PACIFIC GAS AND ELECTRIC COMPANY

2018 ANNUAL ELECTRIC RELIABILITY REPORT
(Per Decision16-01-008)

July 15, 2019

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Executive Summary

PG&E's electric service reliability performance in 2018 was challenged by several weather events, including severe winter storms, extreme summer heat waves and widespread Northern California wildfires. As a result, PG&E's reliability declined compared to 2017.

Electric utilities measure reliability in many ways: duration of customer outages, frequency of customer outages, average restoration time, counting only unplanned outages, counting planned outages, excluding unusual events such as major storms (typically referred to as Major Event Days or "MED"), including or excluding certain types of outages, among other distinctions. This report explains the various different measures and includes the various metrics required by CPUC Decision 16-01-008. For purposes of this Executive Summary, PG&E is focusing on metrics that include planned outages but exclude major event days. These metrics are found in Section 3. PG&E believes these metrics best reflect the typical customer's experience and are common benchmark metrics across the electric utility industry.

Compared to 10 years ago, PG&E has reduced the average annual amount of time customers experienced a sustained outage from 158.0 minutes in 2009 to 126.3 minutes in 2018. This is a 20 percent improvement. In the same period, PG&E also reduced the average number of times customers experienced a sustained outage in a given year from 1.173 to 1.079, an 8 percent improvement. Table 1 below displays improvement in electric reliability from 2009 through 2018.

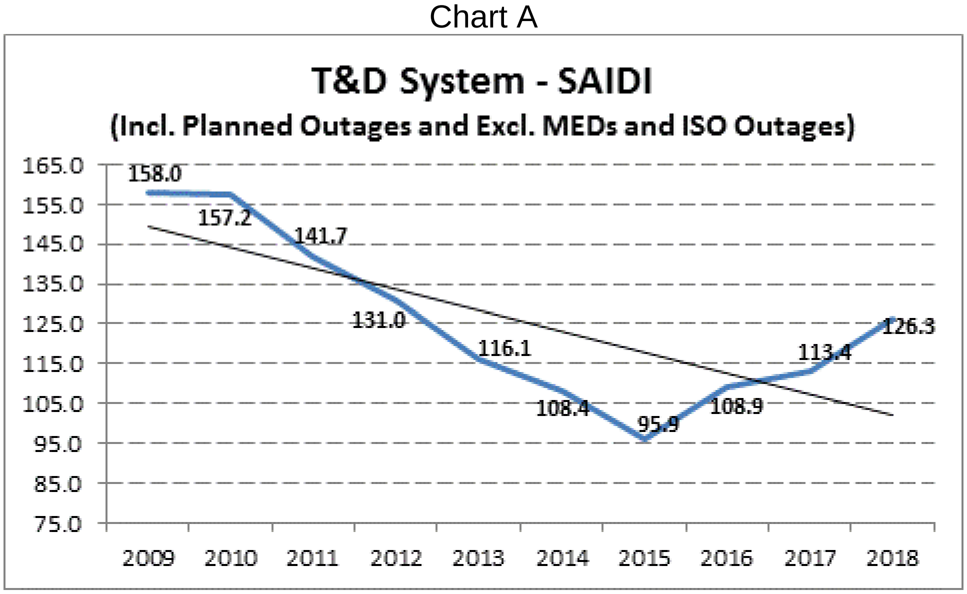
Table 1 – Combined Transmission and Distribution System Indices (2009-2018) (Excludes MED and Independent System Operator (ISO) outages, and includes planned outages)

Year	Major Events Excluded			
	SAIDI	SAIFI	MAIFI	CAIDI
2009	158.0	1.173	1.404	134.7
2010	157.2	1.207	1.254	130.3
2011	141.7	1.097	1.170	129.3
2012	131.0	1.130	1.800	115.9
2013	116.1	1.070	1.527	108.5
2014	108.4	0.966	1.396	112.2
2015	95.9	0.871	1.594	110.1
2016	108.9	1.021	1.494	106.7
2017	113.4	0.958	1.568	118.3
2018	126.3	1.079	1.479	117.0

Chart A below shows the reduction in duration of the amount of time the average PG&E customer experienced a sustained outage or outages each year in graphical form and includes a linear trend line:

2009-2018 Transmission & Distribution System SAIDI Performance Results

Chart A



(Includes Planned Outages, Excludes Major Event Days and ISO Outages)[1]

1 See Table 57 as shown in Section 3.

Not surprisingly, similar trends are mirrored at the division level. Reliability improved in most of PG&E's 19 divisions in 2018 compared to 2009, as shown in the additional 10-year division charts included later in this report.

How PG&E Measures Reliability

PG&E uses four metrics commonly utilized in the electric utility industry to measure reliability for both unplanned and planned outages: the System Average Interruption Duration Index (SAIDI), the System Average Interruption Frequency Index (SAIFI), the Momentary Average Interruption Frequency Index (MAIFI), and the Customer Average Interruption Duration Index (CAIDI).

- SAIDI is the amount of time the average PG&E customer experiences a sustained outage or outages (being without power for more than five minutes) in a given year. **In 2018, PG&E's SAIDI was 126.3 minutes per customer and representing a 20 percent improvement over the last 10 years.**
- SAIFI is the number of times the average PG&E customer experiences a sustained outage in a given year. **In 2018, PG&E's SAIFI was 1.079 for the year and representing an 8 percent improvement over the last 10 years.**
- MAIFI[2] is the number of times the average customer is interrupted by momentary outages each year. Momentary outages are outages lasting 5 minutes or less. **In 2018, PG&E's MAIFI was 1.479 which is higher than 2014 but an improvement from the 2017 MAIFI results.**
- CAIDI is the average duration of sustained outages. It is determined by taking the total outage minutes for all customer outages[3] (SAIDI) and dividing it by the total number of customer outages (SAIFI). **In 2018, PG&E's CAIDI was 117.0 minutes and represents a 13 percent improvement over the past 10 years.**

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2 PG&E's outage reporting tools were originally designed to track momentary outages as defined in D96-09-045. Under D.16-01-008, this method of tracking momentary outages corresponds to the $MAIFI_E$ definition contained in the IEEE Guide for Electric Power Distribution Reliability Indices (IEEE 1366 standard), which counts multiple outage interruptions that occur close to each other in time as a single momentary outage event. This metric is equal to the total number of customer momentary interruption events divided by the total number of customers served and does not include the events immediately preceding a sustained interruption.

3 Measures sustained outage events and excludes momentary outage events.

SAIDI	=	Total minutes every customer was without power due to sustained outages	÷	Total number of customers
SAIFI	=	Number of sustained customer outages experienced by all PG&E customers	÷	Total number of customers
CAIDI	=	System Average Interruption Duration Index (SAIDI)	÷	System Average Interruption Frequency Index (SAIFI)
MAIFI	=	Number of customers who experience Momentary Outages	÷	Total number of customers

What follows is the 2018 Electric Reliability Report for Pacific Gas and Electric Company as required by Decision 16-01-008. This report includes system reliability data based on the Institute of Electrical and Electronic Engineers (IEEE) Standard 1366 methodology, as required by D.16-01-008. The report includes very specific details, including reliability numbers for each of PG&E's 19 divisions. It also includes a list of worst performing circuits in Section 5.

Introduction

This is the 2018 Electric Reliability Report for Pacific Gas and Electric Company as required by Decision 16-01-008. This report includes system reliability data based on the Institute of Electrical and Electronic Engineers (IEEE) Standard 1366 methodology. This report consists of the following:

Section	Description
1.	System Indices for the Last 10 Years (2009-2018)
2.	Division Reliability Indices (2009-2018) Including and Excluding Major Event Days (MED)
3.	System and Division Indices Based on IEEE 1366 (2009-2018) Including Planned Outages and Including and Excluding MED
4.	Service Territory Map including Divisions
5.	Top 1% of Worst Performing Circuits (WPC) excluding MED
6.	Top 10 Major Unplanned Power Outage Events in 2018
7.	Summary List of MED per IEEE 1366
8.	Historical Ten Largest Unplanned Outage Events (2009-2018)
9.	The Number of Customer Inquiries on Reliability Data and the Number of Days per Response
10.	Appendix A – Definitions, Acronyms and Abbreviations

As noted in previous reports, PG&E implemented a new outage reporting system that included the data conversion of its legacy (DART/OUTAGE) database. This new system consists of two main components that are typically referred to as PG&E's Integrated Logging and Information System (ILIS) and its Operations Database (ODB), also called ILIS-ODB for short. ILIS models the actual electric switching operations reported during the circuit restoration process (which is useful for determining accurate customer outage minutes for calculating SAIDI and CAIDI). PG&E maintains account specific information for customers affected by outages that are recorded and stored in PG&E's ODB. This system tracks outages at various levels (generation, transmission, substation, primary distribution, and individual transformers) and the most current outage data was used to compile the information contained in this report.

Distribution operators log outage information in PG&E's ILIS tool, which uses minutes as the smallest time increment to record the outage start, switching operations, and outage end times. Smart Meters measure outage duration in seconds and are used to automatically report momentary outages beyond non-SCADA auto-reclosing devices. Momentary outages for SCADA related and other events are logged by distribution operators using the ILIS tool, which does not have the benefit of measuring the outage duration in seconds. Consequently, and although infrequent, it is possible that an outage duration is recorded as 5 minutes when the actual outage duration was up to 5 minutes and 59 seconds. In 2015, PG&E updated its reporting tools and process to help minimize this occurrence and allow the operator in these situations to log this event as a 6-minute sustained outage.

We have added a list of Definitions, Acronyms and Abbreviations at the end as Appendix A to help the reader who is not familiar with the jargon used in reliability reporting.

1. System Indices for the Last Ten Years

a. System Indices (2009-2018)

Table 2 lists the required SAIDI, SAIFI, MAIFI[4], and CAIDI with MED Included and Excluded as directed in Appendix B of D.16-01-008:

Table 2 – Combine Transmission and Distribution System Indices (2009-2018) (Excludes planned and ISO outages)

Year	Major Events Included				Major Events Excluded			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2009	212.1	1.280	1.551	165.7	134.5	1.084	1.401	124.0
2010	250.4	1.395	1.485	179.6	130.3	1.106	1.250	117.8
2011	279.5	1.276	1.472	219.1	109.6	0.974	1.163	112.5
2012	141.1	1.130	1.918	124.9	110.7	1.036	1.796	106.8
2013	117.0	1.070	1.633	109.3	95.8	0.969	1.523	98.9
2014	131.9	1.045	1.561	126.2	91.0	0.879	1.390	103.5
2015	131.8	0.967	1.812	136.3	80.7	0.787	1.585	102.5
2016	106.7	1.021	1.596	104.5	93.8	0.940	1.487	99.8
2017	357.8	1.466	2.403	244.1	97.3	0.878	1.566	110.8
2018	279.1	1.054	1.545	264.8	99.6	0.959	1.473	103.9

Note: Includes Generation, Transmission, Substation, and Distribution related outages

4 On November 18, 2011 the EON recording system was removed from service. Momentary outage data is now being collected from SCADA devices and through the use of Smart Meters. Data collection from the Smart Meters is more effective than the previous EON system since Smart Meters don't rely on customer volunteers having EON devices connected inside their buildings. The increased frequency of momentary outages recorded does not necessarily indicate an actual increase in momentary outages in 2012 and after (as compared to prior years) but is a result of this improved method for recording momentary outages.

i. Distribution System Indices

Table 3 – Distribution System Indices (2009-2018)
(Excludes planned outages, transmission, substation, and generation related outages)

Year	Major Events Included			Major Events Excluded		
	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI
2009	191.2	1.151	166.1	119.4	0.974	122.5
2010	210.8	1.164	181.1	108.2	0.921	117.5
2011	239.2	1.041	229.7	92.8	0.796	116.5
2012	120.1	0.959	125.2	96.3	0.882	109.2
2013	100.1	0.869	115.2	84.8	0.804	105.5
2014	119.7	0.926	129.2	85.2	0.780	109.2
2015	99.4	0.804	123.6	72.5	0.689	105.3
2016	95.5	0.896	106.6	83.1	0.819	101.5
2017	302.8	1.274	237.7	90.0	0.792	113.6
2018	261.7	0.907	288.7	90.7	0.843	107.6

Note: PG&E defines its distribution system as line voltage less than 60 kilovolts (KV)

The MAIFI information is not included in Table 3 and Table 4 since non-SCADA automatic recording devices (EON or Smart Meters) do not distinguish between transmission system outages or distribution system outages.

ii. Transmission System Indices

Table 4 – Transmission System Indices (2009-2018)
(Excludes planned outages, distribution, and generation related outages)
(Includes substation outages)

Year	Major Events Included			Major Events Excluded		
	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI
2009	20.6	0.165	124.8	14.9	0.144	103.4
2010	38.7	0.230	168.2	22.0	0.186	118.4
2011	39.5	0.224	176.2	16.9	0.168	100.6
2012	21.3	0.165	128.7	14.8	0.149	99.6
2013	13.1	0.168	77.7	11.7	0.160	72.6
2014	14.1	0.116	121.0	7.5	0.097	77.8
2015	32.1	0.160	201.0	7.8	0.095	82.7
2016	11.2	0.125	89.5	10.7	0.121	88.3
2017	54.9	0.191	286.9	7.3	0.085	85.4
2018	16.3	0.145	112.3	7.8	0.114	68.9

Note: PG&E defines its transmission system as line voltage 60 kilovolts (KV) and above

b. Separate System Charts of SAIDI, SAIFI, MAIFI, and CAIDI for the past 10 years with linear trend line (MED Excluded)

i. SAIDI Performance Results (MED Excluded)

Chart 1: Transmission & Distribution System SAIDI Indices

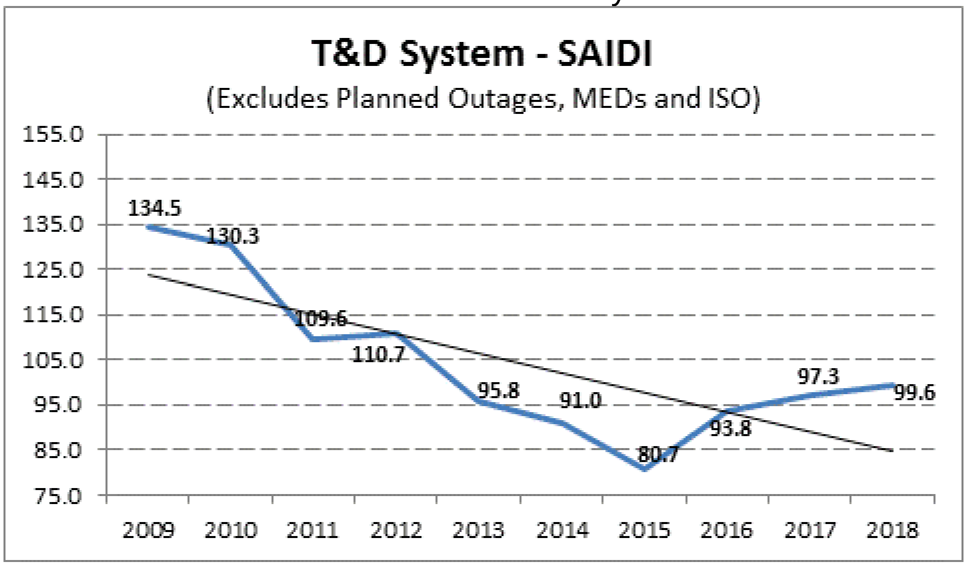


Chart 2: Distribution System SAIDI Indices

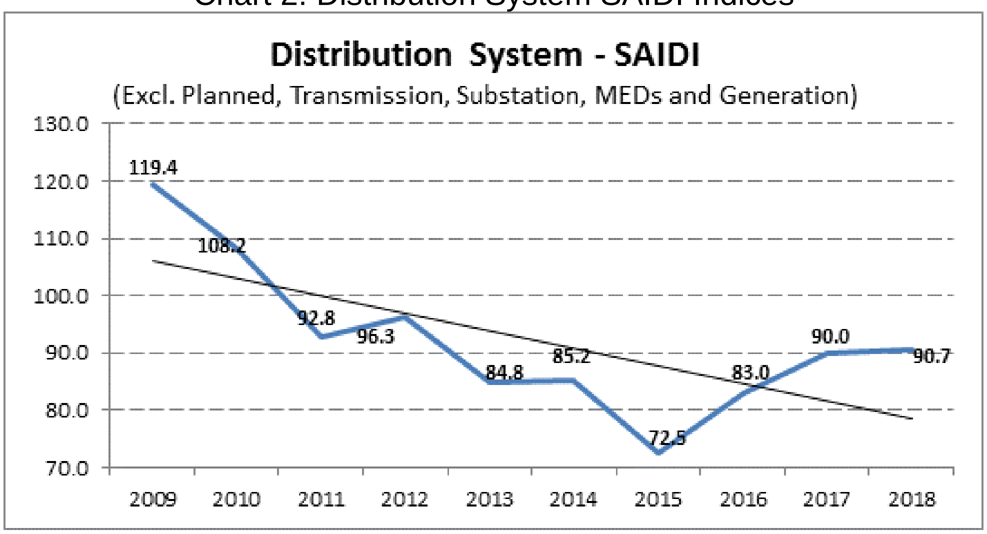
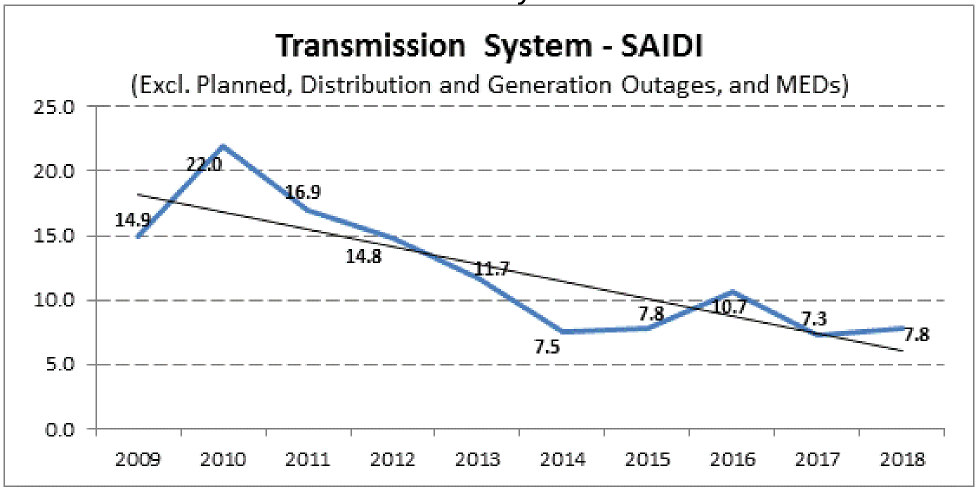


Chart 3: Transmission System SAIDI Indices



(Includes substation outages)

ii. SAIFI Performance Results (MED Excluded)

Chart 4: Transmission & Distribution System SAIFI Indices

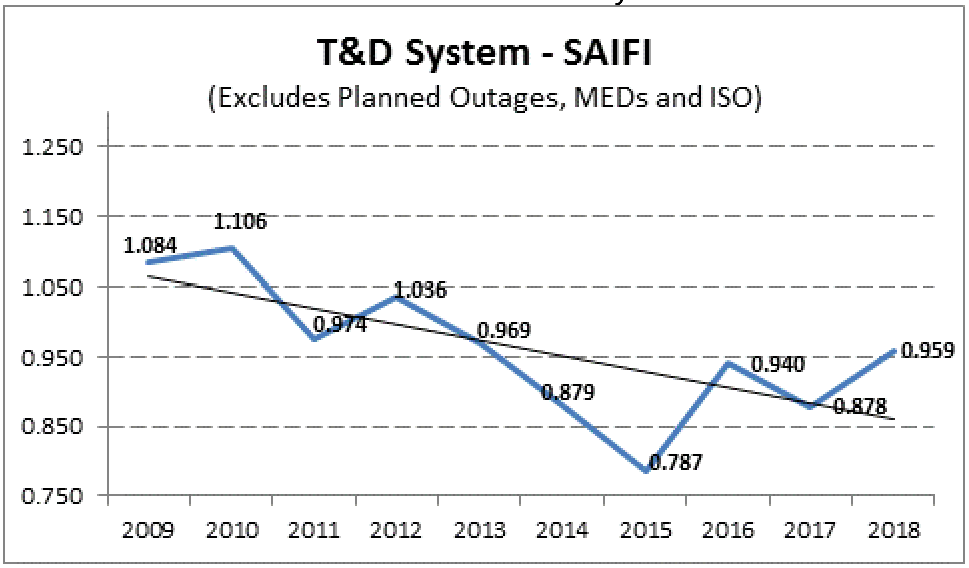


Chart 5: Distribution System SAIFI Indices

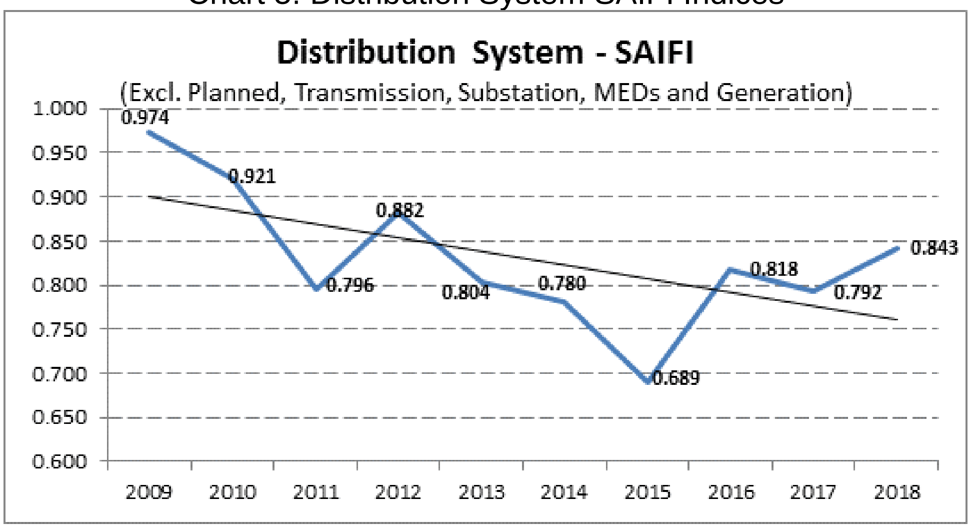
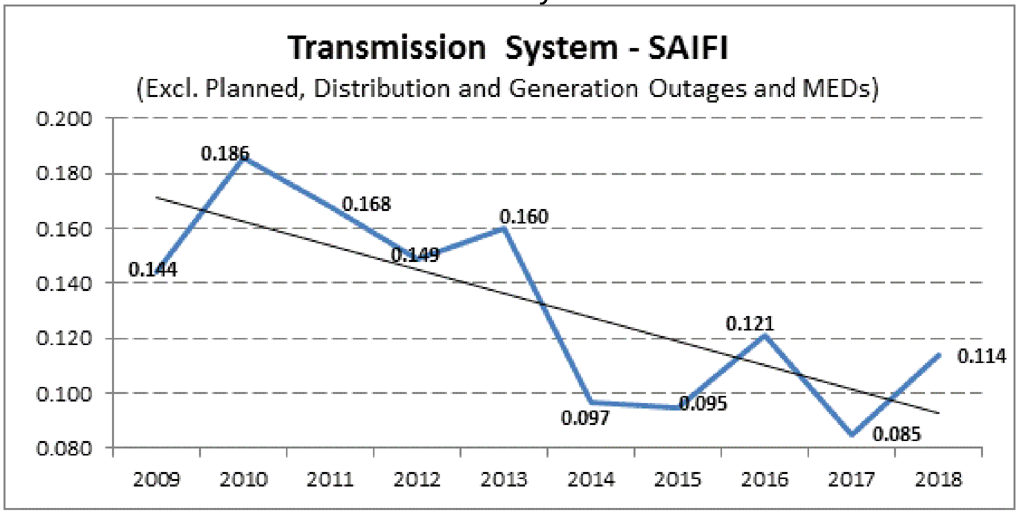


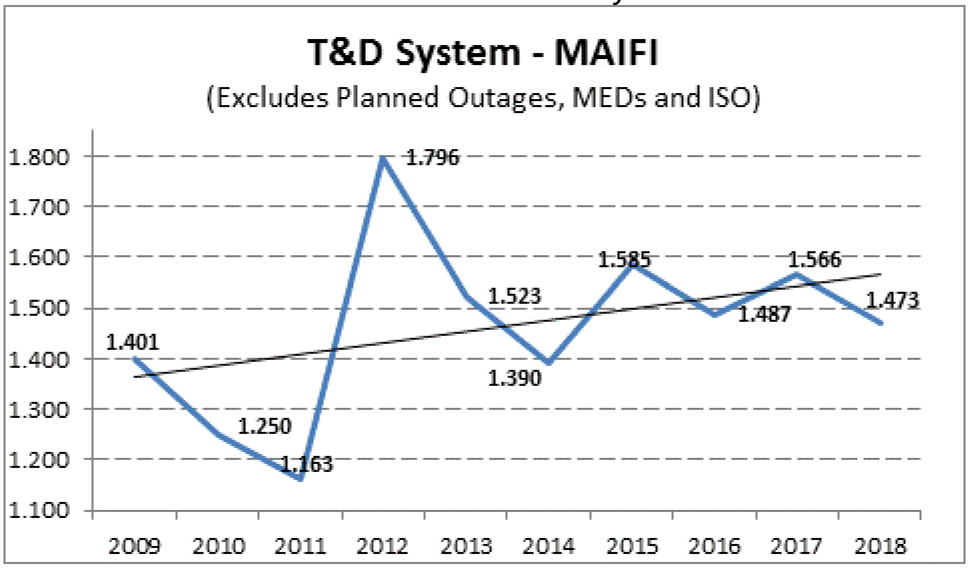
Chart 6: Transmission System SAIFI Indices



(Includes substation outages)

iii. MAIFI[5] Performance Results (MED Excluded)

Chart 7: Transmission & Distribution System MAIFI Indices



5 See footnote 4.

iv. CAIDI Performance Results (MED Excluded)

Chart 8: Transmission & Distribution System CAIDI Indices

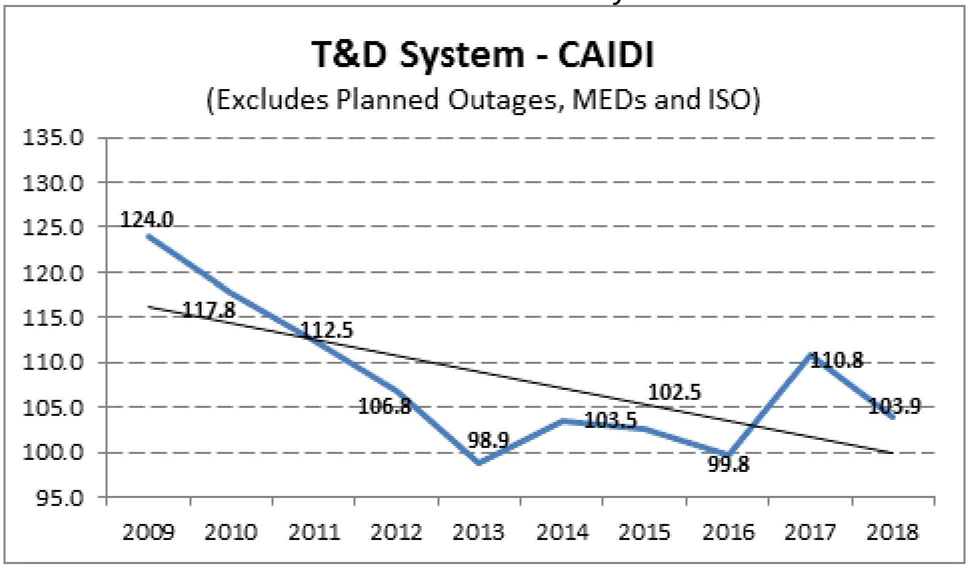


Chart 9: Distribution System CAIDI Indices

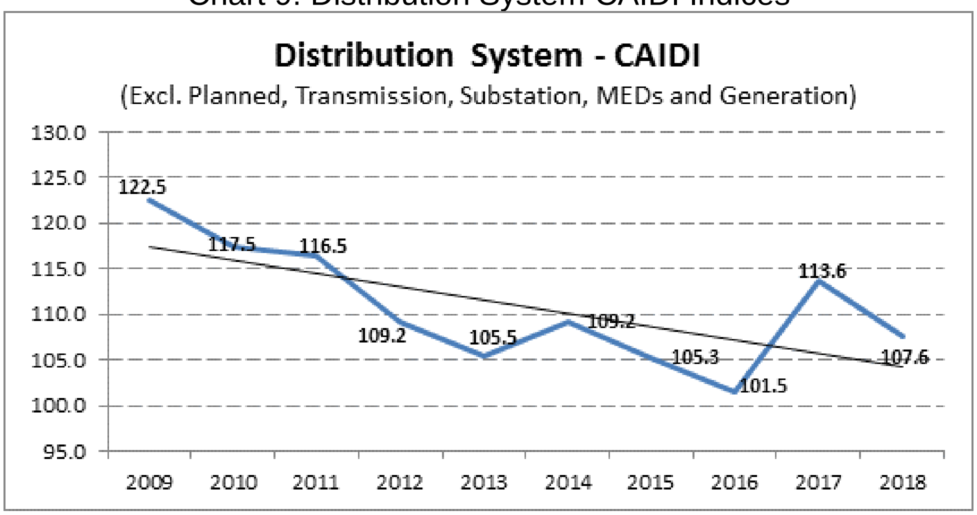
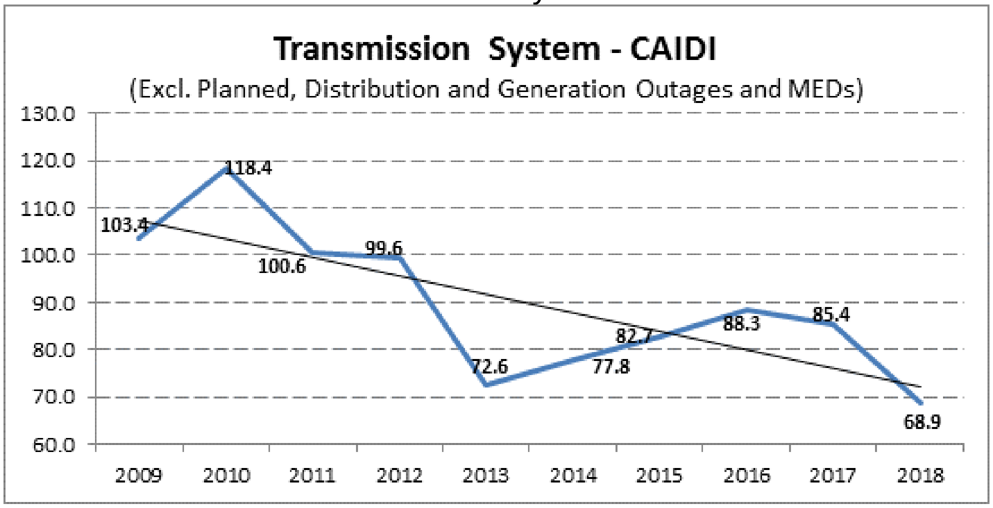


Chart 10: Transmission System CAIDI Indices



(Includes substation outages)

2. Division Reliability Indices for the past 10 years including and excluding MED

a. Division Reliability Indices for the past 10 years excluding ISO and planned outages and including Major Event Days

Table 5: Division Reliability Indices

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
CENTRAL COAST	2009	446.0	2.319	3.173	192.3
CENTRAL COAST	2010	390.7	1.984	3.941	196.9
CENTRAL COAST	2011	497.2	1.995	2.060	249.2
CENTRAL COAST	2012	152.0	1.317	2.362	115.5
CENTRAL COAST	2013	125.3	1.315	2.041	95.3
CENTRAL COAST	2014	199.3	1.351	2.133	147.5
CENTRAL COAST	2015	253.0	1.289	2.173	196.3
CENTRAL COAST	2016	188.6	1.637	2.730	115.2
CENTRAL COAST	2017	807.8	2.462	4.883	328.2
CENTRAL COAST	2018	186.8	1.598	2.802	117.0
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DE ANZA	2009	163.9	0.978	1.638	167.5
DE ANZA	2010	172.8	1.171	1.420	147.7
DE ANZA	2011	82.2	0.712	1.495	115.5
DE ANZA	2012	82.8	0.718	1.223	115.3
DE ANZA	2013	78.8	0.831	1.173	94.8
DE ANZA	2014	112.9	1.017	1.318	111.1
DE ANZA	2015	63.4	0.594	1.281	106.7
DE ANZA	2016	109.6	0.924	1.414	118.6
DE ANZA	2017	315.4	1.503	2.033	209.8
DE ANZA	2018	86.7	0.836	1.599	103.8
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DIABLO	2009	161.1	1.376	1.203	117.1
DIABLO	2010	119.9	1.376	1.309	87.1
DIABLO	2011	78.7	0.936	1.394	84.0
DIABLO	2012	105.3	1.230	1.400	85.6
DIABLO	2013	83.1	1.023	1.297	81.3
DIABLO	2014	82.2	0.979	1.374	84.0
DIABLO	2015	83.7	0.985	1.873	85.0
DIABLO	2016	79.0	1.008	1.729	78.4
DIABLO	2017	140.7	1.218	2.370	115.5
DIABLO	2018	89.5	1.112	1.900	80.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
EAST BAY	2009	139.6	1.146	0.944	121.8
EAST BAY	2010	126.3	1.092	0.754	115.7
EAST BAY	2011	104.5	0.981	1.060	106.6
EAST BAY	2012	110.7	1.372	1.347	80.7
EAST BAY	2013	117.3	1.010	1.266	116.2
EAST BAY	2014	81.1	0.847	1.515	95.8
EAST BAY	2015	59.6	0.723	1.179	82.5
EAST BAY	2016	128.2	1.205	1.242	106.4
EAST BAY	2017	147.3	1.217	2.078	121.1
EAST BAY	2018	87.6	0.990	1.228	88.4

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
FRESNO	2009	153.3	1.298	1.911	118.1
FRESNO	2010	175.4	1.275	1.953	137.6
FRESNO	2011	164.9	1.122	2.012	147.0
FRESNO	2012	100.1	1.066	2.359	94.0
FRESNO	2013	95.0	1.100	2.104	86.4
FRESNO	2014	81.6	1.002	1.781	81.5
FRESNO	2015	100.3	1.151	2.057	87.2
FRESNO	2016	85.1	1.127	1.975	75.5
FRESNO	2017	102.5	0.986	1.913	104.0
FRESNO	2018	113.9	1.046	1.554	108.9
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
HUMBOLDT	2009	243.4	1.710	2.482	142.3
HUMBOLDT	2010	575.3	2.537	1.686	226.7
HUMBOLDT	2011	543.1	1.954	2.282	277.9
HUMBOLDT	2012	338.1	1.747	4.654	193.5
HUMBOLDT	2013	304.3	1.416	2.627	214.9
HUMBOLDT	2014	288.4	1.368	1.940	210.9
HUMBOLDT	2015	695.2	2.234	2.736	311.2
HUMBOLDT	2016	219.4	1.637	2.055	134.0
HUMBOLDT	2017	919.8	2.362	3.512	389.5
HUMBOLDT	2018	399.9	2.089	1.589	191.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
KERN	2009	111.2	1.140	1.534	97.6
KERN	2010	137.4	1.198	1.566	114.8
KERN	2011	169.8	1.273	1.617	133.4
KERN	2012	89.2	0.999	1.218	89.2
KERN	2013	91.3	1.073	1.226	85.1
KERN	2014	108.8	1.109	1.848	98.2
KERN	2015	92.0	0.947	1.925	97.1
KERN	2016	89.8	0.932	2.072	96.3
KERN	2017	138.9	1.072	2.118	129.6
KERN	2018	72.4	0.789	1.928	91.8
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
LOS PADRES	2009	178.4	1.264	1.723	141.1
LOS PADRES	2010	277.0	1.745	2.045	158.7
LOS PADRES	2011	135.4	1.230	2.195	110.1
LOS PADRES	2012	95.4	1.010	1.658	94.4
LOS PADRES	2013	212.5	1.495	1.105	142.1
LOS PADRES	2014	186.6	1.238	1.354	150.7
LOS PADRES	2015	132.2	0.844	1.783	156.6
LOS PADRES	2016	114.1	1.172	1.672	97.4
LOS PADRES	2017	315.7	1.574	2.204	200.6
LOS PADRES	2018	142.1	1.328	1.171	106.9

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
MISSION	2009	93.7	0.805	0.865	116.4
MISSION	2010	111.1	0.987	0.794	112.5
MISSION	2011	74.3	0.869	0.656	85.4
MISSION	2012	93.9	0.931	0.862	100.9
MISSION	2013	73.5	0.805	0.837	91.3
MISSION	2014	73.7	0.751	0.820	98.1
MISSION	2015	62.6	0.596	1.150	105.1
MISSION	2016	82.7	0.763	0.961	108.4
MISSION	2017	137.9	1.012	1.573	136.4
MISSION	2018	67.1	0.672	0.969	99.9
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH BAY	2009	155.3	1.210	1.031	128.3
NORTH BAY	2010	161.8	1.233	1.401	131.2
NORTH BAY	2011	202.8	1.332	1.230	152.3
NORTH BAY	2012	140.4	0.920	1.949	152.6
NORTH BAY	2013	114.0	0.996	1.730	114.5
NORTH BAY	2014	235.1	1.250	2.721	188.1
NORTH BAY	2015	135.4	1.059	2.161	127.9
NORTH BAY	2016	110.3	0.920	1.434	119.8
NORTH BAY	2017	733.3	1.761	2.927	416.5
NORTH BAY	2018	164.6	0.982	1.984	167.6
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH VALLEY	2009	281.4	1.396	3.159	201.5
NORTH VALLEY	2010	552.3	1.843	1.979	299.7
NORTH VALLEY	2011	625.3	2.033	2.133	307.5
NORTH VALLEY	2012	514.0	1.886	2.947	272.6
NORTH VALLEY	2013	139.4	1.093	1.962	127.6
NORTH VALLEY	2014	173.2	1.177	1.778	147.2
NORTH VALLEY	2015	479.6	1.787	2.528	268.3
NORTH VALLEY	2016	175.1	1.265	2.173	138.4
NORTH VALLEY	2017	398.6	1.672	3.208	238.5
NORTH VALLEY	2018	4,199.4	1.628	1.488	2,578.8
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
PENINSULA	2009	127.2	1.069	0.895	119.0
PENINSULA	2010	163.6	1.565	1.475	104.6
PENINSULA	2011	112.7	1.195	0.939	94.3
PENINSULA	2012	101.1	1.144	1.709	88.4
PENINSULA	2013	94.3	0.885	1.322	106.5
PENINSULA	2014	98.4	1.061	1.363	92.8
PENINSULA	2015	76.2	0.867	1.798	87.9
PENINSULA	2016	87.1	0.986	1.381	88.3
PENINSULA	2017	167.0	1.328	2.546	125.7
PENINSULA	2018	66.4	0.856	1.381	77.5

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SACRAMENTO	2009	251.6	1.365	1.844	184.4
SACRAMENTO	2010	193.1	1.115	1.423	173.2
SACRAMENTO	2011	182.1	1.203	1.897	151.4
SACRAMENTO	2012	152.7	1.335	2.142	114.4
SACRAMENTO	2013	98.3	0.983	1.697	100.0
SACRAMENTO	2014	107.9	0.913	1.437	118.2
SACRAMENTO	2015	92.4	0.894	1.771	103.3
SACRAMENTO	2016	99.4	1.035	1.803	96.1
SACRAMENTO	2017	283.0	1.870	3.287	151.3
SACRAMENTO	2018	108.5	1.059	1.997	102.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN FRANCISCO	2009	78.7	0.815	0.139	96.6
SAN FRANCISCO	2010	56.6	0.709	0.086	79.9
SAN FRANCISCO	2011	48.8	0.569	0.217	85.9
SAN FRANCISCO	2012	51.7	0.611	1.051	84.6
SAN FRANCISCO	2013	58.1	0.657	0.332	88.4
SAN FRANCISCO	2014	131.0	0.780	0.353	167.9
SAN FRANCISCO	2015	36.1	0.521	0.537	69.3
SAN FRANCISCO	2016	40.7	0.537	0.397	75.8
SAN FRANCISCO	2017	116.4	0.860	0.552	135.4
SAN FRANCISCO	2018	38.0	0.417	0.332	91.0
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN JOSE	2009	89.7	0.839	0.830	106.9
SAN JOSE	2010	103.6	0.920	0.594	112.6
SAN JOSE	2011	113.8	0.988	0.793	115.2
SAN JOSE	2012	85.2	0.844	0.972	100.9
SAN JOSE	2013	99.7	0.962	1.037	103.7
SAN JOSE	2014	98.9	0.975	1.066	101.4
SAN JOSE	2015	75.6	0.763	1.151	99.1
SAN JOSE	2016	68.9	0.678	1.200	101.5
SAN JOSE	2017	179.8	1.241	1.943	144.8
SAN JOSE	2018	86.9	0.872	1.521	99.6
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SIERRA	2009	823.2	2.007	1.507	410.2
SIERRA	2010	774.9	2.288	1.568	338.7
SIERRA	2011	1,034.4	2.191	2.764	472.2
SIERRA	2012	243.2	1.481	3.224	164.2
SIERRA	2013	156.7	1.411	3.222	111.1
SIERRA	2014	194.8	1.411	2.349	138.1
SIERRA	2015	181.9	1.274	3.150	142.8
SIERRA	2016	174.3	1.252	1.864	139.2
SIERRA	2017	620.1	2.076	3.180	298.7
SIERRA	2018	399.2	1.450	1.500	275.3

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SONOMA	2009	185.0	1.181	1.610	156.6
SONOMA	2010	205.2	1.384	1.017	148.2
SONOMA	2011	246.0	1.283	1.532	191.8
SONOMA	2012	208.4	1.109	2.030	187.9
SONOMA	2013	181.7	1.119	2.536	162.3
SONOMA	2014	214.9	1.270	2.049	169.3
SONOMA	2015	119.1	0.868	1.992	137.3
SONOMA	2016	95.4	0.834	1.605	114.3
SONOMA	2017	1,850.1	1.951	2.948	948.3
SONOMA	2018	107.4	0.974	1.276	110.3
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
STOCKTON	2009	411.9	1.795	3.117	229.4
STOCKTON	2010	386.3	1.711	1.603	225.8
STOCKTON	2011	473.7	1.766	1.182	268.2
STOCKTON	2012	166.1	1.166	2.095	142.4
STOCKTON	2013	115.6	1.462	2.137	79.1
STOCKTON	2014	123.9	0.843	1.444	147.0
STOCKTON	2015	124.5	1.035	2.243	120.3
STOCKTON	2016	100.0	0.994	1.777	100.6
STOCKTON	2017	271.1	1.627	1.946	166.6
STOCKTON	2018	224.8	1.152	2.011	195.1
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
YOSEMITE	2009	261.1	1.415	1.760	184.5
YOSEMITE	2010	711.1	2.015	3.164	352.9
YOSEMITE	2011	1,172.0	1.984	2.632	590.8
YOSEMITE	2012	147.7	1.311	4.168	112.6
YOSEMITE	2013	189.1	1.362	3.429	138.9
YOSEMITE	2014	135.6	1.290	2.669	105.2
YOSEMITE	2015	112.4	1.072	3.095	104.8
YOSEMITE	2016	129.9	1.234	2.156	105.2
YOSEMITE	2017	310.8	1.720	3.077	180.7
YOSEMITE	2018	177.4	1.465	1.863	121.1

b. Division Reliability Indices for the past 10 years excluding planned outages, ISO outages and Major Event Days

Table 6: Division reliability Indices

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
CENTRAL COAST	2009	218.6	1.902	2.959	115.0
CENTRAL COAST	2010	171.1	1.511	2.928	113.2
CENTRAL COAST	2011	156.8	1.513	1.576	103.6
CENTRAL COAST	2012	137.4	1.244	2.184	110.4
CENTRAL COAST	2013	119.7	1.291	1.958	92.7
CENTRAL COAST	2014	122.1	1.088	1.835	112.3
CENTRAL COAST	2015	102.0	0.847	1.844	120.4
CENTRAL COAST	2016	166.1	1.471	2.476	112.9
CENTRAL COAST	2017	146.3	1.293	2.826	113.1
CENTRAL COAST	2018	162.4	1.447	2.480	112.2
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DE ANZA	2009	109.5	0.836	1.570	130.9
DE ANZA	2010	116.4	0.958	1.151	121.5
DE ANZA	2011	62.6	0.625	1.187	100.1
DE ANZA	2012	74.6	0.668	1.109	111.7
DE ANZA	2013	77.0	0.821	1.138	93.8
DE ANZA	2014	89.3	0.890	1.213	100.3
DE ANZA	2015	51.2	0.476	1.171	107.6
DE ANZA	2016	87.3	0.753	1.336	116.0
DE ANZA	2017	97.9	0.985	1.348	99.4
DE ANZA	2018	83.9	0.789	1.528	106.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DIABLO	2009	146.7	1.282	1.165	114.4
DIABLO	2010	104.3	1.225	1.216	85.1
DIABLO	2011	66.8	0.808	1.235	82.7
DIABLO	2012	98.8	1.186	1.363	83.3
DIABLO	2013	80.4	1.001	1.237	80.3
DIABLO	2014	66.1	0.892	1.220	74.1
DIABLO	2015	73.8	0.860	1.666	85.8
DIABLO	2016	76.5	0.995	1.694	76.9
DIABLO	2017	78.0	0.876	1.752	89.1
DIABLO	2018	78.3	1.004	1.846	78.0
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
EAST BAY	2009	125.2	1.049	0.896	119.4
EAST BAY	2010	90.5	0.874	0.678	103.4
EAST BAY	2011	88.1	0.868	0.830	101.5
EAST BAY	2012	100.6	1.289	1.278	78.0
EAST BAY	2013	63.0	0.832	1.155	75.6
EAST BAY	2014	64.8	0.726	1.299	89.2
EAST BAY	2015	45.0	0.586	1.085	76.9
EAST BAY	2016	101.4	1.050	1.079	96.6
EAST BAY	2017	73.8	0.903	1.603	81.7
EAST BAY	2018	78.8	0.901	1.175	87.5

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
FRESNO	2009	136.5	1.173	1.763	116.4
FRESNO	2010	115.0	1.054	1.846	109.1
FRESNO	2011	81.6	0.815	1.685	100.1
FRESNO	2012	98.6	1.043	2.323	94.5
FRESNO	2013	92.4	1.068	2.063	86.5
FRESNO	2014	79.4	0.983	1.709	80.7
FRESNO	2015	70.0	0.849	1.829	82.4
FRESNO	2016	83.4	1.105	1.951	75.4
FRESNO	2017	72.3	0.799	1.588	90.5
FRESNO	2018	73.5	0.861	1.507	85.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
HUMBOLDT	2009	224.1	1.573	2.341	142.5
HUMBOLDT	2010	402.9	2.158	1.505	186.7
HUMBOLDT	2011	227.0	1.448	1.887	156.8
HUMBOLDT	2012	276.6	1.560	4.330	177.3
HUMBOLDT	2013	210.4	1.170	2.437	179.8
HUMBOLDT	2014	212.4	1.217	1.809	174.5
HUMBOLDT	2015	276.3	1.621	2.423	170.5
HUMBOLDT	2016	203.0	1.537	1.995	132.1
HUMBOLDT	2017	275.1	1.306	2.282	210.6
HUMBOLDT	2018	223.1	1.734	1.521	128.7
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
KERN	2009	99.9	1.068	1.439	93.5
KERN	2010	120.4	1.076	1.408	111.9
KERN	2011	112.5	0.979	1.340	114.8
KERN	2012	88.1	0.981	1.218	89.8
KERN	2013	87.5	1.027	1.133	85.2
KERN	2014	81.0	0.936	1.635	86.5
KERN	2015	80.4	0.862	1.850	93.2
KERN	2016	89.2	0.916	2.066	97.4
KERN	2017	78.1	0.733	1.548	106.5
KERN	2018	71.6	0.783	1.901	91.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
LOS PADRES	2009	100.8	0.999	1.333	100.9
LOS PADRES	2010	110.5	1.159	1.722	95.3
LOS PADRES	2011	89.9	0.970	1.666	92.7
LOS PADRES	2012	94.8	1.008	1.652	94.1
LOS PADRES	2013	86.7	0.726	0.960	119.5
LOS PADRES	2014	95.2	1.043	1.135	91.2
LOS PADRES	2015	72.2	0.687	1.408	105.1
LOS PADRES	2016	112.3	1.147	1.671	97.9
LOS PADRES	2017	106.7	0.944	1.511	113.0
LOS PADRES	2018	130.5	1.195	1.078	109.3

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
MISSION	2009	87.2	0.740	0.839	117.8
MISSION	2010	101.4	0.910	0.723	111.5
MISSION	2011	62.9	0.781	0.586	80.6
MISSION	2012	91.2	0.905	0.860	100.7
MISSION	2013	67.8	0.736	0.775	92.1
MISSION	2014	62.9	0.672	0.770	93.6
MISSION	2015	56.7	0.543	1.054	104.4
MISSION	2016	72.7	0.702	0.916	103.7
MISSION	2017	60.2	0.602	1.080	99.9
MISSION	2018	62.0	0.644	0.937	96.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH BAY	2009	112.6	1.033	0.915	109.0
NORTH BAY	2010	133.9	1.035	1.294	129.3
NORTH BAY	2011	110.7	1.074	1.094	103.1
NORTH BAY	2012	109.7	0.791	1.646	138.8
NORTH BAY	2013	101.8	0.910	1.455	111.9
NORTH BAY	2014	114.6	0.875	2.505	131.0
NORTH BAY	2015	97.4	0.904	1.977	107.8
NORTH BAY	2016	83.9	0.767	1.209	109.4
NORTH BAY	2017	148.5	0.955	1.861	155.5
NORTH BAY	2018	116.3	0.921	1.918	126.3
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH VALLEY	2009	203.4	1.182	3.026	172.1
NORTH VALLEY	2010	156.9	1.220	1.814	128.7
NORTH VALLEY	2011	161.2	1.218	1.557	132.3
NORTH VALLEY	2012	223.2	1.505	2.576	148.3
NORTH VALLEY	2013	118.9	1.035	1.904	114.9
NORTH VALLEY	2014	111.1	0.968	1.521	114.8
NORTH VALLEY	2015	132.8	1.062	1.930	125.0
NORTH VALLEY	2016	146.4	1.128	1.937	129.8
NORTH VALLEY	2017	112.3	0.863	2.052	130.2
NORTH VALLEY	2018	187.3	1.366	1.420	137.1
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
PENINSULA	2009	84.1	0.832	0.771	101.1
PENINSULA	2010	117.9	1.324	1.060	89.0
PENINSULA	2011	83.8	1.047	0.782	80.0
PENINSULA	2012	86.8	0.999	1.528	86.9
PENINSULA	2013	70.1	0.785	1.114	89.4
PENINSULA	2014	77.1	0.898	1.164	85.9
PENINSULA	2015	60.5	0.752	1.601	80.4
PENINSULA	2016	78.8	0.905	1.195	87.2
PENINSULA	2017	61.5	0.640	1.307	96.0
PENINSULA	2018	60.5	0.806	1.327	75.0

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SACRAMENTO	2009	134.8	1.077	1.560	125.1
SACRAMENTO	2010	118.6	0.875	1.082	135.5
SACRAMENTO	2011	107.9	0.991	1.693	108.9
SACRAMENTO	2012	130.1	1.194	1.969	108.9
SACRAMENTO	2013	93.0	0.937	1.566	99.2
SACRAMENTO	2014	94.4	0.807	1.258	117.0
SACRAMENTO	2015	80.1	0.799	1.556	100.3
SACRAMENTO	2016	83.6	0.944	1.539	88.5
SACRAMENTO	2017	121.2	1.070	1.772	113.2
SACRAMENTO	2018	101.0	1.021	1.887	98.9
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN FRANCISCO	2009	75.8	0.794	0.103	95.4
SAN FRANCISCO	2010	49.6	0.652	0.066	76.0
SAN FRANCISCO	2011	45.3	0.540	0.211	83.9
SAN FRANCISCO	2012	47.0	0.570	1.008	82.6
SAN FRANCISCO	2013	52.0	0.604	0.302	86.1
SAN FRANCISCO	2014	41.5	0.457	0.235	90.8
SAN FRANCISCO	2015	33.9	0.504	0.501	67.2
SAN FRANCISCO	2016	39.7	0.518	0.355	76.7
SAN FRANCISCO	2017	36.5	0.500	0.401	73.0
SAN FRANCISCO	2018	35.2	0.378	0.303	93.0
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN JOSE	2009	75.8	0.739	0.808	102.5
SAN JOSE	2010	69.4	0.758	0.525	91.6
SAN JOSE	2011	101.5	0.900	0.685	112.8
SAN JOSE	2012	80.6	0.793	0.945	101.6
SAN JOSE	2013	96.7	0.914	0.977	105.7
SAN JOSE	2014	76.0	0.806	1.026	94.4
SAN JOSE	2015	65.9	0.678	1.008	97.2
SAN JOSE	2016	65.5	0.644	1.152	101.7
SAN JOSE	2017	72.3	0.739	1.274	97.8
SAN JOSE	2018	85.0	0.858	1.494	99.1
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SIERRA	2009	262.9	1.337	1.219	196.6
SIERRA	2010	194.0	1.332	1.124	145.6
SIERRA	2011	179.5	1.168	1.401	153.7
SIERRA	2012	182.4	1.322	2.906	137.9
SIERRA	2013	109.9	1.279	3.085	85.9
SIERRA	2014	142.2	1.210	2.128	117.5
SIERRA	2015	123.2	1.115	2.816	110.5
SIERRA	2016	121.7	1.029	1.705	118.2
SIERRA	2017	155.0	1.191	1.896	130.2
SIERRA	2018	152.9	1.241	1.398	123.2

