



Annual Electric Reliability Report Calendar Year: 2023

Prepared for:
California Public Utilities Commission
Pursuant to Decision 16-01-008

Date Submitted: July 15, 2024

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EXECUTIVE SUMMARY

The reliability information contained within this document comprises the Southern California Edison (SCE) Annual Electric Reliability Report for calendar year 2023, as required by California Public Utilities Commission (CPUC) Decision 16-01-008.

SCE's 2023 SAIDI and SAIFI reliability performance is slightly higher than the 10-year average, excluding Major Event Days (MEDs). Table 1 summarizes SCE's 2023 performance for unplanned outages including and excluding MEDs. The table includes the 10-year average performance for unplanned outages including and excluding MEDs for comparison.

Year	System Indices							
	MED Included				MED Excluded			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2023	115.90	1.04	1.37	111.93	95.86	0.94	1.25	102.31
10 Year Avg (2014-2023)	144.42	1.04	1.47	139.45	94.84	0.89	1.30	106.49

Table 1: System Indices for 2023 and the 10 years average (2014-2023)

In 2023, SCE experienced 6 days which resulted in MEDs or a day in which the daily SAIDI exceeded the threshold value (T_{MED}) of 2.15 minutes. Table 2 shows the 6 MEDs, the identified causes, and the SAIDI impact.

Major Event Days for 2023		
Major Event Day	SAIDI	Cause
02/24/2023	2.64	OH Equipment, Operation, Unknown, UG Equipment, Vegetation Blown
02/25/2023	2.91	OH Equipment, Operation, UG Equipment, Unknown, Toppled Poles
02/28/2023	2.60	Avalanche, Vegetation Blown
03/01/2023	2.40	OH Equipment, Operation, Unknown, Vegetation Blown
08/20/2023	6.83	OH Equipment, Toppled Poles, Weather
10/29/2023	2.66	PSPS

Table 2: Major Event Days for 2023

SCE continuously looks for ways to improve reliability performance such as reducing restoration times by improving processes for operational response, lessening customer impact through real-time outage diagnostics, replacing aging and poorly performing infrastructure, installing new equipment such as covered conductor in our high fire risk areas, and enhancing circuitry via automation and equipment that expedites identification of the faulted location and improves both isolation and restoration.

BACKGROUND: Reliability Report History

Decision 16-01-008 became effective January 14, 2016. The purpose of this Decision was to establish policies, procedures, and rules for reliability reporting and mitigation of reliability problems within the service area of the California investor-owned utilities.

The content contained in this report is based on reliability indices and their respective definitions and formulas, as defined **APPENDIX A: Definitions**. SCE used *IEEE Standard 1366* formulas to calculate reliability indices for SAIDI, SAIFI, MAIFI, and CAIDI.

The Annual Electric Reliability Report contains outage data (planned and unplanned) for distribution customers both including and excluding MEDs. Within this report, SCE explicitly notes whether data (e.g., MEDs) has been excluded.

In 2016, SCE provided planned outage reliability indices for the Annual Reliability Report; 2016 was the first year where the entire year's planned outage information was available. SCE had provided planned outage data up to the calendar year of 2021. For 2022 calendar year reporting, SCE had been unable to provide planned outage data indices due to an ongoing IT system enhancement project and retirement of previous systems that were used for data prior to 2020. In addition, for the 2022 calendar year report, SCE created an interim planned outage indices report that provided conservative estimates for indices for 2020-2022 planned outages. In summary, the annual planned outage indices provided in the 2022 reliability report were as follows:

- 2013-2019: No planned outage indices were included
- 2020-2022: Conservative estimates based on interim reporting were used

The initial system implementation of the IT enhancement project, related to planned outage reporting, was recently completed. For the 2023 calendar year annual report, planned outage indices for 2022-2023 utilize the planned outage indices data from the completed IT enhancement project. The completed project improved how SCE accounts for planned outages. It now employs meter data, enabling a higher degree of accuracy compared to interim or previous reporting methods. In summary, the planned outage indices provided in this 2023 reliability report are as follows:

- 2013-2019: No planned outage indices were included
- 2020-2021: Conservative estimates based on interim reporting were used
- 2022-2023: Planned outage indices use planned outage data from the completed IT enhancement project

SECTION 1: System Indices for the Last 10 Years

SECTION 1a: System Indices

This section contains data for the indices SAIDI, SAIFI, MAIFI, and CAIDI for overall System performance, Distribution performance, and Transmission performance from 2014 to 2023 for unplanned outages. Table 3, Table 4, and Table 5 show the indices for all unplanned outages with MED included and excluded.

Distribution system indices reflect outages that occur on systems operating under 50 kV. Transmission system indices reflect outages that occur on systems operating equal to or greater than 50 kV.

Figure 1, Figure 2, Figure 3, and Figure 4 present separate line graphs of the indices, each with a linear trend line spanning from 2014 to 2023, excluding MEDs.

Year	System Indices							
	MED Included				MED Excluded			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2014	112.25	0.965	1.359	116.28	92.40	0.863	1.232	107.12
2015	114.83	0.916	1.417	125.40	100.15	0.859	1.289	116.56
2016	134.48	1.100	1.553	122.26	109.98	0.994	1.403	110.69
2017	139.73	1.192	1.837	117.19	91.72	0.870	1.420	105.40
2018	136.82	0.874	1.434	156.61	71.25	0.716	1.266	99.58
2019	177.97	1.040	1.380	171.17	90.75	0.866	1.228	104.75
2020	201.32	1.057	1.378	190.47	91.40	0.866	1.248	105.51
2021	179.79	1.112	1.569	161.70	103.82	0.960	1.426	108.10
2022	131.13	1.080	1.417	121.45	101.03	0.964	1.232	104.83
2023	115.90	1.036	1.370	111.93	95.86	0.937	1.249	102.31

Table 3: System Indices for the Last 10 years for Unplanned Outages

SECTION 1ai: Distribution System Indices

Distribution System Indices								
Year	MED Included				MED Excluded			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2014	111.23	0.944	1.292	117.88	91.62	0.842	1.167	108.83
2015	111.87	0.877	1.346	127.54	98.34	0.827	1.236	118.88
2016	129.32	1.049	1.473	123.24	106.29	0.949	1.334	112.03
2017	128.74	0.985	1.564	130.69	89.99	0.843	1.375	106.71
2018	134.87	0.863	1.392	156.34	70.81	0.710	1.232	99.70
2019	170.30	1.006	1.318	169.33	89.33	0.848	1.184	105.37
2020	198.93	1.045	1.315	190.39	89.42	0.854	1.191	104.69
2021	178.01	1.081	1.512	164.72	102.15	0.931	1.377	109.69
2022	129.98	1.054	1.349	123.30	100.29	0.950	1.198	105.53
2023	113.07	1.010	1.290	111.99	94.57	0.912	1.185	103.67

Table 4: Distribution System Indices for the Last 10 years for Unplanned Outages

SECTION 1aii: Transmission System Indices

Transmission System Indices								
Year	MED Included				MED Excluded			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2014	1.02	0.022	0.067	46.82	0.78	0.021	0.065	37.50
2015	2.96	0.039	0.071	76.68	1.82	0.032	0.053	56.75
2016	5.15	0.051	0.080	101.92	3.68	0.045	0.068	82.39
2017	10.99	0.207	0.273	53.01	1.74	0.027	0.045	64.31
2018	1.95	0.011	0.042	177.73	0.44	0.005	0.034	83.54
2019	7.67	0.034	0.062	225.95	1.43	0.019	0.044	76.39
2020	2.39	0.012	0.063	197.46	1.98	0.012	0.057	163.29
2021	1.78	0.031	0.057	57.19	1.67	0.029	0.049	57.42
2022	1.15	0.025	0.067	45.16	0.74	0.013	0.035	55.29
2023	2.83	0.026	0.080	109.27	1.29	0.025	0.064	52.04

Table 5: Transmission System Indices for the Last 10 years for Unplanned Outages

SECTION 1b: Line Graphs of SAIDI, SAIFI, MAIFI, and CAIDI

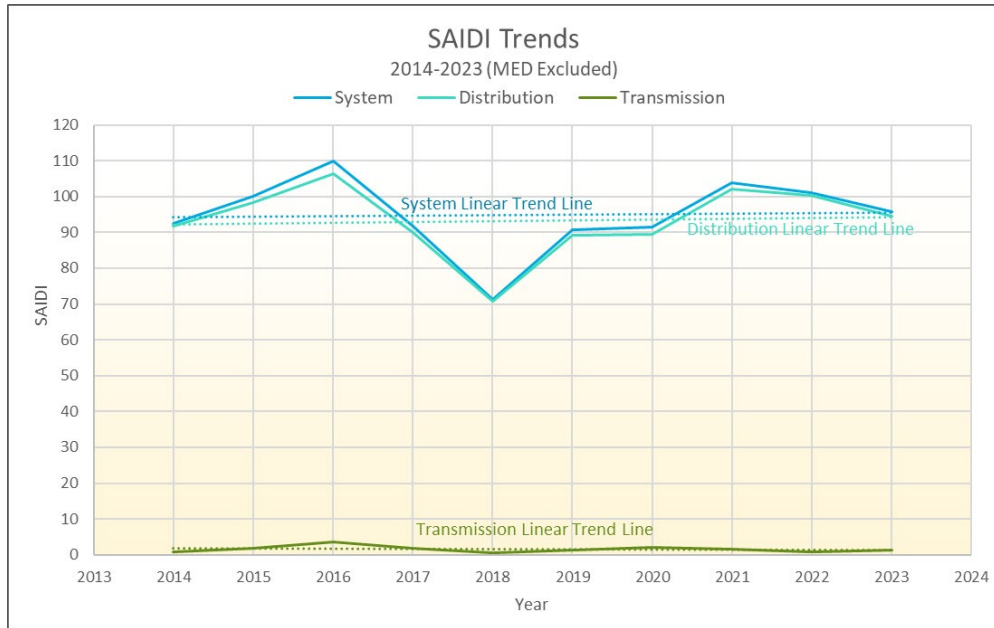


Figure 1: SAIDI Line Graph with Linear Trend Line

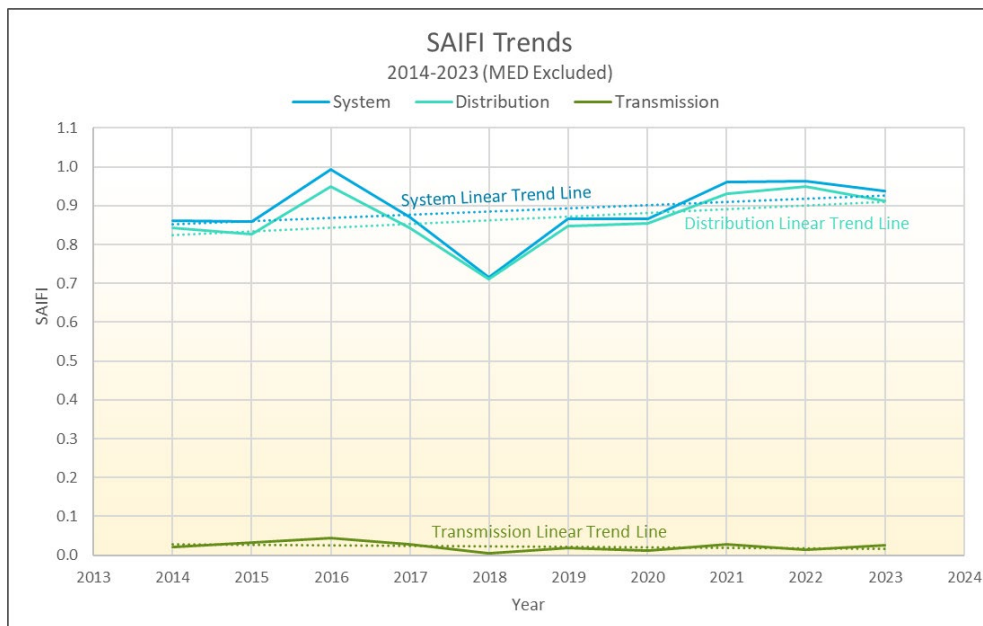


Figure 2: SAIFI Line Graph with Linear Trend Line

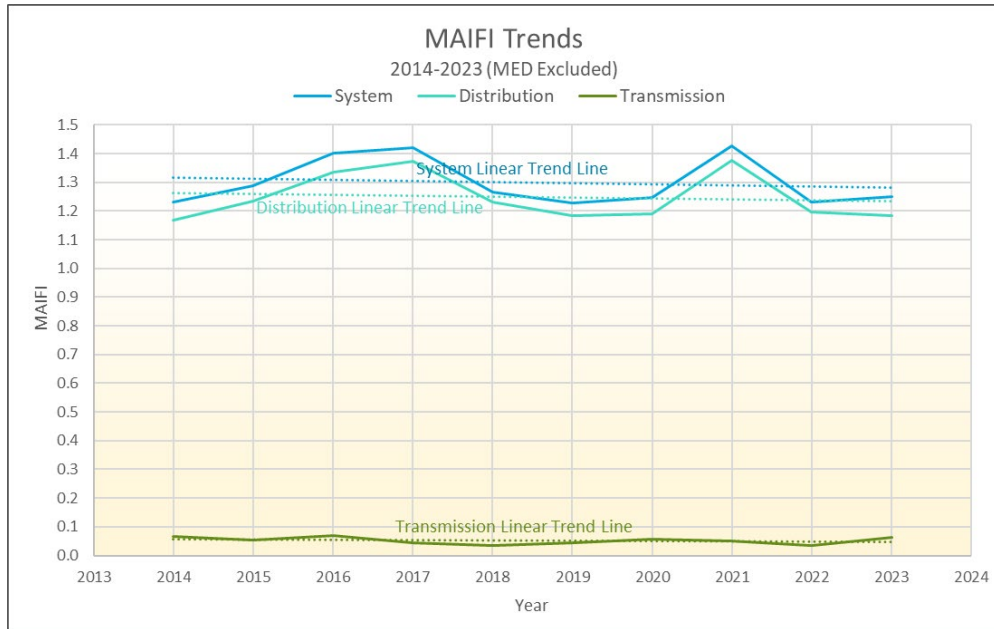


Figure 3: MAIFI Line Graph with Linear Trend Line

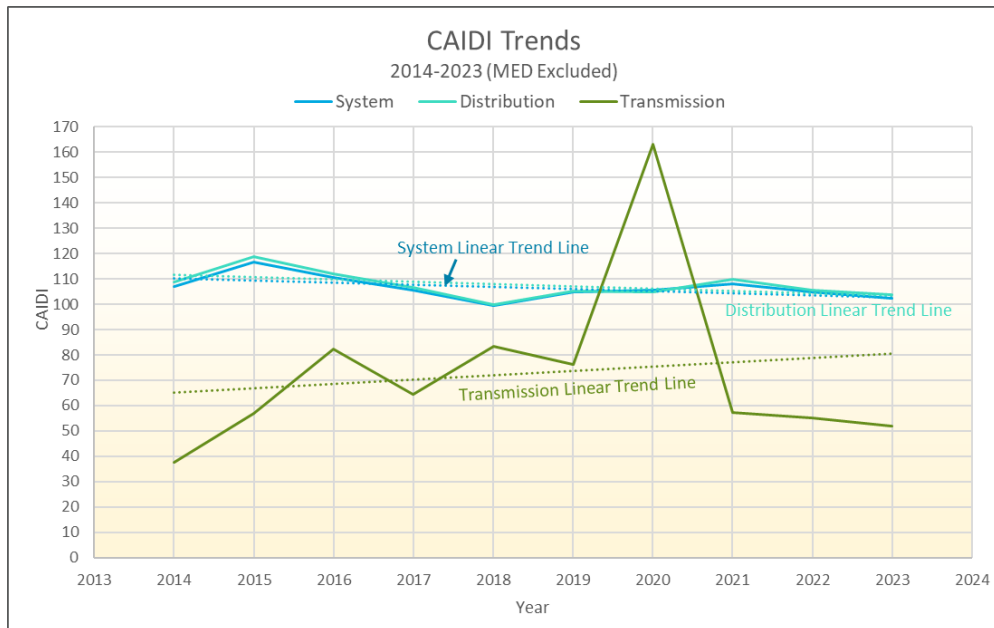


Figure 4: CAIDI Line Graph with Linear Trend Line

SECTION 2: District Reliability Indices for the Last 10 Years

SECTION 2a: District Indices

This section contains district indices for SAIDI, SAIFI, MAIFI, and CAIDI from 2014-2023 for unplanned outages. The district indices are denoted with a lower case “d” to discern between system indices and district indices (e.g., dSAIDI, dSAIFI, dMAIFI, and dCAIDI). District reliability indices are calculated using the local district area as the number of total customers served within the respective district. Table 4 shows the indices for all unplanned outages with MEDs included and excluded.

In the beginning of 2019 annual reporting, numbers for Catalina District indices were combined with Huntington Beach District since the Catalina District operations were merged with Huntington Beach District. For 2023 reporting, Catalina District indices are separated from Huntington Beach District.

The following linear charts in Figure 5 show the past 10 years of district indices from 2014-2023 for all 35 districts. The linear charts represent the unplanned outages with MEDs included and excluded. The charts are listed in alphabetical order by district name.

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Antelope Valley								
2014	51.05	0.594	1.153	85.98	45.69	0.549	1.070	83.22
2015	104.34	0.680	1.838	153.53	70.21	0.601	1.514	116.78
2016	107.67	0.870	1.523	123.79	101.20	0.814	1.430	124.32
2017	103.19	0.873	1.833	118.15	83.35	0.814	1.704	102.39
2018	55.61	0.608	1.258	91.52	50.42	0.534	1.097	94.50
2019	194.75	0.668	1.347	291.50	76.41	0.569	1.249	134.16
2020	287.78	1.156	2.404	249.03	154.81	0.999	2.329	154.89
2021	162.65	1.305	1.789	124.67	149.37	1.239	1.783	120.55
2022	182.86	0.973	1.418	188.02	106.10	0.719	1.072	147.61
2023	121.28	0.921	1.342	131.75	88.04	0.763	1.208	115.32
Arrowhead								
2014	193.25	1.590	4.018	121.53	81.97	0.898	3.035	91.28
2015	362.61	3.973	5.595	91.27	186.74	2.755	2.730	67.79
2016	659.46	2.848	5.951	231.52	200.72	1.883	4.712	106.59
2017	816.52	3.861	7.057	211.50	218.33	3.058	4.093	71.39
2018	68.60	1.527	2.980	44.92	53.42	0.712	2.919	75.07
2019	3630.64	9.592	9.883	378.50	828.27	5.814	6.160	142.45
2020	443.36	2.384	4.264	185.94	204.90	2.061	3.311	99.40
2021	1565.30	2.875	5.966	544.44	492.17	2.057	4.108	239.24
2022	282.96	1.914	3.736	147.82	231.33	1.370	2.245	168.90
2023	555.51	1.745	9.434	318.34	165.92	1.467	6.148	113.11
Barstow								
2014	201.53	1.343	2.536	150.06	173.68	1.240	2.410	140.10
2015	187.11	1.174	2.859	159.42	157.38	0.997	2.131	157.84
2016	134.83	1.350	2.296	99.89	130.08	1.340	2.283	97.11
2017	357.47	2.652	4.195	134.81	356.06	2.639	4.132	134.93
2018	116.70	1.373	2.110	84.99	115.27	1.342	2.077	85.93
2019	114.49	0.833	2.586	137.43	95.23	0.798	2.188	119.30
2020	105.05	1.378	2.647	76.25	100.32	1.367	2.520	73.41
2021	215.92	2.677	4.580	80.65	196.99	2.391	4.383	82.40
2022	587.75	3.080	5.571	190.85	562.81	2.867	4.962	196.31
2023	271.21	1.532	4.857	177.01	167.67	1.086	4.274	154.40
Bishop/Mammoth								
2014	118.79	0.587	1.885	202.48	113.62	0.499	1.706	227.57
2015	298.11	2.218	3.332	134.43	298.11	2.218	3.272	134.43
2016	168.59	1.216	2.820	138.64	168.53	1.216	2.711	138.60
2017	190.51	1.934	3.223	98.49	172.14	1.877	3.077	91.72
2018	139.70	0.539	1.957	258.99	136.47	0.499	1.820	273.59
2019	1445.73	2.915	3.217	496.01	276.15	1.394	2.878	198.13
2020	317.99	1.935	1.637	164.37	317.81	1.933	1.619	164.42
2021	385.95	2.471	4.783	156.18	355.41	2.404	4.630	147.81
2022	236.61	1.962	3.632	120.62	235.04	1.936	3.624	121.43
2023	1237.19	3.216	3.593	384.71	785.39	2.938	3.278	267.31

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Blythe								
2014	707.55	2.419	4.658	292.48	707.31	2.388	4.433	296.24
2015	427.28	1.516	1.396	281.89	331.81	1.129	1.163	293.93
2016	396.38	2.707	6.343	146.43	302.98	1.917	4.848	158.02
2017	684.48	2.377	3.585	287.95	683.56	2.372	3.493	288.18
2018	278.75	1.573	2.199	177.22	256.63	1.324	2.168	193.89
2019	381.29	1.694	2.769	225.15	361.43	1.630	2.675	221.72
2020	211.99	1.319	1.937	160.72	174.05	1.191	1.788	146.08
2021	197.26	1.181	3.755	166.98	196.21	1.176	3.656	166.81
2022	577.44	2.830	2.625	204.06	571.43	2.808	2.625	203.48
2023	153.94	1.246	3.204	123.57	123.81	1.074	2.746	115.27
Catalina								
2014	97.02	4.170	2.321	23.27	97.02	4.170	2.321	23.27
2015	42.56	2.252	2.885	18.90	42.56	2.252	2.885	18.90
2016	65.01	3.659	3.168	17.77	65.01	3.659	3.168	17.77
2017	70.67	0.542	2.496	130.36	4.94	0.487	1.324	10.16
2018	141.45	2.440	1.277	57.98	141.45	2.440	1.277	57.98
2019	46.63	1.559	0.428	29.90	45.63	1.555	0.428	29.34
2020	76.34	0.194	0.000	393.06	76.34	0.194	0.000	393.06
2021	62.02	0.471	0.000	131.75	62.02	0.471	0.000	131.75
2022	18.06	0.598	0.357	30.21	18.06	0.598	0.357	30.21
2023	315.66	2.805	0.887	112.52	315.66	2.805	0.887	112.52
Compton								
2014	82.30	0.712	1.603	115.64	73.61	0.657	1.560	112.08
2015	130.63	0.967	2.049	135.10	126.05	0.934	1.958	134.90
2016	146.38	1.107	2.537	132.20	127.15	1.010	2.229	125.94
2017	123.60	0.826	2.162	149.56	86.63	0.720	1.967	120.39
2018	93.37	0.852	2.447	109.54	66.38	0.718	2.266	92.40
2019	98.66	0.874	2.090	112.87	64.55	0.706	1.721	91.40
2020	171.38	1.234	2.918	138.92	124.52	1.083	2.774	114.95
2021	110.27	1.249	2.794	88.30	88.18	1.071	2.609	82.37
2022	95.29	0.837	1.982	113.83	81.39	0.765	1.890	106.42
2023	116.93	1.087	1.853	107.60	103.10	0.983	1.715	104.83
Covina								
2014	91.60	0.874	1.257	104.76	81.60	0.804	1.028	101.49
2015	100.08	0.815	1.164	122.87	99.84	0.813	1.152	122.76
2016	112.13	0.974	1.319	115.18	90.93	0.875	1.145	103.92
2017	117.18	0.933	1.366	125.56	106.09	0.813	1.139	130.52
2018	103.18	0.832	1.455	124.04	73.46	0.700	1.367	104.98
2019	84.30	0.864	0.999	97.60	76.85	0.800	0.923	96.04
2020	138.23	1.397	1.020	98.92	111.54	1.299	0.979	85.85
2021	99.73	1.084	1.377	92.01	91.49	1.029	1.258	88.91
2022	205.22	1.029	1.234	199.41	74.98	0.851	0.960	88.10
2023	95.78	1.206	1.420	79.45	91.26	1.126	1.272	81.06

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Foothill								
2014	92.41	0.908	1.247	101.78	87.22	0.837	1.222	104.25
2015	109.41	0.946	1.304	115.67	87.57	0.889	1.229	98.55
2016	139.76	1.016	1.499	137.52	135.13	0.997	1.474	135.58
2017	108.79	1.090	1.326	99.78	86.26	0.862	1.152	100.05
2018	116.85	0.975	1.201	119.85	77.94	0.780	0.965	99.89
2019	269.16	1.012	1.054	265.89	66.16	0.770	1.015	85.96
2020	186.54	1.067	1.543	174.85	75.58	0.824	1.389	91.67
2021	284.54	1.372	1.859	207.34	133.58	1.080	1.614	123.69
2022	104.61	1.046	1.444	99.98	86.02	0.989	1.147	87.00
2023	96.62	0.873	1.157	110.62	68.48	0.742	1.071	92.30
Fullerton								
2014	82.23	0.723	1.004	113.75	70.00	0.649	0.974	107.85
2015	76.59	0.669	1.014	114.47	75.50	0.642	0.995	117.68
2016	92.72	0.760	1.174	122.04	73.77	0.588	0.974	125.37
2017	89.29	0.676	1.211	132.08	74.15	0.584	1.084	127.00
2018	69.45	0.517	1.126	134.28	55.38	0.435	1.041	127.37
2019	82.34	0.776	1.092	106.13	73.01	0.710	1.023	102.84
2020	88.29	0.685	1.175	128.91	50.80	0.507	0.779	100.10
2021	94.85	0.613	1.222	154.79	82.60	0.574	1.097	144.02
2022	92.74	0.735	0.727	126.12	84.17	0.693	0.678	121.44
2023	78.30	0.613	1.085	127.73	70.95	0.553	1.030	128.31
Huntington Beach								
2014	79.61	0.778	1.093	102.30	68.08	0.716	0.964	95.11
2015	98.32	0.955	1.217	102.95	94.11	0.929	1.169	101.35
2016	128.02	1.262	1.225	101.42	108.16	1.186	1.163	91.18
2017	99.07	0.976	1.448	101.48	79.71	0.856	1.188	93.14
2018	87.72	0.761	1.377	115.24	73.58	0.678	1.074	108.52
2019	97.70	1.005	1.153	97.19	81.67	0.883	0.979	92.53
2020	90.05	0.864	1.079	104.24	79.08	0.780	1.028	101.38
2021	89.38	0.964	1.444	92.75	79.89	0.877	1.260	91.10
2022	128.62	1.250	1.440	102.86	121.55	1.185	1.389	102.61
2023	89.24	1.002	1.057	89.06	83.65	0.910	0.907	91.88
Kernville								
2014	178.69	1.987	1.882	89.93	142.95	1.918	1.831	74.54
2015	286.38	0.961	1.630	297.92	231.41	0.857	1.293	270.12
2016	2421.32	3.674	2.928	659.03	909.19	2.839	2.832	320.21
2017	305.53	3.286	4.508	92.98	290.60	3.148	4.210	92.31
2018	184.41	1.141	3.104	161.65	152.82	1.009	3.087	151.39
2019	320.17	1.669	3.964	191.87	317.54	1.663	3.961	190.89
2020	318.40	1.873	2.590	170.01	295.34	1.828	2.583	161.54
2021	1830.32	1.885	2.072	970.80	1060.00	1.550	1.365	683.84
2022	507.42	2.579	4.705	196.75	412.72	2.345	2.664	175.97
2023	269.28	1.245	1.902	216.23	198.30	1.144	1.123	173.39

