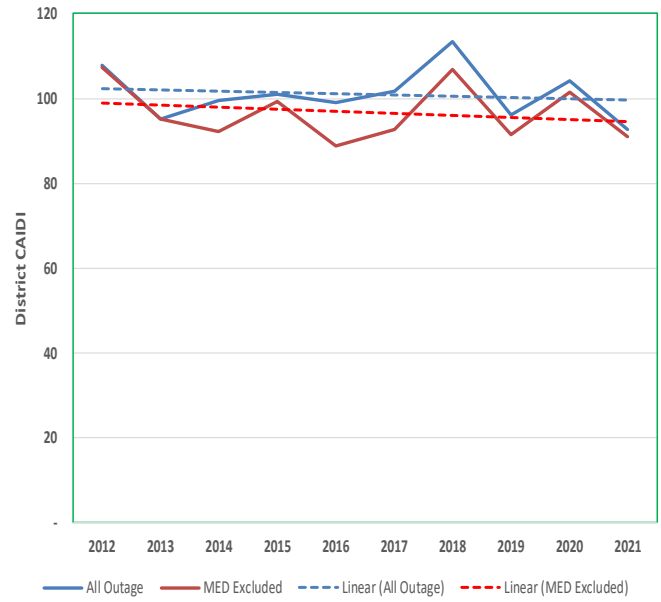
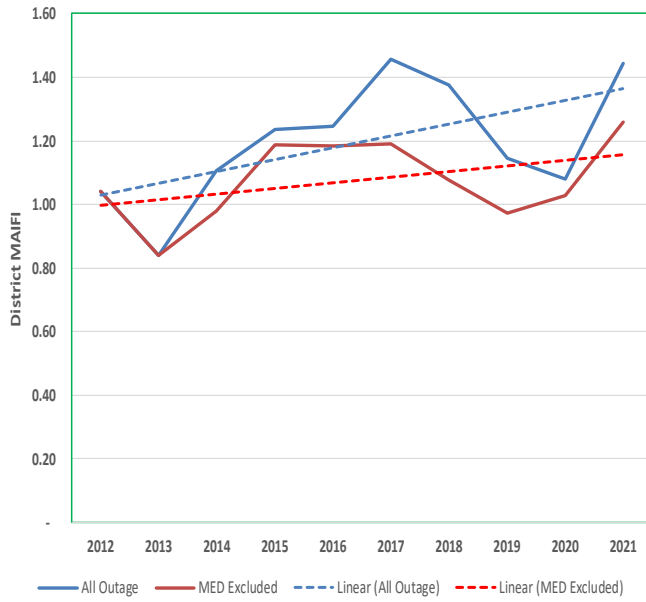
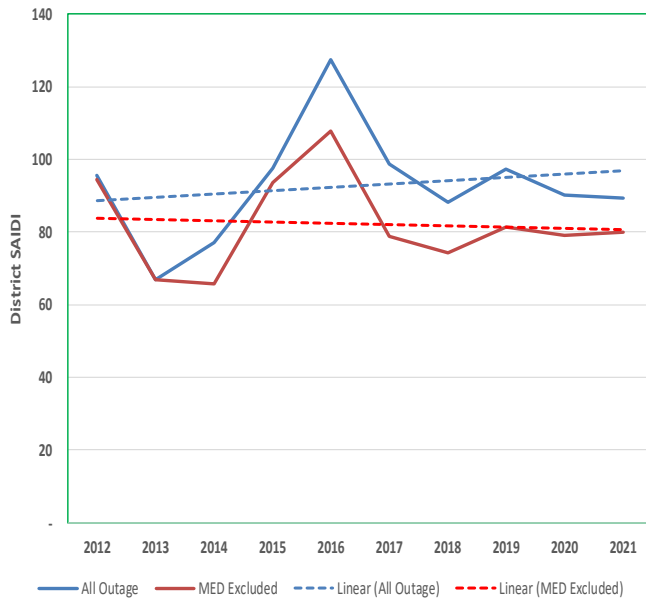
FOOTHILL District Reliability Performance



FULLERTON District Reliability Performance

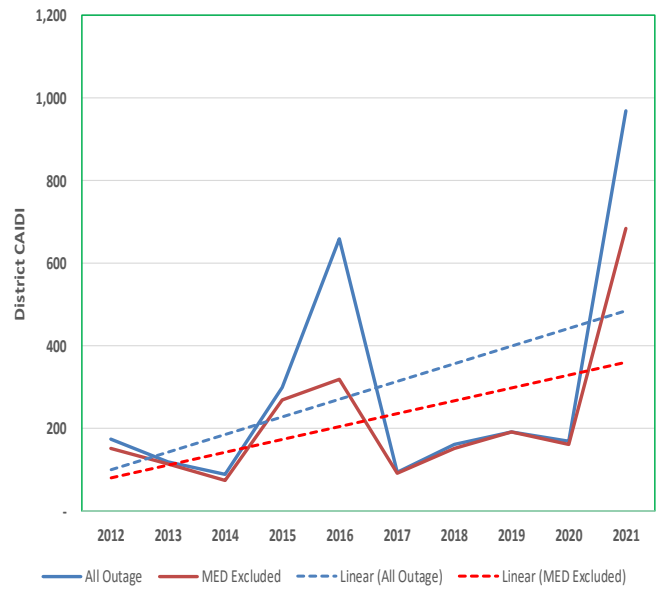
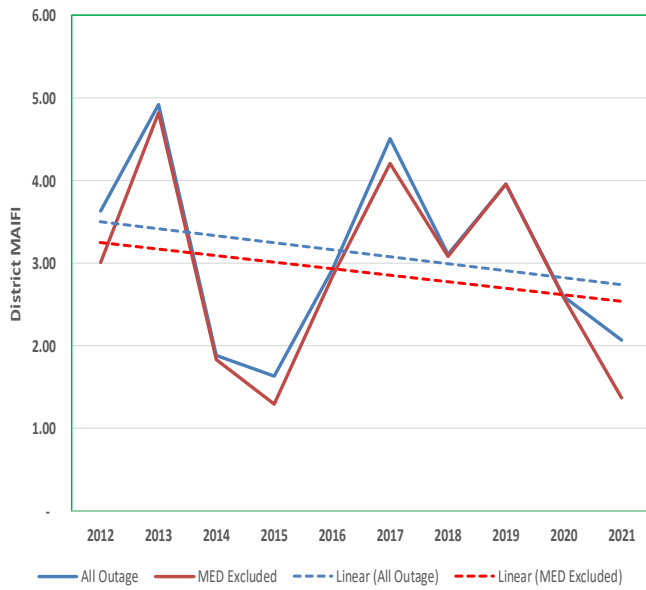
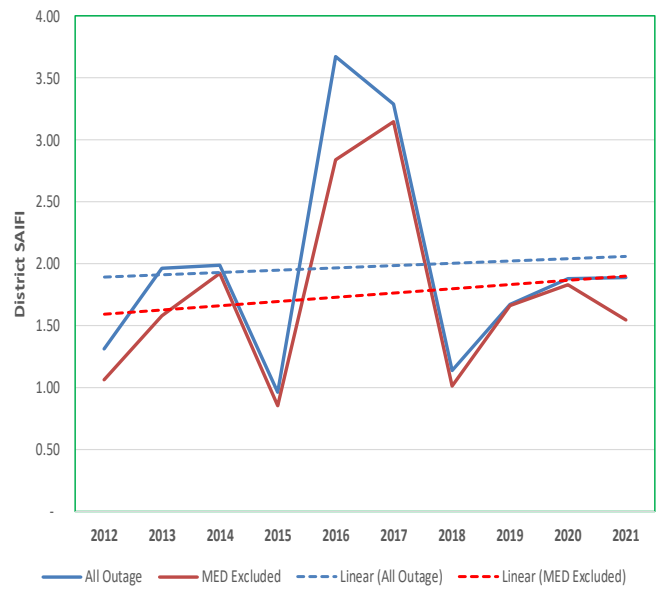
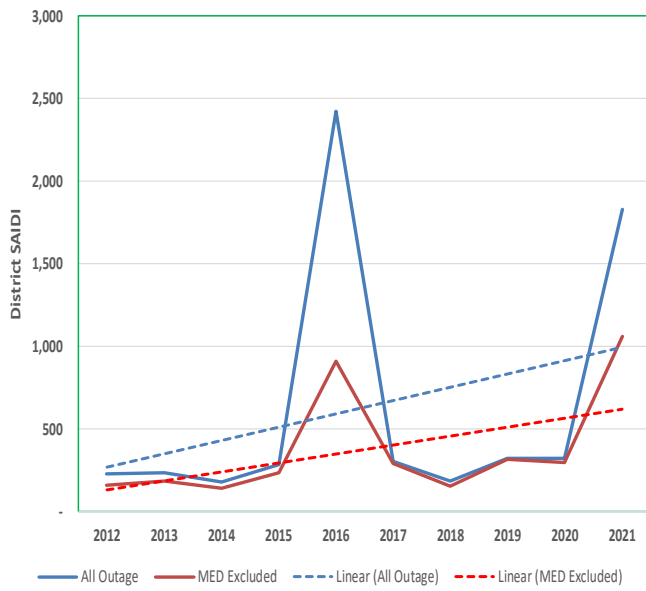


HUNTINGTON BEACH District Reliability Performance⁷

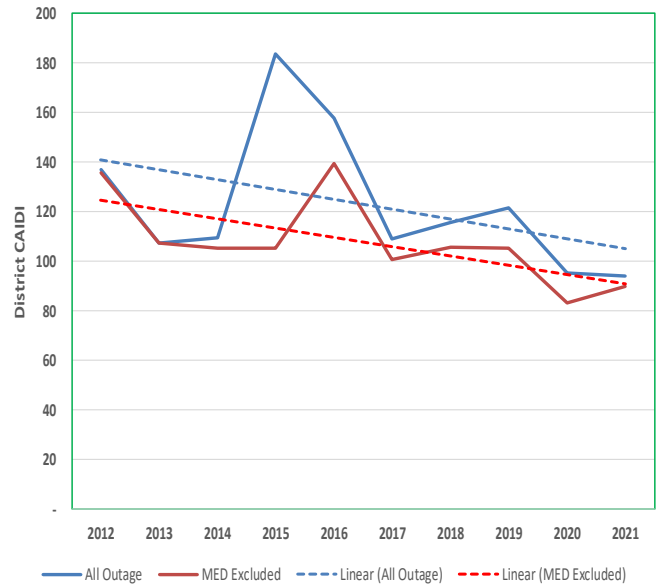
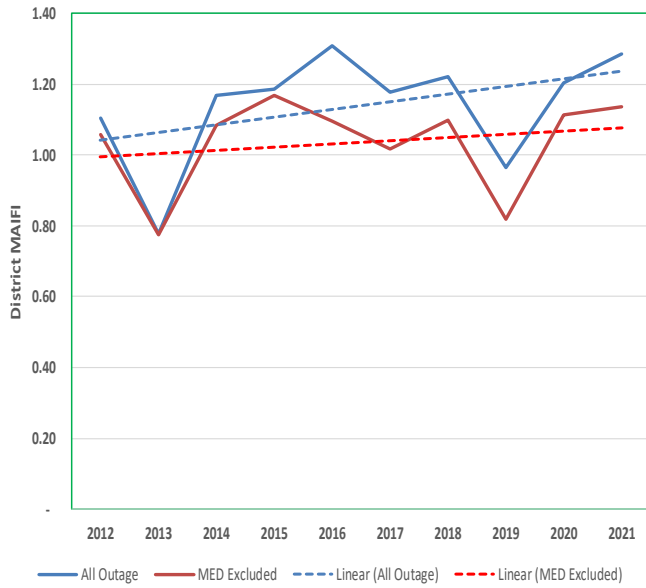
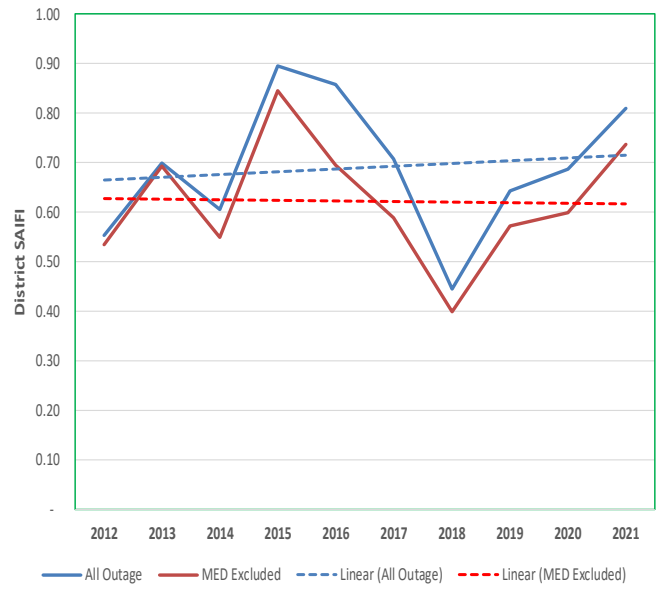
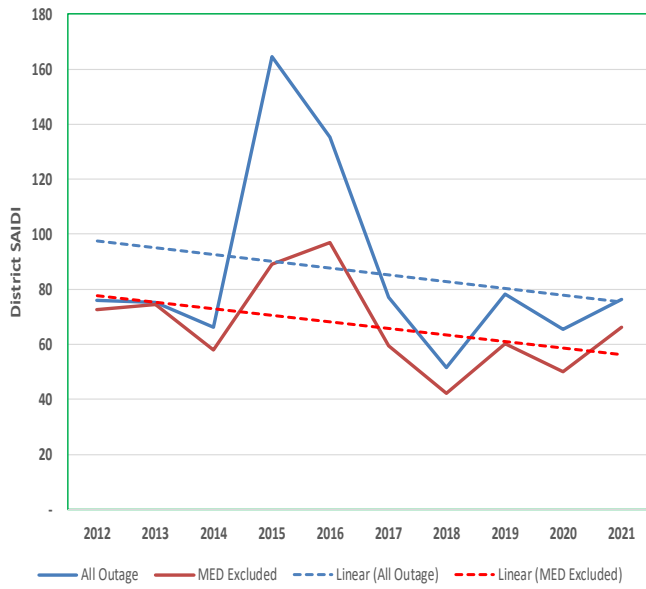


⁷ Beginning in the 2019 annual report, Catalina District charts have been combined with Huntington Beach District, since the Catalina District operations have been combined with the Huntington Beach District.

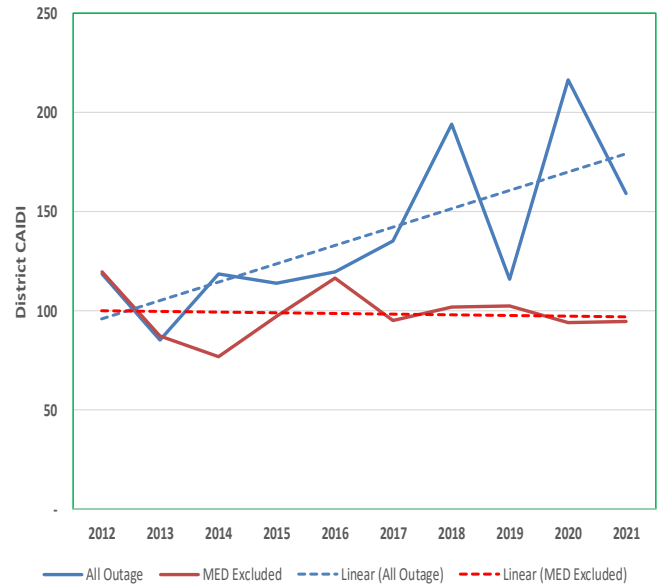
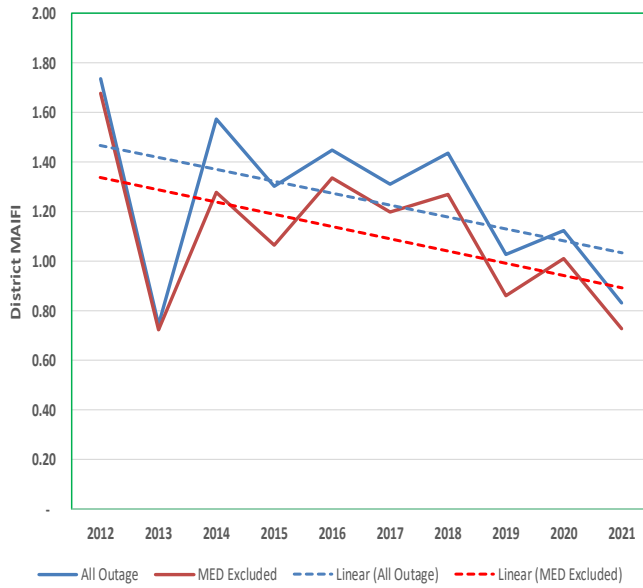
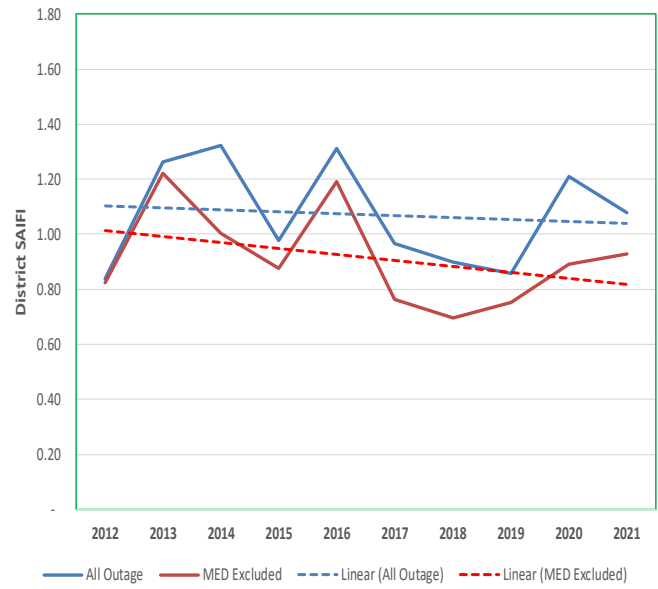
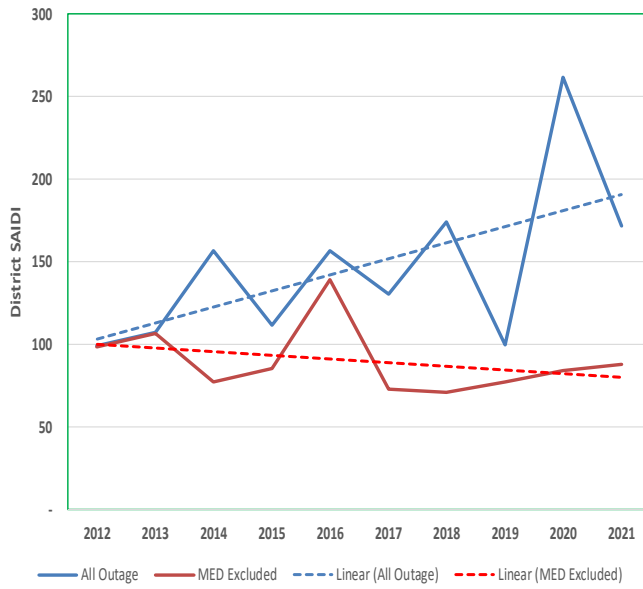
KERNVILLE District Reliability Performance



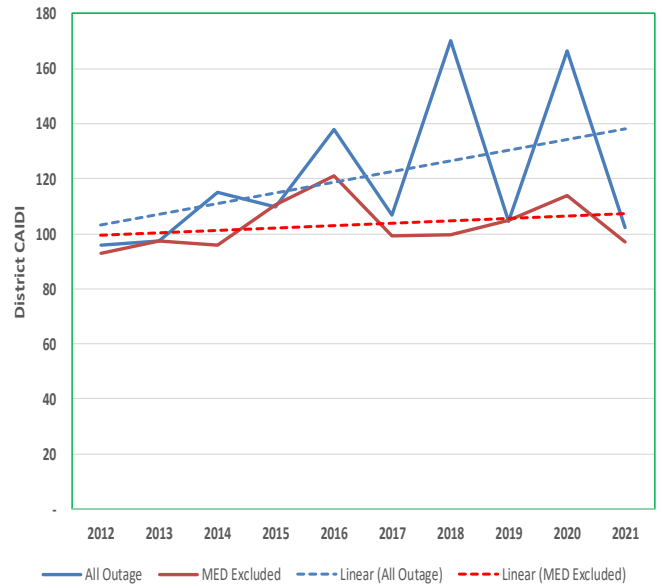
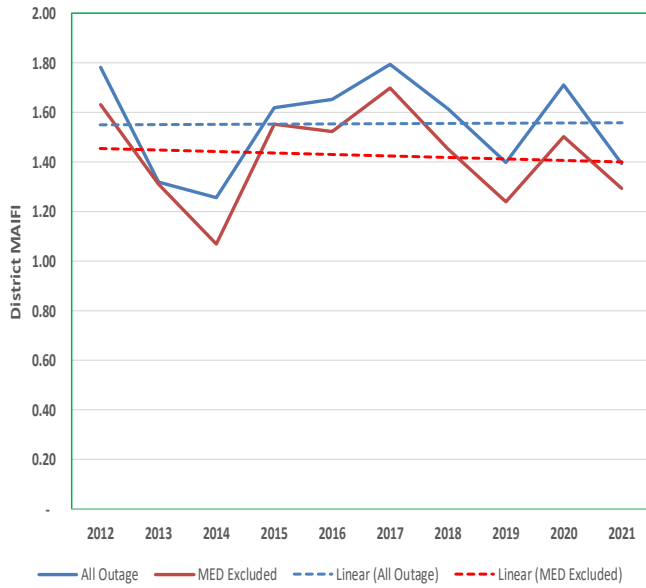
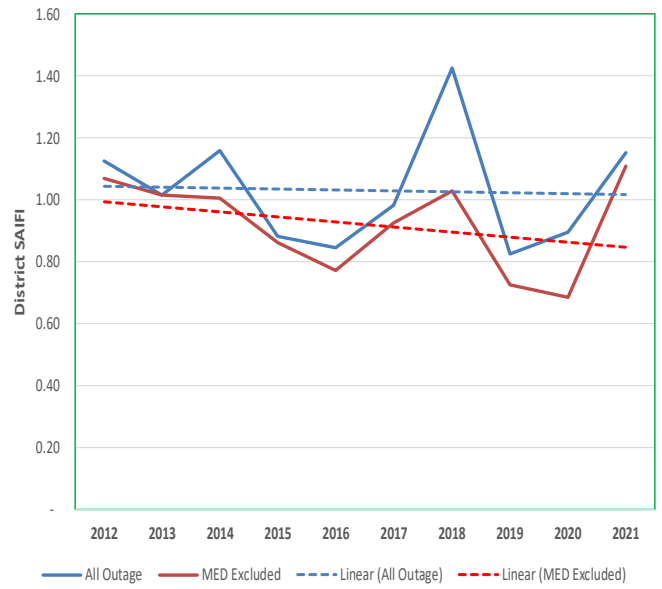
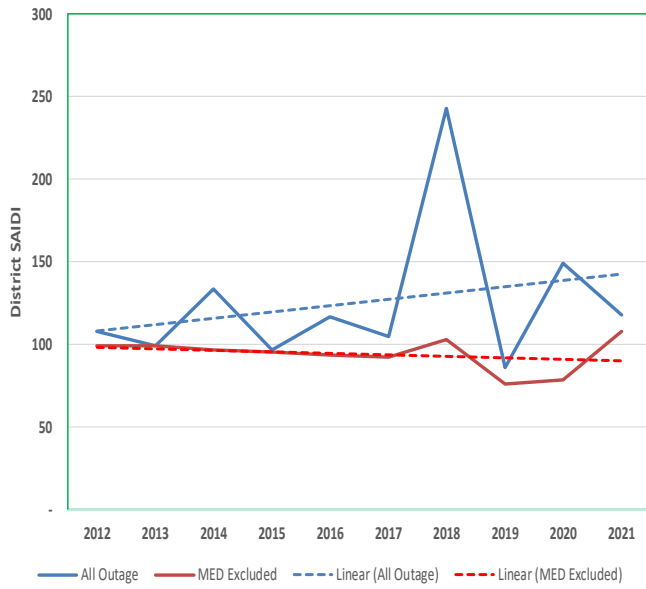
LONG BEACH District Reliability Performance



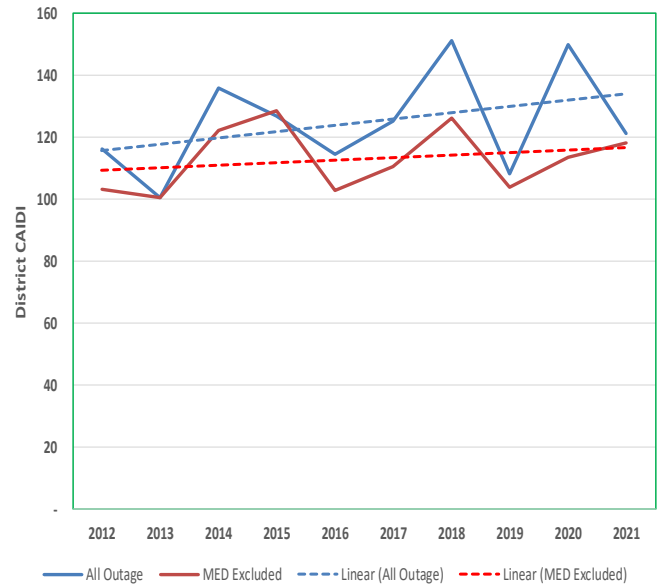
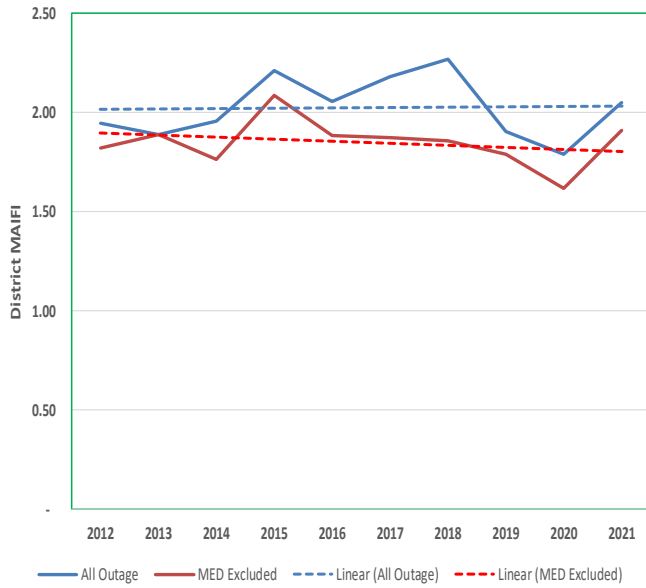
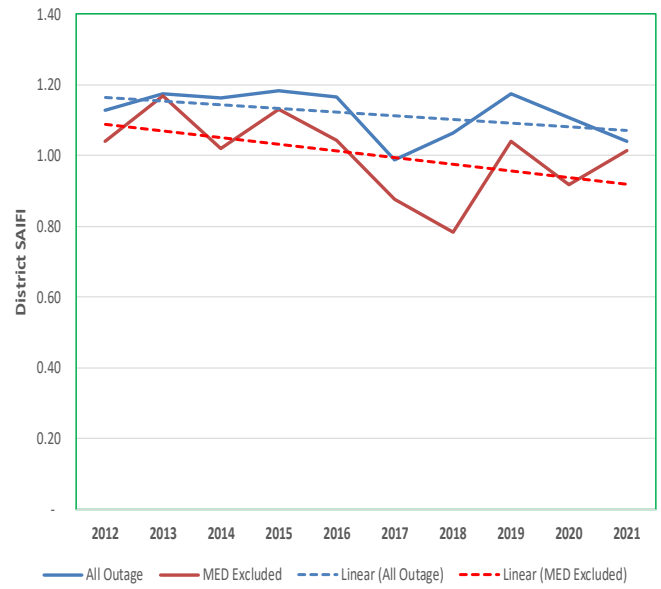
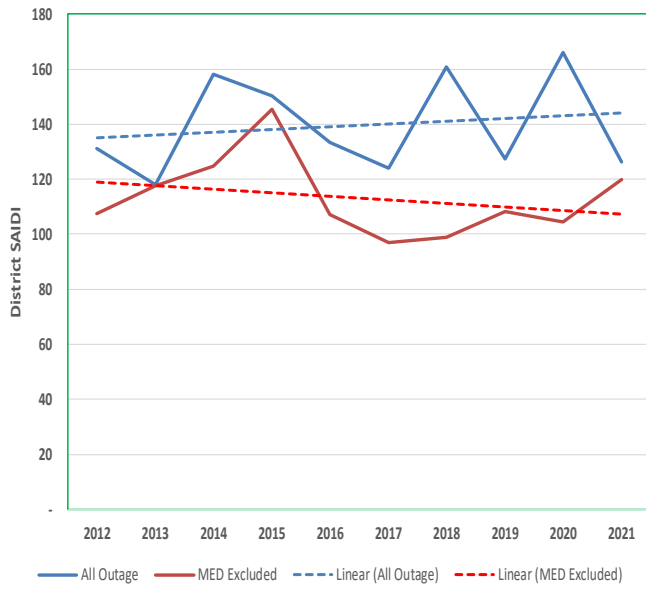
MENIFEE District Reliability Performance



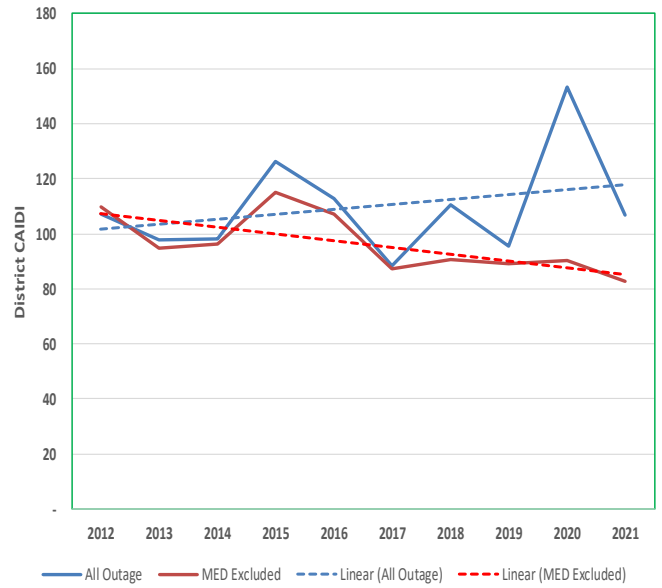
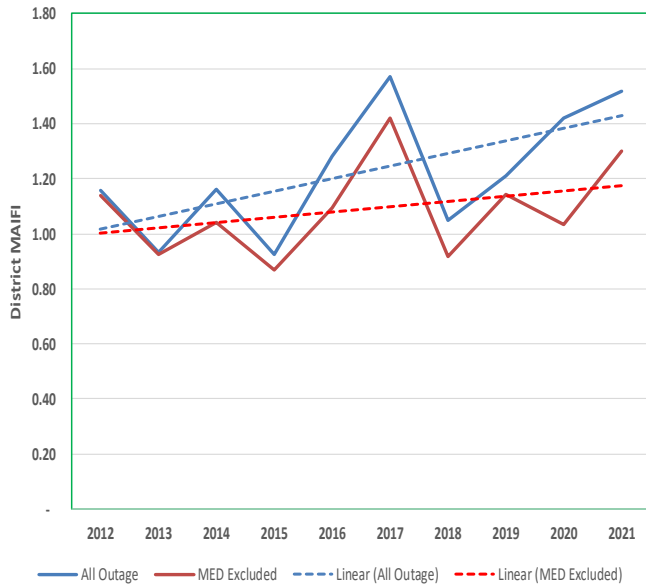
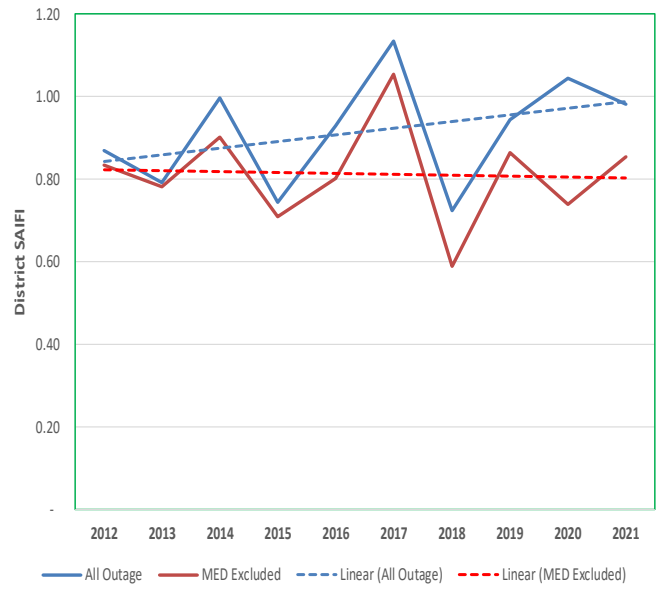
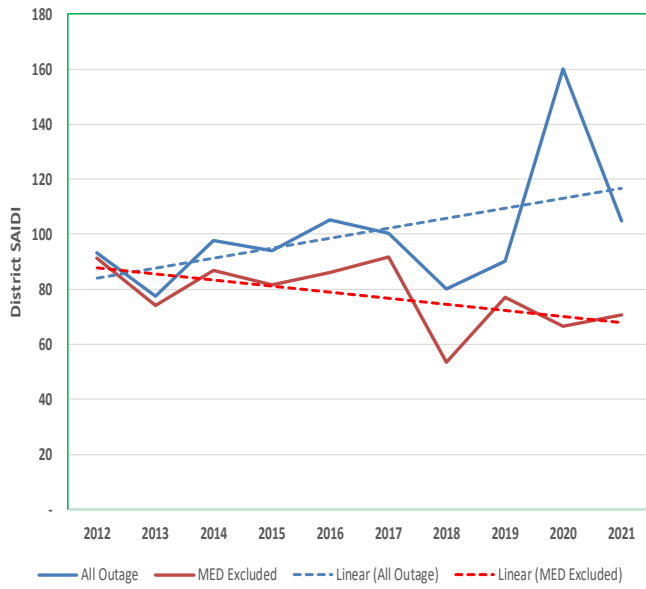
MONROVIA District Reliability Performance



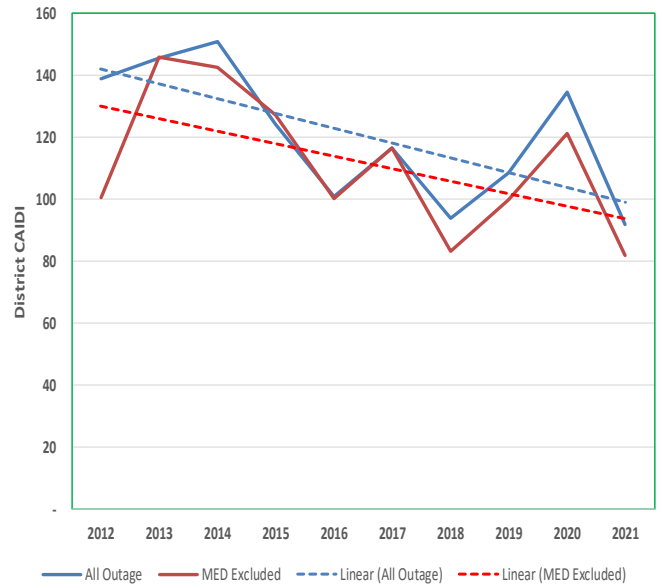
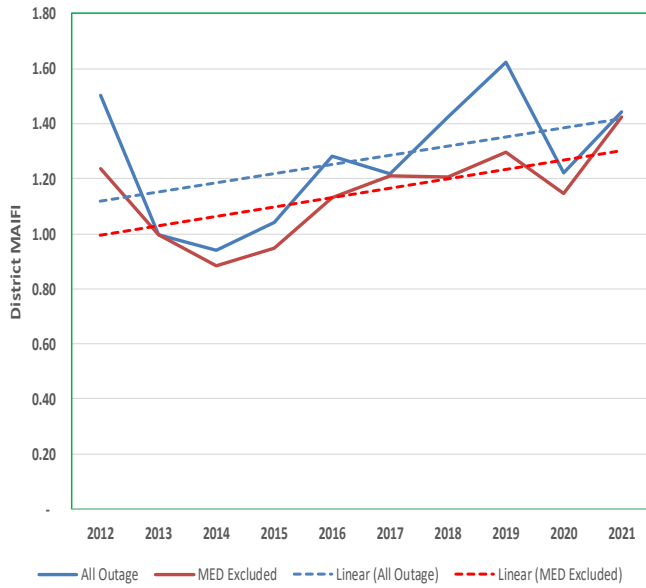
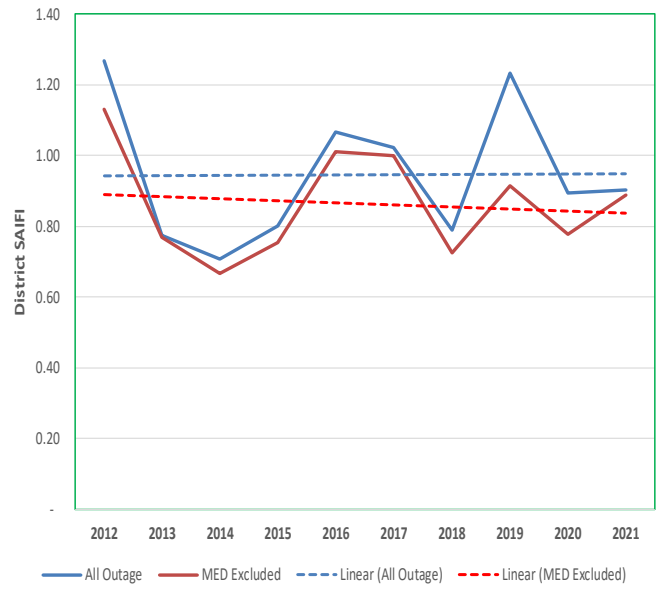
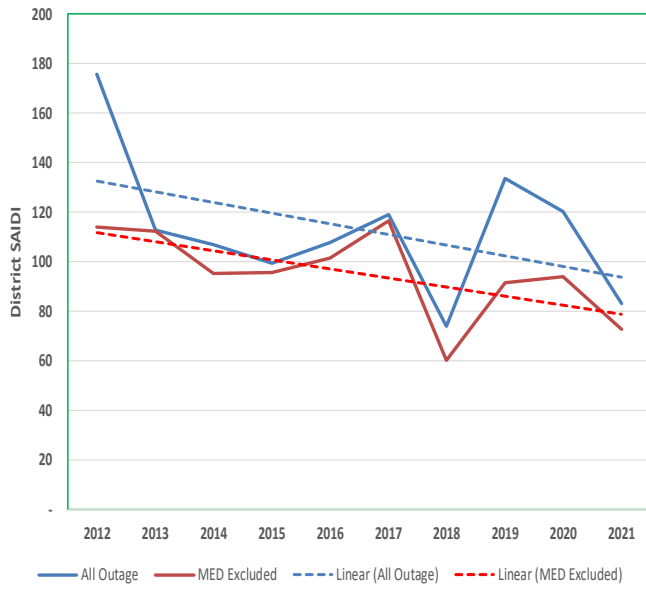
MONTEBELLO District Reliability Performance