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SONOMA	2009	154.9	1.072	1.357	144.4
SONOMA	2010	151.4	1.131	0.818	133.9
SONOMA	2011	103.4	0.896	1.341	115.4
SONOMA	2012	117.9	0.897	1.730	131.5
SONOMA	2013	113.4	0.846	2.256	134.0
SONOMA	2014	113.7	0.899	1.587	126.6
SONOMA	2015	73.0	0.673	1.534	108.5
SONOMA	2016	88.6	0.792	1.508	111.8
SONOMA	2017	120.7	0.886	1.591	136.2
SONOMA	2018	105.5	0.956	1.236	110.3
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
STOCKTON	2009	160.1	1.266	2.697	126.4
STOCKTON	2010	166.2	1.310	1.402	126.8
STOCKTON	2011	180.5	1.234	0.898	146.2
STOCKTON	2012	91.1	0.993	1.972	91.8
STOCKTON	2013	106.5	1.427	2.025	74.6
STOCKTON	2014	105.9	0.749	1.309	141.4
STOCKTON	2015	96.1	0.874	1.947	109.9
STOCKTON	2016	84.0	0.900	1.663	93.3
STOCKTON	2017	84.6	0.946	1.276	89.5
STOCKTON	2018	107.7	1.036	1.890	103.9
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
YOSEMITE	2009	183.4	1.186	1.486	154.6
YOSEMITE	2010	226.3	1.474	2.598	153.5
YOSEMITE	2011	207.9	1.279	1.811	162.5
YOSEMITE	2012	140.8	1.272	4.088	110.7
YOSEMITE	2013	187.8	1.344	3.259	139.7
YOSEMITE	2014	117.6	1.226	2.446	96.0
YOSEMITE	2015	102.3	0.984	2.638	103.9
YOSEMITE	2016	123.2	1.178	2.025	104.5
YOSEMITE	2017	143.0	1.170	2.162	122.2
YOSEMITE	2018	158.3	1.355	1.801	116.8

c. Charts for Division Reliability Indices for the past 10 years

i. Charts for Division Reliability Indices for the past 10 years with linear trend line excluding ISO and planned outages and including MED

1. AIDI Performance Results (MED Included)

Chart 11: Division Reliability - AIDI Indices

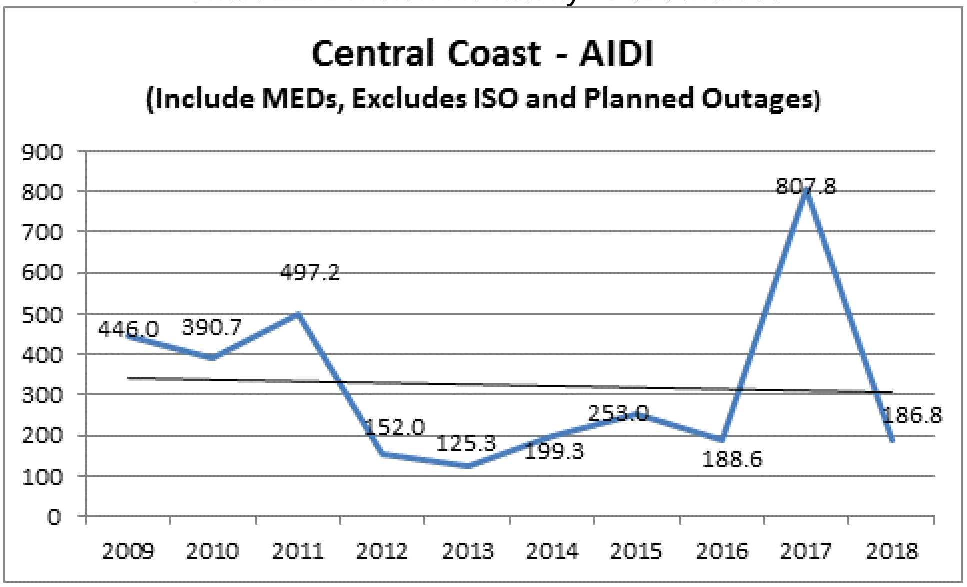


Chart 12: Division Reliability - AIDI Indices

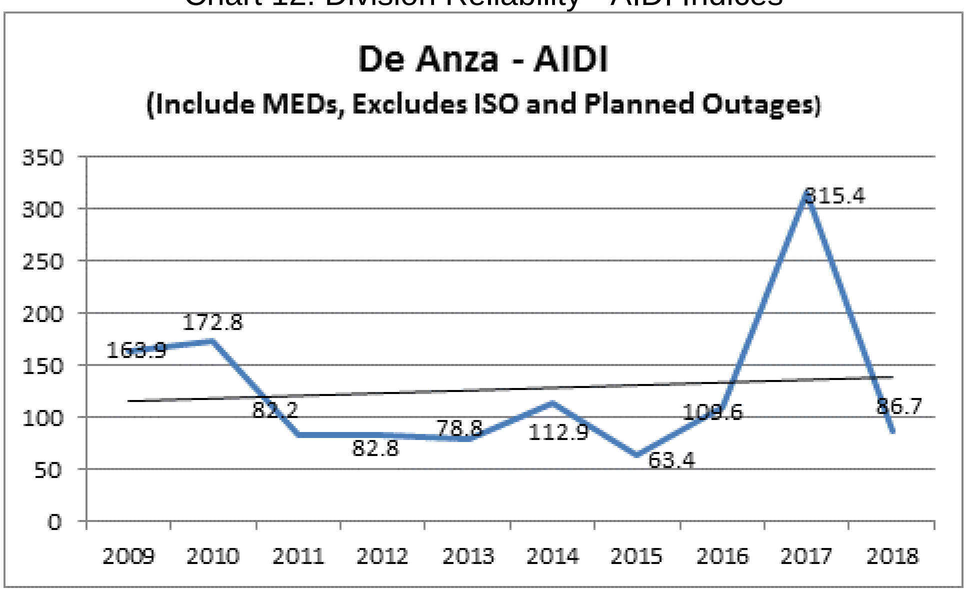


Chart 13: Division Reliability - AIDI Indices

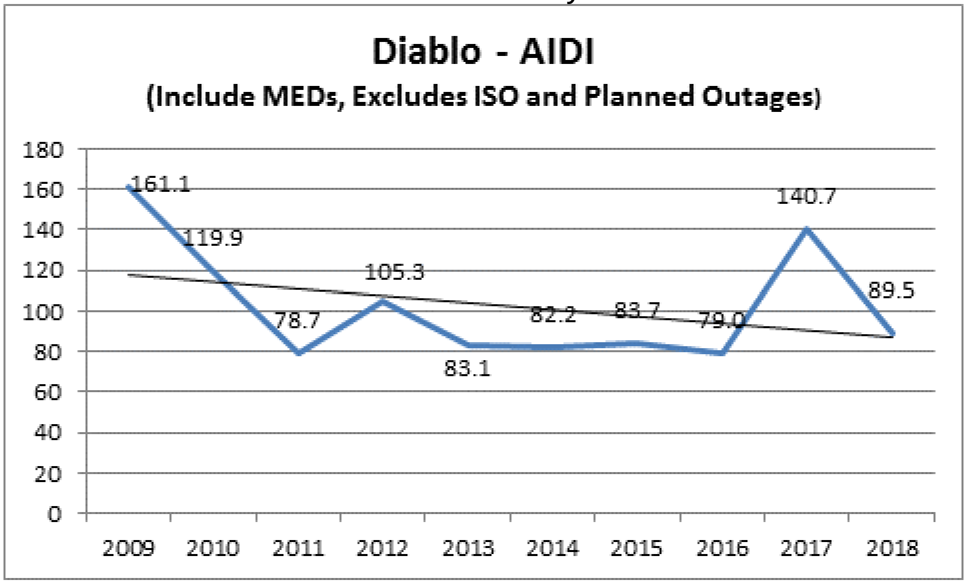


Chart 14: Division Reliability - AIDI Indices

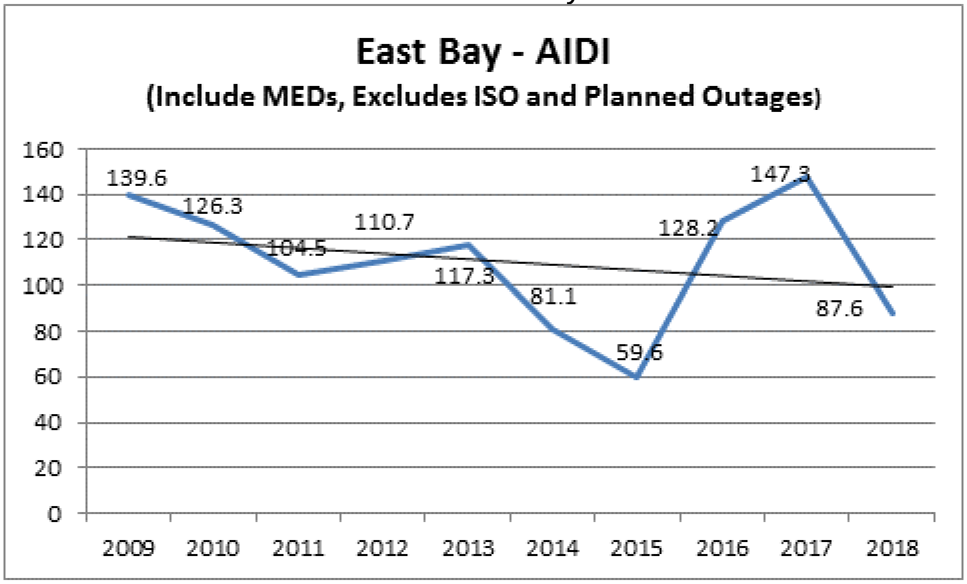


Chart 15: Division Reliability - AIDI Indices

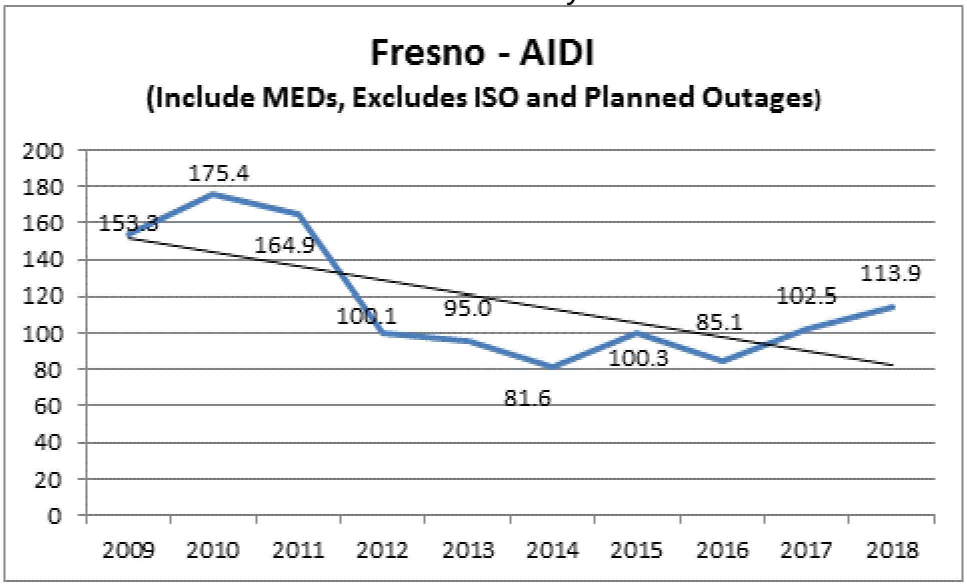


Chart 16: Division Reliability - AIDI Indices

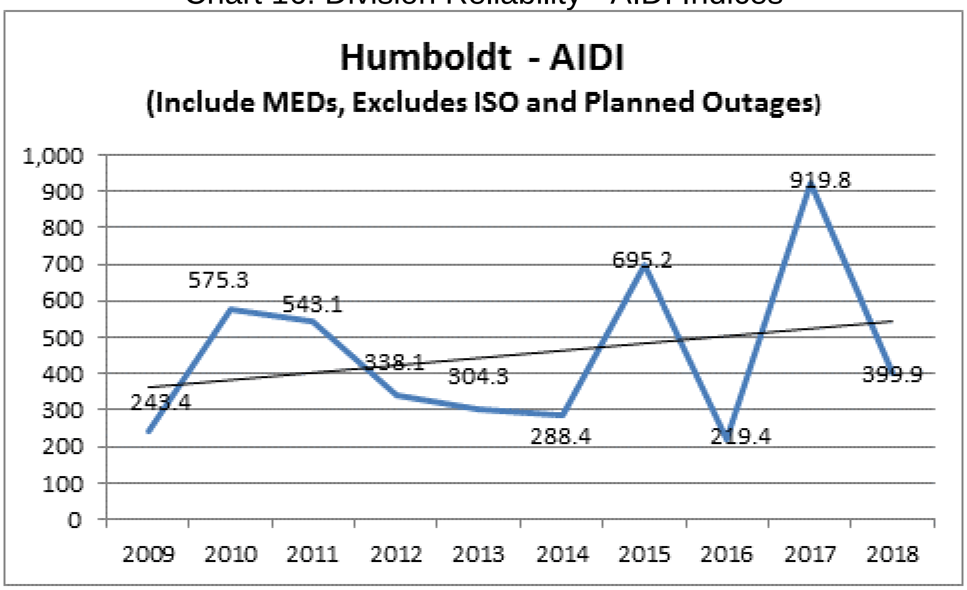


Chart 17: Division Reliability - AIDI Indices

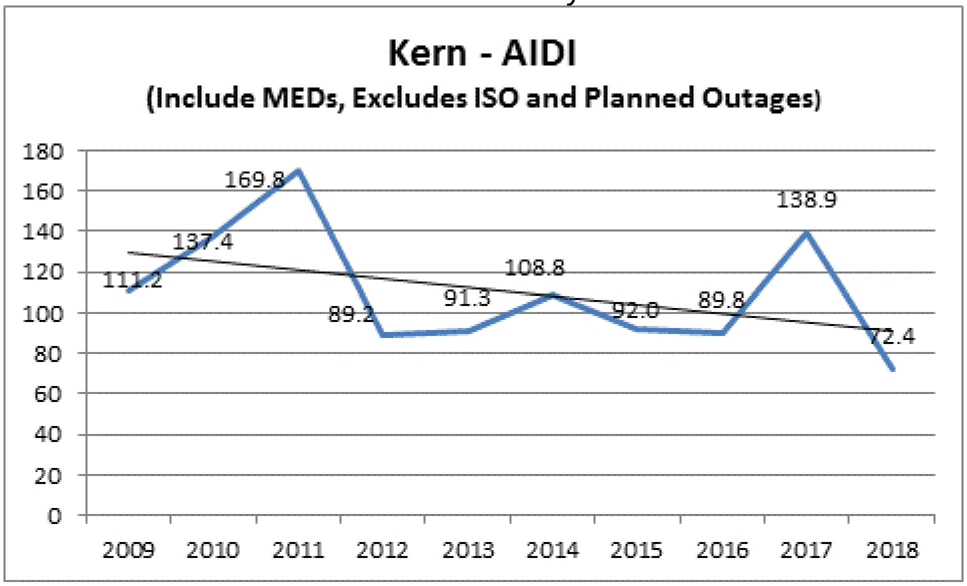


Chart 18: Division Reliability - AIDI Indices

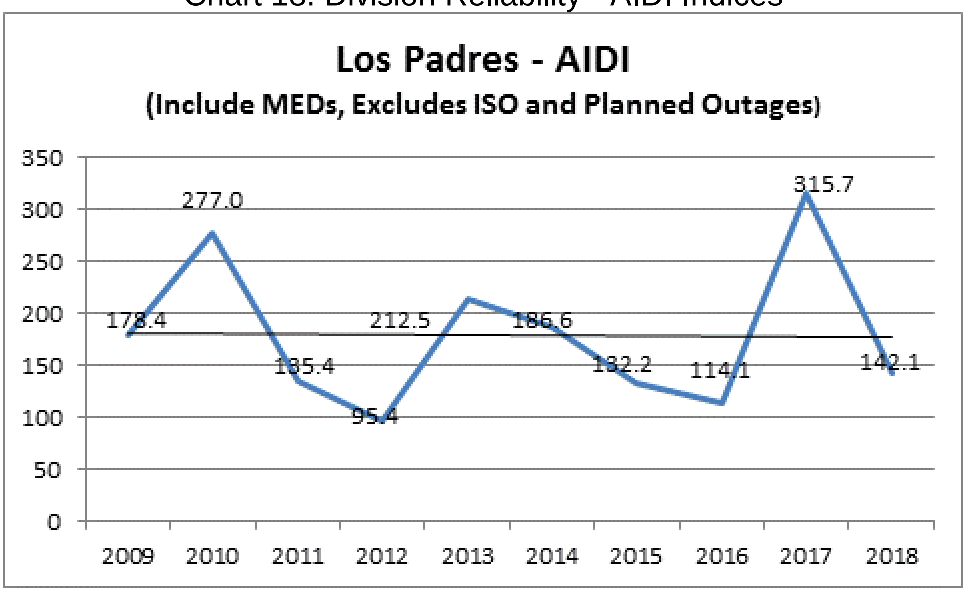


Chart 19: Division Reliability - AIDI Indices

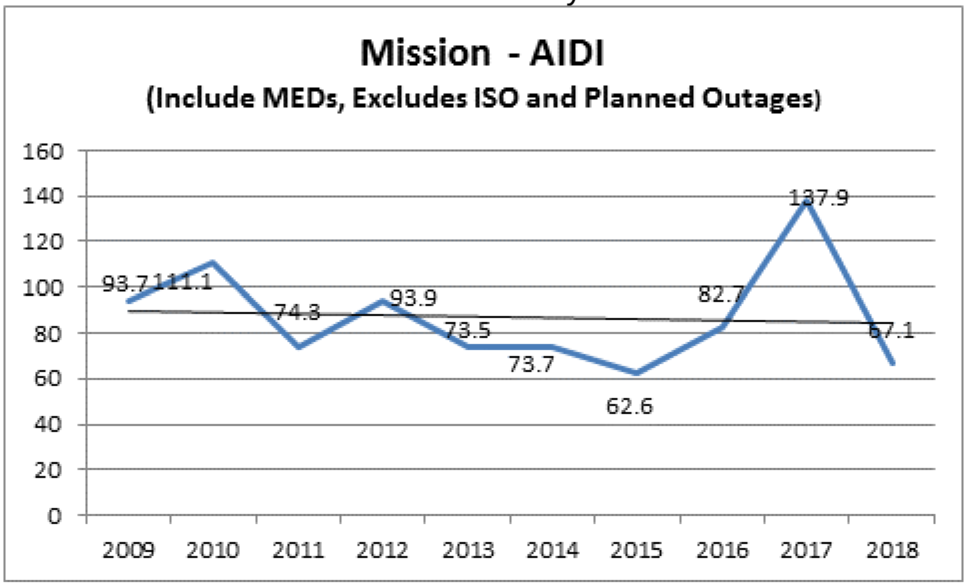


Chart 20: Division Reliability – AIDI Indices

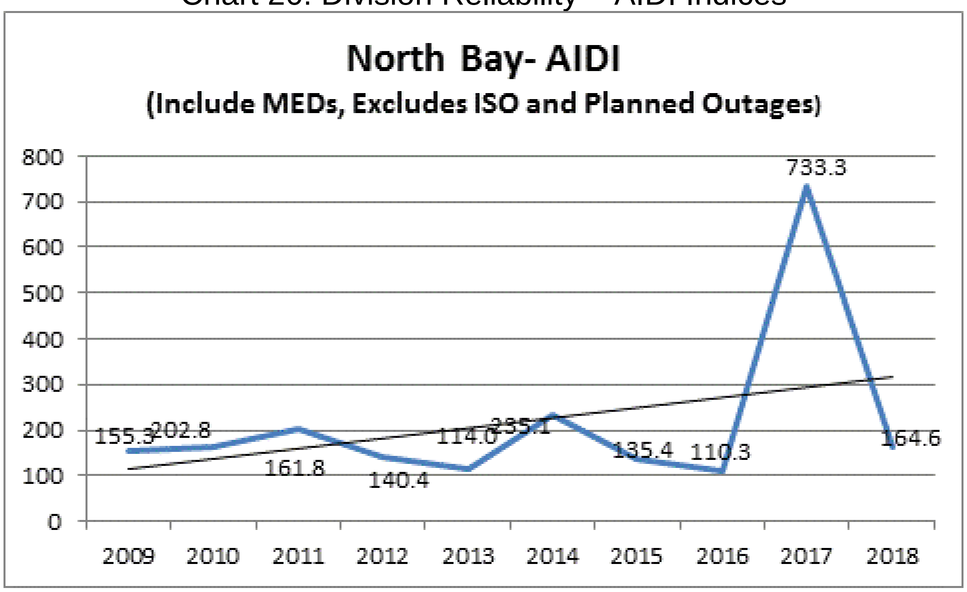


Chart 21: Division Reliability - AIDI Indices

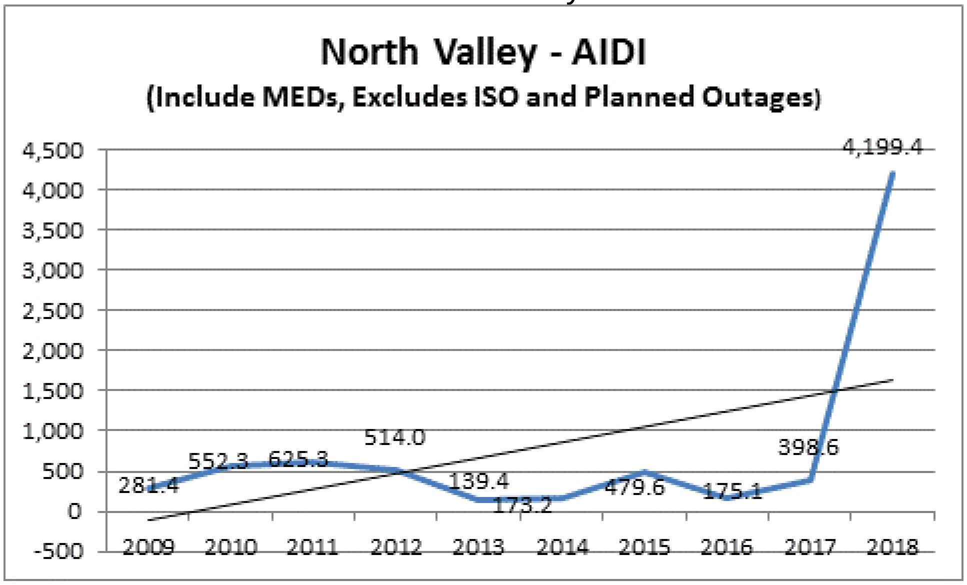


Chart 22: Division Reliability - AIDI Indices

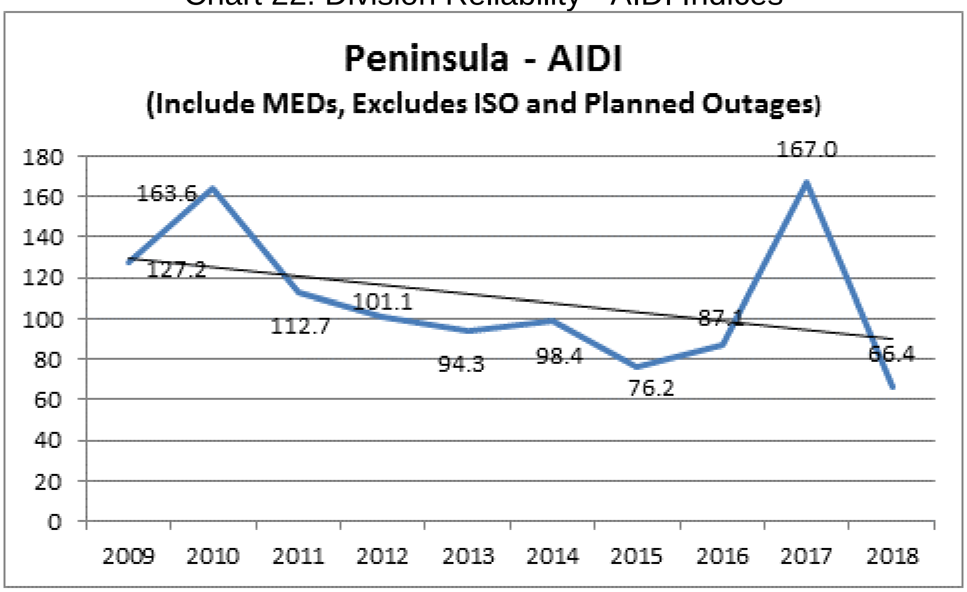


Chart 23: Division Reliability - AIDI Indices

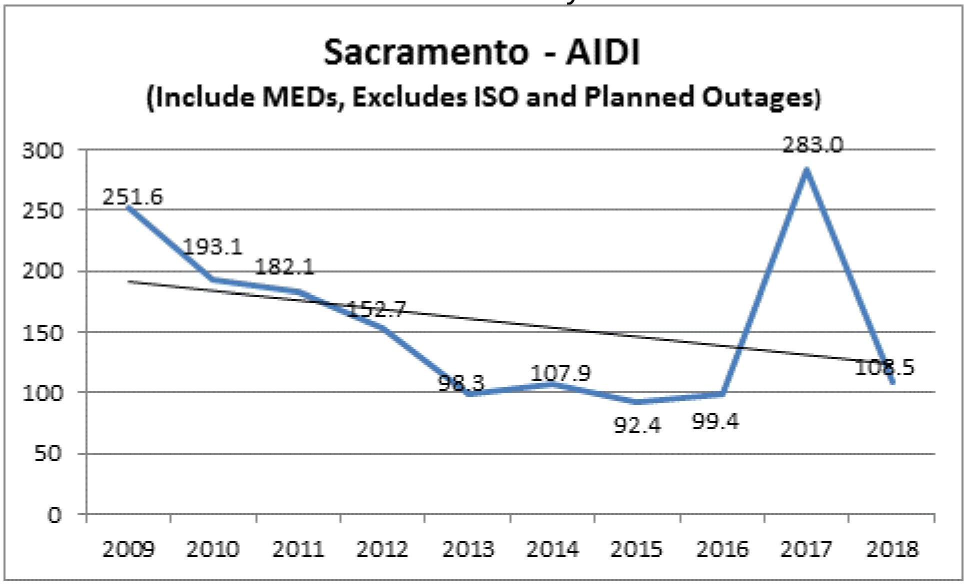


Chart 24: Division Reliability - AIDI Indices

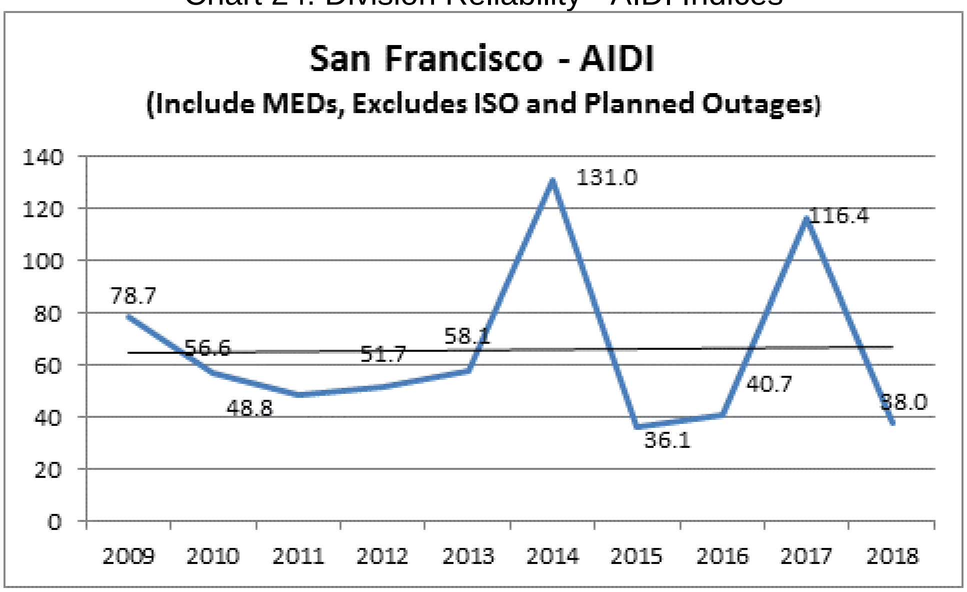


Chart 25: Division Reliability - AIDI Indices

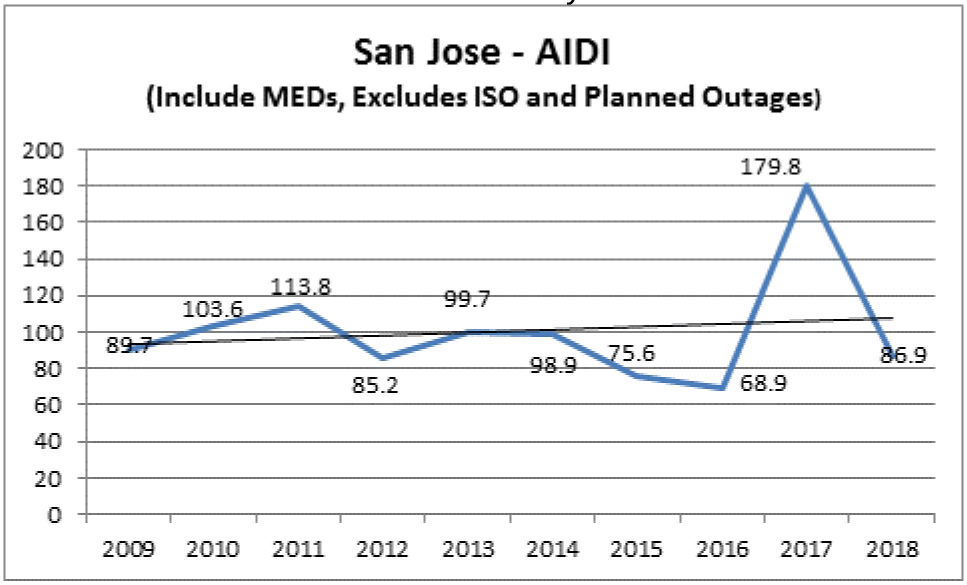


Chart 26: Division Reliability – AIDI Indices

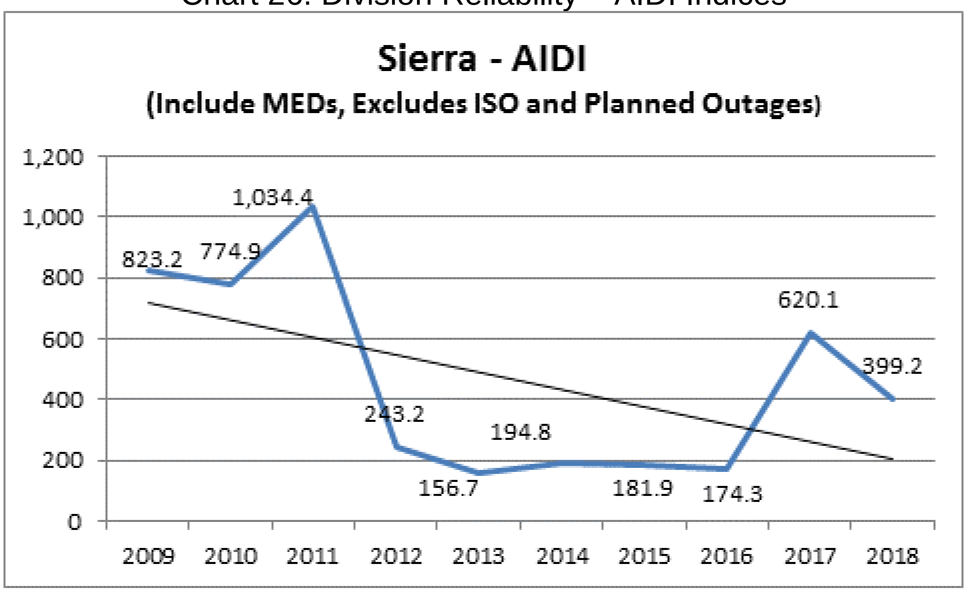


Chart 27: Division Reliability – AIDI Indices

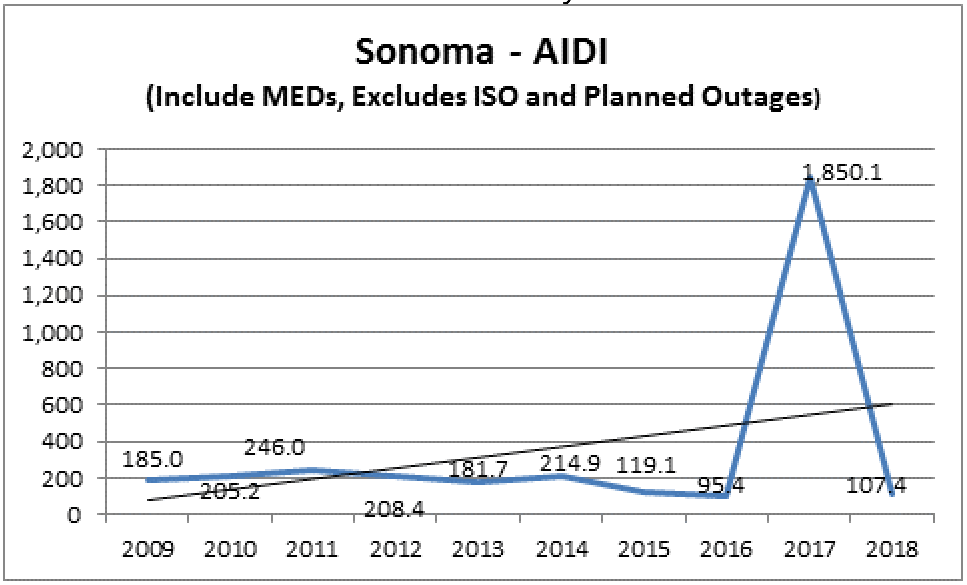


Chart 28: Division Reliability - AIDI Indices

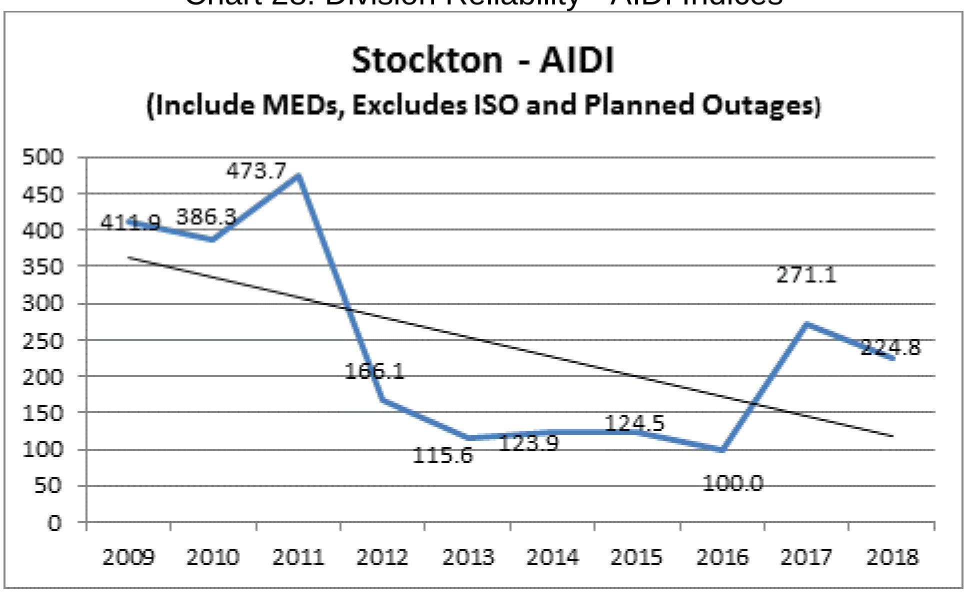
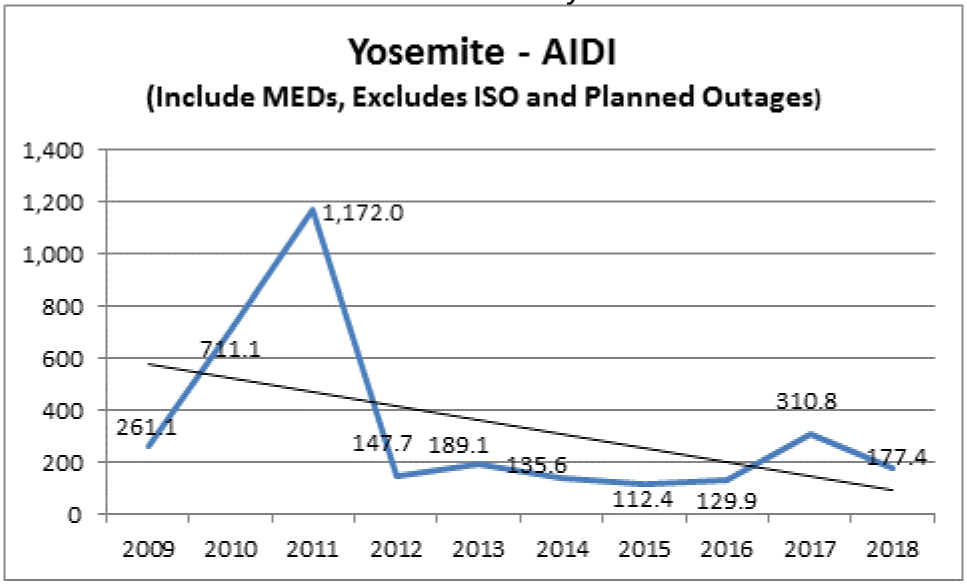