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Long Beach								
2014	66.33	0.606	1.168	109.42	57.89	0.548	1.083	105.54
2015	164.46	0.894	1.185	183.90	89.16	0.846	1.168	105.38
2016	135.16	0.857	1.308	157.70	96.98	0.695	1.095	139.51
2017	77.17	0.708	1.177	108.97	59.50	0.590	1.017	100.88
2018	51.48	0.445	1.223	115.69	42.30	0.400	1.100	105.88
2019	78.18	0.643	0.965	121.65	60.17	0.572	0.818	105.25
2020	65.35	0.686	1.204	95.25	49.95	0.599	1.111	83.38
2021	76.17	0.810	1.287	94.01	66.13	0.737	1.138	89.77
2022	77.44	0.856	1.092	90.45	66.32	0.775	0.981	85.54
2023	62.93	0.677	0.985	93.01	55.95	0.628	0.914	89.15
Menifee								
2014	157.14	1.328	1.603	118.36	77.61	1.006	1.299	77.15
2015	112.82	1.000	1.344	112.80	86.68	0.898	1.109	96.50
2016	158.34	1.332	1.466	118.91	139.93	1.208	1.356	115.84
2017	131.54	0.989	1.311	132.99	73.91	0.789	1.200	93.62
2018	174.60	0.902	1.474	193.54	71.50	0.700	1.308	102.07
2019	100.30	0.865	1.027	116.00	77.68	0.756	0.860	102.78
2020	263.48	1.237	1.173	212.95	85.01	0.902	1.061	94.29
2021	171.97	1.082	0.886	158.94	88.12	0.932	0.783	94.51
2022	131.29	1.079	0.914	121.64	124.16	1.028	0.857	120.81
2023	87.42	0.977	0.727	89.49	79.50	0.923	0.683	86.16
Monrovia								
2014	133.32	1.158	1.258	115.18	96.37	1.005	1.069	95.85
2015	96.68	0.881	1.618	109.74	95.33	0.863	1.554	110.47
2016	116.57	0.844	1.652	138.06	93.39	0.772	1.523	121.00
2017	105.00	0.982	1.797	106.95	92.00	0.925	1.699	99.41
2018	243.02	1.427	1.614	170.29	102.58	1.030	1.453	99.57
2019	86.10	0.824	1.399	104.51	75.96	0.724	1.239	104.95
2020	149.02	0.896	1.711	166.40	78.13	0.685	1.504	114.03
2021	117.88	1.152	1.397	102.29	107.60	1.110	1.295	96.95
2022	260.95	1.220	1.775	213.82	107.79	0.844	1.442	127.74
2023	91.23	1.042	1.281	87.53	81.15	0.941	1.212	86.27
Montebello								
2014	158.34	1.164	1.959	136.02	124.69	1.020	1.763	122.19
2015	150.28	1.183	2.213	126.99	145.30	1.131	2.087	128.46
2016	133.52	1.166	2.057	114.55	107.26	1.043	1.882	102.87
2017	123.98	0.989	2.181	125.39	96.85	0.877	1.873	110.47
2018	160.88	1.063	2.269	151.31	98.88	0.782	1.859	126.38
2019	127.52	1.176	1.906	108.43	108.38	1.042	1.789	104.05
2020	165.90	1.107	1.792	149.90	104.33	0.918	1.615	113.61
2021	126.29	1.041	2.051	121.30	119.77	1.013	1.909	118.27
2022	130.04	1.048	1.712	124.10	98.61	0.922	1.575	106.97
2023	111.80	1.114	1.856	100.35	95.58	0.920	1.622	103.90

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Ontario								
2014	98.51	1.011	1.184	97.44	87.29	0.917	1.058	95.18
2015	94.19	0.745	0.926	126.49	81.75	0.709	0.868	115.23
2016	106.99	0.938	1.288	114.10	88.09	0.810	1.101	108.74
2017	101.53	1.152	1.610	88.13	92.88	1.071	1.461	86.71
2018	80.52	0.724	1.049	111.25	53.92	0.589	0.919	91.47
2019	90.34	0.950	1.242	95.11	77.05	0.871	1.176	88.51
2020	160.99	1.074	1.455	149.93	67.89	0.770	1.071	88.13
2021	106.30	0.995	1.542	106.85	70.57	0.853	1.323	82.69
2022	181.48	1.103	1.814	164.57	78.16	0.861	1.262	90.74
2023	82.33	0.956	1.345	86.12	73.54	0.880	1.286	83.60
Palm Springs								
2014	107.04	0.708	0.941	151.11	95.15	0.667	0.885	142.66
2015	99.54	0.800	1.042	124.38	95.80	0.753	0.949	127.17
2016	107.58	1.066	1.281	100.91	101.36	1.010	1.133	100.35
2017	119.10	1.022	1.220	116.56	116.44	0.998	1.210	116.63
2018	73.95	0.788	1.426	93.79	60.31	0.726	1.208	83.10
2019	133.77	1.233	1.623	108.49	91.61	0.915	1.298	100.09
2020	120.34	0.902	1.218	133.48	94.02	0.783	1.146	120.04
2021	83.62	0.920	1.442	90.93	73.36	0.904	1.424	81.13
2022	84.65	0.827	1.492	102.38	75.96	0.719	1.183	105.70
2023	133.14	0.876	1.546	151.99	69.35	0.696	1.396	99.65
Redlands								
2014	154.25	1.040	1.312	148.33	85.54	0.872	1.149	98.04
2015	124.52	1.012	1.467	122.99	102.29	0.935	1.247	109.37
2016	137.11	0.978	1.475	140.16	118.78	0.883	1.336	134.49
2017	142.59	1.009	1.595	141.35	112.45	0.856	1.407	131.32
2018	88.93	0.973	1.367	91.37	71.01	0.833	1.212	85.24
2019	215.23	1.275	1.407	168.81	104.26	0.970	1.243	107.50
2020	572.39	1.746	1.407	327.89	191.34	1.215	1.245	157.44
2021	363.08	2.041	1.855	177.92	213.78	1.705	1.716	125.42
2022	190.04	1.423	1.487	133.53	151.52	1.273	1.309	119.02
2023	186.78	1.577	1.834	118.41	134.45	1.494	1.769	90.01
Ridgecrest								
2014	176.84	1.573	2.193	112.41	167.79	1.509	2.180	111.21
2015	148.90	1.012	2.169	147.14	139.51	0.837	1.514	166.70
2016	254.31	1.048	1.283	242.67	249.21	0.941	1.160	264.84
2017	164.28	1.089	3.519	150.87	153.58	1.066	3.447	144.03
2018	254.59	1.099	1.287	231.59	99.80	0.732	1.278	136.39
2019	299.99	2.092	4.915	143.41	296.46	1.807	4.181	164.03
2020	118.48	1.007	1.671	117.62	112.51	0.865	1.538	129.99
2021	163.29	1.227	3.359	133.12	126.25	0.992	3.128	127.21
2022	265.34	2.232	4.261	118.87	216.68	1.424	2.591	152.16
2023	179.25	1.127	3.160	159.07	126.47	1.032	2.831	122.52

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Saddleback								
2014	99.07	0.745	0.556	133.02	92.90	0.708	0.549	131.23
2015	46.03	0.385	0.379	119.54	45.65	0.384	0.379	118.98
2016	65.99	0.646	0.780	102.23	62.47	0.602	0.739	103.70
2017	65.35	0.576	0.695	113.48	48.74	0.482	0.545	101.18
2018	45.80	0.377	0.413	121.55	35.83	0.316	0.364	113.49
2019	134.87	0.669	0.388	201.61	42.99	0.512	0.334	83.92
2020	98.19	0.557	0.238	176.16	60.60	0.446	0.220	136.01
2021	67.18	0.577	0.779	116.36	52.25	0.500	0.779	104.60
2022	57.34	0.588	0.483	97.52	55.89	0.552	0.432	101.32
2023	66.32	0.610	0.353	108.71	63.67	0.577	0.310	110.39
Santa Ana								
2014	91.68	0.843	1.274	108.71	79.45	0.755	1.179	105.23
2015	67.46	0.706	1.130	95.60	66.45	0.703	1.109	94.56
2016	97.27	0.995	1.184	97.73	88.31	0.938	1.112	94.13
2017	81.90	0.712	1.269	115.09	67.19	0.609	1.118	110.35
2018	122.09	0.819	1.304	149.09	56.91	0.550	1.093	103.42
2019	62.79	0.564	0.864	111.36	58.44	0.509	0.821	114.86
2020	90.91	0.765	1.187	118.79	65.14	0.629	0.908	103.50
2021	95.59	0.761	1.062	125.61	65.02	0.604	0.861	107.66
2022	65.63	0.725	0.864	90.57	57.21	0.681	0.791	84.00
2023	88.26	0.667	1.074	132.34	78.00	0.622	1.027	125.41
Santa Barbara								
2014	183.78	1.378	2.549	133.33	145.28	1.142	2.012	127.22
2015	152.37	1.517	1.577	100.42	143.29	1.338	1.459	107.10
2016	156.66	1.411	1.464	111.03	130.01	1.269	1.249	102.44
2017	408.43	9.213	13.591	44.33	152.42	1.619	1.206	94.17
2018	172.90	1.022	1.201	169.20	85.57	0.908	1.000	94.28
2019	201.25	1.502	1.750	134.00	179.19	1.389	1.562	129.02
2020	141.07	1.310	1.153	107.72	118.87	1.104	1.125	107.69
2021	225.17	1.503	0.975	149.80	200.20	1.302	0.796	153.77
2022	141.76	1.362	1.949	104.07	139.57	1.343	1.890	103.94
2023	248.04	2.163	1.836	114.65	229.78	1.959	1.720	117.30
Santa Monica								
2014	110.76	0.992	0.852	111.62	106.68	0.943	0.772	113.14
2015	75.41	0.625	1.069	120.68	64.42	0.577	1.065	111.61
2016	91.08	0.948	1.210	96.13	89.11	0.933	1.131	95.49
2017	71.89	0.712	1.168	101.02	66.14	0.678	1.108	97.49
2018	80.24	1.045	1.352	76.79	60.40	0.716	1.320	84.33
2019	104.74	0.896	1.424	116.87	100.35	0.861	1.373	116.49
2020	86.09	1.062	1.241	81.10	76.16	0.978	1.178	77.86
2021	64.09	0.635	1.120	100.94	61.66	0.612	1.039	100.73
2022	152.72	1.768	1.591	86.37	133.08	1.486	1.532	89.57
2023	107.48	0.978	1.150	109.95	74.82	0.807	1.071	92.66

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Shaver Lake								
2014	920.25	1.342	4.901	685.96	438.22	0.581	3.960	754.14
2015	422.77	3.415	9.298	123.78	422.77	3.415	9.298	123.78
2016	1062.01	4.993	4.157	212.70	774.00	2.795	2.165	276.87
2017	4273.52	7.947	5.220	537.73	676.22	6.039	5.197	111.97
2018	203.43	2.484	6.362	81.89	203.43	2.484	6.362	81.89
2019	1559.97	5.579	7.850	279.61	1504.82	5.206	5.339	289.07
2020	33648.98	6.479	3.743	5193.35	647.38	5.230	3.743	123.79
2021	295.79	2.188	3.008	135.18	288.24	2.170	3.007	132.81
2022	934.39	2.475	1.100	377.55	927.45	2.217	0.849	418.32
2023	423.49	2.259	0.401	187.48	298.08	2.205	0.401	135.17
South Bay								
2014	125.28	1.391	1.650	90.05	110.38	1.281	1.502	86.14
2015	164.07	1.305	1.660	125.70	160.40	1.272	1.613	126.14
2016	183.90	1.884	2.020	97.60	150.90	1.752	1.818	86.12
2017	99.19	0.931	1.460	106.53	87.35	0.818	1.328	106.76
2018	90.63	1.090	1.771	83.13	82.27	1.007	1.524	81.67
2019	79.31	1.010	1.398	78.54	71.49	0.950	1.313	75.27
2020	109.92	1.016	1.567	108.19	83.82	0.918	1.526	91.27
2021	86.12	0.990	1.832	87.01	78.13	0.919	1.721	85.00
2022	126.49	1.310	1.983	96.55	118.61	1.222	1.864	97.10
2023	108.28	1.240	1.762	87.34	97.86	1.177	1.639	83.15
Tehachapi								
2014	130.70	1.290	2.090	101.35	83.52	1.097	1.783	76.13
2015	298.96	1.215	3.960	246.11	236.81	1.037	2.513	228.33
2016	97.29	1.132	2.363	85.98	76.43	1.036	1.940	73.78
2017	86.51	1.048	3.126	82.57	77.93	0.890	2.946	87.57
2018	55.99	0.673	2.276	83.20	54.96	0.655	2.146	83.86
2019	2983.88	4.608	2.171	647.60	467.57	2.716	1.776	172.14
2020	1272.84	2.074	3.098	613.57	201.72	1.098	2.958	183.70
2021	458.53	1.083	0.683	423.51	154.70	0.891	0.649	173.59
2022	261.77	1.876	2.860	139.54	88.52	0.803	1.568	110.29
2023	287.74	2.017	1.775	142.63	255.86	1.977	1.339	129.42
Thousand Oaks								
2014	104.37	1.103	1.426	94.63	95.53	1.014	1.287	94.25
2015	106.59	0.919	1.893	115.94	103.69	0.889	1.845	116.64
2016	143.78	1.307	2.585	110.02	128.24	1.227	2.378	104.48
2017	151.74	1.427	3.270	106.30	106.39	1.063	2.903	100.06
2018	1167.54	1.480	1.634	788.97	109.94	0.967	1.354	113.66
2019	517.05	1.723	1.213	300.09	112.98	1.182	1.163	95.56
2020	624.18	1.788	1.047	349.19	139.24	1.154	0.966	120.63
2021	924.23	2.106	1.413	438.86	149.91	1.347	1.286	111.29
2022	151.96	1.446	1.108	105.10	146.00	1.363	1.010	107.15
2023	213.31	1.696	1.193	125.80	167.83	1.396	1.094	120.21

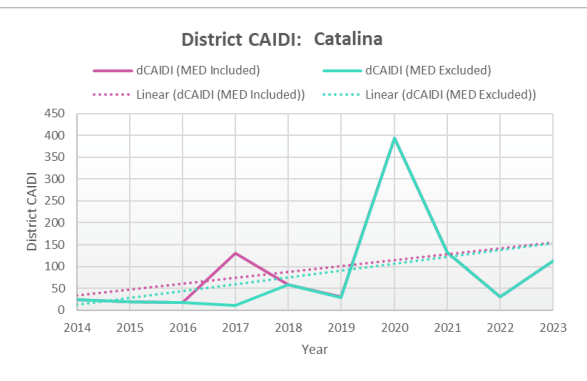
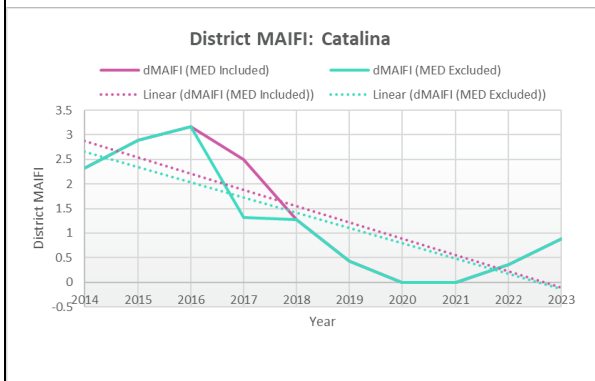
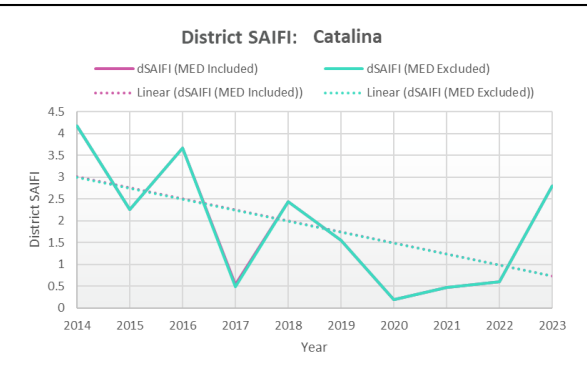
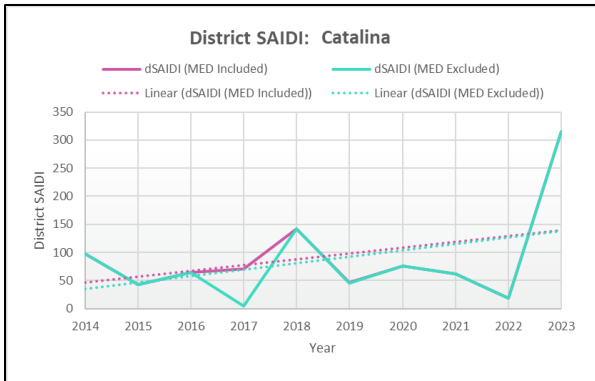
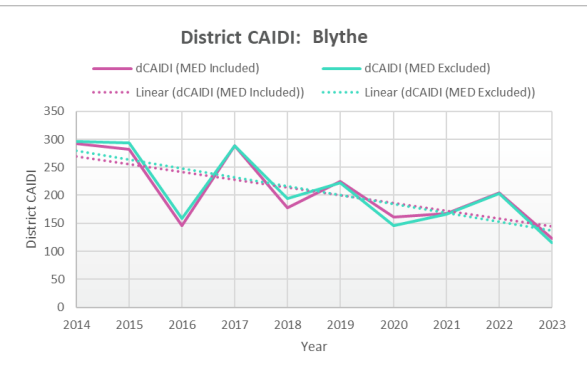
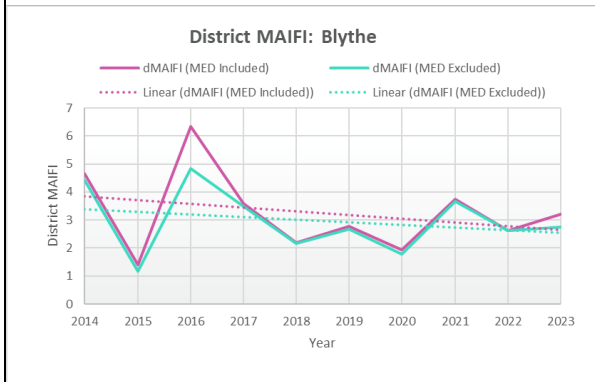
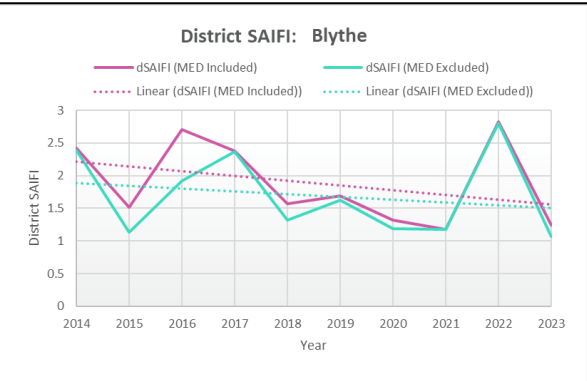
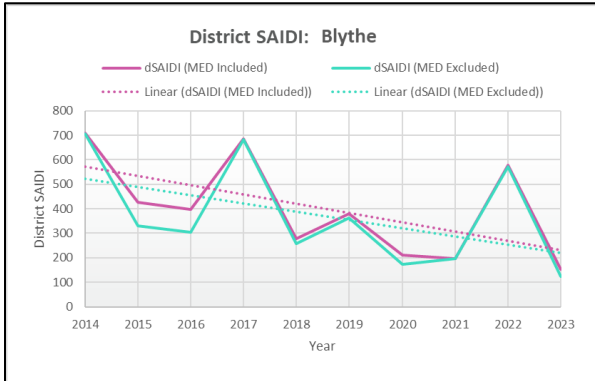
District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Tulare								
2014	138.25	1.172	1.540	117.92	94.17	1.005	1.323	93.71
2015	127.50	1.052	1.414	121.24	99.83	0.908	1.106	109.94
2016	108.44	1.091	1.105	99.37	101.82	1.040	1.082	97.89
2017	191.66	1.343	1.198	142.71	105.72	1.282	1.188	82.46
2018	56.23	0.685	1.077	82.15	51.29	0.652	1.017	78.64
2019	72.67	0.745	1.075	97.51	69.70	0.716	1.035	97.36
2020	186.91	0.817	0.852	228.79	73.71	0.739	0.832	99.75
2021	105.34	0.841	1.117	125.22	93.71	0.810	1.089	115.64
2022	87.95	0.612	1.109	143.70	77.90	0.571	1.049	136.41
2023	119.03	0.840	1.101	141.76	104.92	0.750	0.989	139.95
Valencia								
2014	79.23	0.605	0.998	130.88	63.74	0.533	0.935	119.51
2015	72.27	0.611	0.971	118.22	71.05	0.604	0.845	117.62
2016	105.09	0.968	1.549	108.59	97.40	0.846	1.522	115.19
2017	136.62	1.079	1.549	126.67	81.27	0.702	1.283	115.76
2018	92.41	1.063	1.451	86.97	79.33	0.945	1.391	83.98
2019	457.47	1.224	0.965	373.66	101.43	0.914	0.918	111.00
2020	390.05	1.350	1.131	288.96	95.42	0.985	1.109	96.86
2021	417.07	1.221	1.441	341.64	99.99	0.822	1.397	121.66
2022	106.73	1.209	0.906	88.26	106.01	1.205	0.906	87.96
2023	132.15	1.106	0.730	119.45	120.15	1.028	0.729	116.90
Ventura								
2014	183.79	1.648	2.215	111.54	151.66	1.386	2.075	109.39
2015	148.85	1.190	1.447	125.11	141.43	1.149	1.375	123.11
2016	150.41	1.236	1.679	121.65	107.14	1.019	1.553	105.11
2017	520.90	3.122	2.293	166.85	114.76	1.240	1.542	92.56
2018	136.04	1.438	1.921	94.61	100.39	1.177	1.676	85.30
2019	334.96	1.647	2.610	203.37	133.54	1.364	2.407	97.92
2020	174.17	0.955	1.188	182.36	69.76	0.762	1.078	91.51
2021	370.43	2.004	2.088	184.85	124.87	1.572	1.683	79.44
2022	114.52	1.560	1.400	73.41	109.05	1.502	1.386	72.62
2023	119.98	1.573	2.089	76.26	111.46	1.465	1.980	76.10
Victorville								
2014	68.85	0.633	0.899	108.73	67.70	0.620	0.881	109.17
2015	87.03	0.906	1.839	96.06	72.90	0.812	1.551	89.75
2016	79.35	0.917	1.396	86.49	75.94	0.888	1.327	85.55
2017	84.07	0.895	2.353	93.94	73.12	0.808	1.757	90.49
2018	125.92	0.862	1.345	146.01	97.87	0.802	1.270	122.07
2019	82.42	1.102	2.008	74.77	74.68	0.986	1.667	75.77
2020	52.81	0.915	1.609	57.71	48.81	0.865	1.518	56.41
2021	83.75	0.895	2.499	93.53	78.55	0.844	2.452	93.04
2022	112.30	1.126	1.953	99.69	96.49	0.975	1.821	98.92
2023	58.63	0.701	1.699	83.68	53.56	0.655	1.603	81.82

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Whittier								
2014	87.60	0.704	1.155	124.40	84.19	0.689	1.090	122.16
2015	114.52	0.733	1.084	156.32	104.85	0.704	0.989	148.88
2016	137.34	0.814	1.416	168.76	90.21	0.616	1.290	146.36
2017	148.91	0.896	1.872	166.10	91.91	0.750	1.655	122.50
2018	87.74	0.666	1.413	131.83	73.66	0.575	1.297	128.01
2019	84.86	0.730	1.379	116.21	73.99	0.624	1.160	118.51
2020	113.13	0.839	1.278	134.81	83.14	0.723	1.151	115.01
2021	88.39	0.803	1.578	110.07	73.76	0.712	1.387	103.52
2022	74.50	0.719	1.442	103.62	64.54	0.670	1.286	96.28
2023	80.38	0.767	1.131	104.76	70.38	0.703	0.988	100.16
Wildomar								
2014	117.91	0.800	0.706	147.40	112.05	0.770	0.654	145.58
2015	50.98	0.569	1.202	89.59	46.59	0.538	1.001	86.66
2016	82.00	0.840	0.928	97.59	77.99	0.817	0.838	95.46
2017	88.81	0.769	1.015	115.45	55.05	0.550	0.933	100.15
2018	60.09	0.741	0.798	81.12	51.21	0.616	0.711	83.11
2019	93.45	0.761	0.738	122.82	52.15	0.603	0.726	86.53
2020	96.43	0.740	0.894	130.39	55.90	0.641	0.893	87.20
2021	85.05	0.759	0.605	112.11	75.29	0.679	0.527	110.93
2022	84.81	0.835	0.459	101.55	79.36	0.799	0.424	99.27
2023	81.43	0.685	0.371	118.80	74.56	0.652	0.294	114.28
Yucca Valley								
2014	304.25	1.490	4.856	204.16	293.73	1.407	4.851	208.77
2015	388.99	1.804	3.922	215.64	260.08	1.189	2.708	218.70
2016	463.68	3.393	3.874	136.66	440.06	3.257	3.106	135.13
2017	300.33	1.957	1.602	153.47	270.11	1.728	1.509	156.28
2018	353.49	1.936	2.747	182.56	206.24	1.487	1.832	138.68
2019	473.40	2.491	1.956	190.03	415.89	2.154	1.753	193.10
2020	397.56	2.709	2.684	146.74	240.68	2.282	2.623	105.45
2021	480.92	2.496	2.450	192.68	375.44	2.084	2.387	180.17
2022	237.38	2.126	3.810	111.68	214.02	1.907	1.896	112.25
2023	390.09	2.369	4.700	164.66	337.33	2.147	4.441	157.11