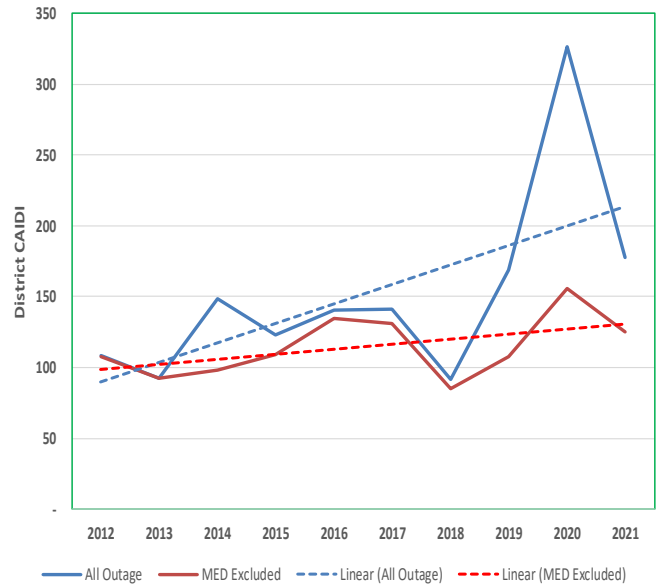
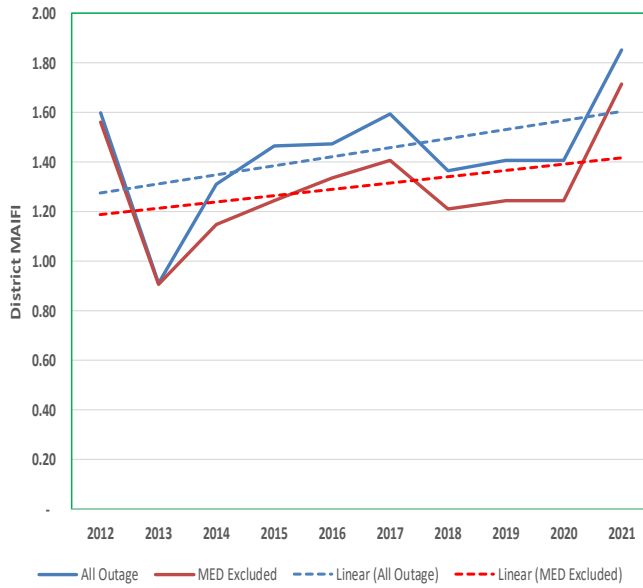
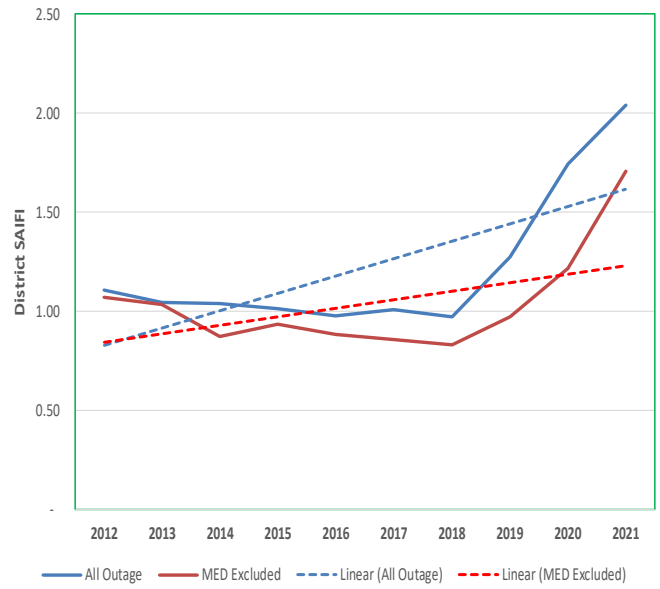
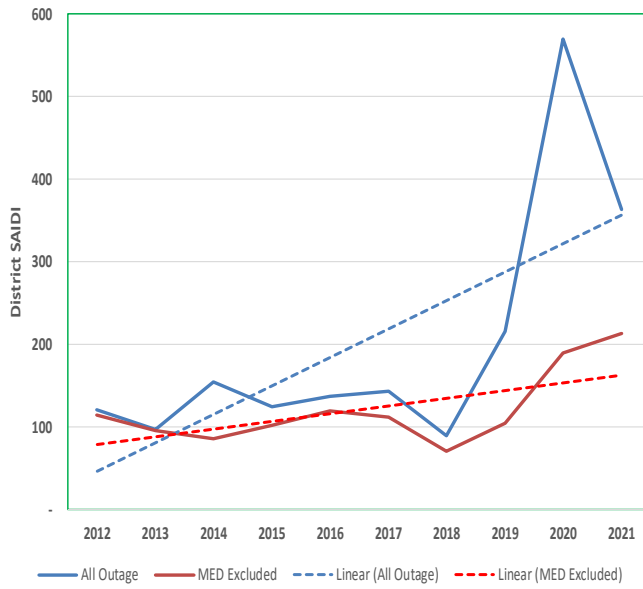
ONTARIO District Reliability Performance



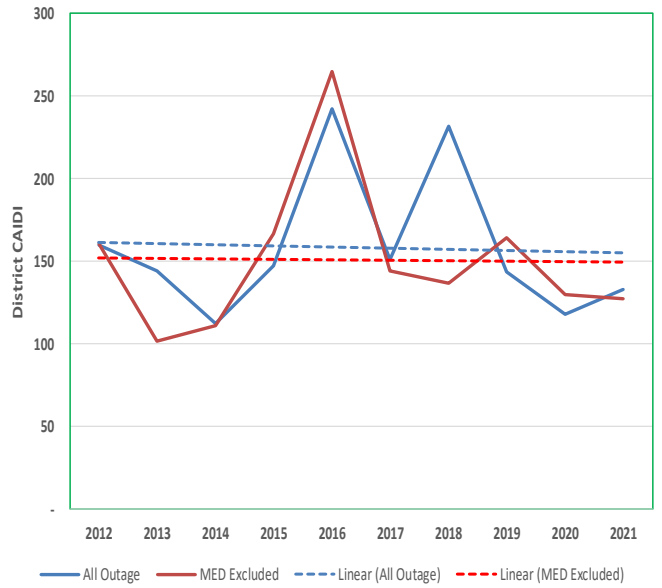
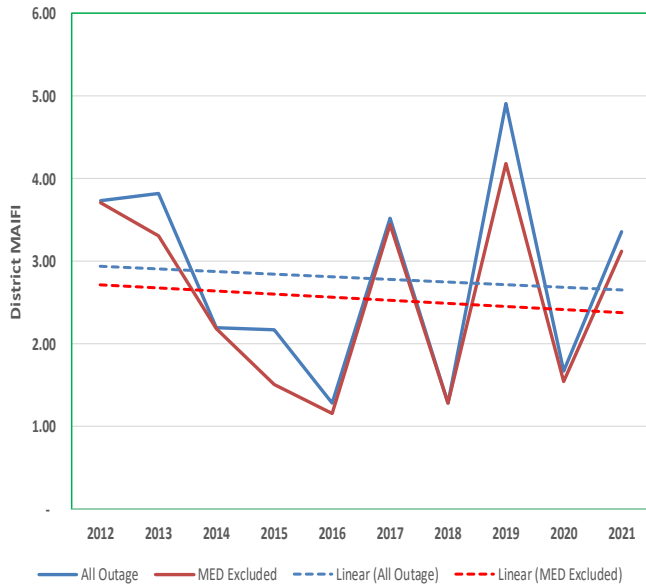
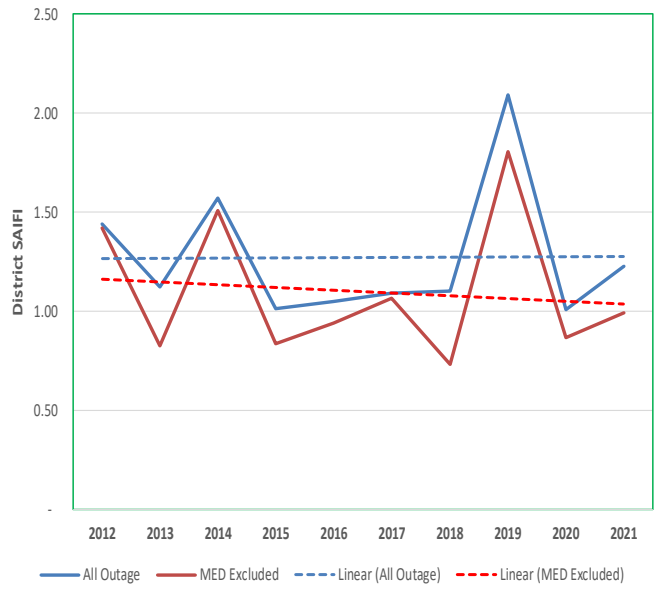
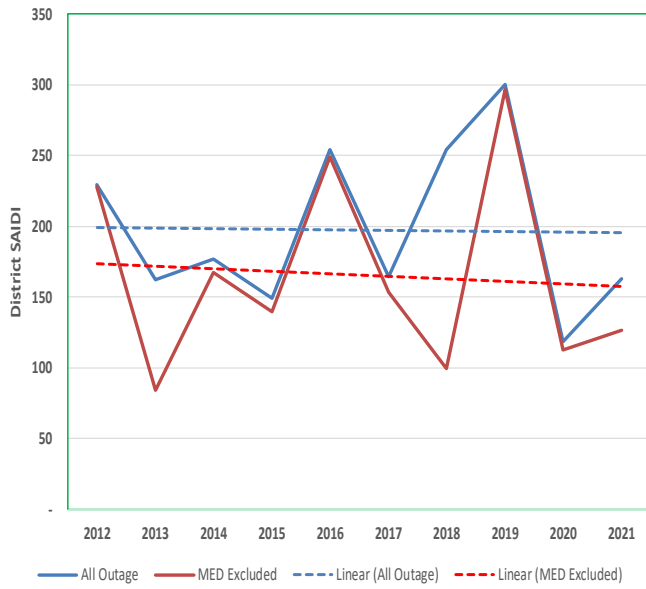
PALM SPRINGS District Reliability Performance



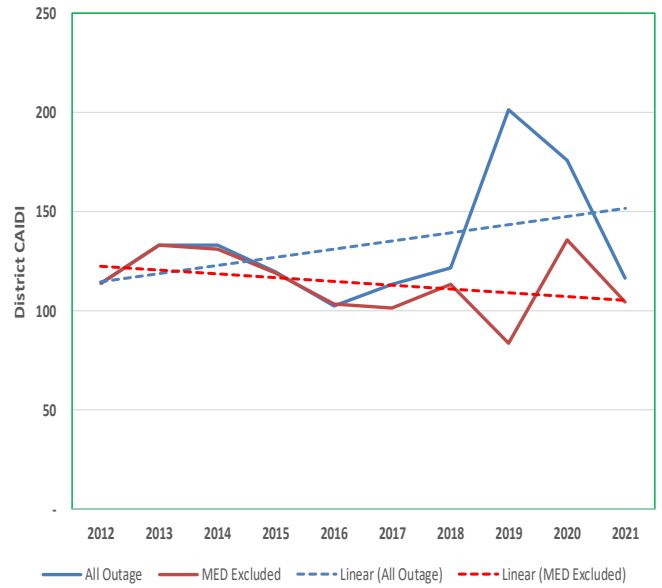
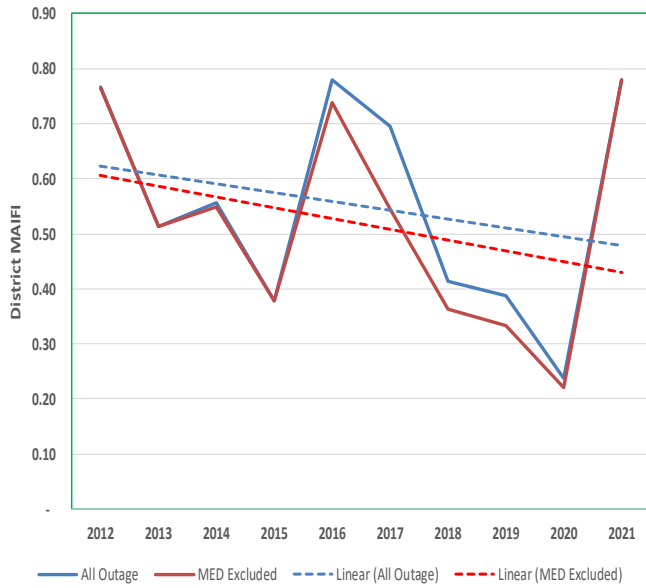
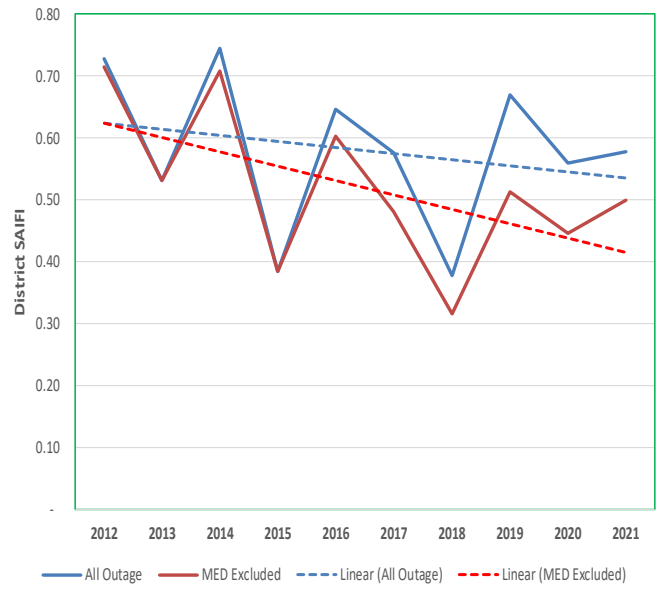
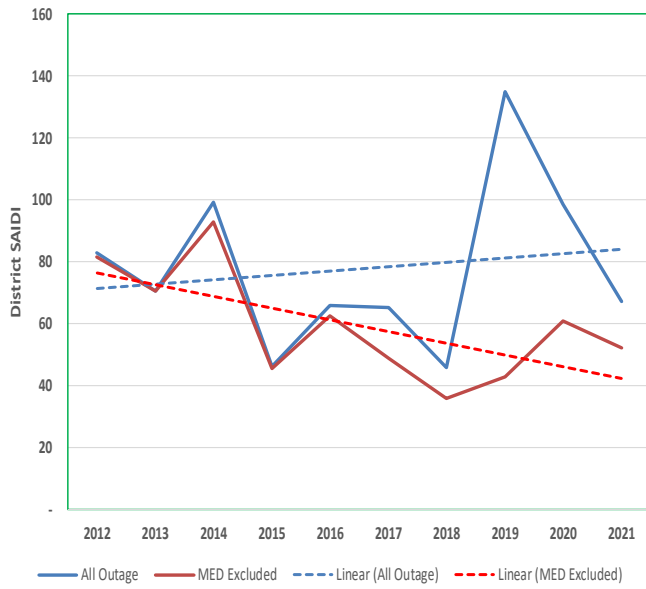
REDLANDS District Reliability Performance



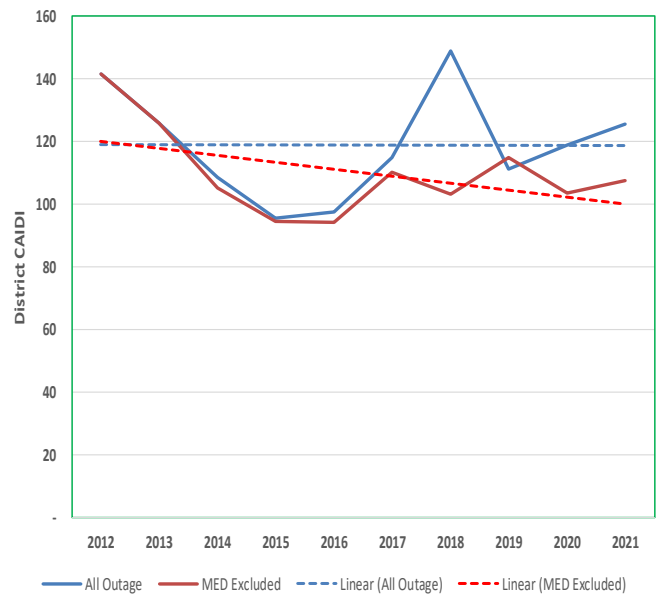
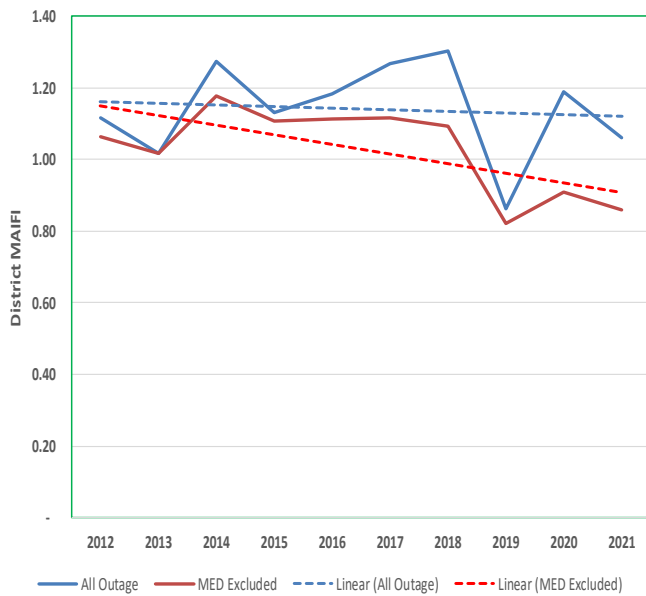
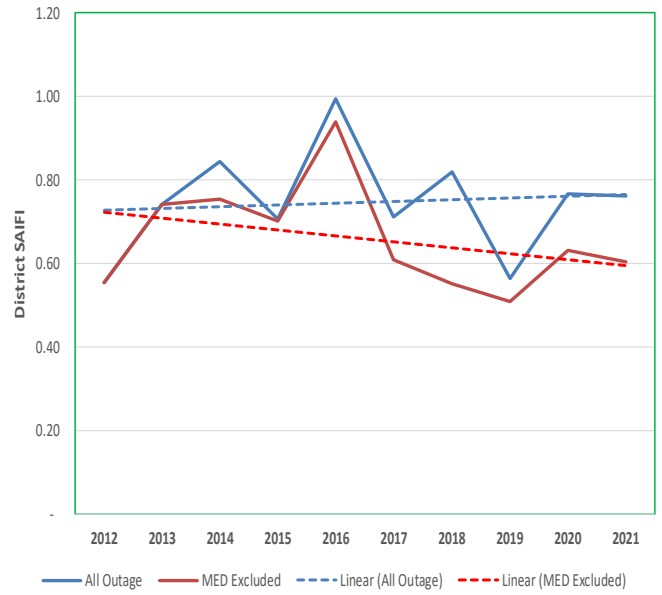
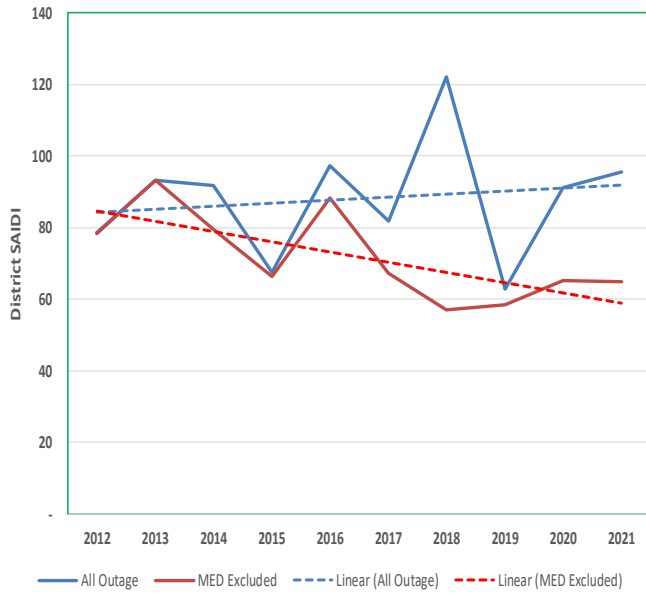
RIDGECREST District Reliability Performance



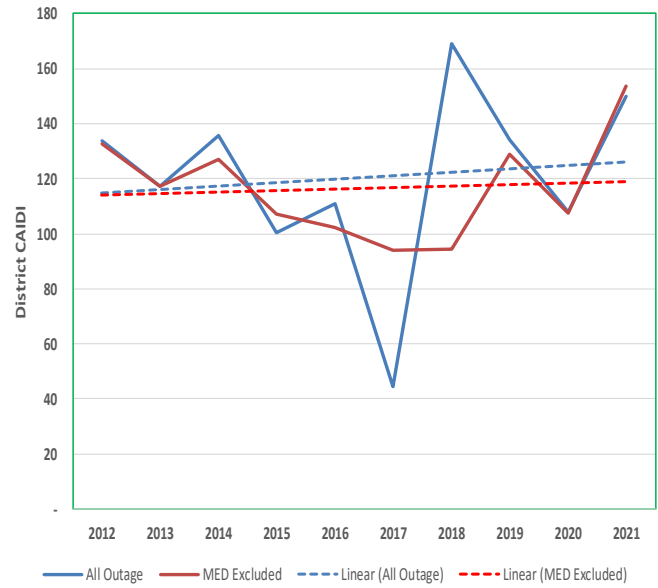
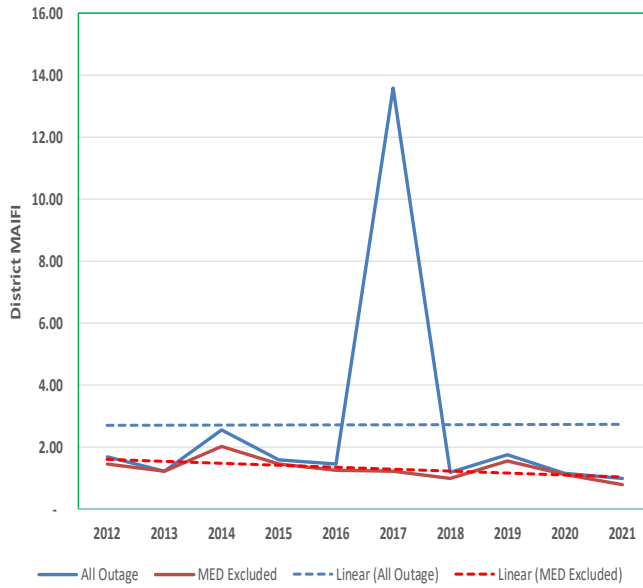
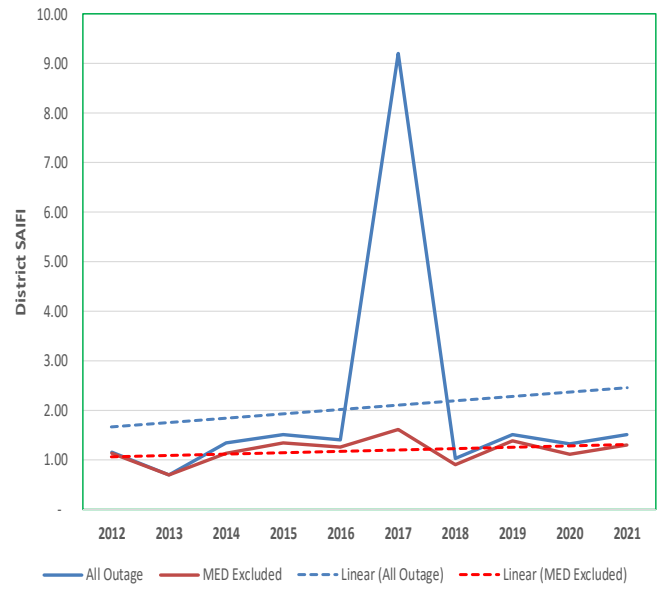
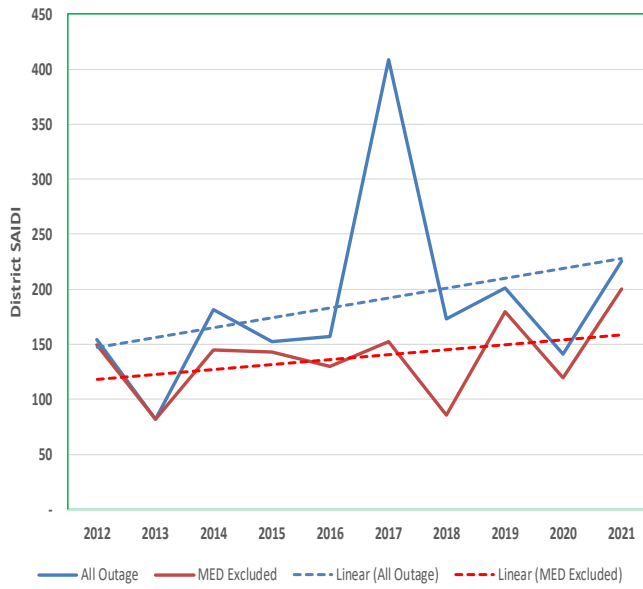
SADDLEBACK District Reliability Performance



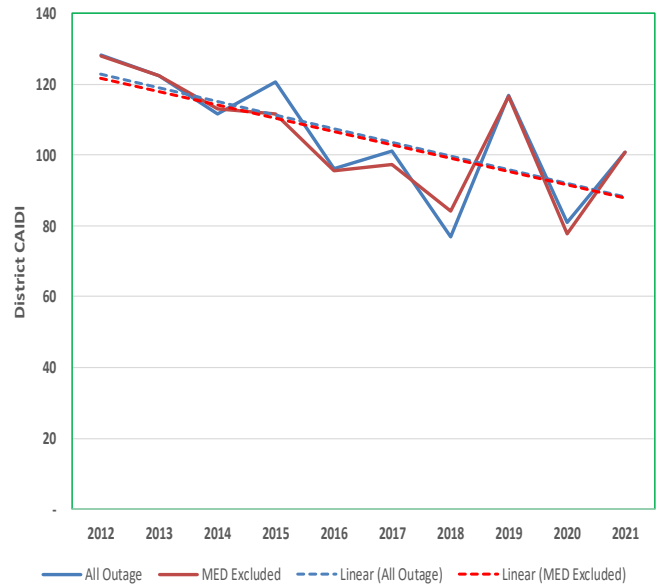
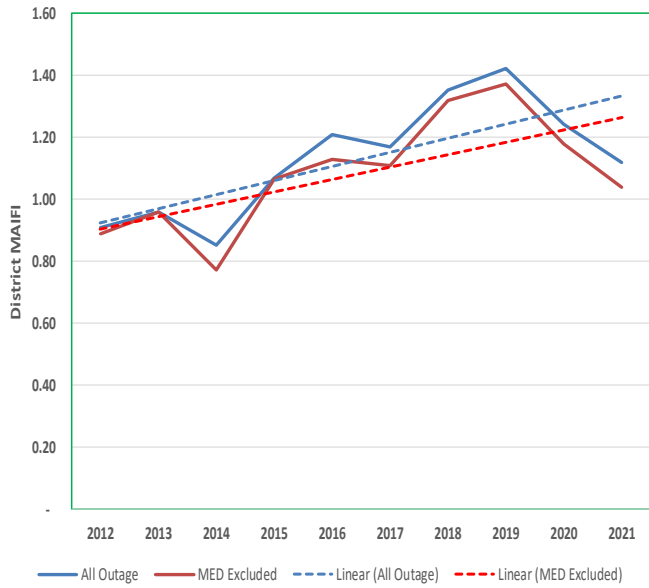
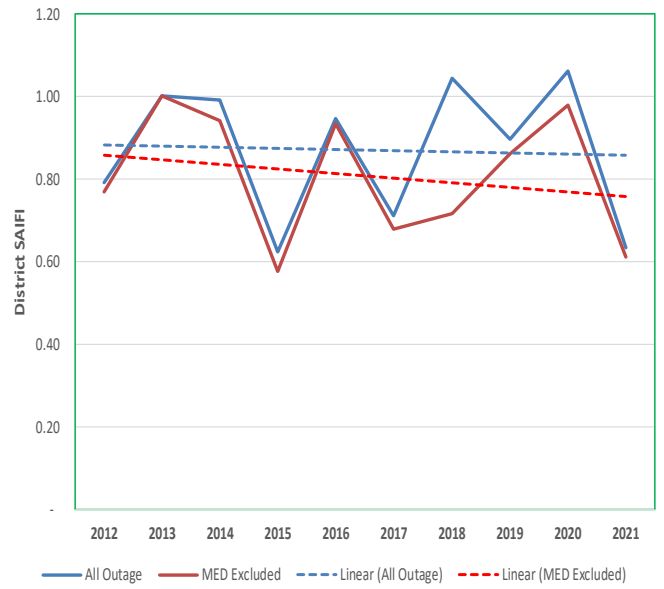
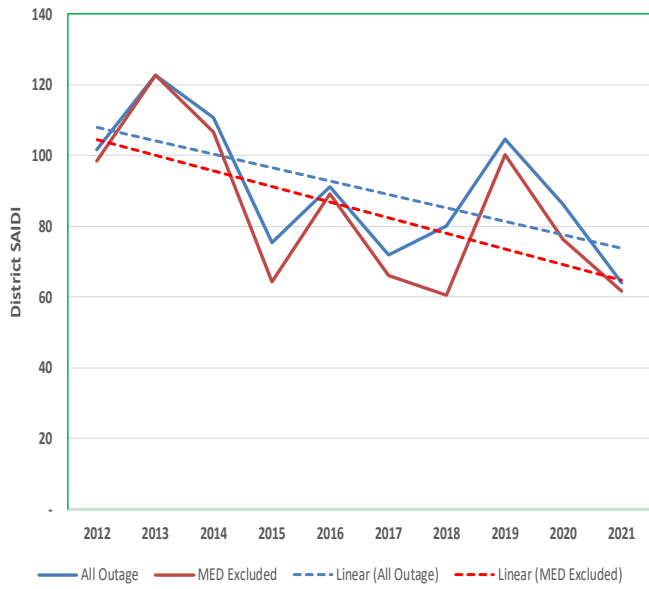
SANTA ANA District Reliability Performance



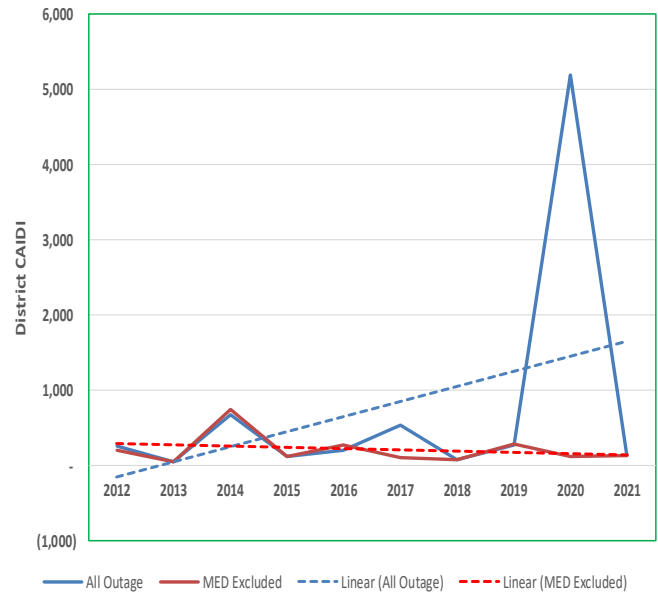
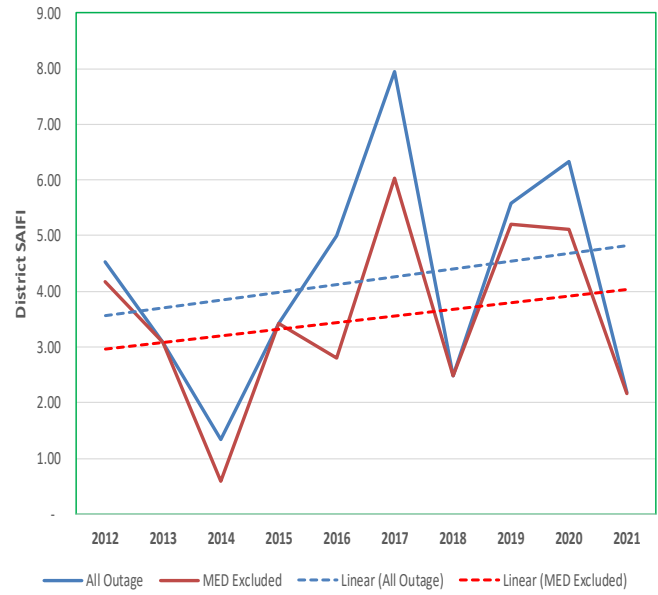
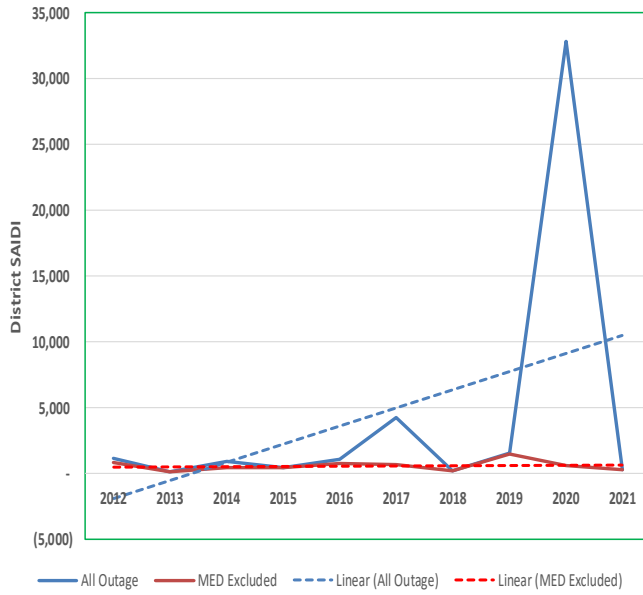
SANTA BARBARA District Reliability Performance



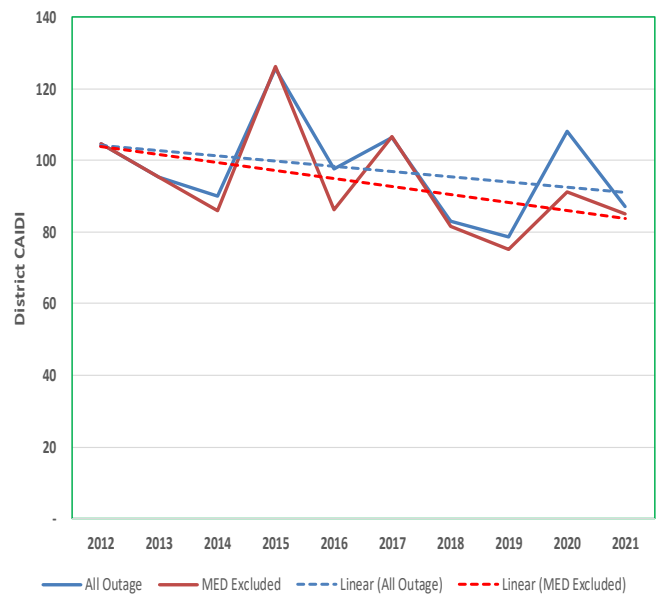
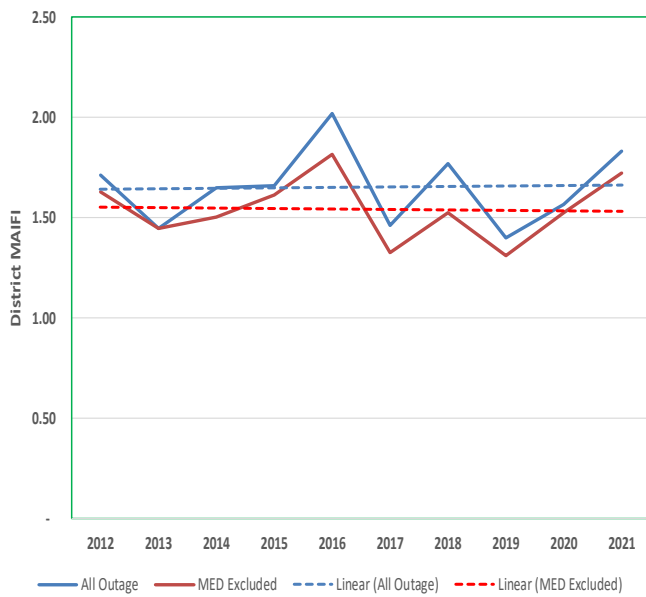
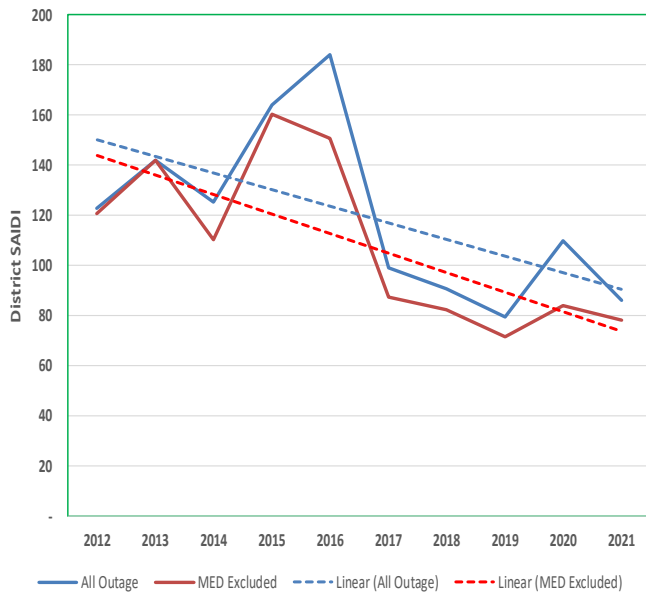
SANTA MONICA District Reliability Performance