Chart 29: Division Reliability - AIDI Indices



2. AIFI Performance Results (MED Included)

Chart 30: Division Reliability - AIFI Indices

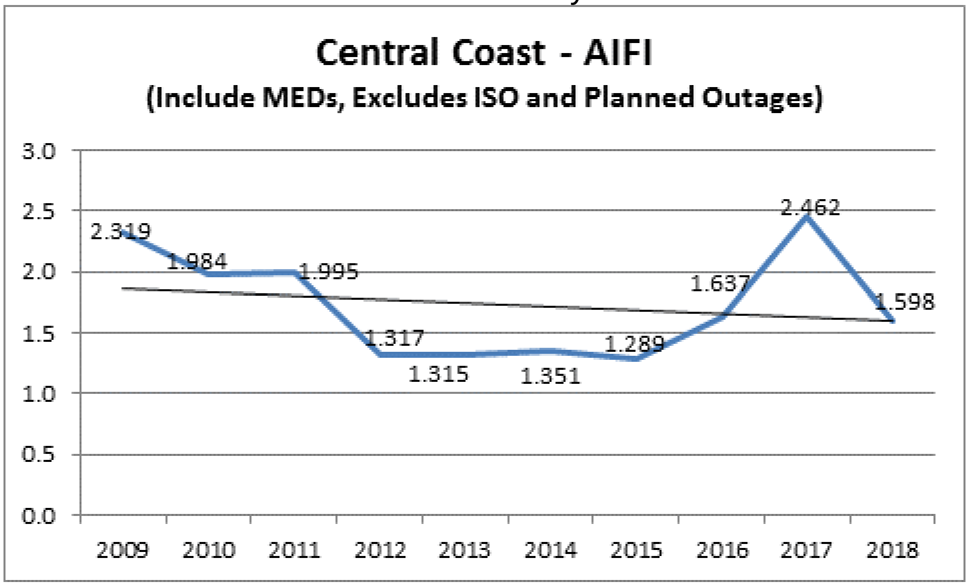


Chart 31: Division Reliability - AIFI Indices

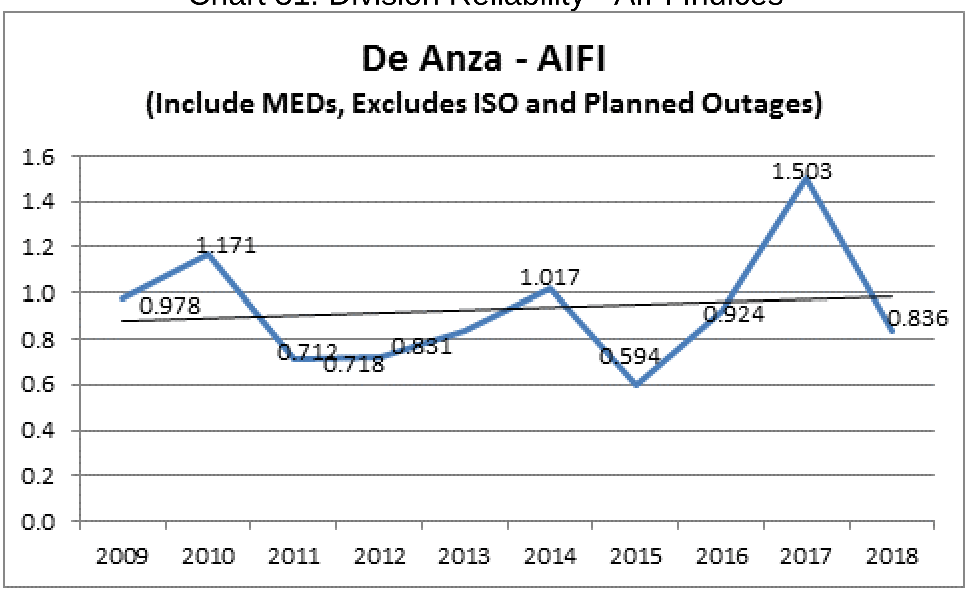


Chart 32: Division Reliability - AIFI Indices

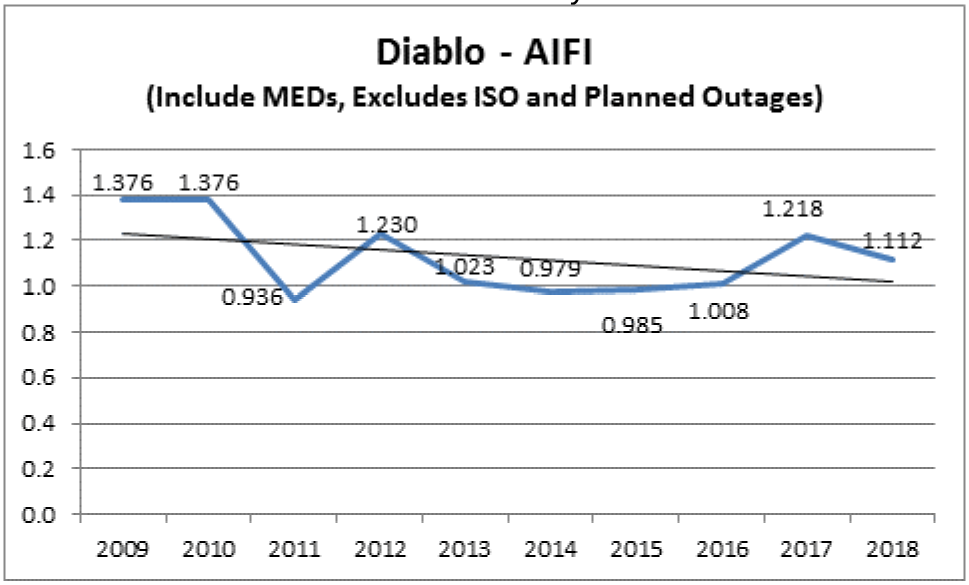


Chart 33: Division Reliability - AIFI Indices

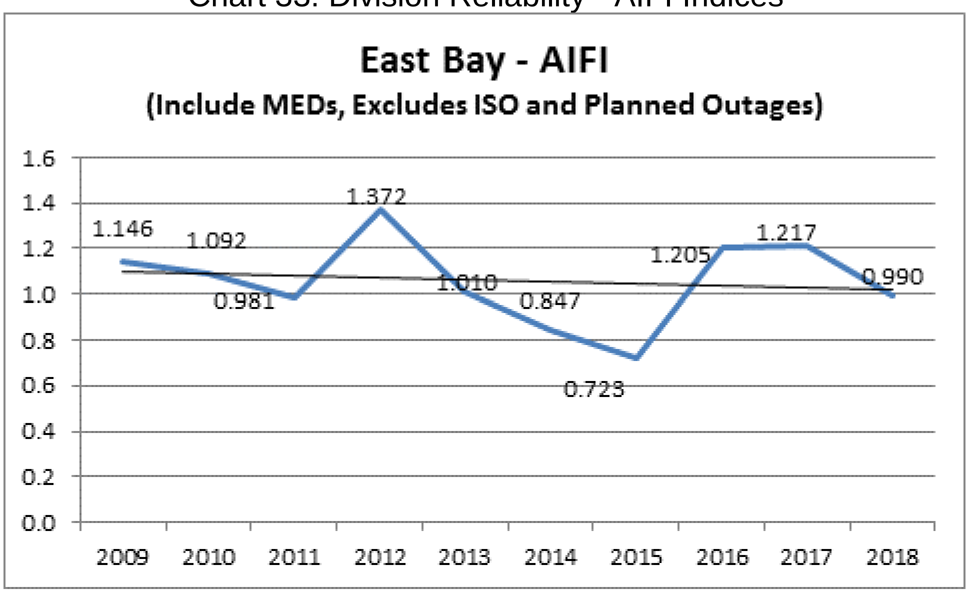


Chart 34: Division Reliability - AIFI Indices

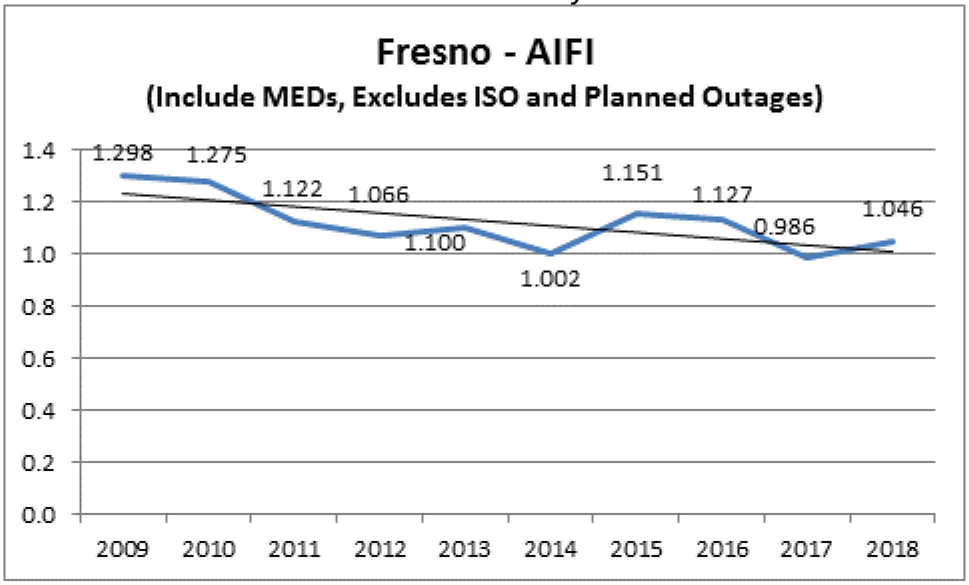


Chart 35: Division Reliability - AIFI Indices

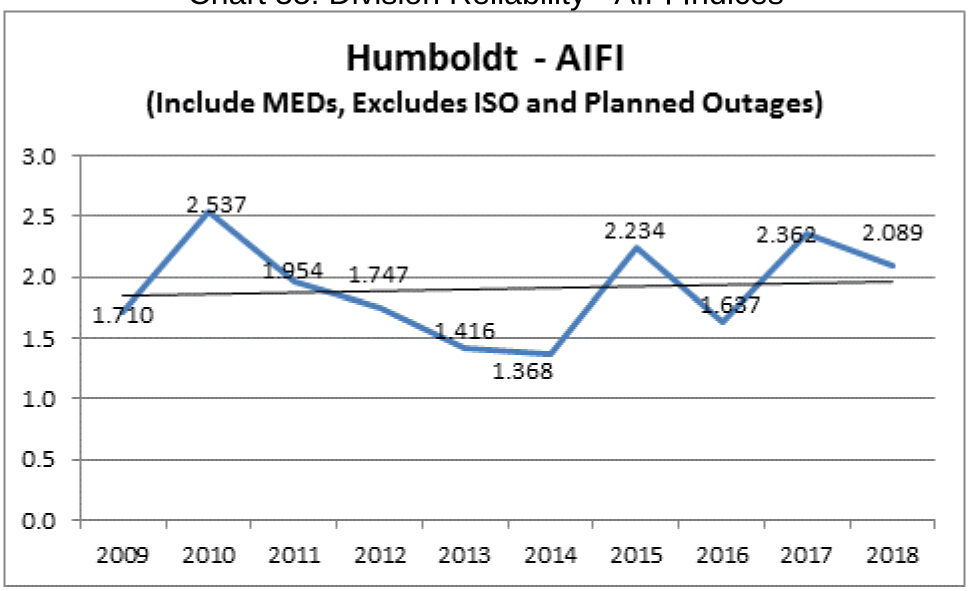


Chart 36: Division Reliability - AIFI Indices

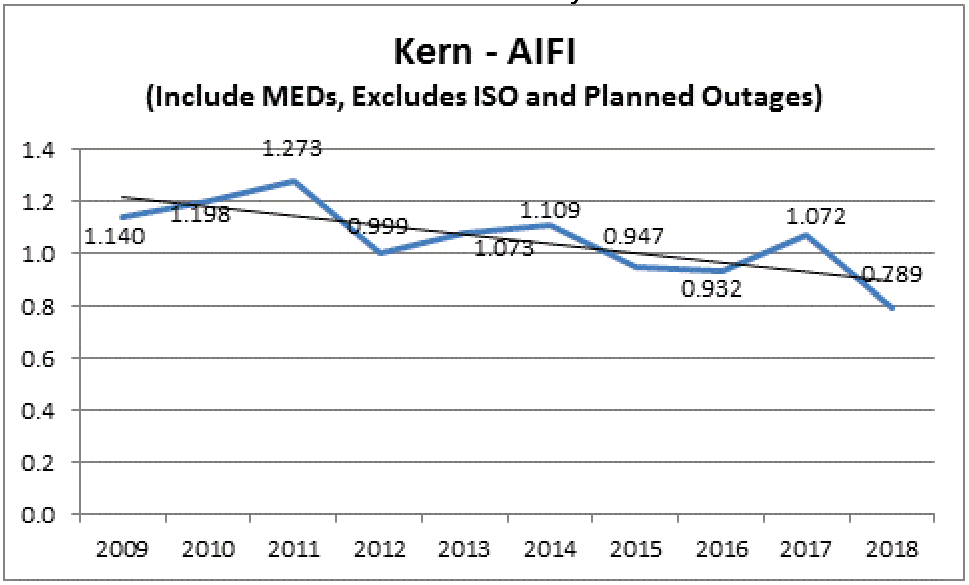


Chart 37: Division Reliability - AIFI Indices

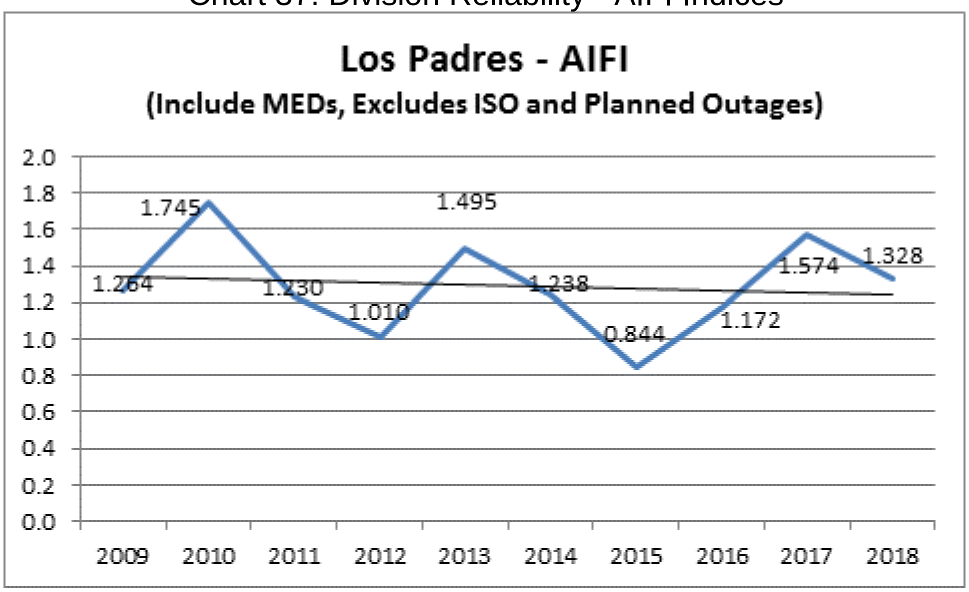


Chart 38: Division Reliability - AIFI Indices

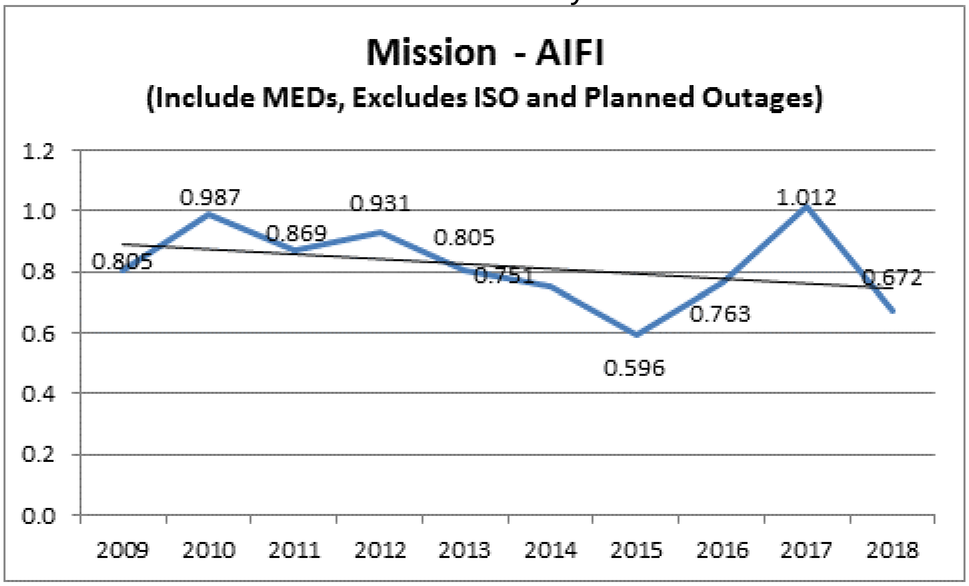


Chart 39: Division Reliability - AIFI Indices

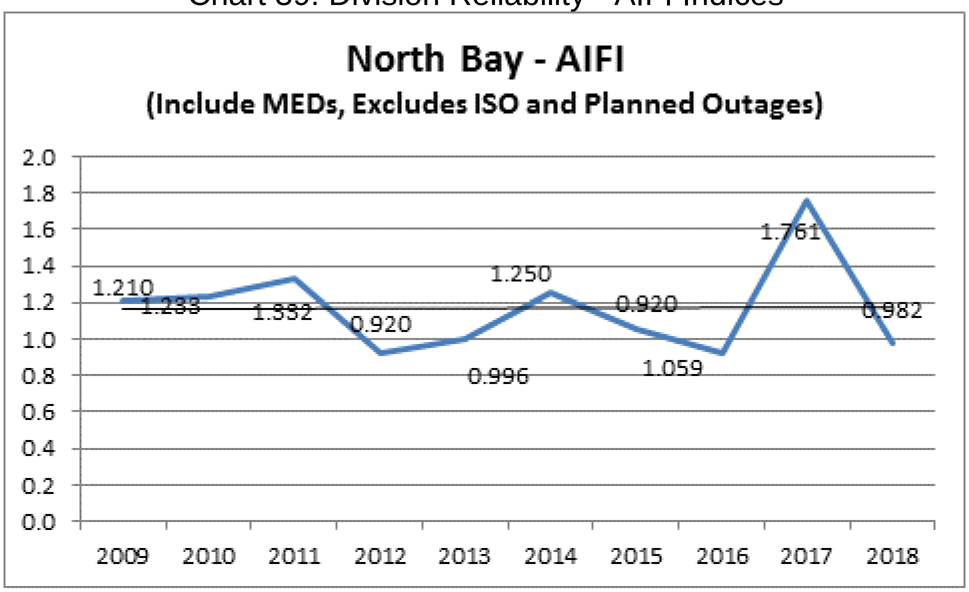


Chart 40: Division Reliability - AIFI Indices

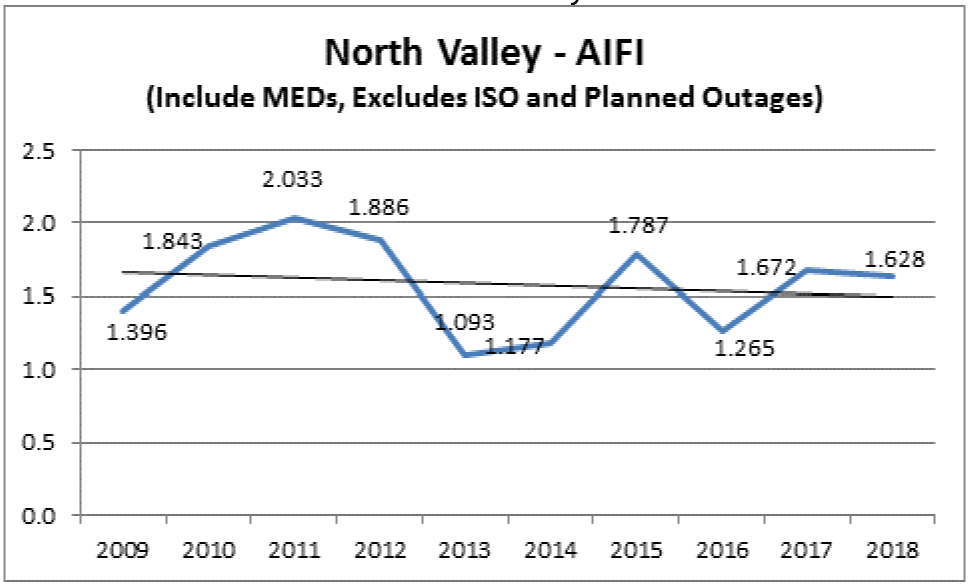


Chart 41: Division Reliability - AIFI Indices

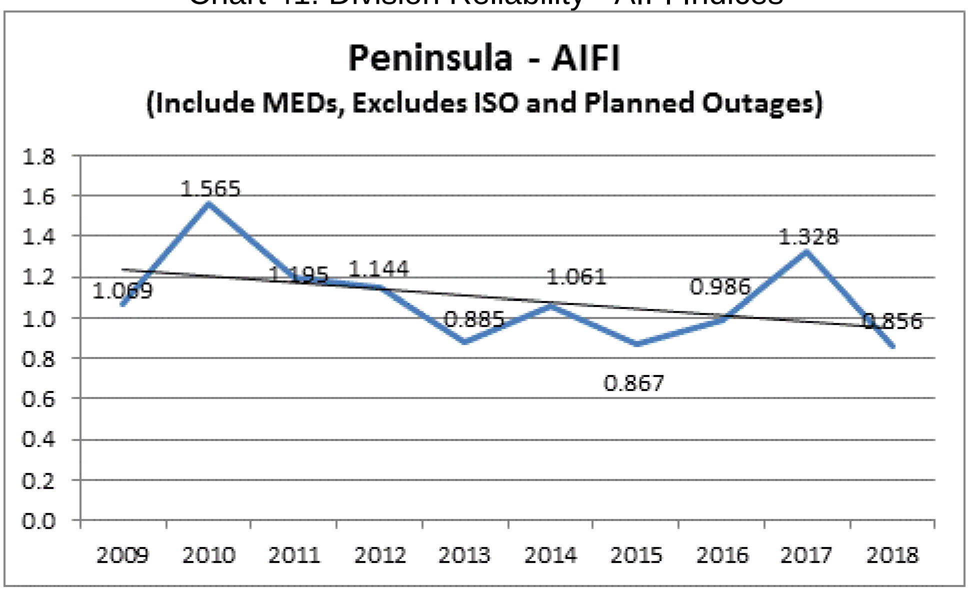


Chart 42: Division Reliability - AIFI Indices

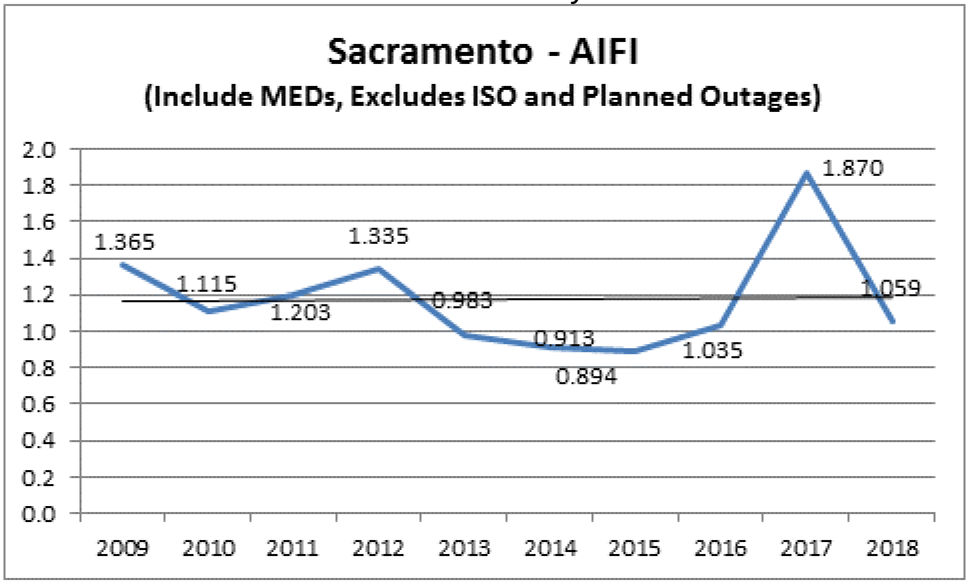


Chart 43: Division Reliability - AIFI Indices

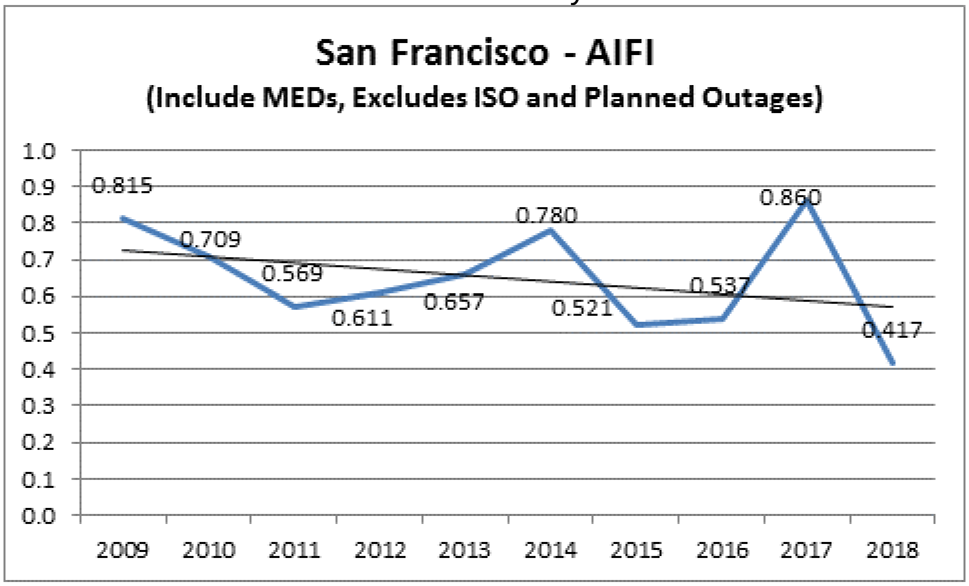


Chart 44: Division Reliability - AIFI Indices

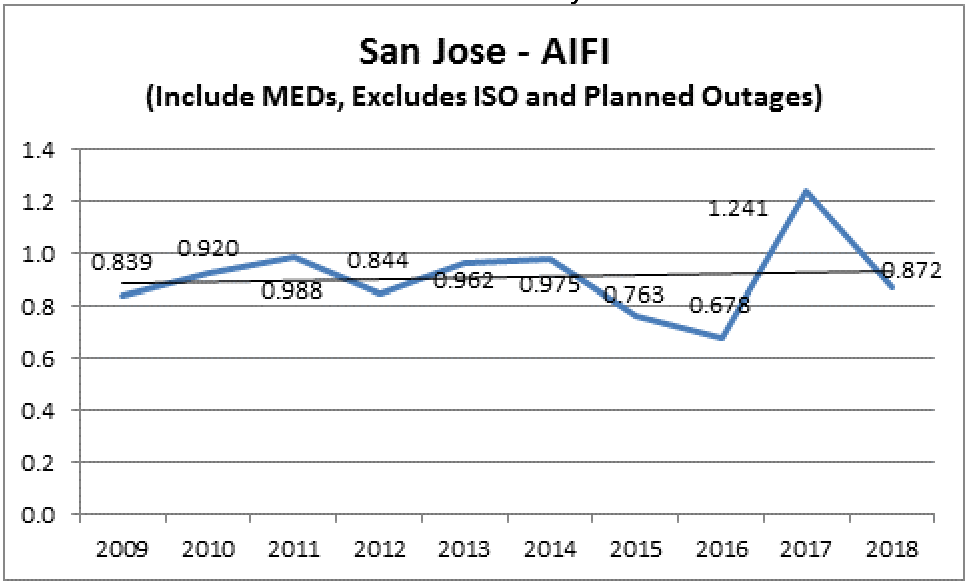


Chart 45: Division Reliability - AIFI Indices

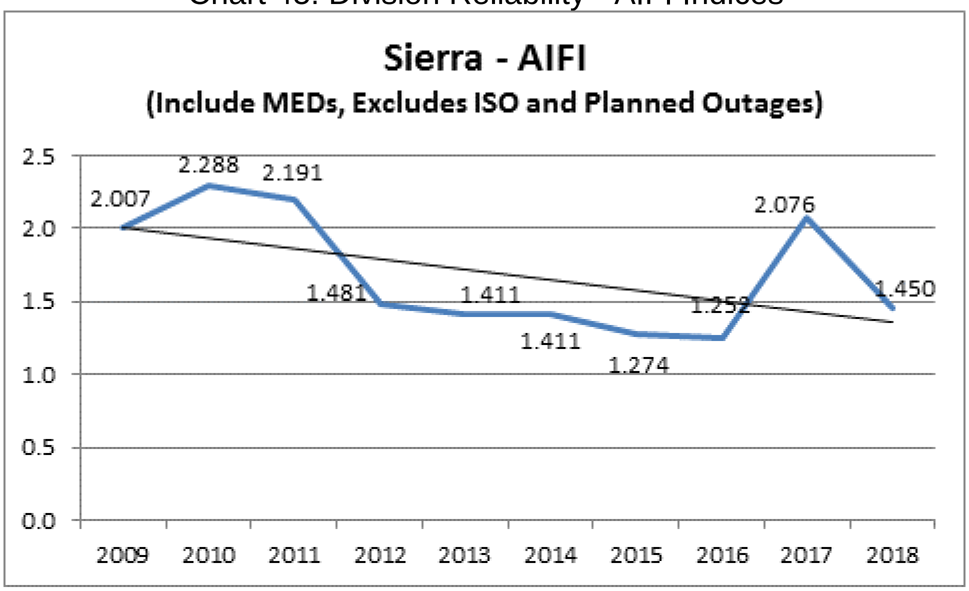


Chart 46: Division Reliability - AIFI Indices

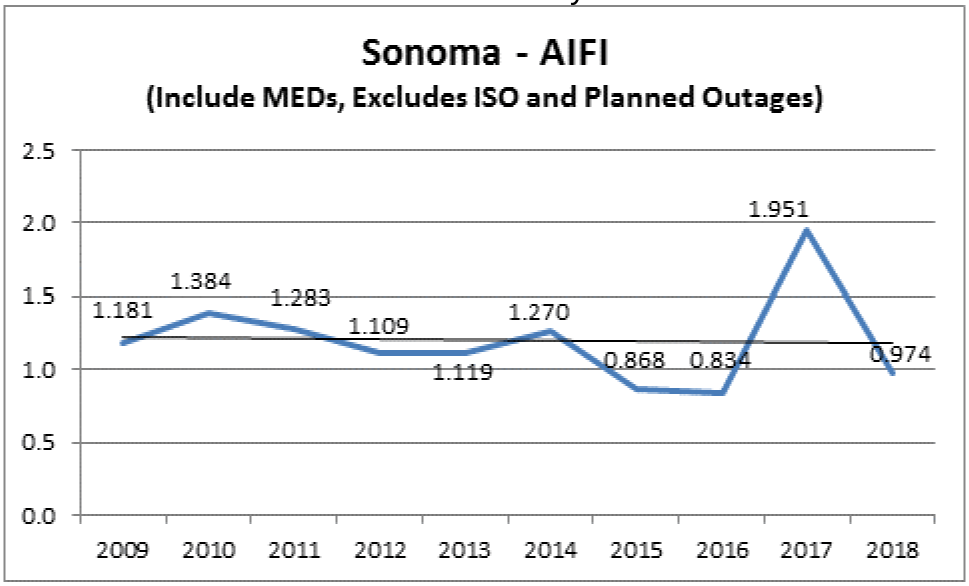


Chart 47: Division Reliability - AIFI Indices

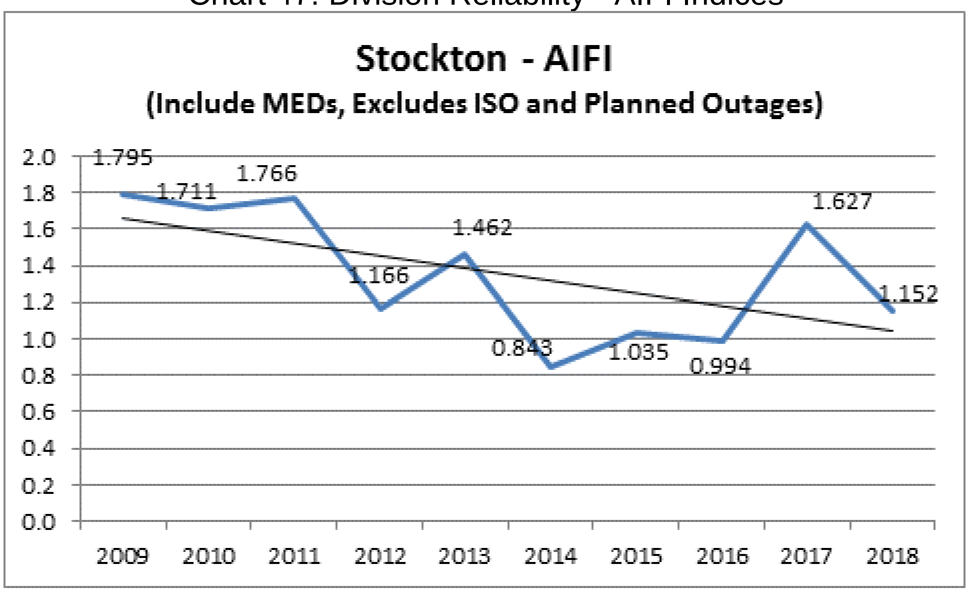
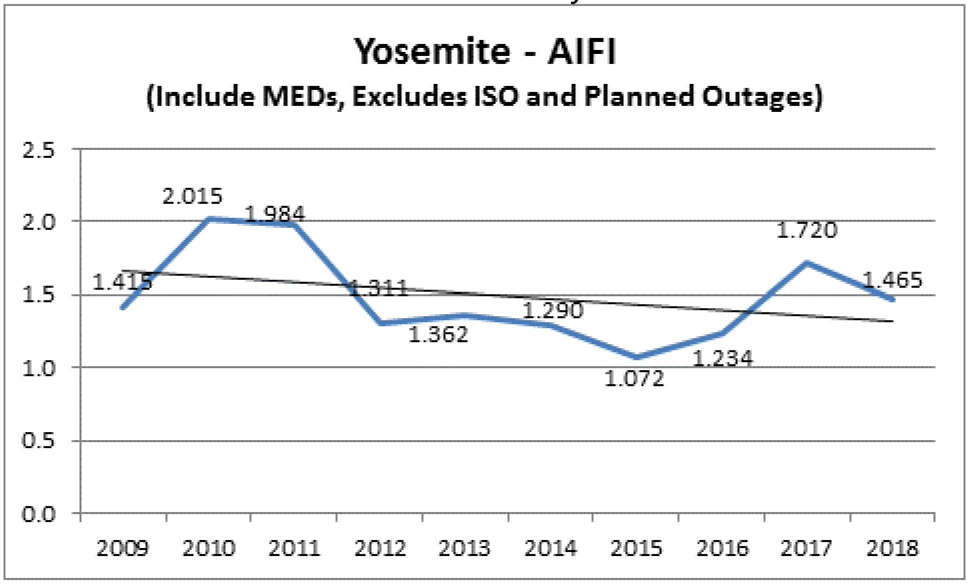


Chart 48: Division Reliability - AIFI Indices



3. MAIFI Performance Results (MED Included)

Chart 49: Division Reliability - MAIFI Indices

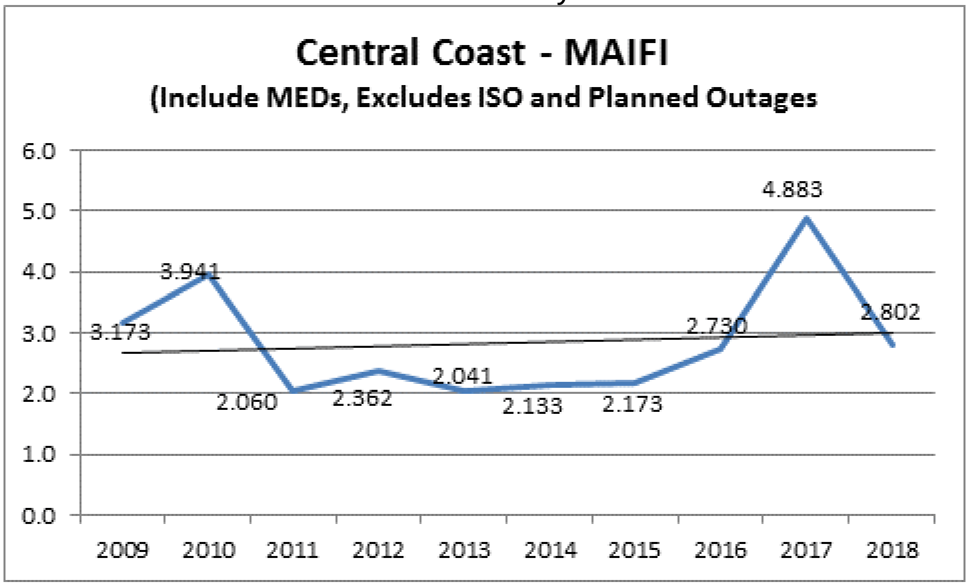


Chart 50: Division Reliability - MAIFI Indices

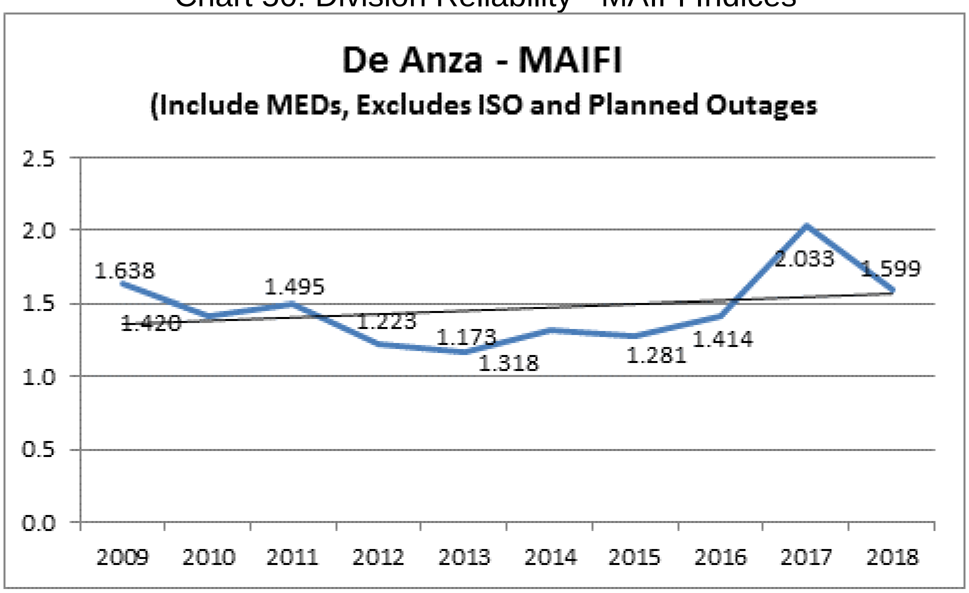


Chart 51: Division Reliability - MAIFI Indices

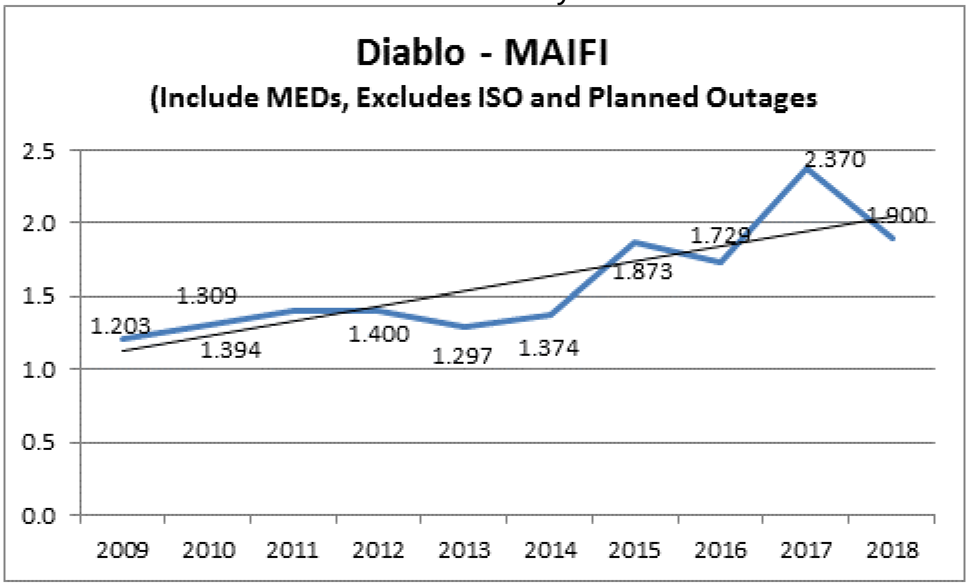


Chart 52: Division Reliability - MAIFI Indices

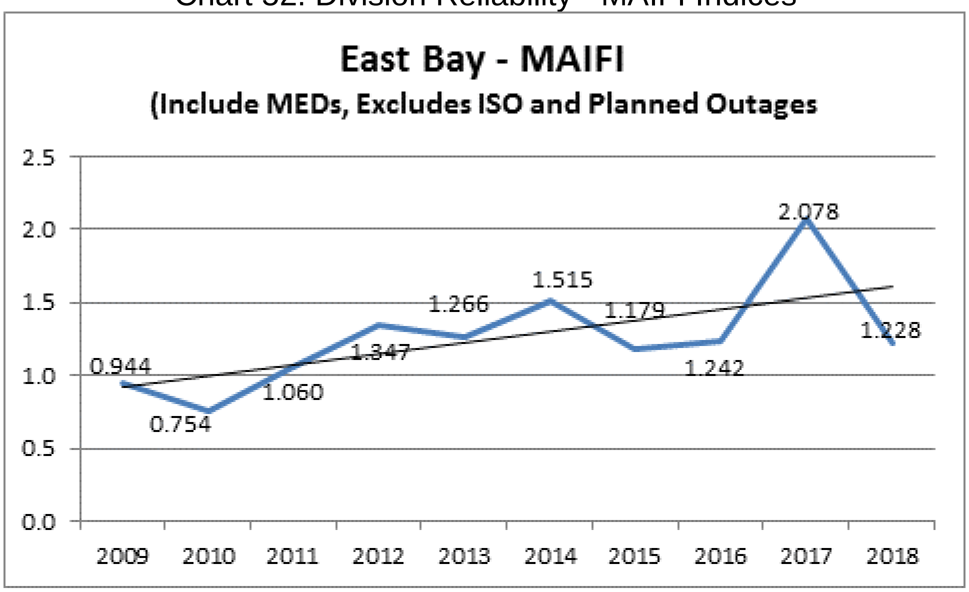


Chart 53: Division Reliability - MAIFI Indices

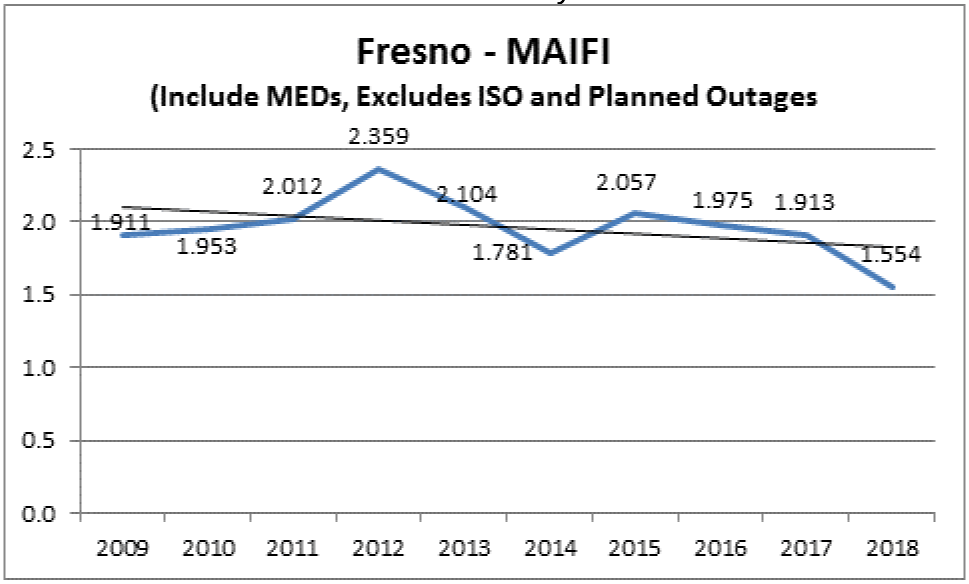


Chart 54: Division Reliability - MAIFI Indices

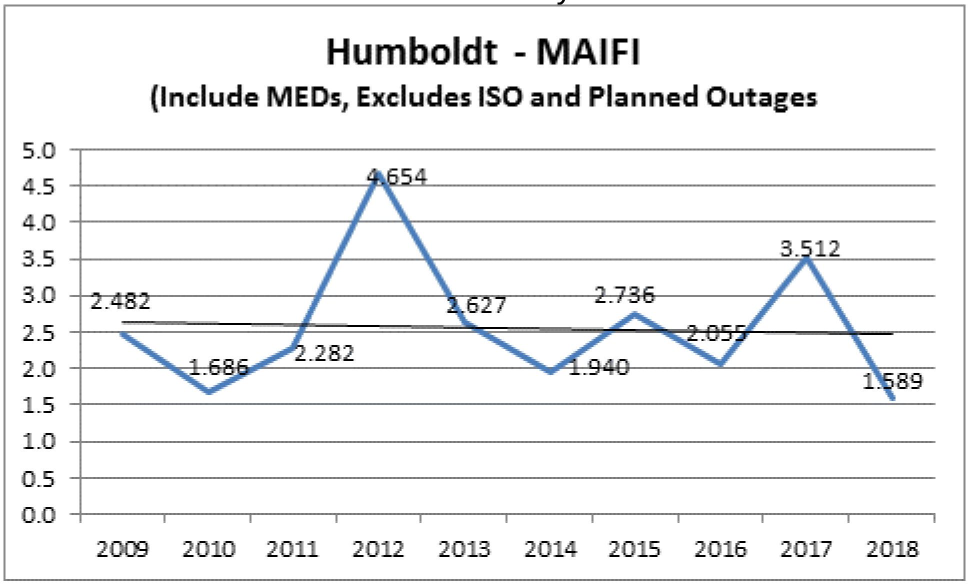


Chart 55: Division Reliability - MAIFI Indices

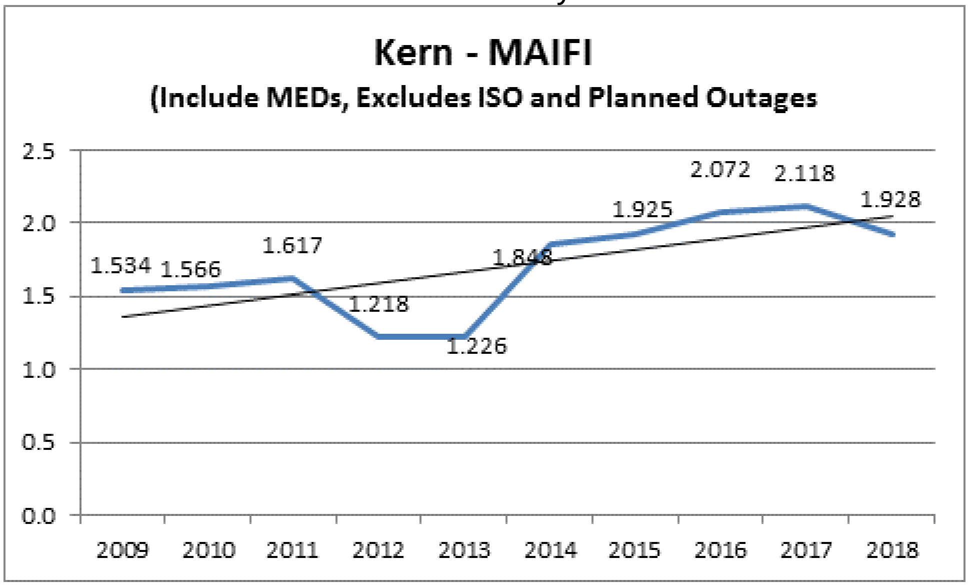


Chart 56: Division Reliability - MAIFI Indices

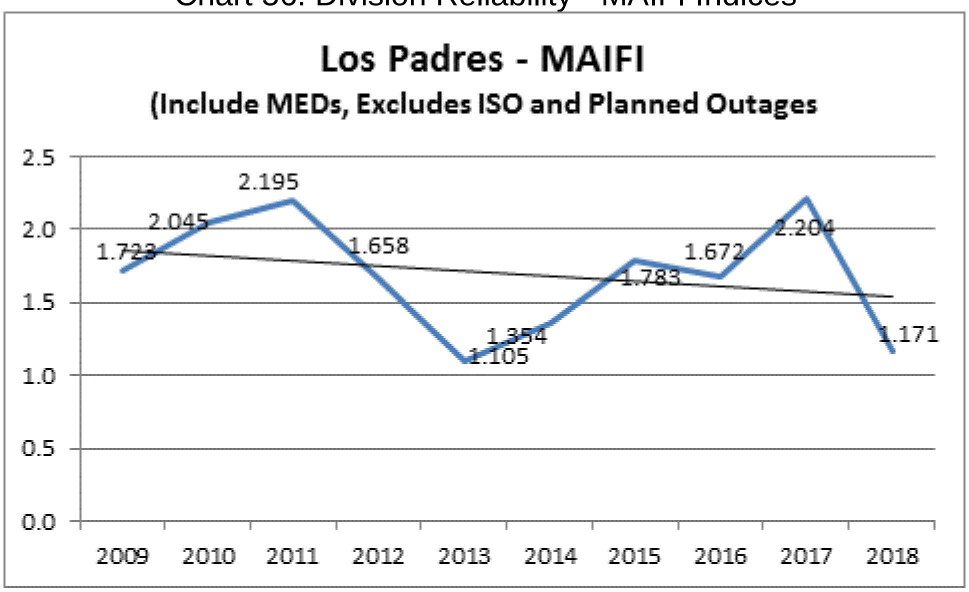


Chart 57: Division Reliability - MAIFI Indices

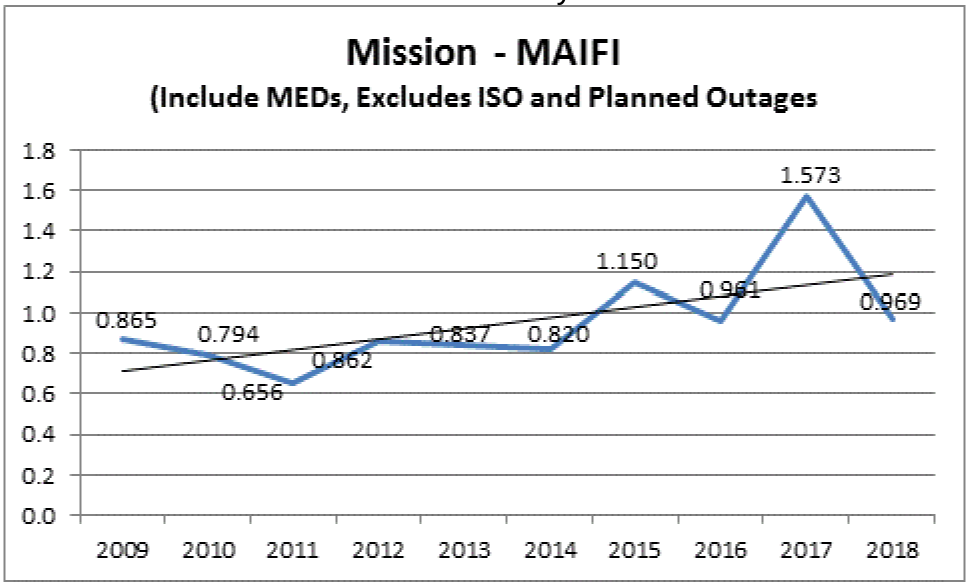


Chart 58: Division Reliability - MAIFI Indices

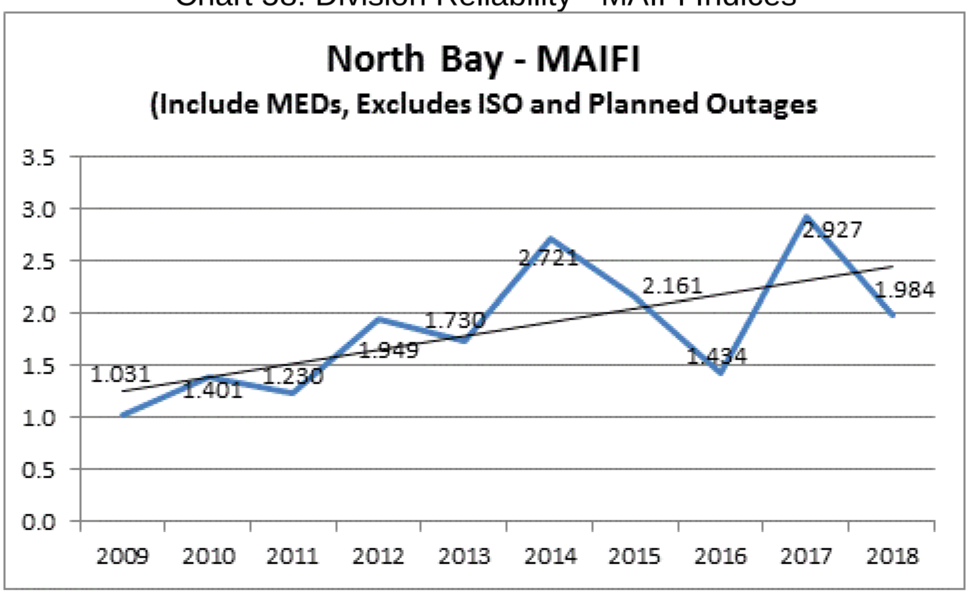


Chart 59: Division Reliability - MAIFI Indices

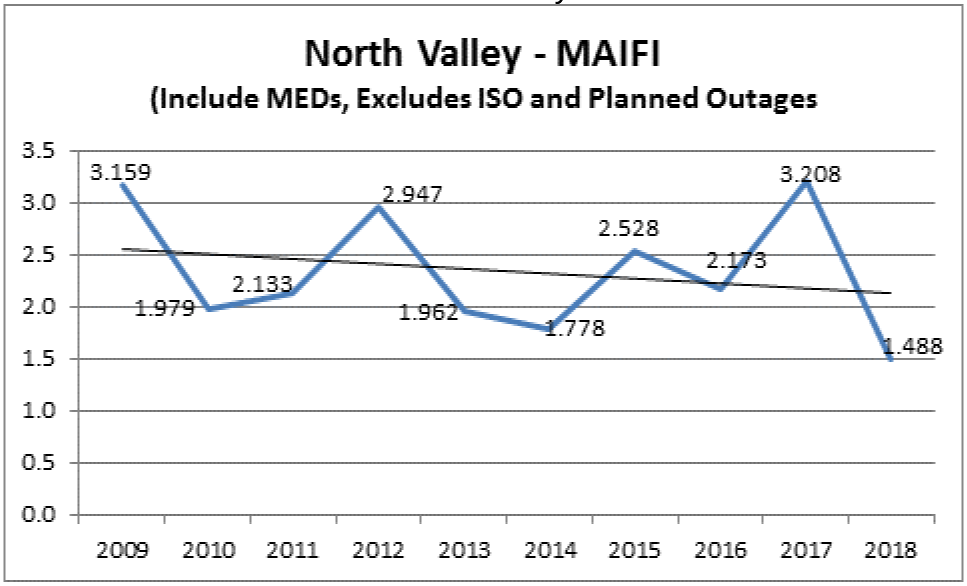


Chart 60: Division Reliability - MAIFI Indices

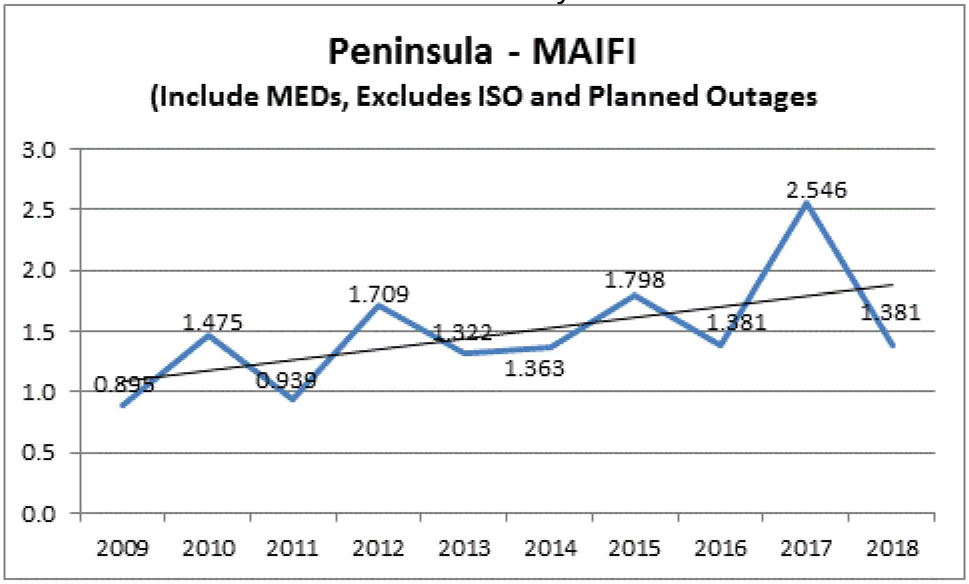


Chart 61: Division Reliability - MAIFI Indices

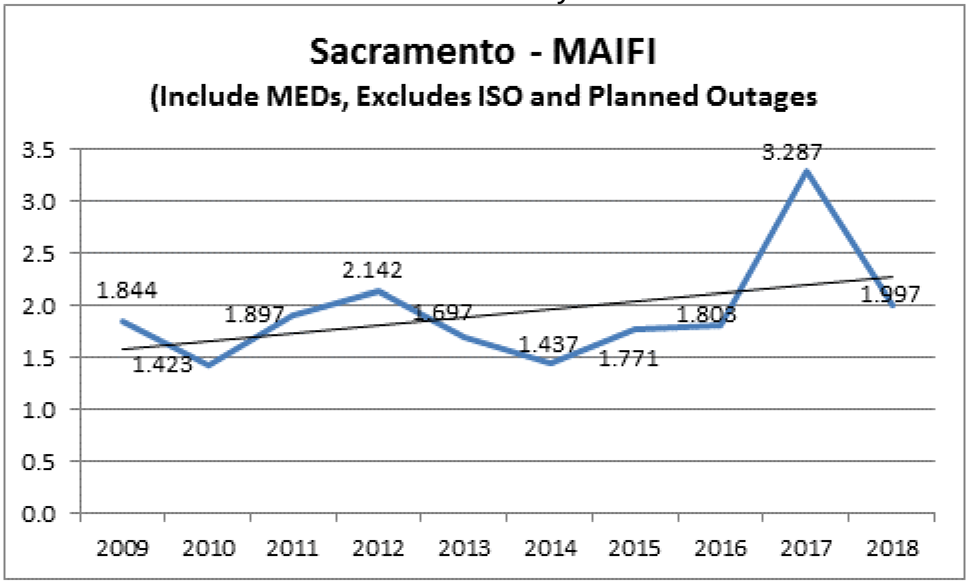


Chart 62: Division Reliability - MAIFI Indices

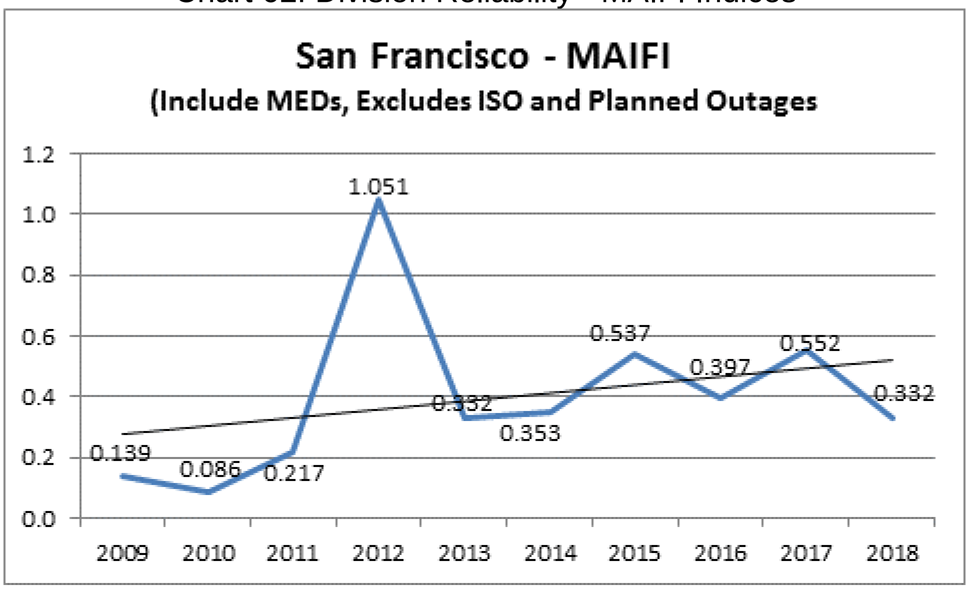


Chart 63: Division Reliability - MAIFI Indices

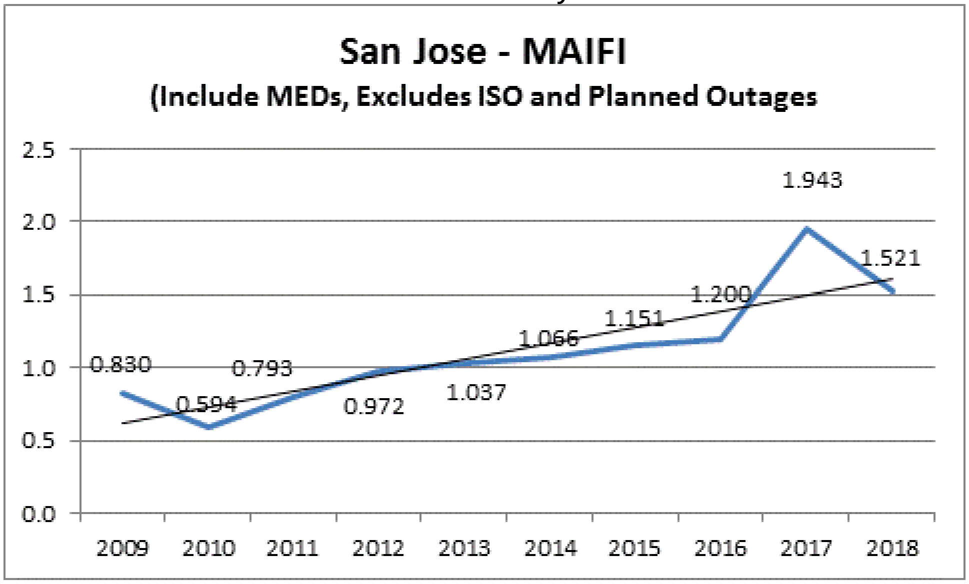


Chart 64: Division Reliability - MAIFI Indices

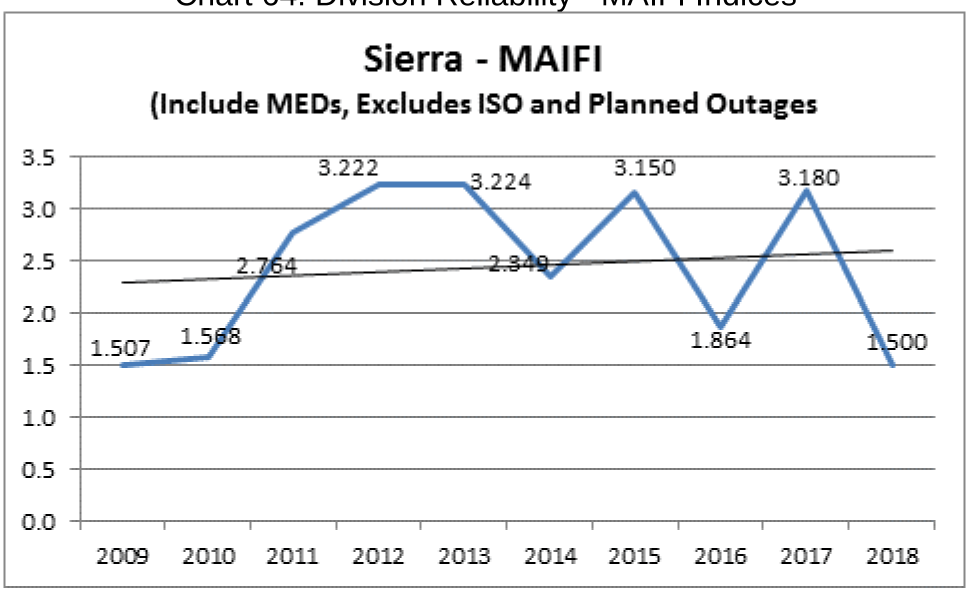


Chart 65: Division Reliability - MAIFI Indices

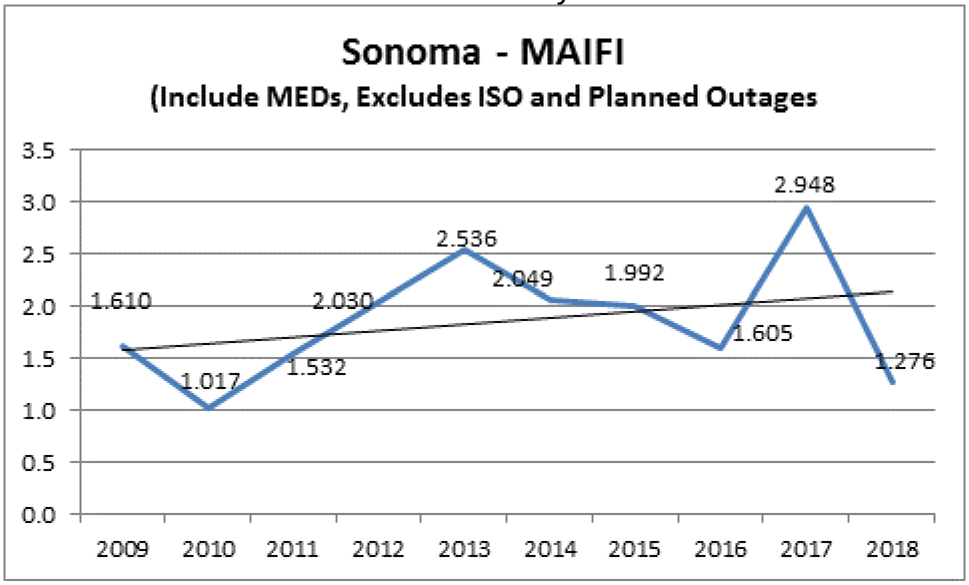


Chart 66: Division Reliability - MAIFI Indices

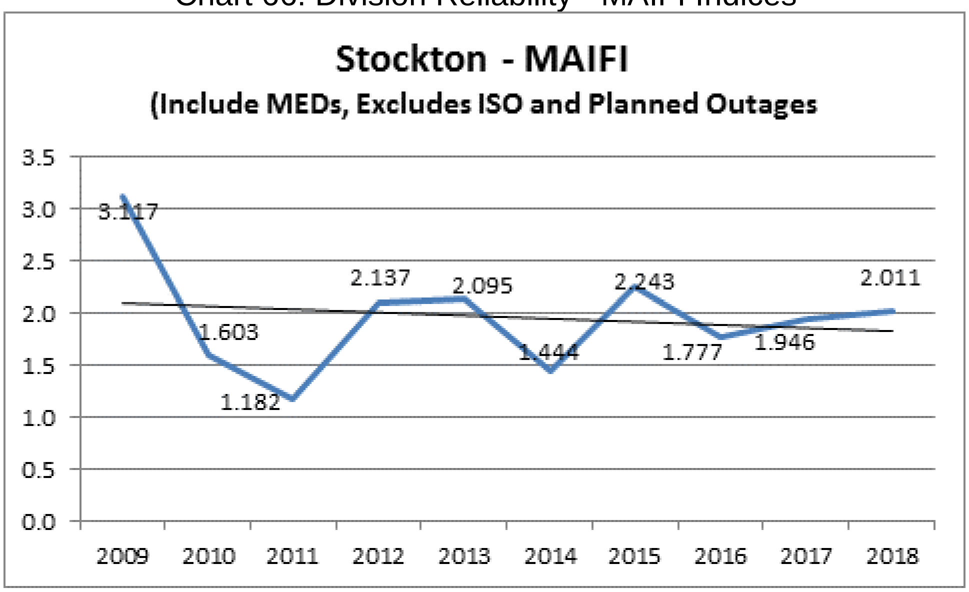
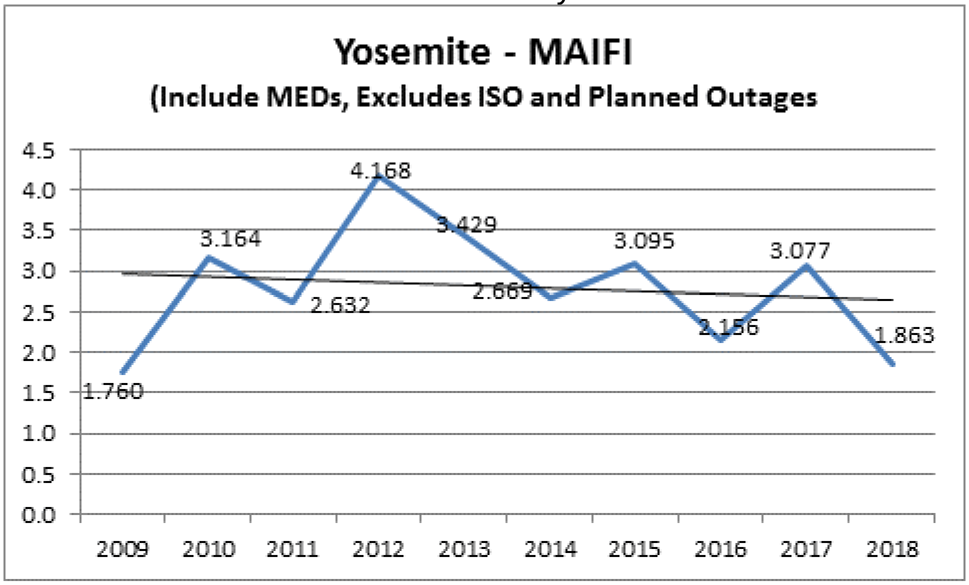