Table 6: District Indices from 2014-2023 for Unplanned Outages

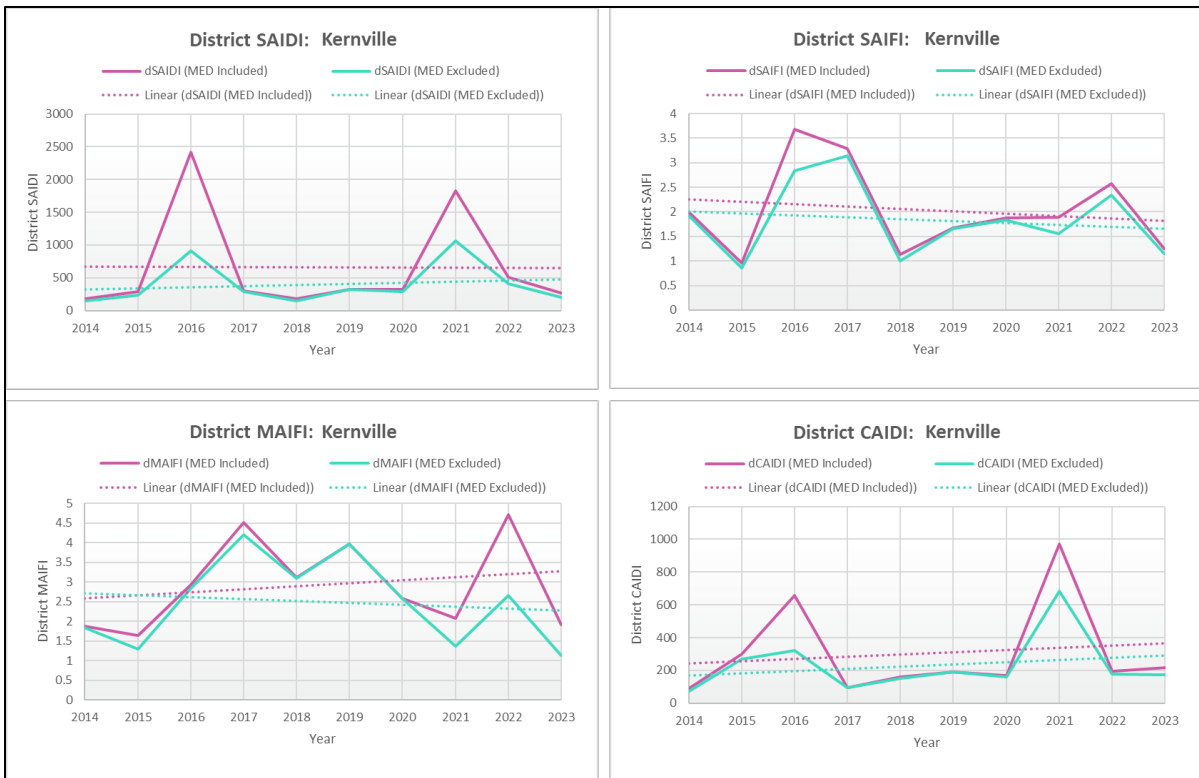
SECTION 2b: District Line Graphs of SAIDI, SAIFI, MAIFI, and CAIDI





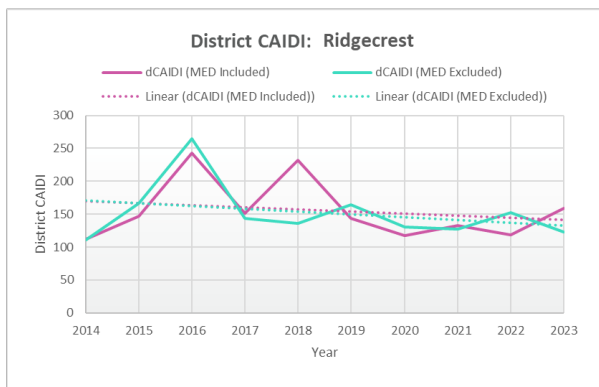
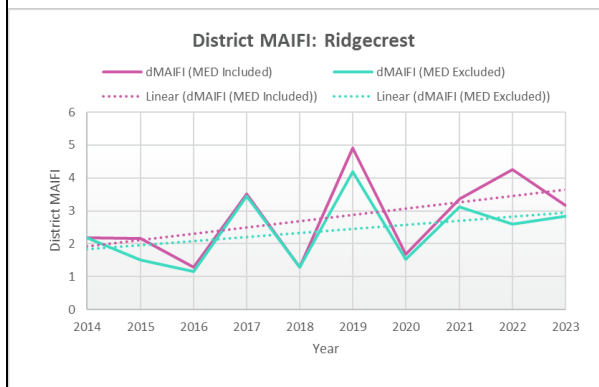
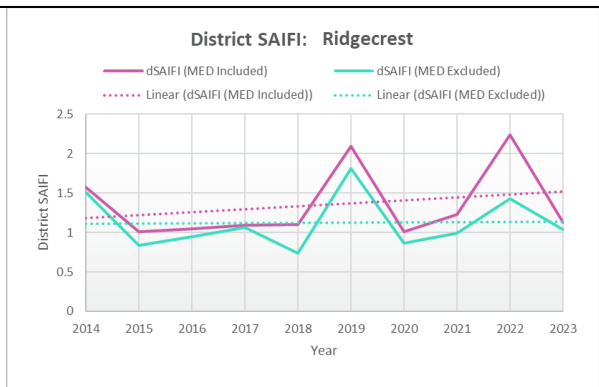
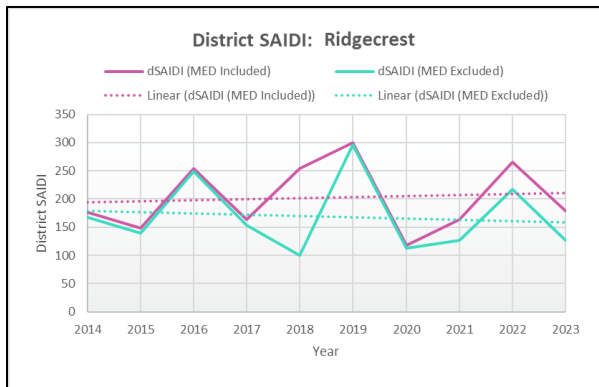
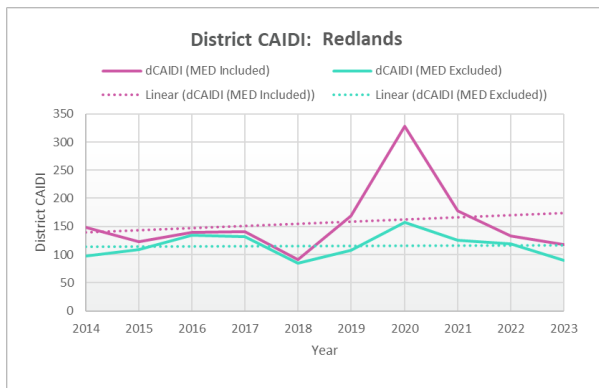
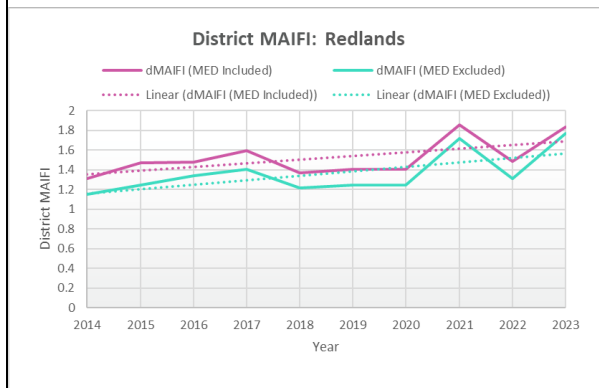
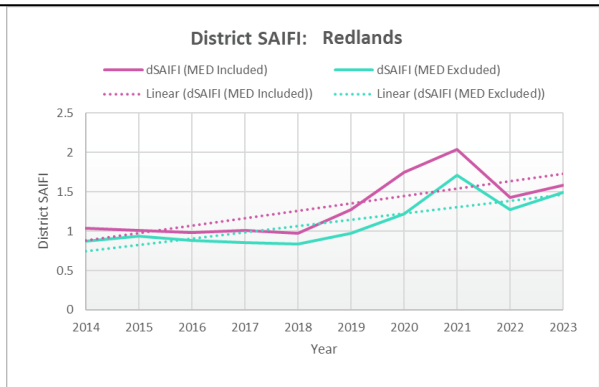
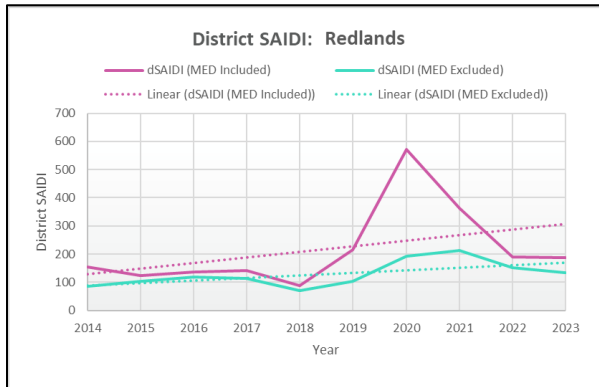








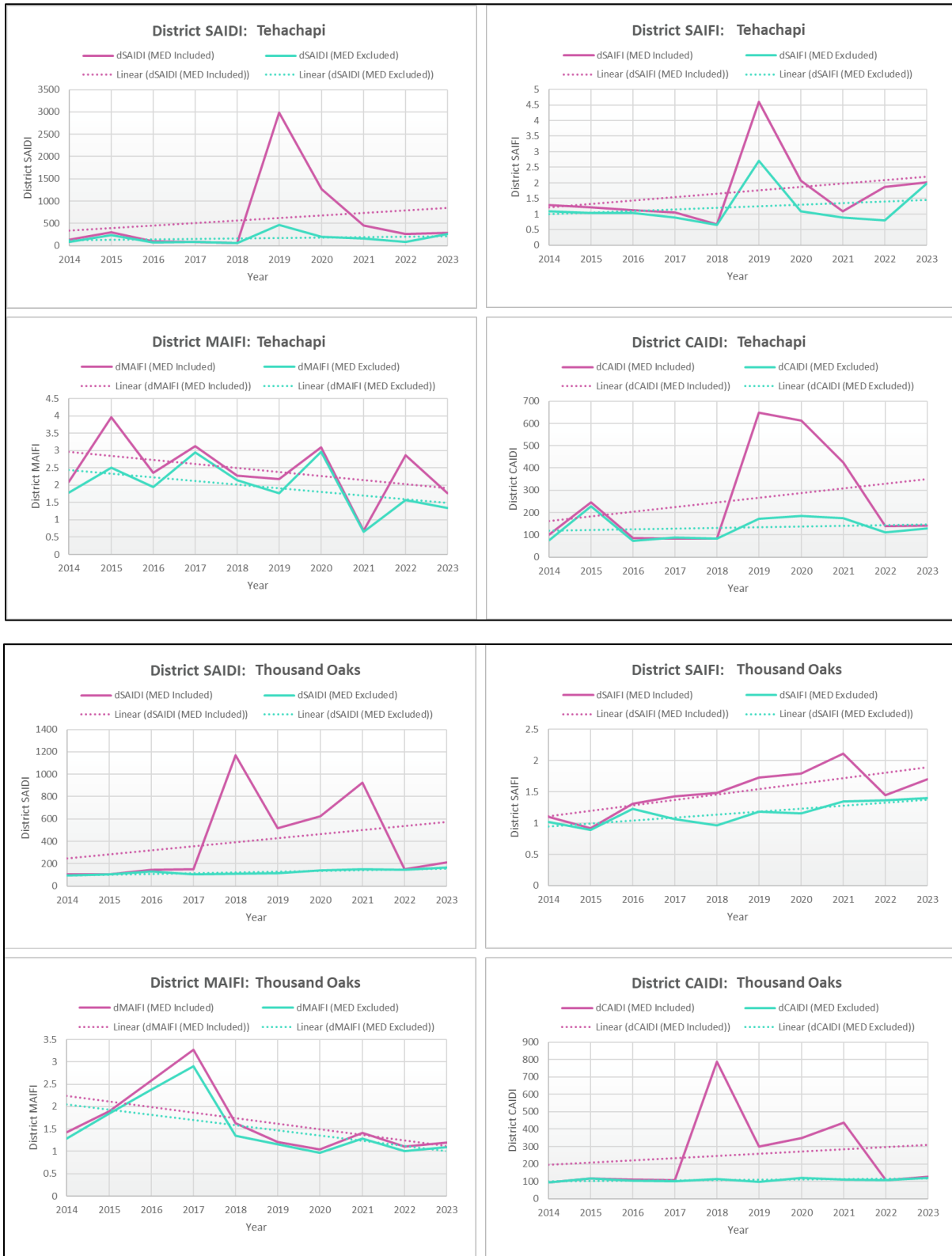


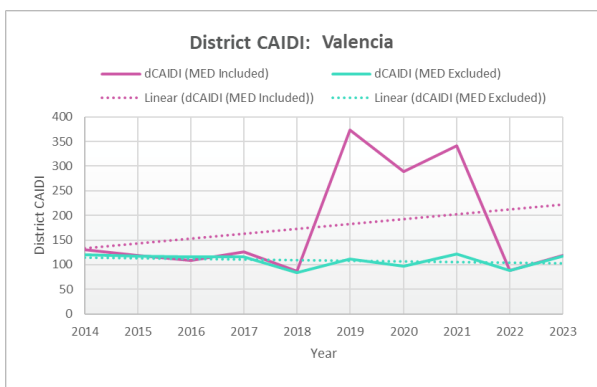
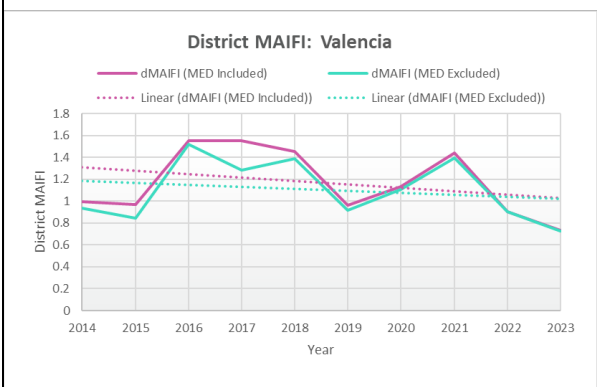
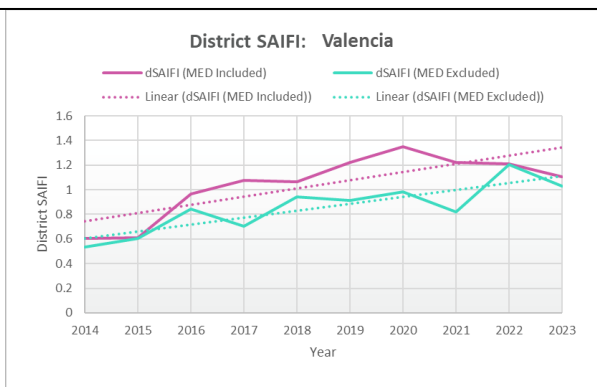
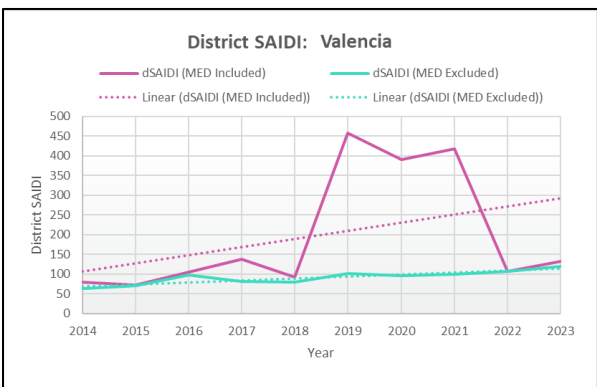
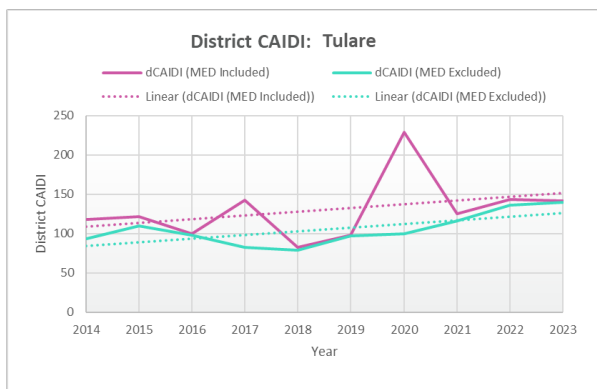
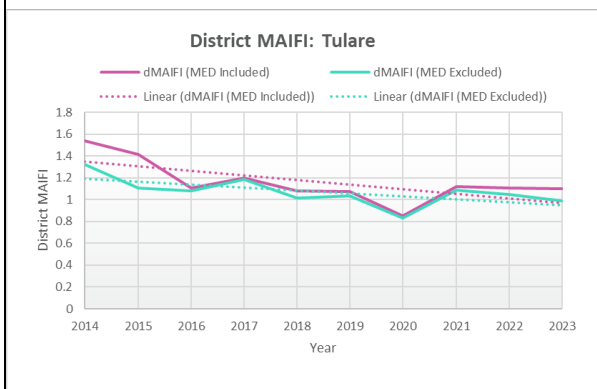
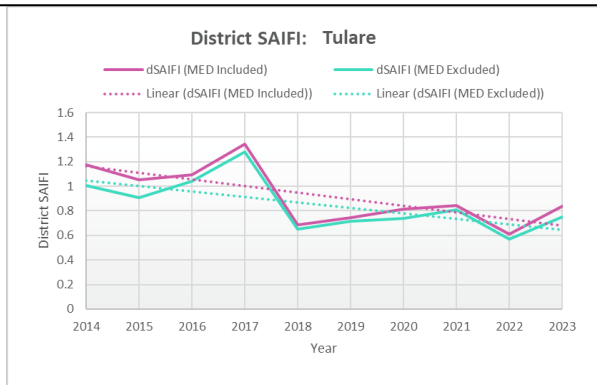
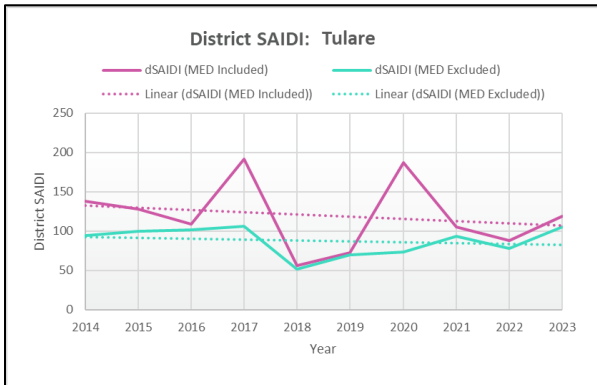












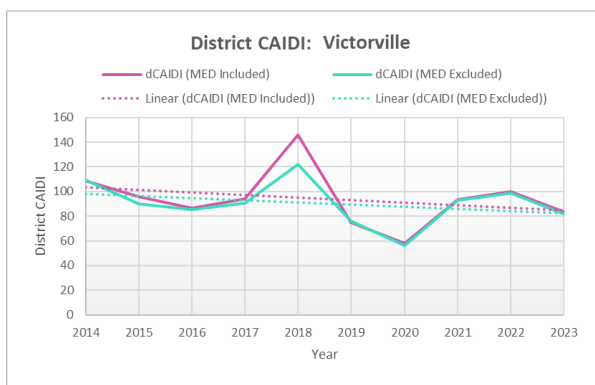
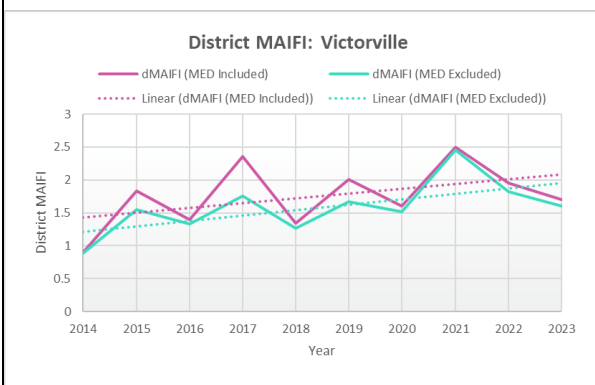
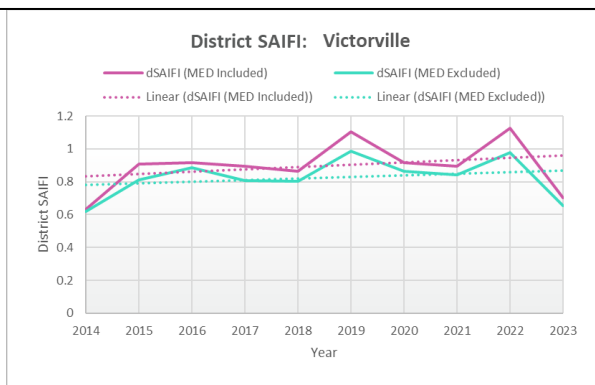
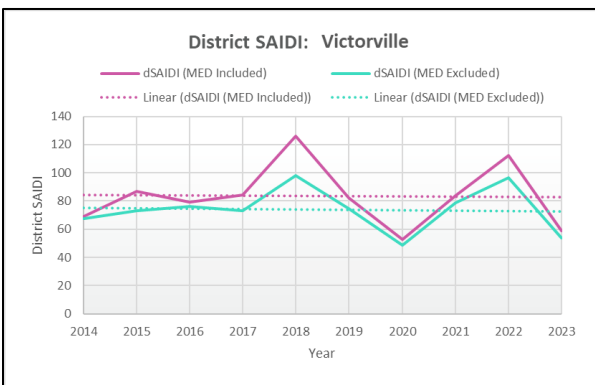
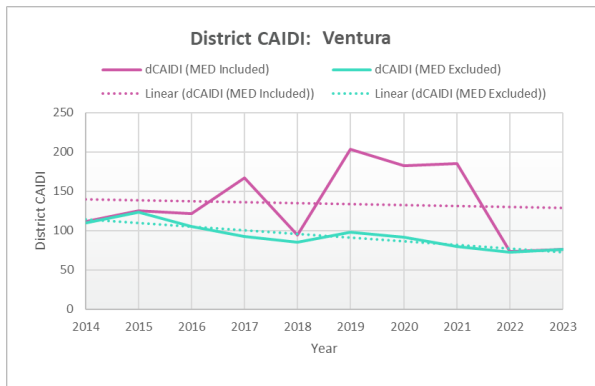
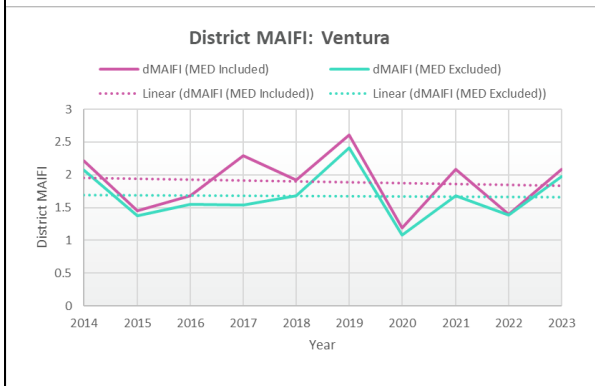
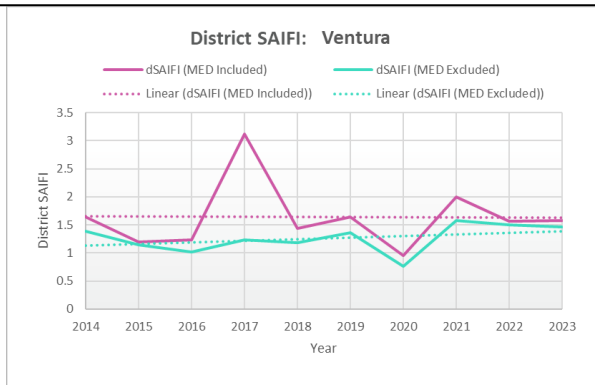
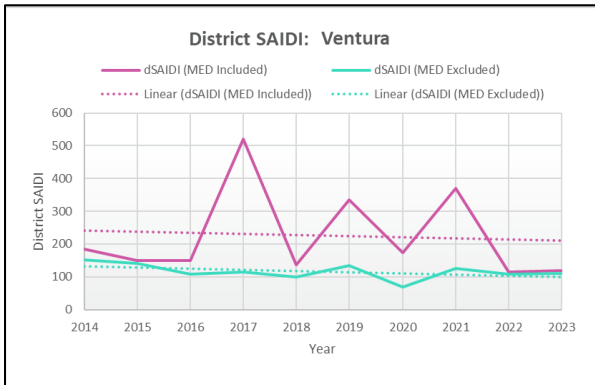






Figure 5: District Indices for Unplanned Outages

SECTION 3: System and District Indices Based on IEEE 1366 for the Last 10 Years for Planned and Unplanned Outages

This section presents the SAIDI, SAIFI, MAIFI, and CAIDI indices, reflecting both overall System performance and District performance from 2014 to 2023. These indices incorporate data from both unplanned and planned outages. Planned outages do not exclude MEDs.

No planned outage indices were included from 2014-2019 due to retirement of the previous reporting systems. For 2020-2021, planned outage indices are reflecting a previous interim planned outage report that provided conservative indices estimate. For 2022-2023, planned outage indices are reflecting the indices from the recently completed IT system project. See

BACKGROUND: Reliability Report History for further explanation.

Table 7 shows the System indices for all unplanned and planned outages with both MEDs included and excluded.

Year	System Indices							
	MED Included				MED Excluded			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2014	112.25	0.965	1.359	116.28	92.40	0.863	1.232	107.12
2015	114.83	0.916	1.417	125.40	100.15	0.859	1.289	116.56
2016	134.48	1.100	1.553	122.26	109.98	0.994	1.403	110.69
2017	139.73	1.192	1.837	117.19	91.72	0.870	1.420	105.40
2018	136.82	0.874	1.434	156.61	71.25	0.716	1.266	99.58
2019	177.97	1.040	1.380	171.17	90.75	0.866	1.228	104.75
2020*	328.50	1.386	1.383	237.05	218.58	1.195	1.254	182.91
2021*	395.87	1.549	1.576	255.64	319.90	1.397	1.434	228.98
2022**	236.46	1.403	1.469	168.55	206.37	1.287	1.284	160.35
2023**	226.40	1.371	1.418	165.18	206.36	1.272	1.297	162.22

Table 7: System Indices for the Last 10 years for Unplanned and Planned Outages

District indices of dSAIDI, dSAIFI, dMAIFI, and dCAIDI from 2014-2023 for planned and unplanned outages can be found in Table 8 with MEDs included and excluded.

In the beginning of 2019 annual reporting, numbers for Catalina District indices were combined with Huntington Beach District since the Catalina District operations were merged with Huntington Beach District. For 2023 reporting, Catalina District indices are separated from Huntington Beach District.

The following linear charts in Figure 6 show the past 10 years of district indices from 2014-2023 for all 35 districts. The linear charts represent the planned and unplanned outages with MEDs included and excluded. The charts are listed in alphabetical order by district name.