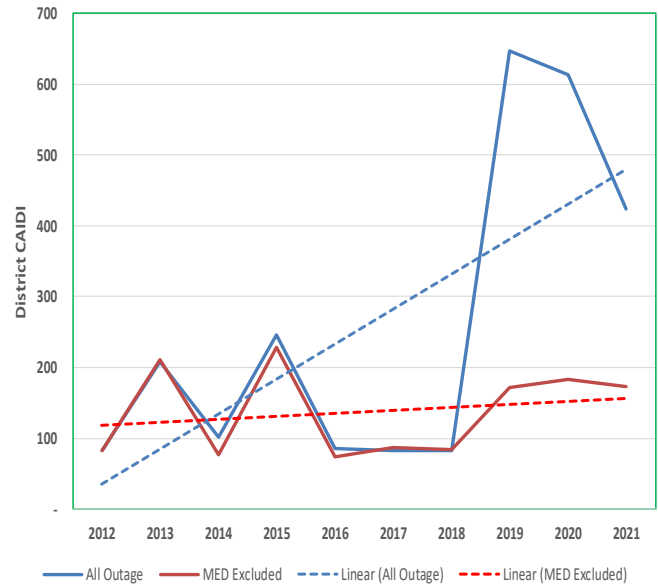
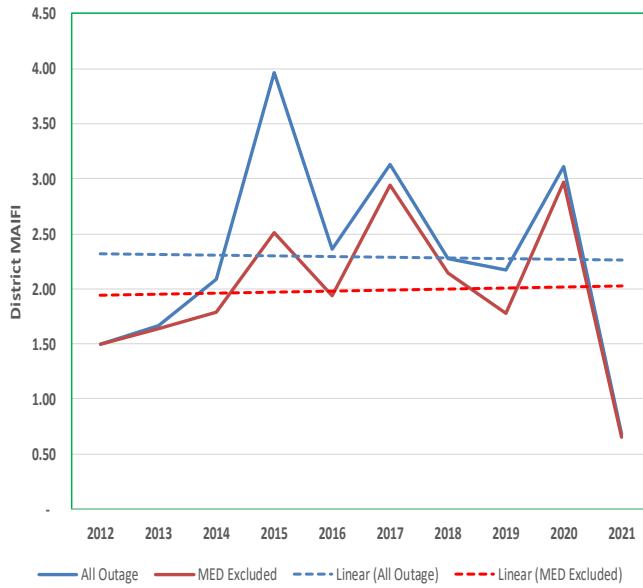
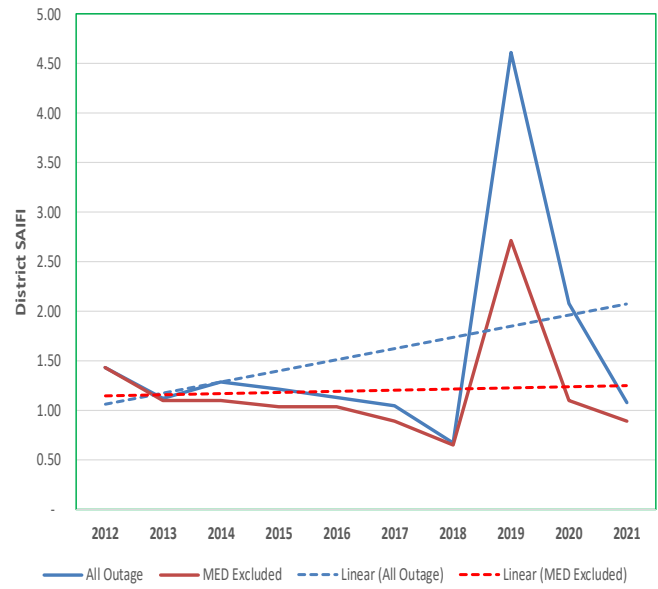
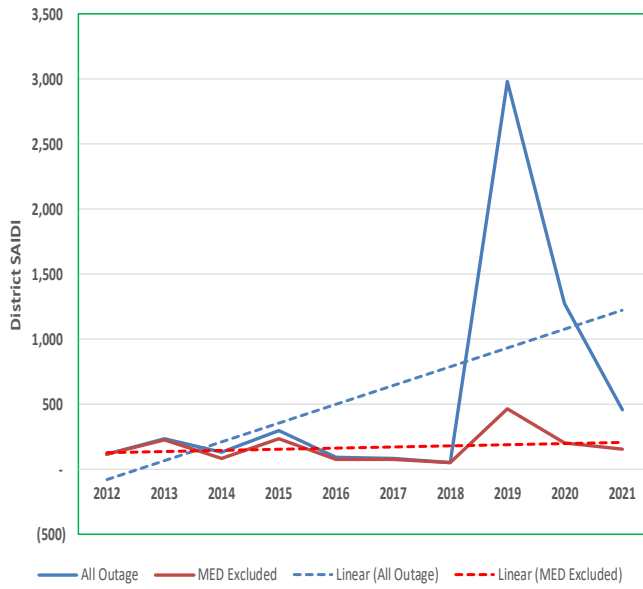
SHAVER LAKE District Reliability Performance



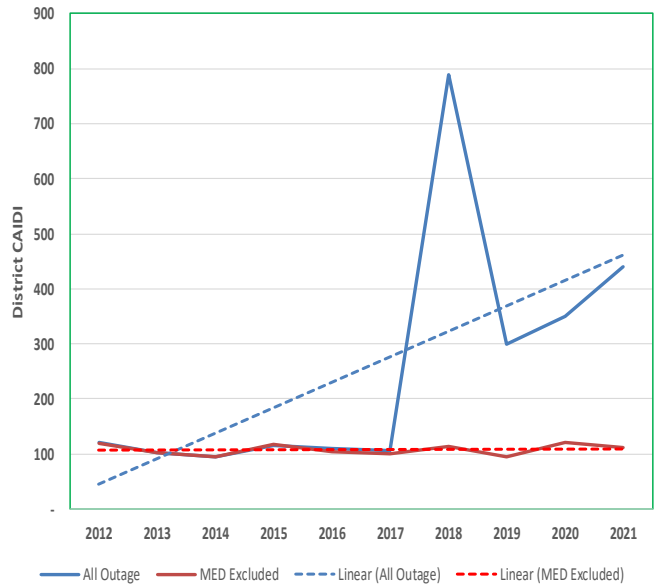
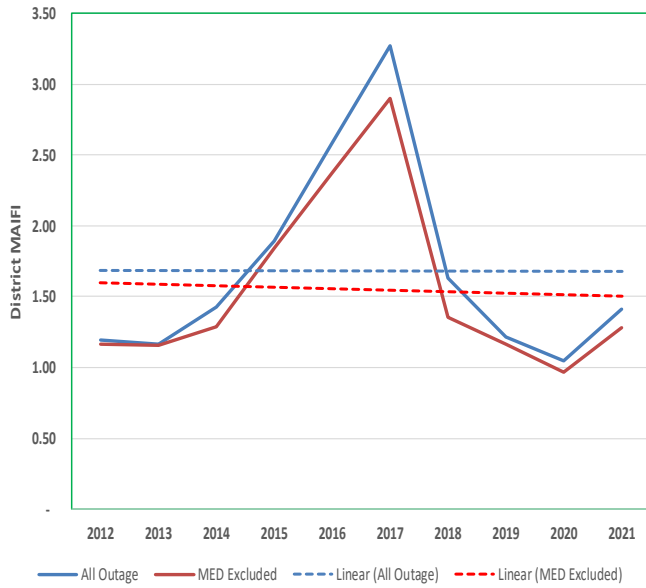
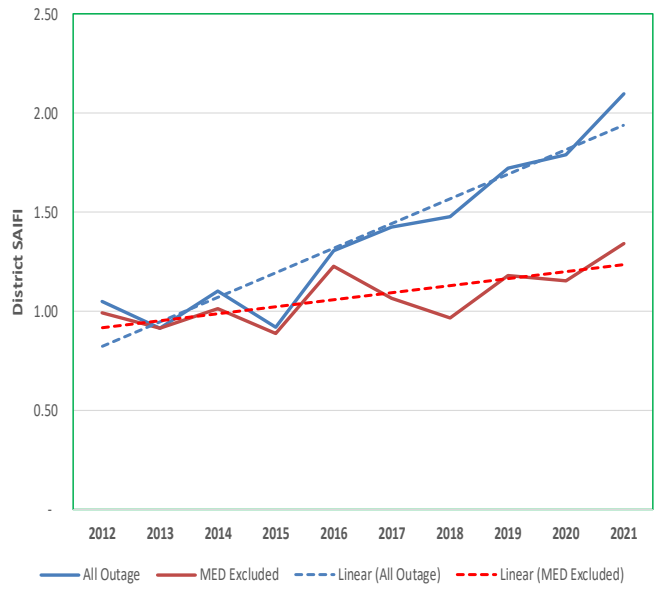
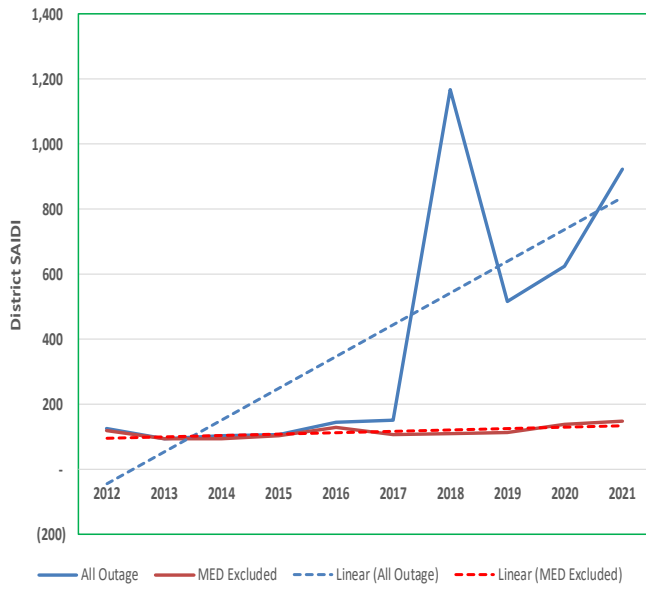
SOUTH BAY District Reliability Performance



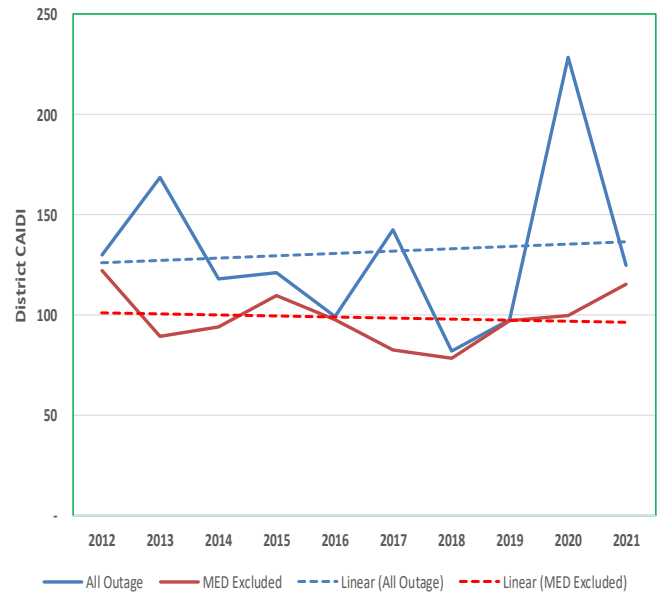
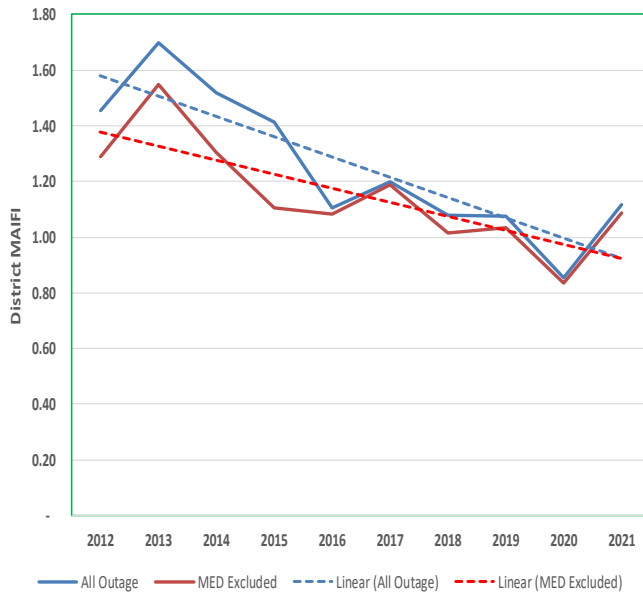
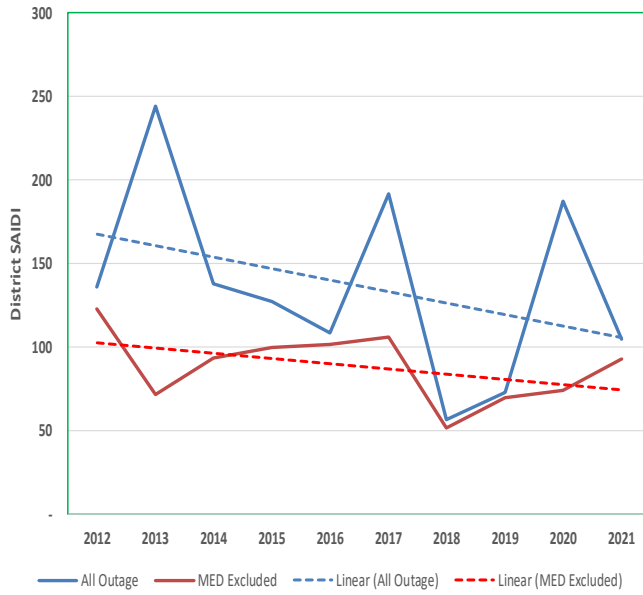
TEHACHAPI District Reliability Performance



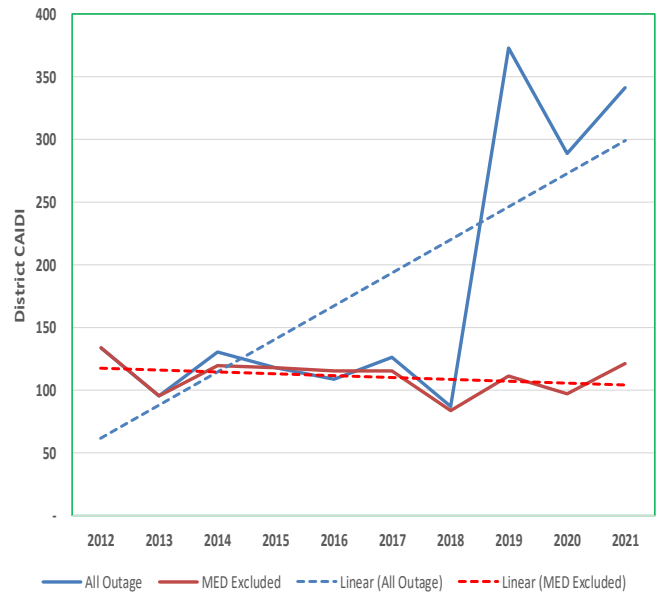
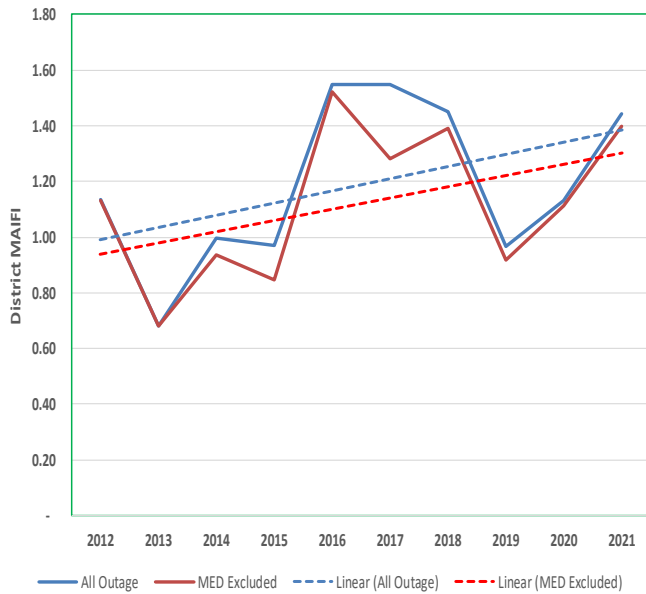
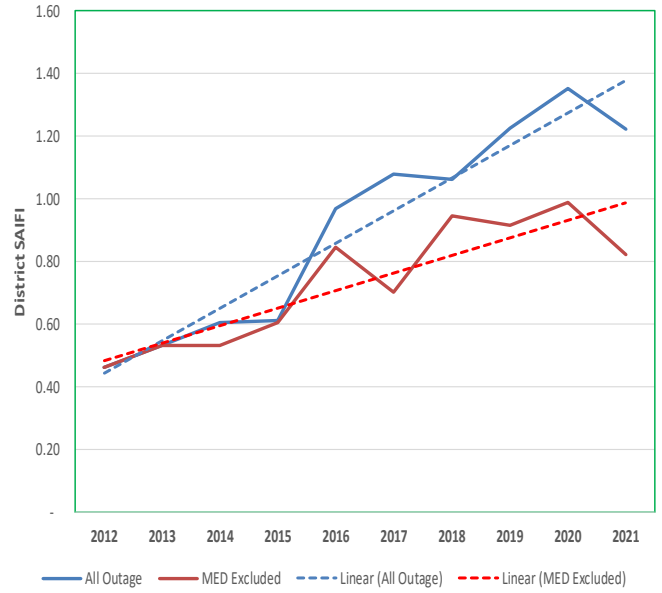
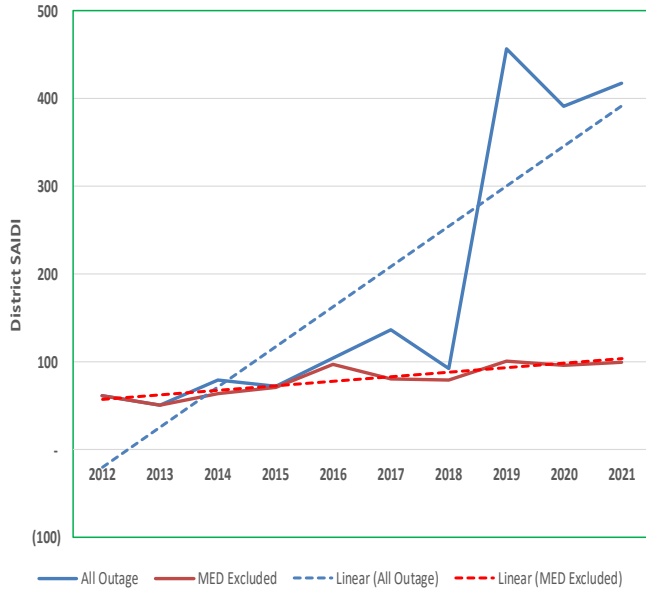
THOUSAND OAKS District Reliability Performance



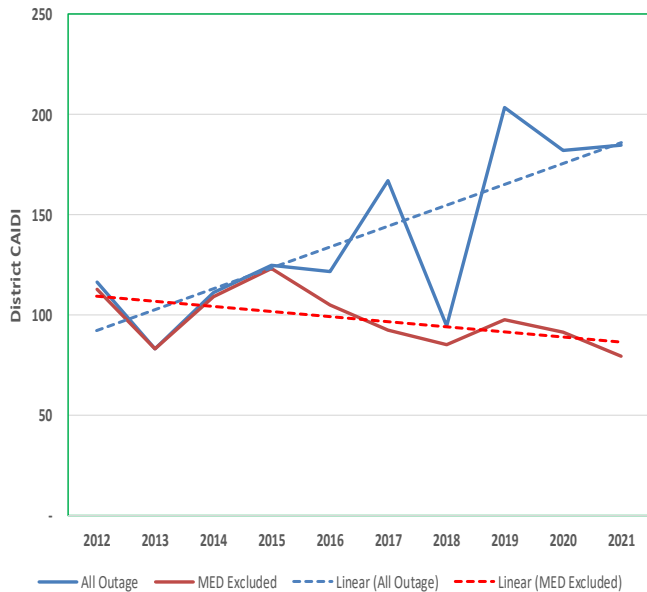
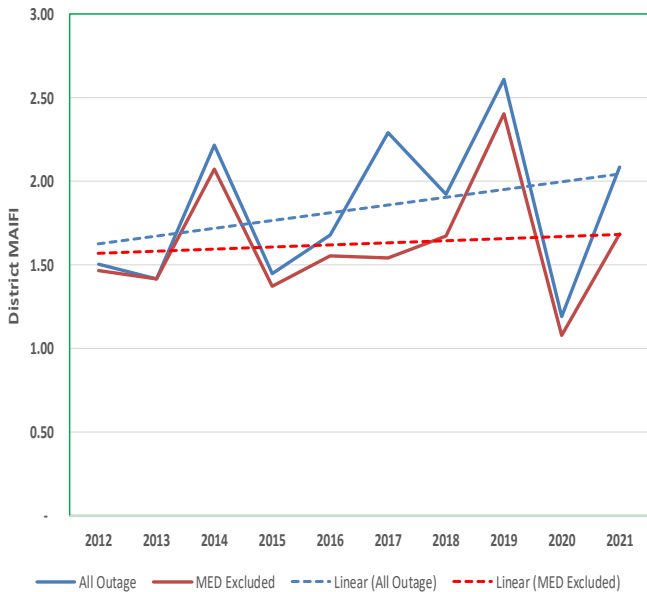
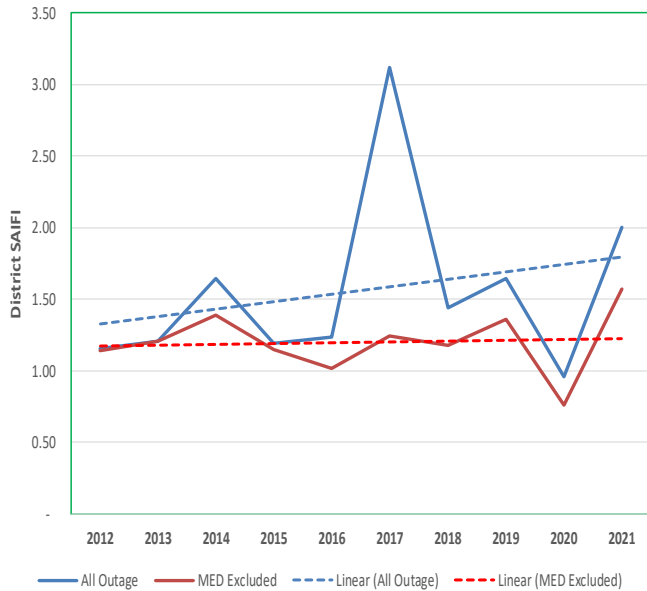
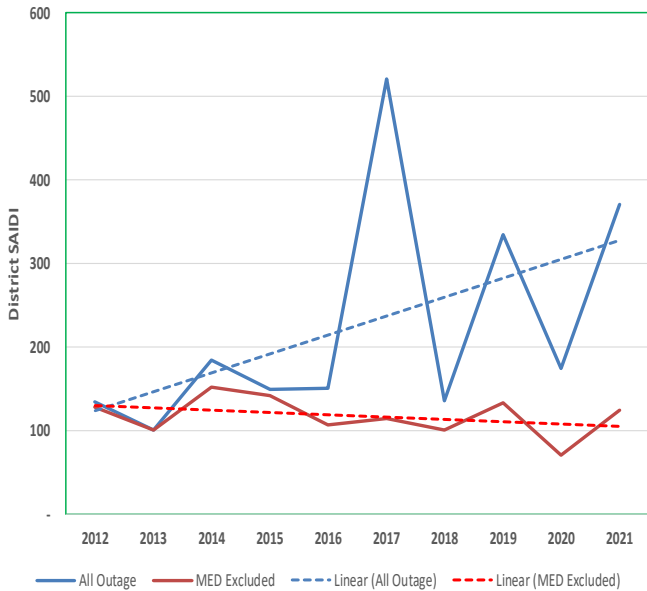
TULARE District Reliability Performance



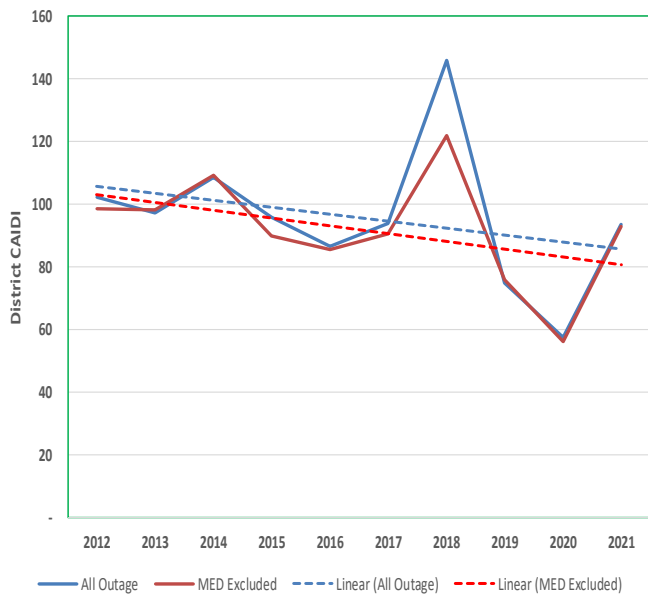
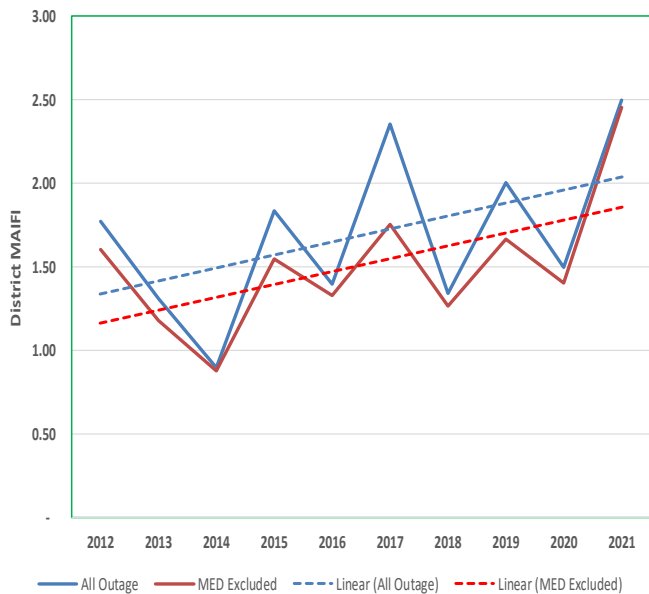
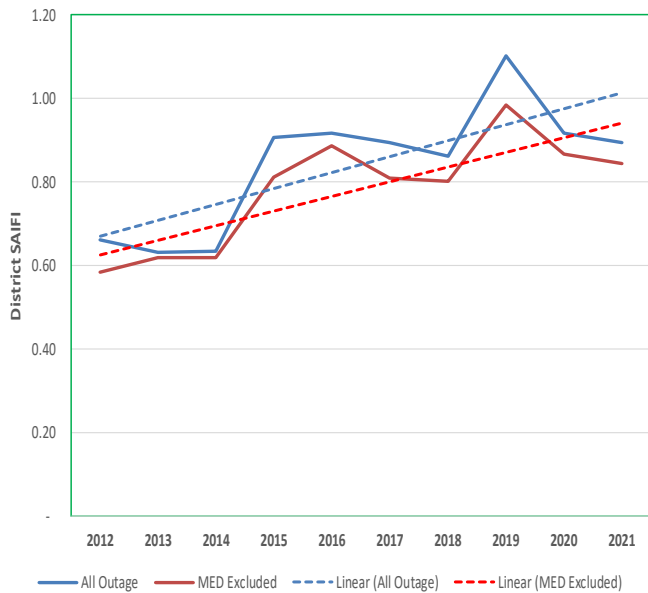
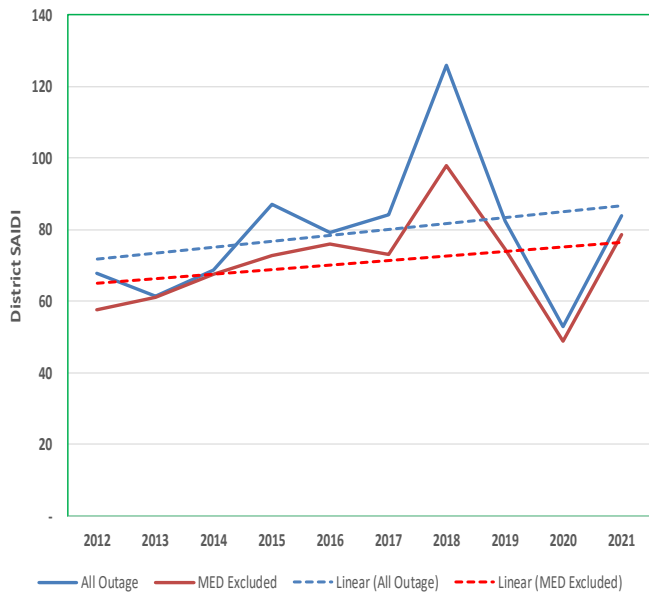
VALENCIA District Reliability Performance



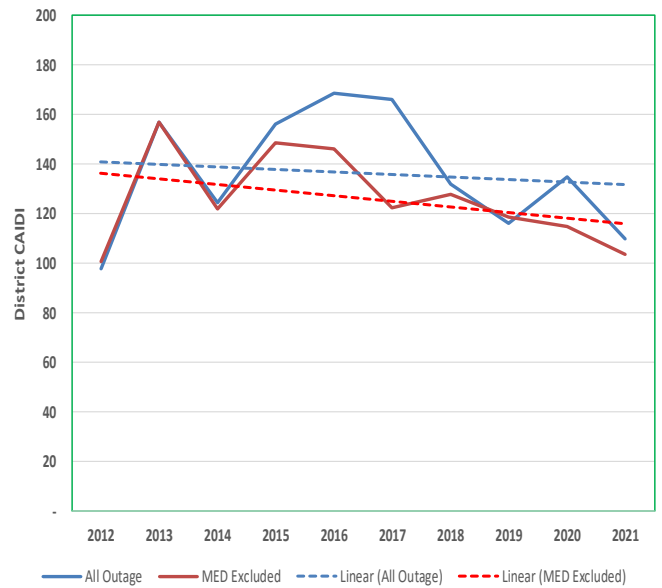
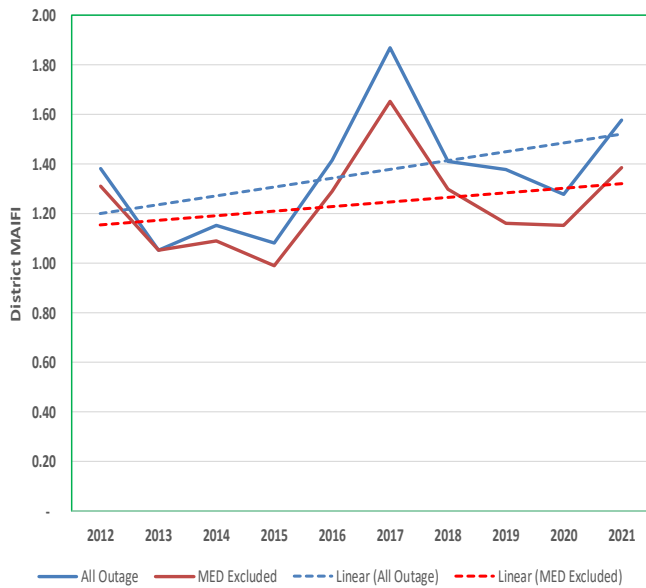
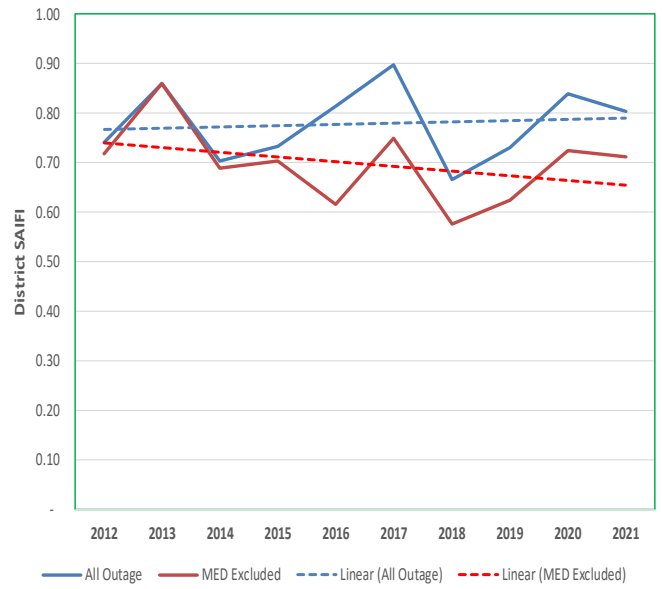
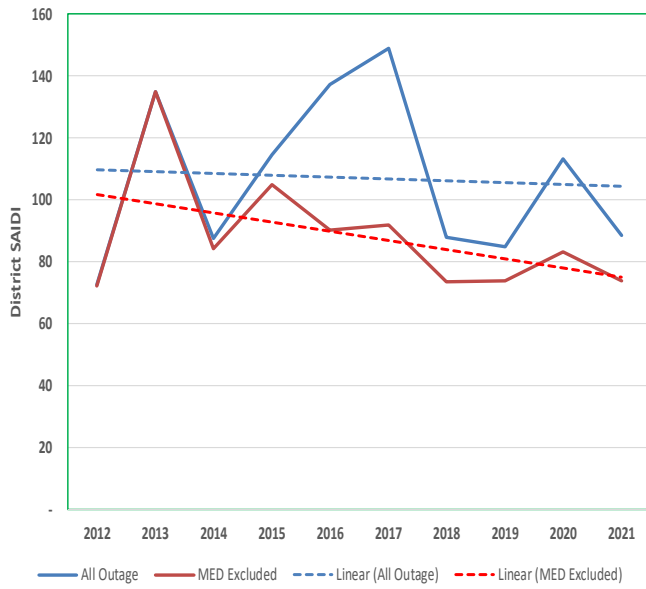
VENTURA District Reliability Performance