Chart 67: Division Reliability - MAIFI Indices



4. CAIDI Performance Results (MED Included)

Chart 68: Division Reliability - CAIDI Indices

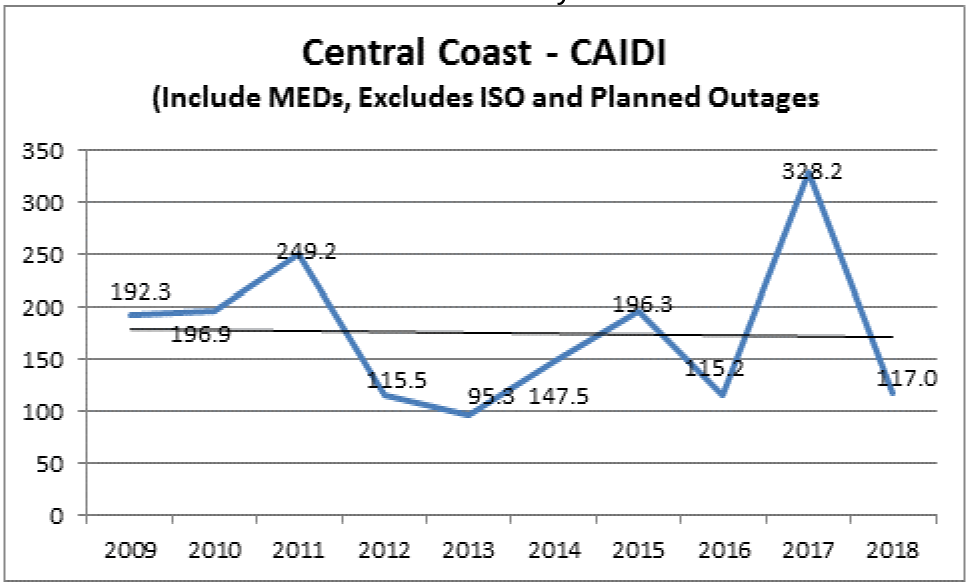


Chart 69: Division Reliability - CAIDI Indices

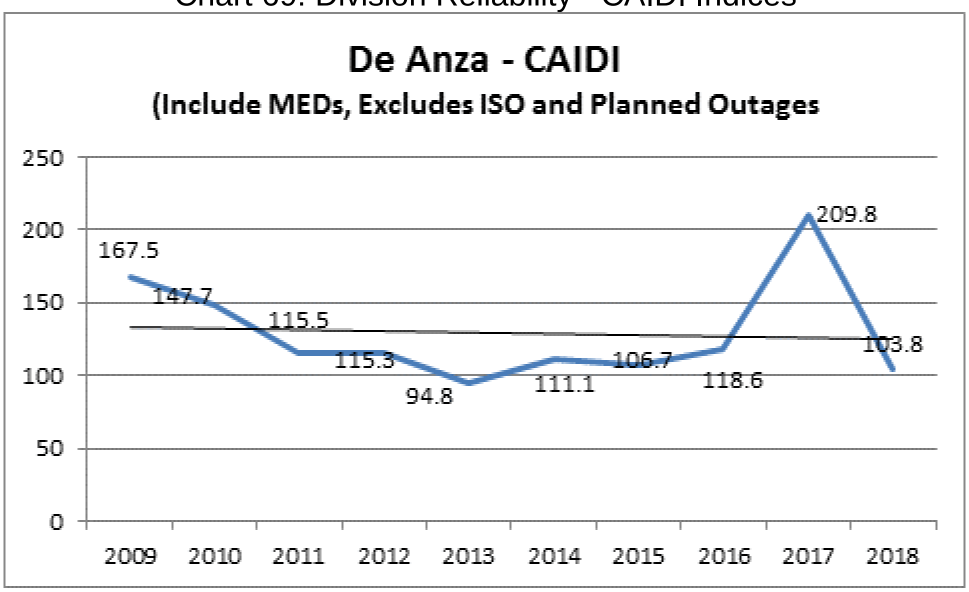


Chart 70: Division Reliability - CAIDI Indices

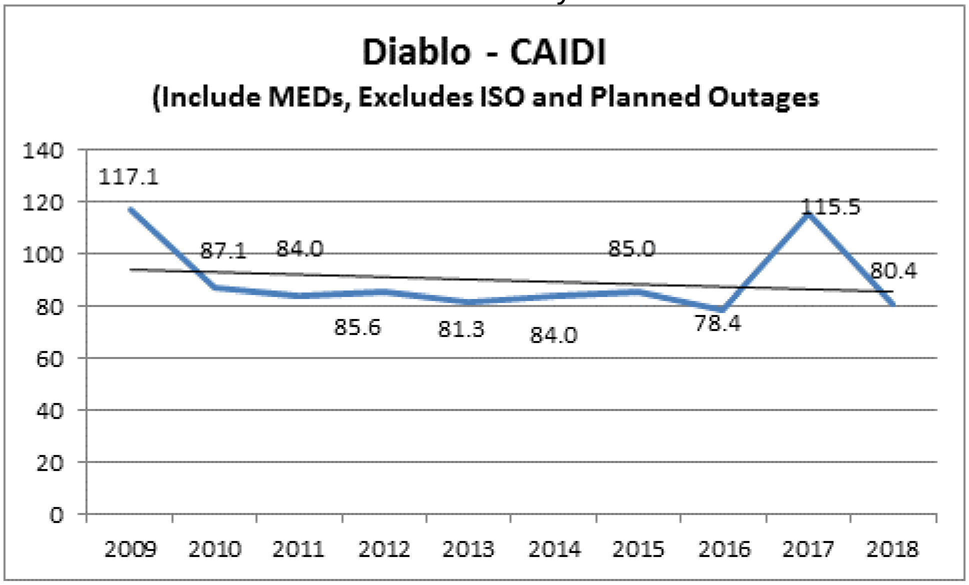


Chart 71: Division Reliability - CAIDI Indices

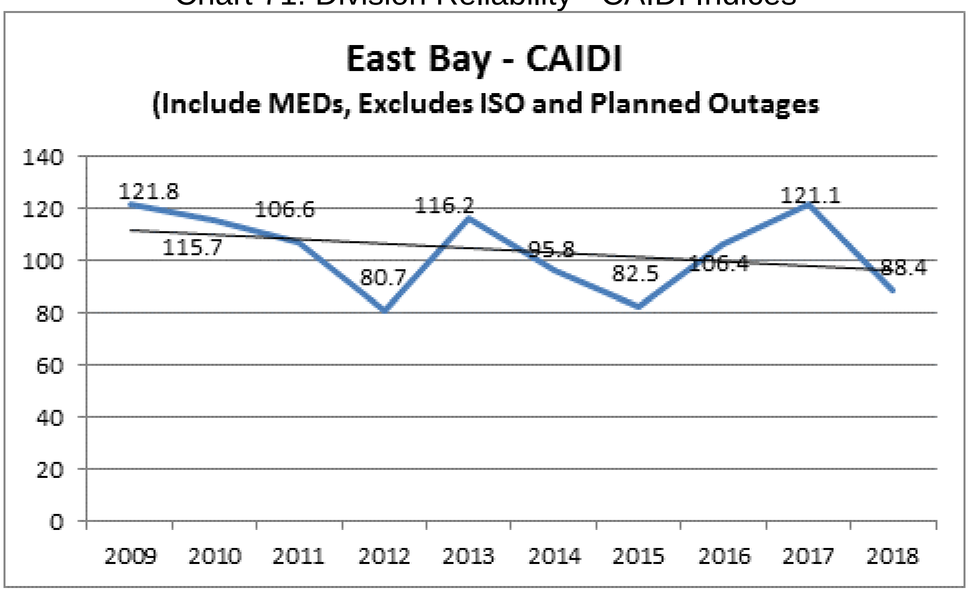


Chart 72: Division Reliability - CAIDI Indices

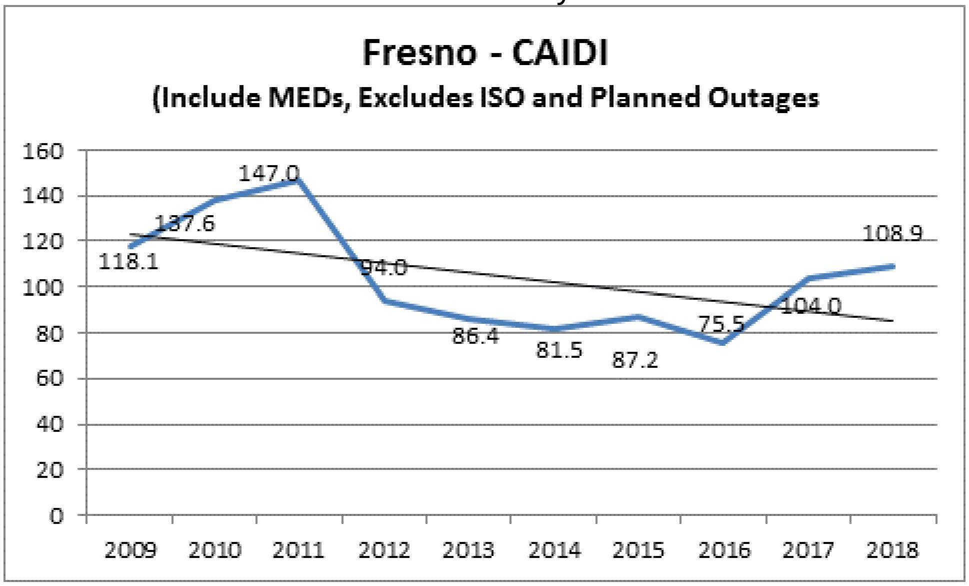


Chart 73: Division Reliability - CAIDI Indices

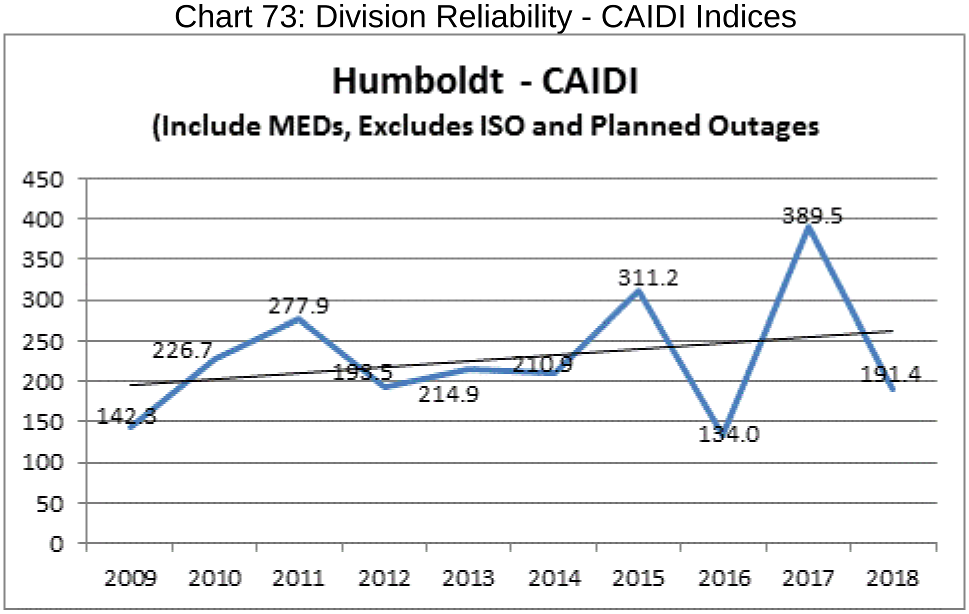


Chart 74: Division Reliability - CAIDI Indices

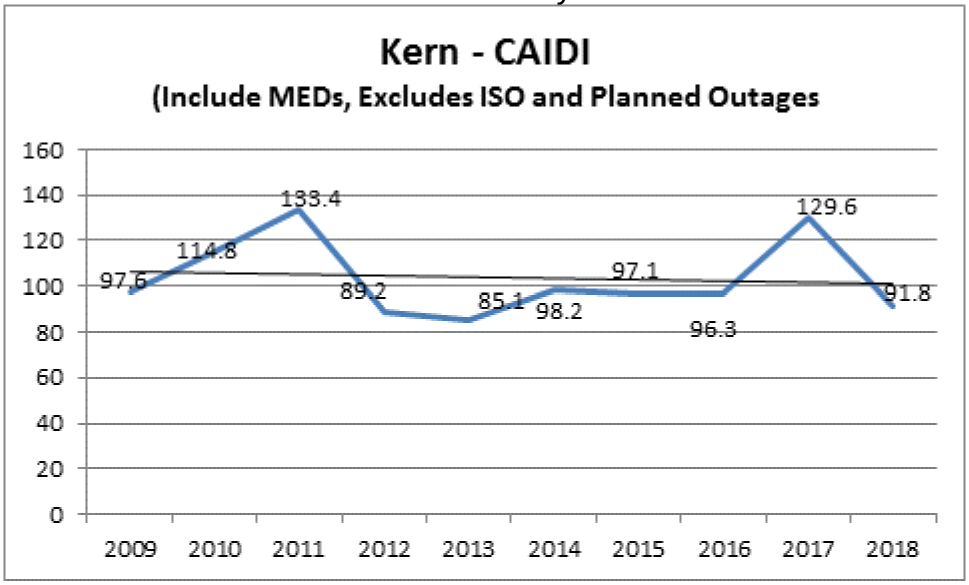


Chart 75: Division Reliability - CAIDI Indices

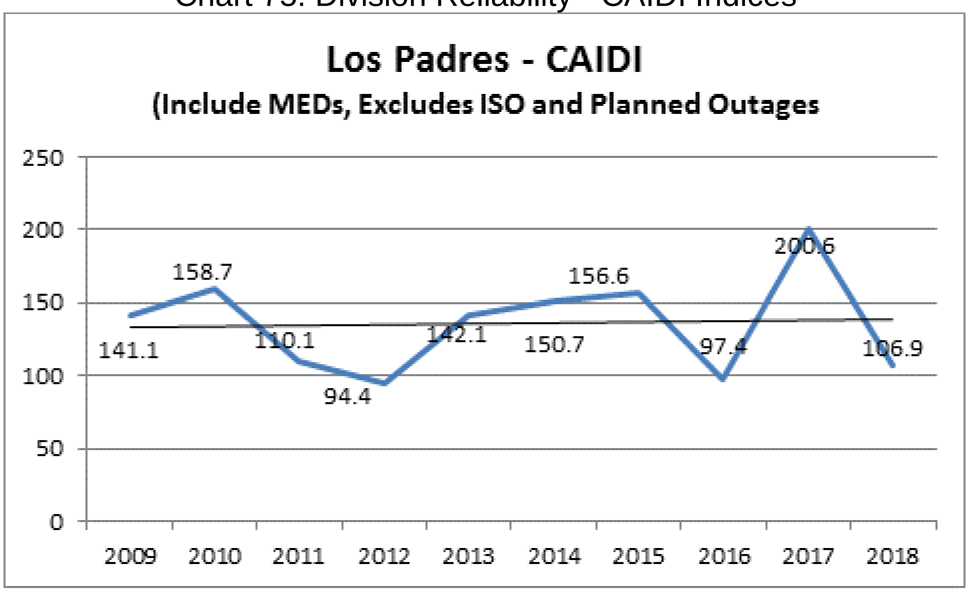


Chart 76: Division Reliability - CAIDI Indices

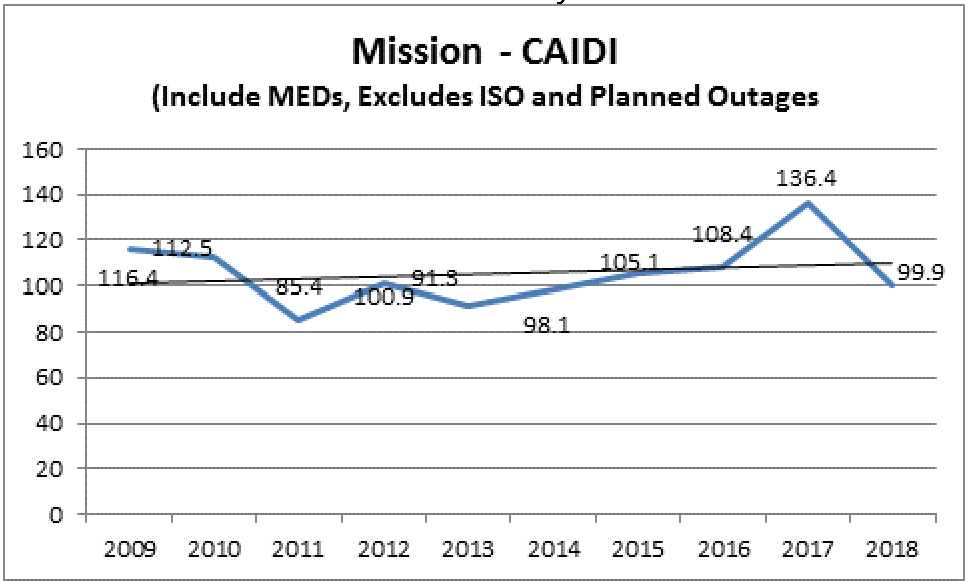


Chart 77: Division Reliability - CAIDI Indices

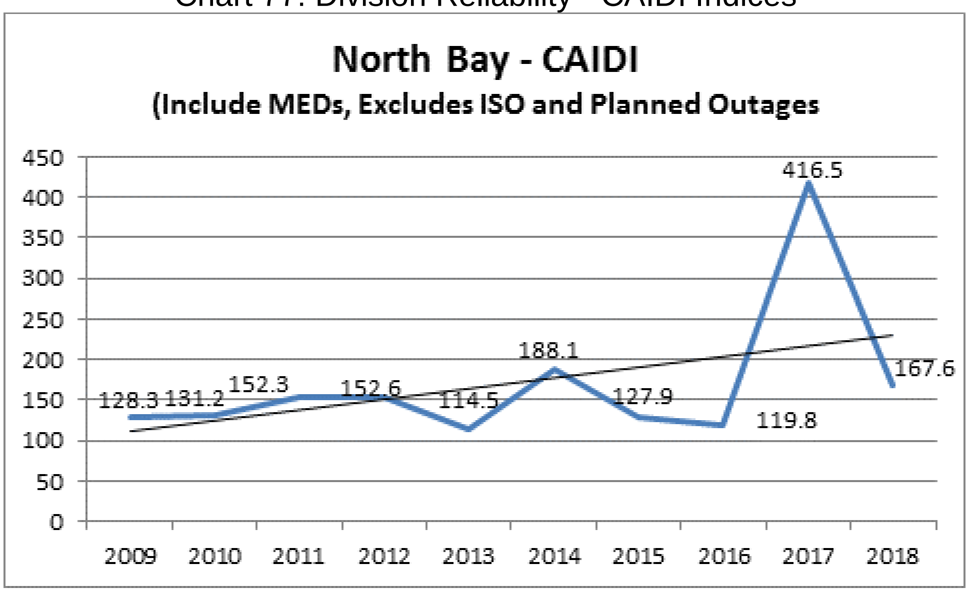


Chart 78: Division Reliability - CAIDI Indices

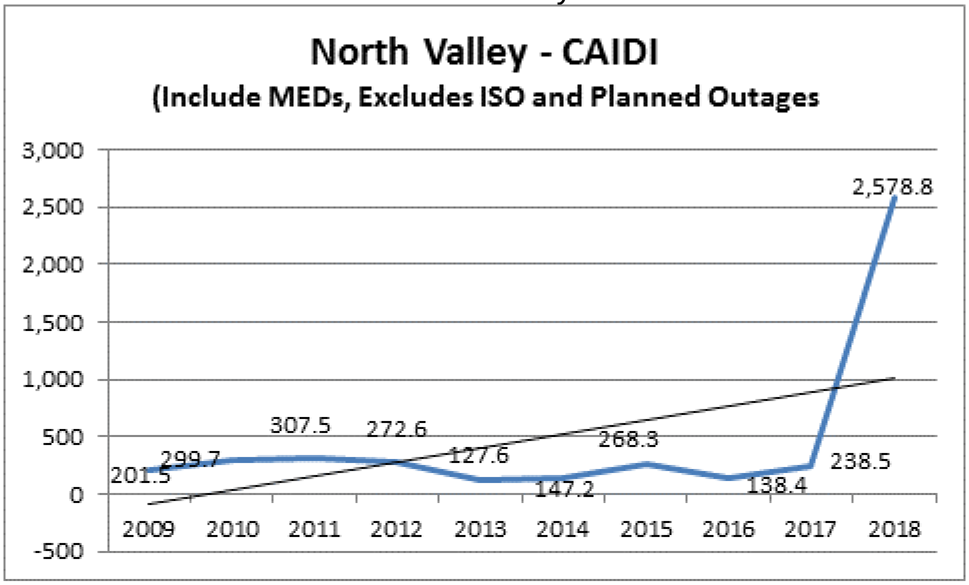


Chart 79: Division Reliability - CAIDI Indices

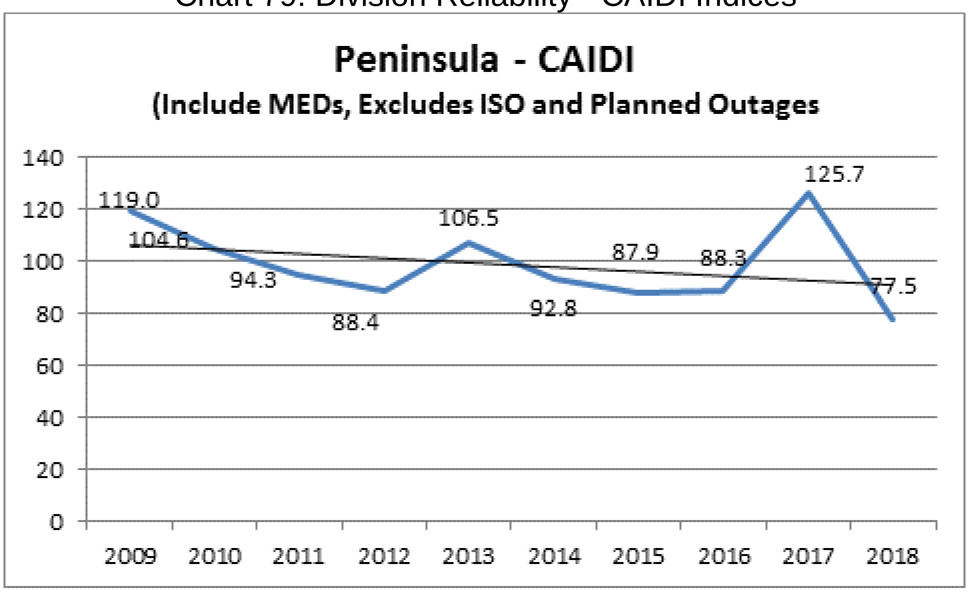


Chart 80: Division Reliability - CAIDI Indices

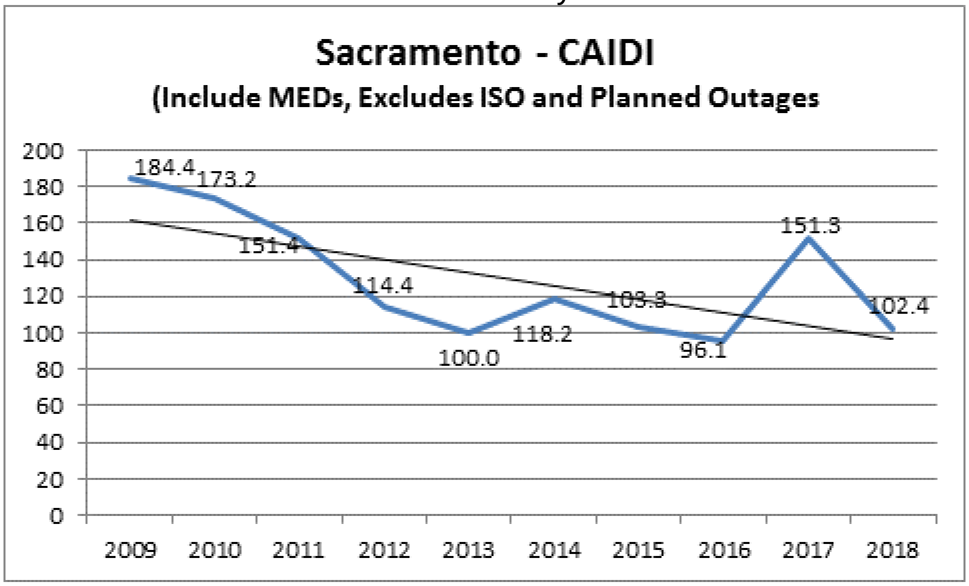


Chart 81: Division Reliability - CAIDI Indices

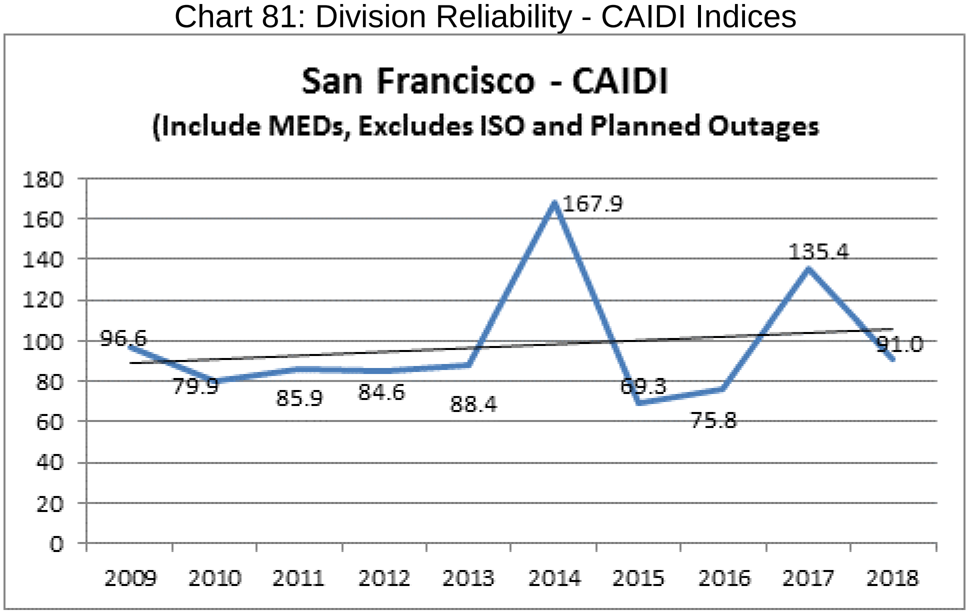


Chart 82: Division Reliability - CAIDI Indices

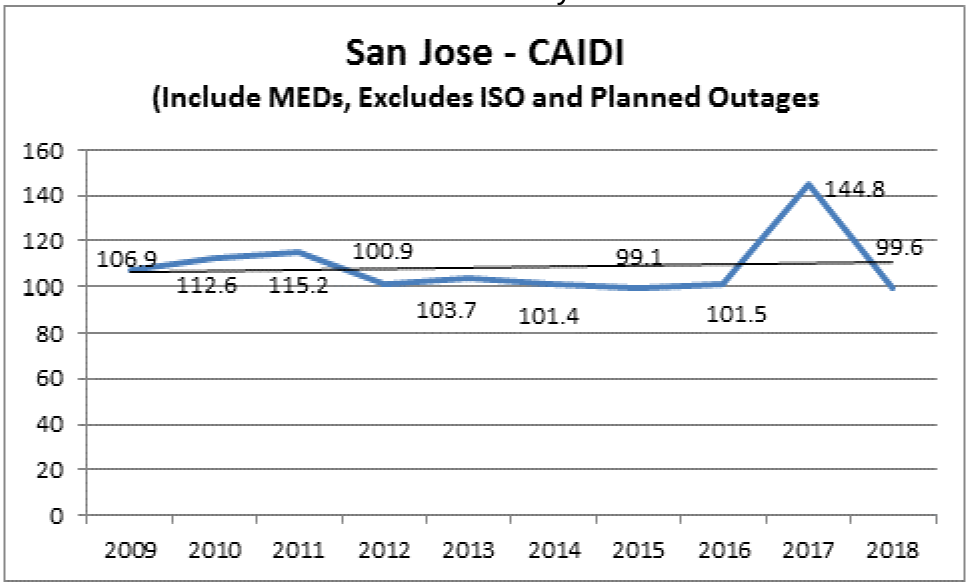


Chart 83: Division Reliability - CAIDI Indices

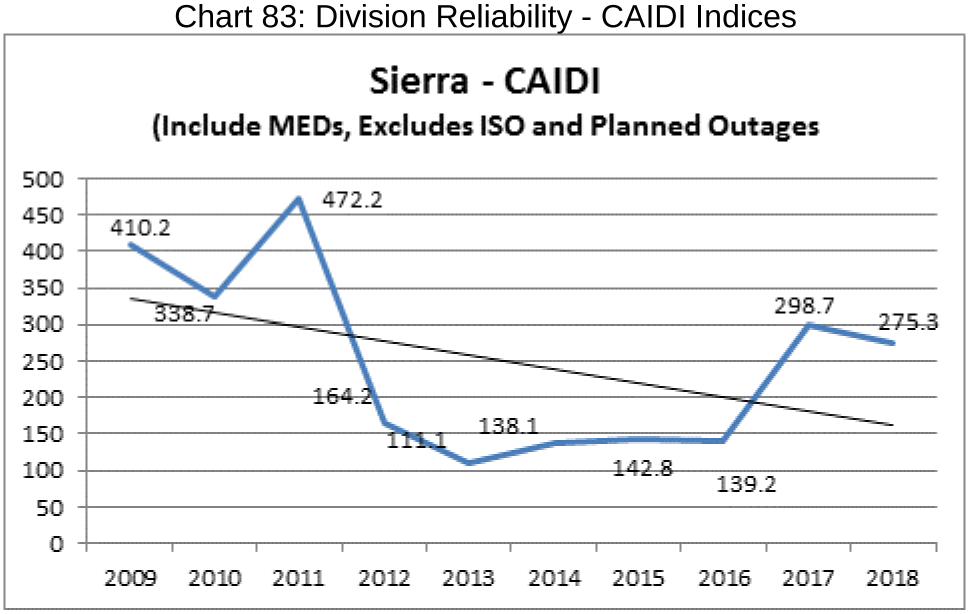


Chart 84: Division Reliability - CAIDI Indices

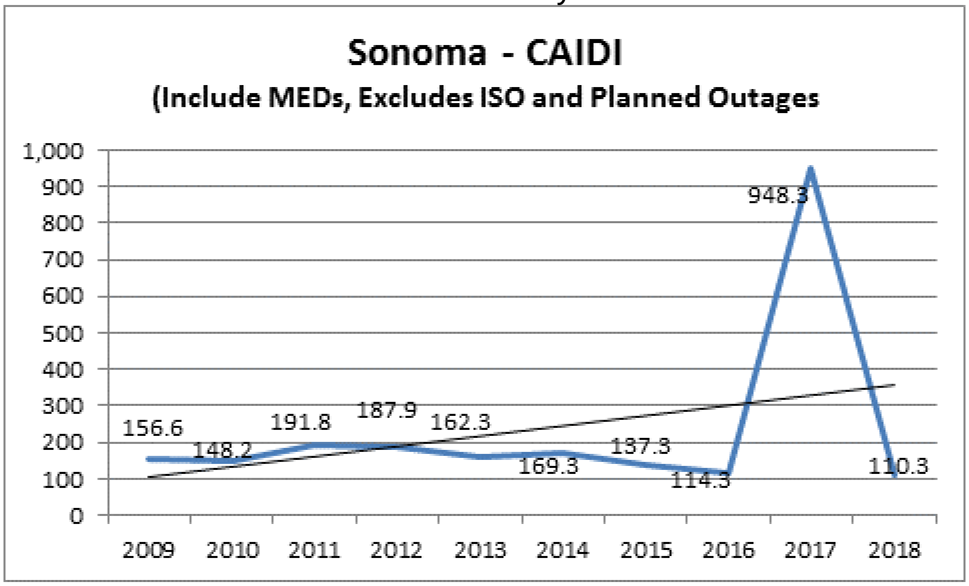


Chart 85: Division Reliability - CAIDI Indices

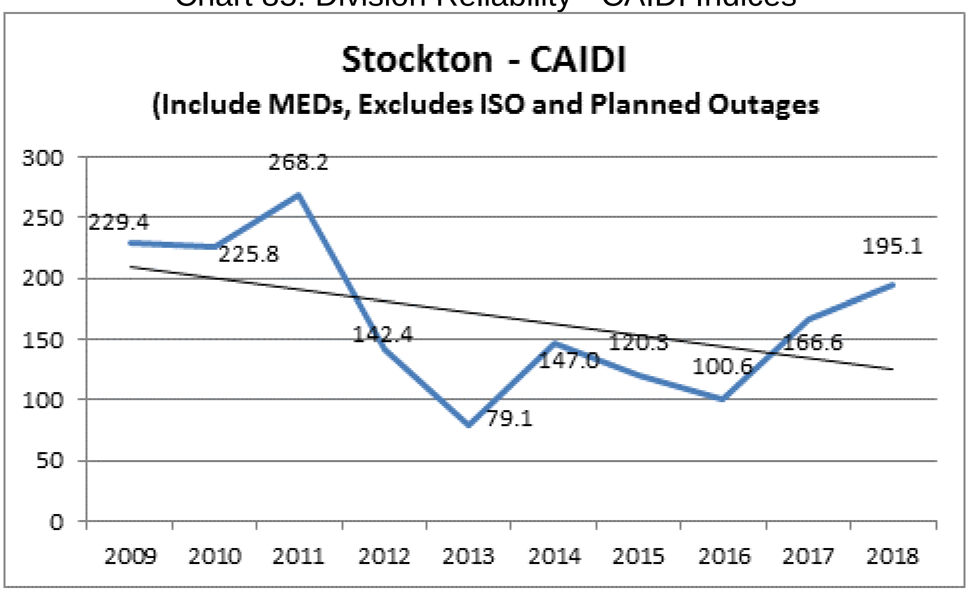
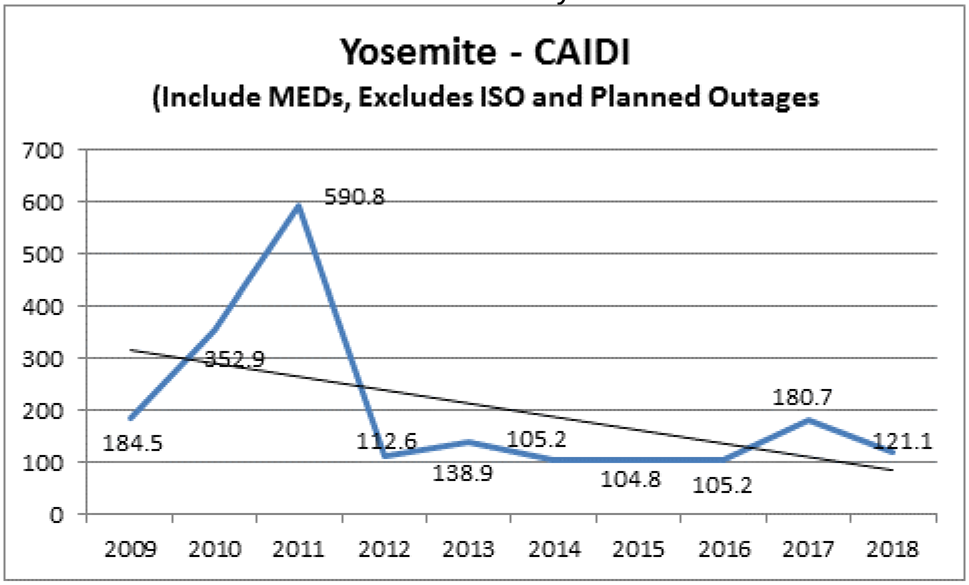


Chart 86: Division Reliability - CAIDI Indices



ii. Charts for Division Reliability Indices for the past 10 years with linear trend line excluding ISO, planned outages and MED