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Antelope Valley								
2014	51.05	0.594	1.153	85.98	45.69	0.549	1.070	83.22
2015	104.34	0.680	1.838	153.53	70.21	0.601	1.514	116.78
2016	107.67	0.870	1.523	123.79	101.20	0.814	1.430	124.32
2017	103.19	0.873	1.833	118.15	83.35	0.814	1.704	102.39
2018	55.61	0.608	1.258	91.52	50.42	0.534	1.097	94.50
2019	194.75	0.668	1.347	291.50	76.41	0.569	1.249	134.16
2020	587.77	1.662	2.415	353.56	454.81	1.506	2.340	301.93
2021	374.05	1.850	1.818	202.22	360.77	1.784	1.812	202.21
2022	273.05	1.249	1.442	218.61	196.29	0.995	1.096	197.23
2023	196.92	1.193	1.354	165.09	163.68	1.036	1.220	158.04
Arrowhead								
2014	193.25	1.590	4.018	121.53	81.97	0.898	3.035	91.28
2015	362.61	3.973	5.595	91.27	186.74	2.755	2.730	67.79
2016	659.46	2.848	5.951	231.52	200.72	1.883	4.712	106.59
2017	816.52	3.861	7.057	211.50	218.33	3.058	4.093	71.39
2018	68.60	1.527	2.980	44.92	53.42	0.712	2.919	75.07
2019	3630.64	9.592	9.883	378.50	828.27	5.814	6.160	142.45
2020	1363.15	4.173	4.272	326.63	1124.68	3.850	3.320	292.10
2021	4311.84	7.579	6.007	568.91	3238.71	6.761	4.149	479.01
2022	1211.32	4.234	3.893	286.11	1159.69	3.689	2.402	314.35
2023	1373.47	3.229	9.605	425.30	983.88	2.951	6.319	333.37
Barstow								
2014	201.53	1.343	2.536	150.06	173.68	1.240	2.410	140.10
2015	187.11	1.174	2.859	159.42	157.38	0.997	2.131	157.84
2016	134.83	1.350	2.296	99.89	130.08	1.340	2.283	97.11
2017	357.47	2.652	4.195	134.81	356.06	2.639	4.132	134.93
2018	116.70	1.373	2.110	84.99	115.27	1.342	2.077	85.93
2019	114.49	0.833	2.586	137.43	95.23	0.798	2.188	119.30
2020	194.59	1.556	2.648	125.05	189.86	1.545	2.521	122.89
2021	343.66	2.933	4.586	117.18	324.74	2.646	4.388	122.71
2022	624.92	3.179	5.662	196.58	599.98	2.966	5.052	202.27
2023	351.10	1.743	4.864	201.40	247.56	1.297	4.281	190.86
Bishop/Mammoth								
2014	118.79	0.587	1.885	202.48	113.62	0.499	1.706	227.57
2015	298.11	2.218	3.332	134.43	298.11	2.218	3.272	134.43
2016	168.59	1.216	2.820	138.64	168.53	1.216	2.711	138.60
2017	190.51	1.934	3.223	98.49	172.14	1.877	3.077	91.72
2018	139.70	0.539	1.957	258.99	136.47	0.499	1.820	273.59
2019	1445.73	2.915	3.217	496.01	276.15	1.394	2.878	198.13
2020	540.48	2.442	1.638	221.33	540.30	2.440	1.620	221.41
2021	534.27	2.924	4.784	182.71	503.73	2.857	4.631	176.29
2022	476.39	2.631	3.804	181.09	474.81	2.605	3.796	182.29
2023	1440.31	3.874	3.853	371.81	988.51	3.596	3.537	274.89

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Blythe								
2014	707.55	2.419	4.658	292.48	707.31	2.388	4.433	296.24
2015	427.28	1.516	1.396	281.89	331.81	1.129	1.163	293.93
2016	396.38	2.707	6.343	146.43	302.98	1.917	4.848	158.02
2017	684.48	2.377	3.585	287.95	683.56	2.372	3.493	288.18
2018	278.75	1.573	2.199	177.22	256.63	1.324	2.168	193.89
2019	381.29	1.694	2.769	225.15	361.43	1.630	2.675	221.72
2020	514.72	2.245	1.937	229.32	476.78	2.117	1.788	225.21
2021	766.31	2.338	3.756	327.70	765.26	2.333	3.656	327.96
2022	753.30	3.758	2.700	200.45	747.29	3.737	2.700	200.00
2023	459.27	2.270	3.353	202.28	429.14	2.099	2.895	204.48
Catalina								
2014	97.02	4.170	2.321	23.27	97.02	4.170	2.321	23.27
2015	42.56	2.252	2.885	18.90	42.56	2.252	2.885	18.90
2016	65.01	3.659	3.168	17.77	65.01	3.659	3.168	17.77
2017	70.67	0.542	2.496	130.36	4.94	0.487	1.324	10.16
2018	141.45	2.440	1.277	57.98	141.45	2.440	1.277	57.98
2019	46.63	1.559	0.428	29.90	45.63	1.555	0.428	29.34
2020	156.54	0.316	0.003	495.54	156.54	0.316	0.003	495.54
2021	226.32	0.848	0.000	266.86	226.32	0.848	0.000	266.86
2022	18.06	0.598	0.357	30.21	18.06	0.598	0.357	30.21
2023	315.66	2.805	0.887	112.52	315.66	2.805	0.887	112.52
Compton								
2014	82.30	0.712	1.603	115.64	73.61	0.657	1.560	112.08
2015	130.63	0.967	2.049	135.10	126.05	0.934	1.958	134.90
2016	146.38	1.107	2.537	132.20	127.15	1.010	2.229	125.94
2017	123.60	0.826	2.162	149.56	86.63	0.720	1.967	120.39
2018	93.37	0.852	2.447	109.54	66.38	0.718	2.266	92.40
2019	98.66	0.874	2.090	112.87	64.55	0.706	1.721	91.40
2020	274.48	1.466	2.918	187.24	227.62	1.315	2.774	173.03
2021	374.79	1.540	2.795	243.31	352.71	1.362	2.609	258.92
2022	369.35	1.630	2.069	226.55	355.45	1.558	1.977	228.14
2023	428.05	1.981	1.914	216.07	414.22	1.878	1.776	220.58
Covina								
2014	91.60	0.874	1.257	104.76	81.60	0.804	1.028	101.49
2015	100.08	0.815	1.164	122.87	99.84	0.813	1.152	122.76
2016	112.13	0.974	1.319	115.18	90.93	0.875	1.145	103.92
2017	117.18	0.933	1.366	125.56	106.09	0.813	1.139	130.52
2018	103.18	0.832	1.455	124.04	73.46	0.700	1.367	104.98
2019	84.30	0.864	0.999	97.60	76.85	0.800	0.923	96.04
2020	224.24	1.649	1.021	135.97	197.55	1.551	0.980	127.36
2021	259.29	1.457	1.380	177.95	251.05	1.402	1.260	179.03
2022	357.43	1.513	1.250	236.22	227.19	1.335	0.976	170.18
2023	234.12	1.643	1.430	142.48	229.60	1.564	1.281	146.85

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Foothill								
2014	92.41	0.908	1.247	101.78	87.22	0.837	1.222	104.25
2015	109.41	0.946	1.304	115.67	87.57	0.889	1.229	98.55
2016	139.76	1.016	1.499	137.52	135.13	0.997	1.474	135.58
2017	108.79	1.090	1.326	99.78	86.26	0.862	1.152	100.05
2018	116.85	0.975	1.201	119.85	77.94	0.780	0.965	99.89
2019	269.16	1.012	1.054	265.89	66.16	0.770	1.015	85.96
2020	323.15	1.490	1.544	216.80	212.18	1.248	1.390	170.01
2021	412.83	1.715	1.860	240.70	261.87	1.423	1.615	184.07
2022	423.35	1.959	1.502	216.10	404.76	1.901	1.205	212.87
2023	468.73	1.917	1.260	244.47	440.58	1.786	1.174	246.73
Fullerton								
2014	82.23	0.723	1.004	113.75	70.00	0.649	0.974	107.85
2015	76.59	0.669	1.014	114.47	75.50	0.642	0.995	117.68
2016	92.72	0.760	1.174	122.04	73.77	0.588	0.974	125.37
2017	89.29	0.676	1.211	132.08	74.15	0.584	1.084	127.00
2018	69.45	0.517	1.126	134.28	55.38	0.435	1.041	127.37
2019	82.34	0.776	1.092	106.13	73.01	0.710	1.023	102.84
2020	137.56	0.841	1.177	163.61	100.06	0.663	0.780	150.85
2021	193.12	0.893	1.232	216.36	180.87	0.853	1.107	211.96
2022	92.74	0.735	0.727	126.12	84.17	0.693	0.678	121.44
2023	78.30	0.613	1.085	127.73	70.95	0.553	1.030	128.31
Huntington Beach								
2014	79.61	0.778	1.093	102.30	68.08	0.716	0.964	95.11
2015	98.32	0.955	1.217	102.95	94.11	0.929	1.169	101.35
2016	128.02	1.262	1.225	101.42	108.16	1.186	1.163	91.18
2017	99.07	0.976	1.448	101.48	79.71	0.856	1.188	93.14
2018	87.72	0.761	1.377	115.24	73.58	0.678	1.074	108.52
2019	97.70	1.005	1.153	97.19	81.67	0.883	0.979	92.53
2020	157.57	1.100	1.081	143.21	146.60	1.016	1.030	144.24
2021	155.14	1.173	1.447	132.21	145.66	1.087	1.263	134.04
2022	238.07	1.632	1.472	145.90	230.99	1.566	1.421	147.52
2023	185.19	1.378	1.087	134.42	179.60	1.286	0.937	139.64
Kernville								
2014	178.69	1.987	1.882	89.93	142.95	1.918	1.831	74.54
2015	286.38	0.961	1.630	297.92	231.41	0.857	1.293	270.12
2016	2421.32	3.674	2.928	659.03	909.19	2.839	2.832	320.21
2017	305.53	3.286	4.508	92.98	290.60	3.148	4.210	92.31
2018	184.41	1.141	3.104	161.65	152.82	1.009	3.087	151.39
2019	320.17	1.669	3.964	191.87	317.54	1.663	3.961	190.89
2020	826.57	3.703	2.624	223.24	803.50	3.658	2.617	219.66
2021	2518.56	3.450	2.099	729.93	1748.24	3.115	1.391	561.21
2022	1532.29	4.936	5.415	310.42	1437.59	4.702	3.373	305.71
2023	1038.09	3.215	2.432	322.92	967.11	3.113	1.654	310.66

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Long Beach								
2014	66.33	0.606	1.168	109.42	57.89	0.548	1.083	105.54
2015	164.46	0.894	1.185	183.90	89.16	0.846	1.168	105.38
2016	135.16	0.857	1.308	157.70	96.98	0.695	1.095	139.51
2017	77.17	0.708	1.177	108.97	59.50	0.590	1.017	100.88
2018	51.48	0.445	1.223	115.69	42.30	0.400	1.100	105.88
2019	78.18	0.643	0.965	121.65	60.17	0.572	0.818	105.25
2020	174.27	0.893	1.229	195.14	158.87	0.806	1.136	197.12
2021	197.41	1.080	1.289	182.75	187.37	1.007	1.140	186.14
2022	77.44	0.856	1.092	90.45	66.32	0.775	0.981	85.54
2023	62.93	0.677	0.985	93.01	55.95	0.628	0.914	89.15
Menifee								
2014	157.14	1.328	1.603	118.36	77.61	1.006	1.299	77.15
2015	112.82	1.000	1.344	112.80	86.68	0.898	1.109	96.50
2016	158.34	1.332	1.466	118.91	139.93	1.208	1.356	115.84
2017	131.54	0.989	1.311	132.99	73.91	0.789	1.200	93.62
2018	174.60	0.902	1.474	193.54	71.50	0.700	1.308	102.07
2019	100.30	0.865	1.027	116.00	77.68	0.756	0.860	102.78
2020	373.81	1.599	1.177	233.76	195.34	1.263	1.065	154.61
2021	387.36	1.605	0.888	241.29	303.51	1.456	0.785	208.48
2022	300.90	1.597	0.947	188.37	293.77	1.546	0.890	190.05
2023	241.25	1.472	0.752	163.87	233.34	1.418	0.707	164.53
Monrovia								
2014	133.32	1.158	1.258	115.18	96.37	1.005	1.069	95.85
2015	96.68	0.881	1.618	109.74	95.33	0.863	1.554	110.47
2016	116.57	0.844	1.652	138.06	93.39	0.772	1.523	121.00
2017	105.00	0.982	1.797	106.95	92.00	0.925	1.699	99.41
2018	243.02	1.427	1.614	170.29	102.58	1.030	1.453	99.57
2019	86.10	0.824	1.399	104.51	75.96	0.724	1.239	104.95
2020	353.45	1.388	1.713	254.59	282.55	1.178	1.505	239.87
2021	421.80	1.710	1.402	246.69	411.51	1.667	1.300	246.82
2022	260.95	1.220	1.775	213.82	107.79	0.844	1.442	127.74
2023	91.23	1.042	1.281	87.53	81.15	0.941	1.212	86.27
Montebello								
2014	158.34	1.164	1.959	136.02	124.69	1.020	1.763	122.19
2015	150.28	1.183	2.213	126.99	145.30	1.131	2.087	128.46
2016	133.52	1.166	2.057	114.55	107.26	1.043	1.882	102.87
2017	123.98	0.989	2.181	125.39	96.85	0.877	1.873	110.47
2018	160.88	1.063	2.269	151.31	98.88	0.782	1.859	126.38
2019	127.52	1.176	1.906	108.43	108.38	1.042	1.789	104.05
2020	296.09	1.437	1.792	206.10	234.52	1.248	1.616	187.88
2021	329.42	1.432	2.057	230.05	322.90	1.403	1.914	230.08
2022	361.60	1.690	1.739	213.92	330.17	1.564	1.602	211.06
2023	468.11	2.025	1.877	231.18	451.90	1.831	1.643	246.85

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Ontario								
2014	98.51	1.011	1.184	97.44	87.29	0.917	1.058	95.18
2015	94.19	0.745	0.926	126.49	81.75	0.709	0.868	115.23
2016	106.99	0.938	1.288	114.10	88.09	0.810	1.101	108.74
2017	101.53	1.152	1.610	88.13	92.88	1.071	1.461	86.71
2018	80.52	0.724	1.049	111.25	53.92	0.589	0.919	91.47
2019	90.34	0.950	1.242	95.11	77.05	0.871	1.176	88.51
2020	247.50	1.314	1.455	188.32	154.39	1.011	1.071	152.75
2021	193.34	1.206	1.546	160.29	157.61	1.065	1.328	148.02
2022	181.48	1.103	1.814	164.57	78.16	0.861	1.262	90.74
2023	82.33	0.956	1.345	86.12	73.54	0.880	1.286	83.60
Palm Springs								
2014	107.04	0.708	0.941	151.11	95.15	0.667	0.885	142.66
2015	99.54	0.800	1.042	124.38	95.80	0.753	0.949	127.17
2016	107.58	1.066	1.281	100.91	101.36	1.010	1.133	100.35
2017	119.10	1.022	1.220	116.56	116.44	0.998	1.210	116.63
2018	73.95	0.788	1.426	93.79	60.31	0.726	1.208	83.10
2019	133.77	1.233	1.623	108.49	91.61	0.915	1.298	100.09
2020	266.94	1.270	1.219	210.19	240.63	1.152	1.147	208.93
2021	247.59	1.339	1.447	184.96	237.33	1.323	1.430	179.36
2022	173.62	1.142	1.505	152.02	164.93	1.034	1.196	159.52
2023	204.85	1.104	1.556	185.54	141.06	0.924	1.406	152.66
Redlands								
2014	154.25	1.040	1.312	148.33	85.54	0.872	1.149	98.04
2015	124.52	1.012	1.467	122.99	102.29	0.935	1.247	109.37
2016	137.11	0.978	1.475	140.16	118.78	0.883	1.336	134.49
2017	142.59	1.009	1.595	141.35	112.45	0.856	1.407	131.32
2018	88.93	0.973	1.367	91.37	71.01	0.833	1.212	85.24
2019	215.23	1.275	1.407	168.81	104.26	0.970	1.243	107.50
2020	744.56	2.203	1.407	337.98	363.51	1.673	1.245	217.34
2021	724.32	2.800	1.864	258.71	575.02	2.464	1.725	233.40
2022	190.04	1.423	1.487	133.53	151.52	1.273	1.309	119.02
2023	186.78	1.577	1.834	118.41	134.45	1.494	1.769	90.01
Ridgecrest								
2014	176.84	1.573	2.193	112.41	167.79	1.509	2.180	111.21
2015	148.90	1.012	2.169	147.14	139.51	0.837	1.514	166.70
2016	254.31	1.048	1.283	242.67	249.21	0.941	1.160	264.84
2017	164.28	1.089	3.519	150.87	153.58	1.066	3.447	144.03
2018	254.59	1.099	1.287	231.59	99.80	0.732	1.278	136.39
2019	299.99	2.092	4.915	143.41	296.46	1.807	4.181	164.03
2020	219.08	1.254	1.683	174.77	213.10	1.112	1.550	191.70
2021	293.09	1.574	3.375	186.16	256.05	1.340	3.143	191.06
2022	398.49	2.558	4.610	155.79	349.83	1.750	2.940	199.94
2023	284.29	1.443	3.372	196.98	231.51	1.349	3.043	171.66

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Saddleback								
2014	99.07	0.745	0.556	133.02	92.90	0.708	0.549	131.23
2015	46.03	0.385	0.379	119.54	45.65	0.384	0.379	118.98
2016	65.99	0.646	0.780	102.23	62.47	0.602	0.739	103.70
2017	65.35	0.576	0.695	113.48	48.74	0.482	0.545	101.18
2018	45.80	0.377	0.413	121.55	35.83	0.316	0.364	113.49
2019	134.87	0.669	0.388	201.61	42.99	0.512	0.334	83.92
2020	149.77	0.731	0.241	204.93	112.18	0.619	0.223	181.23
2021	136.89	0.763	0.782	179.38	121.97	0.685	0.782	177.96
2022	57.34	0.588	0.483	97.52	55.89	0.552	0.432	101.32
2023	66.32	0.610	0.353	108.71	63.67	0.577	0.310	110.39
Santa Ana								
2014	91.68	0.843	1.274	108.71	79.45	0.755	1.179	105.23
2015	67.46	0.706	1.130	95.60	66.45	0.703	1.109	94.56
2016	97.27	0.995	1.184	97.73	88.31	0.938	1.112	94.13
2017	81.90	0.712	1.269	115.09	67.19	0.609	1.118	110.35
2018	122.09	0.819	1.304	149.09	56.91	0.550	1.093	103.42
2019	62.79	0.564	0.864	111.36	58.44	0.509	0.821	114.86
2020	134.33	0.899	1.188	149.38	108.56	0.763	0.909	142.23
2021	203.39	0.990	1.063	205.44	172.82	0.833	0.862	207.48
2022	218.31	1.226	0.879	178.12	209.89	1.182	0.807	177.57
2023	239.92	1.173	1.093	204.48	229.66	1.128	1.047	203.54
Santa Barbara								
2014	183.78	1.378	2.549	133.33	145.28	1.142	2.012	127.22
2015	152.37	1.517	1.577	100.42	143.29	1.338	1.459	107.10
2016	156.66	1.411	1.464	111.03	130.01	1.269	1.249	102.44
2017	408.43	9.213	13.591	44.33	152.42	1.619	1.206	94.17
2018	172.90	1.022	1.201	169.20	85.57	0.908	1.000	94.28
2019	201.25	1.502	1.750	134.00	179.19	1.389	1.562	129.02
2020	598.36	2.237	1.162	267.50	576.16	2.031	1.134	283.68
2021	648.72	2.346	0.981	276.52	623.76	2.145	0.802	290.83
2022	426.96	2.139	2.200	199.57	424.76	2.120	2.141	200.36
2023	513.23	2.887	2.106	177.75	494.97	2.683	1.990	184.50
Santa Monica								
2014	110.76	0.992	0.852	111.62	106.68	0.943	0.772	113.14
2015	75.41	0.625	1.069	120.68	64.42	0.577	1.065	111.61
2016	91.08	0.948	1.210	96.13	89.11	0.933	1.131	95.49
2017	71.89	0.712	1.168	101.02	66.14	0.678	1.108	97.49
2018	80.24	1.045	1.352	76.79	60.40	0.716	1.320	84.33
2019	104.74	0.896	1.424	116.87	100.35	0.861	1.373	116.49
2020	327.40	1.365	1.258	239.92	317.47	1.281	1.196	247.78
2021	164.29	0.836	1.121	196.61	161.86	0.813	1.039	199.14
2022	486.66	2.826	1.791	172.19	467.02	2.544	1.731	183.59
2023	510.83	2.359	1.295	216.58	478.17	2.189	1.216	218.49

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Shaver Lake								
2014	920.25	1.342	4.901	685.96	438.22	0.581	3.960	754.14
2015	422.77	3.415	9.298	123.78	422.77	3.415	9.298	123.78
2016	1062.01	4.993	4.157	212.70	774.00	2.795	2.165	276.87
2017	4273.52	7.947	5.220	537.73	676.22	6.039	5.197	111.97
2018	203.43	2.484	6.362	81.89	203.43	2.484	6.362	81.89
2019	1559.97	5.579	7.850	279.61	1504.82	5.206	5.339	289.07
2020	35395.79	10.737	3.836	3296.62	2394.19	9.488	3.836	252.35
2021	1486.73	3.345	3.017	444.46	1479.19	3.327	3.017	444.56
2022	1363.44	3.822	1.453	356.71	1356.49	3.564	1.202	380.56
2023	463.71	2.417	0.451	191.82	338.30	2.364	0.451	143.12
South Bay								
2014	125.28	1.391	1.650	90.05	110.38	1.281	1.502	86.14
2015	164.07	1.305	1.660	125.70	160.40	1.272	1.613	126.14
2016	183.90	1.884	2.020	97.60	150.90	1.752	1.818	86.12
2017	99.19	0.931	1.460	106.53	87.35	0.818	1.328	106.76
2018	90.63	1.090	1.771	83.13	82.27	1.007	1.524	81.67
2019	79.31	1.010	1.398	78.54	71.49	0.950	1.313	75.27
2020	231.91	1.351	1.570	171.71	205.81	1.253	1.529	164.26
2021	301.53	1.493	1.834	202.02	293.55	1.422	1.722	206.42
2022	126.49	1.310	1.983	96.55	118.61	1.222	1.864	97.10
2023	108.28	1.240	1.762	87.34	97.86	1.177	1.639	83.15
Tehachapi								
2014	130.70	1.290	2.090	101.35	83.52	1.097	1.783	76.13
2015	298.96	1.215	3.960	246.11	236.81	1.037	2.513	228.33
2016	97.29	1.132	2.363	85.98	76.43	1.036	1.940	73.78
2017	86.51	1.048	3.126	82.57	77.93	0.890	2.946	87.57
2018	55.99	0.673	2.276	83.20	54.96	0.655	2.146	83.86
2019	2983.88	4.608	2.171	647.60	467.57	2.716	1.776	172.14
2020	1609.64	3.040	3.123	529.54	538.52	2.063	2.983	261.00
2021	996.70	2.173	0.796	458.67	692.86	1.982	0.762	349.66
2022	584.57	2.822	3.058	207.18	411.33	1.748	1.767	235.27
2023	725.40	3.178	2.028	228.25	693.52	3.138	1.592	221.02
Thousand Oaks								
2014	104.37	1.103	1.426	94.63	95.53	1.014	1.287	94.25
2015	106.59	0.919	1.893	115.94	103.69	0.889	1.845	116.64
2016	143.78	1.307	2.585	110.02	128.24	1.227	2.378	104.48
2017	151.74	1.427	3.270	106.30	106.39	1.063	2.903	100.06
2018	1167.54	1.480	1.634	788.97	109.94	0.967	1.354	113.66
2019	517.05	1.723	1.213	300.09	112.98	1.182	1.163	95.56
2020	792.51	2.381	1.051	332.82	307.57	1.748	0.971	175.96
2021	1222.62	3.050	1.451	400.92	448.31	2.291	1.324	195.71
2022	237.06	1.794	1.376	132.11	231.11	1.711	1.278	135.06
2023	286.84	2.022	1.481	141.84	241.36	1.723	1.383	140.10

District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Tulare								
2014	138.25	1.172	1.540	117.92	94.17	1.005	1.323	93.71
2015	127.50	1.052	1.414	121.24	99.83	0.908	1.106	109.94
2016	108.44	1.091	1.105	99.37	101.82	1.040	1.082	97.89
2017	191.66	1.343	1.198	142.71	105.72	1.282	1.188	82.46
2018	56.23	0.685	1.077	82.15	51.29	0.652	1.017	78.64
2019	72.67	0.745	1.075	97.51	69.70	0.716	1.035	97.36
2020	251.79	1.023	0.888	246.22	138.58	0.945	0.868	146.72
2021	745.71	1.115	1.123	668.97	734.08	1.084	1.094	677.29
2022	144.74	0.840	1.269	172.29	134.68	0.799	1.209	168.55
2023	173.05	1.020	1.209	169.64	158.94	0.930	1.097	170.87
Valencia								
2014	79.23	0.605	0.998	130.88	63.74	0.533	0.935	119.51
2015	72.27	0.611	0.971	118.22	71.05	0.604	0.845	117.62
2016	105.09	0.968	1.549	108.59	97.40	0.846	1.522	115.19
2017	136.62	1.079	1.549	126.67	81.27	0.702	1.283	115.76
2018	92.41	1.063	1.451	86.97	79.33	0.945	1.391	83.98
2019	457.47	1.224	0.965	373.66	101.43	0.914	0.918	111.00
2020	471.63	1.597	1.131	295.38	177.00	1.232	1.109	143.68
2021	636.69	1.791	1.451	355.49	319.61	1.392	1.406	229.59
2022	196.02	1.495	0.924	131.16	195.30	1.491	0.924	131.02
2023	186.23	1.315	0.774	141.62	174.23	1.236	0.772	140.91
Ventura								
2014	183.79	1.648	2.215	111.54	151.66	1.386	2.075	109.39
2015	148.85	1.190	1.447	125.11	141.43	1.149	1.375	123.11
2016	150.41	1.236	1.679	121.65	107.14	1.019	1.553	105.11
2017	520.90	3.122	2.293	166.85	114.76	1.240	1.542	92.56
2018	136.04	1.438	1.921	94.61	100.39	1.177	1.676	85.30
2019	334.96	1.647	2.610	203.37	133.54	1.364	2.407	97.92
2020	352.62	1.422	1.198	247.98	248.20	1.229	1.088	201.92
2021	651.23	2.745	2.093	237.21	405.66	2.313	1.688	175.37
2022	224.29	1.918	1.528	116.94	218.82	1.860	1.515	117.67
2023	204.99	1.859	2.248	110.29	196.47	1.750	2.140	112.26
Victorville								
2014	68.85	0.633	0.899	108.73	67.70	0.620	0.881	109.17
2015	87.03	0.906	1.839	96.06	72.90	0.812	1.551	89.75
2016	79.35	0.917	1.396	86.49	75.94	0.888	1.327	85.55
2017	84.07	0.895	2.353	93.94	73.12	0.808	1.757	90.49
2018	125.92	0.862	1.345	146.01	97.87	0.802	1.270	122.07
2019	82.42	1.102	2.008	74.77	74.68	0.986	1.667	75.77
2020	128.42	1.180	1.611	108.84	124.42	1.130	1.520	110.10
2021	209.84	1.256	2.514	167.06	204.64	1.205	2.467	169.84
2022	212.04	1.482	2.055	143.06	196.23	1.331	1.924	147.41
2023	194.93	1.114	1.743	174.91	189.86	1.068	1.646	177.70