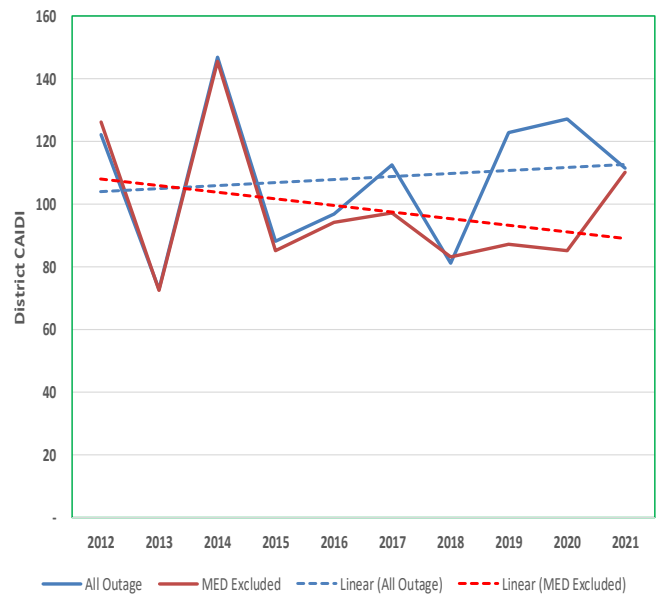
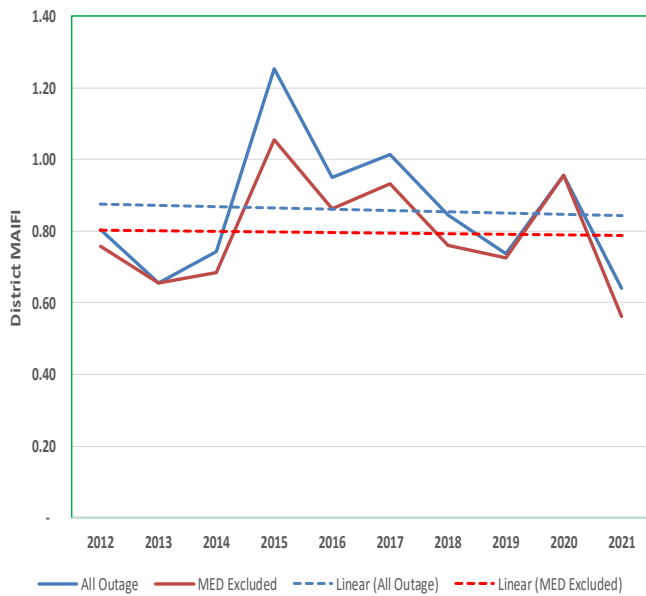
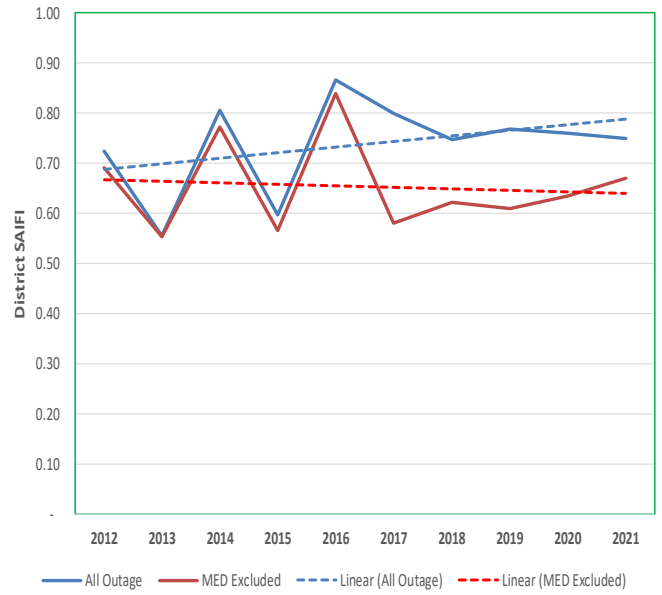
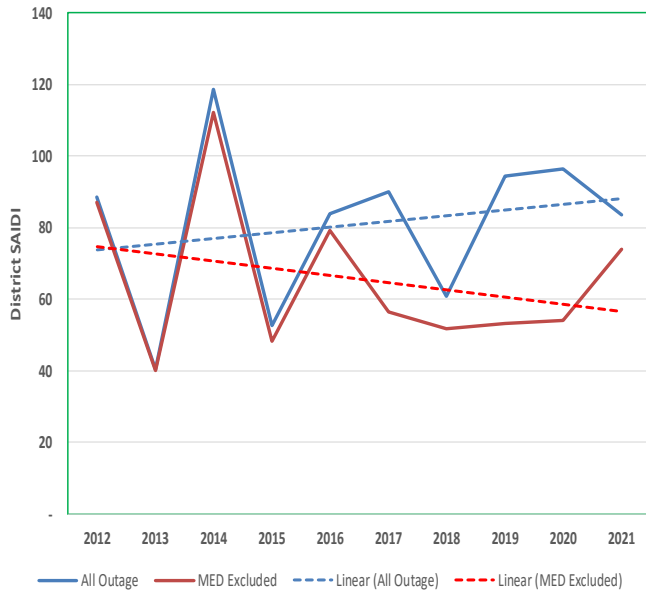
VICTORVILLE District Reliability Performance



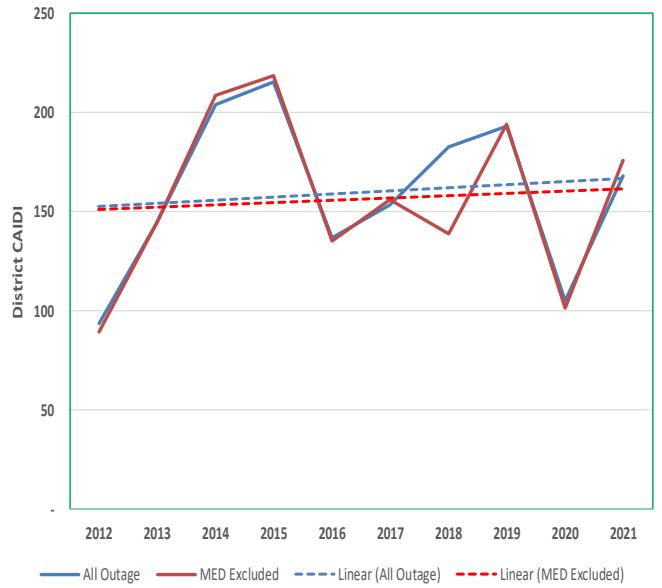
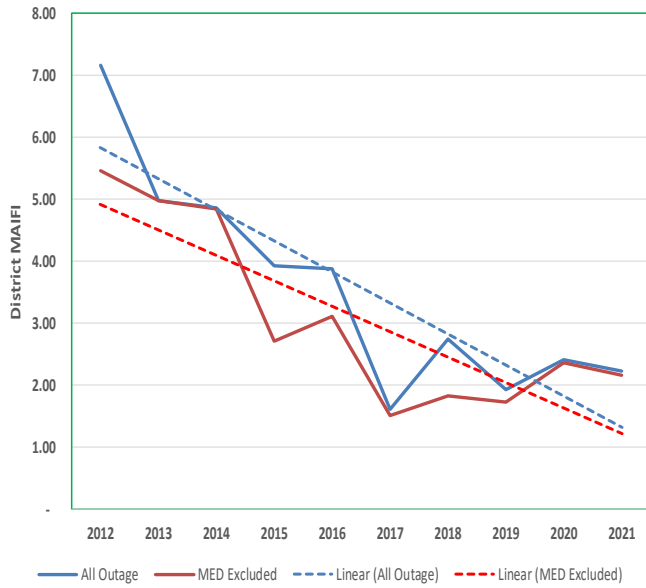
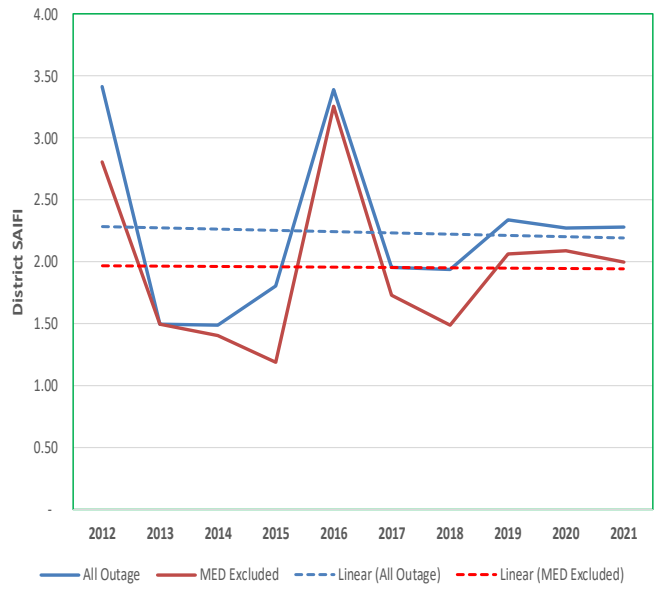
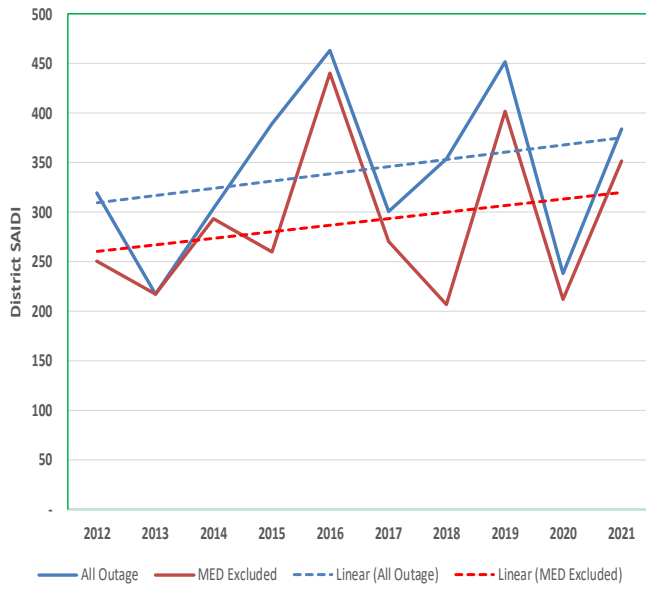
WHITTIER District Reliability Performance



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 2012-2021 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 (2012-2021) Planned and Unplanned⁹

YEAR	Total System Indices (All Interruptions Included) ¹⁰				Total System Indices (Major Event Days Excluded)			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
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
2021	179.58	1.11	1.44	161.64	103.66	0.96	1.32	108.01

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.

¹⁰ Total System Indices include all interruptions for 2012 to 2020. For 2021, the data only includes Unplanned Outages.

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

Table 6 – District Indices (2012-2021) Planned and Unplanned ¹¹

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
ANTELOPE VALLEY								
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
2021	162.578	1.304	1.714	124.644	149.300	1.239	1.708	120.521
ARROWHEAD								
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
2021	1565.303	2.875	4.204	544.443	492.173	2.057	3.329	239.241
BARSTOW								
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
2021	215.495	2.676	3.921	80.519	196.571	2.390	3.725	82.250
BISHOP								
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
2021	385.919	2.471	3.970	156.178	355.380	2.404	3.884	147.809
BLYTHE								
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
2021	195.745	1.180	3.185	165.894	194.702	1.175	3.086	165.715

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.

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
COMPTON								
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
2021	109.997	1.248	2.635	88.119	87.947	1.070	2.456	82.184
COVINA								
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
2021	99.694	1.084	1.274	92.001	91.446	1.029	1.180	88.893
FOOTHILL								
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
2021	304.597	1.432	1.635	212.771	137.892	1.095	1.439	125.877
FULLERTON								
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
2021	94.823	0.613	1.177	154.782	82.575	0.573	1.077	144.016
HUNTINGTON BEACH								
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
2021	88.546	0.963	1.388	91.981	79.755	0.877	1.232	90.966
KERNVILLE								
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
2021	1811.965	1.664	1.775	1088.835	1041.644	1.329	1.214	783.884

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
LONG BEACH								
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
2021	76.045	0.810	1.182	93.915	66.005	0.736	1.045	89.662
MENIFEE								
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
2021	171.143	1.069	0.780	160.031	87.365	0.921	0.697	94.822
MONROVIA								
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
2021	117.768	1.152	1.320	102.240	107.486	1.109	1.219	96.893
MONTEBELLO								
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
2021	126.172	1.041	1.915	121.215	119.651	1.012	1.774	118.191
ONTARIO								
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
2021	104.540	0.982	1.407	106.503	70.427	0.853	1.249	82.560
PALM SPRINGS								
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
2021	82.882	0.900	1.210	92.054	72.622	0.885	1.192	82.067

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
REDLANDS								
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
2021	362.861	2.031	1.685	178.699	213.564	1.694	1.595	126.037
RIDGECREST								
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
2021	163.286	1.227	2.975	133.126	126.245	0.992	2.774	127.221
SADDLEBACK								
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
2021	66.631	0.567	0.774	117.499	52.224	0.499	0.774	104.581
SANTA ANA								
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
2021	95.513	0.761	0.950	125.541	64.941	0.604	0.821	107.568
SANTA BARBARA								
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
2021	225.138	1.503	0.942	149.806	200.176	1.302	0.771	153.784
SANTA MONICA								
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
2021	63.657	0.634	1.082	100.372	61.224	0.611	1.000	100.140

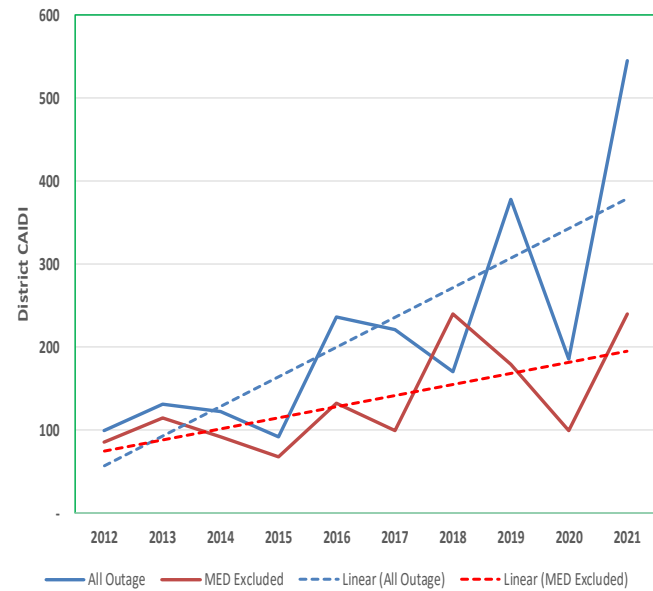
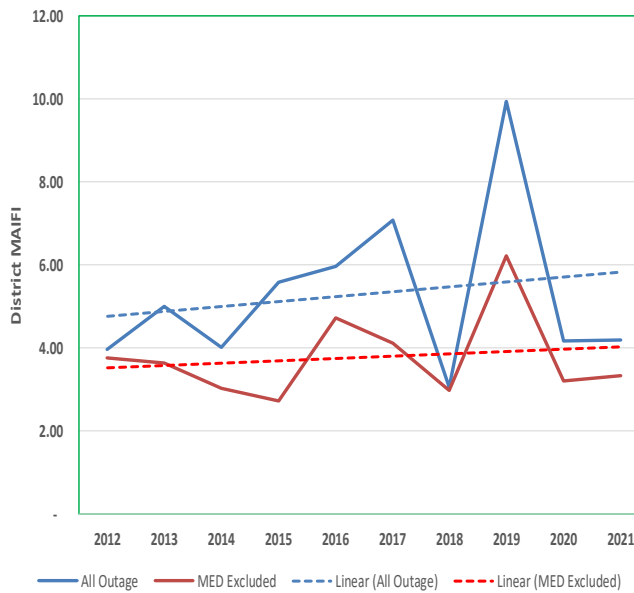
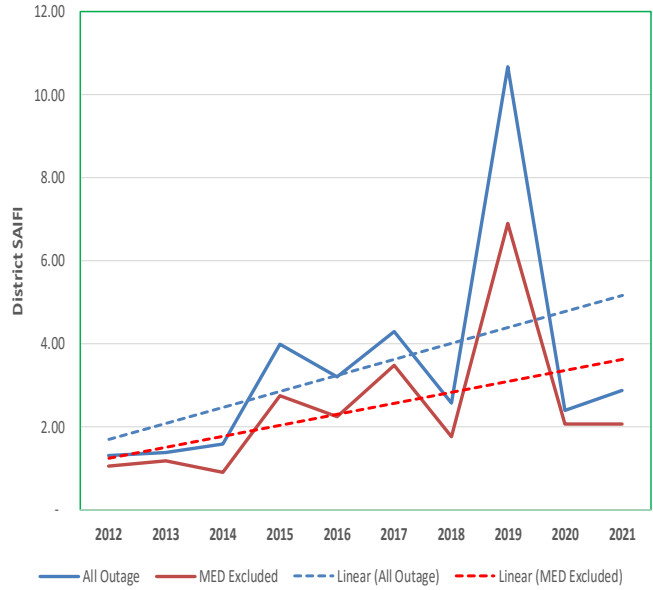
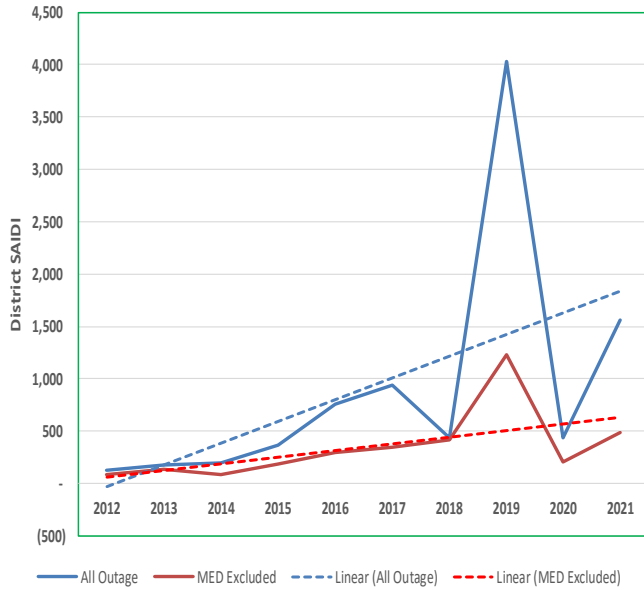
DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
SHAVER LAKE								
2012	1184.253	4.523	2.608	261.831	842.662	4.182	1.681	201.512
2013	176.510	3.080	4.987	57.308	176.510	3.080	4.711	57.308
2014	920.254	1.342	4.901	685.961	438.216	0.581	3.960	754.138
2015	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
2021	295.785	2.188	1.747	135.179	288.244	2.170	1.746	132.808
SOUTH BAY								
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
2021	86.018	0.990	1.743	86.923	78.051	0.919	1.648	84.922
TEHACHAPI								
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
2021	200.097	0.907	0.539	220.579	150.171	0.876	0.521	171.387
THOUSAND OAKS								
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
2021	923.396	2.100	1.356	439.795	149.739	1.344	1.240	111.397
TULARE								
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
2021	104.592	0.838	1.073	124.868	92.964	0.807	1.045	115.234
VALENCIA								
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
2021	417.038	1.220	1.132	341.810	99.964	0.821	1.088	121.736

DISTRICT	All Outage				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
VENTURA								
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
2021	370.305	2.004	1.995	184.823	124.741	1.571	1.670	79.381
VICTORVILLE								
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
2021	83.498	0.892	1.968	93.561	78.316	0.844	1.925	92.823
WHITTIER								
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
2021	88.264	0.803	1.527	109.957	73.632	0.712	1.353	103.386
WILDOMAR								
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
2021	83.379	0.749	0.597	111.315	73.618	0.669	0.530	110.023
YUCCA VALLEY								
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
2021	384.163	2.282	2.021	168.313	351.851	1.999	1.958	176.030

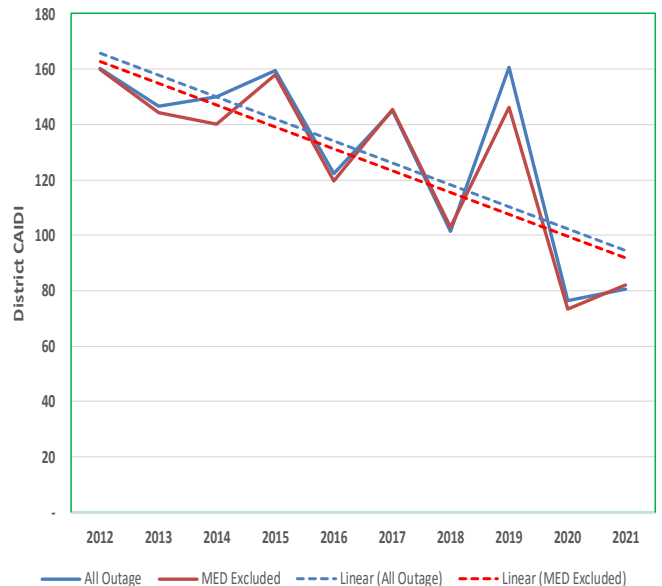
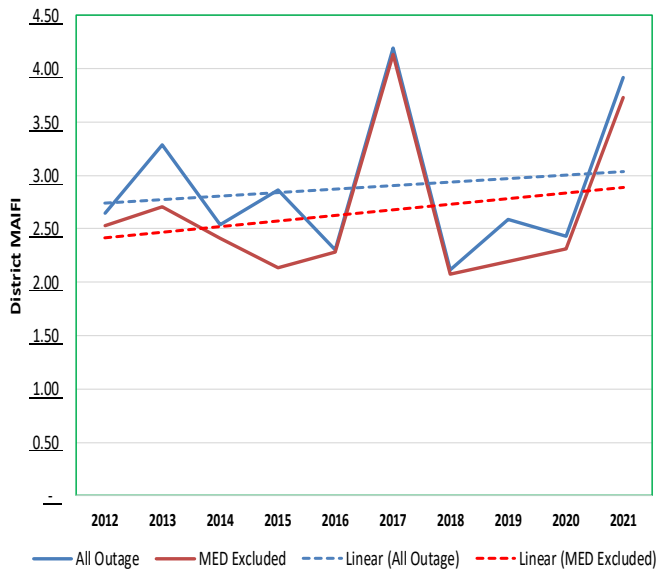
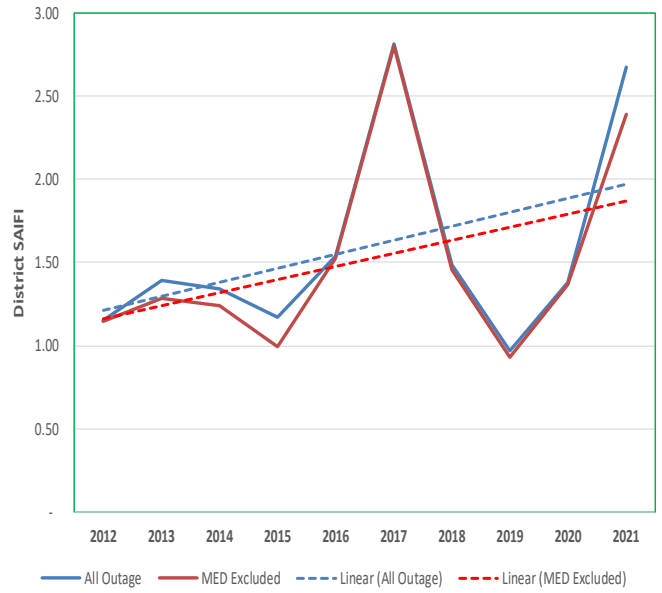
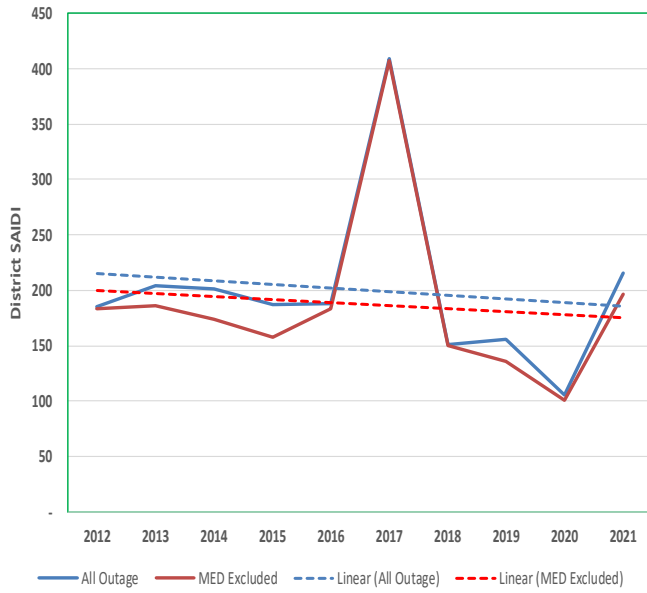
- a. The linear charts below show the past 10 years District Reliability Performance from 2012 – 2021 of dSAIDI, dSAIFI, dMAIFI and dCAIDI for all 34 districts. There are separate charts including and excluding MED. The charts shown are listed in alphabetical order by the district name.



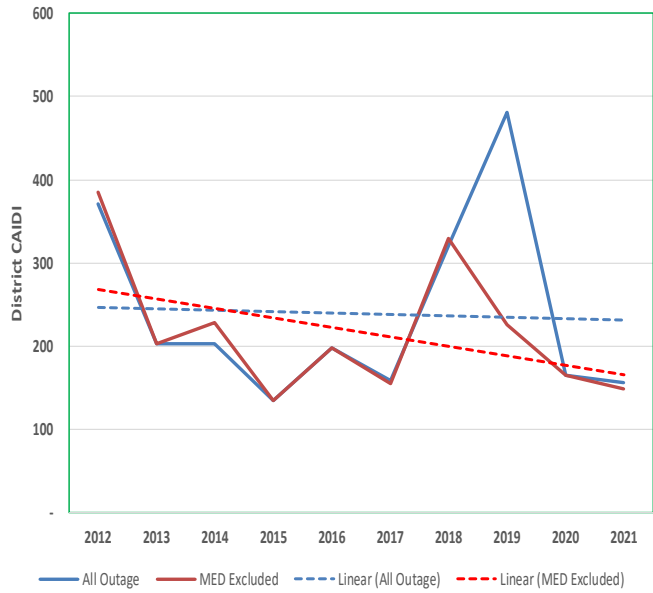
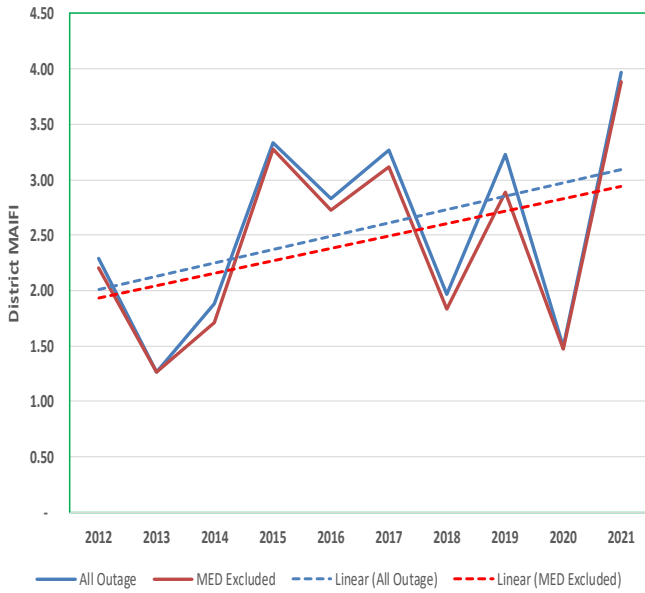
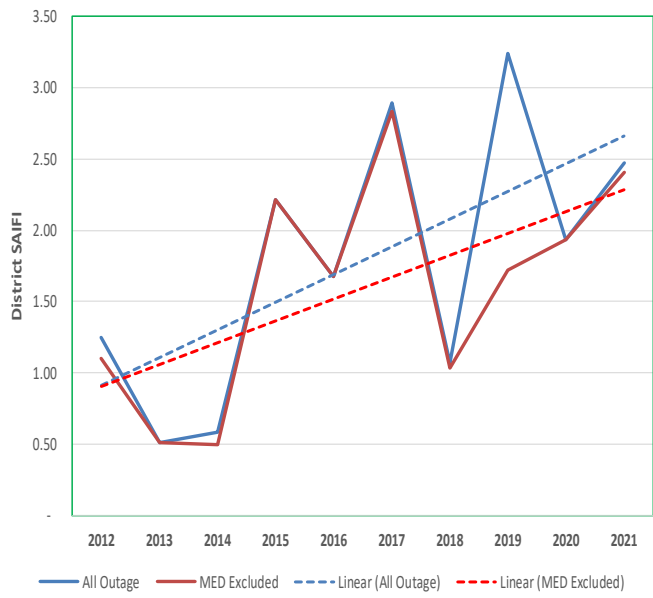
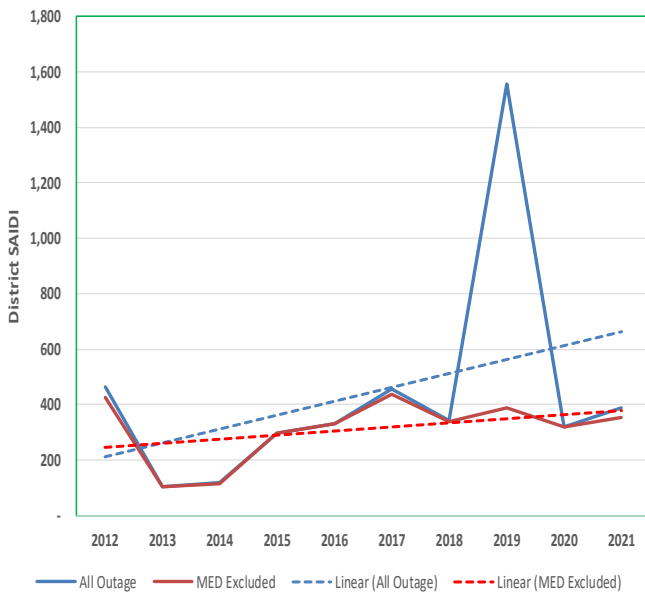
ARROWHEAD District Reliability Performance



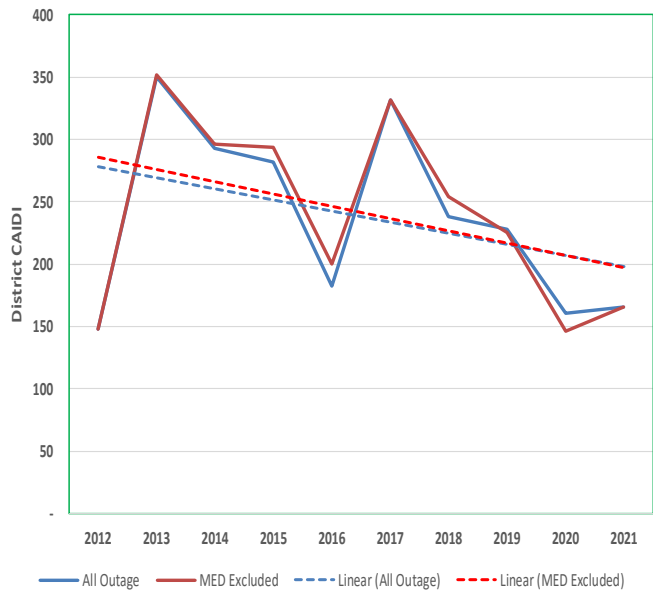
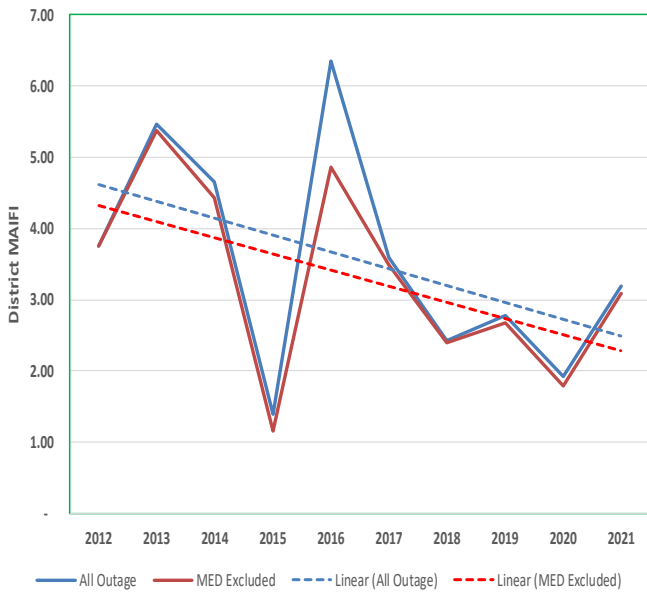
BARSTOW District Reliability Performance



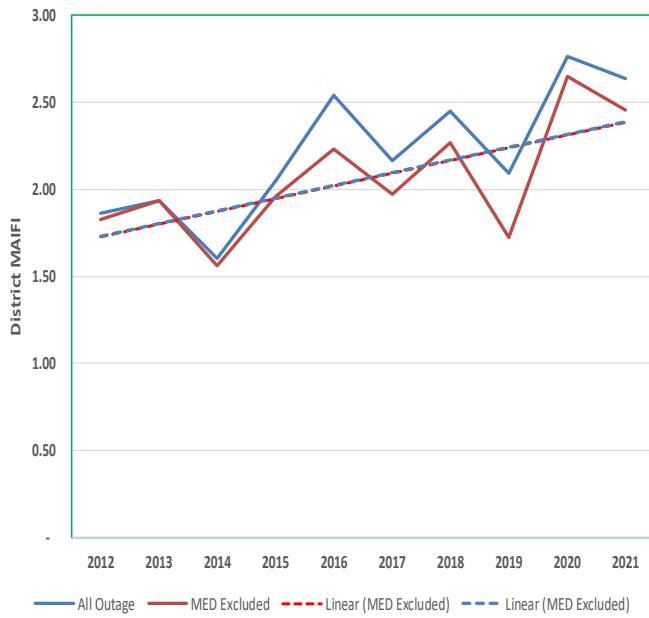
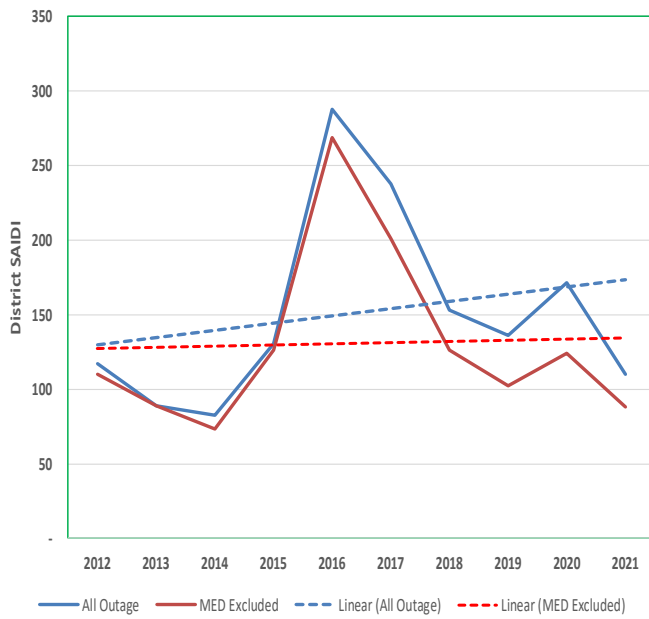
BISHOP District Reliability Performance



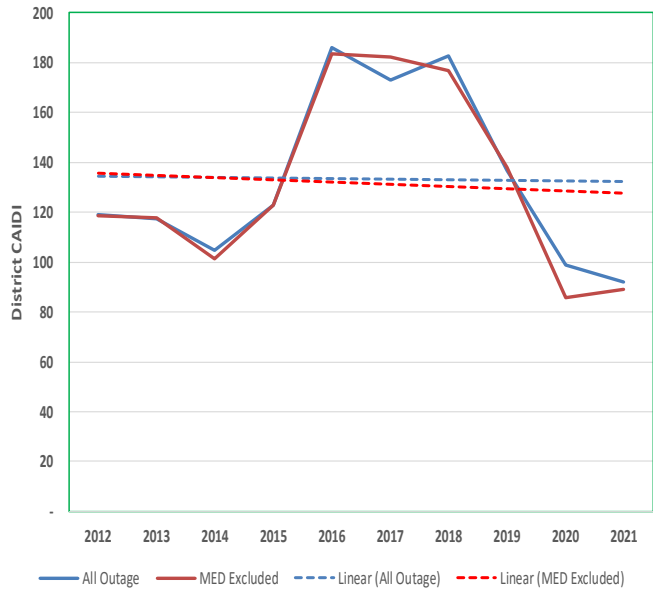
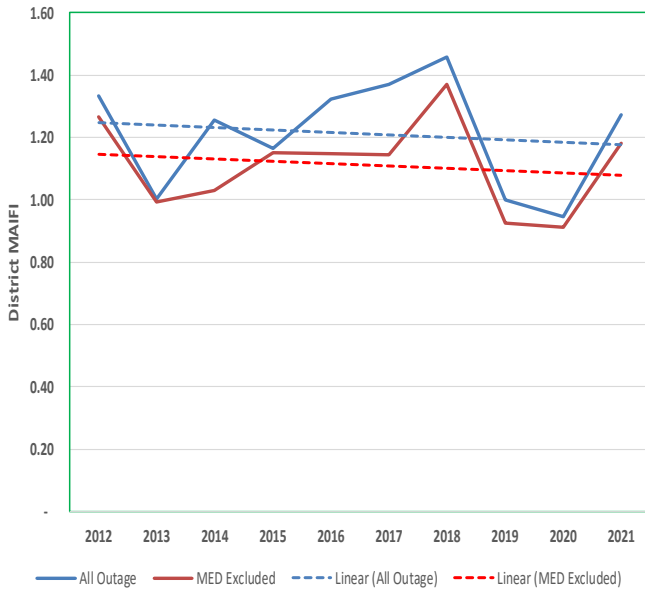
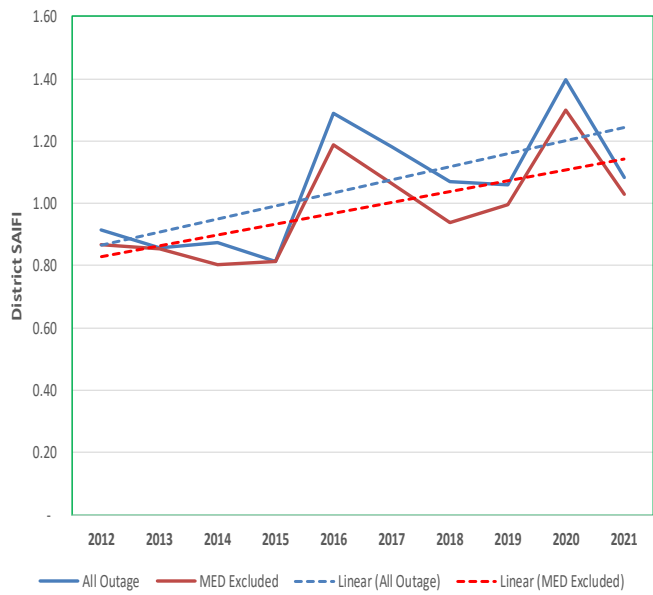
BLYTHE District Reliability Performance