1. AIDI Performance Results (MED Excluded)

Chart 87: Division Reliability - AIDI Indices

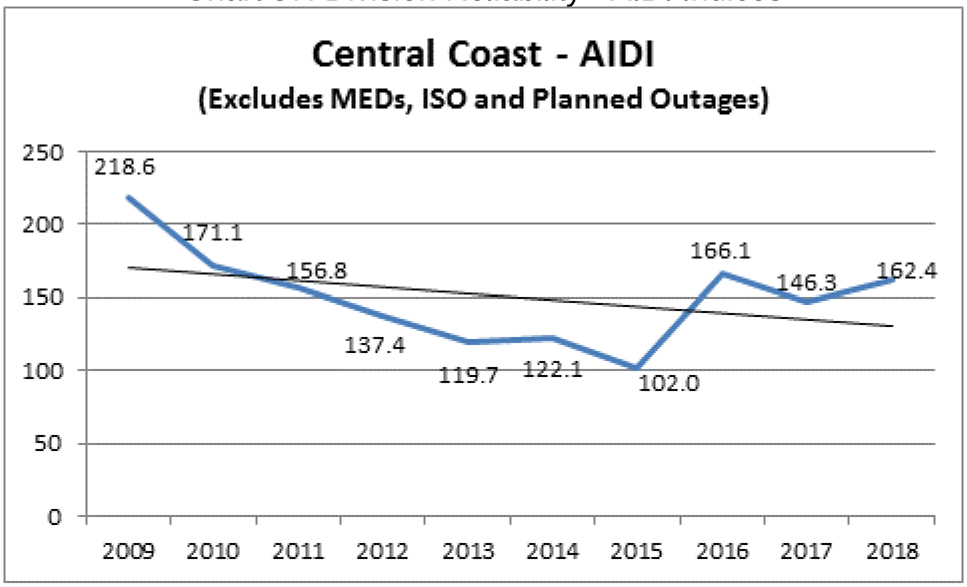


Chart 88: Division Reliability - AIDI Indices

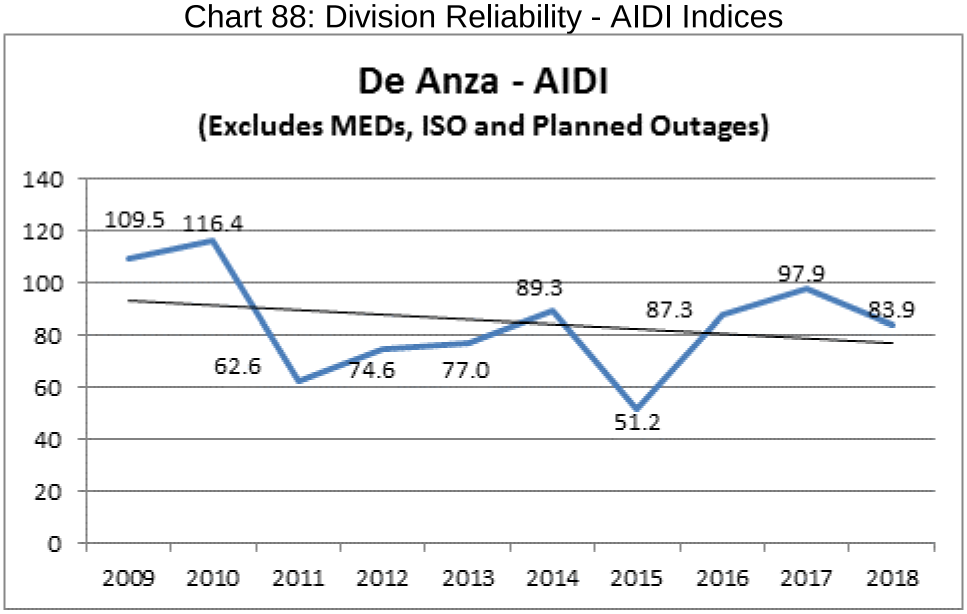


Chart 89: Division Reliability - AIDI Indices

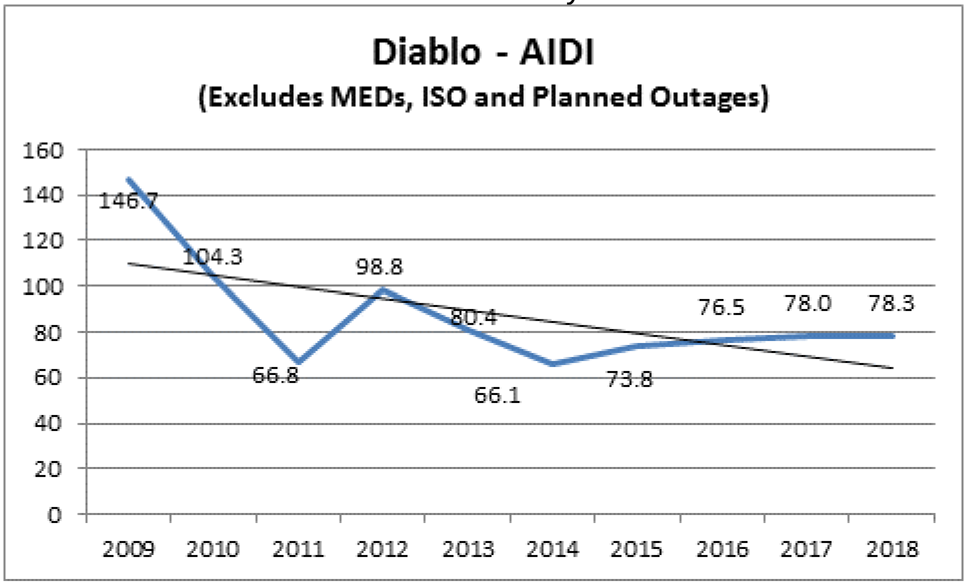


Chart 90: Division Reliability - AIDI Indices

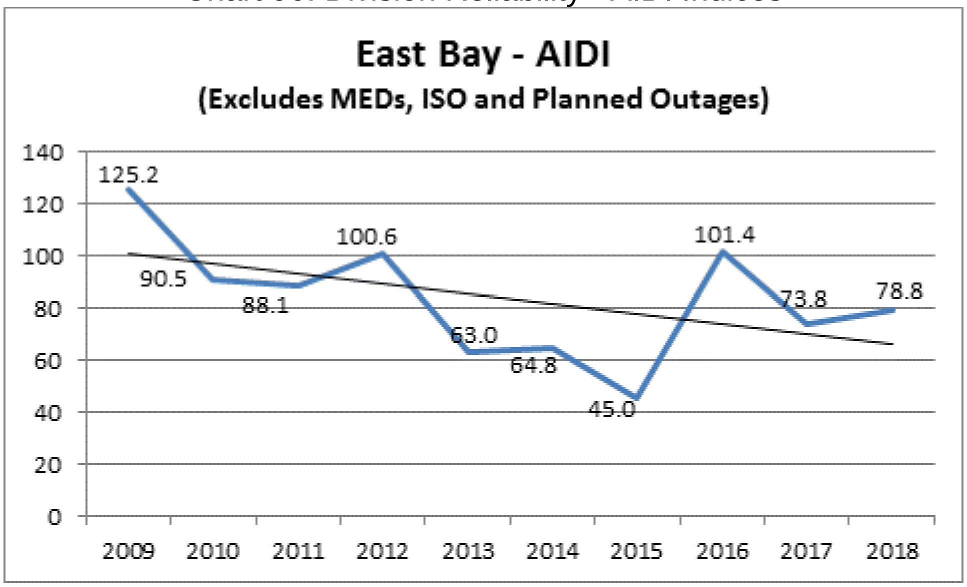


Chart 91: Division Reliability - AIDI Indices

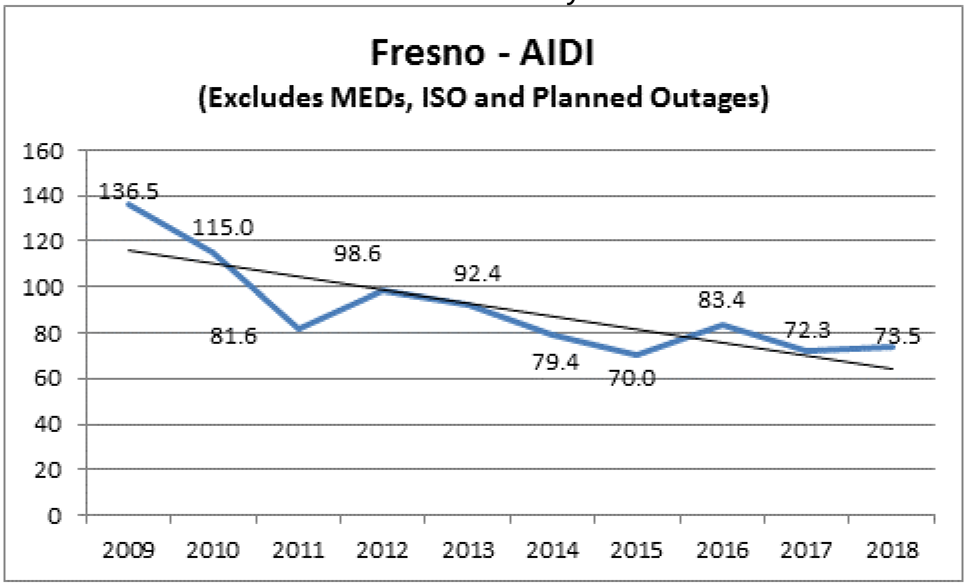


Chart 92: Division Reliability - AIDI Indices

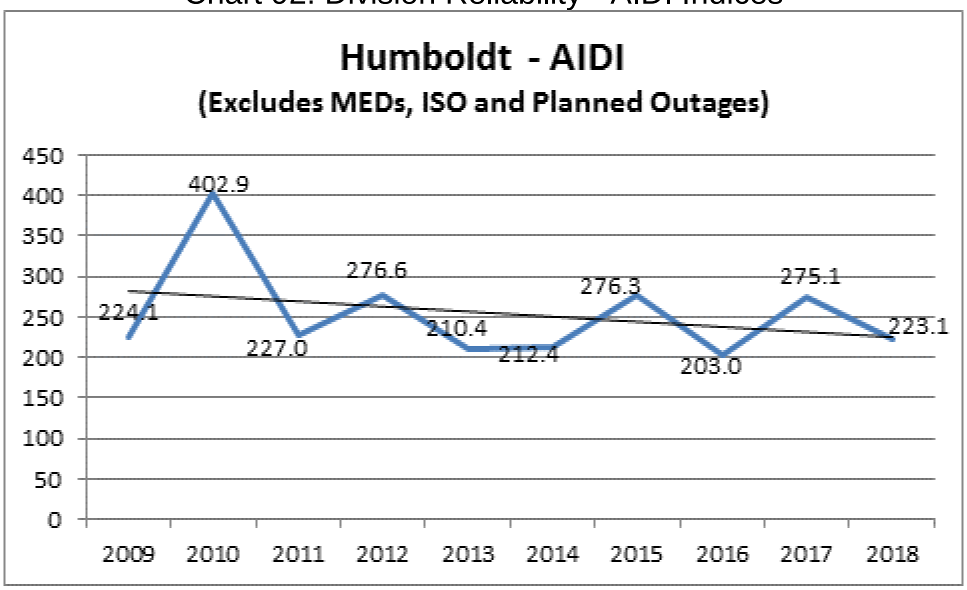


Chart 93: Division Reliability - AIDI Indices

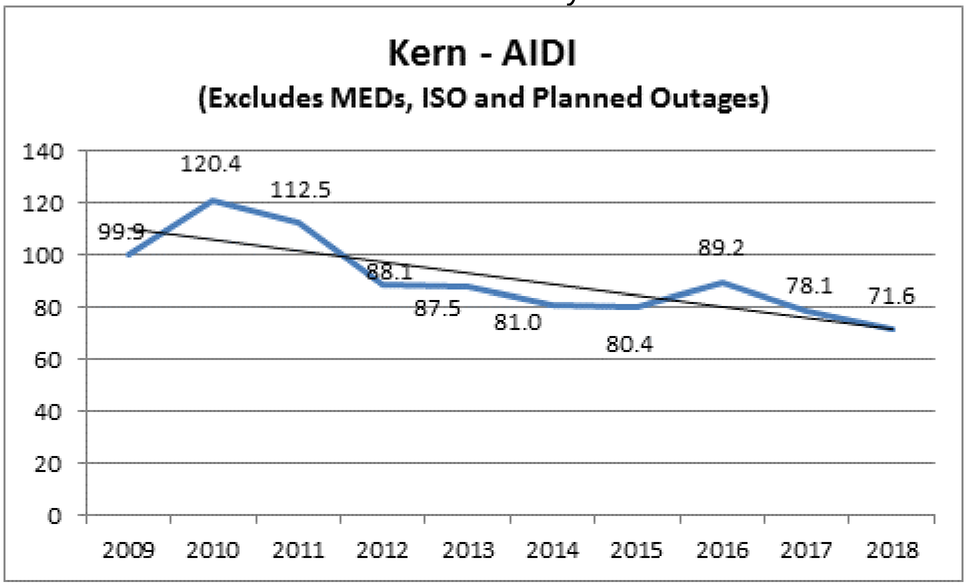


Chart 94: Division Reliability - AIDI Indices

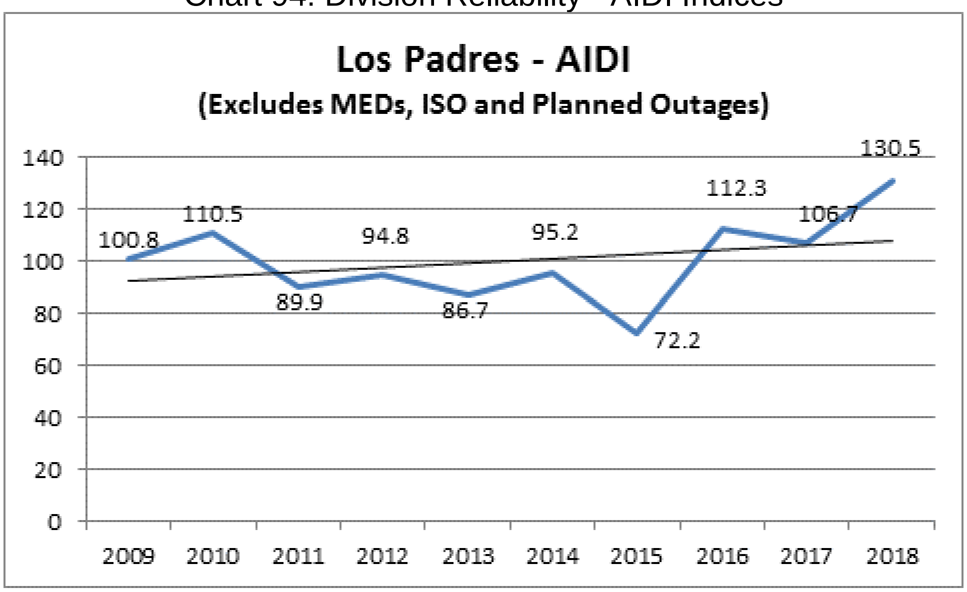


Chart 95: Division Reliability - AIDI Indices

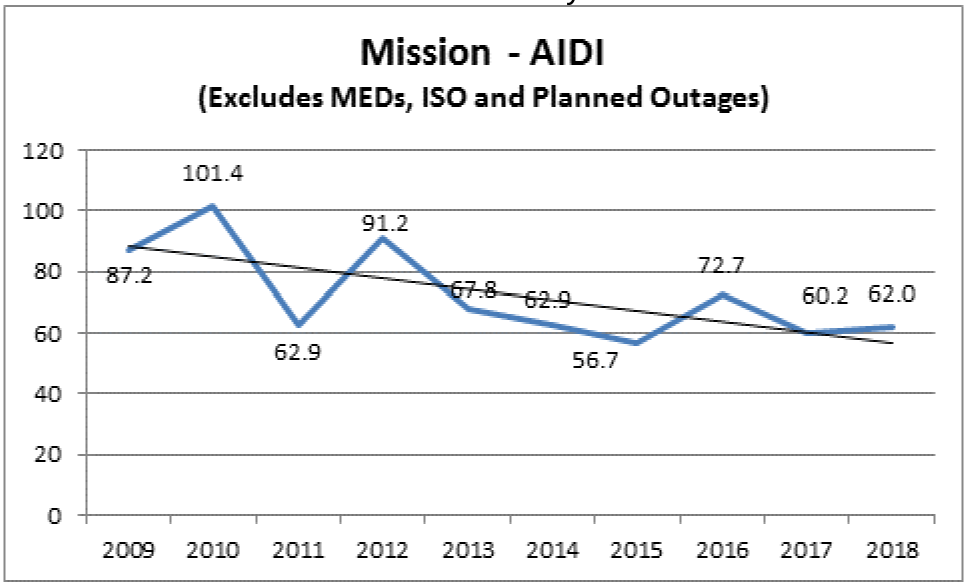


Chart 96: Division Reliability - AIDI Indices

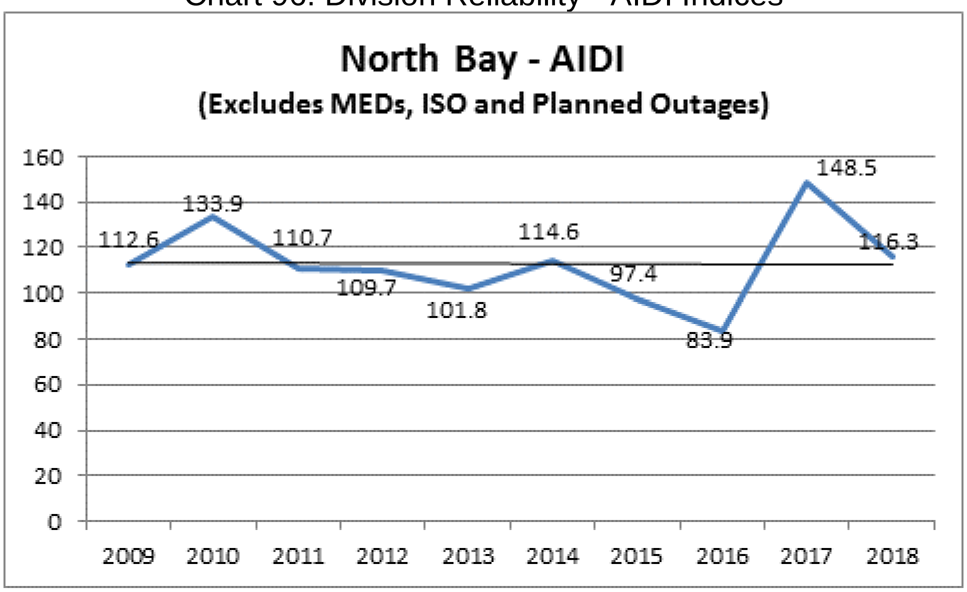


Chart 97: Division Reliability - AIDI Indices

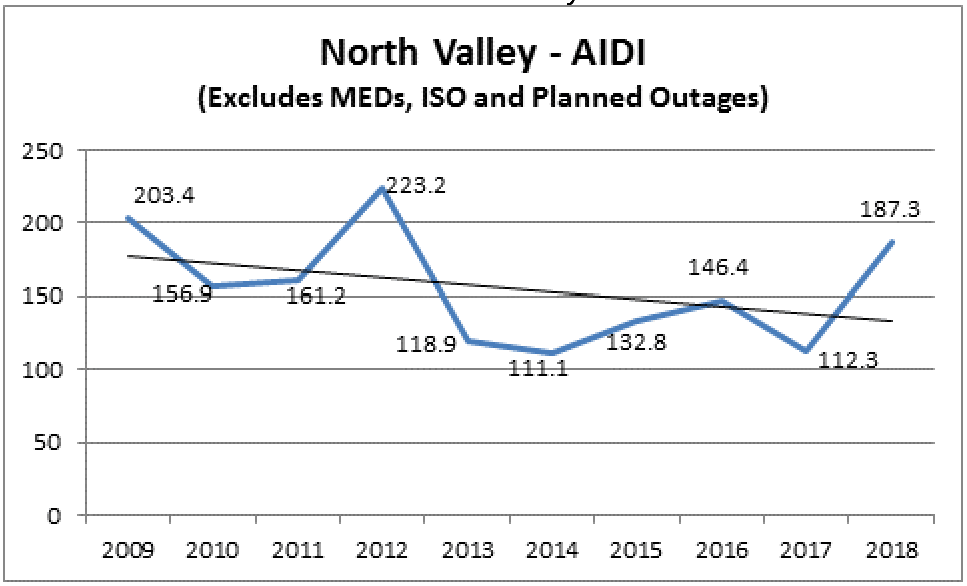


Chart 98: Division Reliability - AIDI Indices

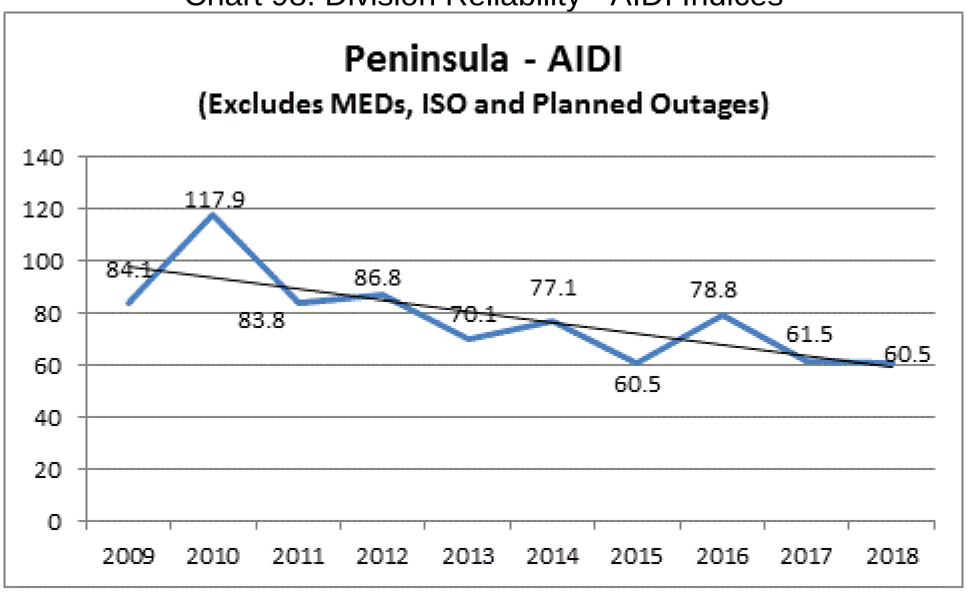


Chart 99: Division Reliability - AIDI Indices

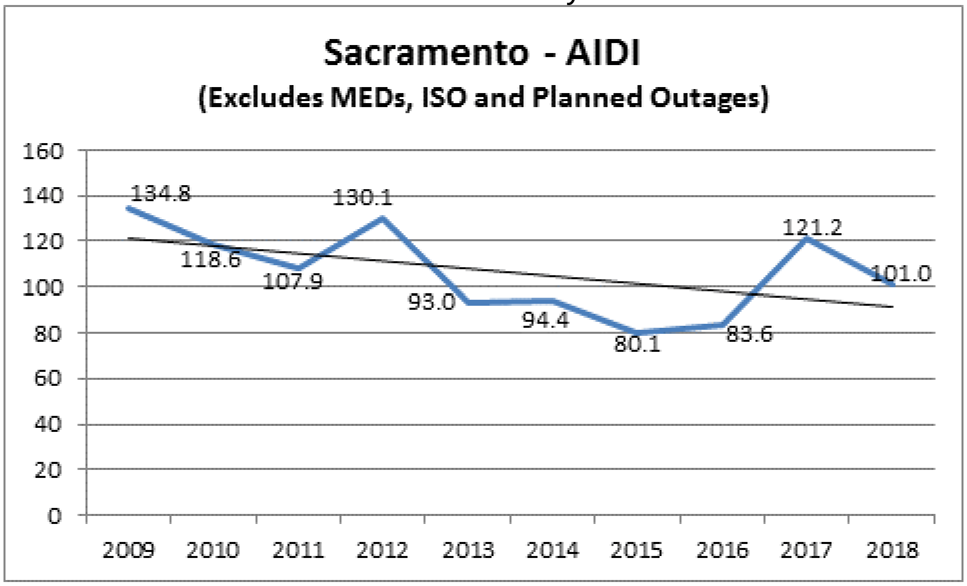


Chart 100: Division Reliability - AIDI Indices

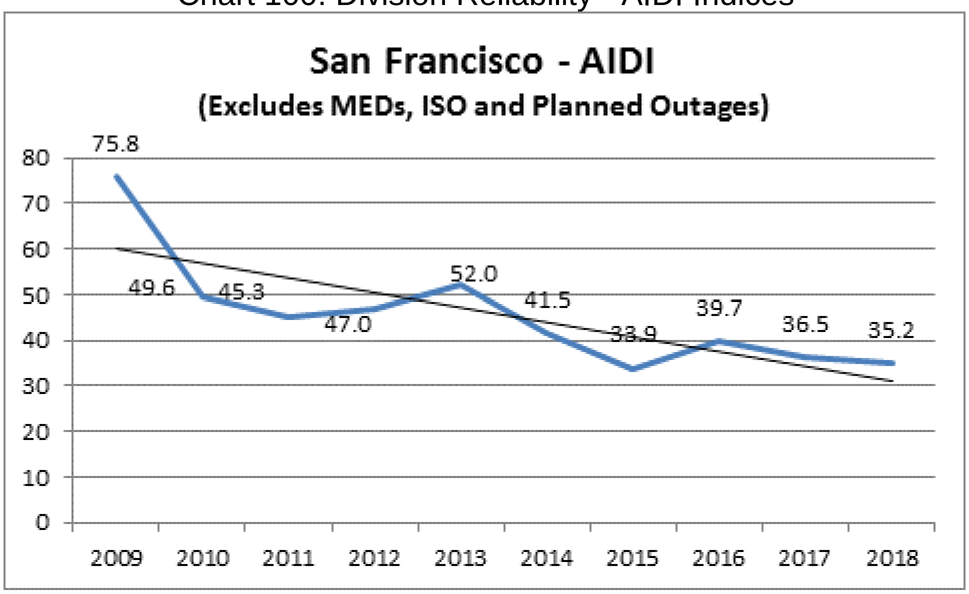


Chart 101: Division Reliability - AIDI Indices

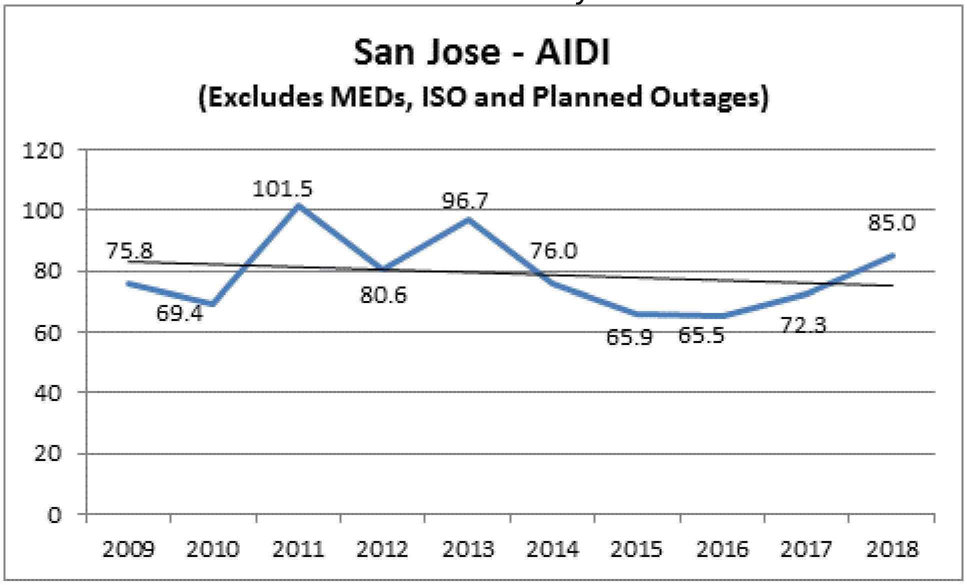


Chart 102: Division Reliability - AIDI Indices

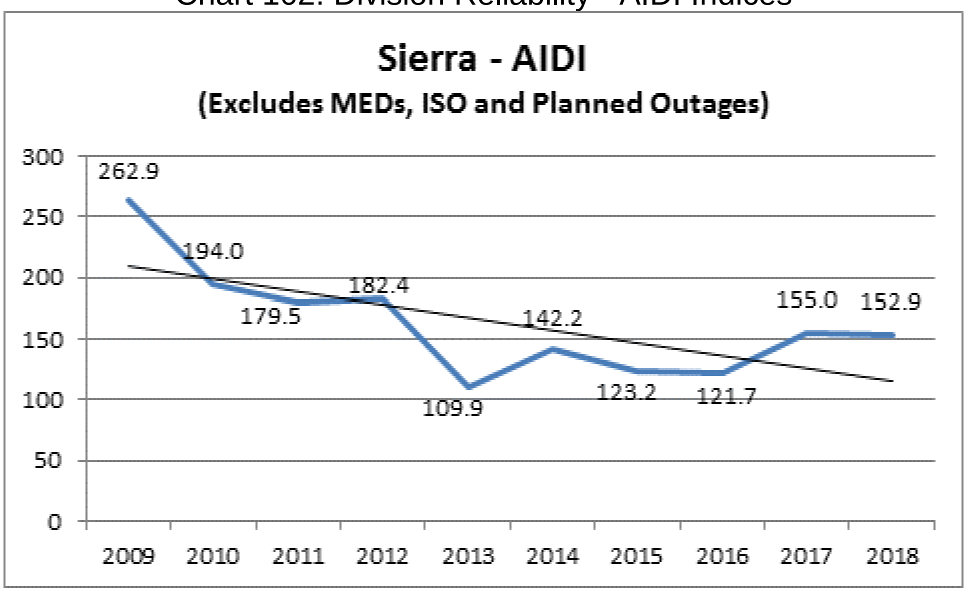


Chart 103: Division Reliability - AIDI Indices

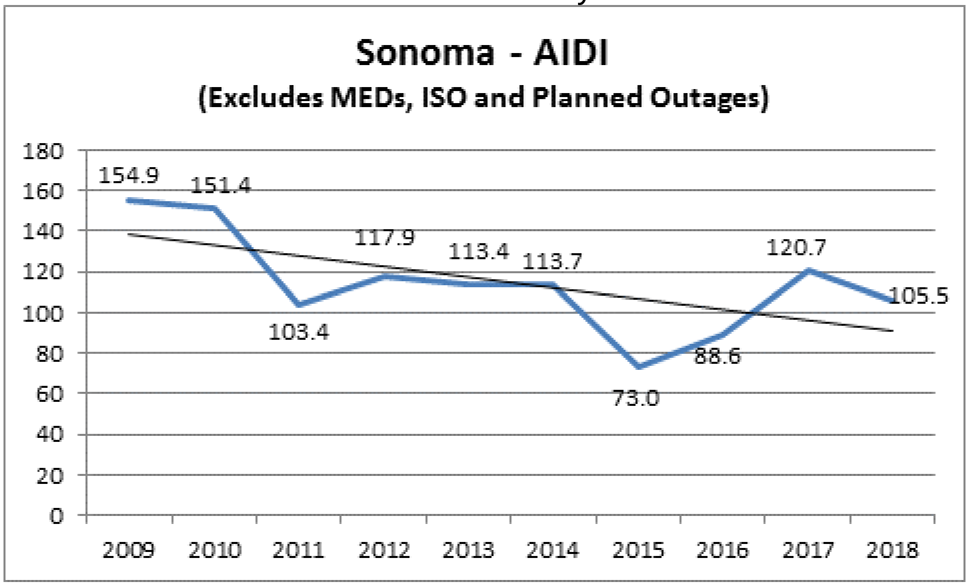


Chart 104: Division Reliability - AIDI Indices

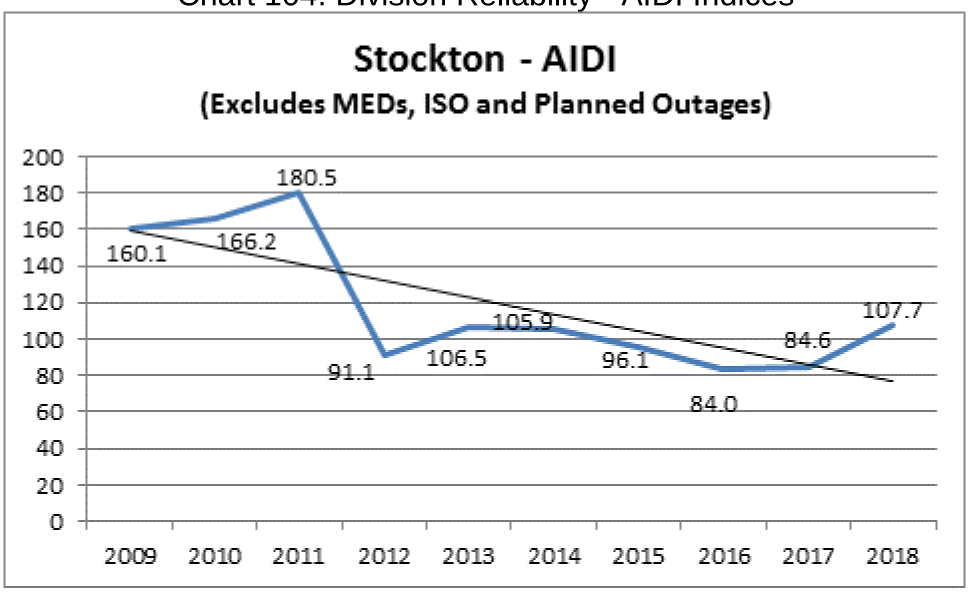
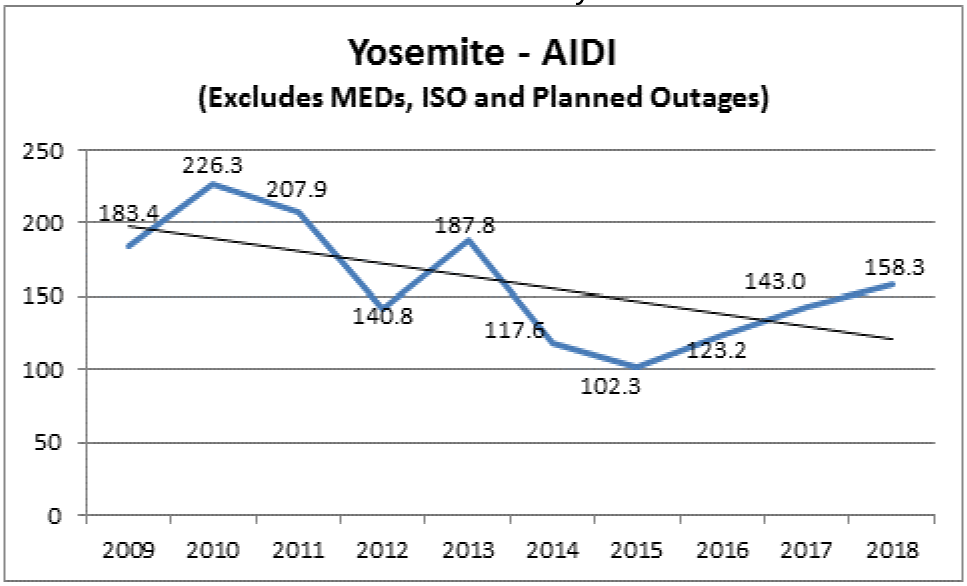


Chart 105: Division Reliability - AIDI Indices



2. AIFI Performance Results (MED Excluded)

Chart 106: Division Reliability - AIFI Indices

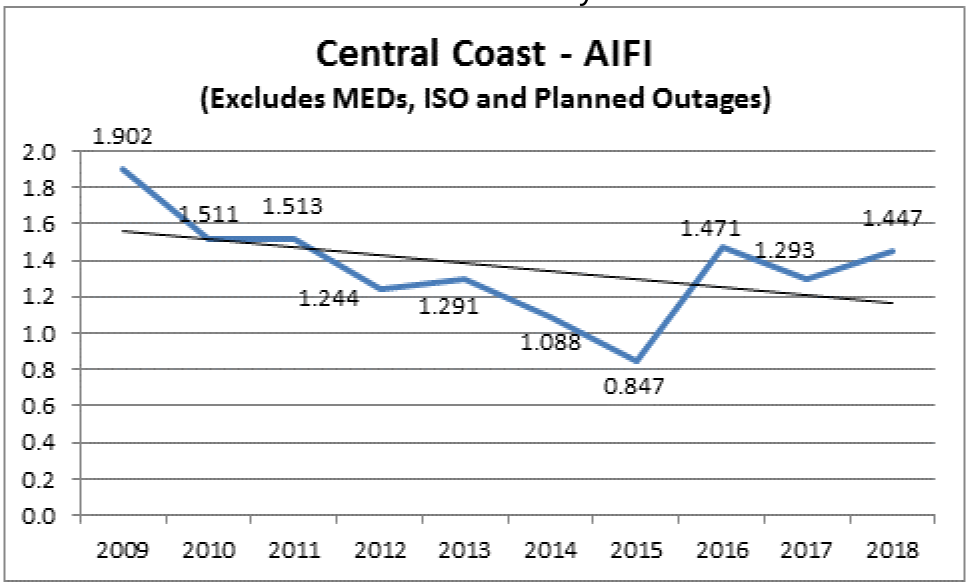


Chart 107: Division Reliability - AIFI Indices

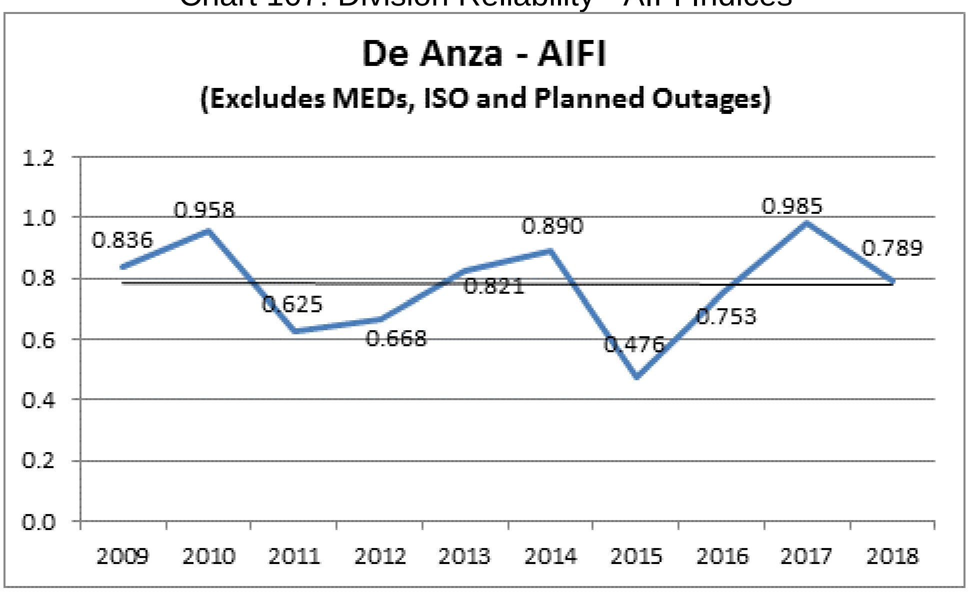


Chart 108: Division Reliability - AIFI Indices

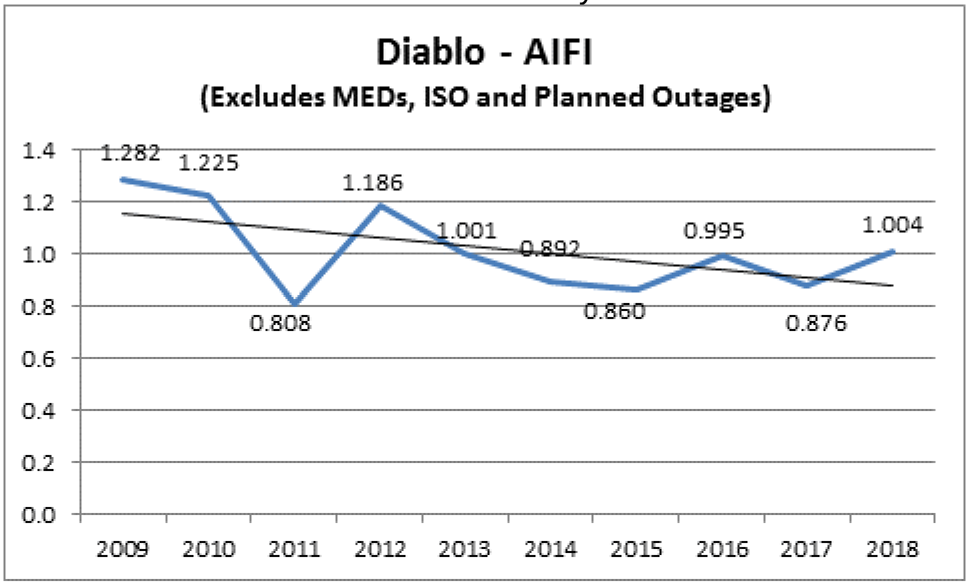


Chart 109: Division Reliability - AIFI Indices

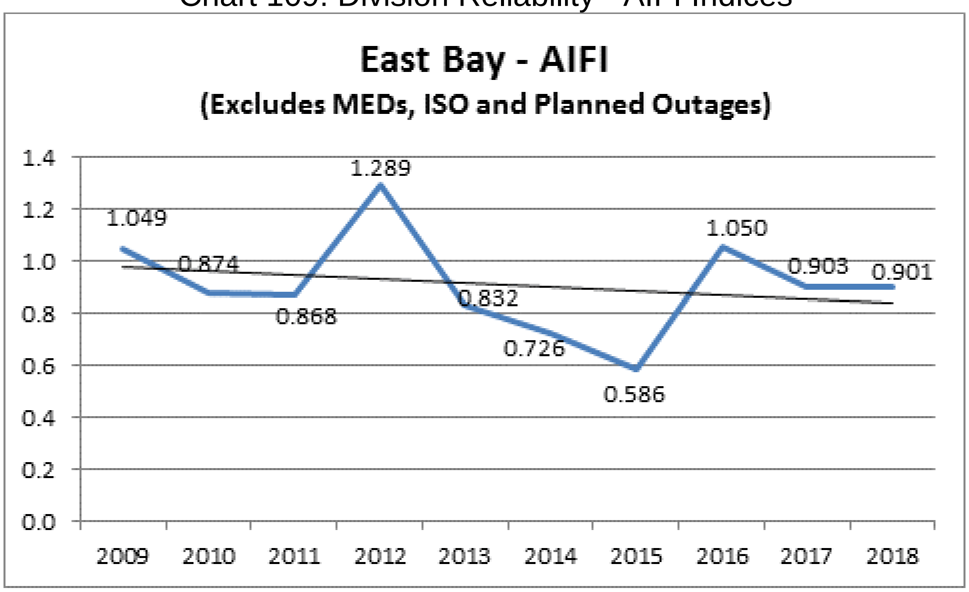


Chart 110: Division Reliability - AIFI Indices

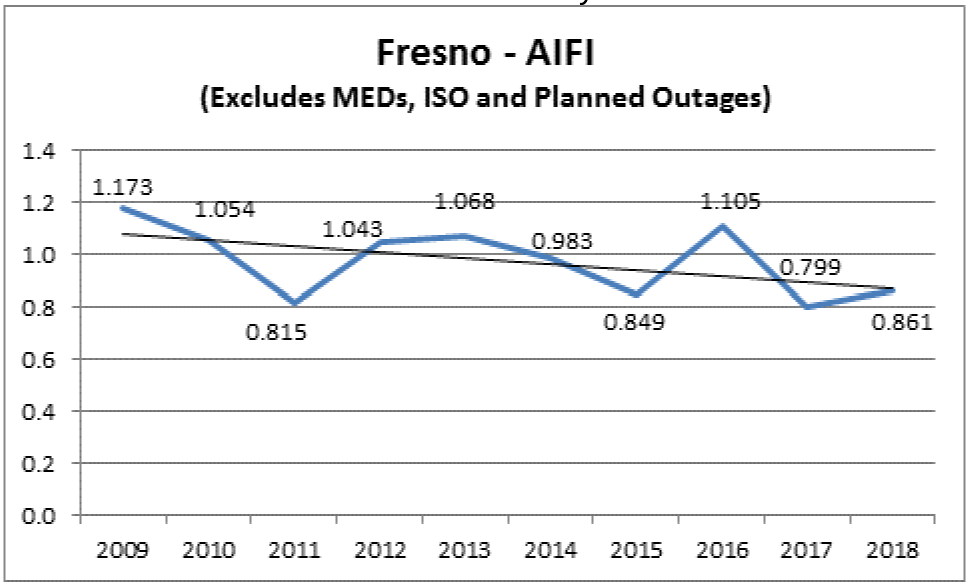


Chart 111: Division Reliability - AIFI Indices

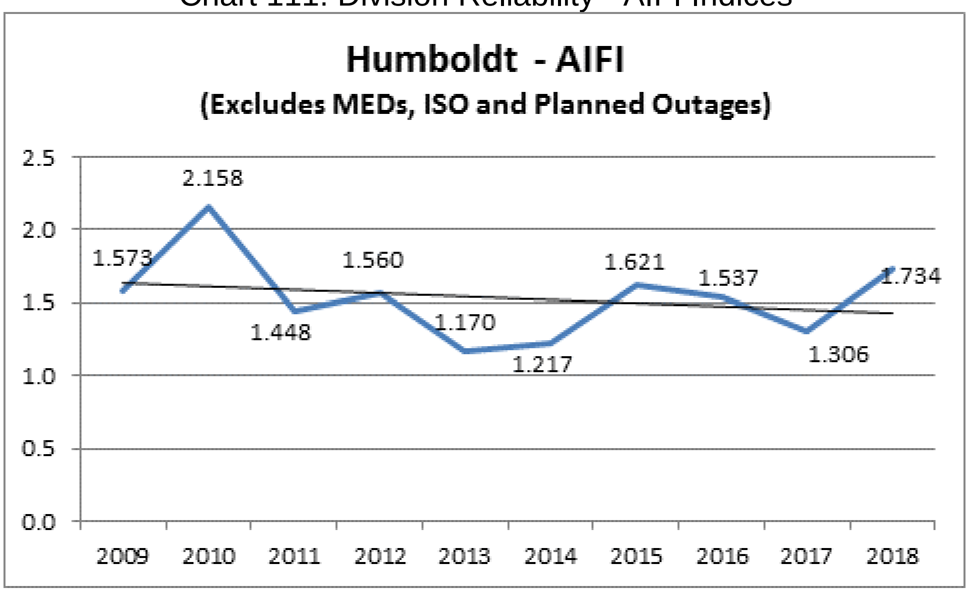


Chart 112: Division Reliability - AIFI Indices

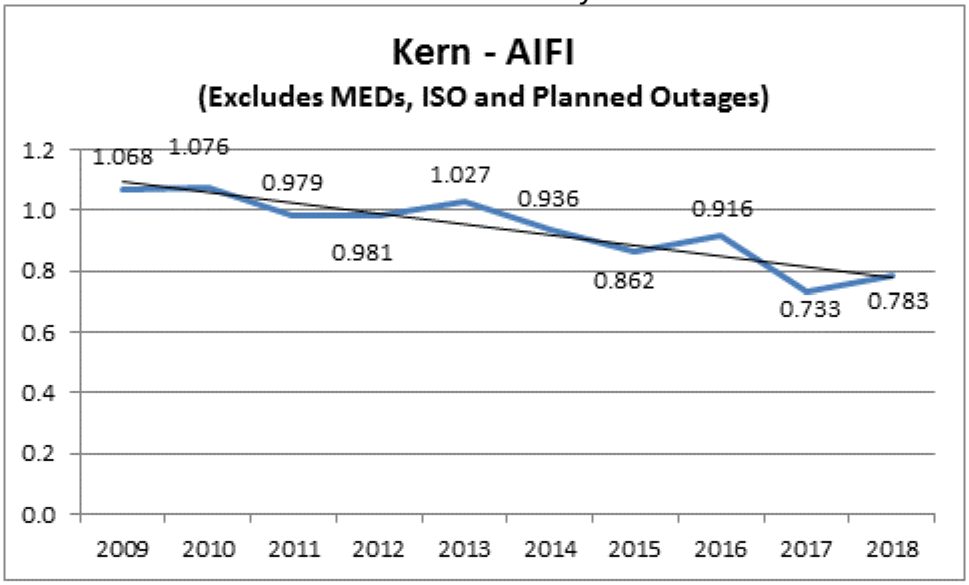


Chart 113: Division Reliability - AIFI Indices

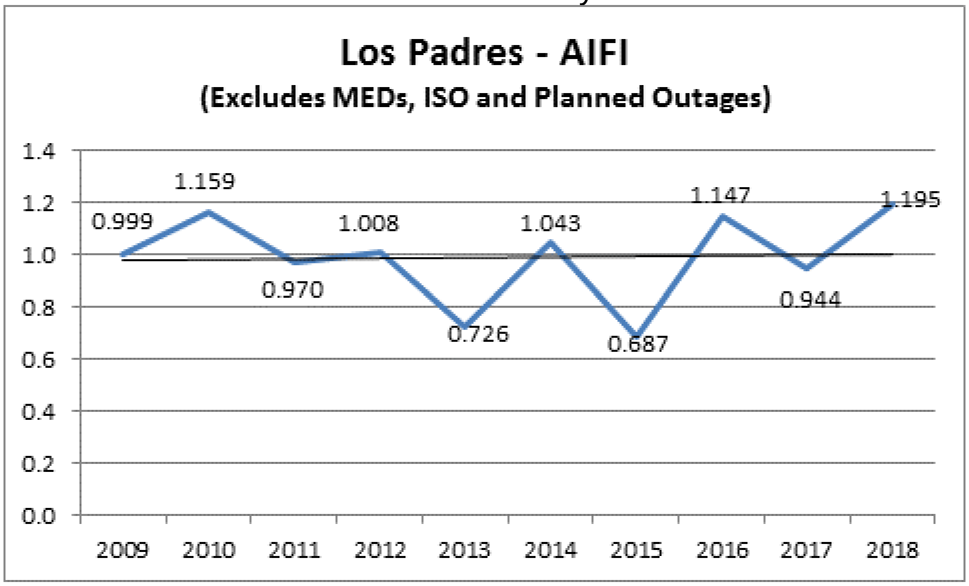


Chart 114: Division Reliability - AIFI Indices

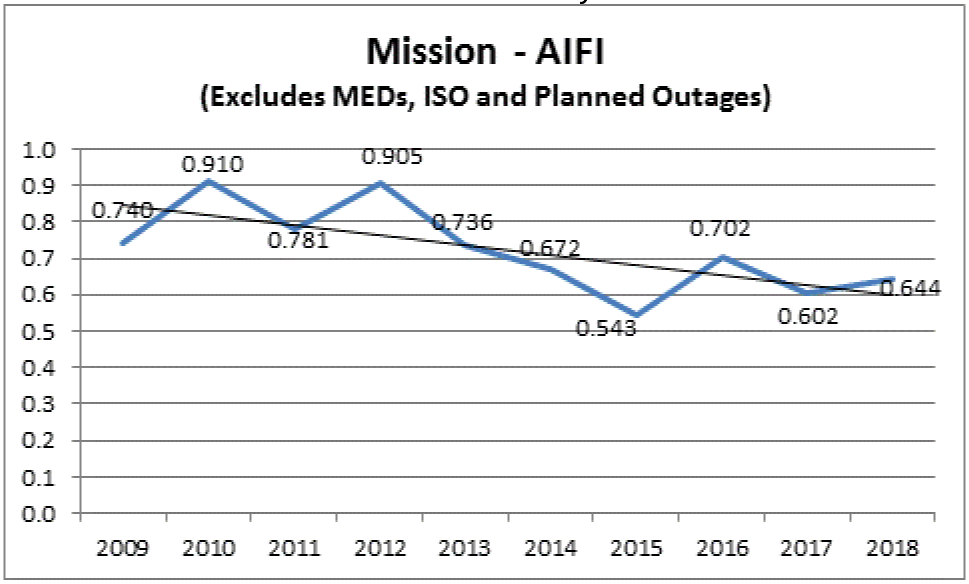


Chart 115: Division Reliability - AIFI Indices

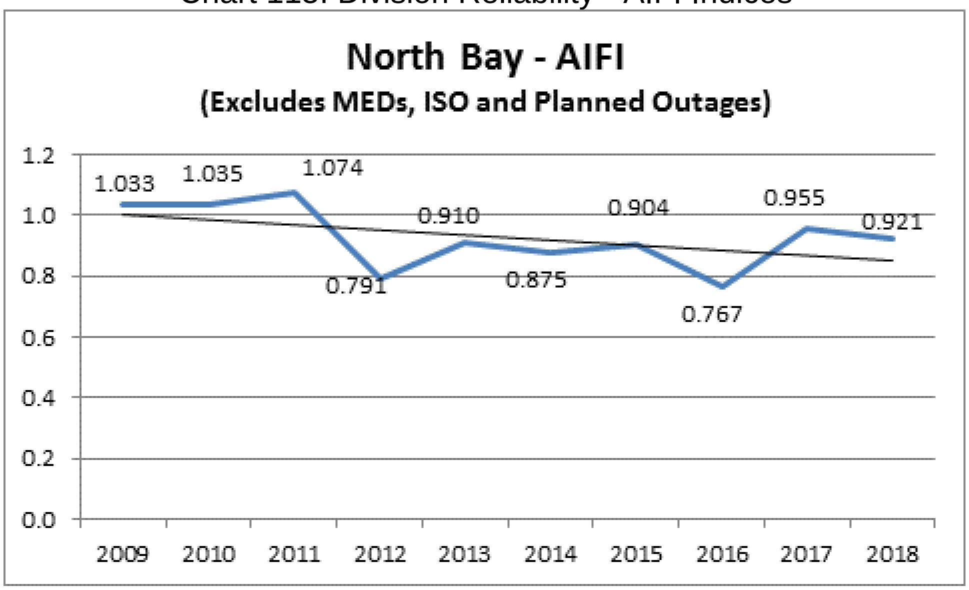


Chart 116: Division Reliability - AIFI Indices

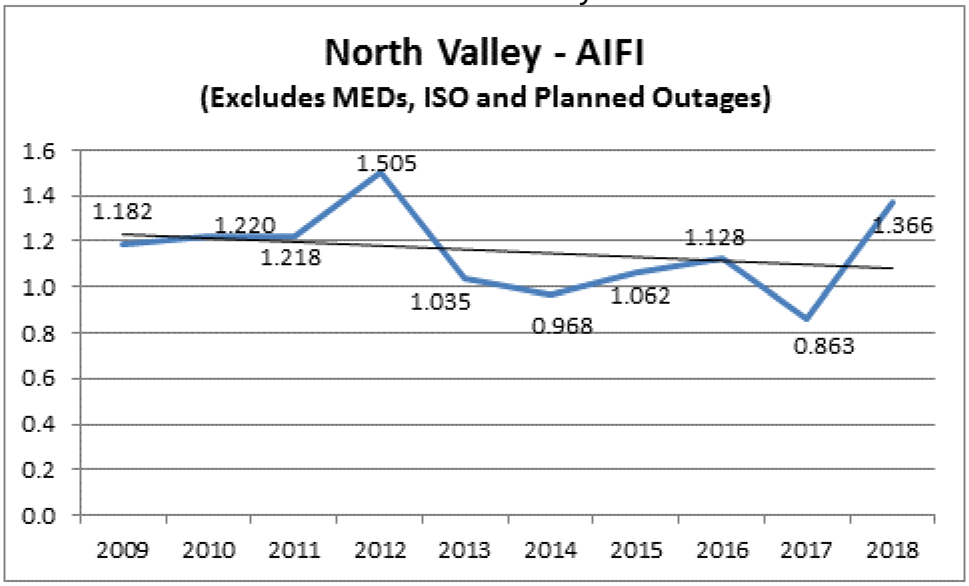


Chart 117: Division Reliability - AIFI Indices

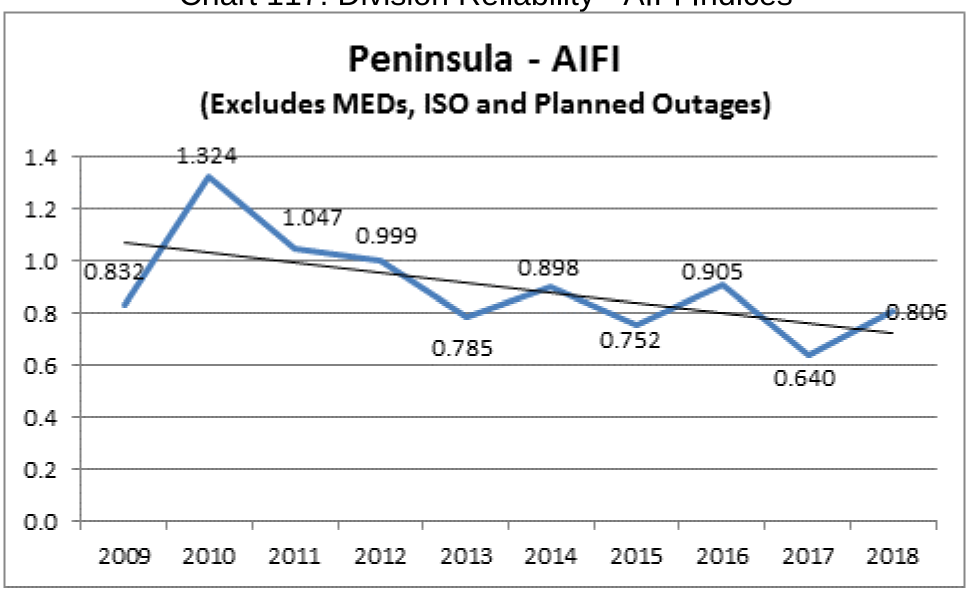


Chart 118: Division Reliability - AIFI Indices

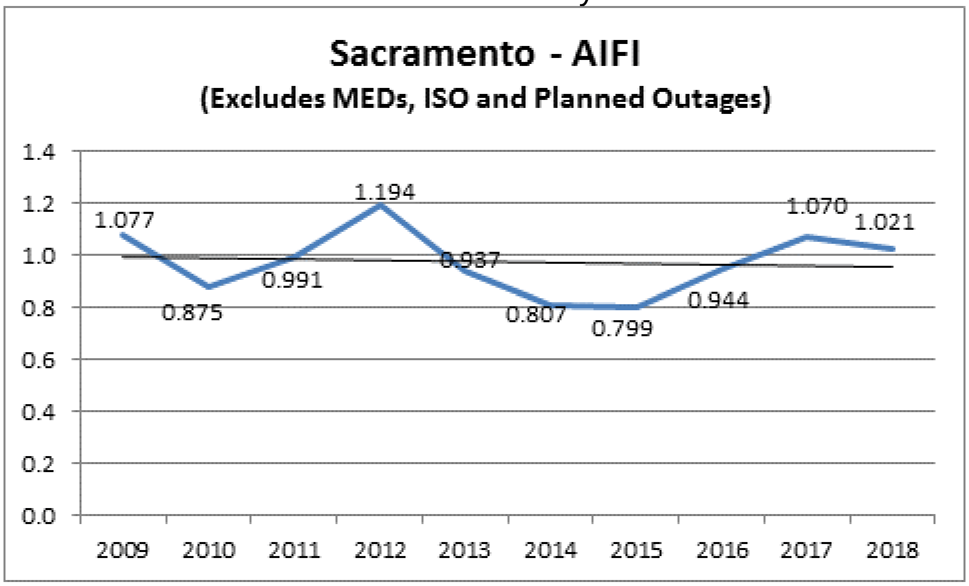


Chart 119: Division Reliability - AIFI Indices

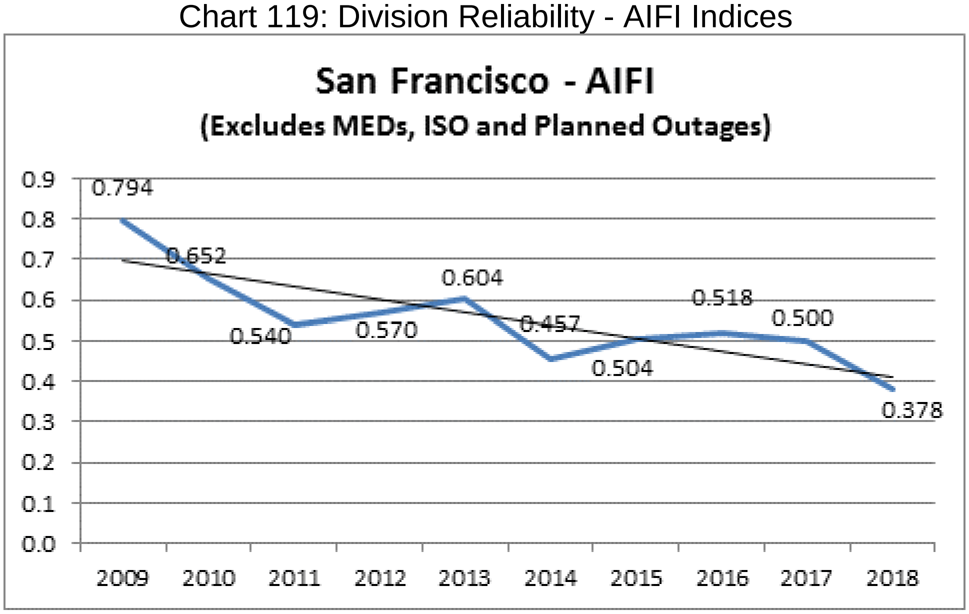


Chart 120: Division Reliability - AIFI Indices

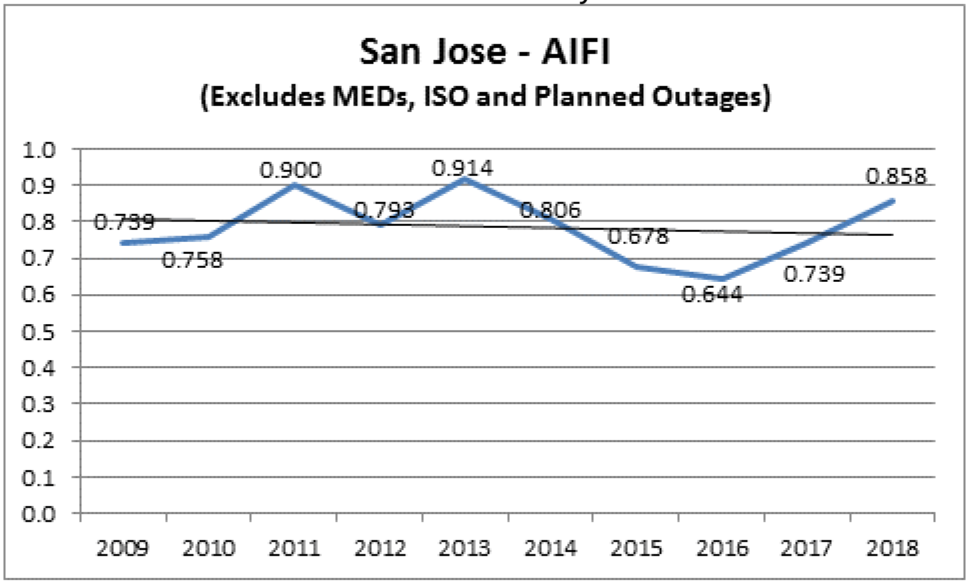


Chart 121: Division Reliability - AIFI Indices

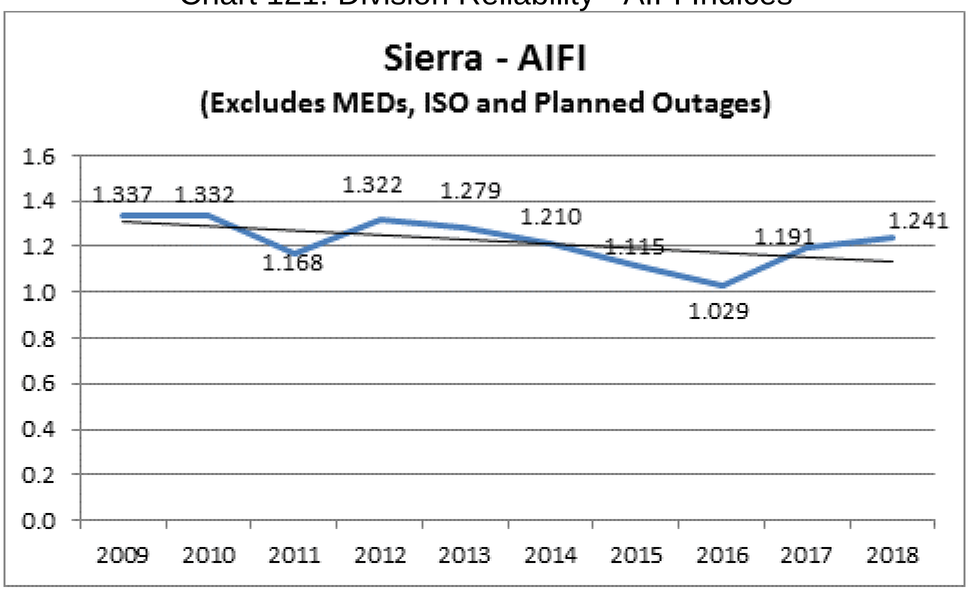


Chart 122: Division Reliability - AIFI Indices

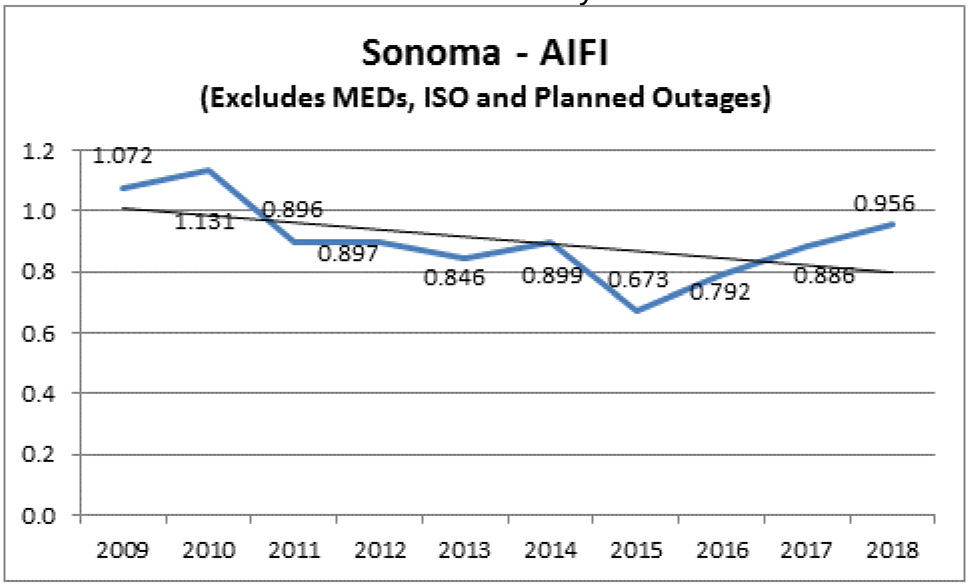


Chart 123: Division Reliability - AIFI Indices

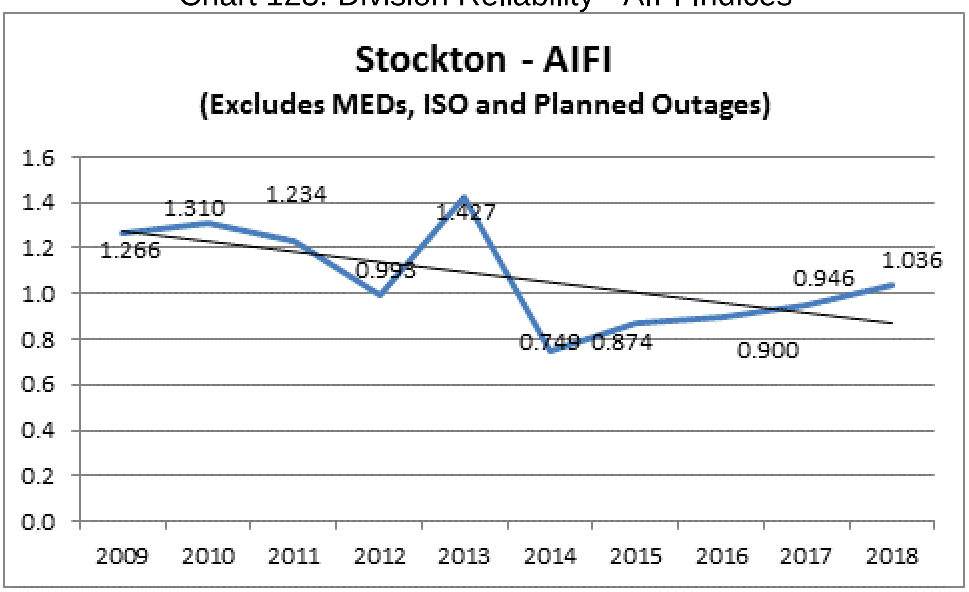
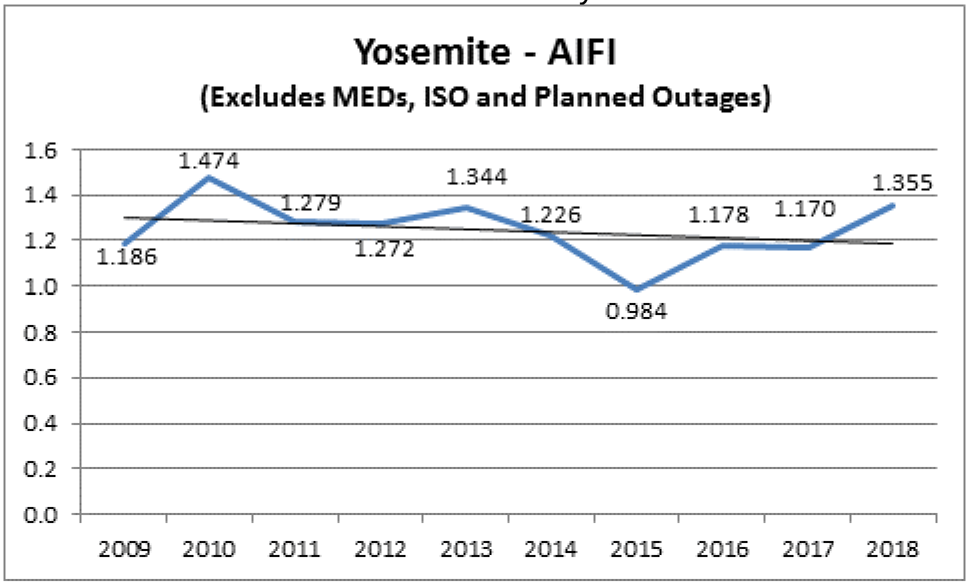