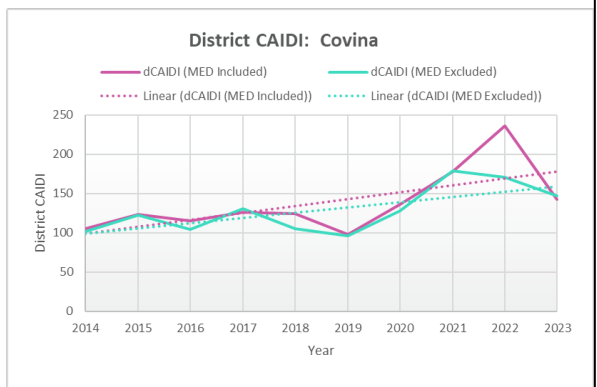
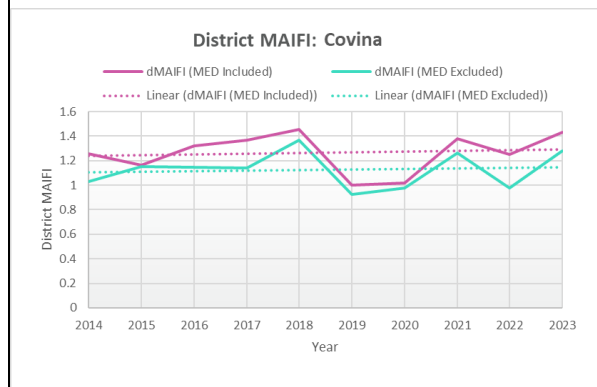
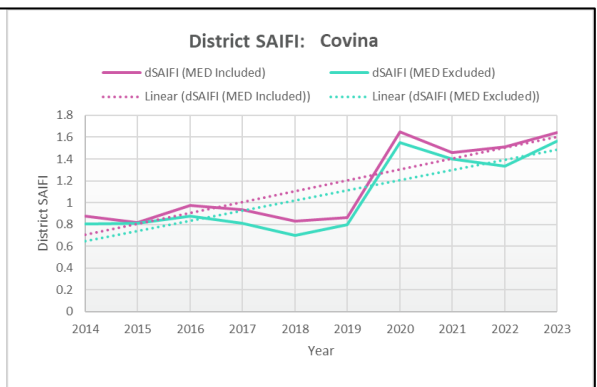
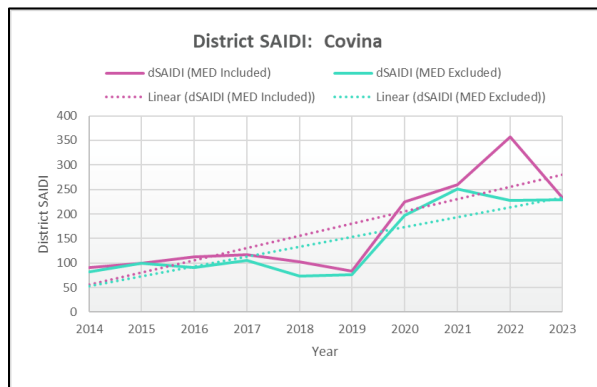
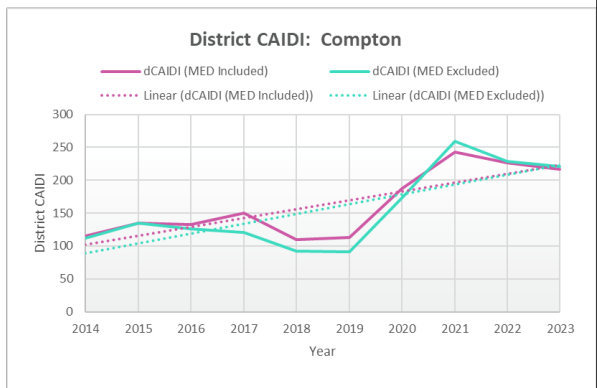
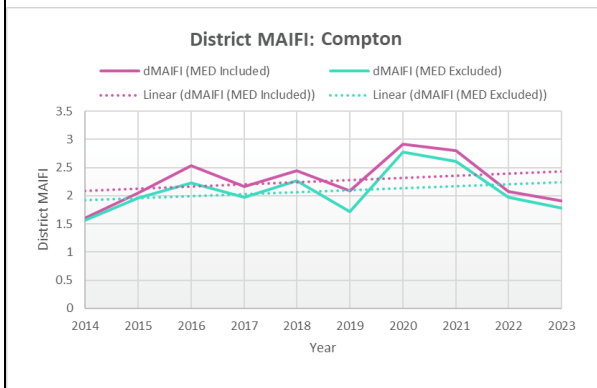
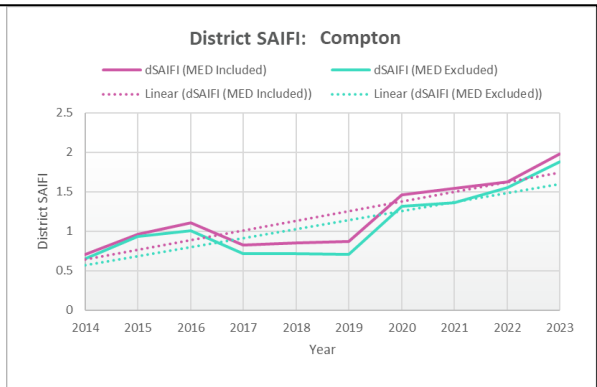
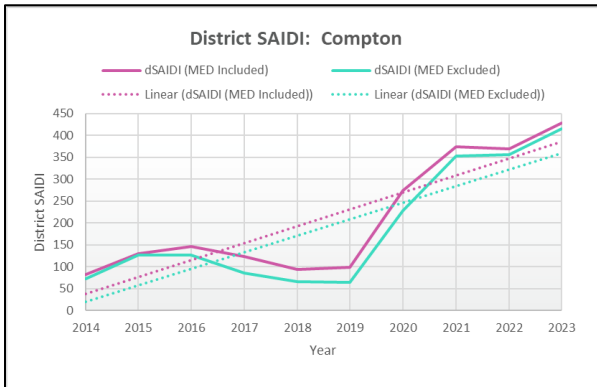
District/Year	MED Included				MED Excluded			
	dSAIDI	dSAIFI	dMAIFI	dCAIDI	dSAIDI	dSAIFI	dMAIFI	dCAIDI
Whittier								
2014	87.60	0.704	1.155	124.40	84.19	0.689	1.090	122.16
2015	114.52	0.733	1.084	156.32	104.85	0.704	0.989	148.88
2016	137.34	0.814	1.416	168.76	90.21	0.616	1.290	146.36
2017	148.91	0.896	1.872	166.10	91.91	0.750	1.655	122.50
2018	87.74	0.666	1.413	131.83	73.66	0.575	1.297	128.01
2019	84.86	0.730	1.379	116.21	73.99	0.624	1.160	118.51
2020	192.66	1.054	1.279	182.74	162.68	0.938	1.151	173.43
2021	316.98	1.302	1.589	243.47	302.35	1.211	1.397	249.58
2022	74.50	0.719	1.442	103.62	64.54	0.670	1.286	96.28
2023	80.38	0.767	1.131	104.76	70.38	0.703	0.988	100.16
Wildomar								
2014	117.91	0.800	0.706	147.40	112.05	0.770	0.654	145.58
2015	50.98	0.569	1.202	89.59	46.59	0.538	1.001	86.66
2016	82.00	0.840	0.928	97.59	77.99	0.817	0.838	95.46
2017	88.81	0.769	1.015	115.45	55.05	0.550	0.933	100.15
2018	60.09	0.741	0.798	81.12	51.21	0.616	0.711	83.11
2019	93.45	0.761	0.738	122.82	52.15	0.603	0.726	86.53
2020	187.03	1.057	0.894	176.88	146.50	0.959	0.893	152.78
2021	237.74	1.133	0.619	209.86	227.98	1.053	0.541	216.52
2022	84.81	0.835	0.459	101.55	79.36	0.799	0.424	99.27
2023	81.43	0.685	0.371	118.80	74.56	0.652	0.294	114.28
Yucca Valley								
2014	304.25	1.490	4.856	204.16	293.73	1.407	4.851	208.77
2015	388.99	1.804	3.922	215.64	260.08	1.189	2.708	218.70
2016	463.68	3.393	3.874	136.66	440.06	3.257	3.106	135.13
2017	300.33	1.957	1.602	153.47	270.11	1.728	1.509	156.28
2018	353.49	1.936	2.747	182.56	206.24	1.487	1.832	138.68
2019	473.40	2.491	1.956	190.03	415.89	2.154	1.753	193.10
2020	645.38	3.292	2.688	196.07	488.50	2.865	2.627	170.52
2021	968.80	3.469	2.473	279.24	863.32	3.057	2.410	282.39
2022	493.18	2.828	3.832	174.39	469.82	2.609	1.917	180.06
2023	693.96	3.171	4.797	218.87	641.19	2.949	4.537	217.46

Table 8: District Indices from 2014-2023 for Planned and Unplanned Outages

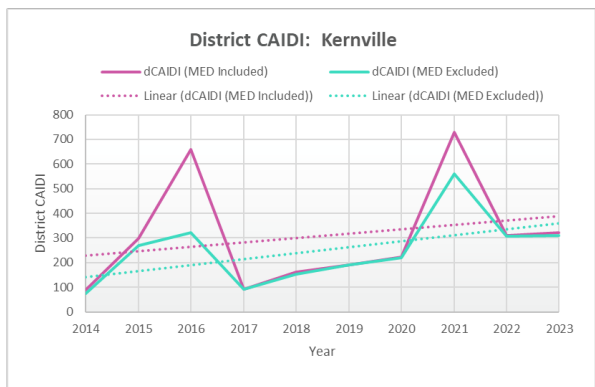
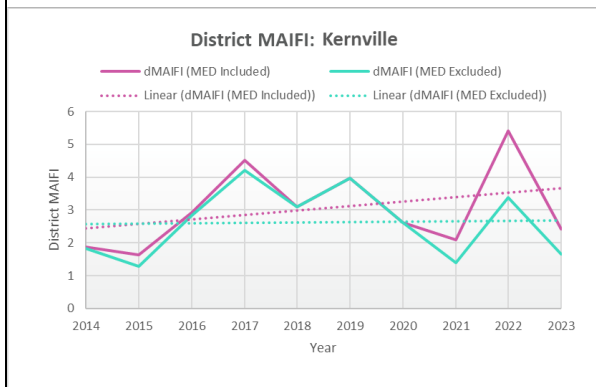
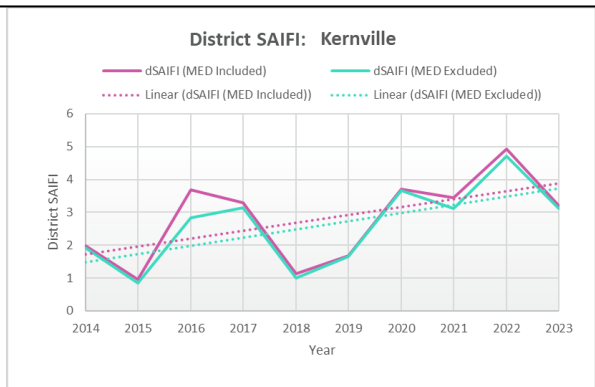
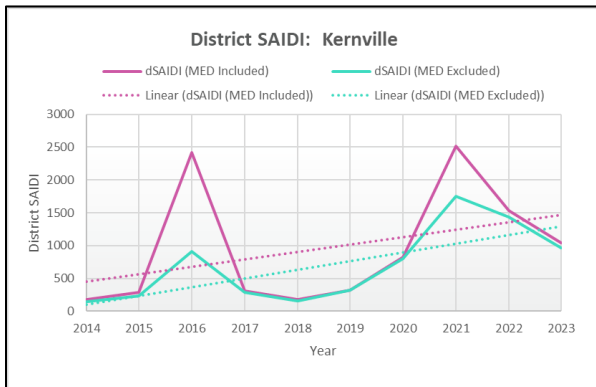
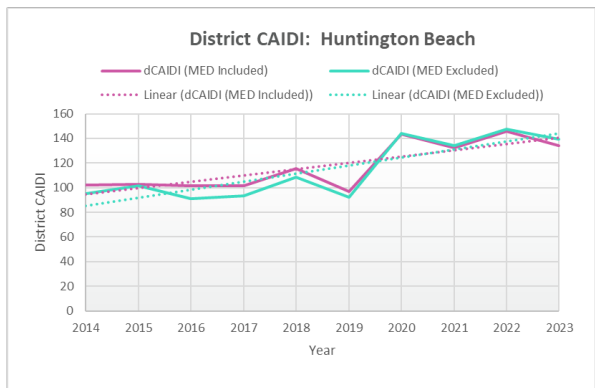
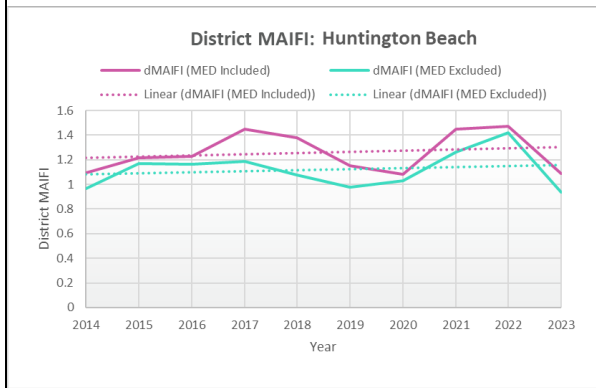
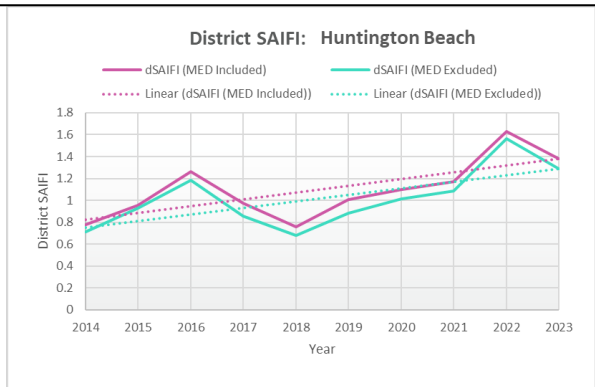
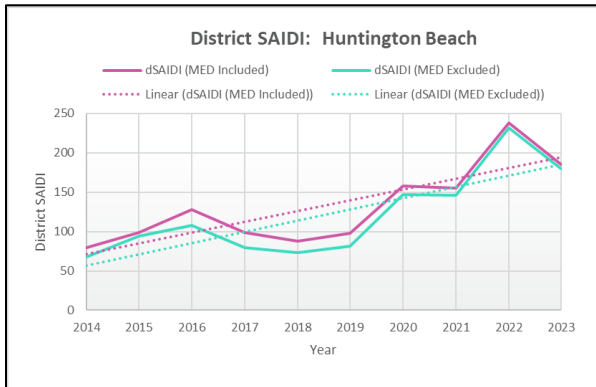
SECTION 3a: District Line Graphs for Planned and Unplanned Outages



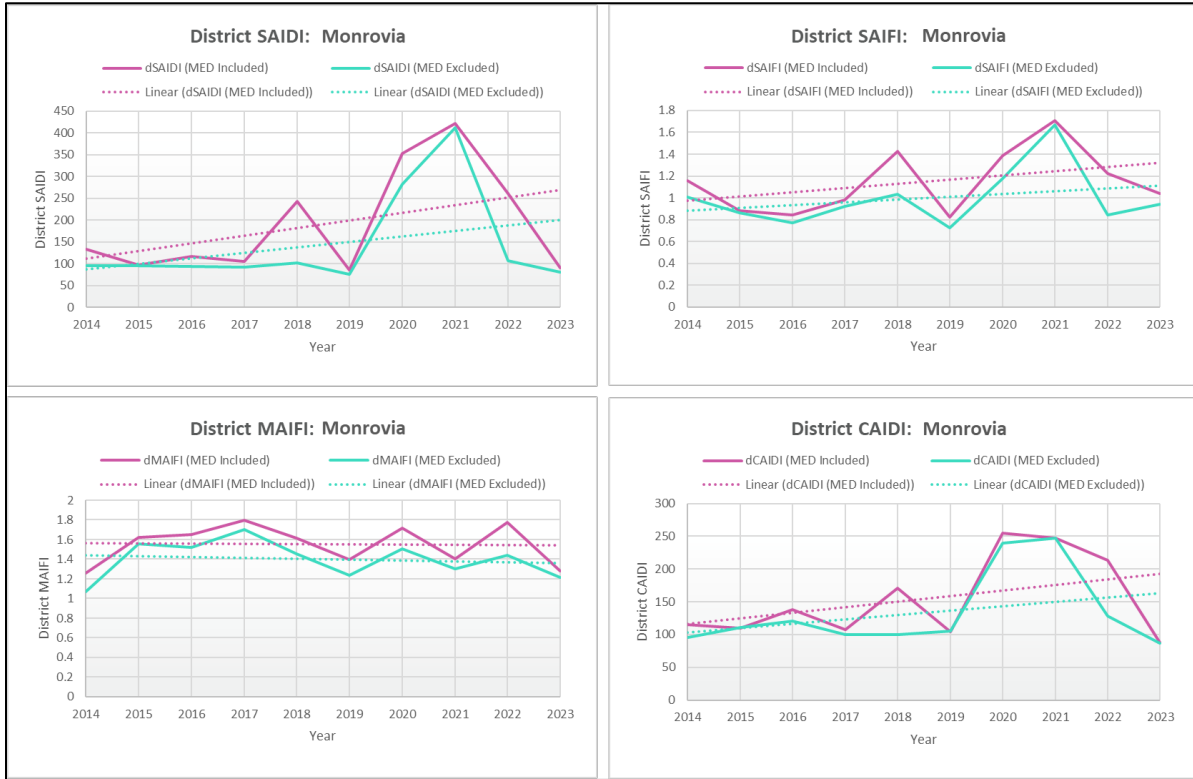


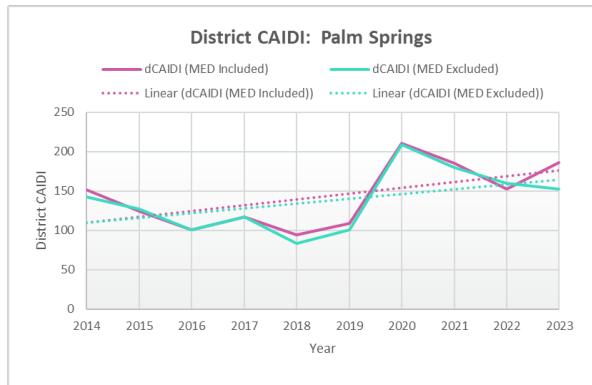
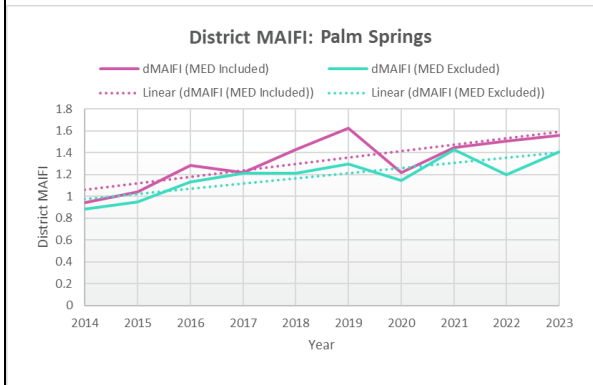
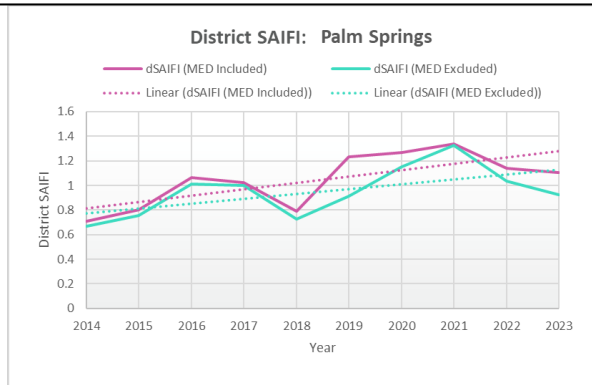
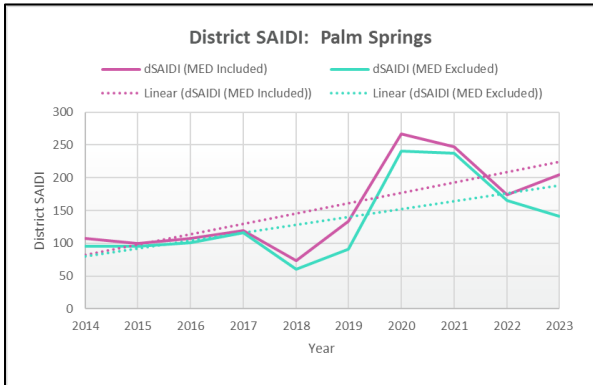
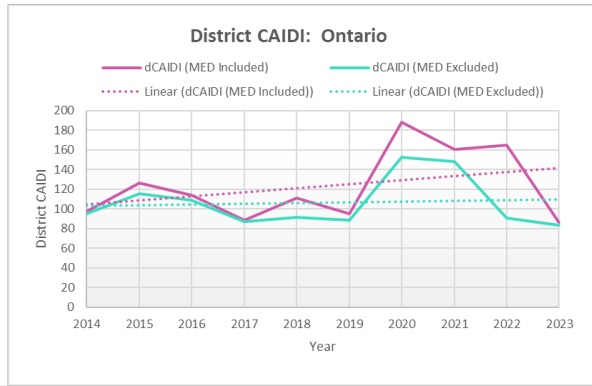
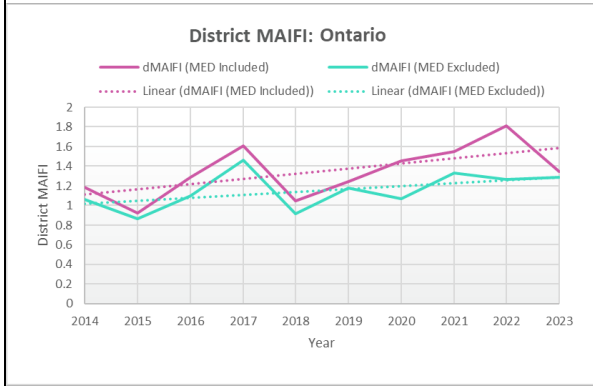
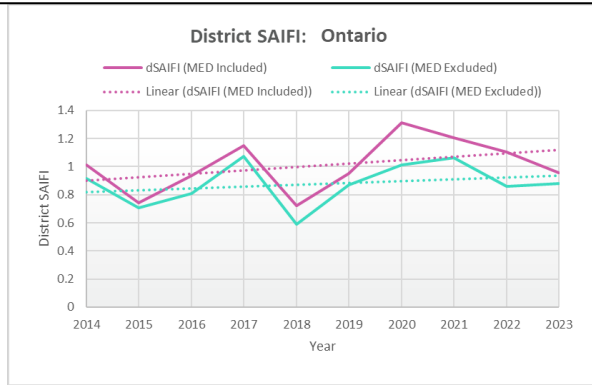
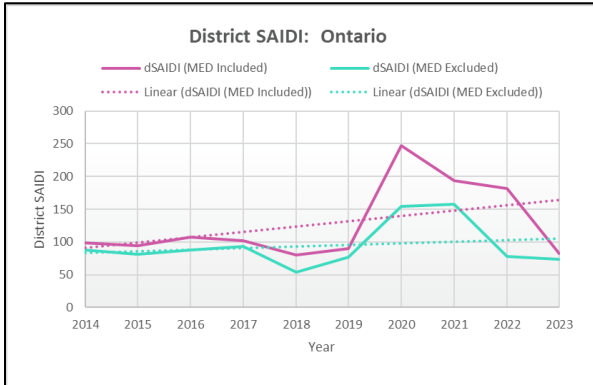



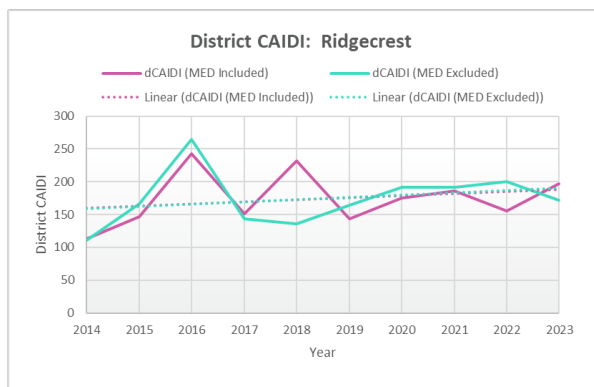
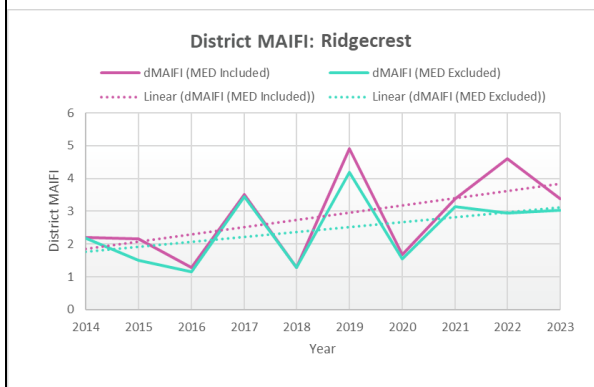
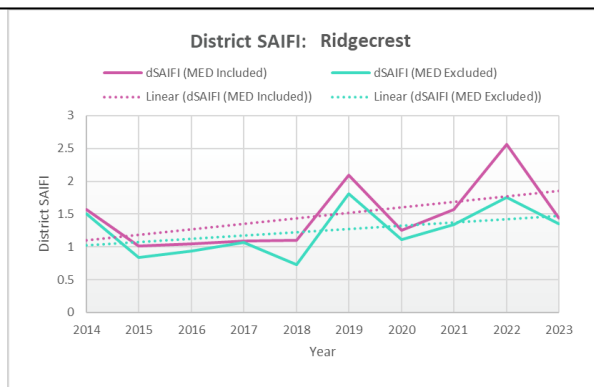
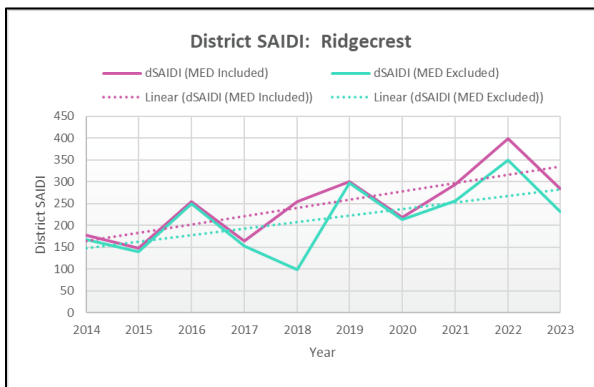
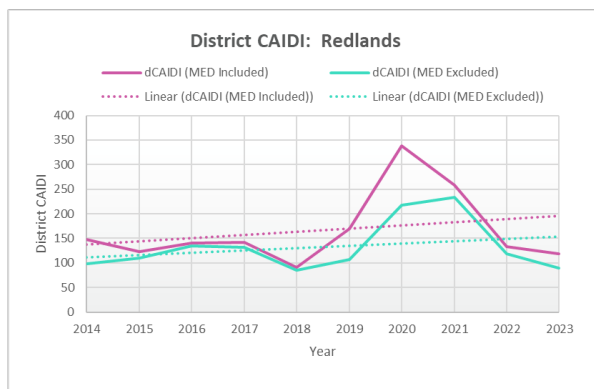
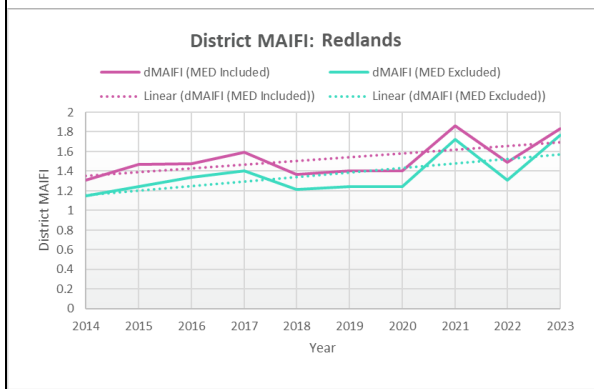
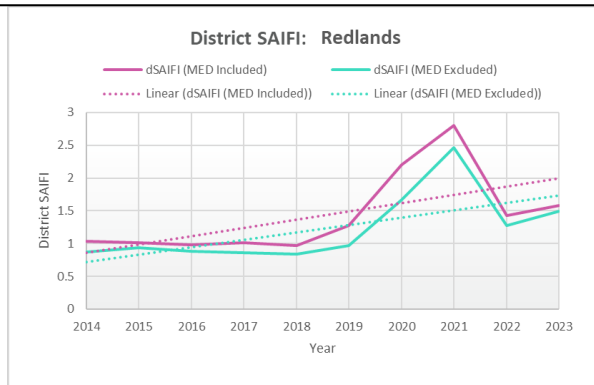
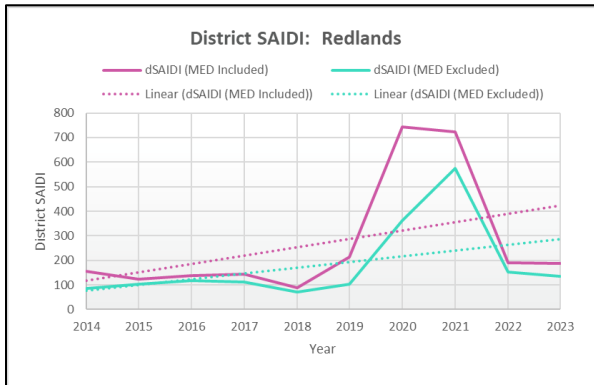