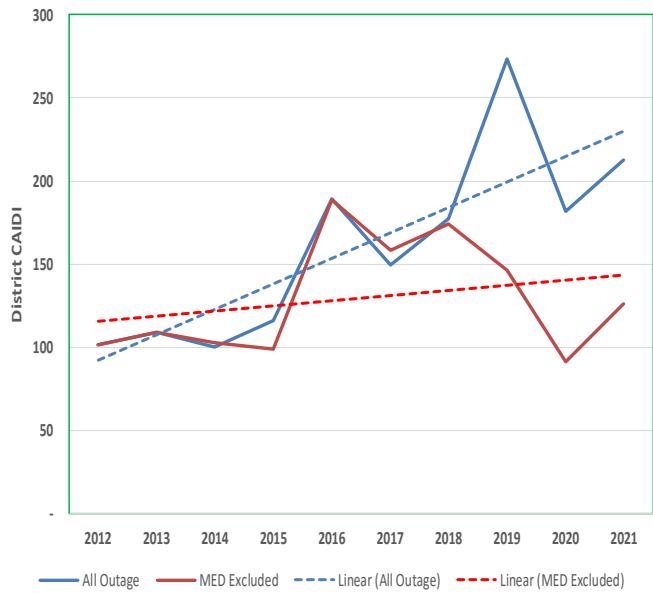
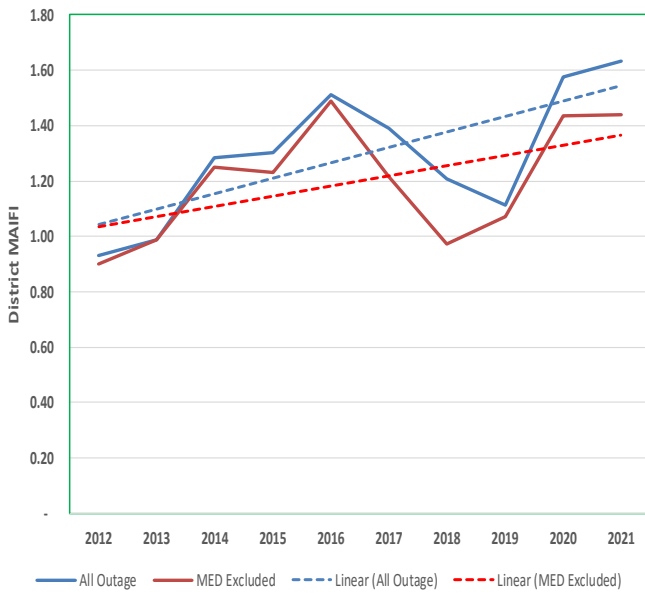
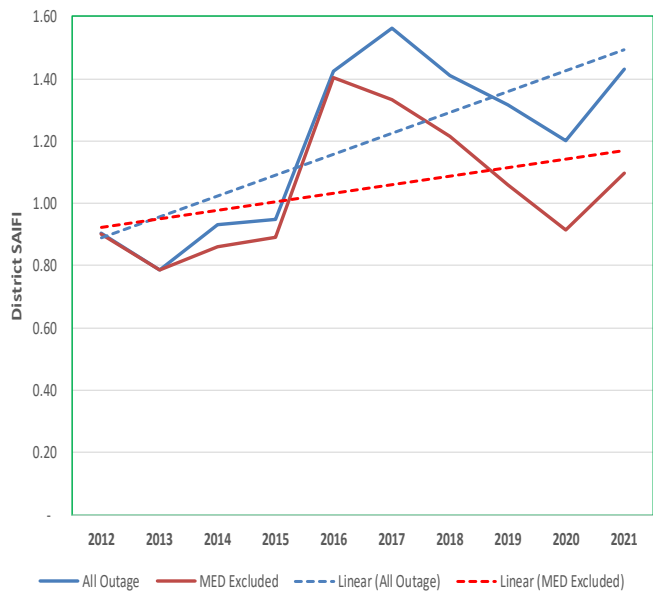
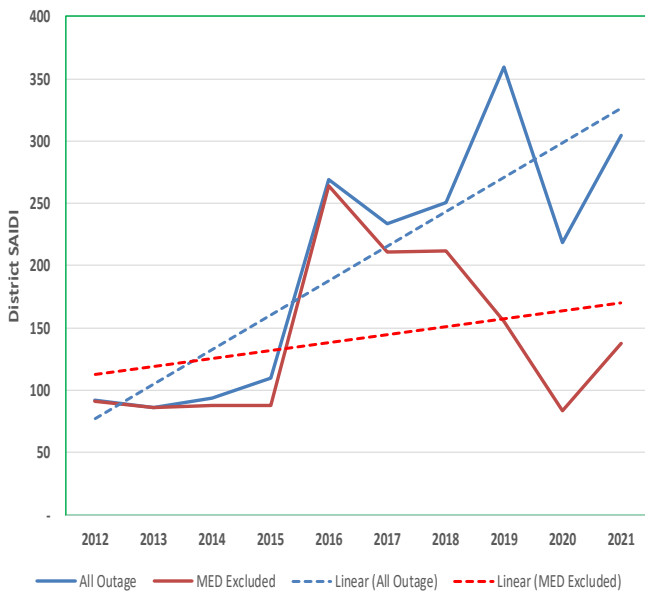
COMPTON District Reliability Performance



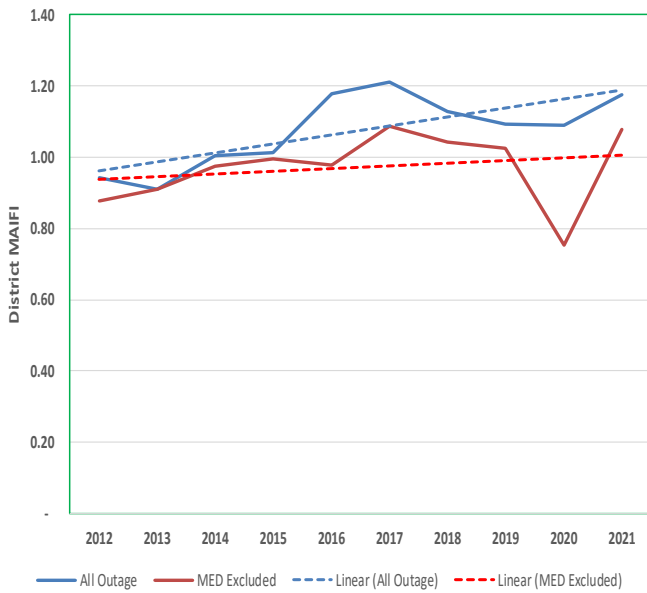
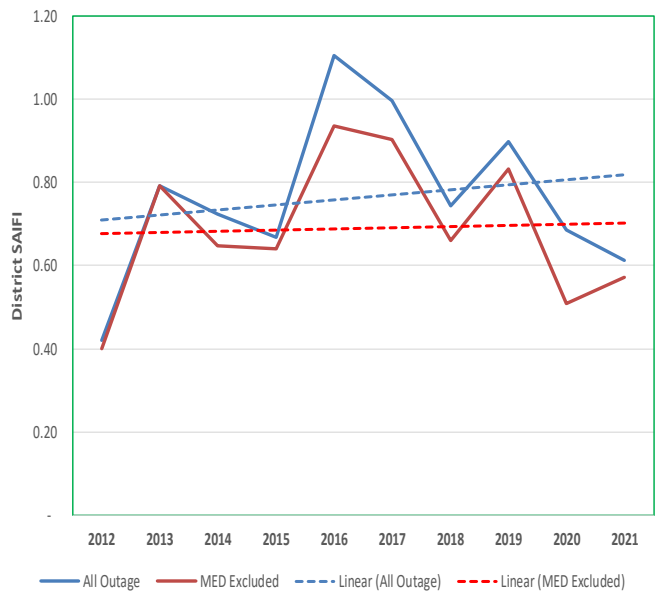
COVINA District Reliability Performance



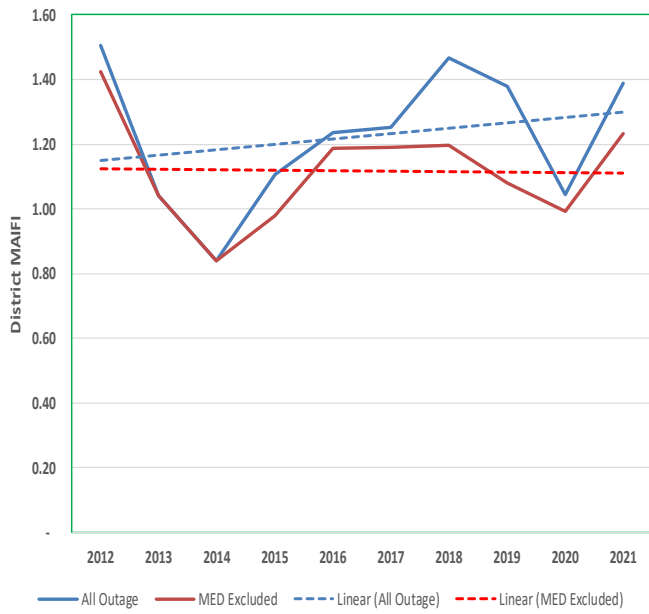
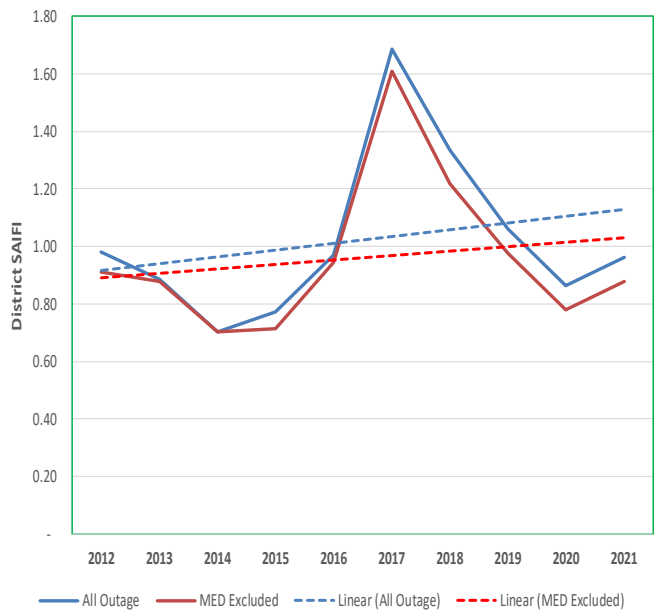
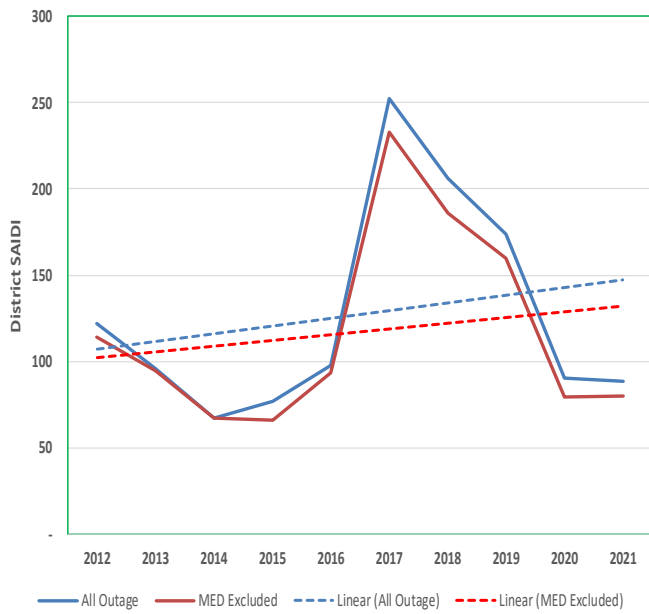
FOOTHILL District Reliability Performance



FULLERTON District Reliability Performance

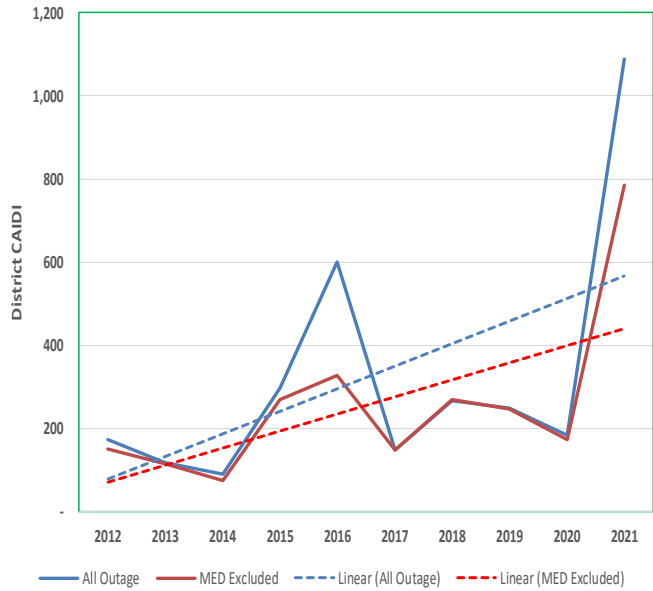
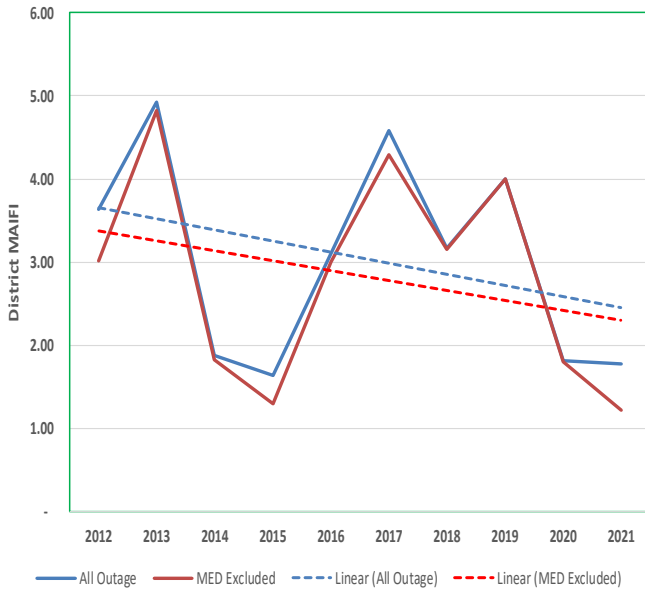
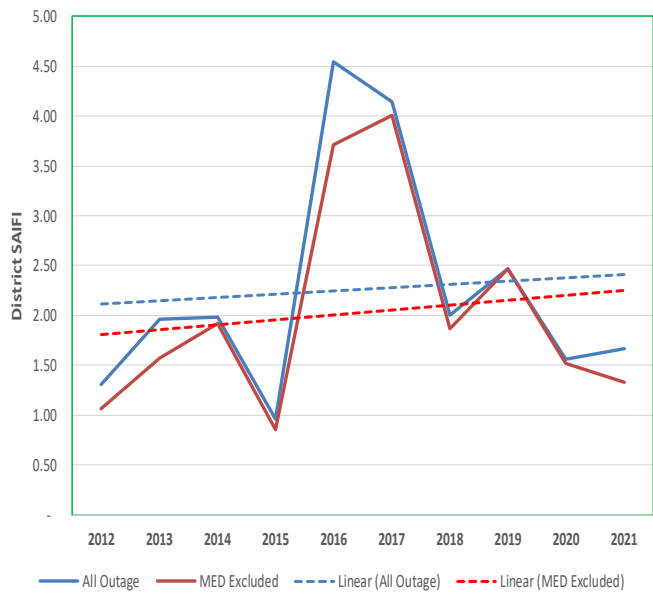
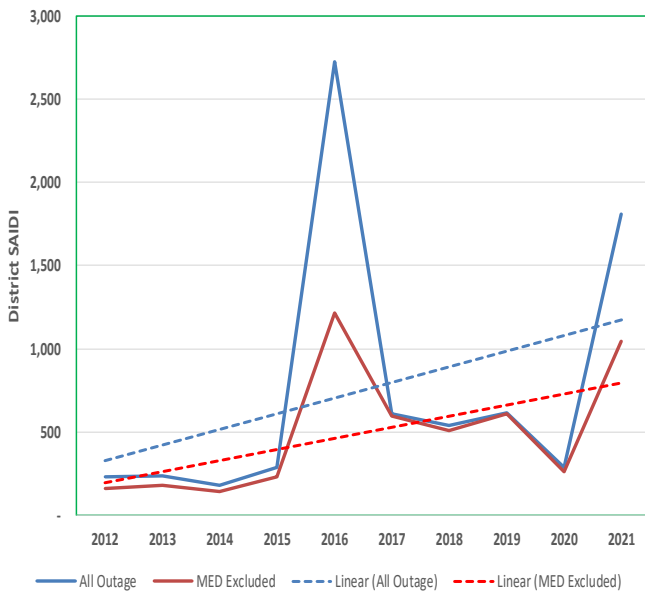


HUNTINGTON BEACH District Reliability Performance¹²

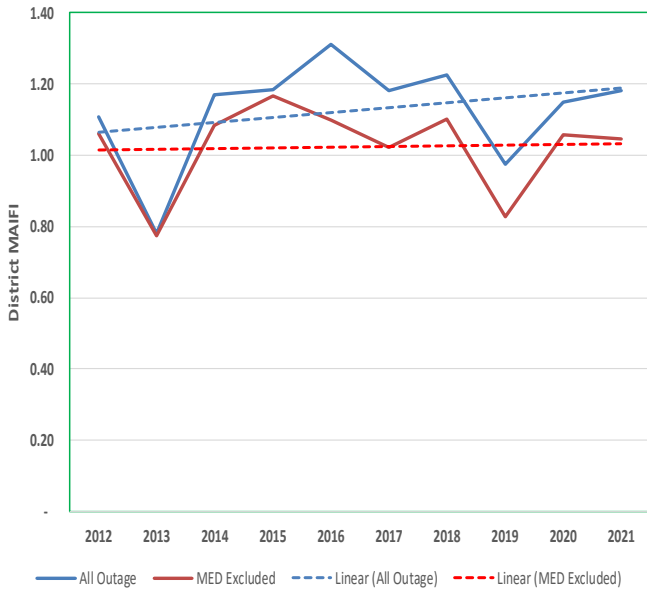
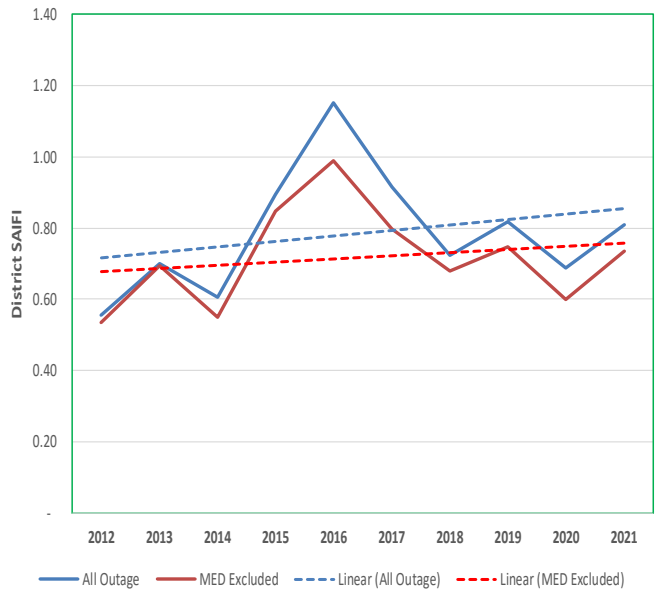


¹² Beginning in the 2019 annual report, Catalina District charts have been combined with Huntington Beach District, since the Catalina District operations have been combined with the Huntington Beach District.

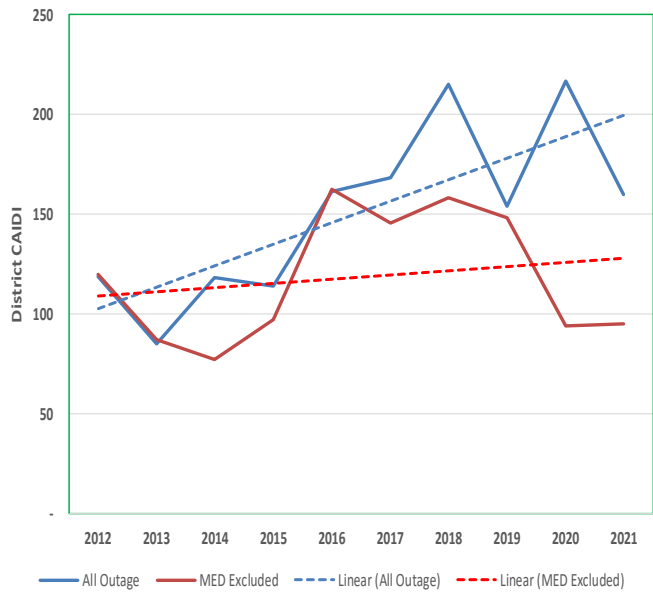
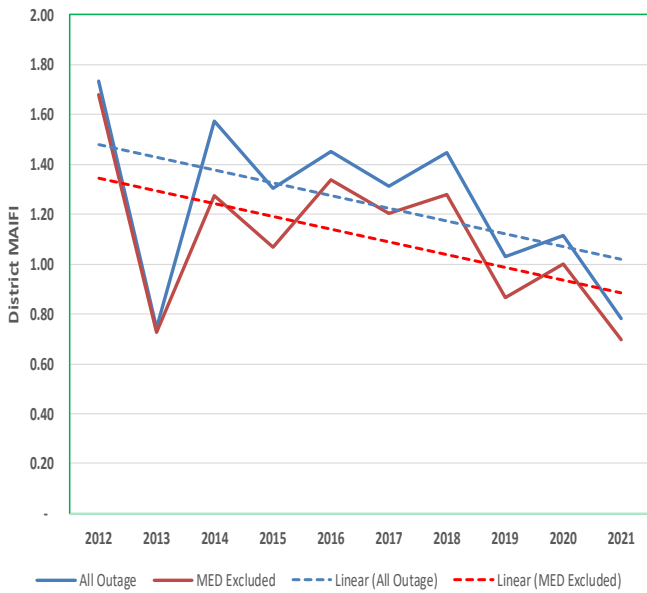
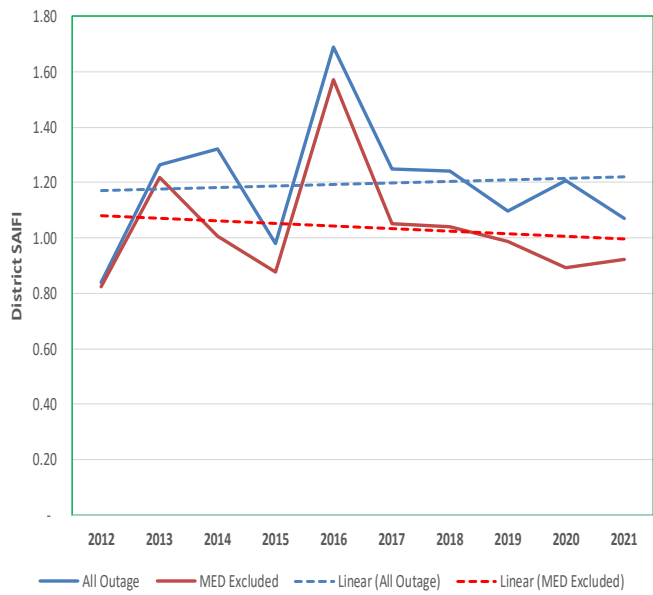
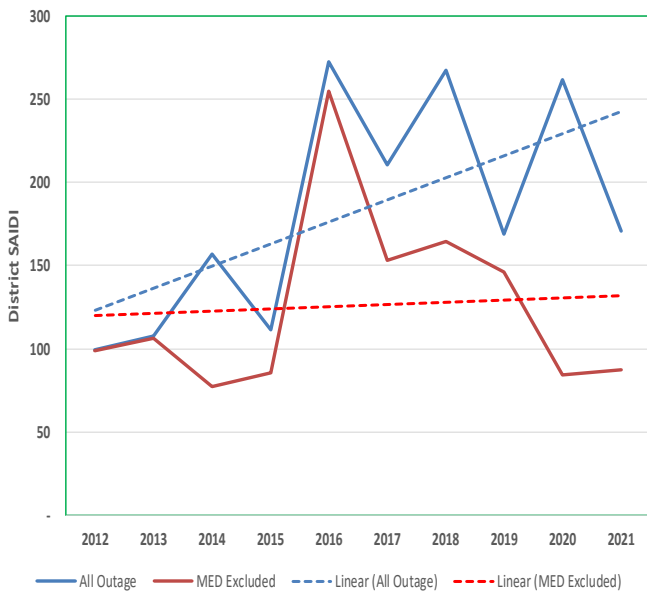
KERNVILLE District Reliability Performance



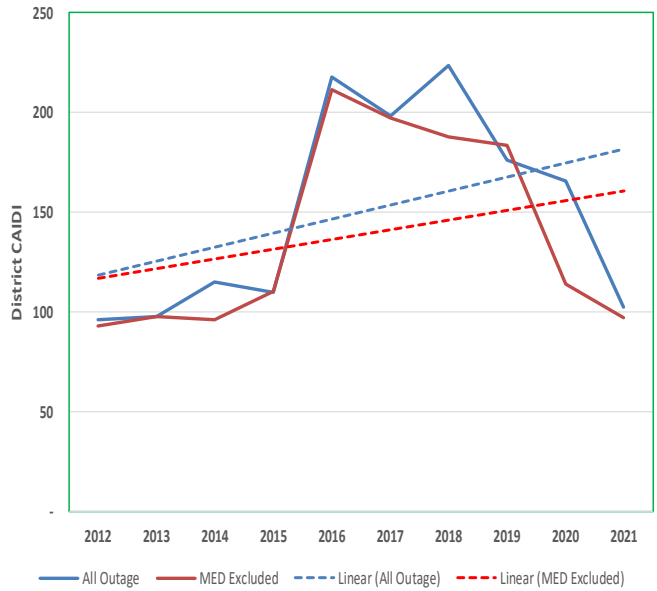
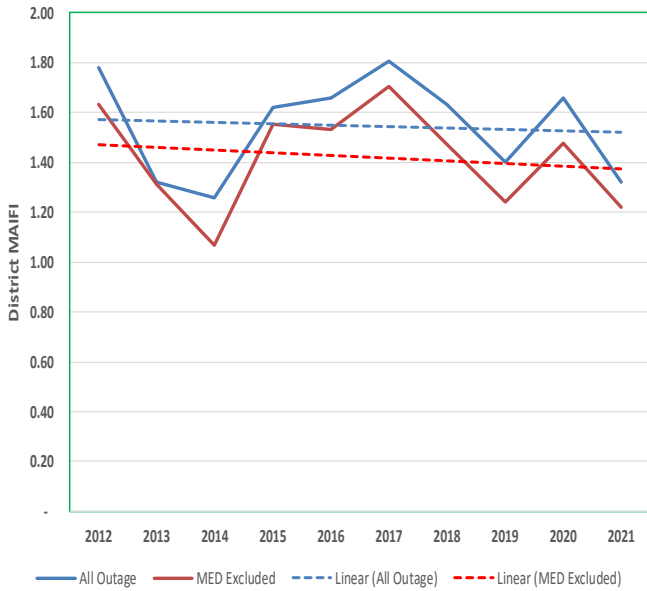
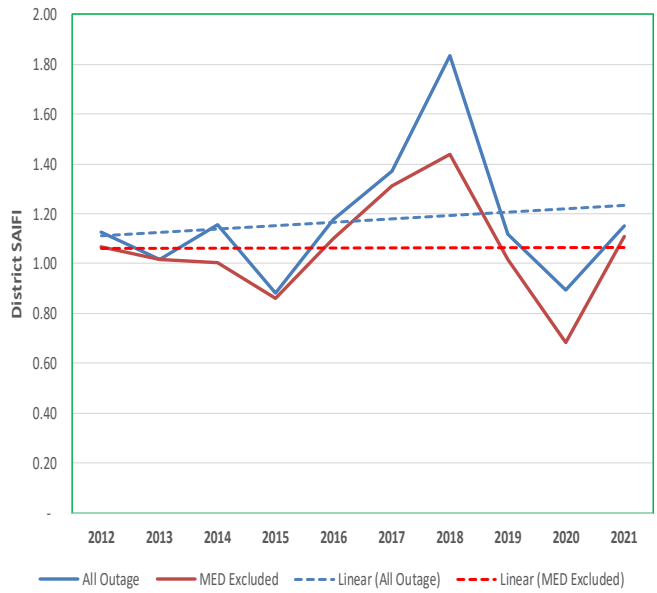
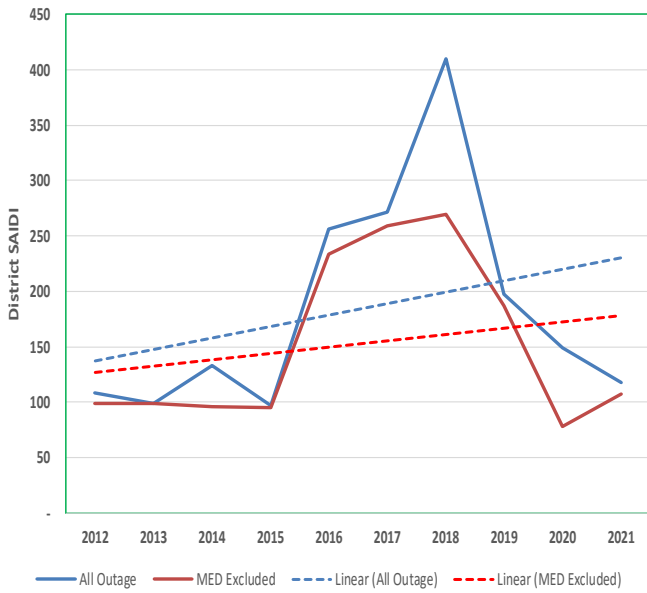
LONG BEACH District Reliability Performance



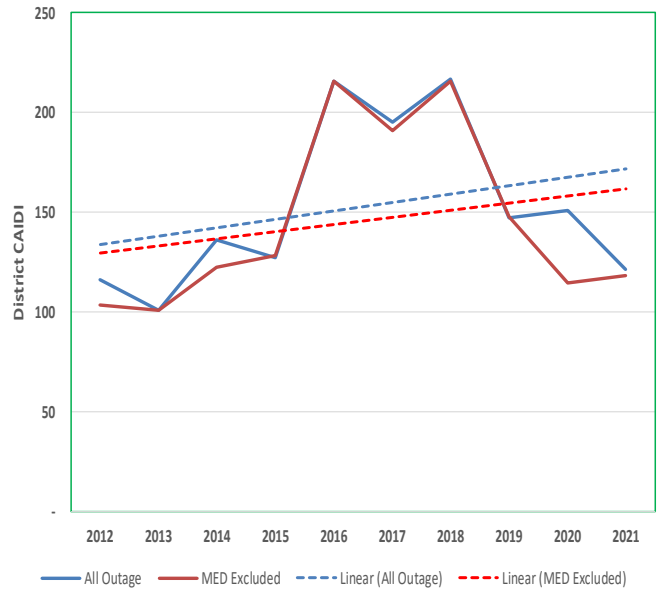
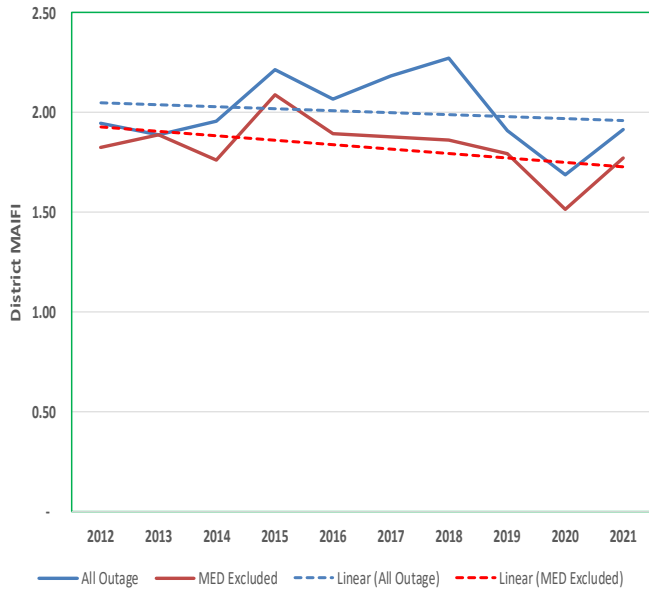
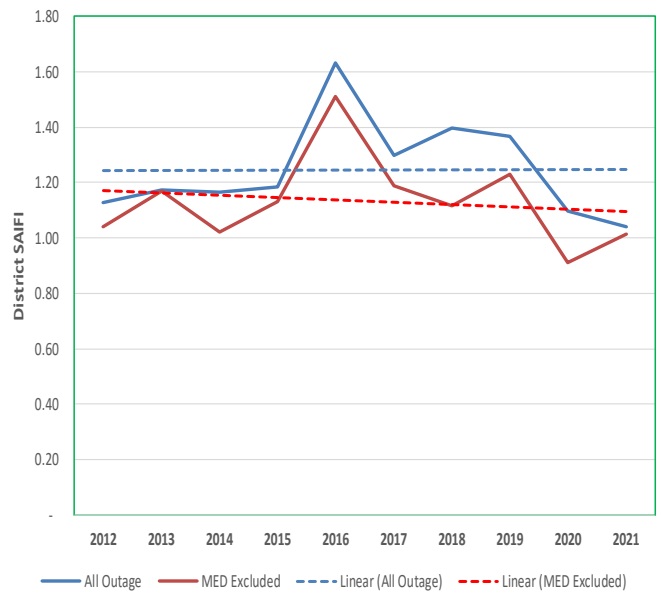
MENIFEE District Reliability Performance



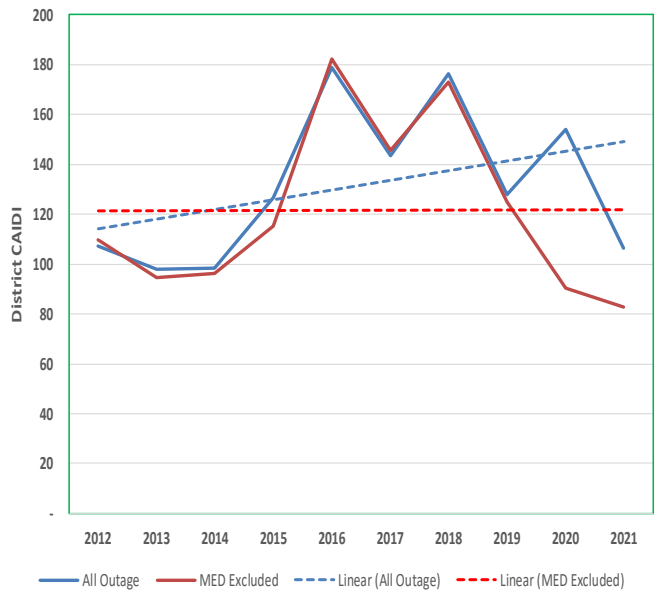
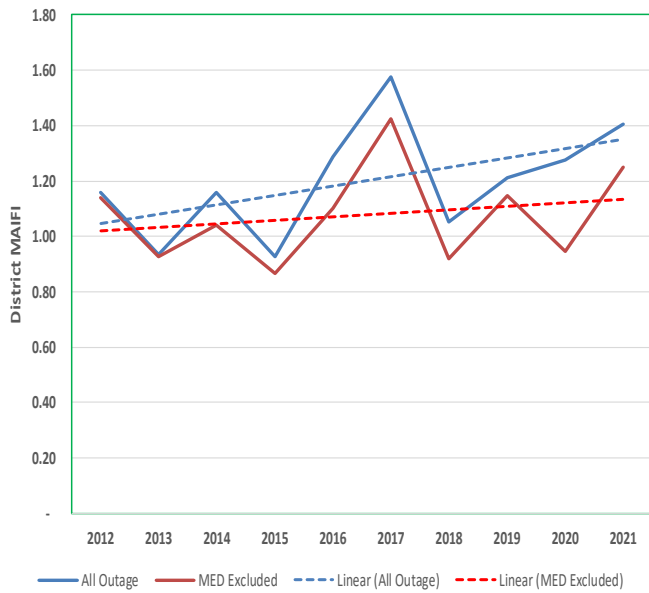
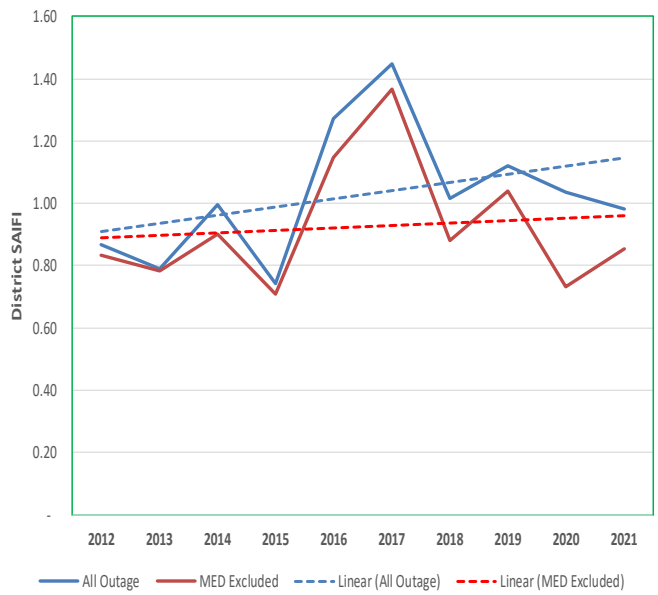
MONROVIA District Reliability Performance