Chart 124: Division Reliability - AIFI Indices



3. MAIFI Performance Results (MED Excluded)

Chart 125: Division Reliability - MAIFI Indices

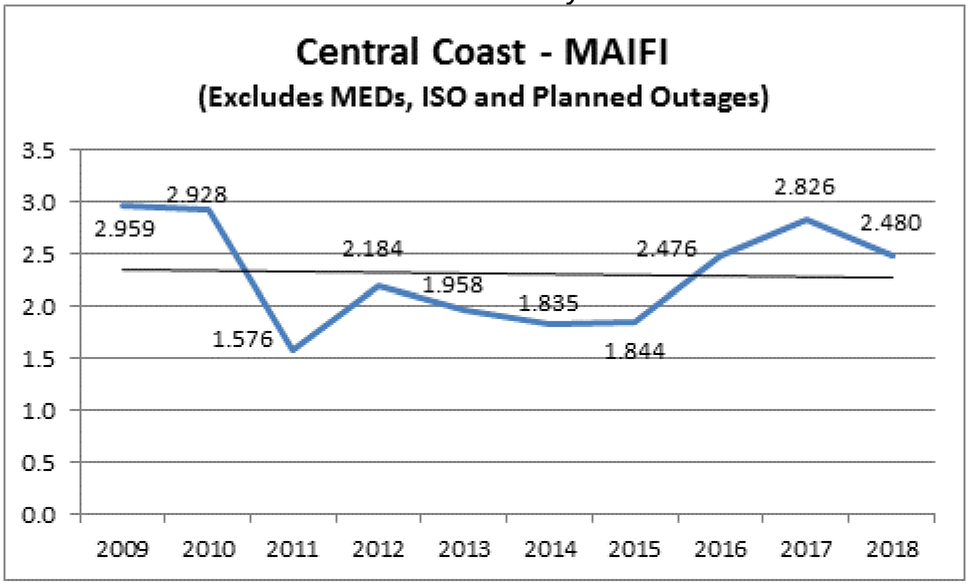


Chart 126: Division Reliability - MAIFI Indices

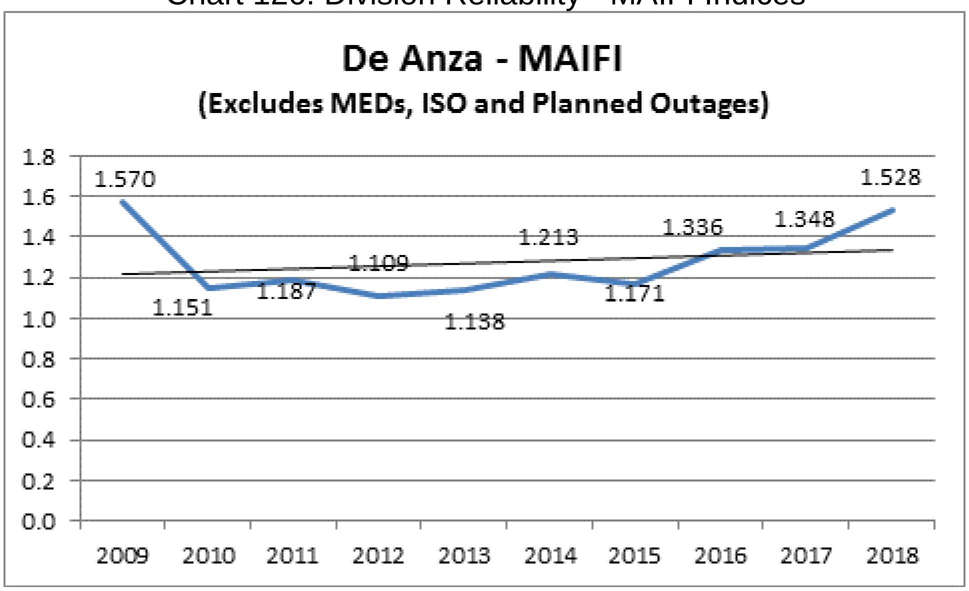


Chart 127: Division Reliability - MAIFI Indices

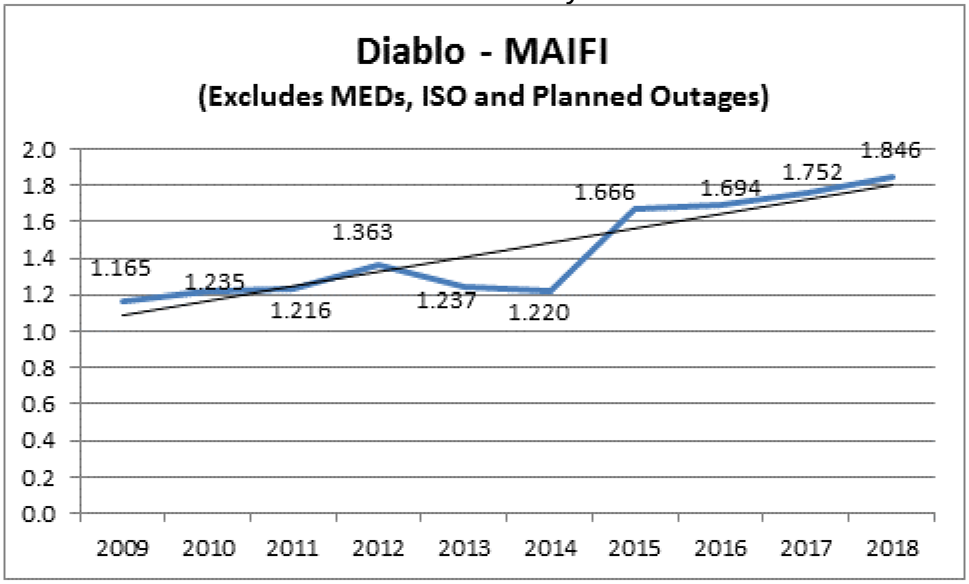


Chart 128: Division Reliability - MAIFI Indices

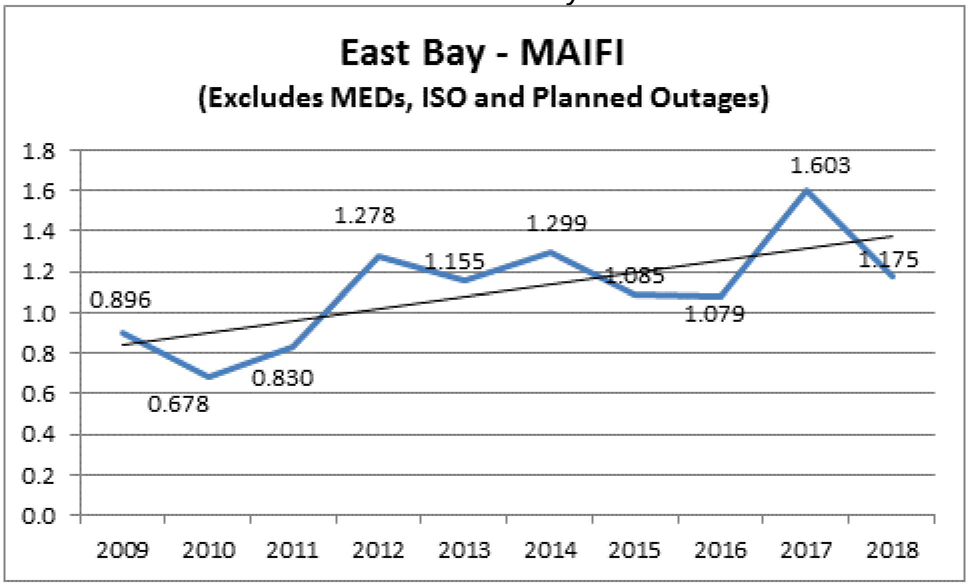


Chart 129: Division Reliability - MAIFI Indices

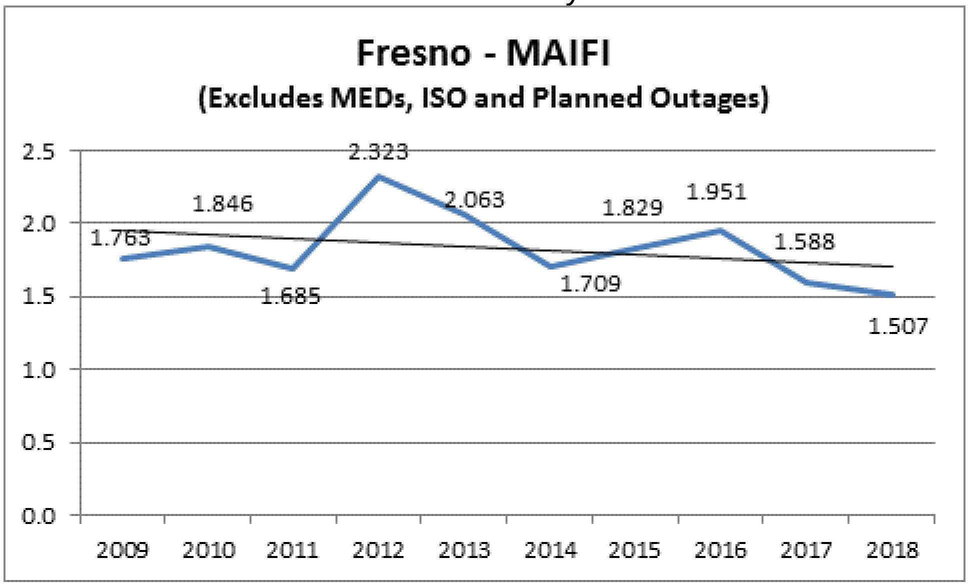


Chart 130: Division Reliability - MAIFI Indices

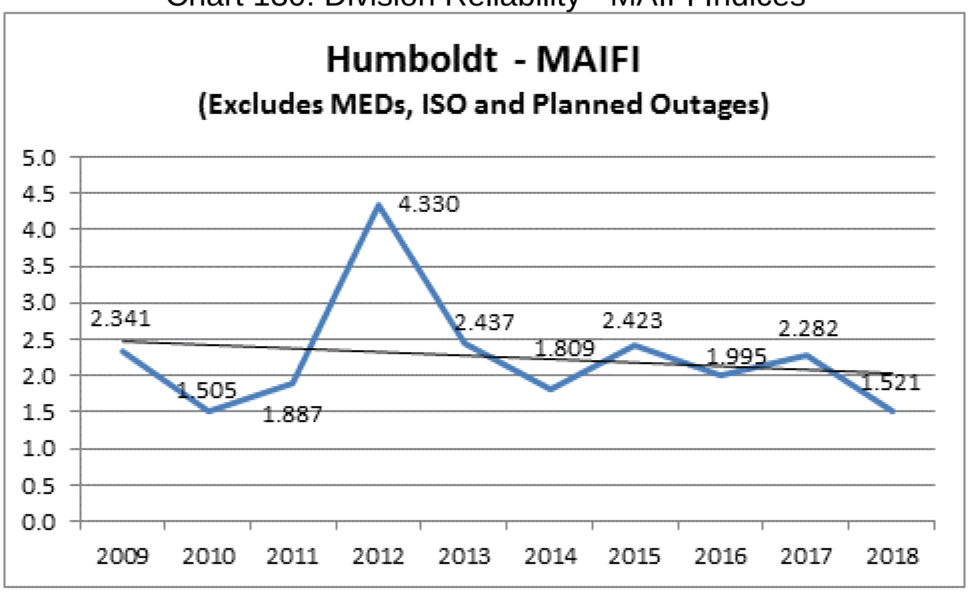


Chart 131: Division Reliability - MAIFI Indices

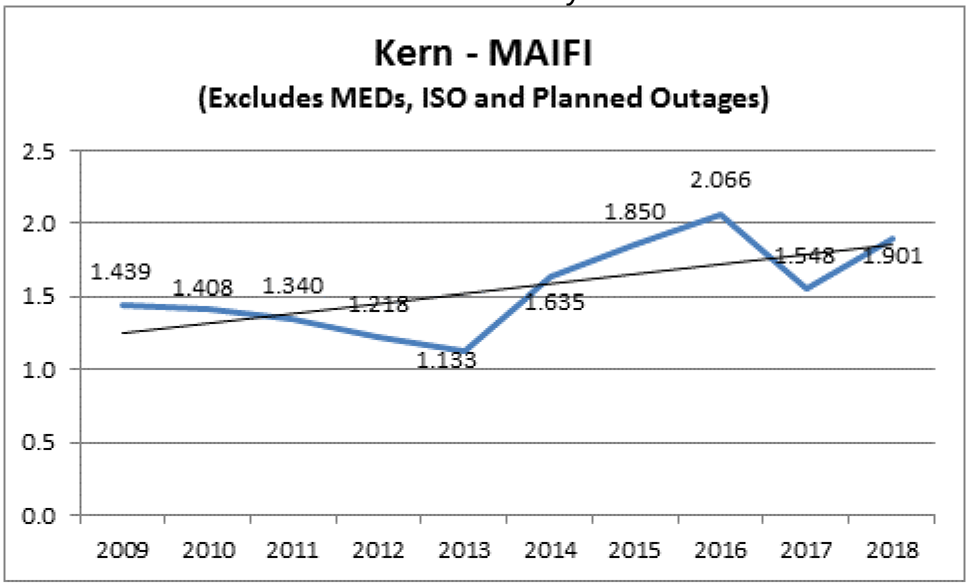


Chart 132: Division Reliability - MAIFI Indices

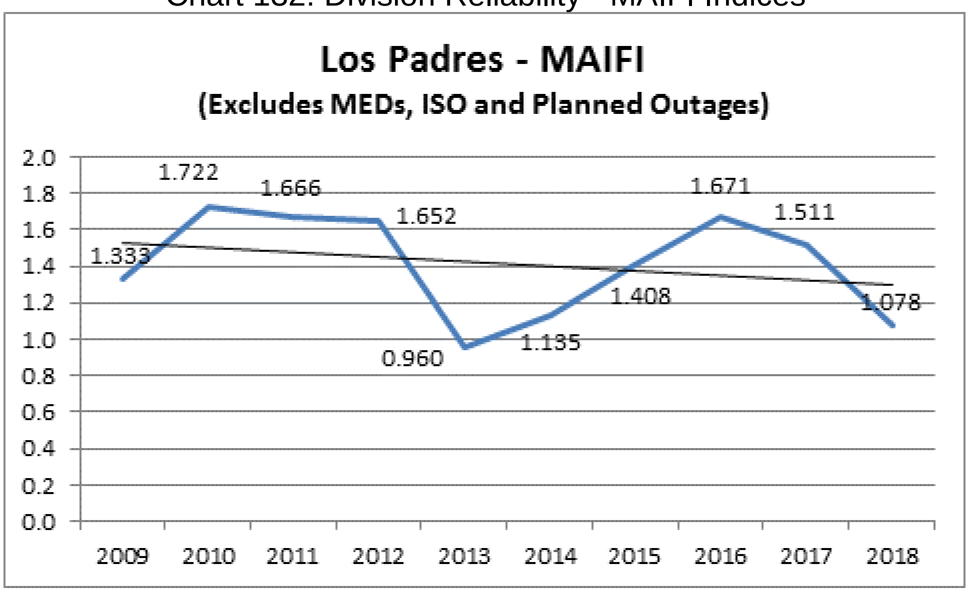


Chart 133: Division Reliability - MAIFI Indices

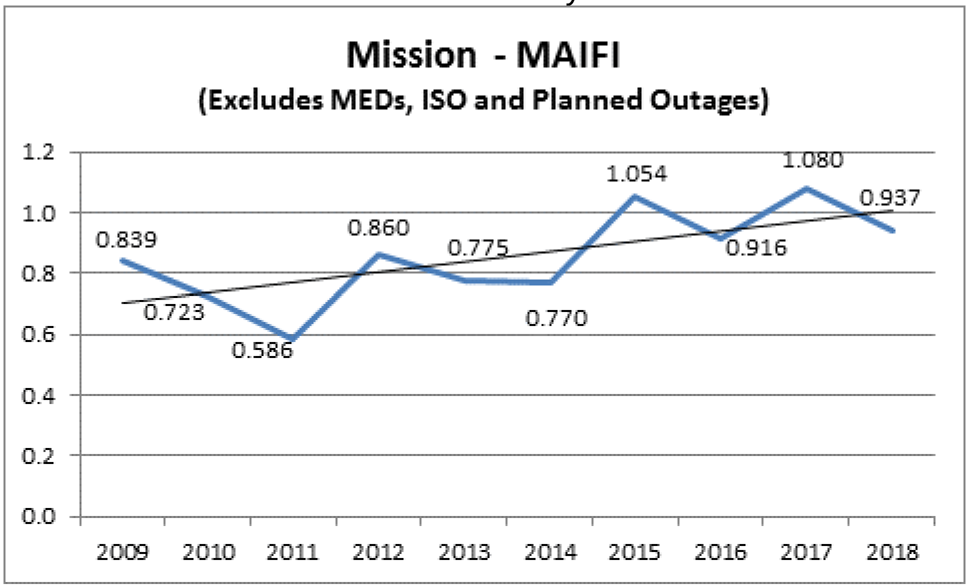


Chart 134: Division Reliability - MAIFI Indices

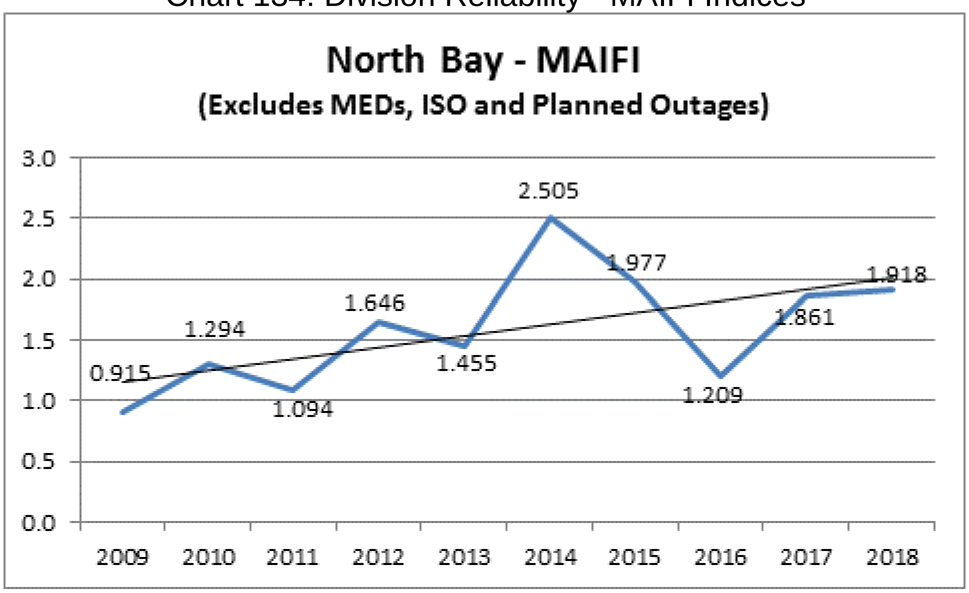


Chart 135: Division Reliability - MAIFI Indices

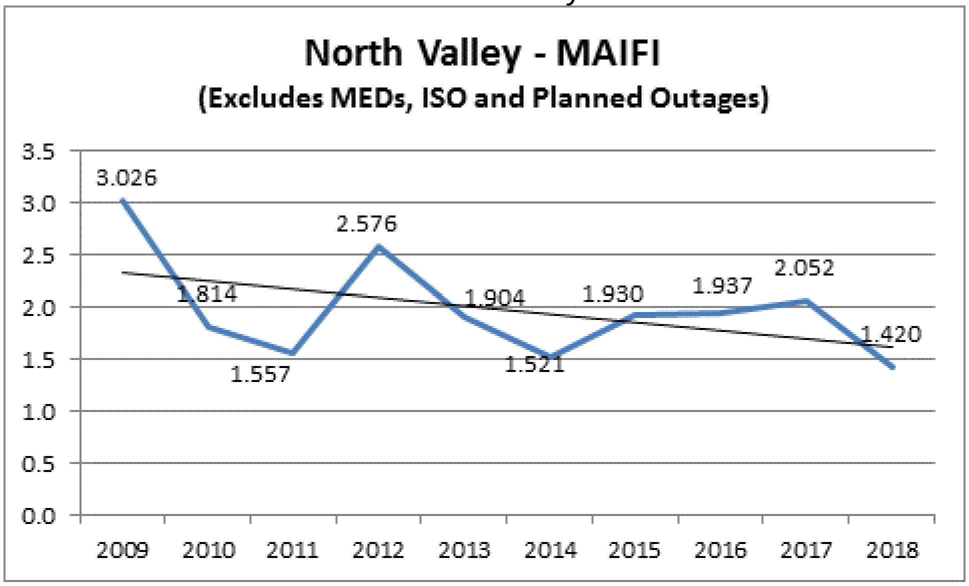


Chart 136: Division Reliability - MAIFI Indices

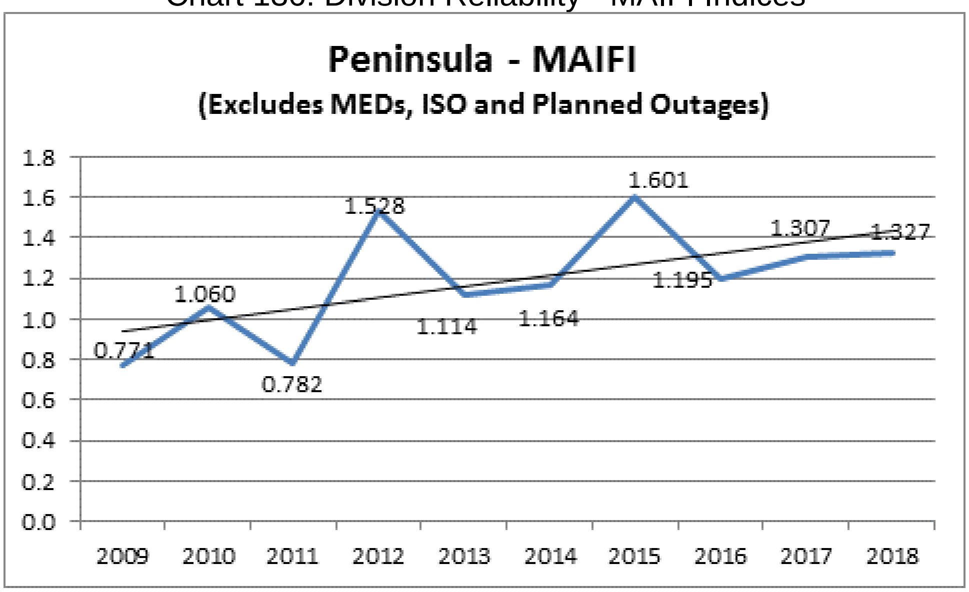


Chart 137: Division Reliability - MAIFI Indices

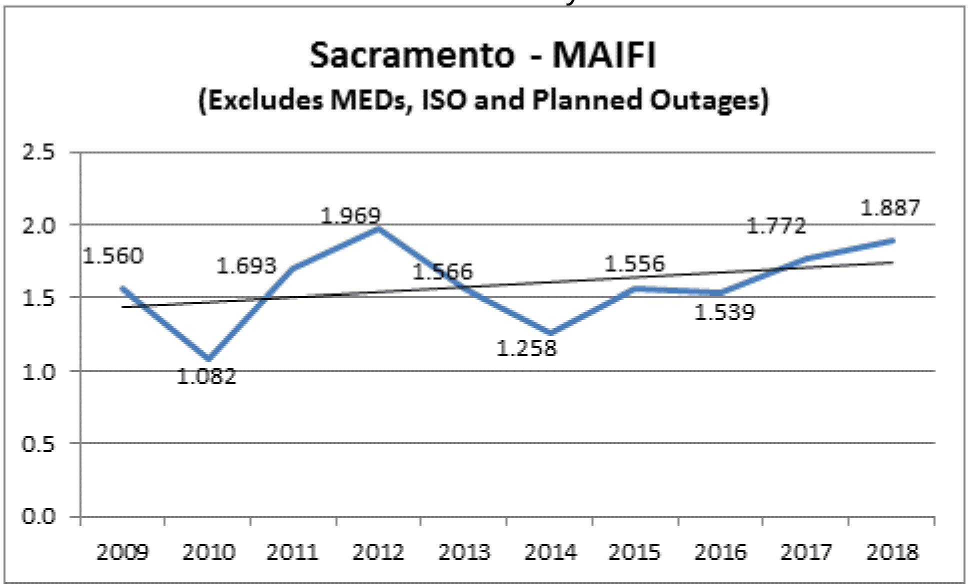


Chart 138: Division Reliability - MAIFI Indices

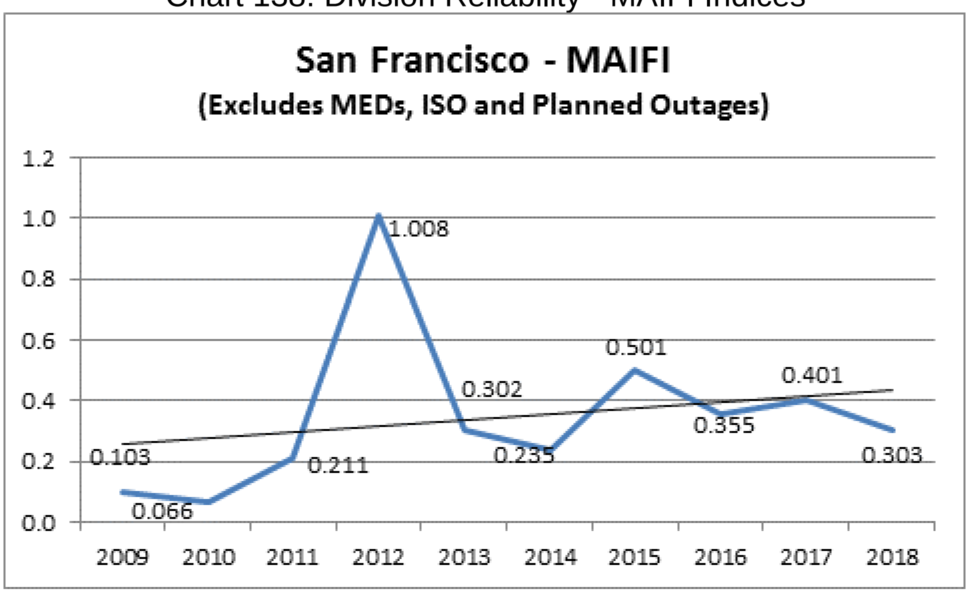


Chart 139: Division Reliability - MAIFI Indices

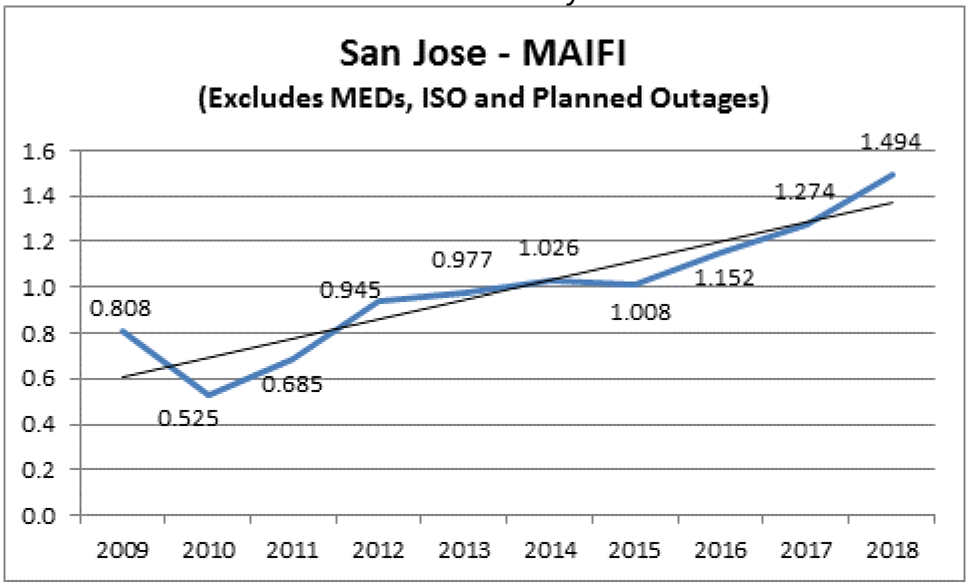


Chart 140: Division Reliability - MAIFI Indices

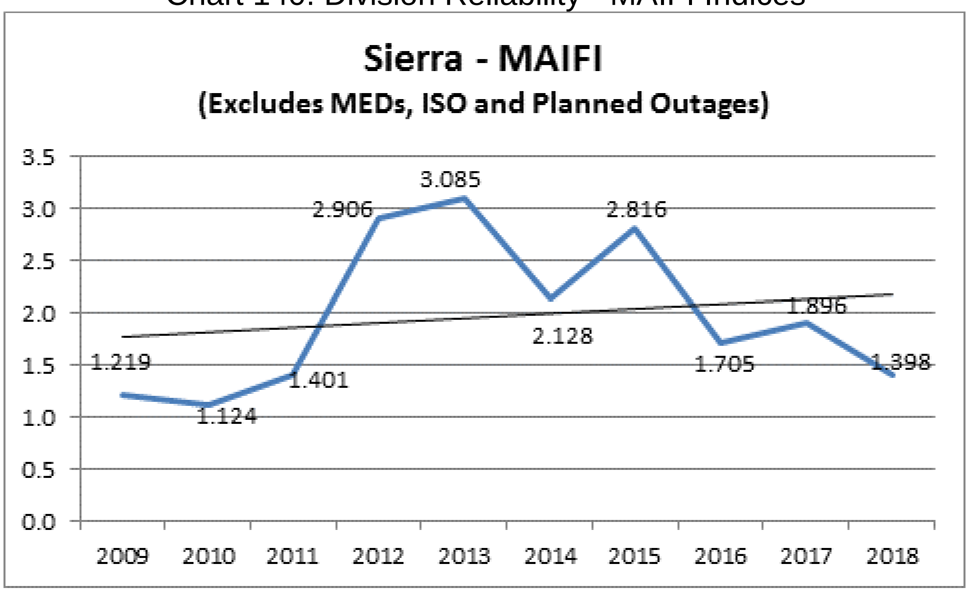


Chart 141: Division Reliability - MAIFI Indices

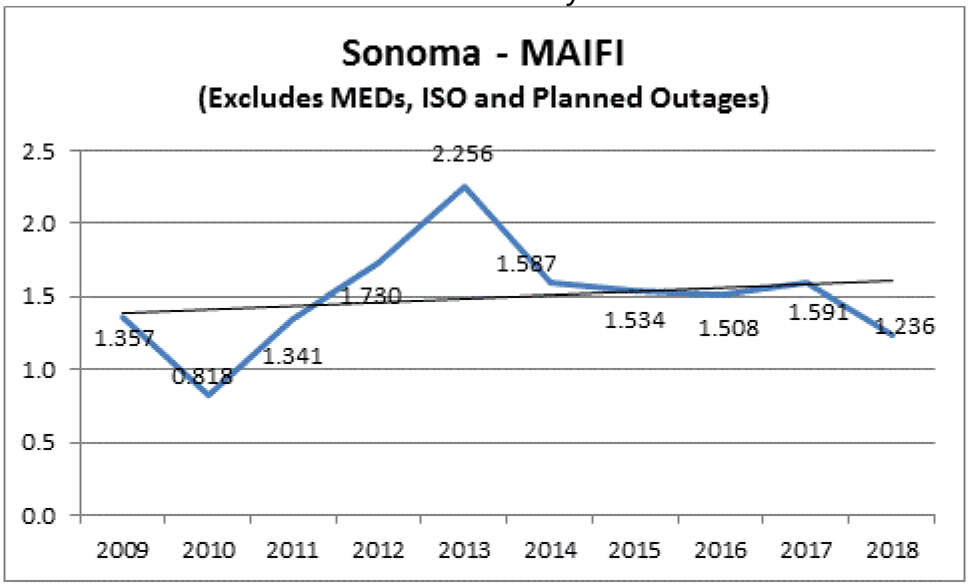


Chart 142: Division Reliability - MAIFI Indices

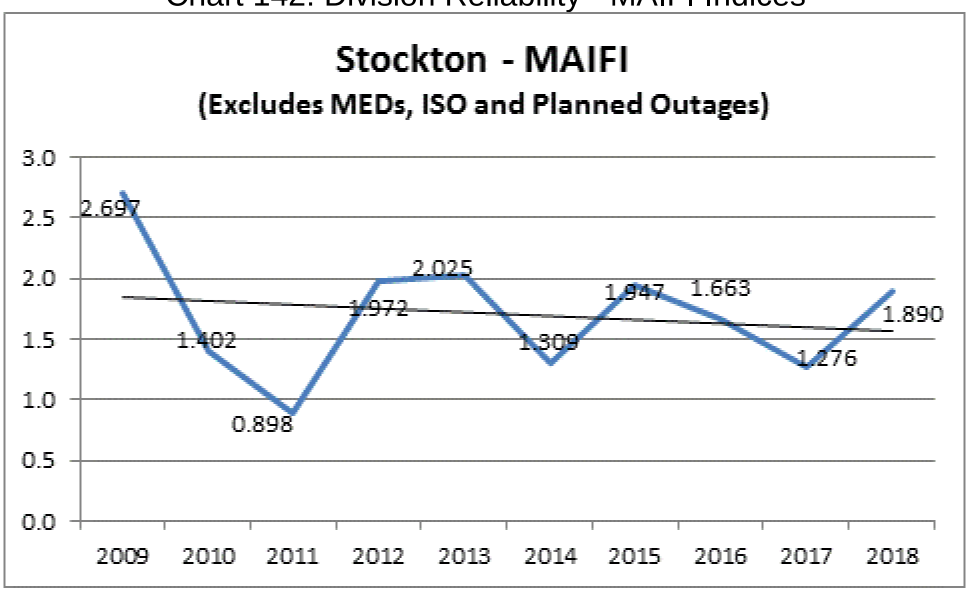
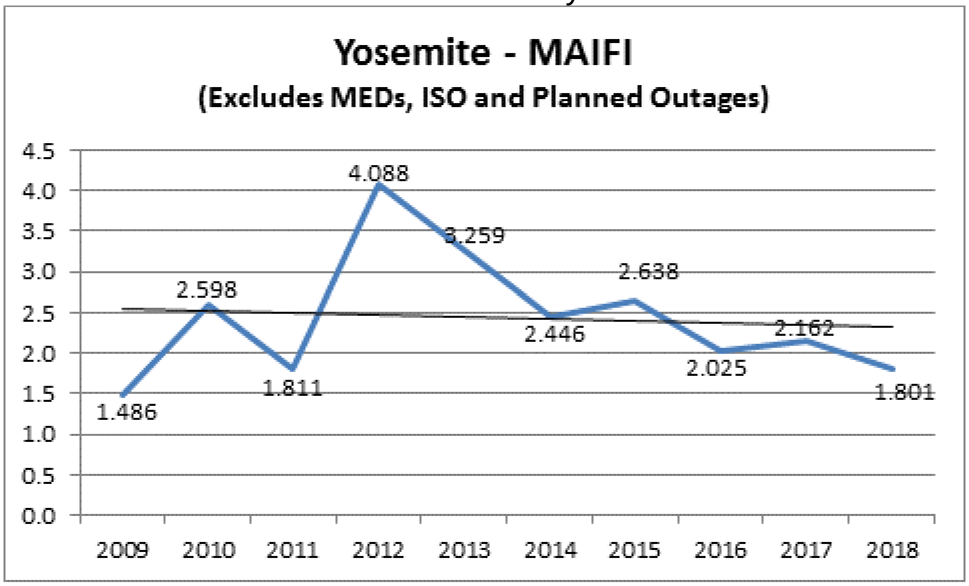