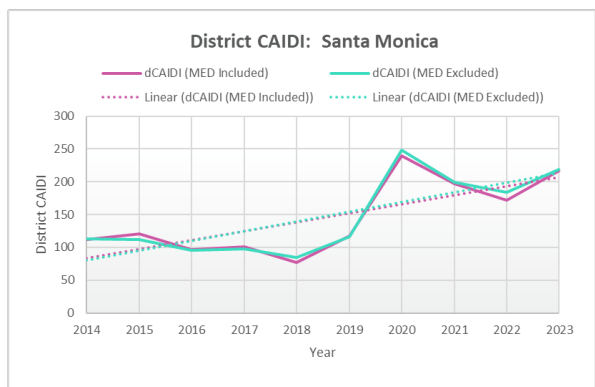
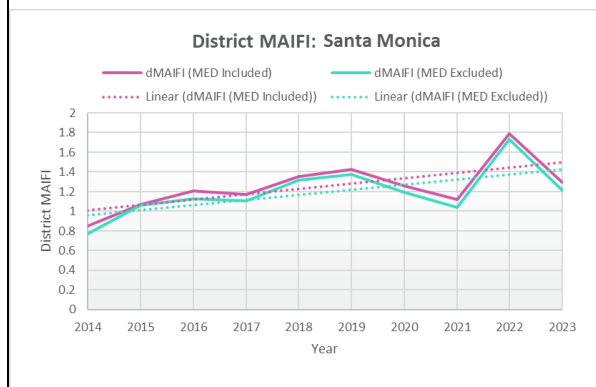
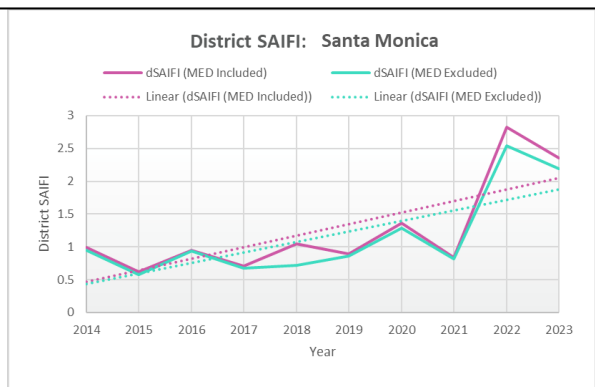
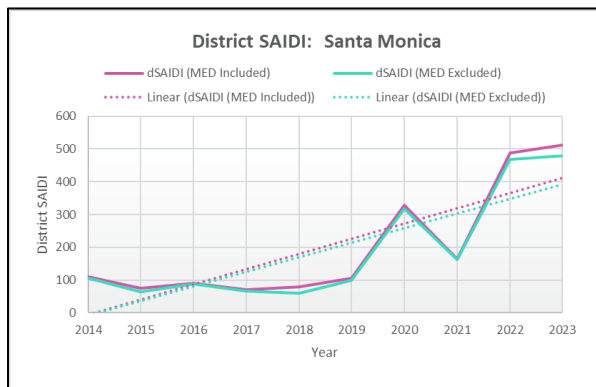
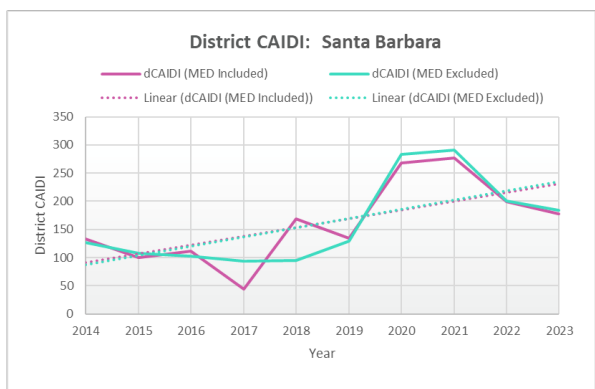
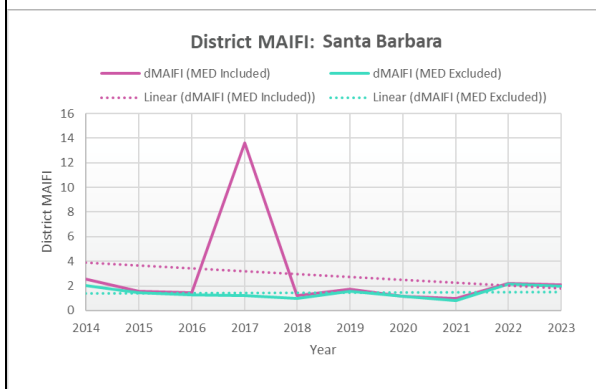
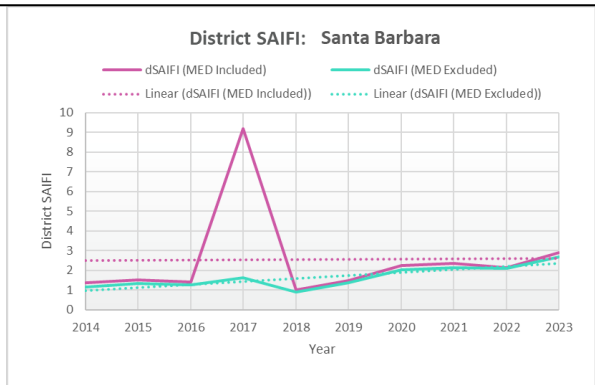
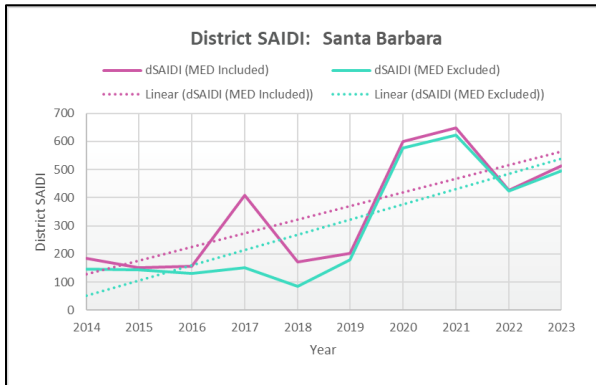


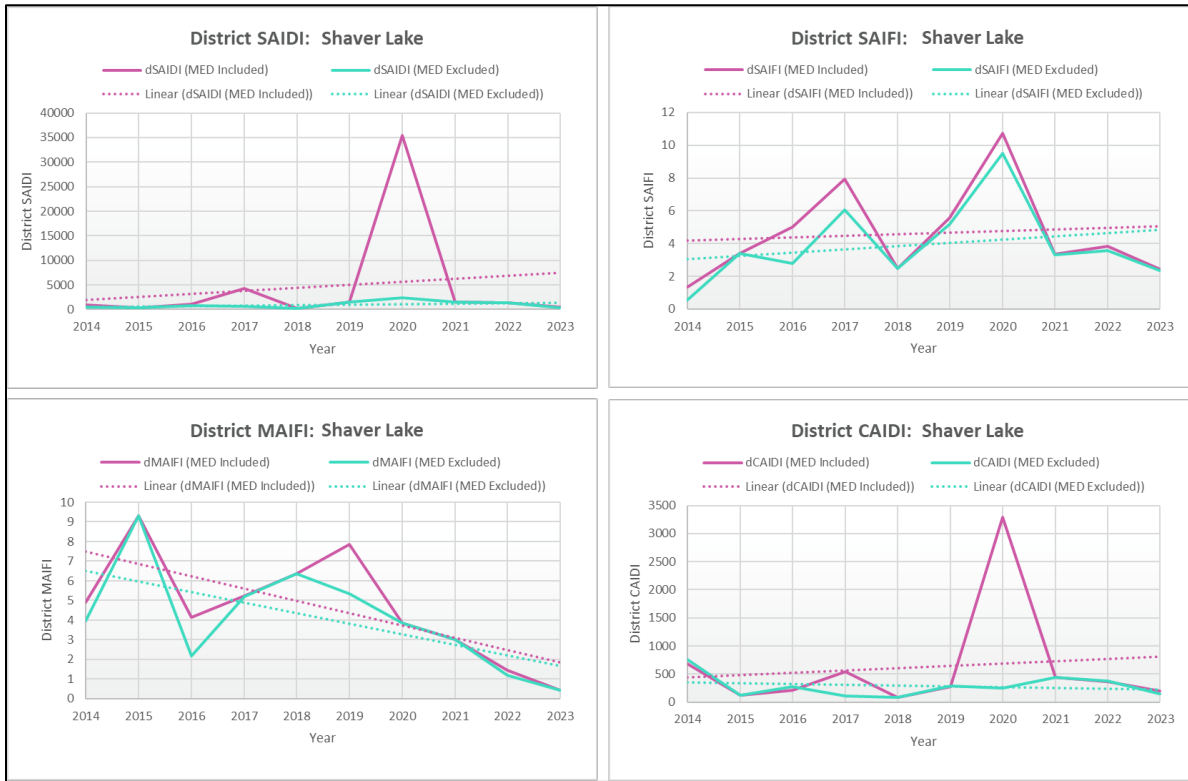


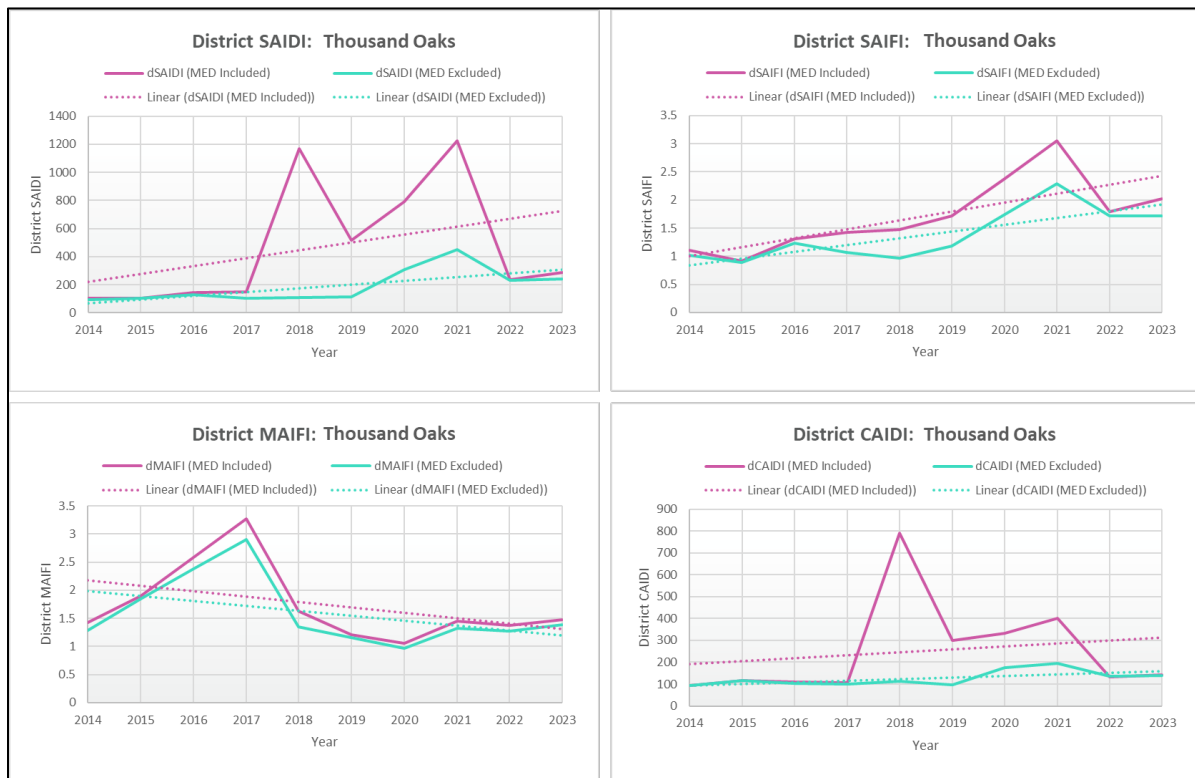


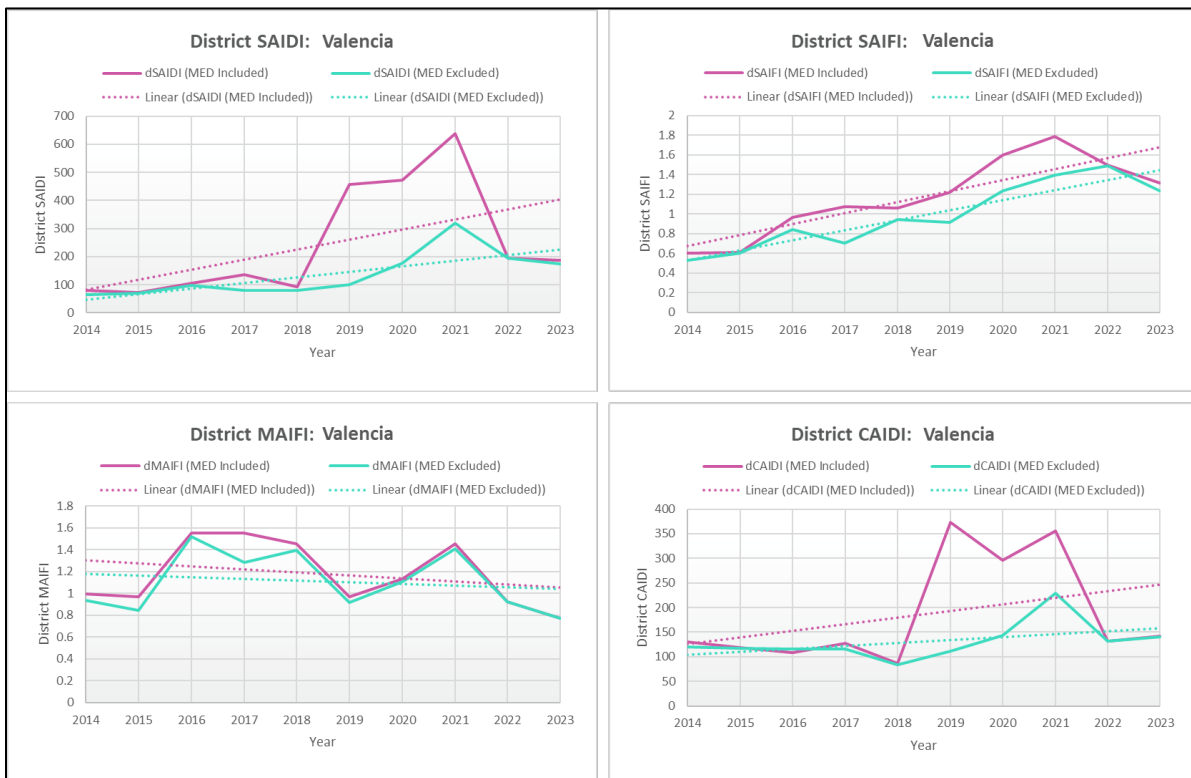


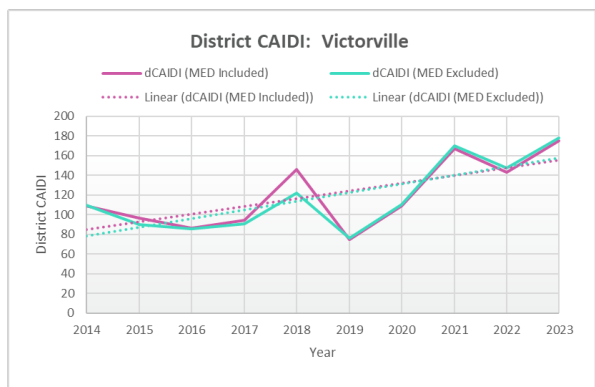
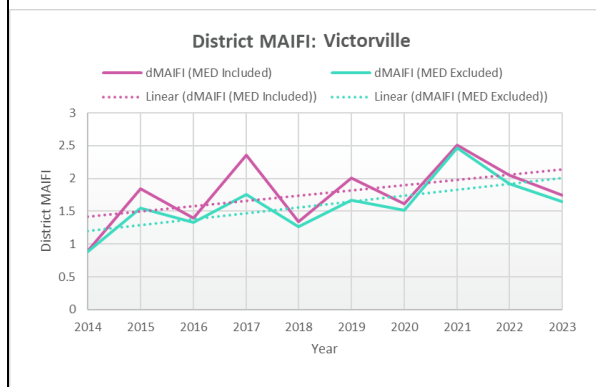
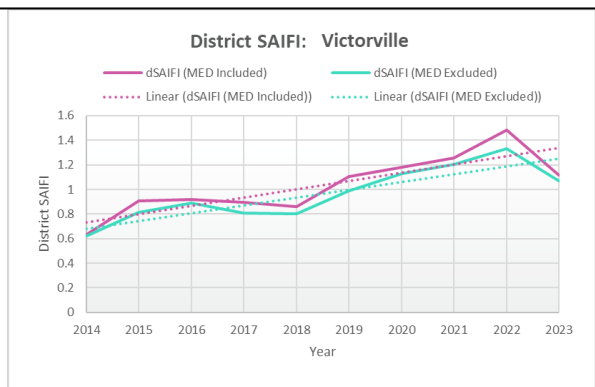
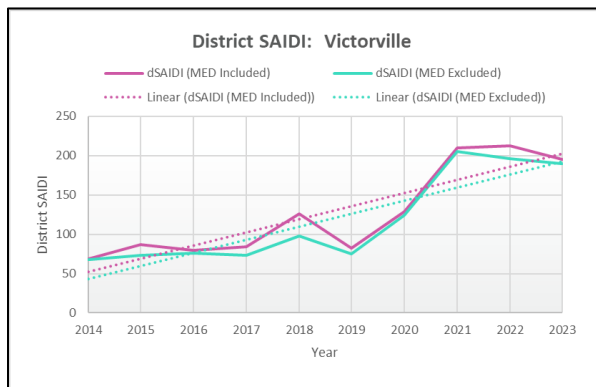
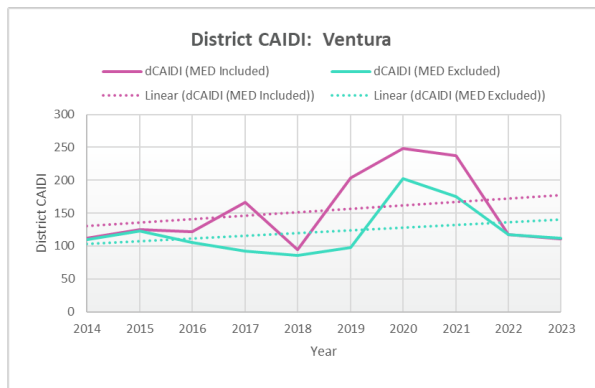
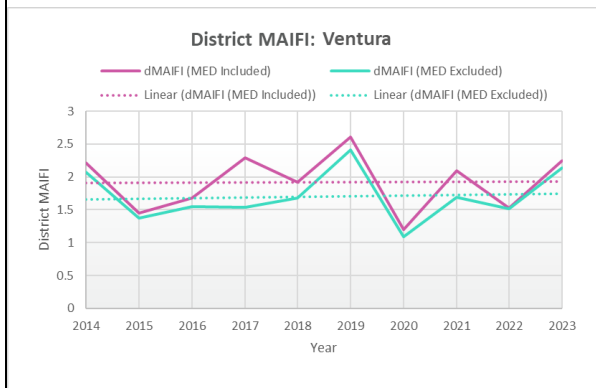
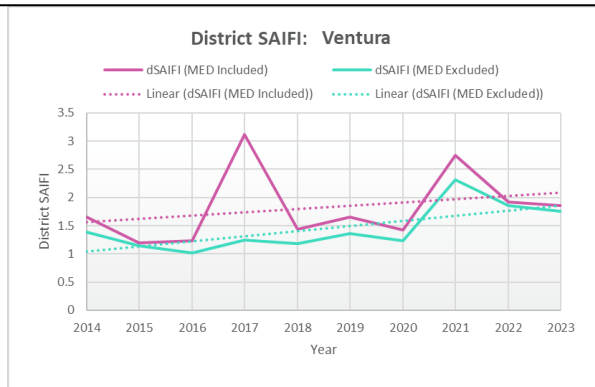
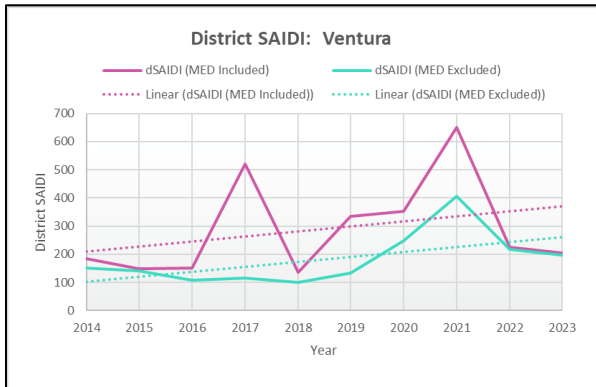












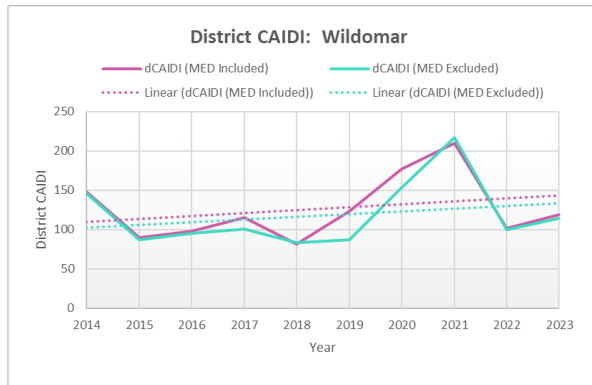
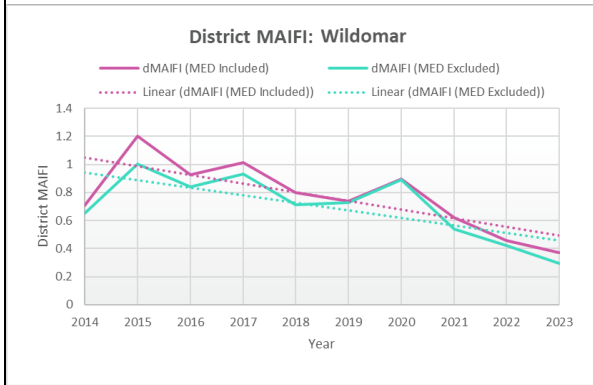
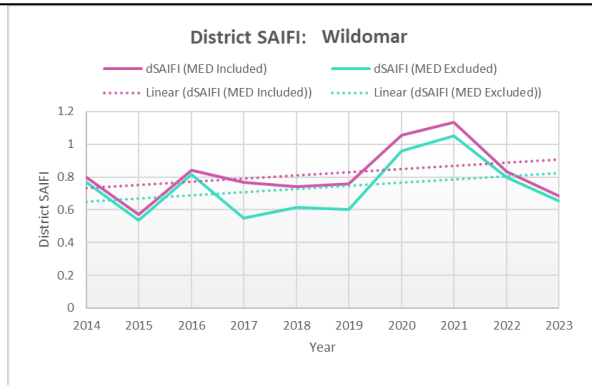
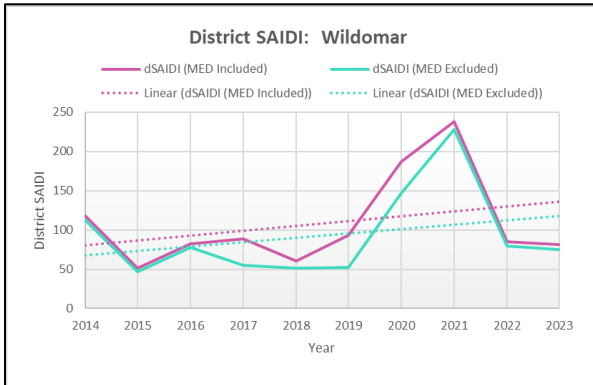
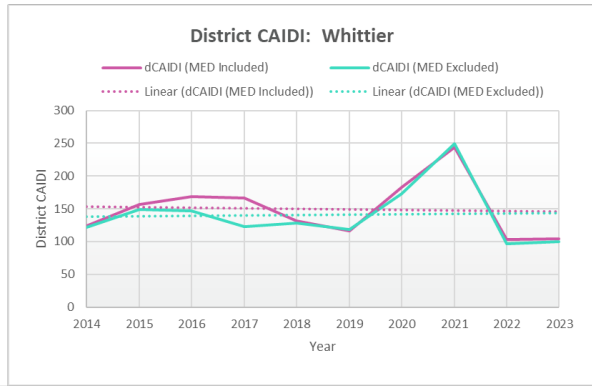
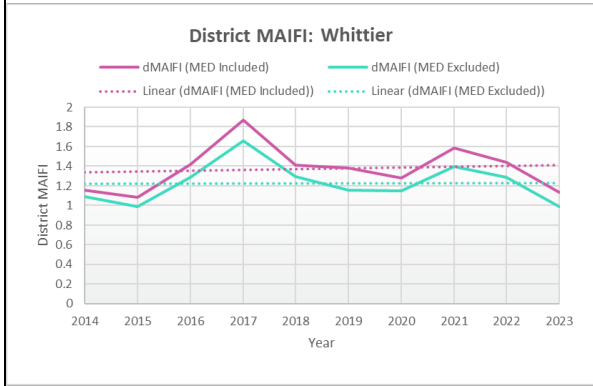
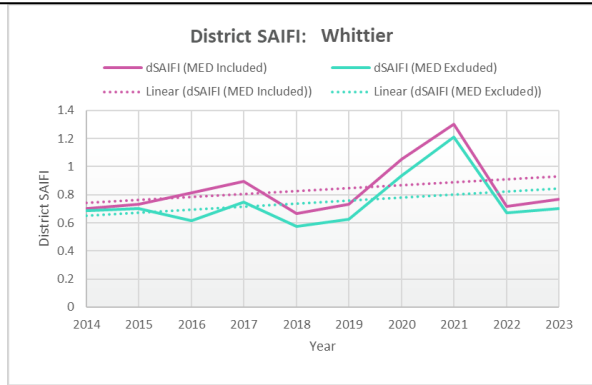
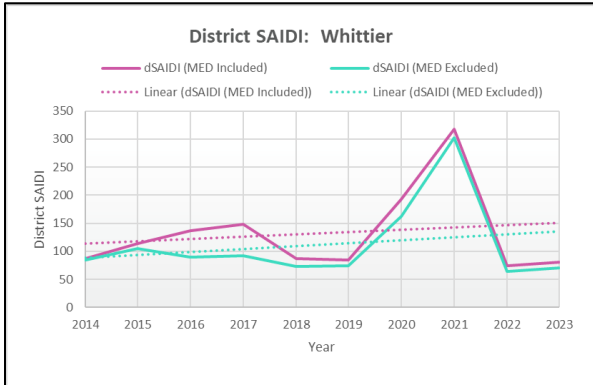




Figure 6: District Indices for Planned and Unplanned Outages

SECTION 3b: District Planned Outages Details

Table 9 summarizes the number of planned outages for each district per month for 2023. Planned outages on the same day and circuit may potentially be condensed into one outage event due to the underlying methodology used to link outages using meter data. The information on the number, date, and location of planned outages for 2023 was provided under seal in a separate report to the Directors of Energy Division and the Safety Enforcement Division on the same day of submission of this report.