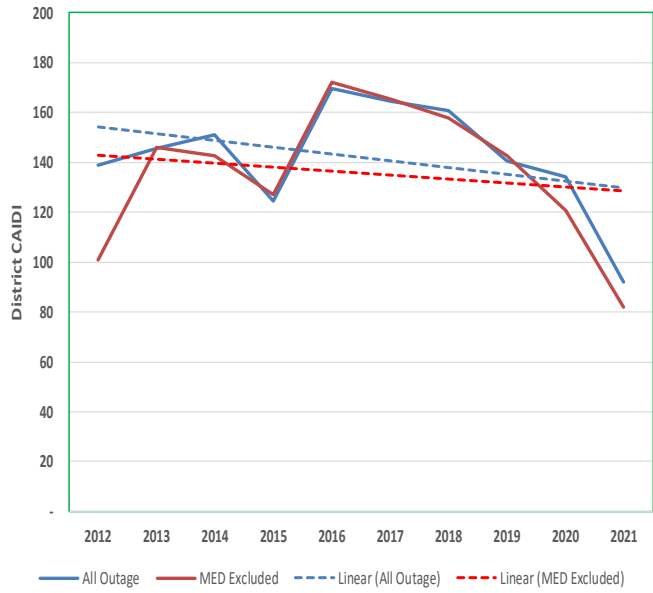
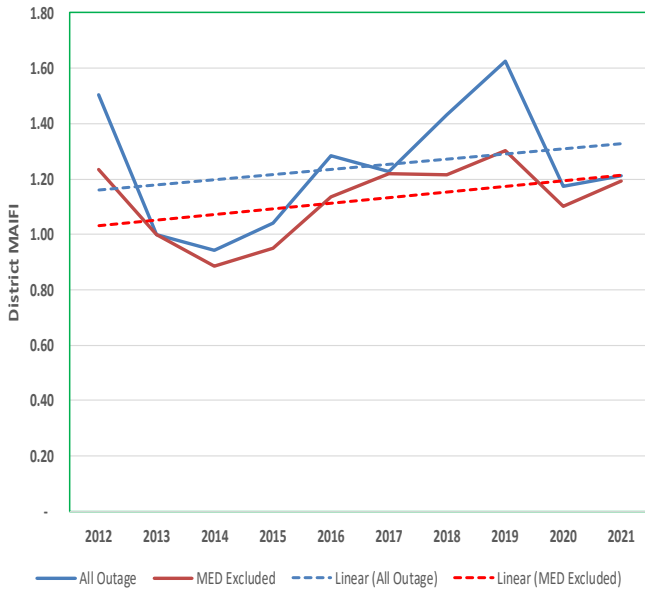
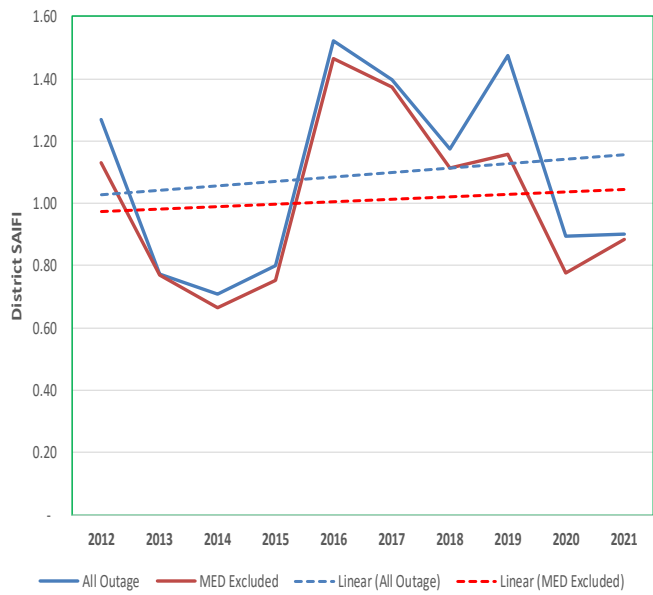
MONTEBELLO District Reliability Performance



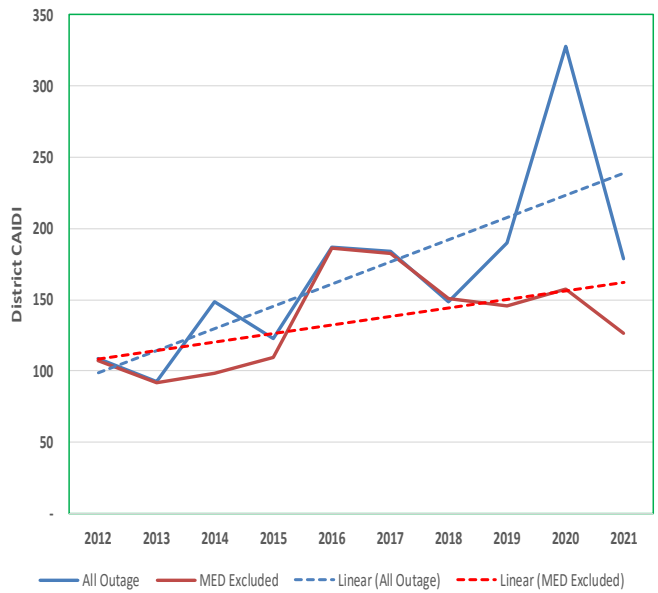
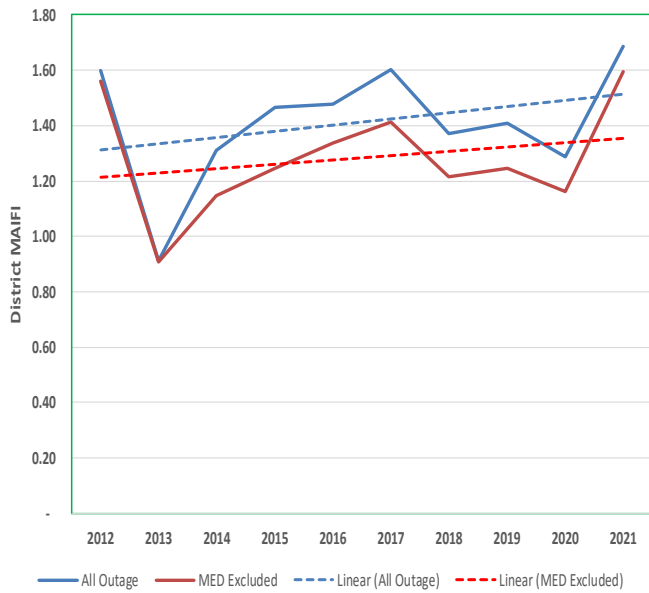
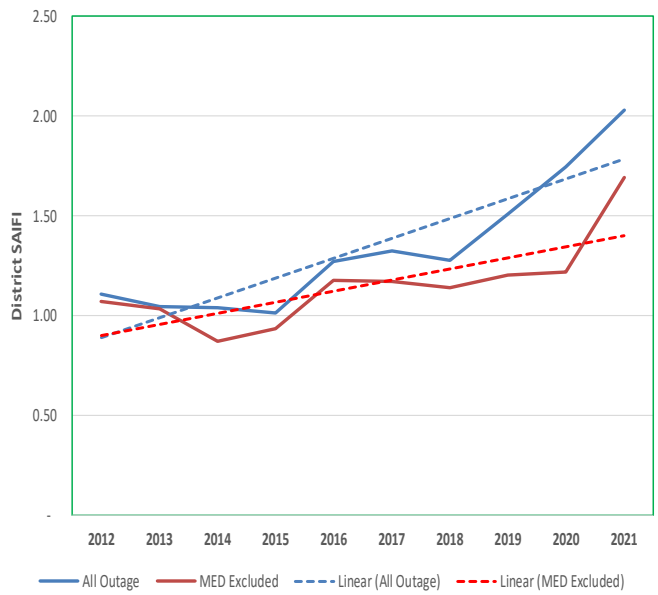
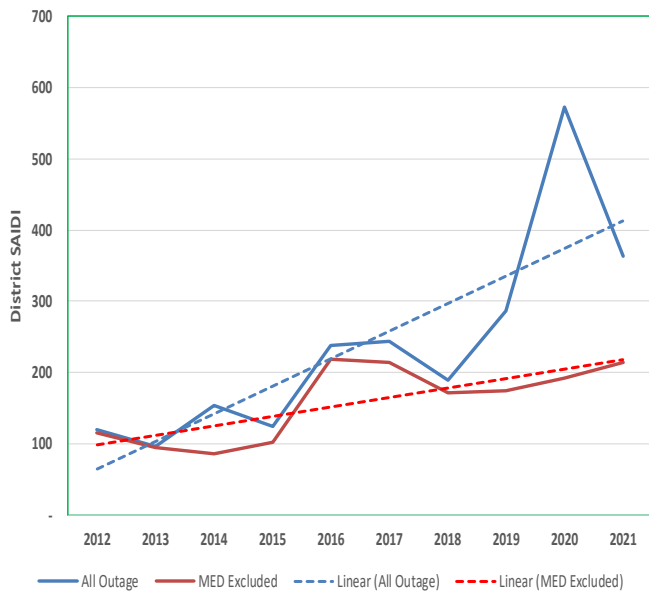
ONTARIO District Reliability Performance



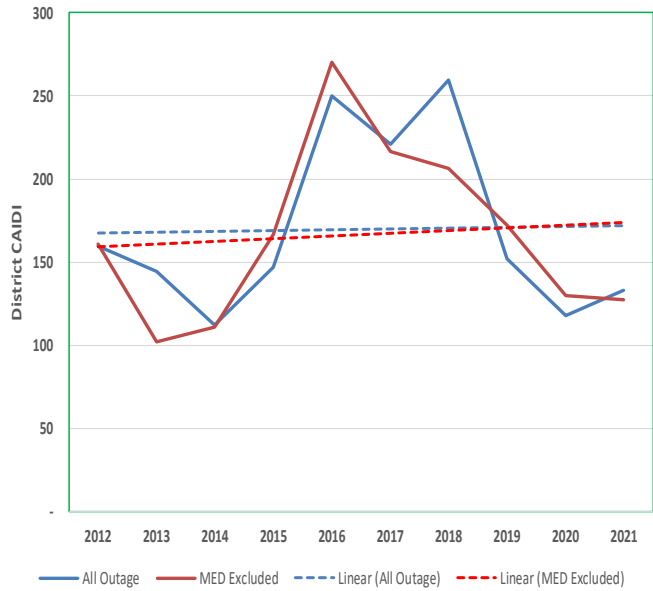
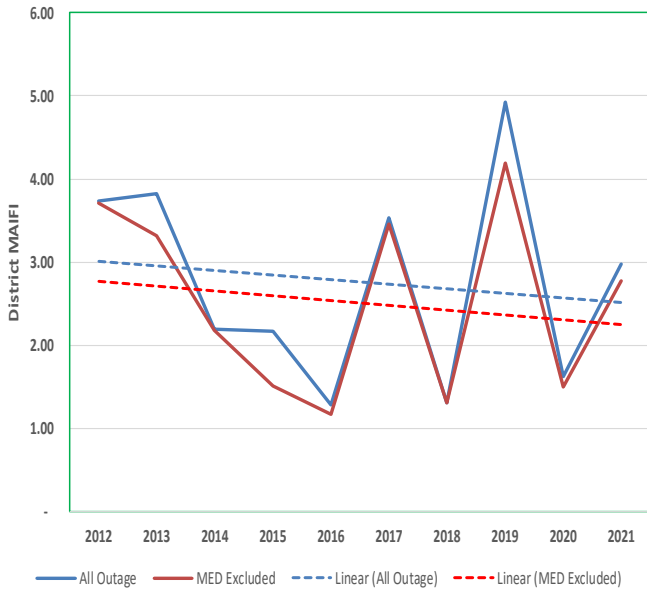
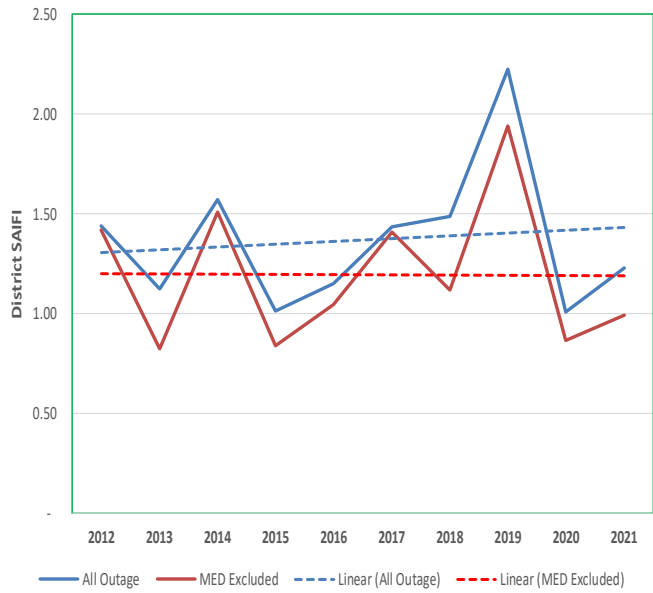
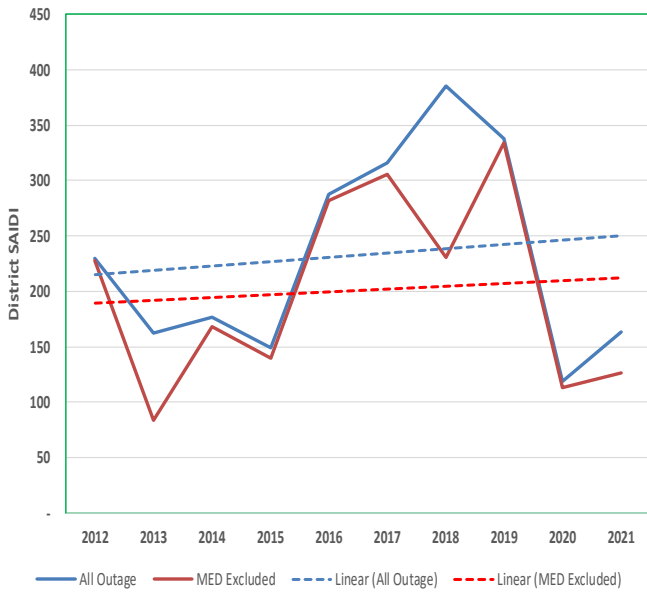
PALM SPRINGS District Reliability Performance



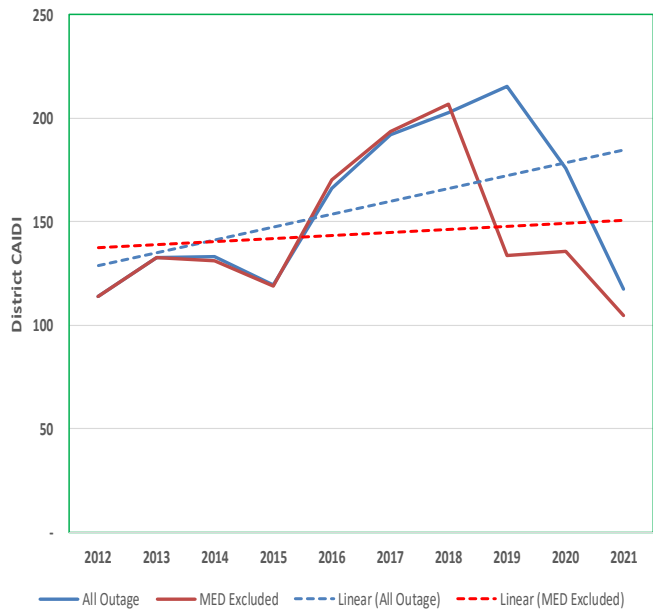
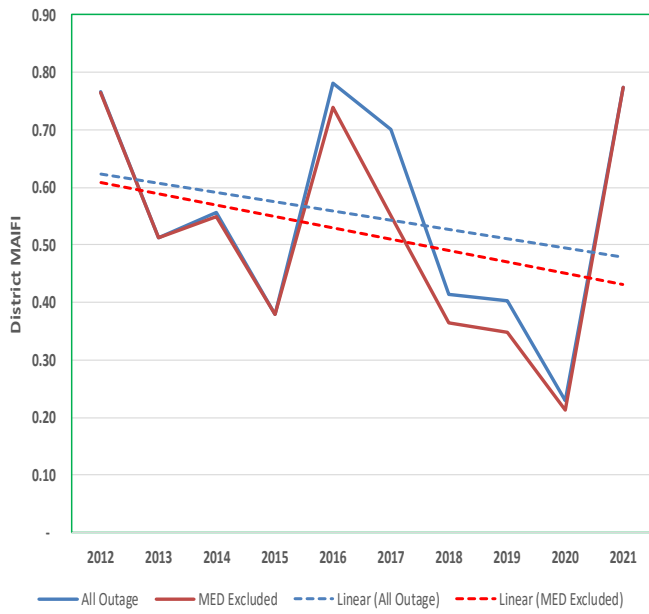
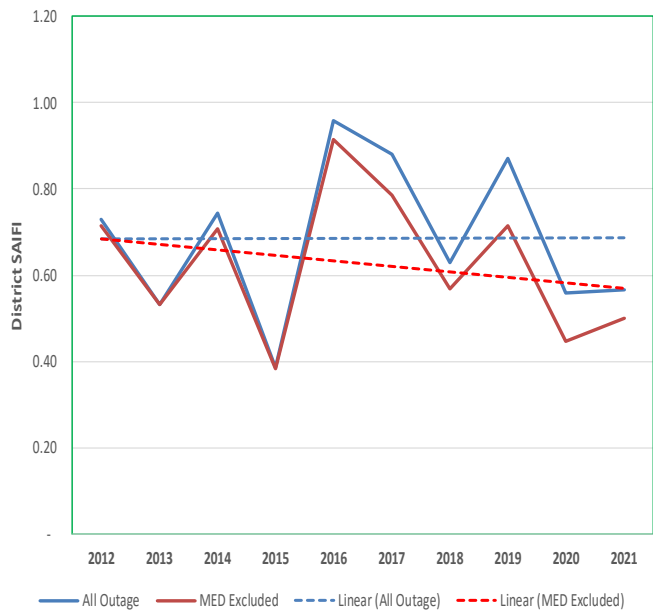
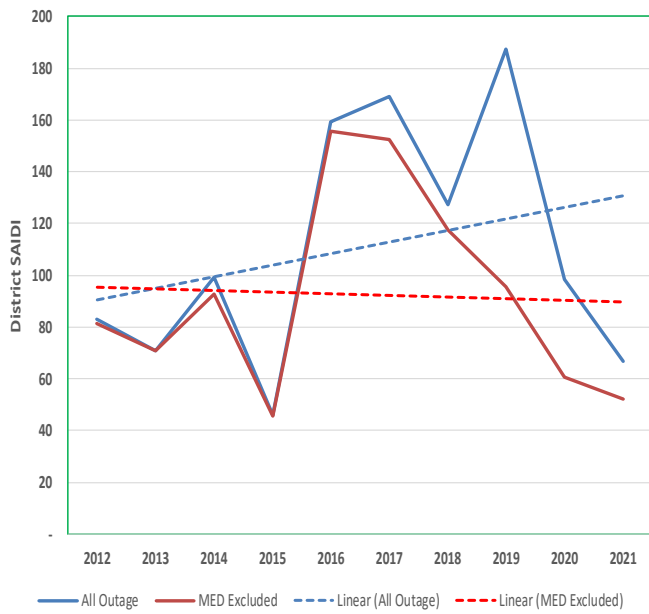
REDLANDS District Reliability Performance



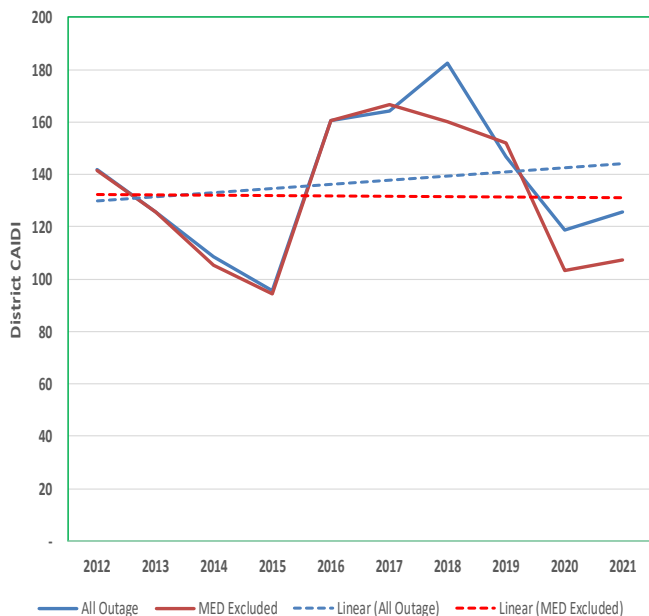
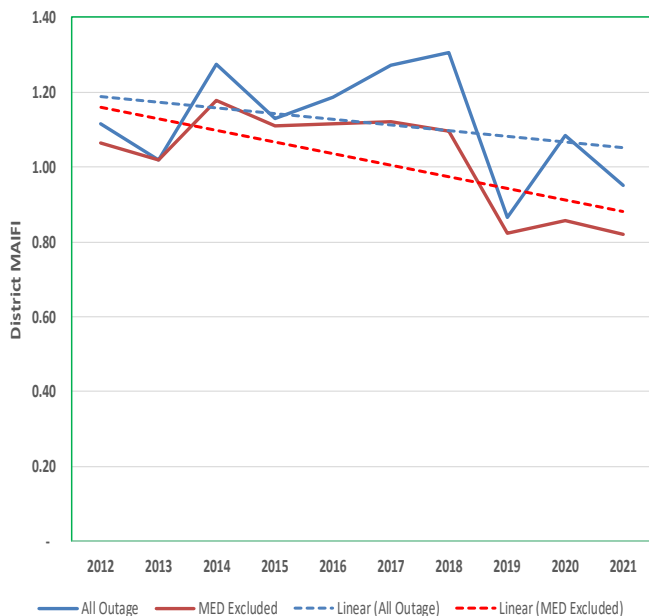
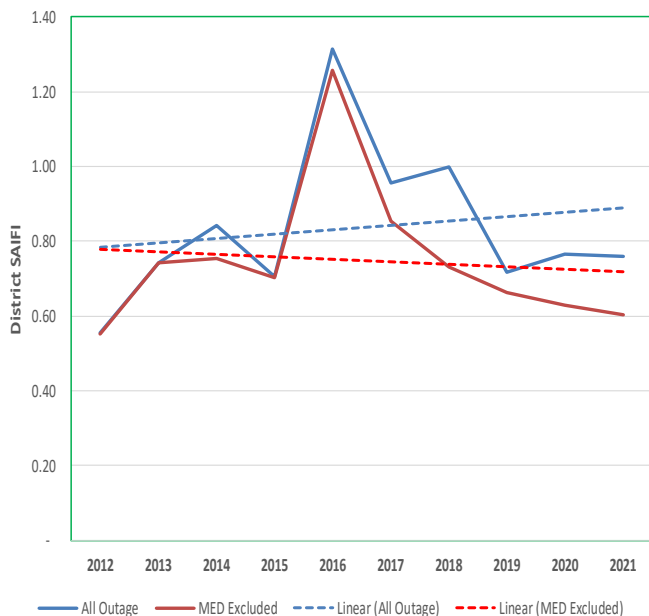
RIDGECREST District Reliability Performance



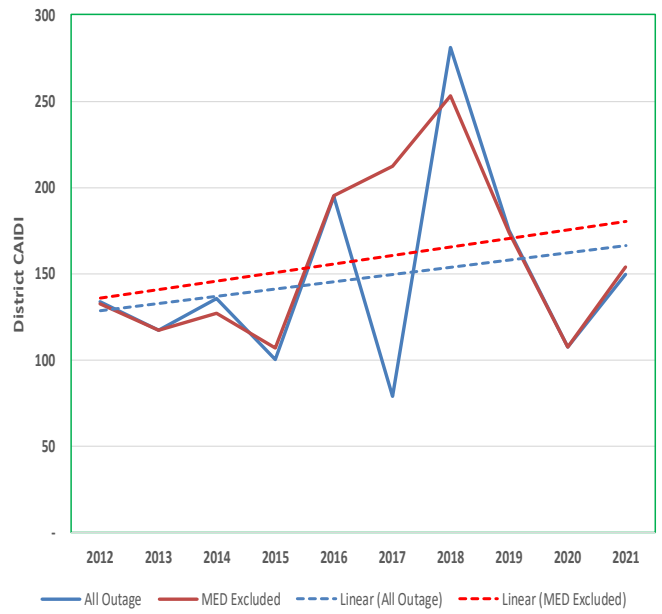
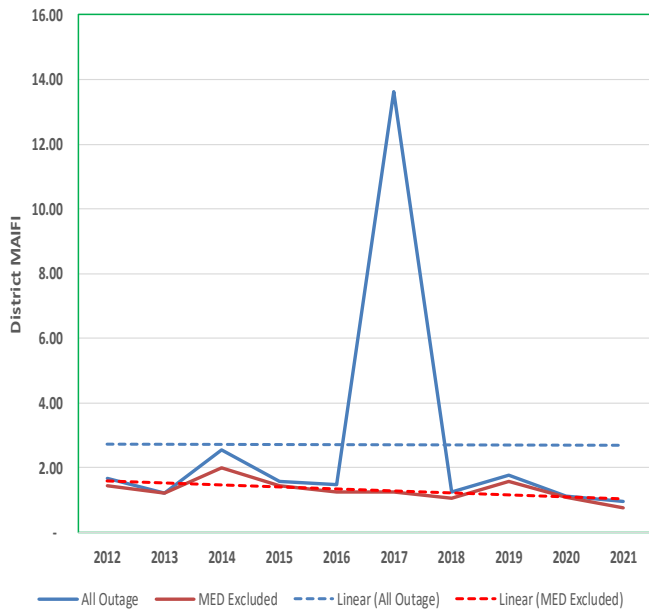
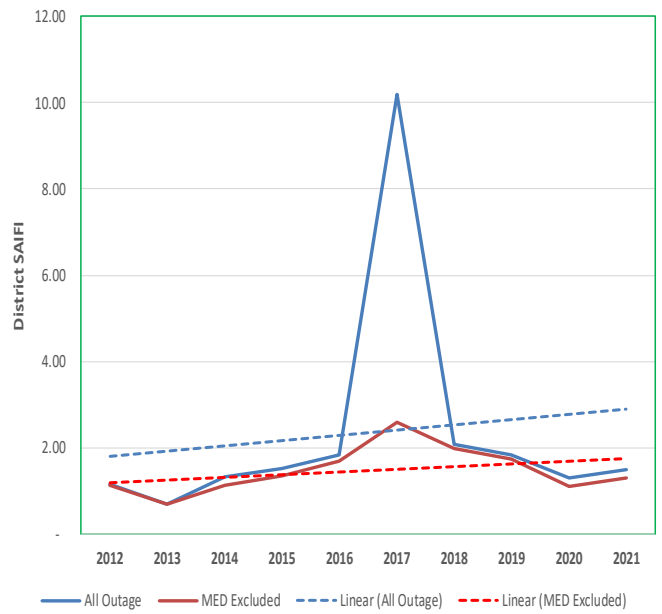
SADDLEBACK District Reliability Performance



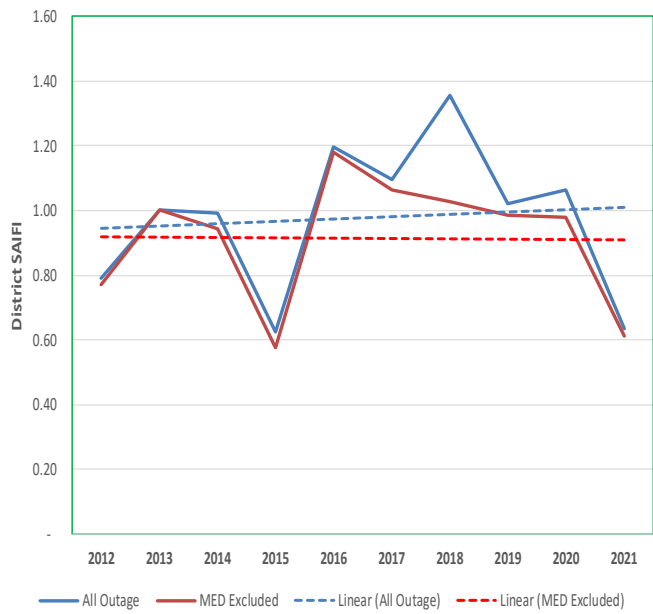
SANTA ANA District Reliability Performance



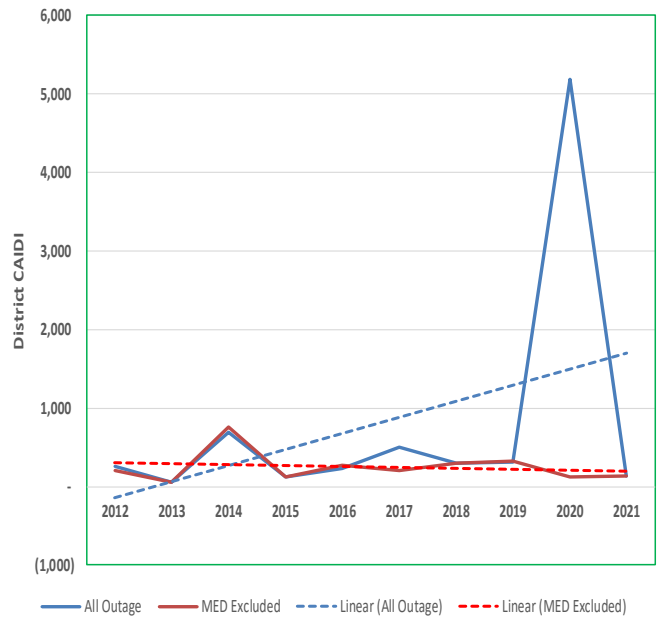
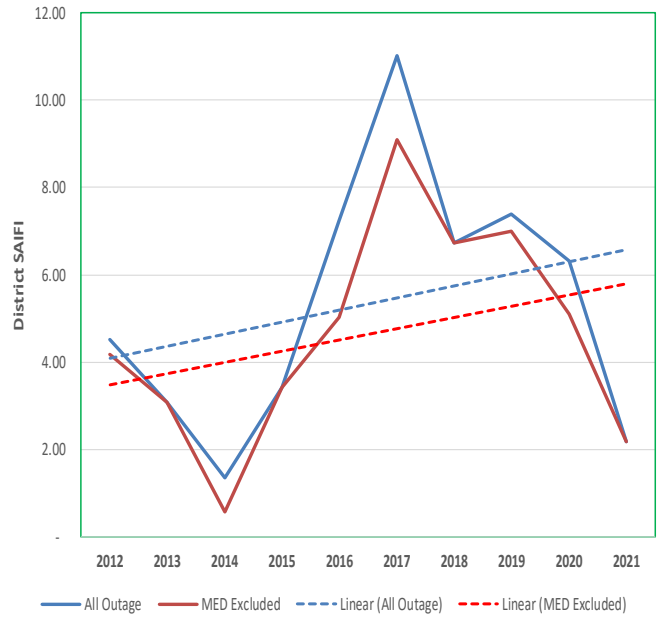
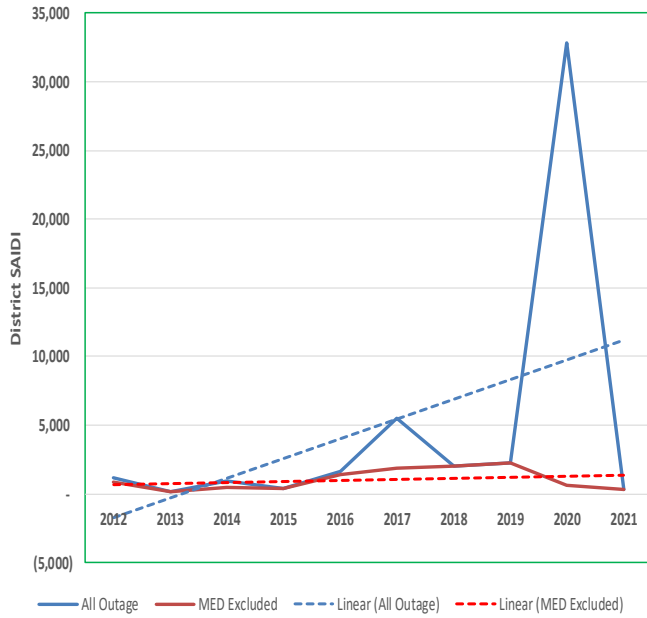
SANTA BARBARA District Reliability Performance



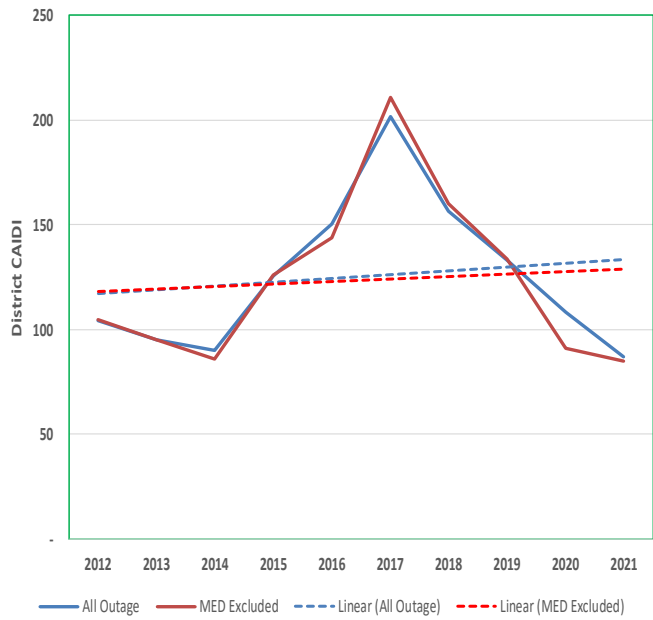
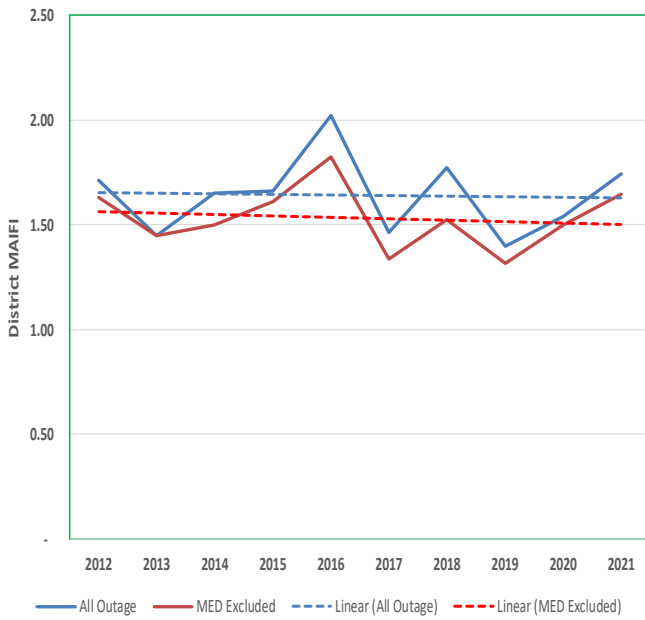
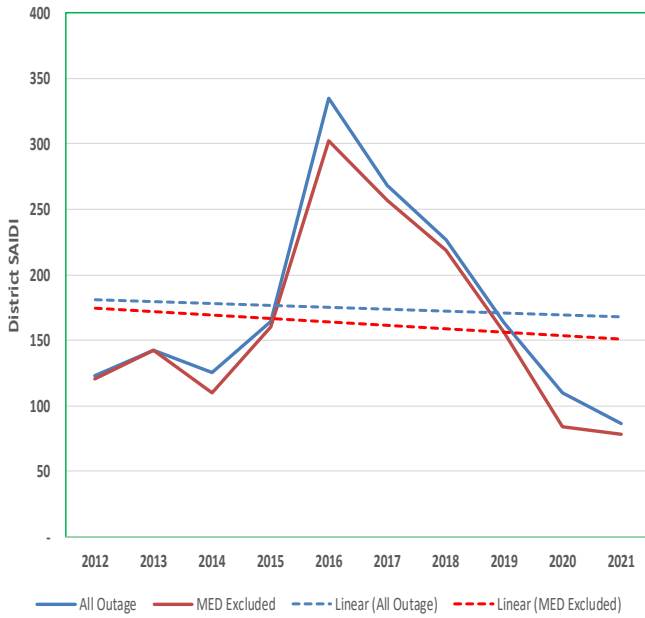
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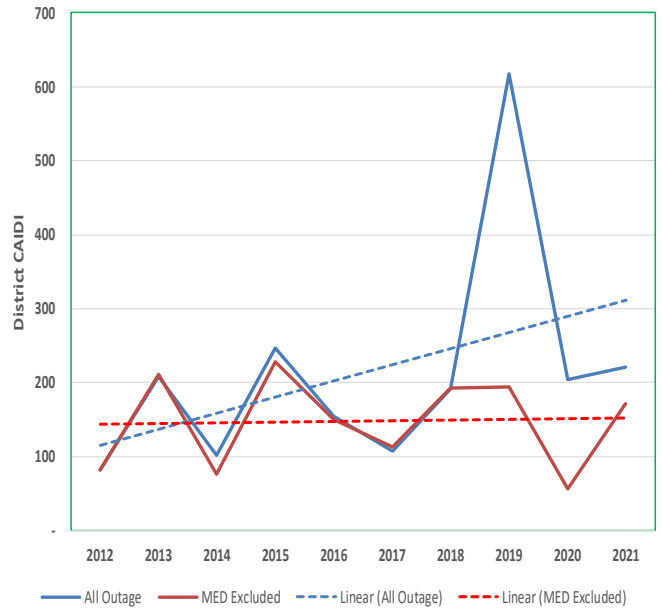
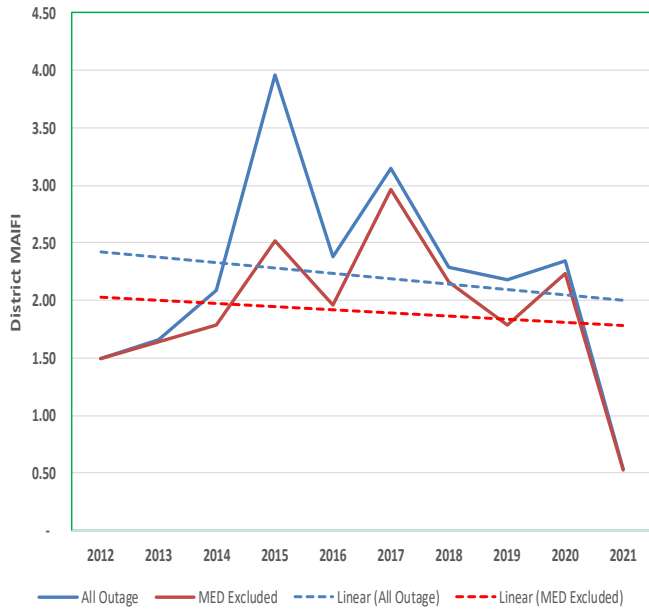
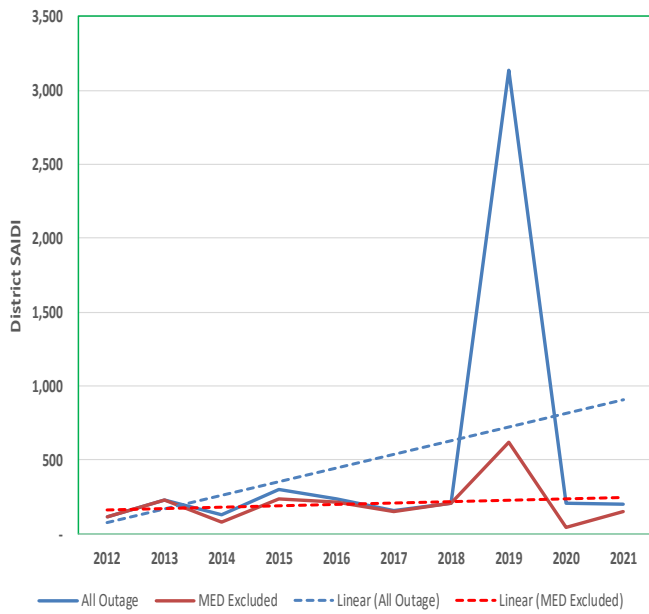
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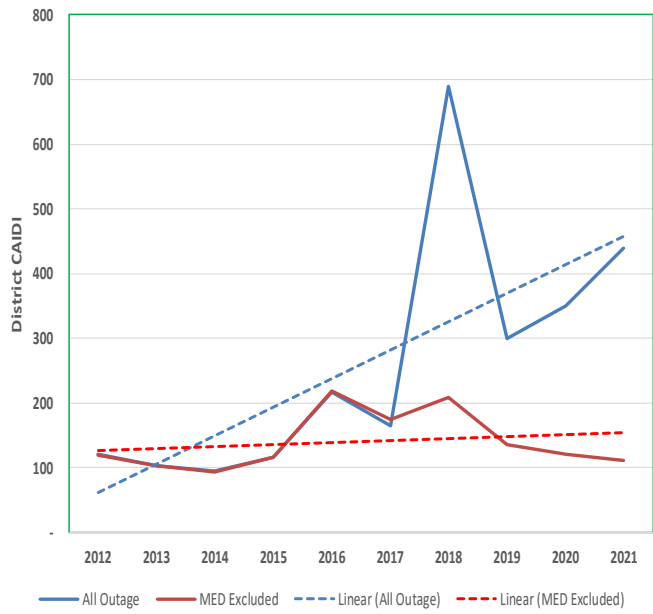
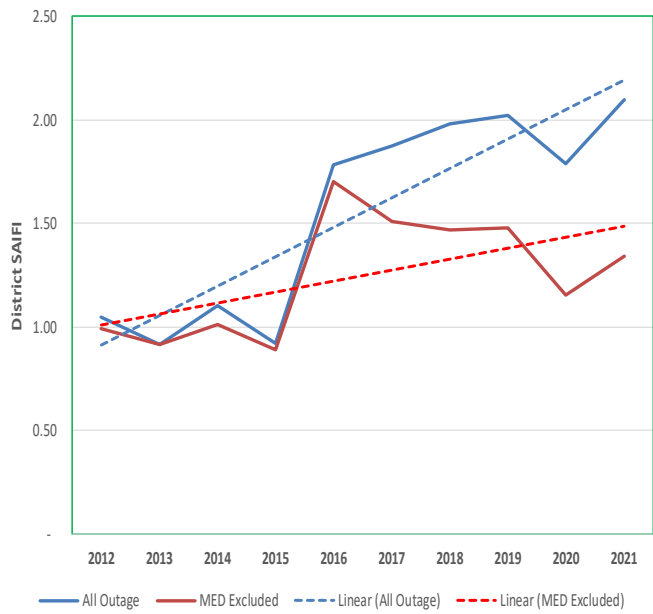
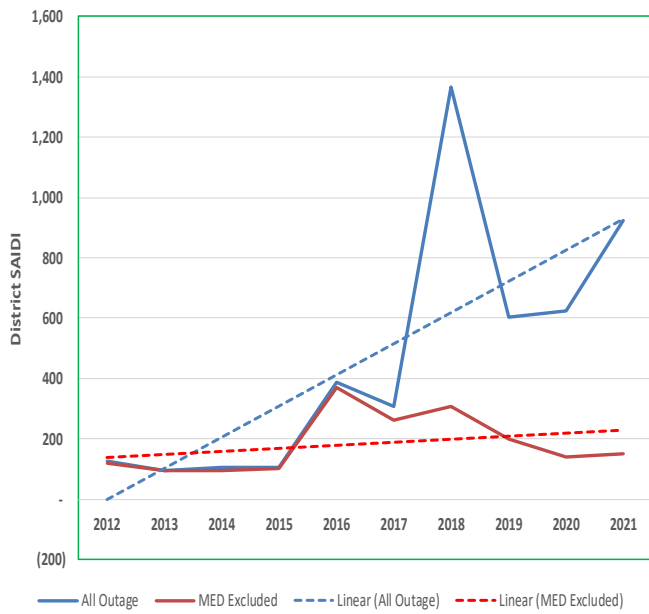
SOUTH BAY District Reliability Performance