Chart 143: Division Reliability - MAIFI Indices



4. CAIDI Performance Results (MED Excluded)

Chart 144: Division Reliability - CAIDI Indices

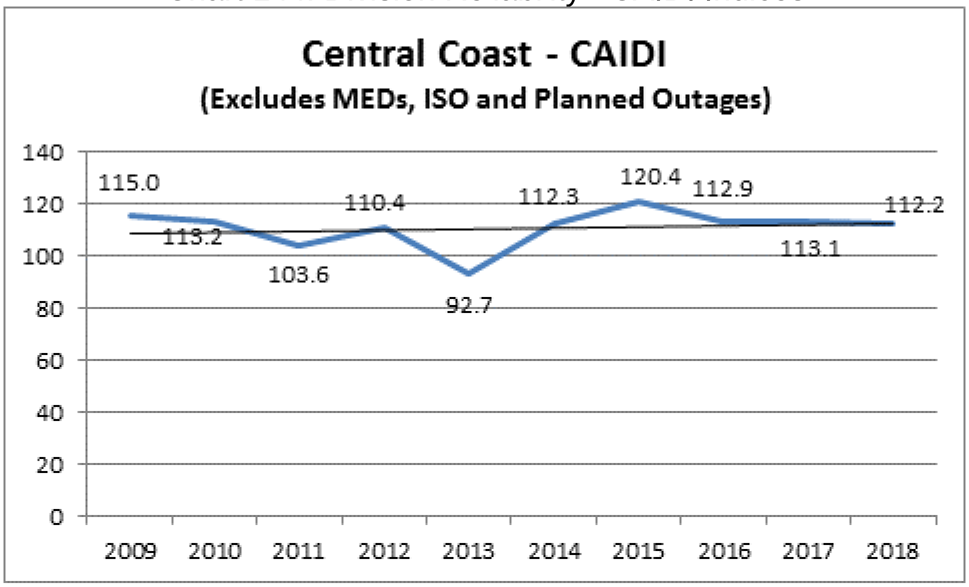


Chart 145: Division Reliability - CAIDI Indices

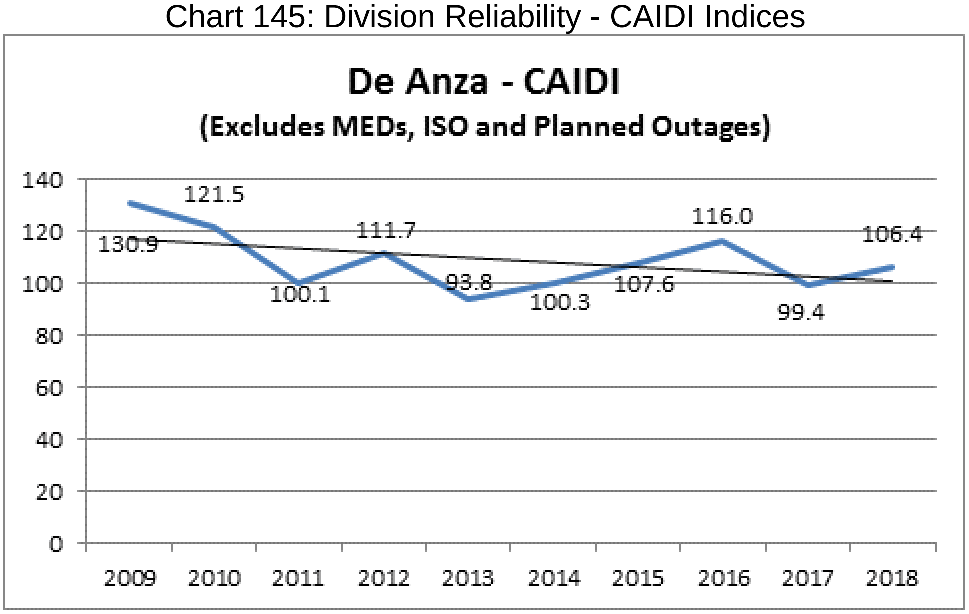


Chart 146: Division Reliability - CAIDI Indices

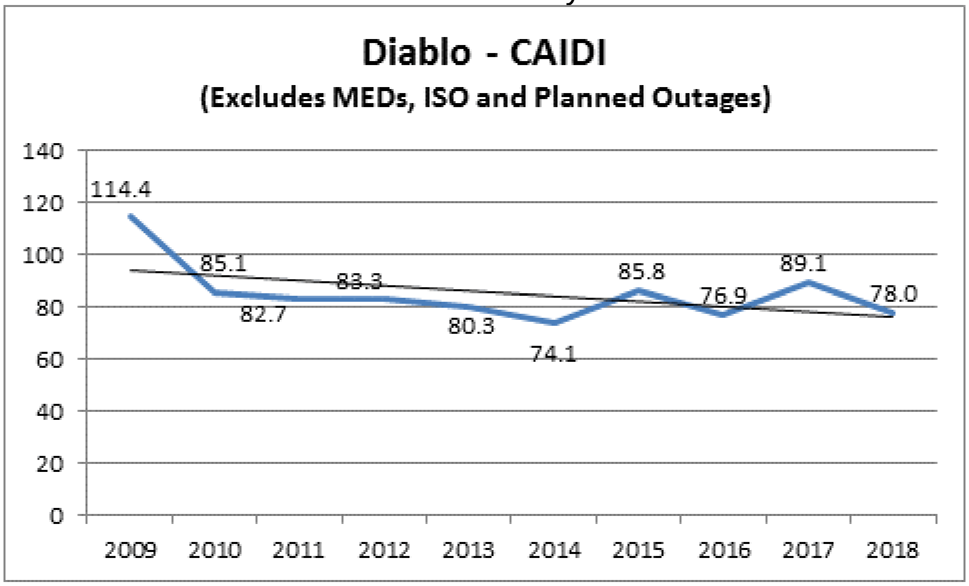


Chart 147: Division Reliability - CAIDI Indices

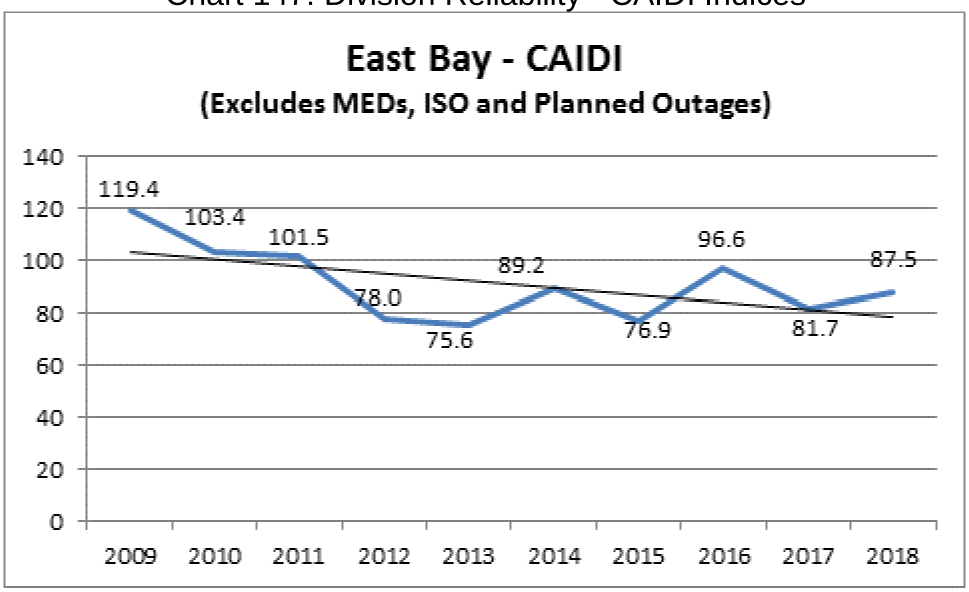


Chart 148: Division Reliability - CAIDI Indices

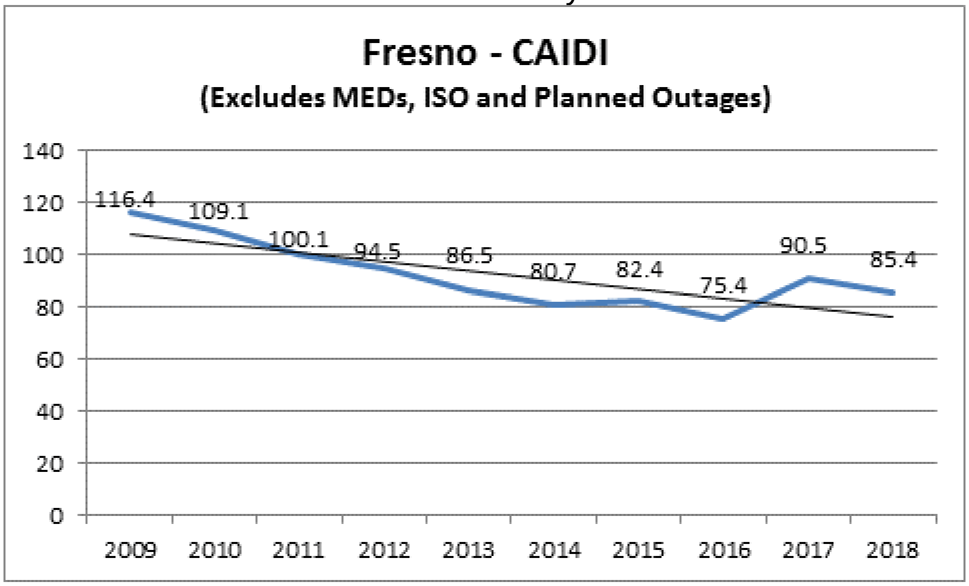


Chart 149: Division Reliability - CAIDI Indices

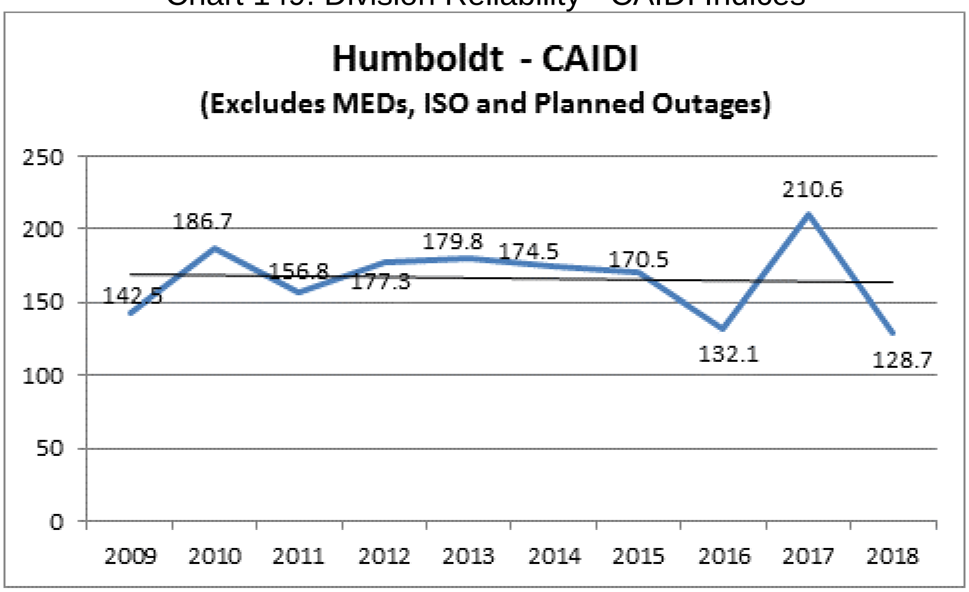


Chart 150: Division Reliability - CAIDI Indices

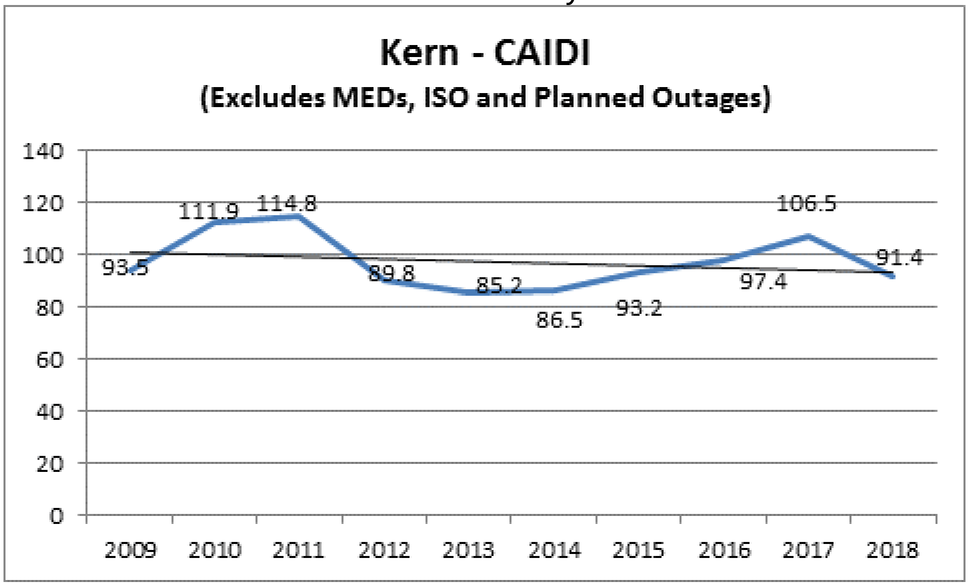


Chart 151: Division Reliability - CAIDI Indices

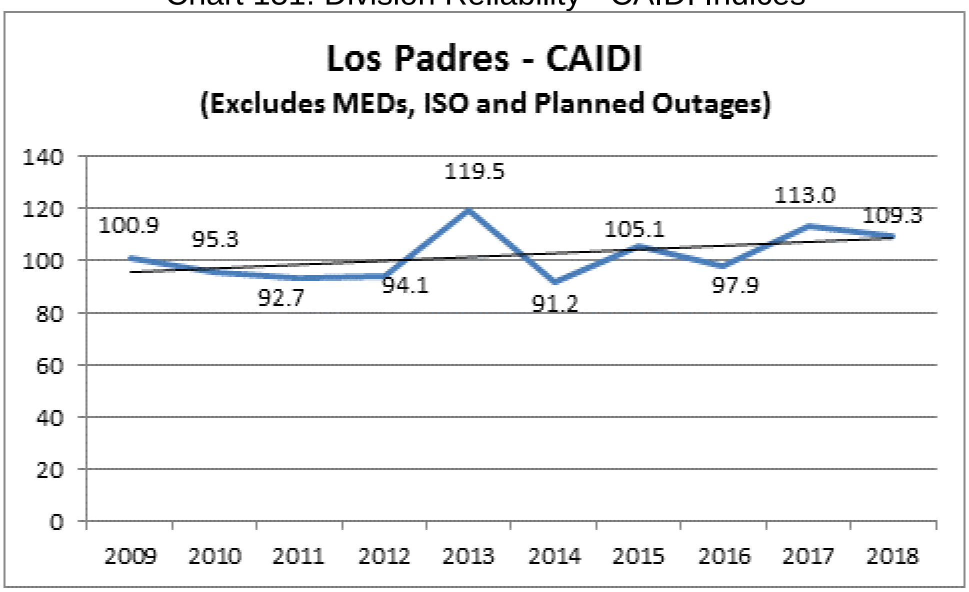


Chart 152: Division Reliability - CAIDI Indices

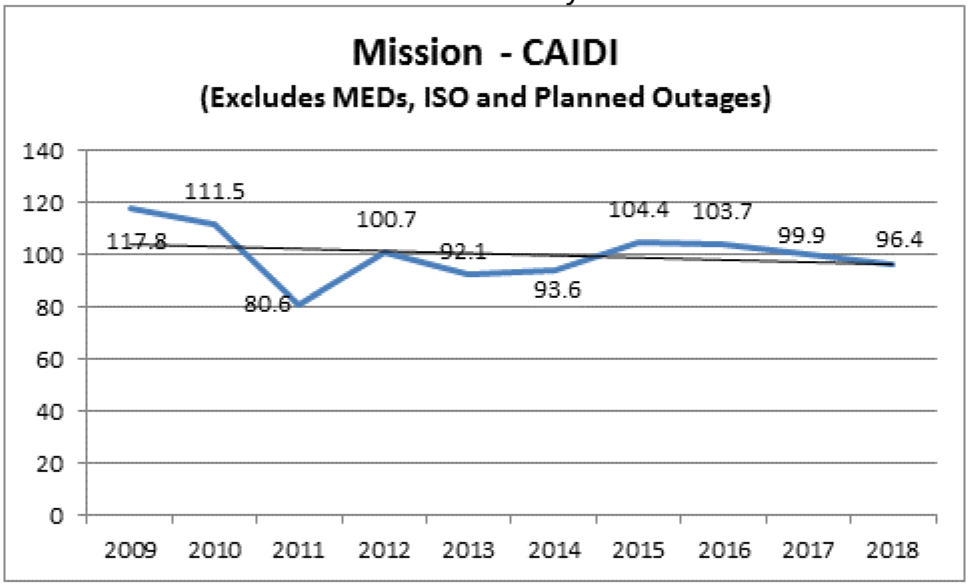


Chart 153: Division Reliability - CAIDI Indices

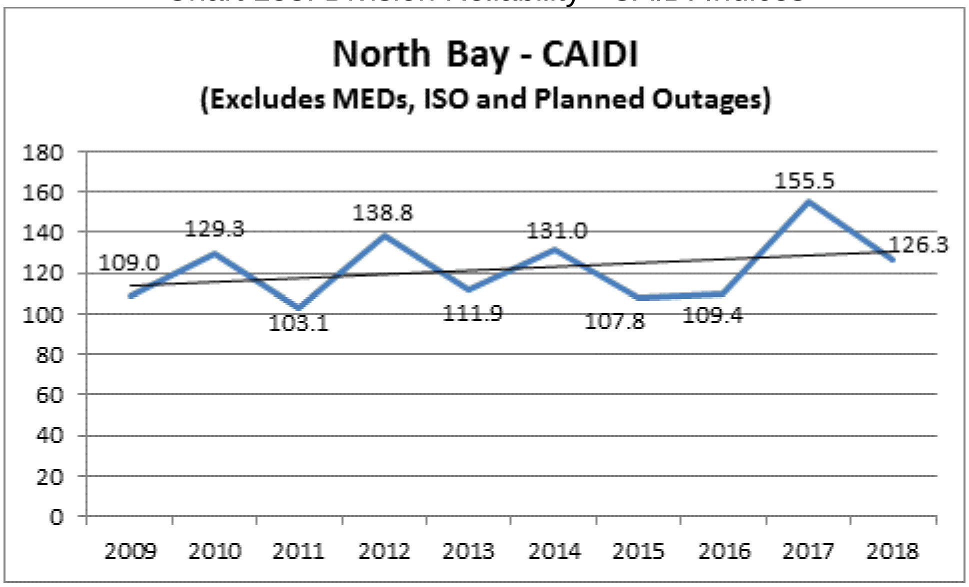


Chart 154: Division Reliability - CAIDI Indices

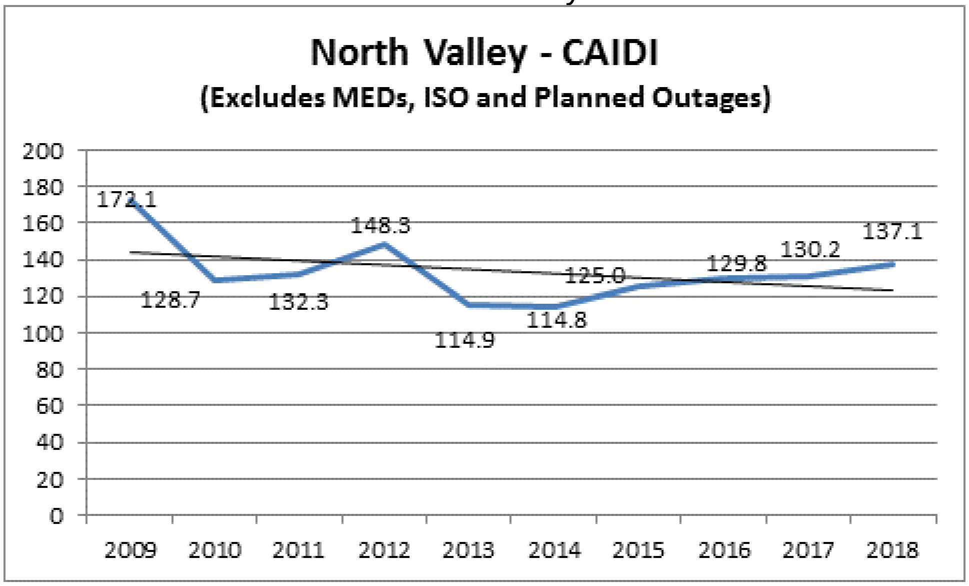


Chart 155: Division Reliability - CAIDI Indices

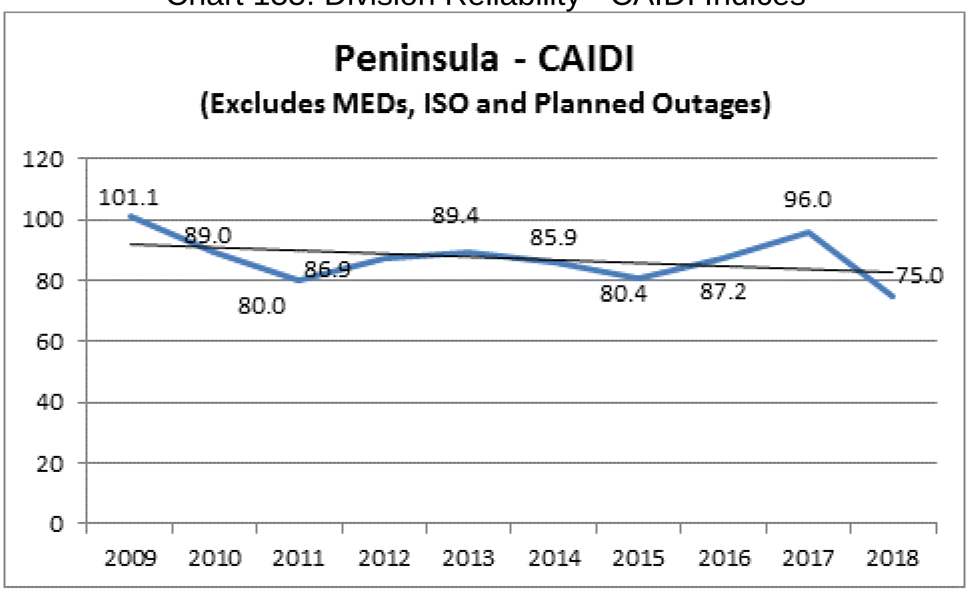


Chart 156: Division Reliability - CAIDI Indices

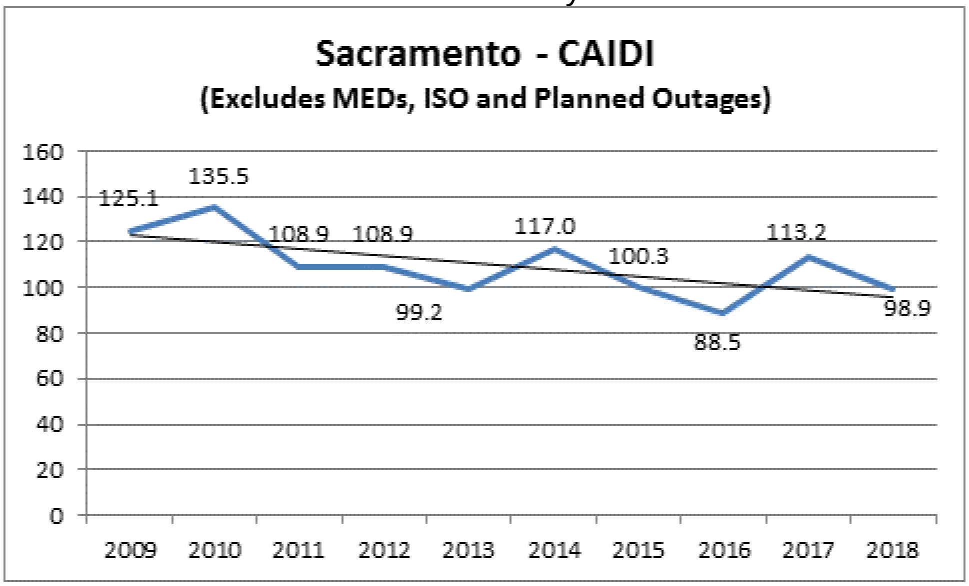


Chart 157: Division Reliability - CAIDI Indices

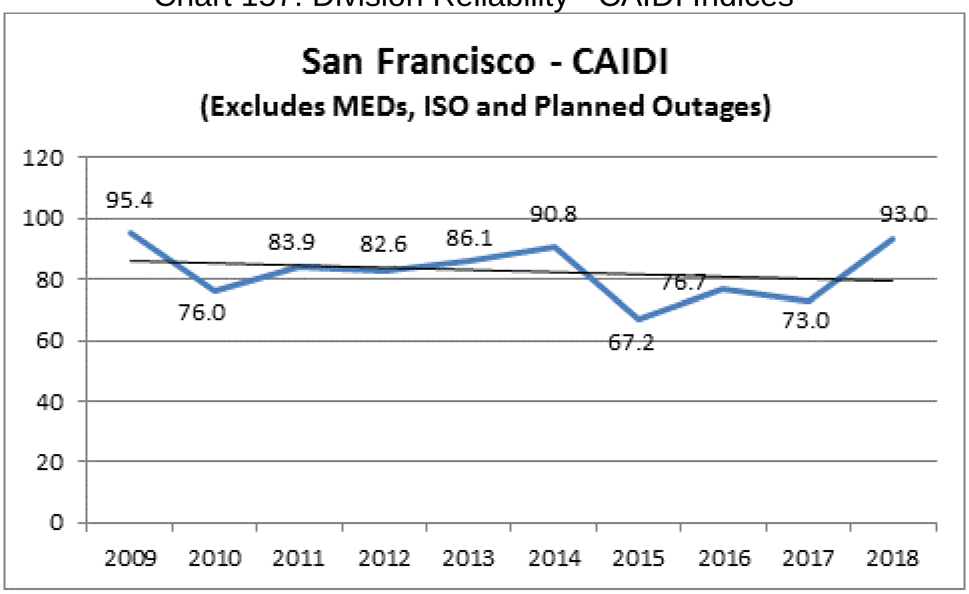


Chart 158: Division Reliability - CAIDI Indices

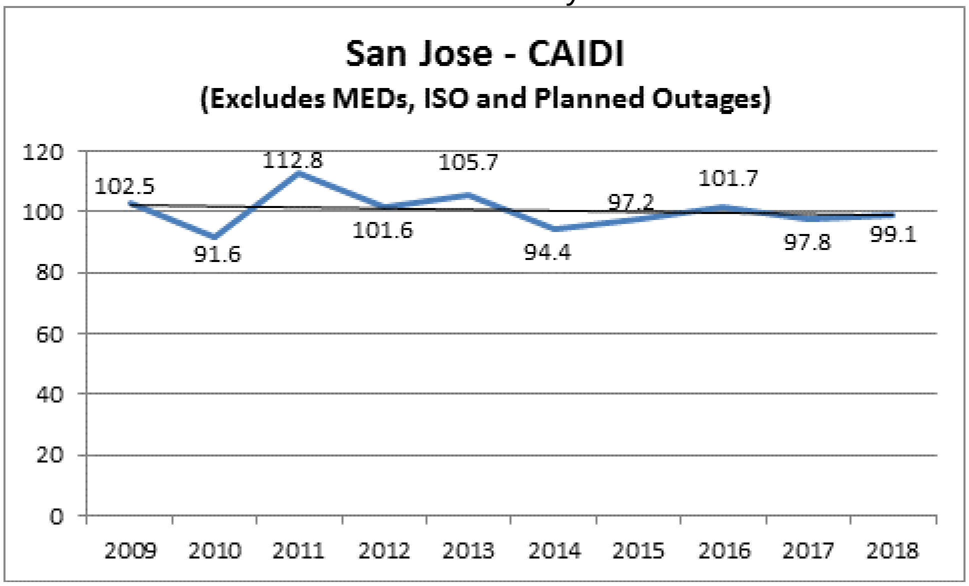


Chart 159: Division Reliability - CAIDI Indices

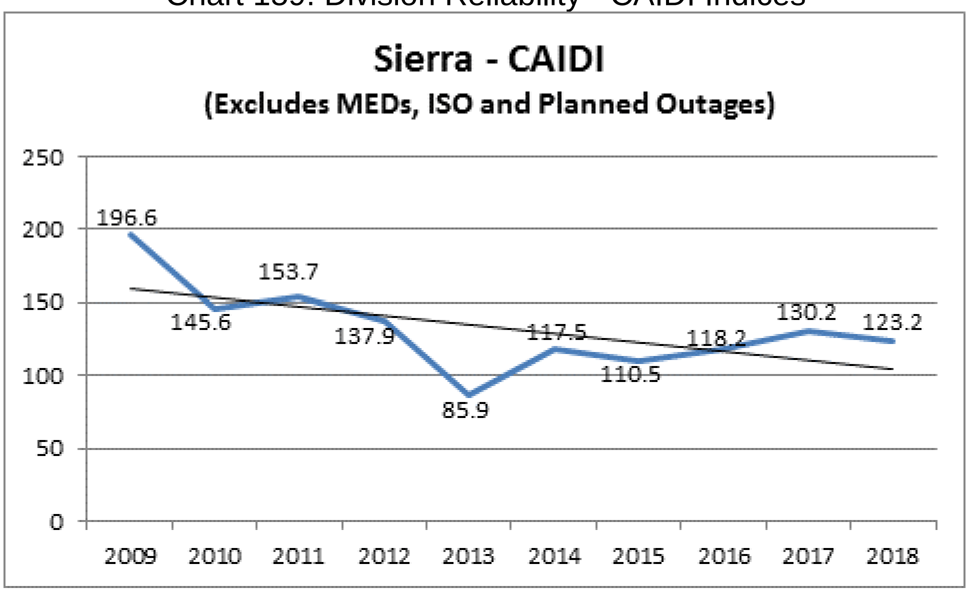


Chart 160: Division Reliability - CAIDI Indices

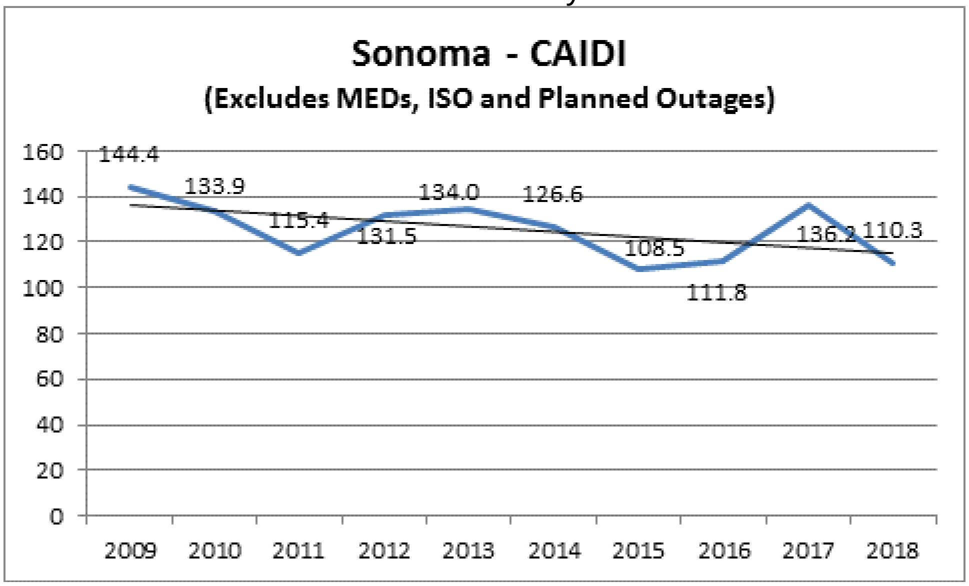


Chart 161: Division Reliability - CAIDI Indices

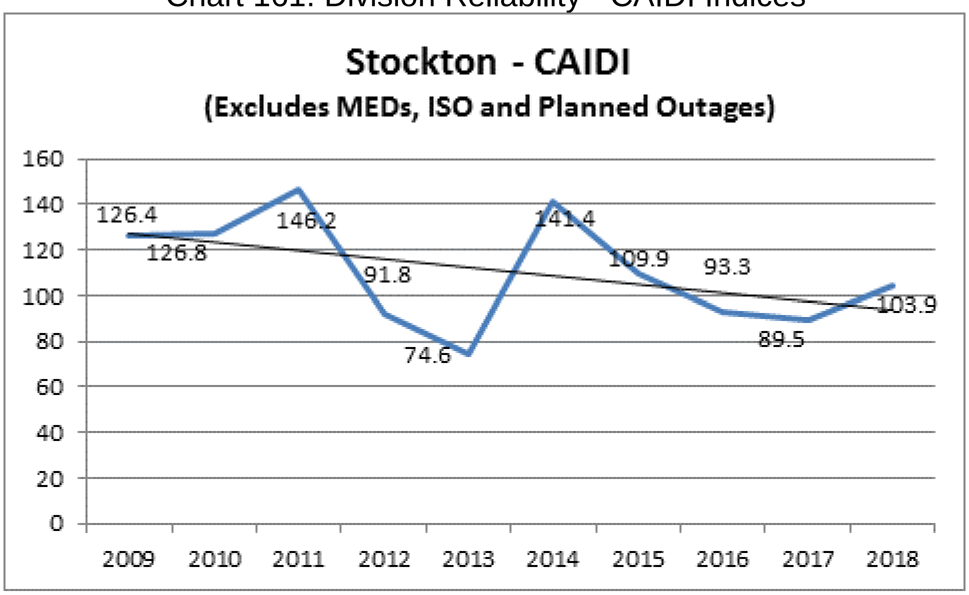
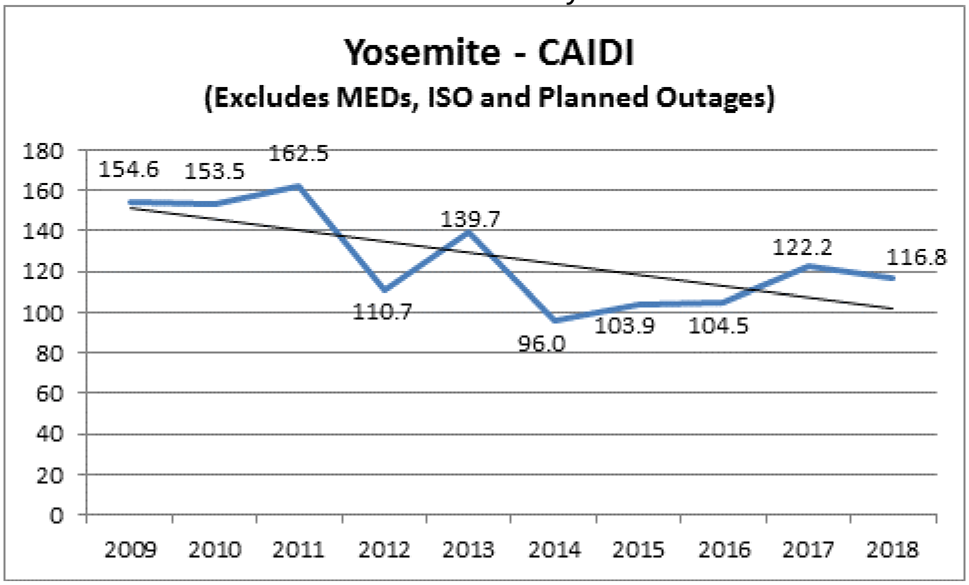


Chart 162: Division Reliability - CAIDI Indices



d. Division and System Reliability Indices Performance Variances (Five-Year Average)

This section contains additional division reliability information, as required by Decision 04-10-034, and Decision 16-01-008, Appendix B, footnote 6. This section explains threshold variations (unplanned outages only) in division and/or system reliability indices relative to the prior five-year averages (excluding major events, as defined per the IEEE 1366 methodology). This section also highlights the large outage events in each division that exceeded the reporting threshold.

Table 7 summarizes the 2018 division indices that meet the reporting requirement thresholds of 10 percent or more for the division, and 5 percent or more at the system level worse than the five year rolling average of reliability performance per D. 04-10-034.[6] An "X" indicates that the 2018 Division and system index exceeded the 10 percent and 5 percent threshold, respectively, and is thus discussed in detail in this section.

[6] As in prior reports, PG&E does not interpret this reporting requirement as applying to those indices where 2018 reliability was better than the prior five-year average.

Table 7 – 2018 Indices excluding Major Events
(Meeting the Reporting Requirement Thresholds)

	SAIDI	SAIFI	MAIFI	CAIDI
SYSTEM	X	X		
CENTRAL COAST	X	X	X	
DE ANZA			X	
DIABLO			X	
EAST BAY	X			
FRESNO				
HUMBOLDT		X		
KERN			X	
LOS PADRES	X	X		
MISSION				
NORTH BAY				
NORTH VALLEY	X	X		X
PENINSULA				
SACRAMENTO		X	X	
SAN FRANCISCO				X
SAN JOSE	X	X	X	
SIERRA	X			X
SONOMA		X		
STOCKTON	X		X	
YOSEMITE	X	X		

Table 8: Division and System Reliability Indices Performance Variances (Excluding MED)

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SYSTEM	2013	95.8	0.969	1.523	98.9
SYSTEM	2014	91.0	0.879	1.390	103.5
SYSTEM	2015	80.7	0.787	1.585	102.5
SYSTEM	2016	93.8	0.940	1.487	99.8
SYSTEM	2017	97.3	0.878	1.566	110.8
5-Year Average	13-17 Avg	91.7	0.891	1.510	103.0
SYSTEM	2018	99.6	0.959	1.473	103.9
	%Difference	8.6%	7.6%	-2.5%	0.9%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
CENTRAL COAST	2013	119.7	1.291	1.958	92.7
CENTRAL COAST	2014	122.1	1.088	1.835	112.3
CENTRAL COAST	2015	102.0	0.847	1.844	120.4
CENTRAL COAST	2016	166.1	1.471	2.476	112.9
CENTRAL COAST	2017	146.3	1.293	2.826	113.1
5-Year Average	13-17 Avg	131.2	1.198	2.188	109.5
CENTRAL COAST	2018	162.4	1.447	2.480	112.2
	%Difference	23.8%	20.8%	13.3%	2.4%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DE ANZA	2013	77.0	0.821	1.138	93.8
DE ANZA	2014	89.3	0.890	1.213	100.3
DE ANZA	2015	51.2	0.476	1.171	107.6
DE ANZA	2016	87.3	0.753	1.336	116.0
DE ANZA	2017	97.9	0.985	1.348	99.4
5-Year Average	13-17 Avg	80.6	0.785	1.241	102.6
DE ANZA	2018	83.9	0.789	1.528	106.4
	%Difference	4.2%	0.5%	23.1%	3.7%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DIABLO	2013	80.4	1.001	1.237	80.3
DIABLO	2014	66.1	0.892	1.220	74.1
DIABLO	2015	73.8	0.860	1.666	85.8
DIABLO	2016	76.5	0.995	1.694	76.9
DIABLO	2017	78.0	0.876	1.752	89.1
5-Year Average	13-17 Avg	74.9	0.925	1.514	81.0
DIABLO	2018	78.3	1.004	1.846	78.0
	%Difference	4.5%	8.5%	21.9%	-3.8%

Division Reliability Indices
2013-2018
(Excluding MED)

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
EAST BAY	2013	63.0	0.832	1.155	75.6
EAST BAY	2014	64.8	0.726	1.299	89.2
EAST BAY	2015	45.0	0.586	1.085	76.9
EAST BAY	2016	101.4	1.050	1.079	96.6
EAST BAY	2017	73.8	0.903	1.603	81.7
5-Year Average	13-17 Avg	69.6	0.819	1.244	84.9
EAST BAY	2018	78.8	0.901	1.175	87.5
	%Difference	13.3%	9.9%	-5.6%	3.0%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
FRESNO	2013	92.4	1.068	2.063	86.5
FRESNO	2014	79.4	0.983	1.709	80.7
FRESNO	2015	70.0	0.849	1.829	82.4
FRESNO	2016	83.4	1.105	1.951	75.4
FRESNO	2017	72.3	0.799	1.588	90.5
5-Year Average	13-17 Avg	79.5	0.961	1.828	82.7
FRESNO	2018	73.5	0.861	1.507	85.4
	%Difference	-7.6%	-10.4%	-17.6%	3.2%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
HUMBOLDT	2013	210.4	1.170	2.437	179.8
HUMBOLDT	2014	212.4	1.217	1.809	174.5
HUMBOLDT	2015	276.3	1.621	2.423	170.5
HUMBOLDT	2016	203.0	1.537	1.995	132.1
HUMBOLDT	2017	275.1	1.306	2.282	210.6
5-Year Average	13-17 Avg	235.5	1.370	2.189	171.8
HUMBOLDT	2018	223.1	1.734	1.521	128.7
	%Difference	-5.2%	26.5%	-30.5%	-25.1%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
KERN	2013	87.5	1.027	1.133	85.2
KERN	2014	81.0	0.936	1.635	86.5
KERN	2015	80.4	0.862	1.850	93.2
KERN	2016	89.2	0.916	2.066	97.4
KERN	2017	78.1	0.733	1.548	106.5
5-Year Average	13-17 Avg	83.2	0.895	1.646	93.0
KERN	2018	71.6	0.783	1.901	91.4
	%Difference	-14.0%	-12.5%	15.5%	-1.7%

Division Reliability Indices
2013-2018
(Excluding MED)

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
LOS PADRES	2013	86.7	0.726	0.960	119.5
LOS PADRES	2014	95.2	1.043	1.135	91.2
LOS PADRES	2015	72.2	0.687	1.408	105.1
LOS PADRES	2016	112.3	1.147	1.671	97.9
LOS PADRES	2017	106.7	0.944	1.511	113.0
5-Year Average	13-17 Avg	94.6	0.909	1.337	104.1
LOS PADRES	2018	130.5	1.195	1.078	109.3
	%Difference	38.0%	31.4%	-19.3%	5.0%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
MISSION	2013	67.8	0.736	0.775	92.1
MISSION	2014	62.9	0.672	0.770	93.6
MISSION	2015	56.7	0.543	1.054	104.4
MISSION	2016	72.7	0.702	0.916	103.7
MISSION	2017	60.2	0.602	1.080	99.9
5-Year Average	13-17 Avg	64.1	0.651	0.919	98.4
MISSION	2018	62.0	0.644	0.937	96.4
	%Difference	-3.2%	-1.1%	2.0%	-2.0%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH BAY	2013	101.8	0.910	1.455	111.9
NORTH BAY	2014	114.6	0.875	2.505	131.0
NORTH BAY	2015	97.4	0.904	1.977	107.8
NORTH BAY	2016	83.9	0.767	1.209	109.4
NORTH BAY	2017	148.5	0.955	1.861	155.5
5-Year Average	13-17 Avg	109.2	0.882	1.801	123.9
NORTH BAY	2018	116.3	0.921	1.918	126.3
	%Difference	6.5%	4.5%	6.5%	2.0%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH VALLEY	2013	118.9	1.035	1.904	114.9
NORTH VALLEY	2014	111.1	0.968	1.521	114.8
NORTH VALLEY	2015	132.8	1.062	1.930	125.0
NORTH VALLEY	2016	146.4	1.128	1.937	129.8
NORTH VALLEY	2017	112.3	0.863	2.052	130.2
5-Year Average	13-17 Avg	124.3	1.011	1.869	122.9
NORTH VALLEY	2018	187.3	1.366	1.420	137.1
	%Difference	50.7%	35.1%	-24.0%	11.5%

Division Reliability Indices
2013-2018
(Excluding MED)

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
PENINSULA	2013	70.1	0.785	1.114	89.4
PENINSULA	2014	77.1	0.898	1.164	85.9
PENINSULA	2015	60.5	0.752	1.601	80.4
PENINSULA	2016	78.8	0.905	1.195	87.2
PENINSULA	2017	61.5	0.640	1.307	96.0
5-Year Average	13-17 Avg	69.6	0.796	1.276	87.5
PENINSULA	2018	60.5	0.806	1.327	75.0
	%Difference	-13.1%	1.3%	4.0%	-14.2%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SACRAMENTO	2013	93.0	0.937	1.566	99.2
SACRAMENTO	2014	94.4	0.807	1.258	117.0
SACRAMENTO	2015	80.1	0.799	1.556	100.3
SACRAMENTO	2016	83.6	0.944	1.539	88.5
SACRAMENTO	2017	121.2	1.070	1.772	113.2
5-Year Average	13-17 Avg	94.5	0.911	1.538	103.6
SACRAMENTO	2018	101.0	1.021	1.887	98.9
	%Difference	7.0%	12.0%	22.7%	-4.6%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN FRANCISCO	2013	52.0	0.604	0.302	86.1
SAN FRANCISCO	2014	41.5	0.457	0.235	90.8
SAN FRANCISCO	2015	33.9	0.504	0.501	67.2
SAN FRANCISCO	2016	39.7	0.518	0.355	76.7
SAN FRANCISCO	2017	36.5	0.500	0.401	73.0
5-Year Average	13-17 Avg	40.7	0.517	0.359	78.8
SAN FRANCISCO	2018	35.2	0.378	0.303	93.0
	%Difference	-13.6%	-26.8%	-15.6%	18.0%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN JOSE	2013	96.7	0.914	0.977	105.7
SAN JOSE	2014	76.0	0.806	1.026	94.4
SAN JOSE	2015	65.9	0.678	1.008	97.2
SAN JOSE	2016	65.5	0.644	1.152	101.7
SAN JOSE	2017	72.3	0.739	1.274	97.8
5-Year Average	13-17 Avg	75.3	0.756	1.087	99.5
SAN JOSE	2018	85.0	0.858	1.494	99.1
	%Difference	12.9%	13.5%	37.4%	-0.5%

Division Reliability Indices
2013-2018
(Excluding MED)

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SIERRA	2013	109.9	1.279	3.085	85.9
SIERRA	2014	142.2	1.210	2.128	117.5
SIERRA	2015	123.2	1.115	2.816	110.5
SIERRA	2016	121.7	1.029	1.705	118.2
SIERRA	2017	155.0	1.191	1.896	130.2
5-Year Average	13-17 Avg	130.4	1.165	2.326	111.9
SIERRA	2018	152.9	1.241	1.398	123.2
	%Difference	17.3%	6.5%	-39.9%	10.1%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SONOMA	2013	113.4	0.846	2.256	134.0
SONOMA	2014	113.7	0.899	1.587	126.6
SONOMA	2015	73.0	0.673	1.534	108.5
SONOMA	2016	88.6	0.792	1.508	111.8
SONOMA	2017	120.7	0.886	1.591	136.2
5-Year Average	13-17 Avg	101.9	0.819	1.695	124.4
SONOMA	2018	105.5	0.956	1.236	110.3
	%Difference	3.5%	16.7%	-27.1%	-11.3%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
STOCKTON	2013	106.5	1.427	2.025	74.6
STOCKTON	2014	105.9	0.749	1.309	141.4
STOCKTON	2015	96.1	0.874	1.947	109.9
STOCKTON	2016	84.0	0.900	1.663	93.3
STOCKTON	2017	84.6	0.946	1.276	89.5
5-Year Average	13-17 Avg	95.4	0.979	1.644	97.4
STOCKTON	2018	107.7	1.036	1.890	103.9
	%Difference	12.8%	5.8%	15.0%	6.6%
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
YOSEMITE	2013	187.8	1.344	3.259	139.7
YOSEMITE	2014	117.6	1.226	2.446	96.0
YOSEMITE	2015	102.3	0.984	2.638	103.9
YOSEMITE	2016	123.2	1.178	2.025	104.5
YOSEMITE	2017	143.0	1.170	2.162	122.2
5-Year Average	13-17 Avg	134.8	1.181	2.506	114.2
YOSEMITE	2018	158.3	1.355	1.801	116.8
	%Difference	17.4%	14.7%	-28.2%	2.3%

i. System and Division Performance Assessment

1. System Performance Assessment

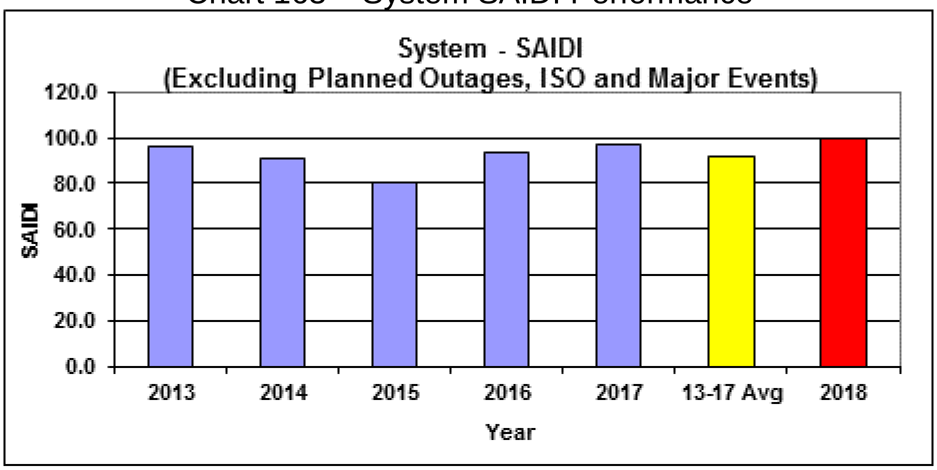
Table 9: System Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SYSTEM	2013	95.8	0.969	1.523	98.9
SYSTEM	2014	91.0	0.879	1.390	103.5
SYSTEM	2015	80.7	0.787	1.585	102.5
SYSTEM	2016	93.8	0.940	1.487	99.8
SYSTEM	2017	97.3	0.878	1.566	110.8
5-Year Average	13-17 Avg	91.7	0.891	1.510	103.0
SYSTEM	2018	99.6	0.959	1.473	103.9
	%Difference	8.6%	7.6%	-2.5%	0.9%

System SAIDI Performance

The system's 2018 SAIDI performance of 99.6 was 7.9 customer-minutes (or 8.6%) higher than the previous 5-year average of 91.7 as shown in the table above and illustrated in the figure below.

Chart 163 – System SAIDI Performance



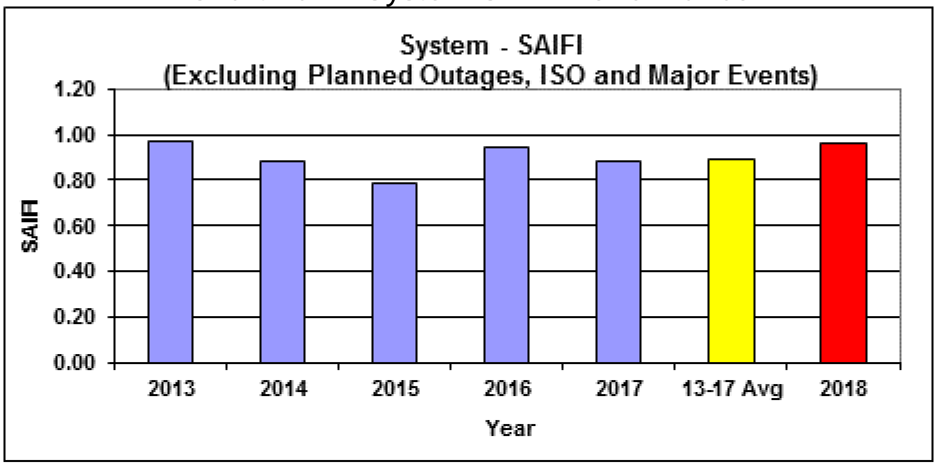
The higher than average 2018 system SAIDI was attributed to the following:

1. The March 1st and 2nd storm event contributed 3.0 customer-minutes to the system's SAIDI.
2. The December 31st storm event contributed 1.2 customer-minutes to the system's SAIDI.

System SAIFI Performance

The system's 2018 SAIFI performance of 0.959 was 0.068 customer-interruptions (or 7.6%) higher than the previous 5-year average of 0.891 as shown in the table above and illustrated in the figure below.

Chart 164 – System SAIFI Performance



The higher than average 2018 system SAIFI was attributed to the following:

1. The March 1st and 2nd storm brought heavy rain and snow throughout the system and contributed 0.019 customer-interruptions to the system SAIFI.
2. The December 31st storm brought strong winds and rain across the system and contributed 0.010 customer-interruptions to the system's SAIFI.

2. Central Coast Division Performance Assessment

Central Coast Division Performance

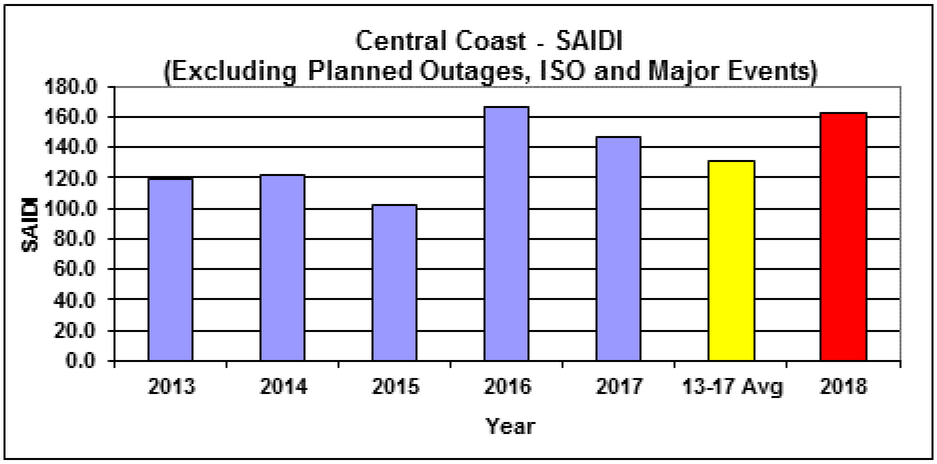
Table 10: Central Coast Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
CENTRAL COAST	2013	119.7	1.291	1.958	92.7
CENTRAL COAST	2014	122.1	1.088	1.835	112.3
CENTRAL COAST	2015	102.0	0.847	1.844	120.4
CENTRAL COAST	2016	166.1	1.471	2.476	112.9
CENTRAL COAST	2017	146.3	1.293	2.826	113.1
5-Year Average	13-17 Avg	131.2	1.198	2.188	109.5
CENTRAL COAST	2018	162.4	1.447	2.480	112.2
	%Difference	23.8%	20.8%	13.3%	2.4%

Central Coast Division SAIDI Performance

Central Coast Division's 2018 SAIDI performance of 162.4 minutes was 31.2 customer-minutes (or 23.8%) higher than the previous 5-year average of 131.2 as shown in the table above and illustrated in the figure below.

Chart 165 – Central Coast Division SAIDI Performance



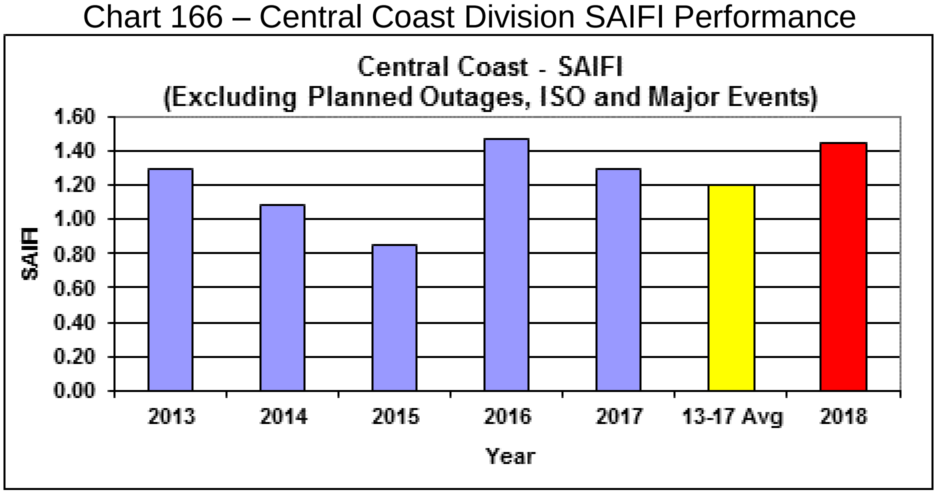
The higher than average 2018 Central Coast division SAIDI was attributed to the following:

1. The March 20-22 storm event brought strong winds and rain through the area and contributed 7.0 customer-minutes to the division's SAIDI.
2. Several strong December storms impacted the divisions performance; those on the 16th, 17th, 25th and 31st. These storms contributed 12.6 customer-minutes to the division's SAIDI.

<u>Central Coast Division SAIFI Performance</u>

Central Coast Division's 2018 SAIFI performance of 1.447 was 0.249 customer-interruptions (or 20.8%) higher than the previous 5-year average of 1.198 as shown in the table above and illustrated in the figure below.

Chart 166 – Central Coast Division SAIFI Performance



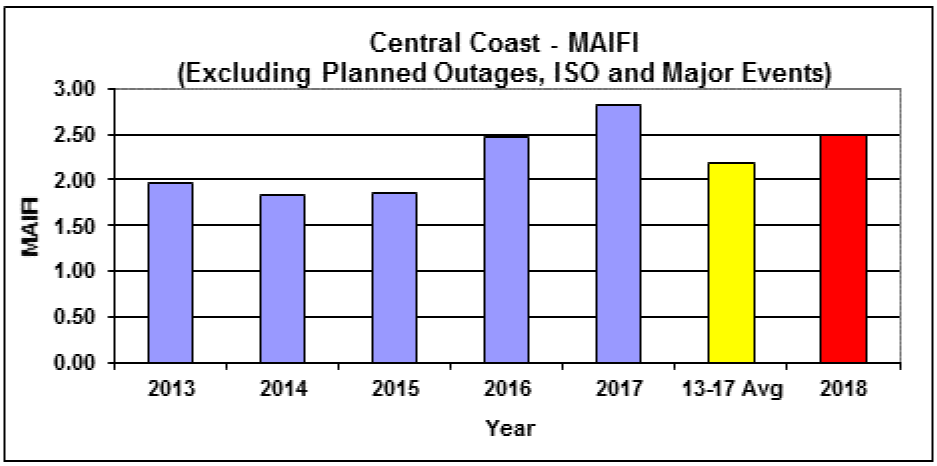
The higher than average 2018 Central Coast SAIFI was attributed to the following:

1. The March 1st storm brought heavy rains into the area and contributed 0.045 customer-interruptions to the division's SAIFI.
2. The storm event of March 20th-22nd brought heavy rains into the area and contributed 0.032 customer-interruptions to the division's SAIFI.
3. Several strong December storms impacted the divisions performance; those on the 16th, 17th, 25th and 31st. These storms contributed 0.089 customer-minutes to the division's SAIFI.

Central Coast Division MAIFI Performance

Central Coast Division's 2018 MAIFI performance of 2.480 was 0.292 customer-interruptions (or 13.3%) higher than the previous 5-year average of 2.188 as shown in the table above and illustrated in the figure below.

Chart 167 – Central Coast Division MAIFI Performance



The higher than average 2018 Central Coast MAIFI was attributed to the following:

1. The division experienced several momentary outages during the March 20th-22nd storm event. These outages contributed 0.070 customer-interruptions to the division's MAIFI.
2. Several momentary outages were experienced during the various December storms, particularly those on the 16th, 17th, 25th and 31st. These outages contributed 0.147 customer-interruptions to the division's MAIFI.

3. De Anza Division Performance Assessment

De Anza Division Performance

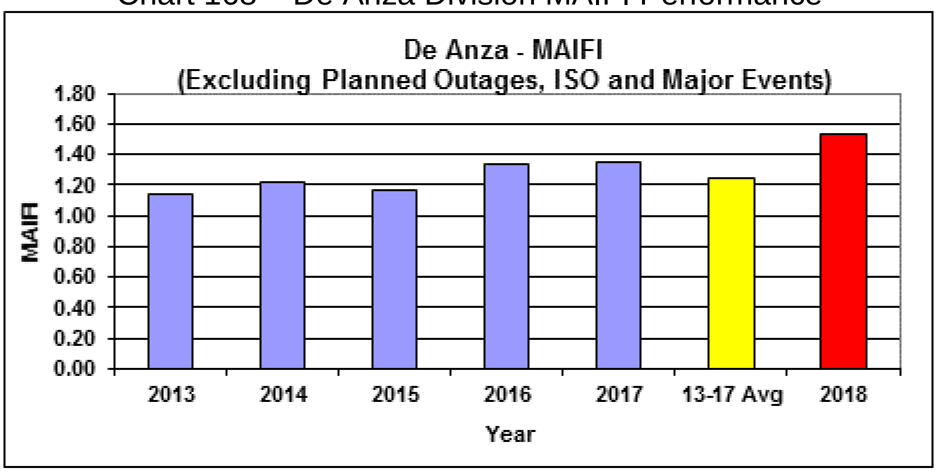
Table 11: De Anza Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
DE ANZA	2013	77.0	0.821	1.138	93.8
DE ANZA	2014	89.3	0.890	1.213	100.3
DE ANZA	2015	51.2	0.476	1.171	107.6
DE ANZA	2016	87.3	0.753	1.336	116.0
DE ANZA	2017	97.9	0.985	1.348	99.4
5-Year Average	13-17 Avg	80.6	0.785	1.241	102.6
DE ANZA	2018	83.9	0.789	1.528	106.4
	%Difference	4.2%	0.5%	23.1%	3.7%

De Anza Division MAIFI Performance

De Anza Division's 2018 MAIFI performance of 1.528 was 0.287 (or 23.1%) customer-interruptions higher than the previous 5-year average of 1.241 as shown in the table above and illustrated in the figure below.

Chart 168 – De Anza Division MAIFI Performance



The higher than average 2018 De Anza Division MAIFI was attributed to the following:

1. On April 13th, a momentary outage at Britton Substation of "unknown cause" contributed 0.088 customer-interruptions to the division's MAIFI.
2. On May 21st, two momentary events caused by a breaker malfunction impacted El Patio Substation. These events contributed 0.087 customer-interruptions to the division's MAIFI.
3. The March 22nd storm event produced several momentary outages that contributed 0.019 customer-interruptions to the division's MAIFI.

4. Diablo Division Performance Assessment

Diablo Division Performance

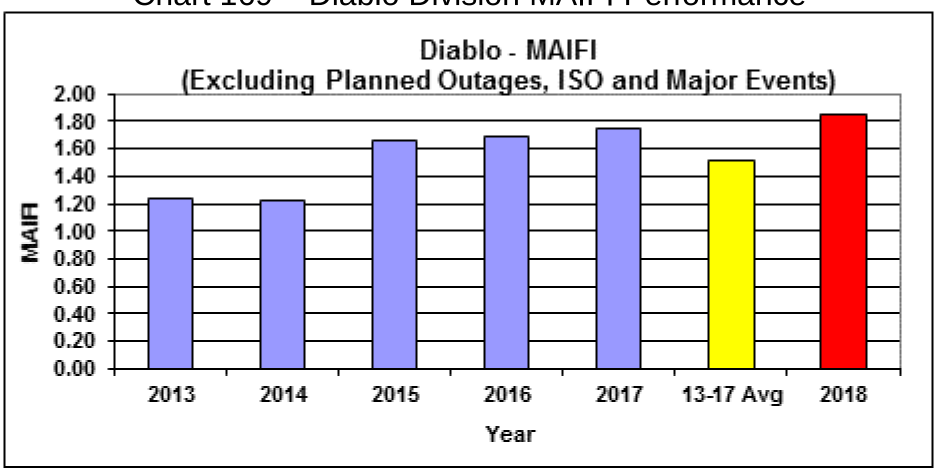
Table 12: Diablo Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
DIABLO	2013	80.4	1.001	1.237	80.3
DIABLO	2014	66.1	0.892	1.220	74.1
DIABLO	2015	73.8	0.860	1.666	85.8
DIABLO	2016	76.5	0.995	1.694	76.9
DIABLO	2017	78.0	0.876	1.752	89.1
5-Year Average	13-17 Avg	74.9	0.925	1.514	81.0
DIABLO	2018	78.3	1.004	1.846	78.0
	%Difference	4.5%	8.5%	21.9%	-3.8%

Diablo Division MAIFI Performance

Diablo Division's 2018 MAIFI performance of 1.846 was 0.332 customer-interruptions (or 21.9%) higher than the previous 5-year average of 1.514 as shown in the table above and illustrated in the figure below.

Chart 169 – Diablo Division MAIFI Performance



The higher than average 2018 Diablo Division MAIFI was attributed to the following:

1. On July 8th, a failed bus-tie switch at Tidewater substation produced momentary outages to the Tidewater 2106 and 2110 circuits contributed 0.083 customer-interruptions to the division's MAIFI.
2. On October 17th, birds caused momentary outages on the Willow Pass 2102 prior to resulting in a sustained outage. These momentary outages contributed 0.116 customer-interruptions to the division's MAIFI.

5. East Bay Division Performance Assessment

East Bay Division Performance

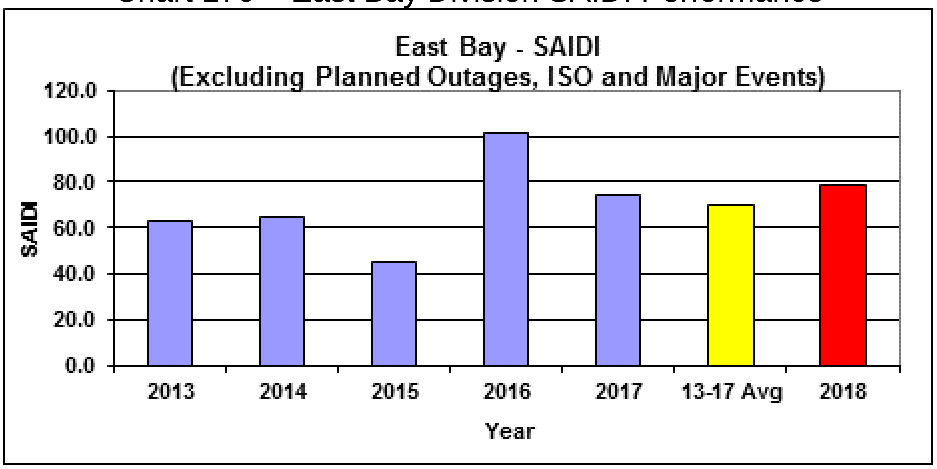
Table 13: East Bay Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
EAST BAY	2013	63.0	0.832	1.155	75.6
EAST BAY	2014	64.8	0.726	1.299	89.2
EAST BAY	2015	45.0	0.586	1.085	76.9
EAST BAY	2016	101.4	1.050	1.079	96.6
EAST BAY	2017	73.8	0.903	1.603	81.7
5-Year Average	13-17 Avg	69.6	0.819	1.244	84.9
EAST BAY	2018	78.8	0.901	1.175	87.5
	%Difference	13.3%	9.9%	-5.6%	3.0%

East Bay Division SAIDI Performance

East Bay Division's 2018 SAIDI performance of 78.8 was 9.2 customer-minutes (or 13.3%) higher than the previous 5-year average of 69.6 as shown in the table above and illustrated in the figure below.

Chart 170 – East Bay Division SAIDI Performance



The higher than average 2018 SAIDI performance was due to the following:

1. The December 24th storm event brought strong winds and rain causing several outages that contributed 4.7 customer-minutes to the division's SAIDI performance.

6. Humboldt Division Performance Assessment

Humboldt Division Performance

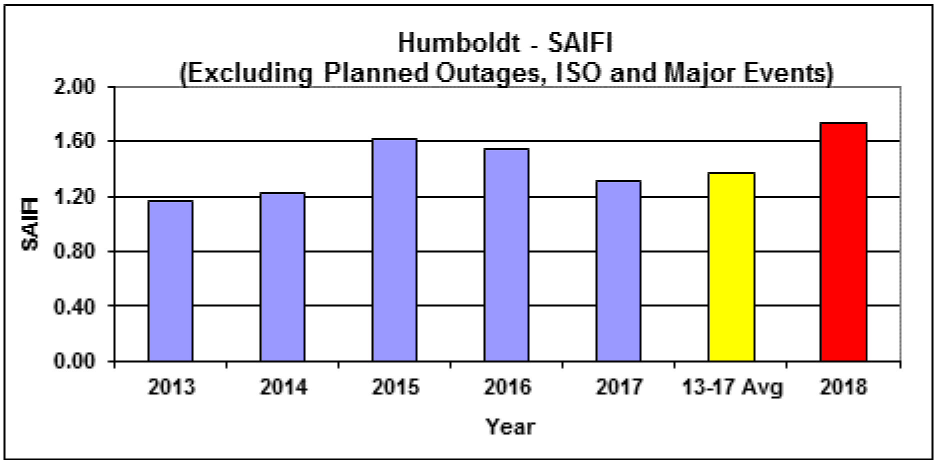
Table 14: Humboldt Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
HUMBOLDT	2013	210.4	1.170	2.437	179.8
HUMBOLDT	2014	212.4	1.217	1.809	174.5
HUMBOLDT	2015	276.3	1.621	2.423	170.5
HUMBOLDT	2016	203.0	1.537	1.995	132.1
HUMBOLDT	2017	275.1	1.306	2.282	210.6
5-Year Average	13-17 Avg	235.5	1.370	2.189	171.8
HUMBOLDT	2018	223.1	1.734	1.521	128.7
	%Difference	-5.2%	26.5%	-30.5%	-25.1%

Humboldt Division SAIFI Performance

Humboldt Division's 2018 SAIFI performance of 1.734 is 0.364 customer-interruptions (or 26.5%) higher than the previous 5-year average of 1.734 as shown in the table above and illustrated below.

Chart 171 – Humboldt Division SAIFI Performance



The higher than average 2018 SAIFI performance is due to the following outage events:

1. Of the various December storm events, those of the 14th, 16th and 24th were the most impactful. The storms contributed 0.115 customer-interruptions to the division's SAIFI performance.
2. The July 29th Mendocino wildfire contributed 0.190 customer-interruptions to the division's SAIFI performance.

7. Kern Division Performance Assessment

Kern Division Performance

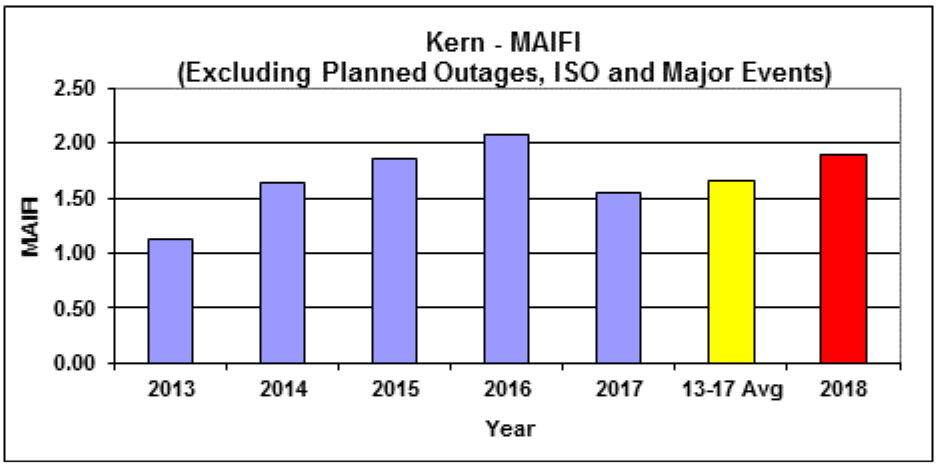
Table 15: Kern Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
KERN	2013	87.5	1.027	1.133	85.2
KERN	2014	81.0	0.936	1.635	86.5
KERN	2015	80.4	0.862	1.850	93.2
KERN	2016	89.2	0.916	2.066	97.4
KERN	2017	78.1	0.733	1.548	106.5
5-Year Average	13-17 Avg	83.2	0.895	1.646	93.0
KERN	2018	71.6	0.783	1.901	91.4
	%Difference	-14.0%	-12.5%	15.5%	-1.7%

Kern Division MAIFI Performance

Kern Division's 2018 MAIFI performance of 1.901 customer-interruptions is 0.255 customer-interruptions (or 15.5%) higher than the previous 5-year average of 1.646 as shown in the table above and illustrated below.

Chart 172 – Kern Division MAIFI Performance



The higher than average 2018 MAIFI performance is due the January 9th storm event that contributed 0.142 customer-interruptions to the division's MAIFI performance.

8. Los Padres Division Performance Assessment

Los Padres Division Performance

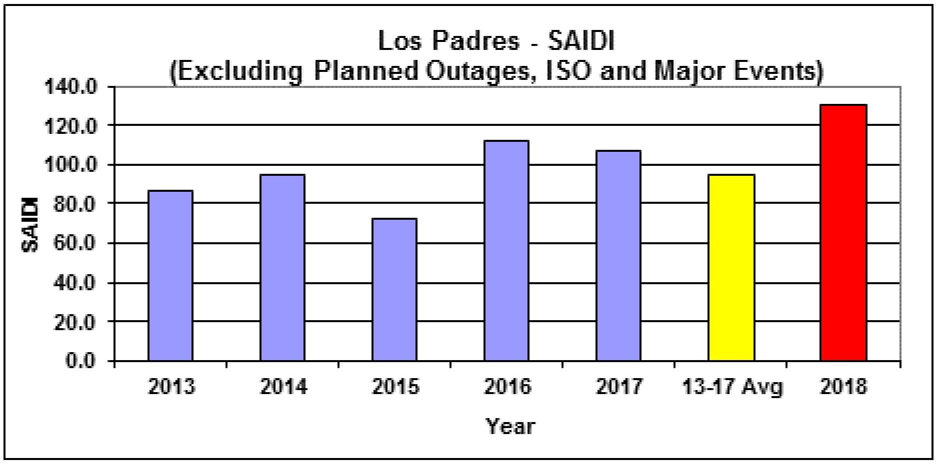
Table 16: Los Padres Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
LOS PADRES	2013	86.7	0.726	0.960	119.5
LOS PADRES	2014	95.2	1.043	1.135	91.2
LOS PADRES	2015	72.2	0.687	1.408	105.1
LOS PADRES	2016	112.3	1.147	1.671	97.9
LOS PADRES	2017	106.7	0.944	1.511	113.0
5-Year Average	13-17 Avg	94.6	0.909	1.337	104.1
LOS PADRES	2018	130.5	1.195	1.078	109.3
	%Difference	38.0%	31.4%	-19.3%	5.0%

Los Padres Division SAIDI Performance

Los Padres Division's 2018 SAIDI performance of 130.5 was 35.9 customer-minutes (or 38.0%) higher than the previous 5-year average of 94.6 as shown in the table above and illustrated in the figure below.

Chart 173 – Los Padres Division SAIDI Performance



The higher than average 2018 Los Padres Division SAIDI was attributed to the following:

Storms:

1. The storm events of January 4th, 8th, and 9th brought heavy rains that contributed 5.1 customer-minutes to the division's SAIDI performance.
2. The February 26th storm contributed 3.4 customer-minutes to the division's SAIDI performance.
3. The March 1st and 22nd storms combined for 5.3 customer-minutes contribution to the division's SAIDI performance.

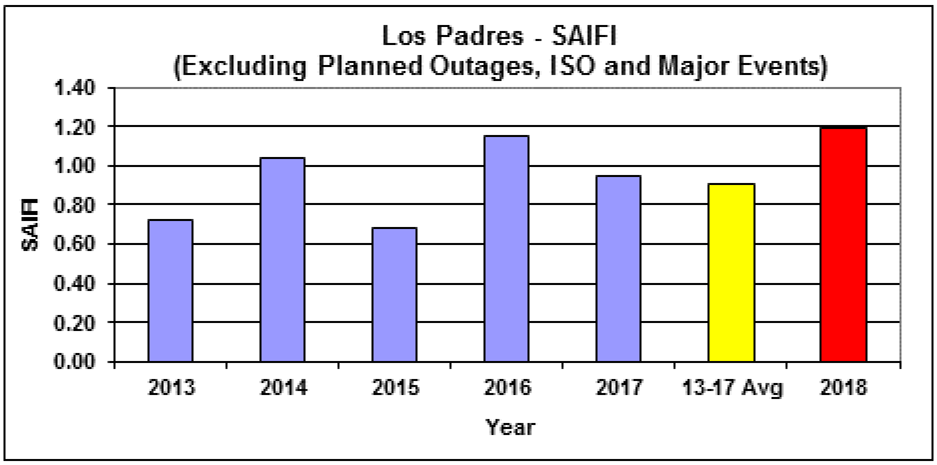
Other:

4. On July 14th a car struck a transmission pole causing an outage to the Purisima Substation. This outage contributed 3.1 customer-minutes to the division's SAIDI performance.
5. On October 18th a failed transmission switch caused an outage to the Santa Ynez Substation. This outage contributed 8.9 customer-minutes to the division's SAIDI.
6. On December 18th a failed jumper on the Oceano 1105 circuit contributed 4.6 customer-minutes to the division's SAIDI performance.