Number of Planned Outages in Each District (2023)													
District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Antelope Valley	56	56	85	76	50	66	66	85	83	62	65	38	788
Arrowhead	12	6	1	9	11	36	32	32	15	36	24	20	234
Barstow	3	12	15	8	4	6	4	4	2	19	6	11	94
Bishop/Mammoth	13	6	14	16	12	18	31	29	25	23	20	12	219
Blythe	5	7	13	11	13	7	1	10	17	19	17	15	135
Compton	222	198	198	187	174	233	244	323	251	252	166	139	2587
Covina	158	167	173	148	110	122	135	183	140	155	158	148	1797
Foothill	229	161	207	175	93	151	160	217	215	272	237	232	2349
Huntington Beach	75	86	107	100	79	106	93	89	77	91	81	62	1046
Kernville	27	45	48	57	47	34	29	32	26	50	39	10	444
Menifee	138	187	230	200	204	175	120	170	127	132	150	142	1975
Montebello	192	169	188	202	133	148	183	213	158	172	138	154	2050
Palm Springs	47	35	52	31	28	29	29	34	36	27	39	32	419
Ridgecrest	15	14	16	11	10	7	14	10	8	1	10	10	126
Santa Ana	92	94	92	146	123	136	115	147	110	106	78	99	1338
Santa Barbara	58	72	60	91	68	110	94	70	71	84	85	61	924
Santa Monica	115	119	156	143	137	138	107	112	110	106	93	77	1413
Shaver Lake	0	0	0	1	0	2	0	2	1	2	0	1	9
Tehachapi	27	29	32	40	32	20	25	31	27	35	47	42	387
Thousand Oaks	64	84	59	66	79	76	46	74	81	77	76	76	858
Tulare	126	100	91	136	166	71	123	143	115	148	123	125	1467
Valencia	38	40	43	53	27	45	23	50	35	55	43	48	500
Ventura	46	50	46	102	94	87	53	71	38	60	67	72	786
Victorville	127	109	126	144	82	105	110	126	141	150	90	59	1369
Yucca Valley	58	52	67	95	95	55	28	24	22	38	62	57	653

Table 9: Number of Planned Outage for Each District (2023)

SECTION 4: Service Area Map

The map below shows SCE's service area with power delivery regions and districts. The map contains both SCE district boundaries and county boundaries. SCE has 10 regions and 35 districts. Previously, SCE had 9 regions and 34 districts.

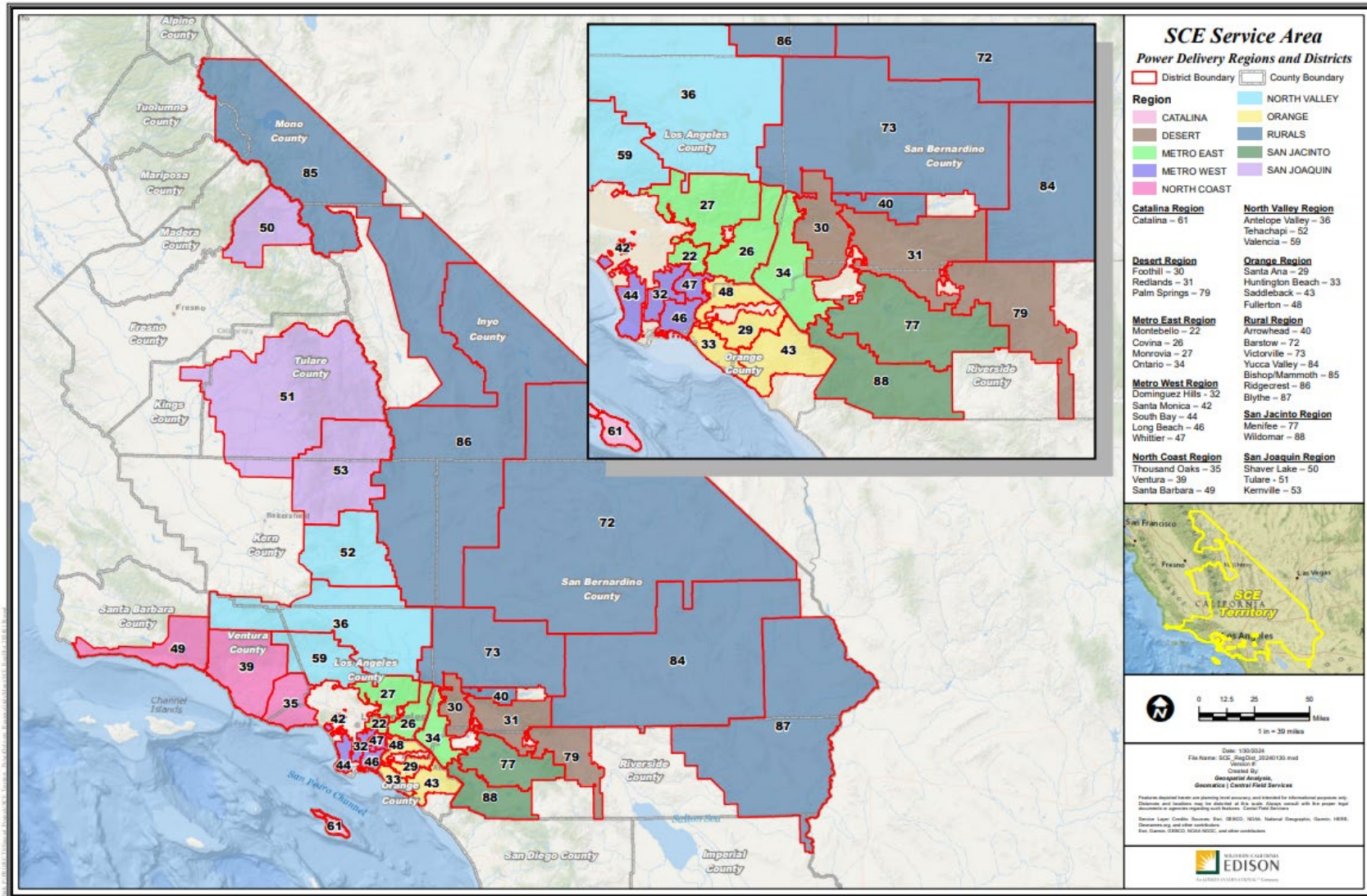


Figure 7: Southern California Edison Service Area Map

SECTION 5: Top 1% of Worst Performing Circuits

SECTION 5a: WPC Details

The Worst Performing Circuits (WPC) activity targets the top 1% worst performing circuits, measured using the IEEE Standard 1366 indices SAIDI and SAIFI.

WPCs are identified by using three years of system outage history excluding MEDs and planned outages. SCE applies a weighted factor to the SAIDI and SAIFI system indices. The most recent year's performance receives a 61% weight, while the weights for the subsequent previous years are 28% and 11%, respectively. The weighted results are summed per circuit and then ranked from highest to lowest. SCE reports the top 46 WPCs for both SAIDI and SAIFI indices; naturally, some circuits overlap between indices. SCE showed 72 unique WPCs. Of the 72 WPCs, 38 circuits are denoted with an asterisk (*) which indicates that the circuit was also on the 2022 WPC list.

Table 10 below presents the Top 1% WPC using the SAIDI index, while Table 11 displays the Top 1% WPC using the SAIFI index. The tables provide (1) circuit name, (2) district, (3) customer count, (4) substation name, (5) circuit miles, (6) %UG, (7) %OH, (8) number of main line outages resulting in the operation of a circuit breaker or automatic re-closer, (9) System-Level reliability index, and (10) Circuit-Level reliability index.

Circuit	District	2023 Customer Count	Substation	Circuit Miles (d)	%UG	%OH	2023 CB/AR Operation (a)	Sys-SAIDI Rank	Sys-SAIDI (b)	Ckt-SAIDI Rank	Ckt SAIDI (c)
Morganstein 16kV*	35	2,002	Moorpark	68.54	67.53%	32.47%	4	1	0.53	58	1401.36
Autumn 12kV*	85	2,192	Skiland	28.27	75.80%	24.20%	2	2	0.49	71	1176.67
Milo 16kV	35	1,902	Valdez	18.95	63.32%	36.68%	4	3	0.43	70	1183.73
Camp Nelson 4kV*	51	414	Camp Nelson P.T.	5.27	2.17%	97.83%	2	4	0.35	20	4284.92
Surfside 16kV*	39	5,739	Channel Island	31.91	61.61%	38.39%	1	5	0.30	427	279.19
Cuthbert 16kV*	35	2,402	Latigo	41.47	40.58%	59.42%	5	6	0.29	144	646.90
Rhinedollar 12kV	85	30	Poole	31.09	94.66%	5.34%	1	7	0.29	2	52206.74
Kay 16kV*	22	2,364	Alhambra	15.13	33.37%	66.63%	6	8	0.29	142	652.83
January 12kV*	33	4,124	Lafayette	19.97	93.16%	6.84%	4	9	0.27	307	346.39
Elster 12kV	51	1,479	Boxwood	72.26	19.74%	80.26%	3	10	0.27	90	949.68
Chevelle 12kV	30	2,141	Falcon Ridge	32.85	48.17%	51.83%	1	11	0.26	152	629.90
Annika 12kV	33	1,826	Lafayette	16.06	91.43%	8.57%	2	12	0.25	131	711.99
Huevos 12kV*	72	2,518	Tortilla	24.83	48.36%	51.64%	4	13	0.24	193	511.12
Brennan 16kV*	35	2,160	Moorpark	32.23	74.72%	25.28%	5	14	0.24	177	551.02
Hurst 16kV	49	3,025	San Marcos	47.55	28.99%	71.01%	1	15	0.24	229	438.00
Molino 12kV	46	2,715	Hathaway	9.16	48.90%	51.10%	3	16	0.24	220	457.48
Driskill 16kV*	49	4,379	San Marcos	69.39	40.91%	59.09%	4	17	0.23	406	289.67
Corsair 12kV*	77	2,339	Stetson	112.47	24.97%	75.03%	3	18	0.23	175	559.69
Crosson 16kV	39	4,478	Camarillo	42.53	48.25%	51.75%	3	19	0.23	445	273.23
Success 12kV	51	2,415	Porterville	70.01	9.39%	90.61%	1	20	0.23	196	503.76
Snead 12kV	33	3,458	Lafayette	19.05	79.96%	20.04%	4	21	0.23	313	342.37
Jameson 16kV	49	2,828	Santa Barbara	20.36	57.58%	42.42%	1	22	0.23	240	419.95
Firebird 12kV	30	1,304	Falcon Ridge	26.95	59.60%	40.40%	6	23	0.22	53	1452.21
Concourse 16kV	32	4,150	Vail	16.60	29.83%	70.17%	2	24	0.22	432	278.80
Stanwood 16kV	49	1,827	Santa Barbara	41.85	21.29%	78.71%	4	25	0.22	151	632.29
Carey 4kV	31	904	Mt. Vernon	7.30	5.91%	94.09%	5	26	0.21	63	1237.95
Bing 12kV	31	2,344	Maraschino	22.54	45.82%	54.18%	6	27	0.21	210	473.21
Marshall 16kV	42	3,224	Marine	10.52	38.26%	61.74%	3	28	0.21	325	335.81
Windjammer 16kV	39	7,704	Channel Island	45.33	48.23%	51.77%	3	29	0.21	1019	142.99
Energy 16kV	35	1,693	Chatsworth	47.75	32.46%	67.54%	3	30	0.21	146	644.60
Erskine 12kV*	53	3,129	Isabella	71.52	4.89%	95.11%	3	31	0.21	311	344.81
Belfast 12kV	29	2,929	Trask	15.75	29.33%	70.67%	3	32	0.21	278	377.39
Nordic 12kV	85	1,365	Skiland	12.98	98.87%	1.13%	0	33	0.20	115	780.53
Corsica 16kV	39	6,765	Gonzales	47.34	61.91%	38.09%	3	34	0.20	912	155.38
Russell 12kV	46	4,258	Broadway	13.34	30.31%	69.69%	2	35	0.19	559	236.88
Melody 25kV*	84	1,966	Hi Desert	320.35	0.09%	99.91%	13	36	0.19	197	502.54
Campanula 25kV	84	2,058	Nugget	137.45	7.16%	92.84%	22	37	0.19	206	479.42
Republic 16kV	44	3,694	Lennox	13.86	59.51%	40.49%	3	38	0.18	479	262.22
Landers 25kV*	84	1,807	Nugget	144.89	1.21%	98.79%	14	39	0.18	185	529.89
Big Pines 12kV*	36	2,268	Little Rock	69.50	47.96%	52.04%	1	40	0.18	239	420.26
Vallecito 16kV*	49	4,382	Carpinteria	55.81	47.93%	52.07%	0	41	0.18	612	217.55
Cronin 12kV*	33	4,506	Hamilton	32.68	51.25%	48.75%	2	42	0.18	643	207.20
Deegan 12kV*	77	1,252	Nelson	11.57	75.98%	24.02%	1	43	0.18	127	743.76
Hot Springs 16kV	49	3,772	Santa Barbara	32.16	53.87%	46.13%	2	44	0.18	533	245.88
Topoc 16kV*	87	880	Landing	26.99	48.53%	51.47%	3	45	0.18	80	1058.55
Roi-Tan 12kV*	31	2,691	Shandin	31.30	27.62%	72.38%	3	46	0.17	303	353.24

Table 10: Top 1% WPC Based on SAIDI (Excluding MEDs)

- (*) Circuits that have appeared in both 2022 and 2023 WPC list per D. 16-01-008
- (a) Includes sustained and momentary outages that affected the circuit breaker (CB) and/or automatic recloser (AR)
- (b) SAIDI is based on a three-year weighted average
- (c) Circuit (Ckt) SAIDI is based on a three-year weighted factor (average customer experience on circuit)
- (d) Starting 2021, Circuit Miles is obtained using geospatial data moving away from legacy software

Circuit	District	2023 Customer Count	Substation	Circuit Miles (d)	%UG	%OH	2023 CB/AR Operation (a)	Sys-SAIFI Rank	Sys-SAIFI (b)	Ckt-SAIFI Rank	Ckt SAIFI (c)
Surfside 16kV*	39	5,739	Channel Island	31.91	61.61%	38.39%	1	1	0.004	101	3.843
Driskill 16kV*	49	4,379	San Marcos	69.39	40.91%	59.09%	4	2	0.004	53	4.645
Crosson 16kV	39	4,478	Camarillo	42.53	48.25%	51.75%	3	3	0.004	73	4.245
Corsica 16kV*	39	6,765	Gonzales	47.34	61.91%	38.09%	3	4	0.003	303	2.551
January 12kV*	33	4,124	Lafayette	19.97	93.16%	6.84%	4	5	0.003	81	4.100
Salmon 16kV*	44	4,136	El Nido	19.77	39.41%	60.59%	2	6	0.003	128	3.515
Campanula 25kV*	84	2,058	Nugget	137.45	7.16%	92.84%	22	7	0.003	22	7.019
Asteroid 16kV*	22	4,451	Alhambra	20.08	36.97%	63.03%	2	8	0.002	222	2.938
Turnpike 16kV	49	4,495	Santa Barbara	21.10	29.39%	70.61%	3	9	0.002	202	3.032
Snead 12kV*	33	3,458	Lafayette	19.05	79.96%	20.04%	4	10	0.002	114	3.687
Hooligan 16kV*	35	3,218	Newbury	48.54	85.09%	14.91%	5	11	0.002	88	3.991
Marshall 16kV*	42	3,224	Marine	10.52	38.26%	61.74%	3	12	0.002	110	3.724
Concourse 16kV	32	4,150	Vail	16.60	29.83%	70.17%	2	13	0.002	208	2.988
Navy 16kV*	42	2,975	Marine	15.26	61.65%	38.35%	1	14	0.002	103	3.785
Gizmo 16kV*	39	4,331	Channel Island	27.56	86.98%	13.02%	2	15	0.002	279	2.609
Enterprise 16kV*	39	3,583	Levy	35.01	59.25%	40.75%	2	16	0.002	176	3.161
San Nicholas 16kV	39	3,665	Casitas	26.54	50.66%	49.34%	5	17	0.002	201	3.018
Roi-Tan 12kV*	31	2,691	Shandin	31.30	27.62%	72.38%	3	18	0.002	78	4.149
Kay 16kV	22	2,364	Alhambra	15.13	33.37%	66.63%	6	19	0.002	59	4.516
Milpas 16kV	49	5,704	Santa Barbara	23.80	34.52%	65.48%	4	20	0.002	559	1.903
Sundown 12kV	73	2,569	Helendale	43.73	90.35%	9.65%	4	21	0.002	78	4.097
Fantail 16kV*	42	5,484	Tahiti	12.81	86.93%	13.07%	1	22	0.002	564	1.895
Rimrock 12kV	43	2,449	Morro	10.64	49.89%	50.11%	1	23	0.002	72	4.215
Hurst 16kV	49	3,025	San Marcos	47.55	28.99%	71.01%	1	24	0.002	111	3.614
Orizaba 12kV	46	4,599	Broadway	8.95	6.08%	93.92%	2	25	0.002	395	2.208
Windjammer 16kV*	39	7,704	Channel Island	45.33	48.23%	51.77%	3	26	0.002	1029	1.322
Maxson 16kV	39	3,701	Saticoy	50.95	31.94%	68.06%	4	27	0.002	247	2.745
Bing 12kV	31	2,344	Maraschino	22.54	45.82%	54.18%	6	28	0.002	69	4.285
Lyons 16kV	59	3,158	Newhall	12.28	54.48%	45.52%	5	29	0.002	181	3.078
Morganstein 16kV	35	2,002	Moorpark	68.54	67.53%	32.47%	4	30	0.002	45	4.926
Ryan 16kV*	44	6,823	Lennox	22.39	12.36%	87.64%	0	31	0.002	1019	1.330
Gowan 12kV*	30	1,397	Glen Avon	26.09	65.43%	34.57%	3	32	0.002	22	6.897
Belfast 12kV	29	2,929	Trask	15.75	29.33%	70.67%	3	33	0.002	136	3.372
Kalmia 16kV	32	2,898	Calden	15.02	5.28%	94.72%	3	34	0.002	139	3.313
Sago 16kV*	44	4,705	Torrance	22.34	24.97%	75.03%	0	35	0.002	469	2.043
Tri City 16kV*	22	3,214	Alhambra	17.12	27.14%	72.86%	5	36	0.002	198	2.963
Hass 12kV	31	2,310	Mentone	45.95	22.99%	77.01%	8	37	0.002	76	4.052
Bushard 12kV*	33	3,480	Oceanview	26.76	34.98%	65.02%	2	38	0.002	248	2.683
Independence 12kV	34	2,196	Peyton	24.58	90.98%	9.02%	4	39	0.002	68	4.231
Mcbean 16kV*	59	2,934	Newhall	21.45	72.95%	27.05%	0	40	0.002	172	3.115
Napoleon 12kV	31	2,969	Maraschino	41.00	79.83%	20.17%	6	41	0.002	130	3.409
Hot Springs 16kV	49	3,772	Santa Barbara	32.16	53.87%	46.13%	2	42	0.002	320	2.393
Sandra 16kV	44	4,349	Felton	15.67	37.86%	62.14%	1	43	0.002	443	2.075
Jameson 16kV	49	2,828	Santa Barbara	20.36	57.58%	42.42%	1	44	0.002	162	3.161
Autumn 12kV	85	2,192	Skiland	28.27	75.80%	24.20%	2	45	0.002	72	4.104
Molino 12kV	46	2,715	Hathaway	9.16	48.90%	51.10%	3	46	0.002	138	3.292

Table 11: Top 1% WPC Based on SAIFI (Excluding MEDs)

- (*) Circuits that have appeared in both 2022 and 2023 WPC list per D. 16-01-008
- (a) Includes sustained and momentary outages that affected the circuit breaker (CB) and/or automatic recloser (AR)
- (b) SAIFI is based on a three-year weighted average
- (c) Circuit (Ckt) SAIFI is based on a three-year weighted factor (average customer experience on circuit)
- (d) Starting 2021, Circuit Miles is obtained using geospatial data moving away from legacy software

SECTION 5b: Deficient WPC Circuits

Table 12 and Table 13 identify the circuits that are the top 1% WPC for SAIDI and SAIFI this year (2023) along with the top 1% WPC circuit for SAIDI and SAIFI identified in the previous year (2022). These tables provide information regarding the requirement of Section 5b of Decision 16-01-008.