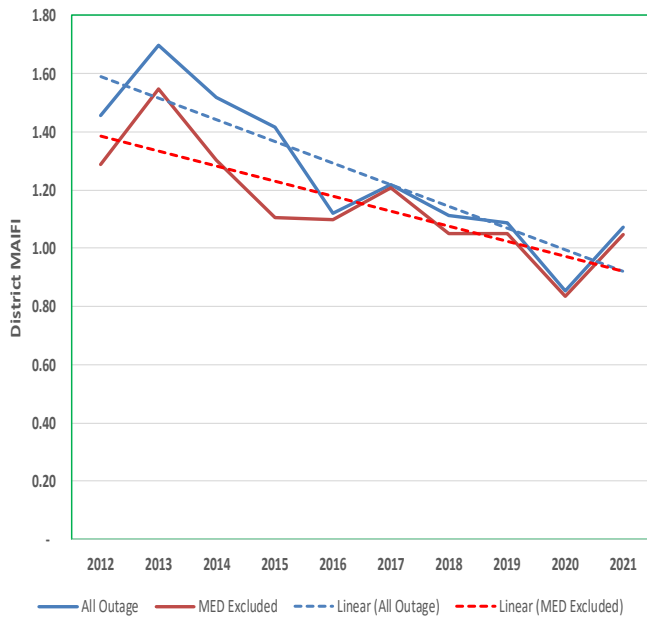
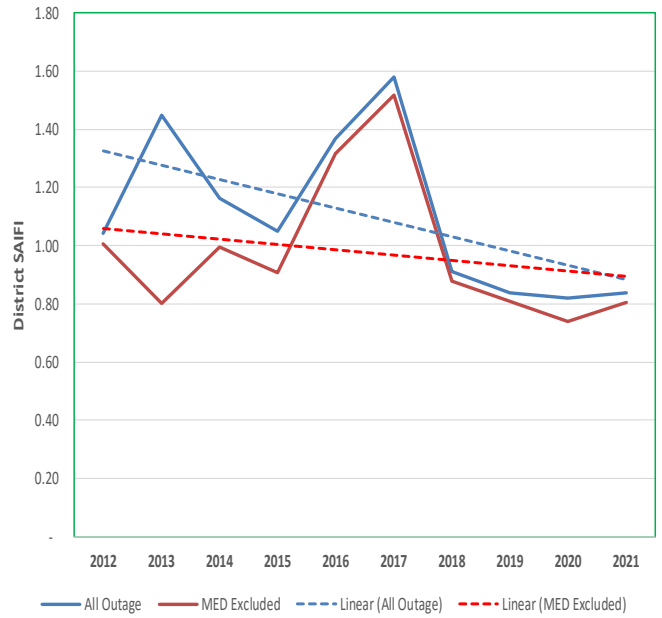
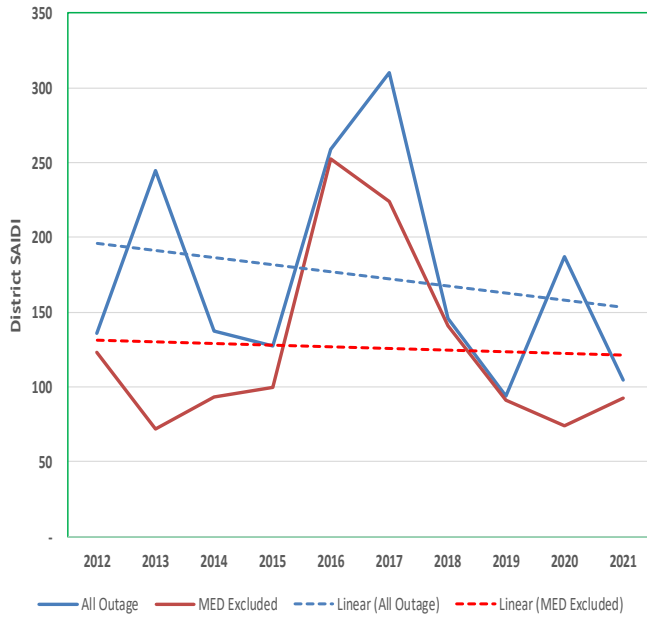
TEHACHAPI District Reliability Performance



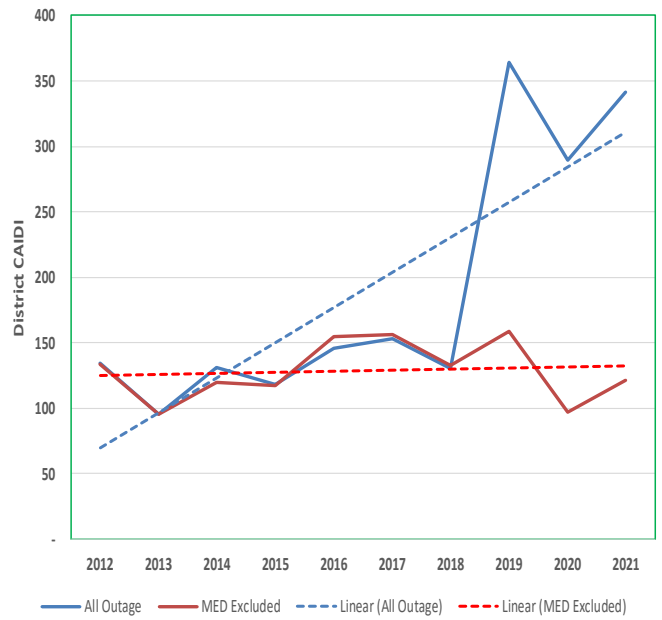
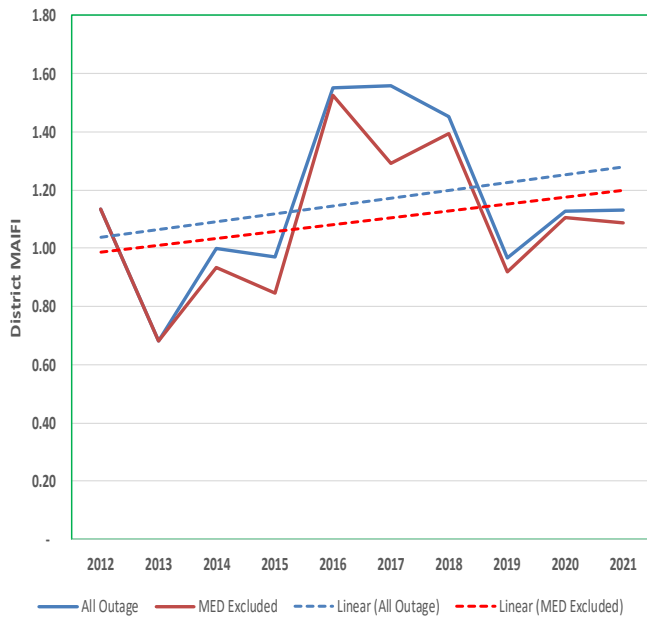
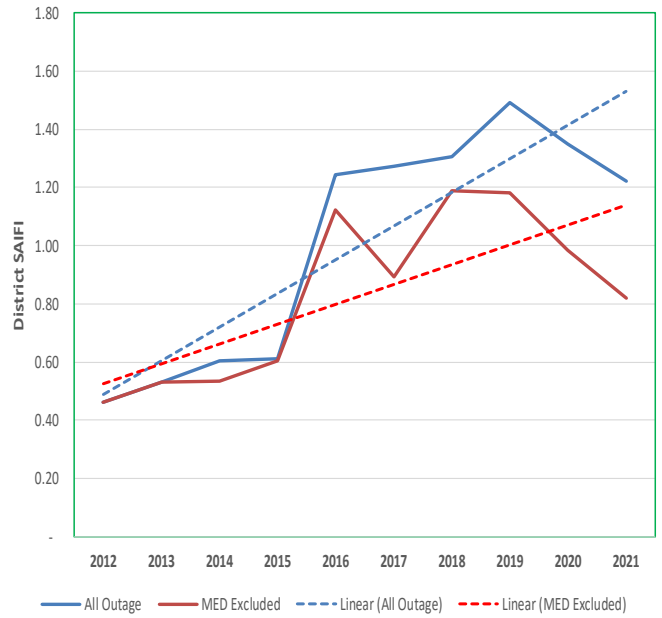
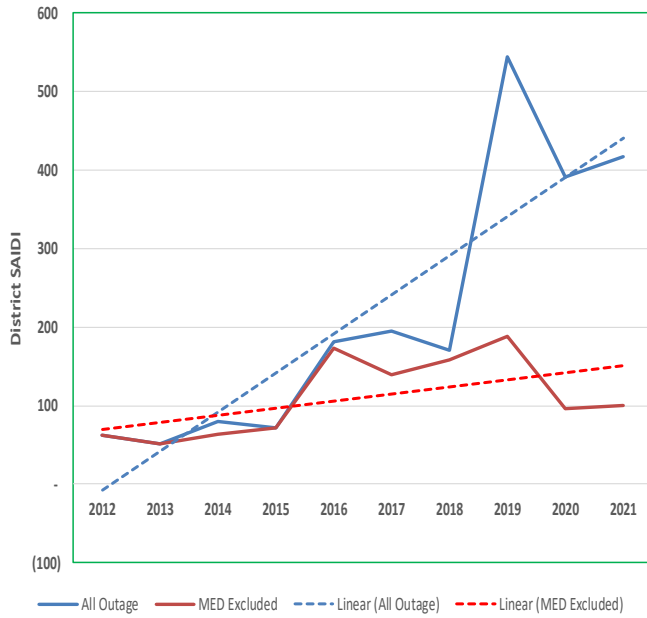
THOUSAND OAKS District Reliability Performance



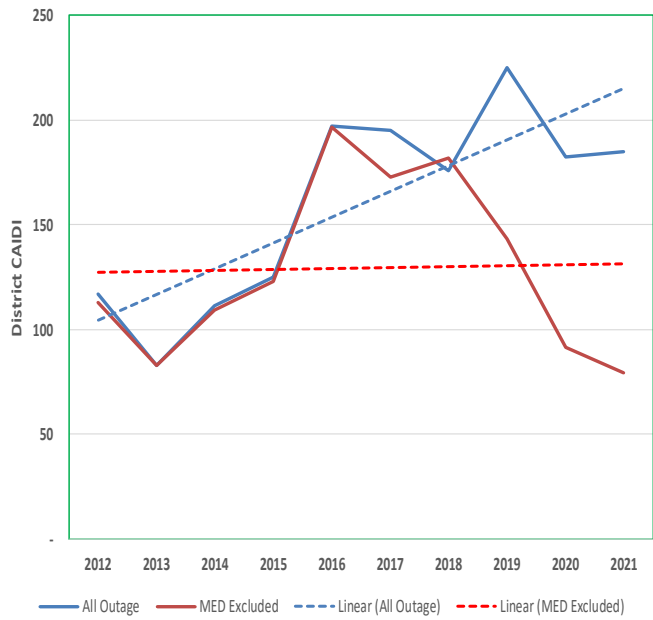
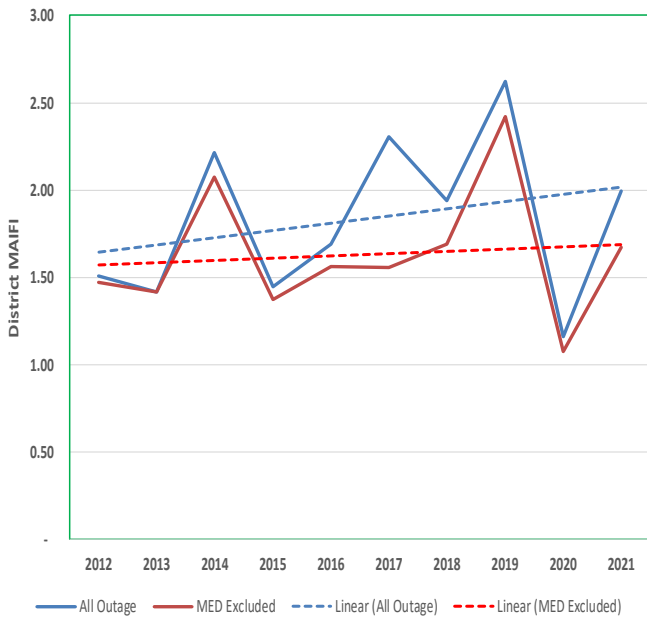
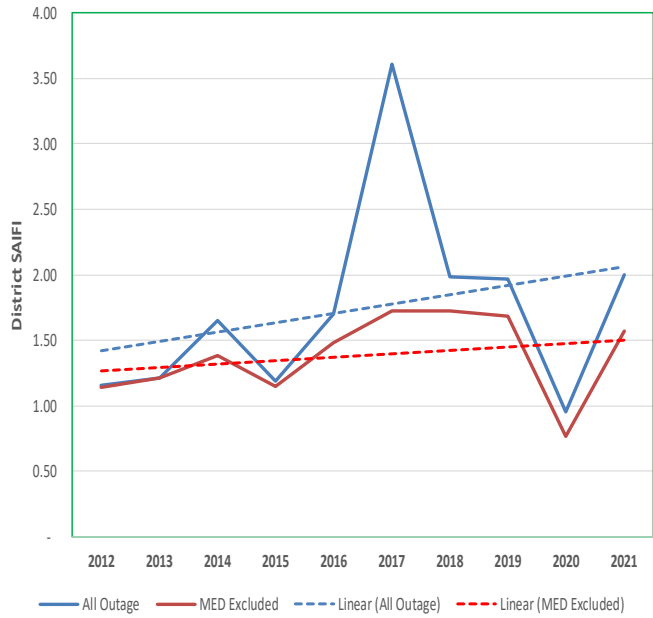
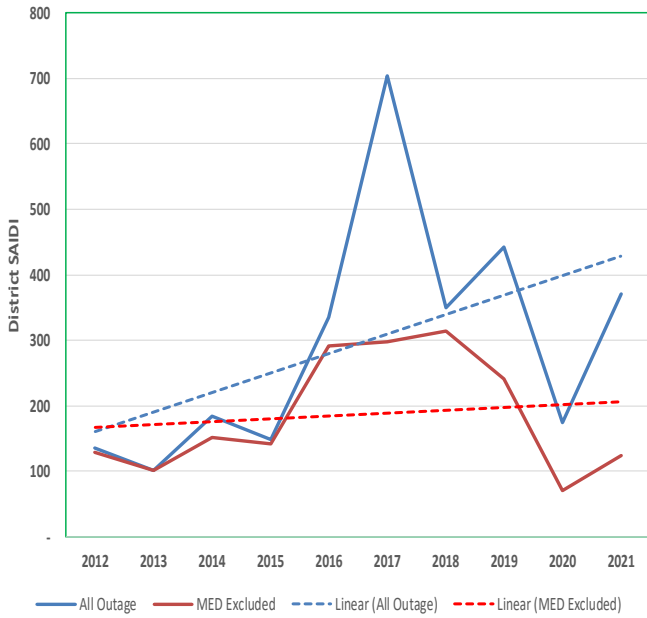
TULARE District Reliability Performance



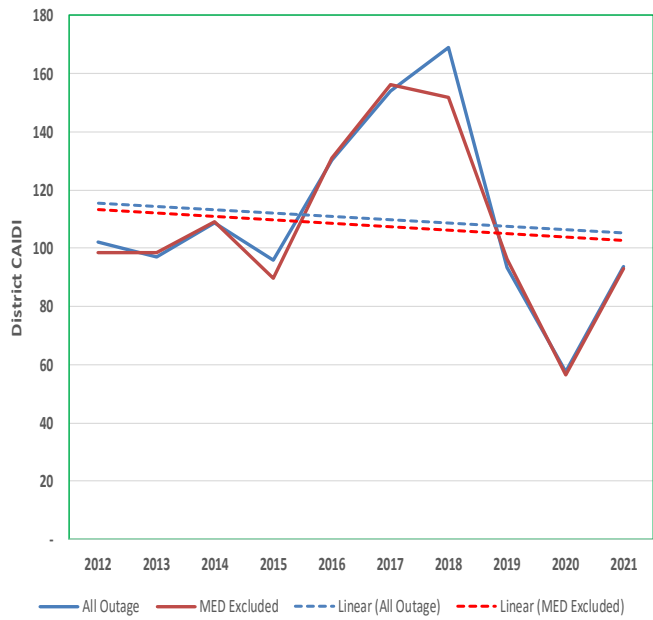
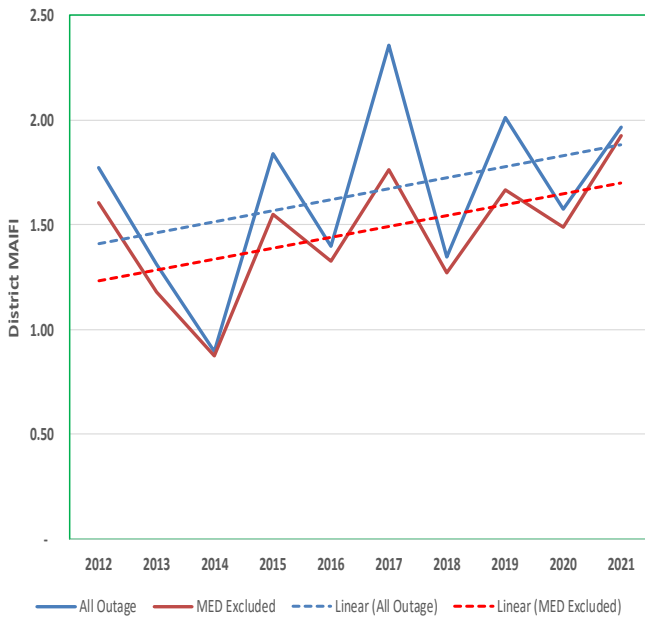
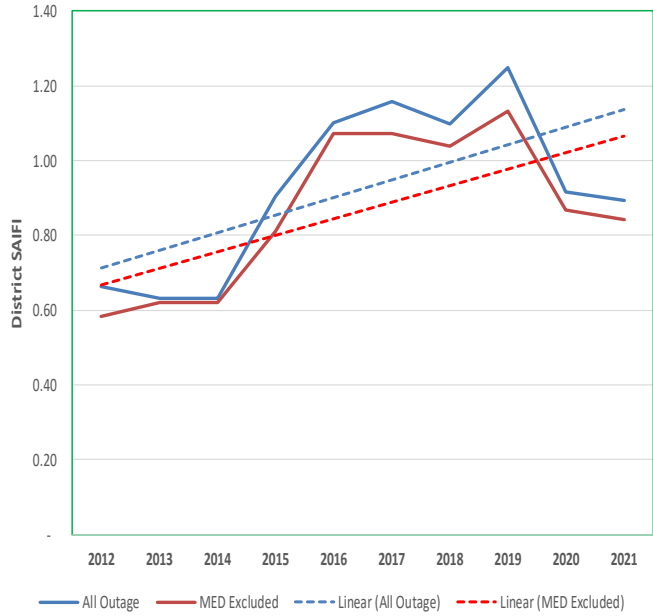
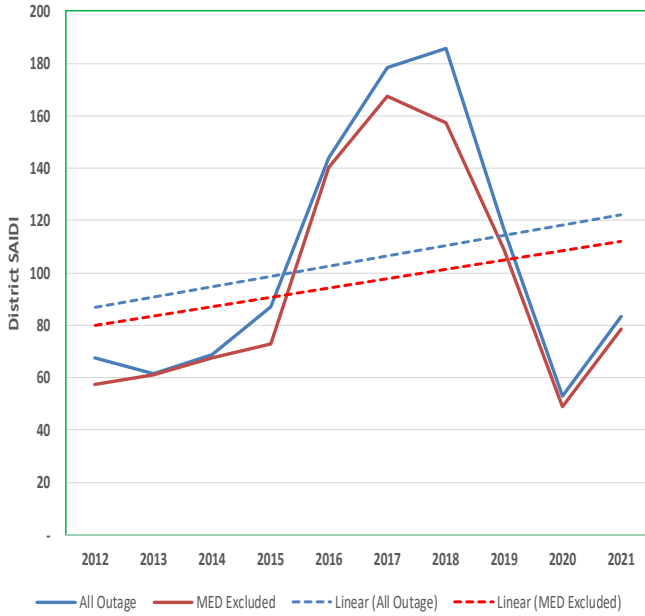
VALENCIA District Reliability Performance



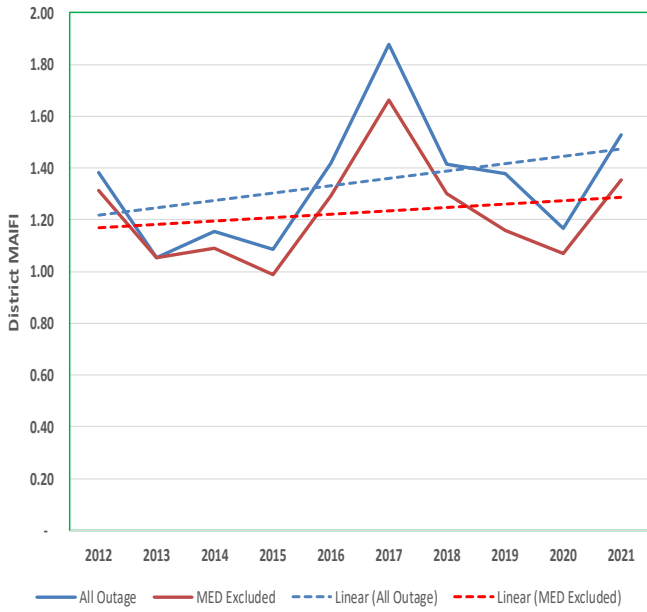
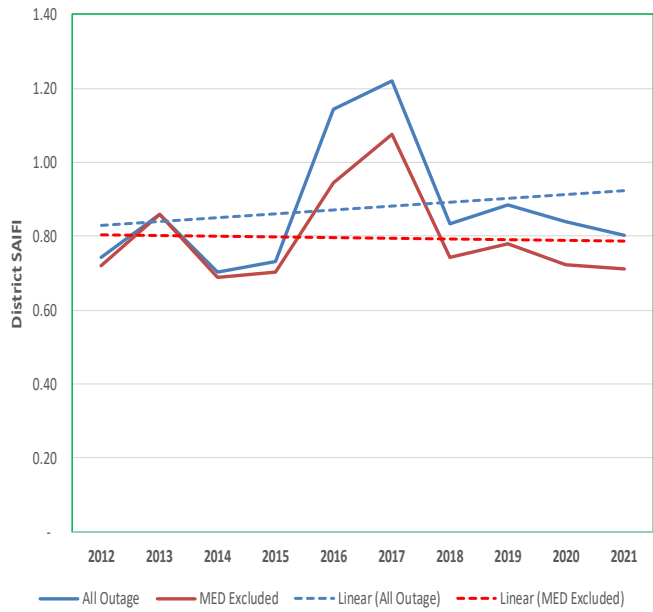
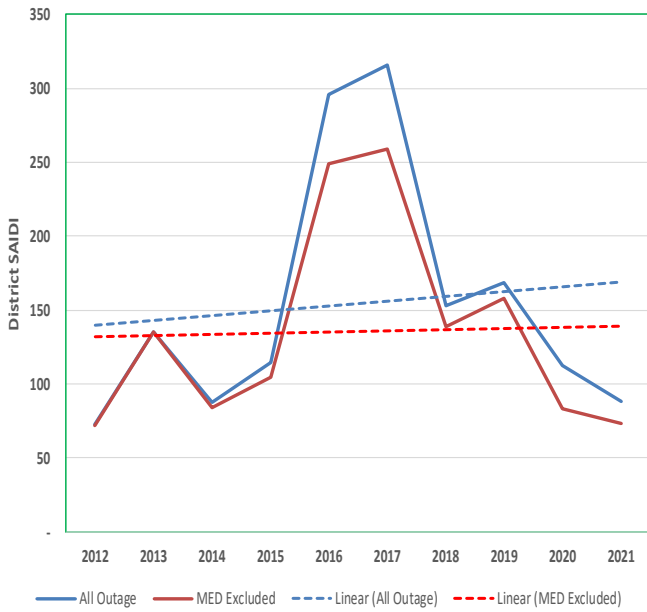
VENTURA District Reliability Performance



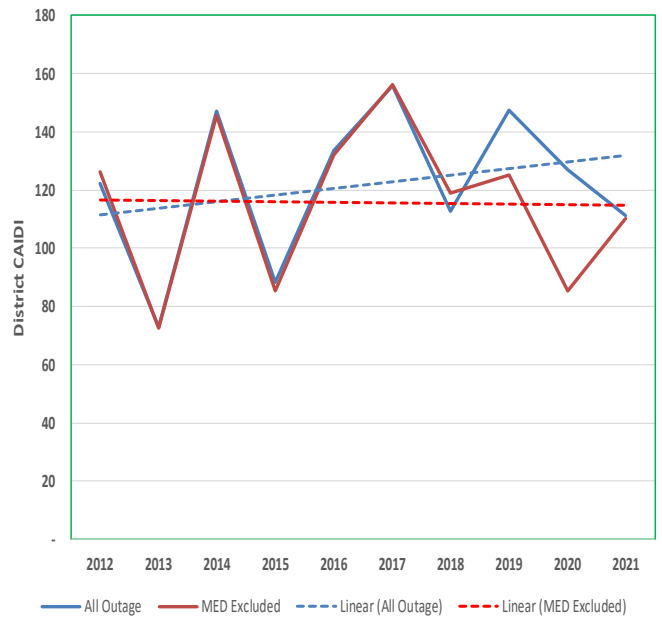
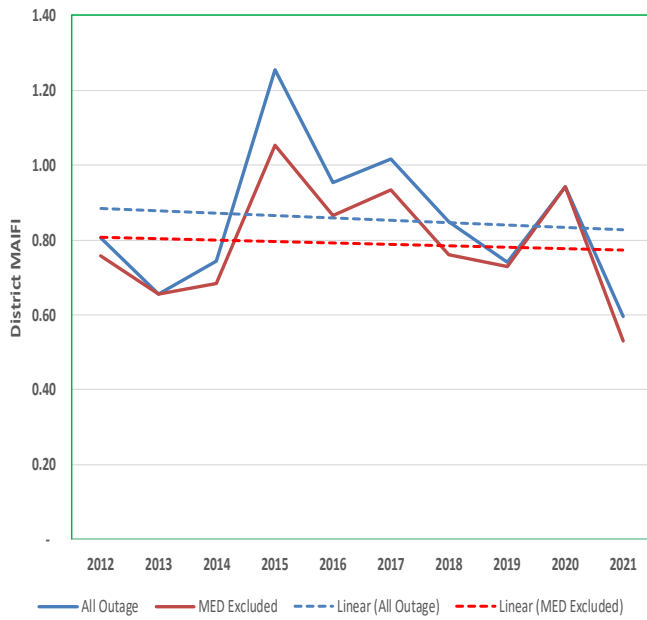
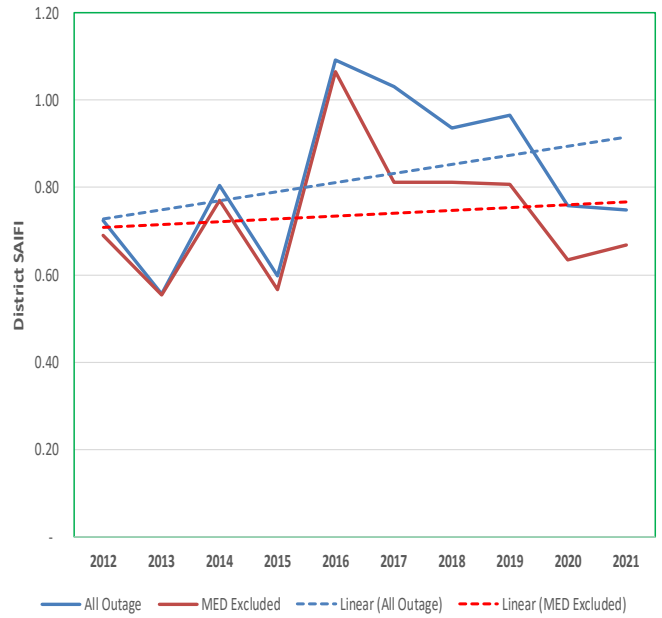
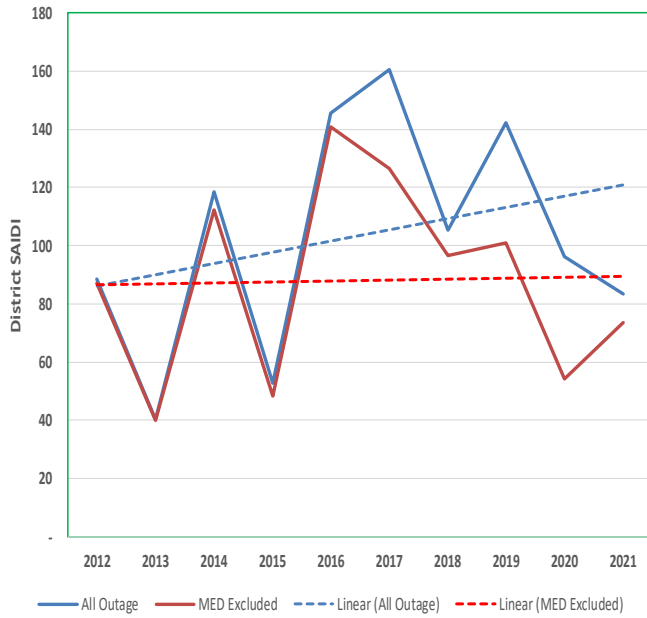
VICTORVILLE District Reliability Performance



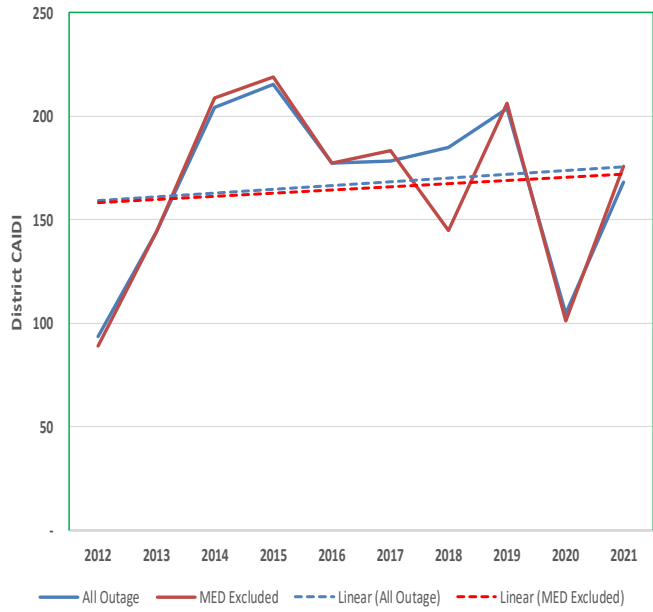
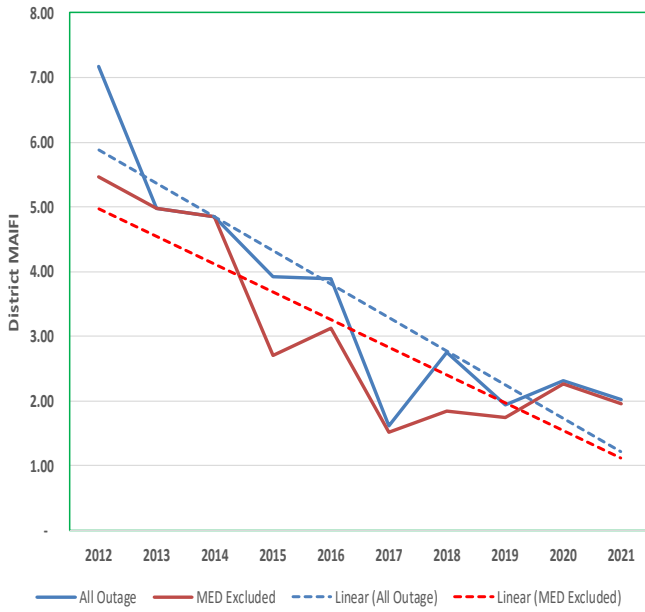
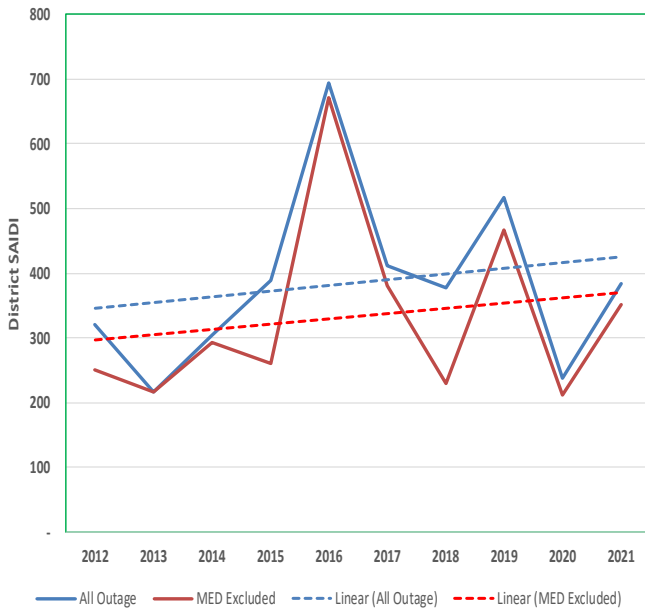
WHITTIER District Reliability Performance



WILDOMAR District Reliability Performance



YUCCA VALLEY District Reliability Performance

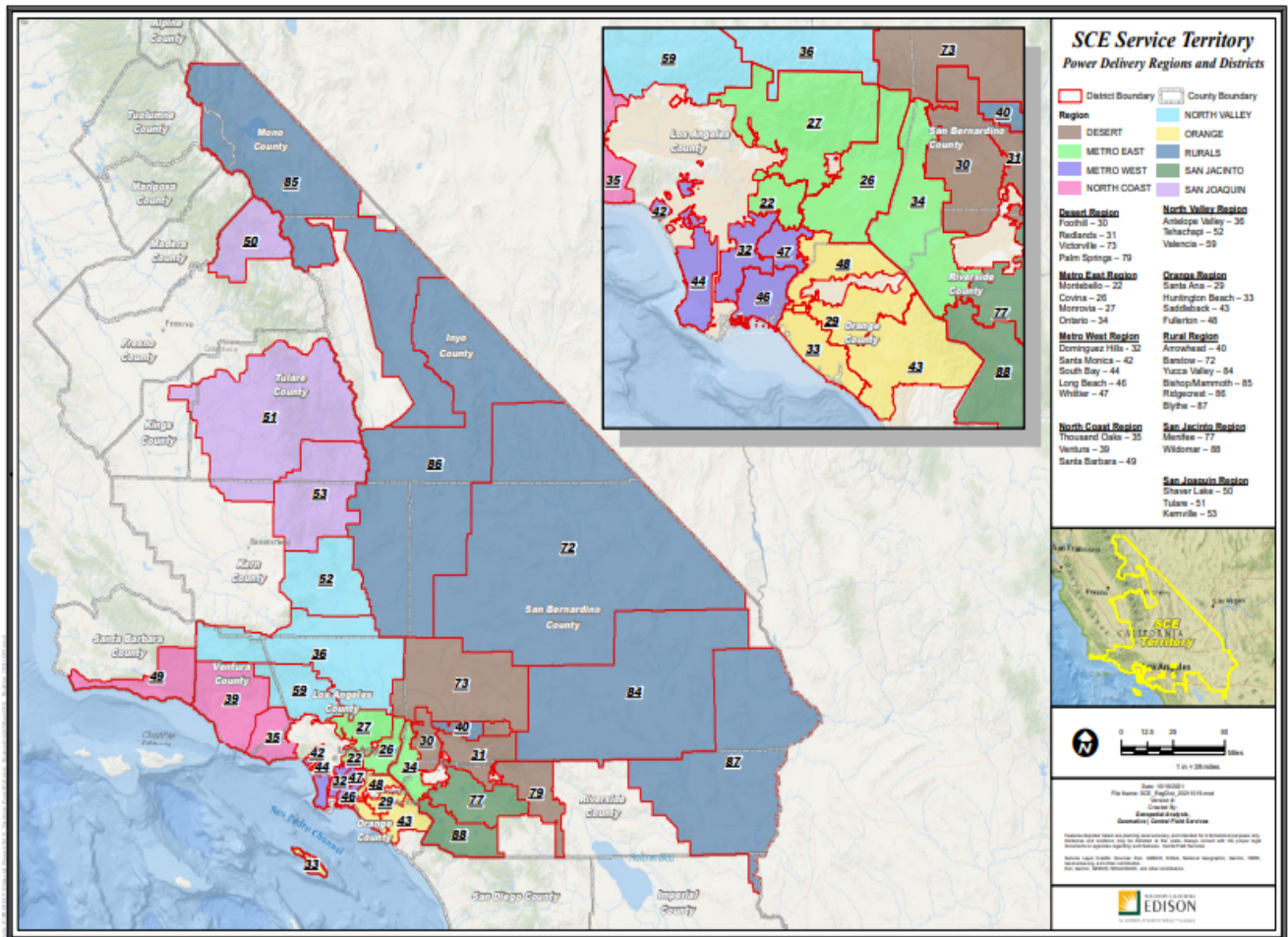


b. The information on the number, date, and location of planned outages are currently unavailable to provide in a separate report to the Directors of the Energy Division and the Safety Enforcement Division.¹³

¹³ SCE is currently unable to provide planned outage data metrics for 2021 due to recent IT system implementation issues. SCE is actively investigating this issue and will provide the data when available.

SECTION 4 – SCE SERVICE AREA MAP

The following is the SCE Service Area with Power Delivery Regions and Districts Map. The map contains both SCE district boundaries and county boundaries. SCE has 9 regions and 34 districts.¹⁴



¹⁴ Beginning in the 2019 annual report, Catalina District indices were combined with Huntington Beach since the Catalina District operations have been combined with the Huntington Beach District. SCE will no longer show Catalina as a standalone District and Region in SCE’s service area map. SCE has updated its Regions with a split of the North Coast Region into North Coast and North Valley Regions.

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 76 unique WPCs where 28 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)

Circuit	District	2021 Customer Count	Substation	Circuit Miles (d)	%UG	%OH	Circuit Breaker or Auto-Recloser Operation (a)	Sys-SAIDI Rank	Sys-SAIDI (b)	Ckt-SAIDI Rank	Ckt SAIDI (c)
Mustang 12kV	53	2,111	Isabella	51.55	0.04	0.96	23	1	0.584195967	62	1,429
Tenneco 12kV*	36	4,712	Frazier Park	124.02	0.21	0.79	73	2	0.57171567	136	683
Pascoe 2.4kV	53	409	Greenhorn	9.65	0.10	0.90	12	3	0.499969375	14	6,314
Cuthbert 16kV*	35	2,347	Latigo	41.84	0.40	0.60	42	4	0.451432658	93	1,042
Melody 25kV	84	1,947	Hi Desert	320.19	-	1.00	81	5	0.450066627	79	1,208
Napoleon 12kV	31	1,907	Maraschino	42.36	0.78	0.22	61	6	0.330180546	115	788
Mist 16kV	49	421	Capitan	65.69	0.09	0.91	40	7	0.321450218	20	4,235
Ranger 2.4kV	40	698	Ranger P.T.	5.19	-	1.00	15	8	0.320809853	38	2,412
Atento 12kV*	43	2,746	Viejo	56.78	0.53	0.47	44	9	0.31997025	144	634
Cachuma 16kV	49	2,483	Vegas	70.82	0.17	0.83	45	10	0.316458681	152	611
Power 4kV	31	781	Muscoy	11.16	0.03	0.97	51	11	0.315281267	45	2,076
Eastmont 4kV*	22	1,325	Bicknell	3.94	0.07	0.93	6	12	0.311647038	74	1,262
Agate 12kV*	43	4,233	Morro	35.48	0.70	0.30	39	13	0.299803232	309	367
Capanero 2.4kV	51	300	Capanero P.T.	5.31	-	1.00	6	14	0.29058599	17	5,055
Trochu 16kV*	32	2,007	Bullis	16.23	0.20	0.80	14	15	0.290247348	121	780
Haskell 16kV	27	1,503	Arroyo	26.08	0.45	0.55	82	16	0.285663113	98	984
Abacus 12kV	31	2,416	Highland	27.71	0.62	0.38	17	17	0.283265401	150	614
Cabana 12kV	30	2,314	Bain	14.52	0.81	0.19	17	18	0.275936149	155	607
Firmona 16kV*	44	1,878	La Fresa	7.70	0.16	0.84	9	19	0.266442763	132	714
Thunderbolt 12kV	36	1,778	Oasis	19.95	0.49	0.51	14	20	0.261041838	125	742
Windjammer 16kV	39	7,436	Channel Islands	45.26	0.48	0.52	22	21	0.254185161	797	177
Concepcion 16kV*	49	245	Gaviota	62.75	0.50	0.50	8	22	0.238098236	16	5,162
Energy 16kV*	35	1,717	Chatsworth	46.80	0.29	0.71	42	23	0.23805466	128	731
Rim 12kV*	40	1,886	Burnt Mill	29.49	0.22	0.78	17	24	0.237482459	141	650
Courson 12kV	36	2,324	Palmdale	21.43	0.85	0.15	5	25	0.237198896	184	530
Landers 25kV	84	1,815	Nugget	144.36	0.01	0.99	73	26	0.235553901	137	677
Big Rock 16kV*	35	2,993	Chatsworth	29.94	0.44	0.56	17	27	0.235498253	254	415
Driskill 16kV	49	4,076	San Marcos	68.79	0.41	0.59	55	28	0.233859818	396	296
Roi-Tan 12kV*	31	2,322	Shandin	28.23	0.31	0.69	28	29	0.233721762	205	500
Canoe 12kV	33	3,152	Bolsa	18.30	0.60	0.40	26	30	0.227624491	300	372
Big Pines 12kV	36	2,232	Little Rock	69.41	0.48	0.52	44	31	0.226117215	188	527
Green Bear 2.4kV	40	667	Green Bear P.T.	7.73	-	1.00	13	32	0.218919328	54	1,677
Memphis 12kV	31	1,456	Tennessee	33.27	0.34	0.66	43	33	0.218680086	117	785
Autumn 12kV	85	2,119	Skiland	27.14	0.77	0.23	21	34	0.218263219	181	536
January 12kV*	33	4,309	Lafayette	20.01	0.92	0.08	34	35	0.218063315	482	256
Vallecito 16kV	49	4,324	Carpinteria	55.51	0.47	0.53	63	36	0.21671293	476	259
Milpas 16kV	49	4,869	Santa Barbara	20.67	0.39	0.61	32	37	0.211738866	573	228
Kay 16kV*	22	2,262	Alhambra	15.37	0.31	0.69	9	38	0.201946942	217	471
Exline 16kV	22	4,102	Amador	18.23	0.23	0.77	28	39	0.199117449	494	253
Hogan 12kV	33	2,733	Lafayette	12.39	0.49	0.51	30	40	0.195785857	282	384
Belpac 16kV	35	3,157	Newbury	40.33	0.87	0.13	25	41	0.193430413	358	316
Moritz 12kV	40	1,995	Huston	30.32	0.26	0.74	43	42	0.193394162	200	503
Norwood 12kV	31	2,207	Highland	18.04	0.36	0.64	23	43	0.191989821	226	455
Camp Nelson 4kV	51	520	Camp Nelson P.T.	9.90	0.01	0.99	24	44	0.191417736	44	2,091
Marbuck 12kV	34	2,317	Francis	15.30	0.50	0.50	40	45	0.190529427	228	450
Karen 12kV	48	2,371	Marion	19.14	0.14	0.86	18	46	0.188654588	257	413

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) Includes Sustained and Momentary outages that affected the Circuit Breaker.
- (b) SAIDI is based on a three-year weighted average.
- (c) Ckt SAIDI is based on a three-year weighted factor (Average Customer experience on Circuit).
- (d) Starting 2021 “Circuit Mile” field is using Geospatial data moving away from legacy software.

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

Circuit	District	2021 Customer Count	Substation	Circuit Miles (d)	%UG	%OH	Circuit Breaker or Auto-Recloser Operation (a)	Sys-SAIFI Rank	Sys-SAIFI (b)	Ckt-SAIFI Rank	Ckt SAIFI (c)
Tenneco 12kV*	36	4,712	Frazier Park	124.02	0.21	0.79	73	1	0.00374	83	4.238
Corsica 16kV*	39	6,523	Gonzales	47.21	0.62	0.38	26	2	0.00329	288	2.539
Windjammer 16kV*	39	7,436	Channel Islands	45.26	0.48	0.52	22	3	0.00306	468	2.115
January 12kV*	33	4,309	Lafayette	20.01	0.92	0.08	34	4	0.00286	140	3.403
Blimp 16kV	32	3,674	Nola	30.50	0.23	0.77	28	5	0.00283	90	3.991
Margaret 16kV	44	5,224	Felton	16.71	0.27	0.73	18	6	0.00227	399	2.260
Salmon 16kV*	44	3,971	El Nido	18.46	0.42	0.58	21	7	0.00227	139	3.431
Spinnaker 16kV*	39	5,080	Channel Islands	34.19	0.29	0.71	23	8	0.00219	409	2.245
Roi-Tan 12kV*	31	2,322	Shandin	28.23	0.31	0.69	28	9	0.00219	72	4.678
Driskill 16kV	49	4,076	San Marcos	68.79	0.41	0.59	55	10	0.00209	258	2.663
Milpas 16kV	49	4,869	Santa Barbara	20.67	0.39	0.61	32	11	0.00208	417	2.214
Marbuck 12kV	34	2,317	Francis	15.30	0.50	0.50	40	12	0.00207	63	4.888
Kuehner 16kV*	35	3,070	Santa Susana	23.98	0.77	0.23	18	13	0.00207	114	3.655
Ricardo 16kV*	39	2,982	San Miguel	23.21	0.39	0.61	44	14	0.00206	130	3.507
Napoleon 12kV	31	1,907	Maraschino	42.36	0.78	0.22	61	15	0.00205	74	4.559
Gringo 16kV	39	4,736	San Miguel	28.68	0.90	0.10	31	16	0.00203	423	2.201
Agate 12kV	43	4,233	Morro	35.48	0.70	0.30	39	17	0.00202	311	2.479
Tri City 16kV*	22	3,153	Alhambra	17.01	0.26	0.74	19	18	0.00200	144	3.361
Exline 16kV	22	4,102	Amador	18.23	0.23	0.77	28	19	0.00198	290	2.537
Vallecito 16kV	49	4,324	Carpinteria	55.51	0.47	0.53	63	20	0.00196	369	2.341
Fantail 16kV*	42	5,839	Tahiti	12.90	0.87	0.13	9	21	0.00195	984	1.388
Haskell 16kV	27	1,503	Arroyo	26.08	0.45	0.55	82	22	0.00195	32	6.726
Ambrus 16kV	27	2,335	Bradbury	19.46	0.67	0.33	23	23	0.00193	81	4.312
Hooligan 16kV	35	3,164	Newbury	48.48	0.85	0.15	26	24	0.00192	167	3.138
Sweetwater 12kV	31	3,361	Shandin	33.32	0.92	0.08	24	25	0.00191	193	2.963
Campanula 25kV*	84	1,979	Nugget	135.78	0.07	0.93	89	26	0.00187	59	4.986
Kalmia 16kV	32	2,850	Calden	15.36	0.05	0.95	23	27	0.00186	138	3.432
Ryan 16kV	44	7,018	Lennox	27.13	0.20	0.80	10	28	0.00185	1,096	1.303
Sundown 12kV*	73	2,578	Helendale	46.98	0.85	0.15	26	29	0.00184	133	3.481
Diablo 16kV	39	4,284	San Miguel	36.71	0.60	0.40	29	30	0.00177	453	2.150
Queensland 12kV	36	2,437	Lancaster	26.74	0.71	0.29	20	31	0.00176	93	3.952
Surfside 16kV	39	5,623	Channel Islands	31.50	0.62	0.38	28	32	0.00171	814	1.571
Wintersburg 12kV	33	3,651	Oceanview	17.23	0.56	0.44	5	33	0.00168	350	2.389
Trochu 16kV*	32	2,007	Bullis	16.23	0.20	0.80	14	34	0.00168	79	4.415
Asteroid 16kV*	22	4,430	Alhambra	20.74	0.36	0.64	15	35	0.00165	534	1.969
Big Rock 16kV*	35	2,993	Chatsworth	29.94	0.44	0.56	17	36	0.00164	188	3.002
Kwis 12kV*	26	2,101	Walnut	26.64	0.54	0.46	27	37	0.00162	89	4.008
Mallet 12kV	26	2,723	Railroad	29.35	0.69	0.31	35	38	0.00162	172	3.106
Power 4kV	31	781	Muscoy	11.16	0.03	0.97	51	39	0.00160	18	10.504
Belpac 16kV	35	3,157	Newbury	40.33	0.87	0.13	25	40	0.00157	284	2.560
Tandem 16kV	44	1,975	Walteria	18.92	0.41	0.59	20	41	0.00156	85	4.189
Seminary 16kV	39	2,086	Somis	22.01	0.46	0.54	17	42	0.00153	103	3.786
Campbell 12kV*	51	2,622	Porterville	114.73	0.24	0.76	26	43	0.00152	178	3.077
Speaker 12kV	33	4,809	Hamilton	31.76	0.61	0.39	12	44	0.00151	751	1.645
Rhumba 16kV	44	4,121	Brighton	16.76	0.34	0.66	10	45	0.00150	570	1.902
McDonnell 16kV	44	2,017	Lennox	12.78	0.31	0.69	19	46	0.00150	97	3.852

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) Includes Sustained and Momentary outages that affected the Circuit Breaker.
- (b) SAIFI is based on a three-year weighted average.
- (c) Ckt SAIFI is based on a three-year weighted factor (Average Customer experience on Circuit).
- (d) Starting 2021, "Circuit Mile" field is using Geospatial data moving away from legacy software.

Tables 9 and 10 below identify the circuits that are top 1% WPC (by SAIDI or SAIFI this year) *and* were top 1% circuits by SAIDI or SAIFI on SCE's WPC list in 2018. 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.	
	2021 Sys-SAIDI Rank	2021 Sys-SAIDI	2020 Sys-SAIDI Rank	2020 Sys-SAIDI			Engineering Scope	Anticipated Completion Year
Tenneco 12kV*	2	0.57172	1	0.91703	Tenneco traverse through HFRA, following Frazier Mountain Park road splits towards Lockwood Valley Rd and Cuddy Valley Rd feeding residential load to Frasier Park communities. 2021 impact interruptions for Tenneco were 3-source lost and 3-UG equipment failures.	7/31/2018	Project Completed in 2021 13 OH Switches Engineering will continue to monitor and evaluate circuit performance for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Cuthbert 16kV*	4	0.45143	3	0.59737	Cuthbert traverses through Malibu canyon which is HFRA. Circuit experienced 4-PSPS events in 2021 which were the leading high impact interruptions in 2021.	-	Engineering is monitoring and evaluating circuit performance for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Atento 12kV*	9	0.31997	2	0.62269	Atento follows E Santiago Canyon Road then feeds Silverado Canyon which feeds Silverado Canyon community. Entire circuit is in HFRA where it's subjected to PSPS. 2021 leading interruptions for circuit's reliability deficiency was 1-OH equipment failure and 1-PSPS event which impacted circuit breaker therefore affecting every customer.	1/29/2021	Grid Resiliency 7.8 Circuit Miles of Covered Conductor 14 BLFs	2022
Cachuma 16kV*	10	0.31646	17	0.22972	75% of circuit is in HFRA and following San Marcos Rd which is a narrow windy in Santa Barbara foothills. Patrolling need lines need to be completed by helicopter. Circuit experienced the following high impacted outages in 2021 which lead to circuit's reliability deficiency 2-OH equipment and 1-UG equipment failures which had an impact to CMI.	2/22/2019	Grid Resiliency 44 Circuit Miles of Covered Conductor 15 CLFs	2022
Eastmont 4kV*	12	0.31165	14	0.27023	Eastmont experienced 2-UG equipment failures and was the leading high impact interruption in 2021 for circuit reliability deficiency.	-	Engineering is monitoring and evaluating circuit performance for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Agate 12kV*	13	0.29980	46	0.15511	Agate traverse through Laguna Beach and into the foothills. Troubleshooting circuit is difficult due to circuit's line route and congested roads. 2-UG equipment failures impacted circuit breaker affecting every customer these events were the 2021 leading interruptions for circuit's deficiency.	5/21/2018	Inflight project to rebus existing circuit tie by installing: Civil 1.7 Cond Miles of UG Cable 2 UG Switches 1 UG Fuse	2022
Trochue 16kV*	15	0.29025	4	0.54330	Trochue experienced the following high impact interruptions in 2021 leading to the circuit's reliability deficiency 1-source lost and 2-UG equipment failure.	-	Engineering is monitoring and evaluating circuit performance for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Firmona 16kV*	19	0.26644	5	0.53595	Firmona experienced two high impact interruptions in 2021 leading to the circuit's reliability deficiency. The interruptions were 1-source lost and 1-OH equipment failure.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Concepcion 16kV*	22	0.23810	16	0.24580	Concepcion experienced a large high impact interruption in 2021 which contributed to reliability deficiency. 16kV lines were de-energized by operations due to environmental emergency.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Energy 16kV*	23	0.23805	9	0.31311	Energy traverse in HFRA and is subjected to PSPS. Circuit line route follows American Cut Off Rd to feed residential load in Chatsworth. 2021 leading interruptions for circuit's reliability deficiency was 6-PSPS events.	3/8/2021	Grid Resiliency 25 Conductor Miles of Covered Conductor RAR	2022
Rim 12kV*	24	0.23748	10	0.31050	Rim feeds Twin Lakes community which is in the San Bernardino mountains. Circuit experiences snowy weather conditions which lead to a high impact interruption in 2021 where a tree branch fell onto the OH lines during a snowy conditions.	-	Engineering is monitoring and evaluating circuit for additional Grid Hardening solutions (i.e Covered Conductor and automation) to improve wind threshold to reduce PSPS.	Pending Review
Big Rock 16kV*	27	0.23550	29	0.17850	Big Rock traverse through HFRA and subject to PSPS. Circuit follows Black Canyon Rd to feed residential load in SE portion of Simi Valley. 2021 leading interruptions for circuit's reliability deficiency was 1-PSPS and 1-source lost. Both events impacted circuit breaker therefore affecting every customer.	7/31/2018	Grid Resiliency 11 Conductor Miles of Covered Conductor	2022
Roi-Tan 12kV*	29	0.23372	19	0.22073	2021 leading interruptions for circuit's reliability deficiency was 3-OH equipment and 1-UG equipment failures. Roi-Tan experienced a source lost which impacted multiple customer on the circuit.	10/31/2017	Project Completed in 2021 21 BLFs 6 OH Switches Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	2021
January 12kV*	35	0.21806	15	0.25198	Leading interruptions for reliability deficiency are 2-UG equipment failures and 1 vegetation in overhead lines impacted circuit breaker therefore affecting every customer. Circuit traverse along Newport Beach Balboa Peninsula congested intersections and structures need to pump to begin troubleshooting.	1/1/2020	One Automated device was installed in 2021 to help improve reliability by quickly sectionalizing and isolating the circuit. Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	2021
Kay 16kV*	38	0.20195	11	0.29719	Kay experienced two high impact interruptions in 2021 leading to the circuit's reliability deficiency. The interruptions were a 3rd party caused event and 1-UG equipment failure.	1/19/2021	2 Automated Switches	Postphone due to resouces

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. WORST PERFORMING CIRCUITS (WPC) Evaluation

WPC projects are initiated from three years of System outage data which are weighted then ranked. Per CPUC guidance, the top 1% circuits are the SCE's WPC and are 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, ODRM reports, and repair orders are used as part of the outage evaluation and provide additional details such as 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 Branch Line Fuses (BLFs) to minimize impact of outage to a small subset of customers or Fault Indicators (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/underground 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 overhead re-conducting tend to be costly and have longer lead times than the previous two options described, but can add more reliability benefits. The underground and overhead re-conducting 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	iv.		
	2020 Sys-SAIFI Rank	2020 Sys-SAIFI	2019 Sys-SAIFI Rank	2019 Sys-SAIFI		Submitted	Engineering Scope	Anticipated Completion Year
Tenneco 12kV*	1	0.0037439	6	0.002620	Tenneco traverse through HFRA, following Frazier Mountain Park road splits towards Lockwood Valley Rd and Cuddy Valley Rd feeding residential load to Frasier Park communities. 2021 impact interruptions for Tenneco were 3-source lost and 3-UG equipment failures.	7/31/2018	Project Completed in 2021 13 OH Switches Engineering will continue to monitor and evaluate circuit performance for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	2021
Corsica 16kV*	2	0.0032865	1	0.00371239	The leading interruptions for Corsica's reliability deficiency was two OH interruptions caused by a mylar balloon and an OH equipment failure. The circuit experienced a source lost which impacted majority of the customers on the circuit.	10/31/2017	0.2 Cond Miles of UG Cable 5 FIs 3 Automated Switches 20 BLFs 8 OH Switches	Postpone due to resouces
Windjammer 16kV*	3	0.0030584	33	0.00143078	Windjammer experienced the following high impact interruptions in 2021 2-OH equipment failures and operations de-energized the circuit twice for standard operations.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
January 12kV*	4	0.0028623	9	0.00230479	Leading interruptions for reliability deficiency are 2-UG equipment failures and 1 vegetation in overhead lines impacted circuit breaker therefore affecting every customer. Circuit traverse along Newport Beach Balboa Peninsula congested intersections and structures need to pump to begin troubleshooting.	1/1/2020	One Automated device was installed in 2021 to help improve reliability by quickly sectionalizing and isolating the circuit. Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	2021
Salmon 16kV*	7	0.0022659	3	0.00353272	Salmon traverses and feeds Manhattan Beach. Congested intersections make it difficult to troubleshoot circuit. 2021 leading interruption for reliability deficiency was a OH equipment failure.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Spinnaker 16kV*	8	0.0021865	17	0.00179679	2021 leading interruptions for Spinnaker's reliability deficiency was 1-UG equipment and 2-OH equipment failures.	10/27/2016	4 Automated Switches 22 BLFs 2.9 Cond Mi of OH Conductor	Postpone due to resouces
Roi-Tan 12kV*	9	0.0021854	11	0.00215207	2021 leading interruptions for circuit's reliability deficiency was 3-OH equipment and 1-UG equipment failures. Roi-Tan experienced a source lost which impacted multiple customer on the circuit.	10/31/2017	Project Completed in 2021 21 BLFs 6 OH Switches Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	2021
Kuehner 16kV*	13	0.0020653	5	0.00278324	Kuehner had three high impact events in 2021. The leading interruptions for circuit's reliability deficiency was the following equipment failures 2-OH and 1-UG.	2/28/2018	Project Completed in 2021 2.1 Covered Conductor - Circuit Miles	2021
Ricardo 16kV*	14	0.0020607	39	0.00136591	Ricardo experienced the following 2021 high impact interruptions leading to the circuit's reliability deficiency: 2-PSPS, 3-OH equipment failures, and 2-UG equipment failures.	1/29/2021	Project Completed 1-RAR	2021
Tri City 16kV*	18	0.0019961	37	0.00138532	Tri City traverses into HFRA boundary, circuit experienced three interruptions that were patrolled but could not identify the cause of the interruptions. And, a critter interrupted the circuit by coming into contact with OH equipment.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Fantail 16kV*	21	0.0019512	2	0.003650	Fantail traverse through Marina del Rey congested intersections. Structures need to be pump to begin troubleshooting. Leading interruptions for reliability deficiency are 1-UG equipment failure impacted the circuit breaker therefore affecting every customer.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Campanula 25kV*	26	0.0018749	8	0.00233704	Overall Campanula is a long circuit expands from Pioneertown to Yucca Valley. Circuit experienced three high impact events in 2021 which lead to reliability deficiency these interruption are 1-OH equipment failure, 1-weather, and 1-UG equipment failure impacted multiple customers.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Sundown 12kV*	29	0.0018413	4	0.00290874	Sundown feeds Helendale community 2021 leading interruptions for circuit's reliability deficiency was 1-source lost and 1-UG equipment failure.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Trochu 16kV*	34	0.0016758	19	0.00171528	Trochu experienced the following high impact interruptions in 2021 leading to the circuit's reliability deficiency 1-source lost and 2-UG equipment failure.	-	Engineering is monitoring and evaluating circuit performance for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	Pending Review
Asteroid 16kV*	35	0.0016478	26	0.00153394	Asteroid feeds Alhambra, splitting into a north and east section. Two interruptions are the leading cause of the circuit's 2021 reliability deficiency both occurred at the end of line of each section where one was an OH equipment failure and the other was caused by a critter.	7/31/2018	5.5 Conductor Miles of OH Conductor	Postpone due to resouces

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
Big Rock 16kV*	36	0.0016421	12	0.00206316	Big Rock traverse through HFRA and subject to PSPS. Circuit follows Black Canyon Rd to feed residential load in SE portion of Simi Valley. 2021 leading interruptions for circuit's reliability deficiency was 1-PSPS and 1-source lost. Both events impacted circuit breaker therefore affecting every customer.	7/31/2018	Grid Resiliency 11 Conductor Miles of Covered Conductor	2022
Kwis 12kV*	37	0.0016236	23	0.00158698	High impact interruptions in 2021 for Kwis's reliability deficiency was caused by 2-OH equipment, 1-source lost, and weather.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FIs and automation) to minimize CMI and CI.	Pending Review
Campbell 12kV*	43	0.0015216	22	0.00161742	2021 leading interruptions for circuit's reliability deficiency was vehicle hit pole and mylar balloon. Both interruptions impacted the circuit breaker therefore affecting every customer.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e FIs and automation) to minimize CMI and CI.	Pending Review

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. WORST PERFORMING CIRCUITS (WPC) Evaluation. WPC projects are initiated from three years of System outage data which are weighted then ranked. Per CPUC guidance, the top 1% circuits are the SCE's WPC and are 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, ODRM reports, and repair orders are used as part of the outage evaluation and provide additional details such as 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.

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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 2021 including the cause and location of the outage. Table 12 captures the number of customers without power in hourly intervals for the 2021 Top 10 outages.

Table 11 – Top 10 Major Unplanned Outage Events (2021)

Rank	System Outage ID	Switching Center	Cause Description	SAIDI	Date	Number of Customers Affected	Longest Individual Customer Interruption (minutes)
1	383108	RECTOR	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	1.801	8/20/2021	413	22,691
2	388053	VENTURA	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	1.463	11/24/2021	3,404	2,633
3	390687	VISTA	UNKNOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	1.450	12/29/2021	5,740	6,203
4	382392	ORANGE COUNTY	UNKNOWN SUBSTATION EQUIPMENT BUS/CONDUCTOR	1.261	8/9/2021	17,919	574
5	390712	VISTA	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	1.257	12/29/2021	23,554	10,001
6	369669	VINCENT	VEGETATION BLOWN SUBSTATION EQUIPMENT DISCONNECT	1.159	1/19/2021	18,377	2,572
7	369889	VENTURA	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	1.094	1/19/2021	2,669	2,836
8	369414	VINCENT	NO CAUSE FOUND UNKNOWN PATROLLED	1.090	1/19/2021	5,501	1,934
9	369394	VENTURA	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	1.063	1/19/2021	3,068	1,811
10	388252	VISTA	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	1.023	11/25/2021	7,662	2,504

Table 12 – Number of Customers without Power in Hourly Intervals

Ranking	1	2	3	4	5	6	7	8	9	10
System Outage ID	383108	388053	390687	382392	390712	369669	369889	369414	369394	388252
Outage Start Hour	8/20/21 9:06 PM	11/24/21 6:35 PM	12/29/21 11:22 AM	8/9/21 4:25 AM	12/29/21 5:49 PM	1/19/21 7:06 PM	1/19/21 10:41 AM	1/19/21 11:24 AM	1/19/21 8:20 AM	11/25/21 2:04 AM
0 - 1 Hour	413	3404	5740	17919	23554	18377	2669	5501	3068	7661
1 - 2 Hour	413	3404	4253	17906	2920	18377	2669	5501	3068	4701
2 - 3 Hour	413	3404	4253	17906	2920	18377	2669	5501	3068	4701
3 - 4 Hour	413	3404	4253	14208	2920	18377	2669	5501	3068	4701
4 - 5 Hour	413	3404	4253	14118	2920	8983	2669	5501	3068	4701
5 - 6 hour	413	3404	2705	10643	2920	6903	2669	5501	3068	4701
6 - 7 Hour	413	3404	2641	8604	2920	6834	2669	2989	3068	4701
7 - 8 Hour	413	3404	2641	7789	2920	6834	2669	2352	3068	4701
8 - 9 Hour	413	3404	2641	6551	2920	4628	2669	2352	3068	4701
9 - 10 Hour	413	3404	2641	2248	2920	9	2669	2352	3068	4701
10 - 11 Hour	413	3404	2641	0	2920	9	2669	2352	3068	4701
11 - 12 Hour	413	3404	2641	0	2920	9	2669	2352	3068	4701
12 - 13 Hour	413	3404	2641	0	2920	9	2669	2352	3068	4701
13 - 14 Hour	413	3404	2641	0	2920	9	2669	2352	3068	4701
14 - 15 Hour	413	3404	2641	0	2920	9	2669	2352	3068	4701
15 - 16 Hour	413	3404	2641	0	2920	9	2669	2352	3068	3343
16 - 17 Hour	413	3404	2641	0	1018	4	2669	2352	3068	2055
17 - 18 Hour	413	3404	2641	0	495	4	2669	2352	3068	1738
18 - 19 Hour	413	3404	2641	0	495	4	2669	2352	3068	1738
19 - 20 Hour	413	3404	2641	0	495	4	2669	2352	3068	1735
20 - 21 Hour	413	3404	2641	0	495	4	2669	2352	3068	1735
21 - 22 Hour	413	3404	2641	0	495	4	2669	2352	3068	1735
22 - 23 Hour	413	3404	2641	0	495	4	2669	2352	3068	1577
23 - 24 Hour	413	3404	2641	0	495	4	2669	2352	3068	1274
After24Hour (includes interruptions started at later days/Hours)	413	3404	2641	0	495	4	2669	2352	3068	243

SECTION 7 – SUMMARY LIST OF MED PER IEEE 1366

Table 13 below captures all MED occurring in 2021 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 (2021)

Cause	PSPS, No Cause Found, Unknown	Unknown, Open for Repairs, No Cause Found	Lightning, Unknown, No Cause Found	PSPS, Unknown, Open for Repairs	PSPS, No Cause Found, Unknown	Unknown, Vegetation, No Cause Found	Vegetation, Unknown, Open for Repair	Unknown, No Cause Found, Vegetation
Location	NC, NV, D	ME, D, SJQ	MW, NC, O	O, NC, ME	D, O, NC	R, MW, D	R, SJQ, SJC	MW, R, NC
Outage Duration	1/19/2021	8/20/2021	10/4/2021	11/24/2021	11/25/2021	12/14/2021	12/29/2021	12/30/2021
0 to 1 hour	179,593	23,901	140,633	62,799	127,417	302,791	46,118	88,978
1 to 5 hours	69,743	11,531	41,357	23,772	43,109	61,440	3,833	21,784
5 to 10 hours	34,013	205	4,364	924	11,618	12,398	689	1,401
10 to 15 hours	31,340	239	1,300	1,582	9,508	1,769	233	3,574
15 to 20 hours	18,127	243	1,276	1,718	9,411	458	2,537	1,713
20 to 24 hours	12,785	46	652	1,720	11,849	227	-	1,077
1 to 2 days	57,167	3,168	204	21,381	12,552	432	2,344	710
2 to 3 days	1,387	1	2	4	129	-	89	808
3 to 4 days	-	-	4	-	-	-	6	12
4 to 5 days	-	-	-	-	-	-	286	343
5 to 6 days	-	-	-	-	3	-	538	155
6 to 7 days	-	-	-	-	-	-	14	18
>= 7 days	-	413	80	-	-	-	14	-
Total	404,155	39,747	189,872	113,900	225,596	379,515	56,701	120,573

Note:

D - DESERT
 ME - METRO EAST
 MW - METRO WEST
 NC - NORTH COAST
 NV - NORTH VALLEY
 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 2012 - 2021.

Table 14 – Historical Top 10 Outage Events (2021)

Rank	Cause Description	System Outage ID	Date	SAIDI	Number of Customers Affected	Longest Individual Customer Interruption (minutes)	Location
							Switching Center
2021							
1	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	383108	8/20/2021	1.801	413	22,691	RECTOR
2	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	388053	11/24/2021	1.463	3,404	2,633	VENTURA
3	UNKNOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	390687	12/29/2021	1.450	5,740	6,203	VISTA
4	UNKNOWN SUBSTATION EQUIPMENT BUS/CONDUCTOR	382392	8/9/2021	1.261	17,919	574	ORANGE COUNTY
5	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	390712	12/29/2021	1.257	23,554	10,001	VISTA
6	VEGETATION BLOWN SUBSTATION EQUIPMENT DISCONNECT	369669	1/19/2021	1.159	18,377	2,572	VINCENT
7	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	369889	1/19/2021	1.094	2,669	2,836	VENTURA
8	NO CAUSE FOUND UNKNOWN PATROLLED	369414	1/19/2021	1.090	5,501	1,934	VINCENT
9	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	369394	1/19/2021	1.063	3,068	1,811	VENTURA
10	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	388252	11/25/2021	1.023	7,662	2,504	VISTA
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	MIRA LOMA
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	LIGHTHIZE
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

Rank	Cause Description	System Outage ID	Date	SAIDI	Number of Customers Affected	Longest Individual Customer Interruption (minutes)	Location
							Switching Center
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	MIRA LOMA
5	UNKNOWN UNDERGROUND EQUIPMENT CABLE	257337	7/15/2015	0.452	1,801	3,539	LIGHTHIPE
6	OTHER-SEE NOTES STRUCTURE POLE	257205	7/19/2015	0.446	3,906	1,247	VALLEY
7	N/A UNKNOWN NOT PATROLLED	262924	10/15/2015	0.436	10,130	581	VISTA
8	UNKNOWN UNDERGROUND EQUIPMENT CABLE	261743	9/19/2015	0.411	4,024	906	ORANGE COUNTY
9	UNKNOWN SUBSTATION EQUIPMENT CIRCUIT BREAKER	261051	9/15/2015	0.387	17,282	135	LIGHTHIPE
10	LANDSLIDE/MUDSLIDE STRUCTURE POLE	267353	10/18/2015	0.382	18	106,745	ELDORADO
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

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

In 2021, SCE received a total of 121 customer inquiries relating to circuit outage history or reliability data. SCE responded to 42 % of the inquiries within 7 days, 50% of the inquiries within 15 days and 8% 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.

Circuit 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)

Circuit CAIDI

The average time required to restore service for a sustained outage.