Circuit	2023 Sys-SAIDI Rank	2023 Sys-SAIFI	2022 Sys-SAIDI Rank	2022 Sys-SAIFI	Explanation of Repeat Deficiency	Submitted	Engineering Scope	Anticipated Completion Year
Morganstein 16kV*	1	0.53	21	0.25	Eight outage events exceeding the three year average, 3 of them being due to PSPS and 5 of them due to failed underground (UG) equipment/cable.	4/1/2024	WPC Proposed the following: Install 10 sets of fuses Install 7 automation devices	2025
Autumn 12kV*	2	0.49	38	0.19	The Autumn circuit experienced six major interruptions in 2023. Four were on distribution, caused by three overhead (OH) equipment failures and one instance of vegetation in OH lines. The remaining two interruptions were due to an animal in substation equipment and a blown tap on a transmission line	11/30/2022	Grid Resiliency Proposed to reconductor 7.8 circuit miles to covered conductor	2024
Camp Nelson 4kV*	4	0.35	2	0.42	2023 major interruptions due to lost transmission source line and overhead equipment issues.	5/6/2020	Grid Resiliency Proposed to reconductor 2.6 circuit miles to OH Aerial bundled cable. Camp Nelson is being cutover to Mahogany 12kV.	2024
Surfside 16kV*	5	0.30	6	0.34	Surfside experienced 4 large CMI outages exceeding double of the 3 year average, due to large customer count, vegetation issues and failed underground (UG) equipment	1/8/2024	WPC Proposed the following: Install 4 sets of fuses Install 3 OH switches Install 4 sets of fault indicators	2025
Cuthbert 16kV*	6	0.29	17	0.26	2023 major interruptions due to six events exceeding 3 year average for CMI due to underground (UG) equipment, overhead (OH) equipment, and PSPS event	7/29/2022	Grid Resiliency Proposed the following: Reconductor 3.7 circuit miles to OH covered conductor Install 10 sets of fuses Engineering will continue to monitor and evaluate circuit performance for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	2024
Kay 16kV*	8	0.29	34	0.21	Kay experienced five major interruptions in 2023 that led to its poor performance. These interruptions included: two underground (UG) equipment failures, one overhead (OH) equipment failure, and one caused by a critter.	4/24/2024	Grid Mod Proposed the following: Install 2 automated devices Install 2 sets fault indicators	2025
January 12kV*	9	0.27	10	0.30	January experienced five large interruptions in 2023 due to underground (UG) equipment failures, which was the leading cause of its reliability deficiency. These events included four UG equipment failures and one cable failure. Both the January 12kV and Snead 12kV circuits traverse the congested intersections and structures of Newport Beach Balboa Peninsula, requiring pumping to begin troubleshooting.	3/1/2024	WPC Proposed the following: Install 2 automated devices Install 8 Eco Pumps Install Cathodic Protection at 13 locations Replacing 6 UG Switches	2025
Huevos 12kV*	13	0.24	1	0.45	Huevos experienced one major interruption due to underground (UG) equipment. Engineering will continue to monitor the circuit's performance.	-	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
Brennan 16kV*	14	0.24	16	0.26	2023 major interruptions due to overhead (OH) equipment, operations, and PSPS events.	-	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

Circuit	2023 Sys-SAIDI Rank	2023 Sys-SAIDI	2022 Sys-SAIDI Rank	2022 Sys-SAIDI	Explanation of Repeat Deficiency	Submitted	Engineering Scope	Anticipated Completion Year
Driskill 16kV*	17	0.23	12	0.29	Driskill experienced four major interruptions in 2023 caused by two source interruptions, one overhead equipment failure, and vegetation	1/8/2024	WPC Proposed the following: Install 4 automated devices Install 9 OH switches Install a of fuse set Installing a set of fault indicator	2025
Corsair 12kV*	18	0.23	13	0.28	2023 major interruption due to underground equipment failure and vehicle hit pole.	-	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
Erskine 12kV*	31	0.21	9	0.32	The major interruption in 2023 was caused by equipment failure inside the substation, impacting Erskine.	-	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
Melody 25kV*	36	0.19	18	0.25	Melody had two overhead (OH) equipment interruption in 2023 that were high impact outages leading to the reliability deficiency.	4/30/2019	Proposed to install 220 sets of fuses	2026
Landers 25kV*	39	0.18	42	0.19	Landers experienced five major interruptions in 2023. Two were due to weather, and the remaining three originated from the Pinto 33kV circuit. Pinto 33kV, which feeds both Campanula and Landers, had three interruptions that impacted both circuits.	-	DSP N-1 Reviewing 7 mile line extension to Nugget sub to improve source outages.	Pending Review
Big Pines 12kV*	40	0.18	8	0.33	2023 major interruption due to operational flexibility challenges.	2/1/2024	WPC Proposed to install a one-mile-long underground line extension to improve operability and eliminate islanded customers.	2025
Vallecito 16kV*	41	0.18	44	0.18	2023 major interruptions due to UG equipment in area being in close proximity to ocean and large difficulty for repair. Underground (UG) structures need to have water pumped out and have limited access due to cars being parked on top of structures at times. Both increase the duration to carry out repairs.	1/8/2024	WPC Proposed the following: Install 12 sets of fuses Install 5 OH switches Install a set of fault indicator Installing Cathodic Protection at one location	2025
Cronin 12kV*	42	0.18	4	0.35	Cronin experienced two large overhead (OH) interruptions in 2023 due to a Mylar balloon and OH equipment.	-	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
Deegan 12kV*	43	0.18	5	0.35	The major interruption in 2023 was due to overhead (OH) equipment. Engineering will continue to monitor the circuit's performance.	-	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
Topoc 16kV*	45	0.18	11	0.30	Topoc experienced one major interruption due to overhead (OH) equipment. Engineering will continue to monitor the circuit's performance.	4/1/2024	Grid Mod Proposed the following: Install 2 automated devices Install a sets fault indicator	2025
Roi-Tan 12kV*	46	0.17	7	0.33	Roi-Tan experienced two major interruptions in 2023: a third-party dig-in and a substation interruption caused by a bird in the substation equipment.	1/6/2023	Grid Resiliency Reconductor 1.4 circuit miles to covered condutor Engineering will continue to monitor and evaluate circuit performance for additional circuit enhancements (i.e FI's and automation) to minimize CMI and CI.	2024

Table 12: SAIDI Repeat Deficient List

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

**Completion dates may shift due to the availability of planning and construction resources.

Circuit	2023 Sys-SAIFI Rank	2023 Sys-SAIFI	2022 Sys-SAIFI Rank	2022 Sys-SAIFI	Explanation of Repeat Deficiency	Submitted	Engineering Scope	Anticipated Completion Year
Surfside 16kV*	1	0.004	9	0.003	Surfside experienced 4 large CMI outages exceeding double of the 3 year average, due to large customer count, vegetation issues and failed underground (UG) equipment	1/8/2024	WPC Proposed the following: Install 4 sets of fuses Install 3 OH switches Install 4 sets of fault indicators	2025
Driskill 16kV*	2	0.004	3	0.003	Driskill experienced four major interruptions in 2023 caused by two source interruptions, one overhead equipment failure, and vegetation	1/8/2024	WPC Proposed the following: Install 4 automated devices Install 9 OH switches Install a of fuse set Installing a set of fault indicator	2025
Corsica 16kV*	4	0.003	5	0.003	Corsica encountered three outages exceeding the three-year average, attributed to underground (UG) cable failures and overhead (OH) primary conductor issues.	1/8/2024	WPC Proposed the following: Install 24 sets of fuses Install an OH switch	2025
January 12kV*	5	0.003	8	0.003	January experienced five large interruptions in 2023 due to underground (UG) equipment failures, which was the leading cause of its reliability deficiency. These events included four UG equipment failures and one cable failure. Both the January 12kV and Snead 12kV circuits traverse the congested intersections and structures of Newport Beach Balboa Peninsula, requiring pumping to begin troubleshooting.	3/1/2024	WPC Proposed the following: Install 2 automated devices Install 8 Eco Pumps Install Cathodic Protection at 13 locations Replacing 6 UG Switches	2025
Salmon 16kV*	6	0.003	33	0.002	During 2023, customers on the Salmon faced four significant interruptions, including two caused by overhead equipment failures, one by vegetation contacting the lines, and one due to an animal in the substation equipment.	5/24/2024	WPC Proposed the following: Install 4 sets fault indicators Install a set of fuses	2026
Campanula 25kV*	7	0.003	10	0.003	Campanula experienced five major interruptions in 2023. Two were due to overhead (OH) equipment failures, and the remaining three originated from the Pinto 33kV circuit. Pinto 33kV, which feeds both Campanula and Landers, had three interruptions that impacted both circuits.	Grid Resiliency: 1/31/2022 DSP N-1: Pending	Grid Resiliency Proposed to reconductor 7.8 circuit miles to covered conductor DSP N-1 Reviewing 7 mile line extension to Nugget sub to improve source outages.	Grid Resiliency:2024 DSP N-1: pending review
Asteroid 16kV*	8	0.002	1	0.003	Asteroid experienced two major interruptions in 2023 that led to its poor performance. These interruptions included one underground (UG) equipment failure and one overhead (OH) equipment failure.	7/31/2018	OCP Proposed the following: Reconductor 5.5 conductor miles of OH bare conductor	Postponed due to resources
Snead 12kV*	10	0.002	38	0.002	Snead experienced four underground (UG) equipment failures in 2023, which was the leading cause of its reliability deficiency. These events included three UG equipment failures and one cable failure. Both the January 12kV and Snead 12kV circuits traverse the congested intersections and structures of Newport Beach Balboa Peninsula, requiring pumping to begin troubleshooting.	-	Evaluate for Eco-Pumps, Cathodic Protection, and other circuit enhancements (i.e FI's and automation).	Pending Review
Hooligan 16kV*	11	0.002	22	0.002	Hooligan experienced four events exceeding three year average due to overhead (OH) and underground (UG) equipment failure and weather.	-	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
Marshall 16kV*	12	0.002	11	0.003	Marshall experienced two major overhead (OH) equipment interruptions in 2023 that led to its poor performance.	10/31/2022	Grid Resiliency Proposed to reconductor 0.27 circuit miles to covered conductor	2024
Navy 16kV*	14	0.002	17	0.002	Customers on the Navy experienced three major interruptions in 2023 caused by two underground (UG) equipment and one equipment failures.	4/2/2024	WPC Proposed the following: Install an automated device Install 4 sets fault indicators Replace UG Switch Replacing .24 Conductor miles of UG Cable	2025
Gizmo 16kV*	15	0.002	30	0.002	Gizmo experienced two major interruptions due to underground cable failure that led to its poor performance. Large CMI per outage is due to large customer count on this circuit.	-	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

Circuit	2023 Sys-SAIFI Rank	2023 Sys-SAIFI	2022 Sys-SAIFI Rank	2022 Sys-SAIFI	Explanation of Repeat Deficiency	Submitted	Engineering Scope	Anticipated Completion Year
Enterprise 16kV*	16	0.002	12	0.003	Enterprise experienced three major interruptions due to overhead and underground equipment	-	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
Roi-Tan 12kV*	18	0.002	7	0.003	Roi-Tan experienced two major interruptions in 2023: a third-party dig-in and a substation interruption caused by a bird in the substation equipment.	1/6/2023	Grid Resiliency Reconductor 1.4 circuit miles to covered conductor Engineering will continue to monitor and evaluate circuit performance for additional circuit enhancements (i.e. FI's and automation) to minimize CMI and CI.	2024
Fantail 16kV*	22	0.002	2	0.003	Fantail experienced one major underground (UG) equipment interruptions in 2023 that led to its poor performance.	1/8/2024	WPC Proposed the following: Install an automated device Install a set fault indicator	2025
Windjammer 16kV*	26	0.002	31	0.002	Windjammer experienced two outages exceeding three year average due to Mylar balloon and underground (UG) equipment failure. Large customer count on this circuit attributes to large outages.	1/8/2024	WPC Proposed the following: Install 2 sets of fault indicators Install 28 sets of fuses Install 1 OH switch	2025
Ryan 16kV*	31	0.002	4	0.003	Ryan experienced one large interruption overhead (OH) equipment failure in 2023 that impacted all the customers on the circuit.	4/1/2024	WPC Proposed to install 4 automated devices	2025
Gowan 12kV*	32	0.002	14	0.002	2023 leading interruptions for Gowan's reliability deficiency were one underground (UG) equipment failure and two overhead (OH) equipment failures.	3/1/2023	Regional Grid Team (RGT) Proposed the following: Install an automated device Install 2 fault indicators	2024
Sago 16kV*	35	0.002	13	0.003	The primary causes of Sago's reliability deficiencies in 2023 were two overhead equipment failures.	-	Engineering is monitoring and evaluating circuit for additional circuit enhancements (i.e. FI's and automation) to minimize CMI and CI.	Pending Review
Tri City 16kV*	36	0.002	29	0.002	Customers on the Tri City experienced three major interruptions in 2023 caused by critters that impacted the entire circuit.	4/23/2024	Grid Mod Proposed to install 2 sets fault indicators	2025
Bushard 12kV*	38	0.002	42	0.002	Bushard experienced two large interruptions in 2023 due to a Mylar balloon and a car hitting a pole.	-	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
Mcbean 16kV*	40	0.002	6	0.003	2023 major interruption due to underground cable and equipment failure.	-	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

Table 13: SAIFI Repeat Deficient List

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

**Completion dates may shift due to the availability of planning and construction resources.

SECTION 5c: WPC Evaluation

WPC projects are initiated using three years of system outage data which are weighted then ranked. Per CPUC guidance, the top 1% circuits are assigned to the area Distribution Engineer to evaluate.

The WPC evaluation begins with the review of outages exceeding thresholds of either 100,000 Customer Minutes of Interruption (CMI) or 1,100 Customer Interrupted (CI). These thresholds were used to identify the severity of the outage and target specific areas with reliability concerns. Outage logs and repair orders were 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 had been evaluated, Distribution Engineering determines the WPC project scope.

The Distribution Engineer outage evaluation determines project 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 recommendations may propose additional measures such as branch line fuses (BLFs) to minimize impact of outage to a smaller subset of customers or fault indicators (FIs) to improve operation response time in identifying the direction of the fault. These solutions are inexpensive and can be constructed quickly if the field conditions allow. The next level of circuit reliability recommendations may be overhead/underground automation which costs more than BLFs and FIs but can greatly reduce duration of the outage by converting sustain interruption into momentary events. Underground improvements or overhead conductor replacements tend to be costly and have longer lead times than the previous two options described above but can add more reliability benefits. Opting for the replacement of underground and overhead cables/conductors necessitates the allocation of additional resources for planning and construction. Planning needs to field verify the proposed locations to determine if work can be constructed and if multiple crews are required for construction.

SECTION 6: Top 10 Major Unplanned Power Outages within 2023

This section contains the top 10 unplanned outages based on SAIDI for 2023. The location, cause, and SAIDI can be found for each outage.

Rank	System Outage ID	Date	Switching Center	Cause Description	SAIDI
1	415936	2/28/2023	LUGO	OTHER-SEE NOTES STRUCTURE POLE	1.41
2	431080	8/20/2023	VISTA	TOPPLED/BROKEN STRUCTURE POLE	1.32
3	412386	1/23/2023	ORANGE COUNTY	FOREIGN MATERIAL SUBSTATION EQUIPMENT BUS/CONDUCTOR	1.10
4	426494	8/20/2023	DEVERS	UNKNOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	1.03
5	418022	3/10/2023	RECTOR	TOPPLED/BROKEN STRUCTURE POLE	0.54
6	419067	4/3/2023	LUGO	TOPPLED/BROKEN STRUCTURE POLE	0.52
7	423826	7/16/2023	VISTA	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	0.49
8	415938	2/28/2023	VISTA	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	0.48
9	418396	2/27/2023	LUGO	NO CAUSE FOUND UNKNOWN PATROLLED	0.47
10	430913	12/9/2023	VENTURA	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	0.47

Table 14: Top 10 Unplanned Outage for 2023 (SAIDI)

SECTION 7: Summary List of Major Event Days

This section contains all the MEDs for 2023 along with the number of customers without service for specific intervals, the cause, and location.

Cause	OH Equipment, Operation, Unknown, UG Equipment, Vegetation Blown	OH Equipment, Operation, UG Equipment, Unknown, Toppled Poles	Avalanche, Vegetation Blown	OH Equipment, Operation, Unknown, Vegetation Blown	OH Equipment, Toppled Poles, Weather	PSPS
Region Location	Metro East, Metro West, North Coast, Rural	Metro East, Metro West, Rural, North Valley	Rural	North Coast, Rural, San Jacinto, San Joaquin	Desert, Rural	Desert, North Coast, Orange
Outage Date	02/24/2023	02/25/2023	02/28/2023	03/01/2023	08/20/2023	10/29/2023
Outage Duration	Number of Customers Impacted for Each Duration Period					
0 to 1 hour	239,933	185,674	18,392	196,862	215,776	42,649
1 to 5 hours	39,736	28,651	7,942	24,370	69,726	21,539
5 to 10 hours	2,528	10,317	1,312	2,774	5,237	11,880
10 to 15 hours	1,402	1,934	86	4,154	4,133	2,353
15 to 20 hours	934	561	21	1,138	2,094	643
20 to 24 hours	673	397	0	79	537	11
1 to 2 days	651	1,009	160	489	904	1,823
2 to 3 days	17	218	221	248	1,855	8
3 to 4 days	262	8	282	41	2	0
4 to 5 days	146	0	356	32	0	29
5 to 6 days	1	0	122	0	0	0
6 to 7 days	0	0	654	0	0	0
>= 7 days	16	22	3	31	230	0
Total	286,299	228,791	29,551	230,218	300,494	80,935

Table 15: Summary List of MED for 2023

SECTION 8: Historical 10 Largest Unplanned Outage Events in the Last 10 Years

This section contains the 10 largest unplanned outage events based on SAIDI for each year from 2014-2023.

Rank	Cause Description	System Outage ID	Date	SAIDI	Switching Center
2023					
1	OTHER-SEE NOTES STRUCTURE POLE	415936	2/28/2023	1.41	LUGO
2	TOPPLED/BROKEN STRUCTURE POLE	431080	8/20/2023	1.32	VISTA
3	FOREIGN MATERIAL SUBSTATION EQUIPMENT BUS/CONDUCTOR	412386	1/23/2023	1.10	ORANGE COUNTY
4	UNKNOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	426494	8/20/2023	1.03	DEVERS
5	TOPPLED/BROKEN STRUCTURE POLE	418022	3/10/2023	0.54	RECTOR
6	TOPPLED/BROKEN STRUCTURE POLE	419067	4/3/2023	0.52	LUGO
7	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	423826	7/16/2023	0.49	VISTA
8	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	415938	2/28/2023	0.48	VISTA
9	NO CAUSE FOUND UNKNOWN PATROLLED	418396	2/27/2023	0.47	LUGO
10	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	430913	12/9/2023	0.47	VENTURA
2022					
1	UNKNOWN OVERHEAD EQUIPMENT SPLICE/CONNECTOR/TAP	392533	1/22/2022	1.03	MIRA LOMA
2	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	405076	8/15/2022	0.95	RECTOR
3	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	391947	1/21/2022	0.81	MESA
4	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	400741	6/16/2022	0.72	LUGO
5	LIGHTNING OVERHEAD EQUIPMENT FUSE/BLF/CUTOUT	400713	6/22/2022	0.63	VINCENT
6	OTHER-SEE NOTES SUBSTATION EQUIPMENT CIRCUIT BREAKER	403187	7/19/2022	0.58	EL NIDO
7	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	392509	1/21/2022	0.56	MIRA LOMA
8	OTHER-SEE NOTES STRUCTURE POLE	403999	8/8/2022	0.56	ELDORADO
9	WIND OVERHEAD EQUIPMENT CONDUCTOR/WIRE	392236	1/21/2022	0.55	MIRA LOMA
10	WIND OVERHEAD EQUIPMENT CONDUCTOR/WIRE	392495	1/21/2022	0.55	MIRA LOMA
2021					
1	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	383108	8/20/2021	1.80	RECTOR
2	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	388053	11/24/2021	1.46	VENTURA
3	UNKNOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	390687	12/29/2021	1.45	VISTA
4	UNKNOWN SUBSTATION EQUIPMENT BUS/CONDUCTOR	382392	8/9/2021	1.26	ORANGE COUNTY
5	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	390712	12/29/2021	1.26	VISTA
6	VEGETATION BLOWN SUBSTATION EQUIPMENT DISCONNECT	369669	1/19/2021	1.16	VINCENT
7	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	369889	1/19/2021	1.09	VENTURA
8	NO CAUSE FOUND UNKNOWN PATROLLED	369414	1/19/2021	1.09	VINCENT
9	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	369394	1/19/2021	1.06	VENTURA
10	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	388252	11/25/2021	1.02	VISTA
2020					
1	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	368680	9/5/2020	16.14	RECTOR
2	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	366672	9/9/2020	3.30	VISTA
3	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	368697	9/13/2020	1.91	RECTOR
4	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	367130	12/7/2020	1.88	VALLEY
5	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	366833	12/7/2020	1.80	VINCENT
6	FIRE STRUCTURE POLE	366519	9/5/2020	1.65	RECTOR
7	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	362801	9/14/2020	1.48	RECTOR
8	DE-ENERGIZE FOR PUB. AGENCY PUB. SAFETY SWITCH/DISCONNECT/AR	364540	9/10/2020	1.31	VISTA
9	REMEDIAL ACTION SCHEME STANDARD OPERATION OPERATOR/CREW	367731	12/13/2020	1.30	MIRA LOMA
10	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	366862	12/7/2020	1.27	VINCENT

Rank	Cause Description	System Outage ID	Date	SAIDI	Switching Center
2019					
1	LOST SOURCE SUBSTATION	336358	8/2/2019	4.62	ORANGE COUNTY
2	LOST SOURCE SUBSTATION	338863	9/16/2019	2.29	CONTROL
3	WIND OVERHEAD EQUIPMENT CONDUCTOR/WIRE	344450	12/26/2019	2.20	VISTA
4	NO CAUSE FOUND UNKNOWN PATROLLED	342810	11/28/2019	1.64	VISTA
5	UNKNOWN TRANSMISSION EQUIPMENT CONDUCTOR	339320	10/5/2019	1.61	CONTROL
6	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	340707	10/30/2019	1.42	VISTA
7	LOST SOURCE SUBSTATION	344416	12/26/2019	1.29	VISTA
8	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	340669	10/30/2019	1.20	VINCENT
9	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	340627	10/30/2019	1.10	VINCENT
10	PUB. SAFETY POWER SHUTDOWN PUB. SAFETY SWITCH/DISCONNECT/AR	340690	10/30/2019	1.05	VISTA
2018					
1	LOST SOURCE SUBSTATION	320389	11/13/2018	7.58	VENTURA
2	FIRE STRUCTURE POLE	320287	11/12/2018	4.16	VENTURA
3	PUBLIC AGENCY DENIED ACCESS POLE	320225	11/9/2018	3.70	VENTURA
4	LOST SOURCE SUBSTATION	320091	11/11/2018	2.74	VENTURA
5	LOST SOURCE SUBSTATION	320324	11/15/2018	2.46	VENTURA
6	PUBLIC AGENCY DENIED ACCESS POLE	320390	11/9/2018	2.42	VENTURA
7	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	313579	7/25/2018	2.20	VALLEY
8	LOST SOURCE SUBSTATION	319319	11/9/2018	2.06	VENTURA
9	LOST SOURCE DISTRIBUTION LINE	318316	10/15/2018	1.31	VALLEY
10	LOST SOURCE SUBSTATION	319972	11/9/2018	0.93	VENTURA
2017					
1	LOST SOURCE SUBSTATION	303349	12/4/2017	5.00	VENTURA
2	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	298030	8/29/2017	3.02	RECTOR
3	FIRE STRUCTURE POLE	303217	12/4/2017	2.26	VENTURA
4	TOPPLED/BROKEN STRUCTURE POLE	286230	1/22/2017	2.05	RECTOR
5	FIRE STRUCTURE POLE	303315	12/5/2017	1.85	VENTURA
6	FIRE TRANSMISSION EQUIPMENT CONDUCTOR	303350	12/4/2017	1.45	VENTURA
7	LOST SOURCE SUBSTATION	301515	12/7/2017	0.92	VALLEY
8	FIRE TRANSMISSION EQUIPMENT CONDUCTOR	302696	12/10/2017	0.90	VENTURA
9	BALLOON OVERHEAD EQUIPMENT POTHEAD	290334	4/30/2017	0.74	VISTA
10	LOST SOURCE SUBSTATION	302693	12/4/2017	0.62	VENTURA
2016					
1	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	272685	4/29/2016	1.51	VALLEY
2	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	278786	8/19/2016	1.30	RECTOR
3	FIRE STRUCTURE POLE	276042	6/23/2016	1.17	RECTOR
4	VEGETATION BLOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	267639	1/7/2016	0.98	VISTA
5	OVERLOAD/FATIGUE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	275066	6/20/2016	0.93	LIGHTHIPE
6	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	276005	6/23/2016	0.88	RECTOR
7	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	276561	6/23/2016	0.84	RECTOR
8	FIRE OVERHEAD EQUIPMENT CONDUCTOR/WIRE	275884	6/23/2016	0.83	RECTOR
9	SUBSTATION MAINTENANCE ERROR DURING ROUTINE WORK	280501	10/11/2016	0.69	EL NIDO
10	BALLOON OVERHEAD EQUIPMENT CONDUCTOR/WIRE	269108	2/15/2016	0.64	EL NIDO

Rank	Cause Description	System Outage ID	Date	SAIDI	Switching Center
2015					
1	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	257095	7/15/2015	2.32	LIGHTHIPE
2	OPEN FOR REPAIRS STANDARD OPERATION OPERATOR/CREW	257307	7/15/2015	0.78	LIGHTHIPE
3	UNKNOWN OVERHEAD EQUIPMENT CONDUCTOR/WIRE	258625	8/13/2015	0.61	DEVERS
4	TOPPLED/BROKEN STRUCTURE POLE	261130	9/9/2015	0.47	MIRA LOMA
5	UNKNOWN UNDERGROUND EQUIPMENT CABLE	257337	7/15/2015	0.45	LIGHTHIPE
6	OTHER-SEE NOTES STRUCTURE POLE	257205	7/19/2015	0.45	VALLEY
7	N/A UNKNOWN NOT PATROLLED	262924	10/15/2015	0.44	VISTA
8	UNKNOWN UNDERGROUND EQUIPMENT CABLE	261743	9/19/2015	0.41	ORANGE COUNTY
9	UNKNOWN SUBSTATION EQUIPMENT CIRCUIT BREAKER	261051	9/15/2015	0.39	LIGHTHIPE
10	LANDSLIDE/MUDSLIDE STRUCTURE POLE	267353	10/18/2015	0.38	ELDORADO
2014					
1	BUSHING SUBSTATION EQUIPMENT CIRCUIT BREAKER	247325	12/22/2014	2.16	VISTA
2	LOST SOURCE SUBSTATION	239280	7/24/2014	0.81	ORANGE COUNTY
3	TOPPLED/BROKEN STRUCTURE POLE	236393	5/14/2014	0.74	VALLEY
4	UNKNOWN UNDERGROUND EQUIPMENT CABLE	247704	12/31/2014	0.46	VALLEY
5	UNKNOWN OVERHEAD EQUIPMENT POTHEAD	245855	11/23/2014	0.40	DEVERS
6	OTHER-SEE NOTES STRUCTURE SUBSTATION STRUCTURE/RACK	239913	7/30/2014	0.40	MESA
7	OVERLOADED SUBSTATION EQUIPMENT TRANSFORMER BANK	243293	10/2/2014	0.38	VENTURA
8	TOPPLED/BROKEN STRUCTURE POLE	245458	11/16/2014	0.37	DEVERS
9	LOST SOURCE SUBSTATION	232941	2/28/2014	0.35	VENTURA
10	TESTING/TROUBLESHOOTING STANDARD OPERATION OPERATOR/CREW	246973	12/15/2014	0.35	ORANGE COUNTY

Table 16: Historical Top 10 Outages from 2014 to 2023 (SAIDI)

SECTION 9: Number of Customers Inquires on Reliability Data

In 2023, SCE received a total of 56 customer inquiries relating to circuit outage history or reliability data. SCE responded to 20% of the inquiries within 7 business days, 62% of the inquiries between 8 to 15 business days, and 18% of the inquiries in a time frame greater than 15 business days.

APPENDIX A: Definitions

Outages are defined as an interruption to electric services. The type of outages falls in 4 different categories:

1. Unplanned outages: Unplanned outages are also known as repair outages. These outages occur without warning or notification of interruption of service.
 - a. Sustained Outages: Sustained outage is a subcategory of unplanned outages where the outage duration is greater than 5 minutes.
 - b. Momentary Outages: Momentary outage is a subcategory of unplanned outages where the outage duration is equal to or less than 5 minutes.
2. Planned outages: Planned outages are also known as maintenance outages. Maintenance outages would occur with notifications prior to interruption of service.
3. Public Safety Power Shutoff (PSPS): An operational protocol that is implemented under extreme weather conditions to minimize the threat of wildfires and keep communities safe from potentially dangerous situations. These types of sustained outages are temporary and usually involve situations where high-fire areas are experiencing adverse weather or public safety is at risk.
4. Major Event Day (MED): A day in which the daily system SAIDI exceeds a threshold value of T_{MED} . 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 indices if their SAIDI exceeds 2.5 times the standard deviation of the natural logarithm of daily SAIDI over the previous five-year period.
 - a. 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 2023 was 2.15 minutes.

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

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

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).

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

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). SCE calculates MAIFI at the individual outage event.

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

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

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

Circuit SAIFI: 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). Circuit reliability indices are calculated using the average number of customers on that circuit as the number of total customers served for that specific circuit.

$$\text{Circuit SAIFI} = \frac{\text{sum of total quantity of sustained customer interruptions}}{\text{average number of customers on a circuit}}$$

Circuit SAIDI: The amount of time on average a customer was without power in a year due to sustained interruptions (measured in minutes per customer). Circuit reliability indices are calculated using the average number of customers on that circuit as the number of total customers served for that specific circuit.

$$\text{Circuit SAIDI} = \frac{\text{sum of all sustained customer interruption durations}}{\text{average number of customers on a circuit}}$$

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). SCE calculates MAIFI at the individual outage event. Circuit reliability indices are calculated using the average number of customers on that circuit as the number of total customers served for that specific circuit.

$$\text{Circuit MAIFI} = \frac{\text{sum of total quantity of momentary customer interruptions}}{\text{average number of customers on a circuit}}$$

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

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