Los Padres Division SAIFI Performance

Los Padres Division's 2018 SAIFI performance of 1.195 was 0.285 customer-interruptions (or 31.4%) higher than the previous 5-year average of 0.909 as shown in the table above and illustrated in the figure below.

Chart 174 – Los Padres Division SAIFI Performance



The higher than average 2018 Los Padres Division SAIFI was attributed to the following:

Storms:

1. The storm events of January 4th, 8th, and 9th brought heavy rains that contributed 0.040 customer-interruptions to the division's SAIFI performance.
2. The February 26th storm contributed 0.027 customer-interruptions to the division's SAIFI performance.
3. The March 1st and 22nd storms combined for 0.026 customer-interruptions contribution to the division's SAIFI performance.

Other:

4. On July 14th a car struck a transmission pole causing an outage to the Purisima Substation. This outage contributed 0.015 customer-interruptions to

the division's SAIFI performance.

5. On October 18th a failed transmission switch caused an outage to the Santa Ynez Substation. This outage contributed 0.067 customer-interruptions to the division's SAIFI.
6. On December 18th a failed jumper on the Oceano 1105 circuit contributed 0.031 customer-interruptions to the division's SAIFI performance.

9. North Valley Division Performance Assessment

North Valley Division Performance

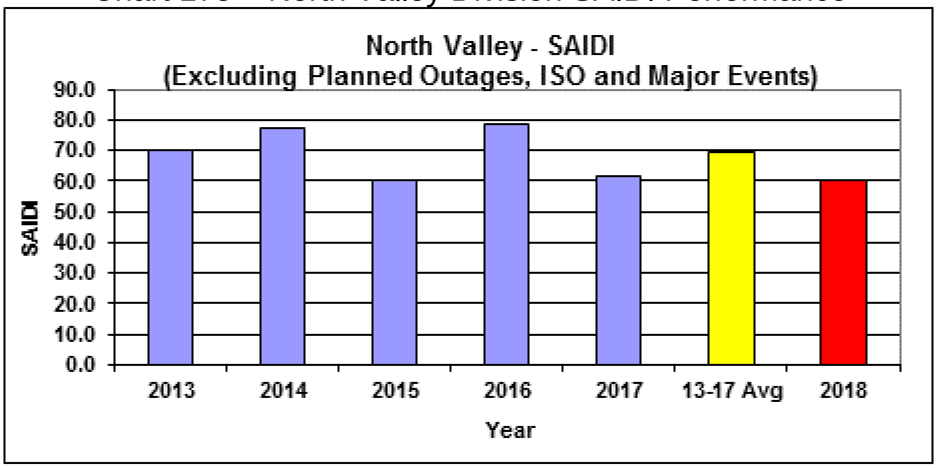
Table 17: North Valley Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
NORTH VALLEY	2013	118.9	1.035	1.904	114.9
NORTH VALLEY	2014	111.1	0.968	1.521	114.8
NORTH VALLEY	2015	132.8	1.062	1.930	125.0
NORTH VALLEY	2016	146.4	1.128	1.937	129.8
NORTH VALLEY	2017	112.3	0.863	2.052	130.2
5-Year Average	13-17 Avg	124.3	1.011	1.869	122.9
NORTH VALLEY	2018	187.3	1.366	1.420	137.1
	%Difference	50.7%	35.1%	-24.0%	11.5%

North Valley Division SAIDI Performance

North Valley Division's 2018 SAIDI performance of 187.3 was 63.0 customer-minutes (or 50.7%) higher than the previous 5-year average of 124.3 as shown in the table above and illustrated in the figure below.

Chart 175 – North Valley Division SAIDI Performance



The higher than average 2018 North Valley Division SAIDI was attributed to the following outage events:

Storms:

1. The February 19th and 26th storm events brought heavy rain and wind into the area. These storms contributed 5.8 customer-minutes to the division's SAIDI performance.
2. The March 1st storm brought heavy rain and wind into the area. This storm contributed 9.4 customer-minutes to the division's SAIDI performance.
3. The March 15th and 22nd storm events brought heavy rain into the area. These storms contributed 2.9 customer-minutes to the division's SAIDI performance.
4. The November 22nd storm brought heavy rain and wind into the area. This storm contributed 3.7 customer-minutes to the division's SAIDI performance.
5. The December 14th and 17th storm events brought heavy rain into the area. These storms contributed 5.7 customer-minutes to the division's SAIDI performance.

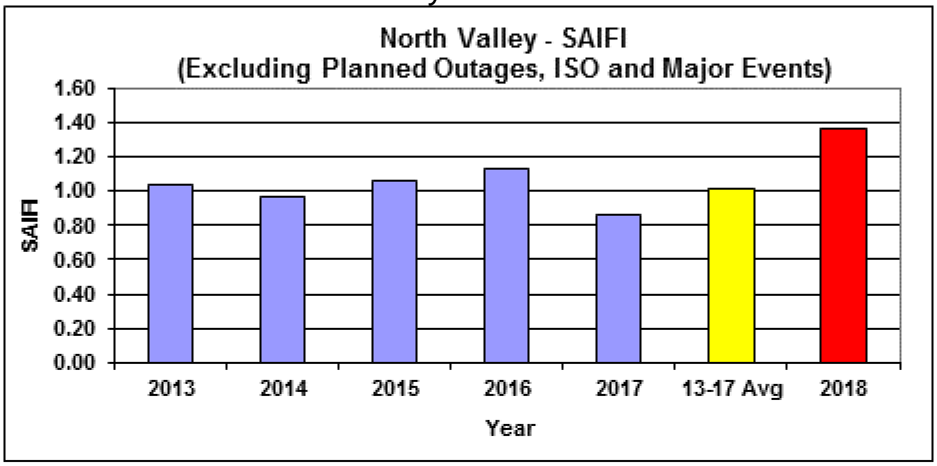
Other:

6. A grass fire on June 23rd in the Red Bluff area contributed 3.8 customer-minutes to the division's SAIDI performance.
7. On July 26th, the Carr fire contributed 12.3 customer-minutes to the division SAIDI performance.
8. On September 24th, an outage on the De Sabla-Centerville 60 kV line caused by a bear climbing into the line contributed 11.8 customer-minutes to the division's SAIDI performance.

North Valley Division SAIFI Performance

North Valley Division's 2018 SAIFI performance of 1.366 was 0.355 customer-interruptions (or 35.1%) higher than the previous 5-year average of 1.011 as shown in the table above and illustrated in the figure below.

Chart 176 – North Valley Division SAIFI Performance



The higher than average 2018 North Valley Division SAIFI was attributed to the following outage events:

Storms:

1. The February 19th and 26th storm events brought heavy rain and wind into the area. These storms contributed 0.051 customer-interruptions to the division's SAIFI performance.
2. The March 1st storm brought heavy rain and wind into the area. This storm contributed 0.028 customer-interruptions to the division's SAIFI performance.
3. The March 15th and 22nd storm events brought heavy rain into the area. These storms contributed 0.018 customer-interruptions to the division's SAIFI performance.
4. The November 22nd storm brought heavy rain and wind into the area. This storm contributed 0.008 customer-interruptions to the division's SAIFI performance.
5. The December 14th and 17th storm events brought heavy rain into the area. These storms contributed 0.008 customer-interruptions to the division's SAIFI performance.

Other:

6. A grass fire on June 23rd in the Red Bluff area contributed 0.060 customer-interruptions to the division's SAIFI performance.
7. On July 26th, the Carr fire contributed 0.024 customer-interruptions to the division SAIFI performance.
8. On July 18th the transmission line serving Corning Substation was de-energized at the request of the fire department due to a structure fire. This outage contributed 0.044 customer-interruptions to the division's SAIFI

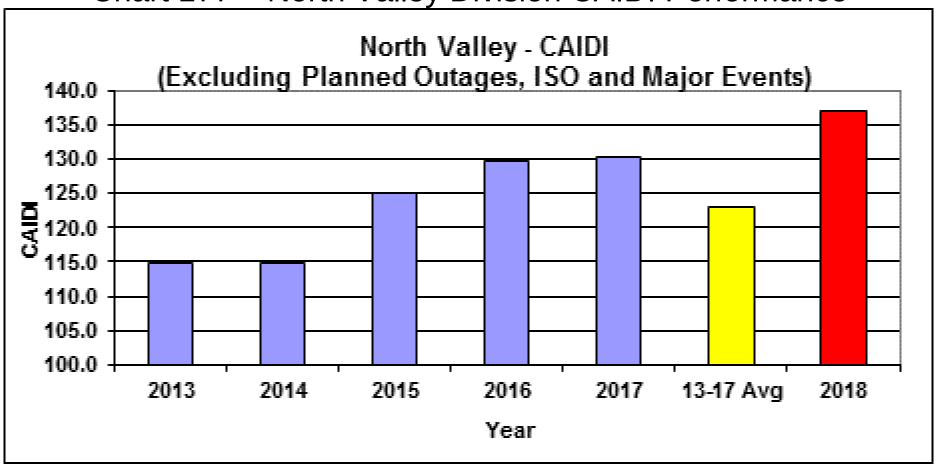
performance.

9. On September 24th, an outage on the De Sabla-Centerville 60 kV line caused by a bear climbing into the line contributed 0.022 customer-interruptions to the division's SAIFI performance.

North Valley Division CAIDI Performance

North Valley Division's 2018 CAIDI performance of 137.1 was 14.2 minutes (or 11.5%) higher than the previous 5-year average of 122.9 as shown in the table above and illustrated in the figure below.

Chart 177 – North Valley Division CAIDI Performance



The higher than average 2018 North Valley Division CAIDI was attributed to the following outage events:

Most impactful storm events to the CAIDI performance:

1. The February 19th and 26th.
2. The March 1st storm.
3. The March 15th and 22nd storm events.
4. The November 22nd storm.
5. The December 14th and 17th storm events.

These outages combined contributed 9.7 minutes to the division's CAIDI performance.

Other:

6. On July 18th the transmission line serving Corning Substation was de-energized at the request of the fire department due to a structure fire. This outage contributed an additional 7.2 minutes to the division's CAIDI performance.

10. Sacramento Division Performance Assessment

Sacramento Division Performance

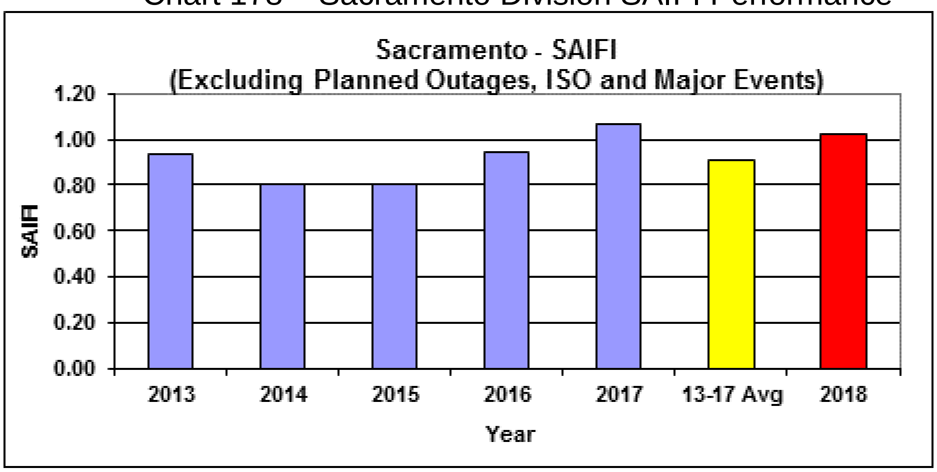
Table 18: Sacramento Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SACRAMENTO	2013	93.0	0.937	1.566	99.2
SACRAMENTO	2014	94.4	0.807	1.258	117.0
SACRAMENTO	2015	80.1	0.799	1.556	100.3
SACRAMENTO	2016	83.6	0.944	1.539	88.5
SACRAMENTO	2017	121.2	1.070	1.772	113.2
5-Year Average	13-17 Avg	94.5	0.911	1.538	103.6
SACRAMENTO	2018	101.0	1.021	1.887	98.9
	%Difference	7.0%	12.0%	22.7%	-4.6%

Sacramento Division SAIFI Performance

Sacramento Division's 2018 SAIFI performance of 1.021 was 0.110 customer-interruptions (or 12.0%) higher than the previous 5-year average of 0.911 as shown in the table above and illustrated in the figure below.

Chart 178 – Sacramento Division SAIFI Performance

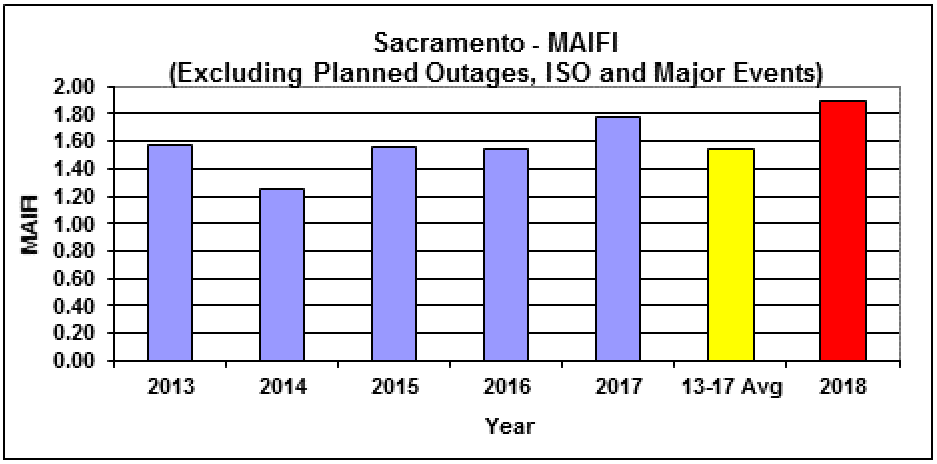


The higher than average 2018 Sacramento Division SAIFI was attributed to the March 1st storm that brought heavy winds and rain into the area. This storm contributed 0.024 customer-interruptions to the division's SAIFI performance.

Sacramento Division MAIFI Performance

Sacramento Division's 2018 MAIFI performance of 1.887 was 0.348 customer-interruptions (or 22.7%) higher than the previous 5-year average of 1.538 as shown in the table above and illustrated in the figure below.

Chart 179 – Sacramento Division MAIFI Performance



The higher than average 2018 Sacramento Division MAIFI was attributed to the following:

1. On February 20th, a momentary outage of unknown cause was experienced on the Cortina #3 transmission line that contributed 0.023 customer-interruptions to the division's MAIFI performance.
2. On February 24th, a momentary outage of unknown cause was experienced on the Davis 1106 circuit that contributed 0.017 customer-interruptions to the division's MAIFI performance.
3. The storm event of January 4th caused several momentary outages that contributed 0.018 customer-interruptions to the division's MAIFI performance.
4. The storm event of March 1st caused several momentary outages that contributed 0.096 customer-interruptions to the division's MAIFI performance.
5. Many of the December storm events (December 22, 23, and 27-30) caused several momentary outages that contributed 0.080 customer-interruptions to the division's MAIFI performance.

11. San Francisco Division Performance Assessment

San Francisco Division Performance

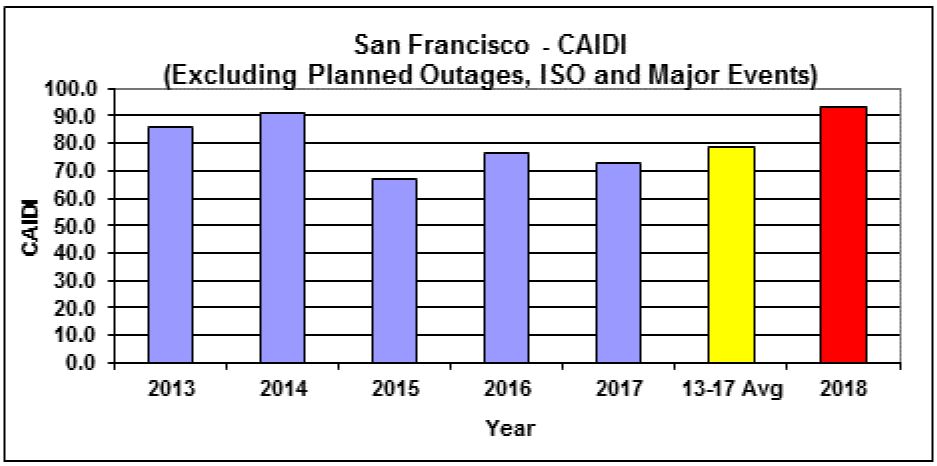
Table 19: San Francisco Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SAN FRANCISCO	2013	52.0	0.604	0.302	86.1
SAN FRANCISCO	2014	41.5	0.457	0.235	90.8
SAN FRANCISCO	2015	33.9	0.504	0.501	67.2
SAN FRANCISCO	2016	39.7	0.518	0.355	76.7
SAN FRANCISCO	2017	36.5	0.500	0.401	73.0
5-Year Average	13-17 Avg	40.7	0.517	0.359	78.8
SAN FRANCISCO	2018	35.2	0.378	0.303	93.0
	%Difference	-13.6%	-26.8%	-15.6%	18.0%

San Francisco Division CAIDI Performance

San Francisco Division's 2018 CAIDI performance of 93.0 was 14.2 minutes (or 18.0%) higher than the previous 5-year average of 78.8 as shown in the table above and illustrated in the figure below.

Chart 180 – San Francisco Division CAIDI Performance



The higher than average 2018 San Francisco Division CAIDI was attributed to the following:

1. A failed jumper on the K-404 circuit and a failed underground switch on the A-1109 on February 13th.
2. A failed underground cable on the Y-1102 circuit on April 7th.
3. An outage caused by a metallic balloon on the E-1105 circuit on April 14th.

These four outages contributed 15.1 minutes.

12. San Jose Division Performance Assessment

San Jose Division Performance

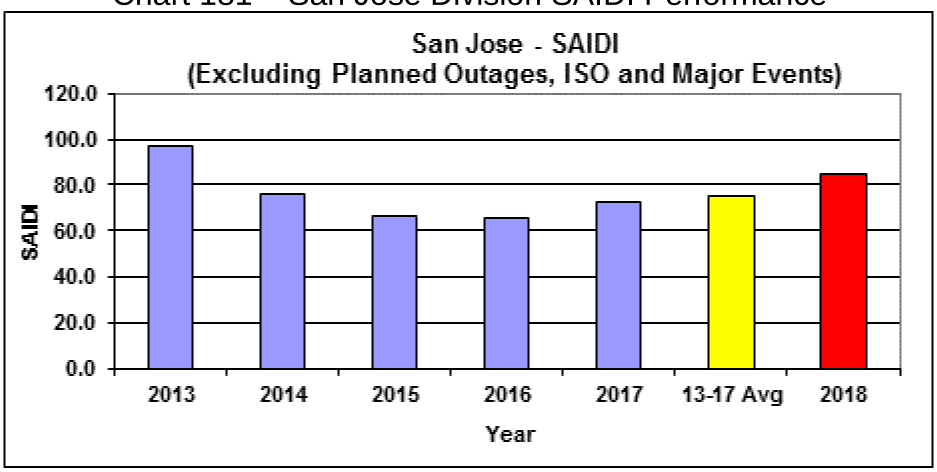
Table 20: San Jose Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SAN JOSE	2013	96.7	0.914	0.977	105.7
SAN JOSE	2014	76.0	0.806	1.026	94.4
SAN JOSE	2015	65.9	0.678	1.008	97.2
SAN JOSE	2016	65.5	0.644	1.152	101.7
SAN JOSE	2017	72.3	0.739	1.274	97.8
5-Year Average	13-17 Avg	75.3	0.756	1.087	99.5
SAN JOSE	2018	85.0	0.858	1.494	99.1
	%Difference	12.9%	13.5%	37.4%	-0.5%

San Jose Division SAIDI Performance

San Jose Division's 2018 SAIDI performance of 85.0 was 9.7 customer-minutes (or 12.9%) higher than the previous 5-year average of 75.3 as shown in the table above and illustrated in the figure below.

Chart 181 – San Jose Division SAIDI Performance

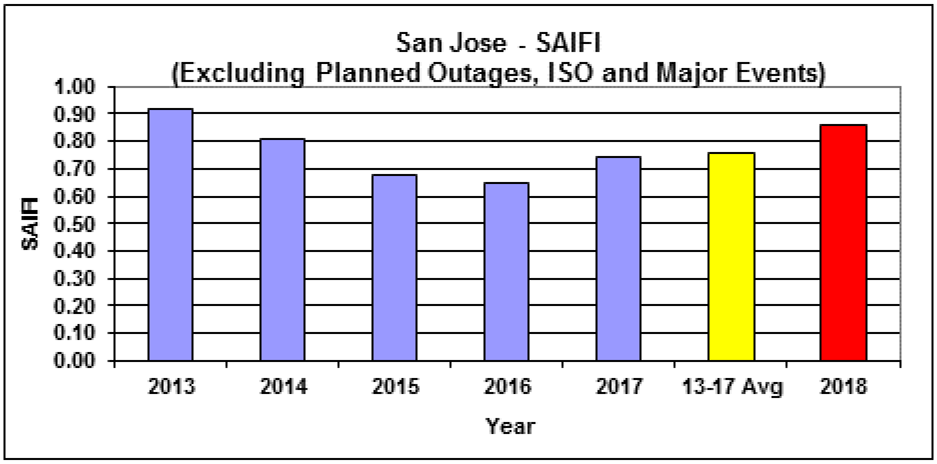


The higher than average 2018 San Jose Division SAIDI was attributed to the December 31st storm event which contributed 5.2 customer-minutes to the division's SAIDI performance.

San Jose Division SAIFI Performance

San Jose Division's 2018 SAIFI performance of 0.858 was 0.102 customer-interruptions (or 13.5%) higher than the previous 5-year average of 0.756 as shown in the table above and illustrated in the figure below.

Chart 182 – San Jose Division SAIFI Performance

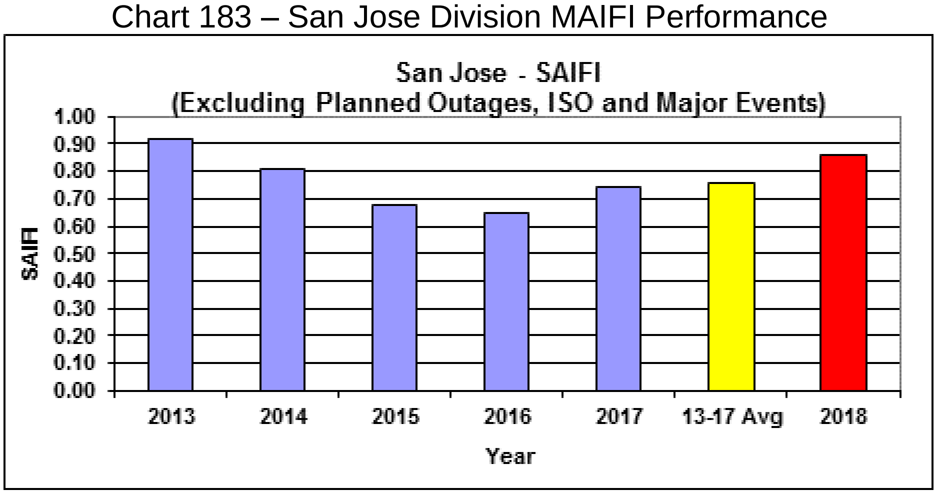


The higher than average 2018 San Jose Division SAIFI was attributed to the December 31st storm event which contributed 0.056 customer-interruptions to the division's SAIFI performance.

San Jose Division MAIFI Performance

San Jose Division's 2018 MAIFI performance of 1.494 was 0.407 customer-interruptions (or 37.4%) higher than the previous 5-year average of 1.087 as shown in the table above and illustrated in the figure below.

Chart 183 – San Jose Division MAIFI Performance



The higher than average 2018 San Jose Division MAIFI was attributed to the following:

1. On February 6th, a failed overhead conductor on the Evergreen 2103 circuit caused a momentary outage prior to becoming a sustained outage. This

outage contributed 0.026 customer-interruptions to the division's MAIFI.

2. On February 27th, a momentary outage of unknown cause on the Piercy 2109 circuit contributed 0.025 customer-interruptions to the division's MAIFI performance.
3. On May 12th, two underground transformer failures on the Milpitas 2110 circuit produced momentary outages prior to becoming a sustained outage. These outages contributed 0.016 customer-interruptions. In addition, a momentary outage of unknown cause occurred on the McKee 1112 circuit and another momentary outage occurred on the Hicks 1113 due to a failed secondary wire prior to becoming a sustained outage. These two outages contributed 0.012 customer-interruptions to the division's MAIFI.
4. On June 3rd, a failed underground switch on the Montague 2104 circuit produced a momentary outage prior to becoming a sustained outage contributing 0.012 customer interruptions. In addition, a momentary outage of unknown cause on the Hicks 2111 contributed 0.043 customer-interruptions to the division's MAIFI.
5. On July 7th, momentary outages of unknown cause were experienced on the Mabury 1101 and 1105 circuits, the Edenvale 2107 and Almaden substations. These outages contributed 0.062 customer-interruptions to the division's MAIFI.
6. On July 21st, a momentary outage was experienced on the Evergreen 2103 circuit (unknown cause) and another momentary outage on the Morgan Hill 2105 circuit due to birds prior to becoming a sustained outage.
7. The following two momentary outages were experienced on August 2nd: (1) the San Jose B 1112 circuit due to a car-pole incident prior to becoming a sustained outage and (2) the Hicks 1111 circuit due to a failed substation switch prior to becoming a sustained outage. The outages contributed 0.049 customer-interruptions to the division's MAIFI.
8. On December 20th, a momentary outage of unknown cause was experienced on the transmission line impacting Mabury substation. This momentary outage contributed 0.032 customer-interruptions to the division's MAIFI.

13. Sierra Division Performance Assessment

Sierra Division Performance

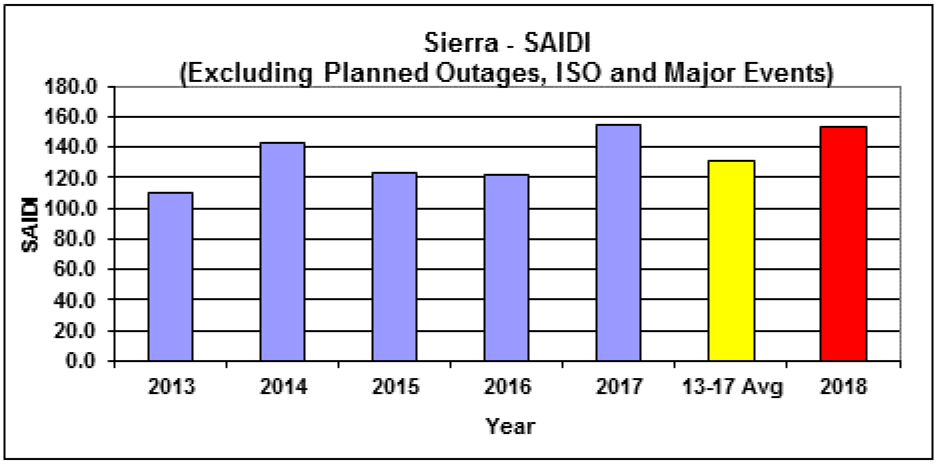
Table 21: Sierra Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SIERRA	2013	109.9	1.279	3.085	85.9
SIERRA	2014	142.2	1.210	2.128	117.5
SIERRA	2015	123.2	1.115	2.816	110.5
SIERRA	2016	121.7	1.029	1.705	118.2
SIERRA	2017	155.0	1.191	1.896	130.2
5-Year Average	13-17 Avg	130.4	1.165	2.326	111.9
SIERRA	2018	152.9	1.241	1.398	123.2
	%Difference	17.3%	6.5%	-39.9%	10.1%

Sierra Division SAIDI Performance

Sierra Division's 2018 SAIDI performance of 152.9 was 22.5 customer-minutes (or 17.3%) higher than the previous 5-year average of 130.4 as shown in the table above and illustrated in the figure below.

Chart 184 – Sierra Division SAIDI Performance

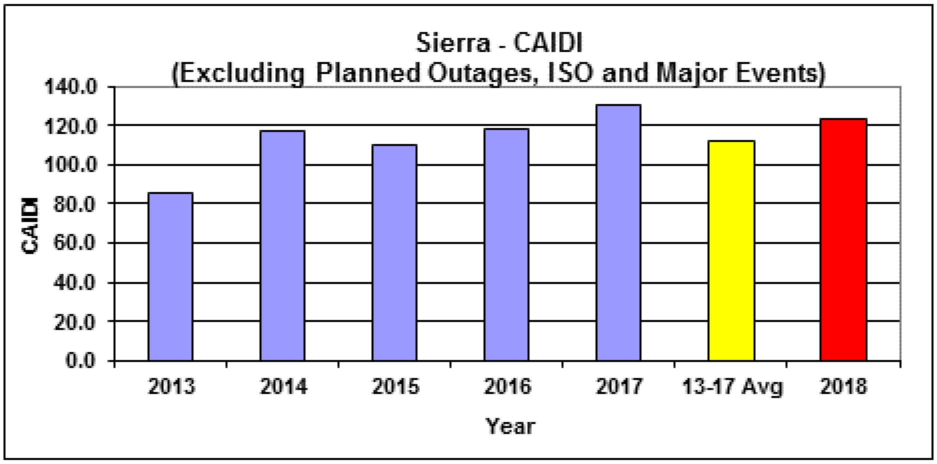


The higher than average 2018 Sierra Division SAIDI was attributed to the March 2nd storm event that contributed 12.8 customer-minutes to the division's SAIDI performance.

Sierra Division CAIDI Performance

Sierra Division's 2018 CAIDI performance of 123.2 was 11.3 minutes (or 10.1%) higher than the previous 5-year average of 111.9 as shown in the table above and illustrated in the figure below.

Chart 185 – Sierra Division CAIDI Performance



The higher than average 2018 Sierra Division CAIDI was attributed to the March 2nd storm event that contributed 7.0 customer-minutes to the division's CAIDI performance.

14. Sonoma Division Performance Assessment

Sonoma Division Performance

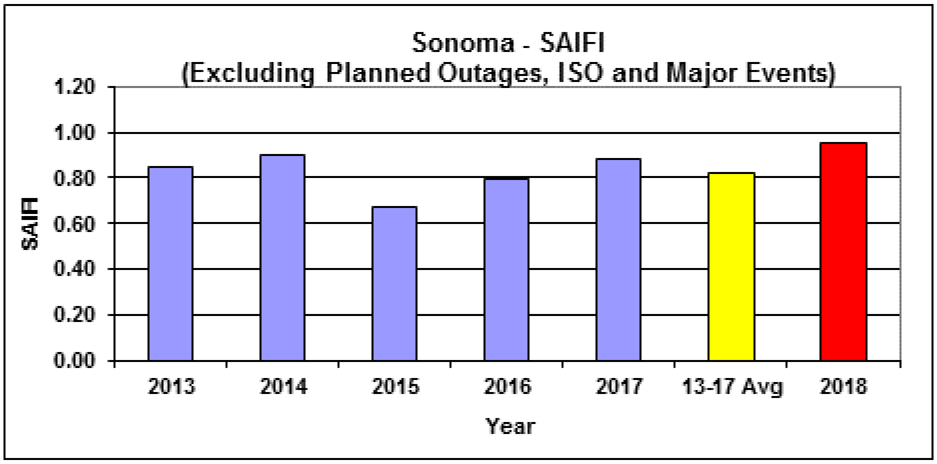
Table 22: Sonoma Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SONOMA	2013	113.4	0.846	2.256	134.0
SONOMA	2014	113.7	0.899	1.587	126.6
SONOMA	2015	73.0	0.673	1.534	108.5
SONOMA	2016	88.6	0.792	1.508	111.8
SONOMA	2017	120.7	0.886	1.591	136.2
5-Year Average	13-17 Avg	101.9	0.819	1.695	124.4
SONOMA	2018	105.5	0.956	1.236	110.3
	%Difference	3.5%	16.7%	-27.1%	-11.3%

Sonoma Division SAIFI Performance

Sonoma Division's 2018 SAIFI performance of 0.956 was 0.137 customer-interruptions (or 16.7%) higher than the previous 5-year average of 0.819 as shown in the table above and illustrated in the figure below.

Chart 186 – Sonoma Division SAIFI Performance



The higher than average 2018 Sonoma Division SAIFI was attributed to a July 1st outage caused when a bird flew into a transmission switch impacting the Petaluma A and Petaluma C substations. This outage contributed 0.085 customer-interruptions to the division's SAIFI performance.

15. Stockton Division Performance Assessment

Stockton Division Performance

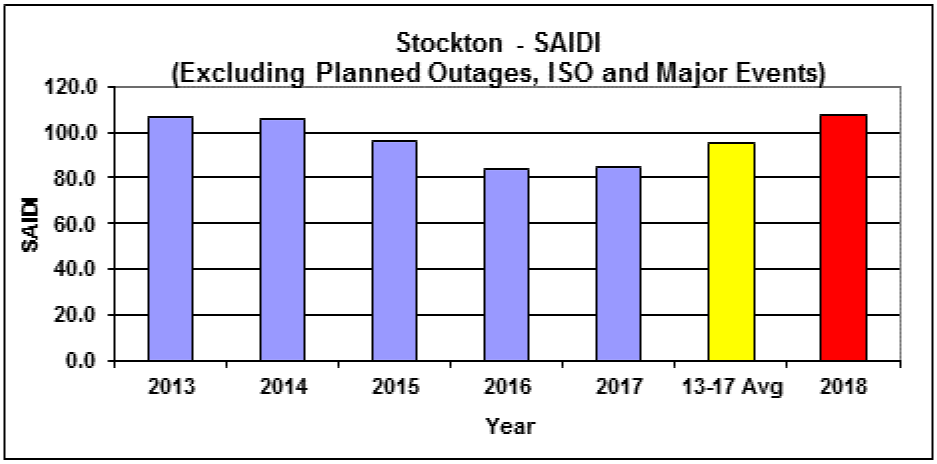
Table 23: Stockton Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
STOCKTON	2013	106.5	1.427	2.025	74.6
STOCKTON	2014	105.9	0.749	1.309	141.4
STOCKTON	2015	96.1	0.874	1.947	109.9
STOCKTON	2016	84.0	0.900	1.663	93.3
STOCKTON	2017	84.6	0.946	1.276	89.5
5-Year Average	13-17 Avg	95.4	0.979	1.644	97.4
STOCKTON	2018	107.7	1.036	1.890	103.9
	%Difference	12.8%	5.8%	15.0%	6.6%

Stockton Division SAIDI Performance

Stockton Division's 2018 SAIDI performance of 107.7 was 12.3 customer-minutes (or 12.8%) higher than the previous 5-year average of 95.4 as shown in the table above and illustrated in the figure below.

Chart 187 – Stockton Division SAIDI Performance

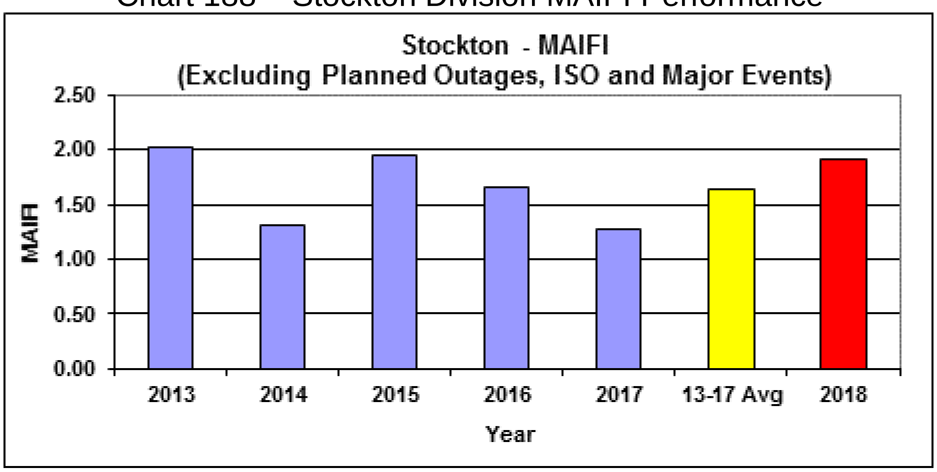


The higher than average 2018 Stockton Division SAIDI was attributed to the March 17th storm event that contributed 13.5 customer-minutes to the division's SAIDI performance.

<u>Stockton Division MAIFI Performance</u>

Stockton Division's 2018 MAIFI performance of 1.890 was 0.246 customer-interruptions (or 15.0%) higher than the previous 5-year average of 1.644 as shown in the table above and illustrated in the figure below.

Chart 188 – Stockton Division MAIFI Performance



The higher than average 2018 Stockton Division MAIFI was attributed to the March 22nd storm event that contributed 0.136 customer-interruptions to the division's MAIFI performance.

16. Yosemite Division Performance Assessment

Yosemite Division Performance

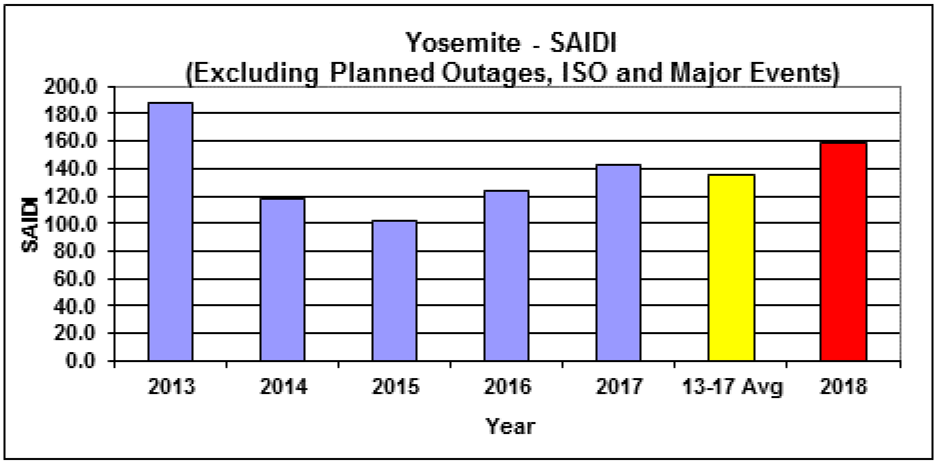
Table 24: Yosemite Division Performance

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
YOSEMITE	2013	187.8	1.344	3.259	139.7
YOSEMITE	2014	117.6	1.226	2.446	96.0
YOSEMITE	2015	102.3	0.984	2.638	103.9
YOSEMITE	2016	123.2	1.178	2.025	104.5
YOSEMITE	2017	143.0	1.170	2.162	122.2
5-Year Average	13-17 Avg	134.8	1.181	2.506	114.2
YOSEMITE	2018	158.3	1.355	1.801	116.8
	%Difference	17.4%	14.7%	-28.2%	2.3%

Yosemite Division SAIDI Performance

Yosemite Division's 2018 SAIDI performance of 158.3 was 23.5 customer-minutes (or 17.4%) higher than the previous 5-year average of 134.8 as shown in the table above and illustrated in the figure below.

Chart 189 – Yosemite Division SAIDI Performance

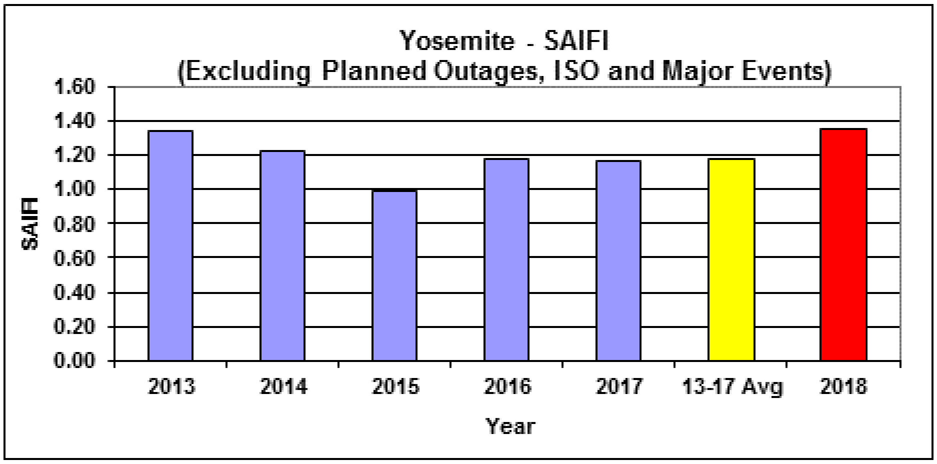


The higher than average 2018 Yosemite Division SAIDI was attributed to the March 2nd storm event that contributed 16.8 customer-minutes to the division's SAIDI performance.

Yosemite Division SAIFI Performance

Yosemite Division's 2018 SAIFI performance of 1.355 was 0.174 customer-interruptions (or 14.7%) higher than the previous 5-year average of 1.181 as shown in the table above and illustrated in the figure below.

Chart 190 – Yosemite Division SAIFI Performance



The higher than average 2018 Yosemite Division SAIFI was attributed to the March 22nd storm event that contributed 0.064 customer-interruptions to the division's SAIFI performance.

ii. 2018 Excludable Major Event Day (MED) CAIDI Performance

Excludable Major Event Days (MED) In 2018

This section contains PG&E's report on weather related excludable major event days (MED) for each division in which CAIDI[7] varied by 25 percent or more in the division benchmark, as required by Decision 04-10-034 and Decision 16-01-008, Appendix B, footnote 6. Per D.04-10-034, the division benchmark is calculated from the rolling average of the prior 10 weather-related excludable major events.[8] PG&E is also required by D.04-10-034 to provide such a report for the system, where the system performance varies by more than 10 percent from the rolling average of the prior 10 weather-related system-wide excludable major event days, whichever yields more event days.

There were six weather-related Major Event Days in 2018[9].

Table 25 – Summary MED days

2018 Weather-Related Major Event Days	# Weather-Related Events	MEDs
March 16, 2018	1	1
May 17, 2018	2	1
July 28, 2018	3	1
October 14, 2018	4	1
November 8, 2018	5	1
November 21, 2018	6	1
November 29, 2018	7	1
		7

NOTE: May 17th was not a weather-related MED.

The first major event day of the year, March 16, 2018, involved a winter storm system that moved into PG&E's service territory producing rain, gusty winds, and mountain snow at lower elevations.

Table 26 summarizes the system and division CAIDI performances during this event and the average of the prior ten weather related major events.

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[7] Per Decision 16-01-008, Appendix B footnote 6, Decision 04-10-034 only applies to PG&E: Investigate and report on all weather-related excludable major events for each division in which CAIDI varies by 25 percent or more from the division benchmark. The division benchmarks are calculated from the rolling average of the prior 10 weather-related excludable events as defined by IEEE 1366.

[8] A major event is defined in the IEEE Standard 1366. As in prior reports, PG&E is using the "prior ten weather related excludable major events" prior to the calendar year that is the subject of the report.

[9] May 17th was a non-weather-related MED (outage due to a vehicle hitting a 230 kV tower).

(March 16, 2018 vs. Prior 10 MED)

System / Division	Average CAIDI of Prior 10 System / Division Specific Excludable ME	March 16, 2018 / Division Specific CAIDI	Percent Difference From the Prior CAIDI Average	Exceeds the Investigation Threshold?
SYSTEM	584.1	358.3	61.3%	NO
CENTRAL COAST	418.5	63.2	15.1%	NO
DE ANZA	483.7	0.0	0.0%	NO
DIABLO	218.3	0.0	0.0%	NO
EAST BAY	270.3	87.9	32.5%	NO
FRESNO	155.7	308.1	197.9%	Yes
HUMBOLDT	667.2	563.7	84.5%	NO
KERN	167.7	56.8	33.9%	NO
LOS PADRES	447.7	815.1	182.1%	Yes
MISSION	203.8	130.5	64.0%	NO
NORTH BAY	1239.9	310.5	25.0%	NO
NORTH VALLEY	319.3	242.0	75.8%	NO
PENINSULA	150.8	163.5	108.4%	NO
SACRAMENTO	135.4	112.5	83.1%	NO
SAN FRANCISCO	103.8	54.5	52.5%	NO
SAN JOSE	269.0	680.0	252.8%	Yes
SIERRA	507.4	604.9	119.2%	NO
SONOMA	2958.6	258.7	8.7%	NO
STOCKTON	169.0	556.6	329.4%	Yes
YOSEMITE	236.7	267.9	113.2%	NO

Table 26 – March 16, 2018 CAIDI Performance

1. March 16, 2018 Major Event Day

1.1 Fresno CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
FRESNO	February 17-22, 2017	160.9	20
FRESNO	April 6-7, 2017	90.0	14
FRESNO	June 18, 2017	128.5	23
FRESNO	September 3, 2017	115.1	18
FRESNO	September 11, 2017	182.5	49
FRESNO	October 8-9, 2017	94.2	5
FRESNO	October 14, 2017	180.8	4
FRESNO	October 20, 2018	173.1	60
FRESNO	December 4, 2017	40.5	3
FRESNO	December 16, 2017	109.4	8
	Average of 10 excludable major events	155.7	19
FRESNO	March 16, 2018	308.1	9
	% Difference	97.9%	-53%

Table 27 – Fresno Historical Performance

As indicated in Table 27, the Fresno Division CAIDI value of 308.1 minutes for the March 16th major event was 97.9% higher than the 155.7-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher division CAIDI value was a car pole incident on the Kingsburg 1111 circuit. This outage contributed 204.6 minutes to the overall March 16th CAIDI performance.

1.2 Los Padres CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
LOS PADRES	February 17-22, 2017	488.1	27
LOS PADRES	April 7, 2017	108.9	5
LOS PADRES	June 18, 2017	186.1	1
LOS PADRES	September 3, 2017	469.4	18
LOS PADRES	September 11, 2017	181.7	35
LOS PADRES	October 8-9, 2017	141.6	4
LOS PADRES	October 14, 2017	140.0	1
LOS PADRES	October 20, 2018	139.6	11
LOS PADRES	December 4, 2017	52.0	8
LOS PADRES	December 16, 2017	21.2	3
	Average of 10 excludable major events	447.7	15
LOS PADRES	March 16, 2018	815.1	3
	% Difference	82.1%	-80%

Table 28 – Los Padres Historical Performance

As indicated in Table 28, the Los Padres Division CAIDI value of 815.1 minutes for the March 16th major event was 82.1% higher than the 447.7-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher division CAIDI value was a car pole incident on the Mesa 1101 circuit. This outage contributed 343.3 minutes to the overall March 16th CAIDI performance

1.2 San Jose CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
SAN JOSE	February 17-22, 2017	332.1	30
SAN JOSE	April 6-7, 2017	164.2	8
SAN JOSE	June 18, 2017	295.2	38
SAN JOSE	September 3, 2017	165.0	16
SAN JOSE	September 11, 2017	75.9	12
SAN JOSE	October 8-9, 2017	147.3	2
SAN JOSE	October 14, 2017	51.8	2
SAN JOSE	October 20, 2018	175.6	10
SAN JOSE	December 4, 2017	75.2	12
SAN JOSE	December 16, 2017	110.9	14
	Average of 10 excludable major events	269.0	17
SAN JOSE	March 16, 2018	680.0	1
	% Difference	152.8%	-94%

Table 29 – San Jose Historical Performance

As indicated in Table 29, the San Jose Division CAIDI value of 680.0 minutes for the March 16th major event was 152.8% higher than the 269.0-minute average of the prior 10 weather-related excludable major events.

This was due to an outage of unknown cause on the Llagas 2107 circuit.

1.3 Stockton CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
STOCKTON	February 17-22, 2017	213.7	37
STOCKTON	April 6-7, 2017	71.8	12
STOCKTON	June 18, 2017	178.6	26
STOCKTON	September 3, 2017	98.3	9
STOCKTON	September 11, 2017	62.6	8
STOCKTON	October 8-9, 2017	145.8	8
STOCKTON	October 14, 2017	460.4	3
STOCKTON	October 20, 2018	112.2	13
STOCKTON	December 4, 2017	261.8	30
STOCKTON	December 16, 2017	112.8	40
	Average of 10 excludable major events	169.0	22
STOCKTON	March 16, 2018	556.6	54
	% Difference	229.4%	143%

Table 30 – Stockton Historical Performance

As indicated in Table 30, the Stockton Division CAIDI value of 556.6 minutes for the March 16th major event was 229.4% higher than the 169.0-minute average of the prior 10 weather-related excludable major events.

The cause of the high CAIDI value was attributed to the low snow elevations which made roads inaccessible.

2. July 28, 2018 Major Event Day

The second major event was on July 28, 2018, which was driven by the Carr fire.

Table 31 summarizes the system and division CAIDI performances during this event and the average of the prior ten weather related major events.

(July 28, 2018 vs. Prior 10 MED)

System / Division	Average CAIDI of Prior 10 System / Division Specific Excludable ME	July 28, 2018 / Division Specific CAIDI	Percent Difference From the Prior CAIDI Average	Exceeds the Investigation Threshold?
SYSTEM	584.1	217.3	37.2%	NO
CENTRAL COAST	418.5	91.8	21.9%	NO
DE ANZA	483.7	331.6	68.6%	NO
DIABLO	218.3	163.6	75.0%	NO
EAST BAY	270.3	13.6	5.0%	NO
FRESNO	155.7	10.0	6.4%	NO
HUMBOLDT	667.2	266.8	40.0%	NO
KERN	167.7	0.0	0.0%	NO
LOS PADRES	447.7	324.0	72.4%	NO
MISSION	203.8	81.1	39.8%	NO
NORTH BAY	1239.9	266.5	21.5%	NO
NORTH VALLEY	319.3	56.2	17.6%	NO
PENINSULA	150.8	60.9	40.4%	NO
SACRAMENTO	135.4	85.1	62.8%	NO
SAN FRANCISCO	103.8	11.0	10.6%	NO
SAN JOSE	269.0	534.8	198.8%	Yes
SIERRA	507.4	308.3	60.8%	NO
SONOMA	2958.6	564.0	19.1%	NO
STOCKTON	169.0	838.9	496.5%	Yes
YOSEMITE	236.7	691.8	292.2%	Yes

Table 31 – July 28, 2018 CAIDI Performance

2.1 San Jose CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
SAN JOSE	February 17-22, 2017	332.1	30
SAN JOSE	April 6-7, 2017	164.2	8
SAN JOSE	June 18, 2017	295.2	38
SAN JOSE	September 3, 2017	165.0	16
SAN JOSE	September 11, 2017	75.9	12
SAN JOSE	October 8-9, 2017	147.3	2
SAN JOSE	October 14, 2017	51.8	2
SAN JOSE	October 20, 2018	175.6	10
SAN JOSE	December 4, 2017	75.2	12
SAN JOSE	December 16, 2017	110.9	14
	Average of 10 excludable major events	269.0	17
SAN JOSE	July 28, 2018	534.8	2
	% Difference	98.8%	-88%

Table 32 – San Jose Historical Performance

As indicated in Table 32, the San Jose Division CAIDI value of 534.8 minutes for the July 28, 2018 major event day was 98.8% higher than the 269.0-minute average of the prior 10 weather-related excludable major events.

The higher CAIDI value was due to a car-pole incident on the Piercy 2110 circuit. This outage contributed 457.8 minutes to the overall July 28, 2018 CAIDI performance.

2.2 Stockton Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
STOCKTON	February 17-22, 2017	213.7	37
STOCKTON	April 6-7, 2017	71.8	12
STOCKTON	June 18, 2017	178.6	26
STOCKTON	September 3, 2017	98.3	9
STOCKTON	September 11, 2017	62.6	8
STOCKTON	October 8-9, 2017	145.8	8
STOCKTON	October 14, 2017	460.4	3
STOCKTON	October 20, 2018	112.2	13
STOCKTON	December 4, 2017	261.8	30
STOCKTON	December 16, 2017	112.8	40
	Average of 10 excludable major events	169.0	22
STOCKTON	July 28, 2018	838.9	3
	% Difference	396.5%	-86%

Table 33 – Stockton Division Historical Performance

As indicated in Table 33, the Stockton Division CAIDI value of 838.9 minutes for the July 28, 2018 major event day was 396.5% higher than the 169.0-minute average of the prior 10 weather-related excludable major events.

The following three outages were the top contributing factors to the higher CAIDI value:

- Salt Springs 2101 circuit - due to a failed primary riser.
- Alpine 1101 circuit – due to the Salt Springs 2101 outage.
- Alpine 1102 circuit – due to the Salt Springs 2101 outage.

Note: Salt Springs 2101 serves the two Alpine circuits via two step-down transformers.

These three outages contributed 661.0 minutes to the overall July 28, 2018 CAIDI performance.

2.3 Yosemite Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
YOSEMITE	February 17-22, 2017	235.5	33
YOSEMITE	April 6-7, 2017	520.4	20
YOSEMITE	June 18, 2017	231.5	15
YOSEMITE	September 3, 2017	50.3	10
YOSEMITE	September 11, 2017	244.3	25
YOSEMITE	October 8-9, 2017	25.3	5
YOSEMITE	October 14, 2017	184.0	2
YOSEMITE	October 20, 2018	178.6	33
YOSEMITE	December 4, 2017	186.8	9
YOSEMITE	December 16, 2017	137.7	28
	Average of 10 excludable major events	236.7	21
YOSEMITE	July 28, 2018	691.8	5
	% Difference	192.2%	-76%

Table 34 – Yosemite Division Historical Performance

As indicated in Table 34, the Yosemite Division CAIDI value of 691.8 minutes for the July 28, 2018 major event day was 192.2% higher than the 236.7 minute-average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was an underground cable failure on the Riverbank 1715 circuit. This outage contributed 525.8 minutes to the overall July 28, 2018 CAIDI performance.

3. October 14, 2018 Major Event Day

The third major event was for October 14, 2018 caused by an offshore wind event across the northern two thirds of the territory that produced Extreme-Plus fire danger resulting in execution of the Power Safety Power Shut-off (PSPS) program. Table 35 summarizes the system and division CAIDI performances during this event and the average of the prior ten weather related major events.

(October 14, 2018 vs. Prior 10 MED)

System / Division	Average CAIDI of Prior 10 System / Division Specific Excludable ME	October 14, 2018 / Division Specific CAIDI	Percent Difference From the Prior CAIDI Average	Exceeds the Investigation Threshold?
SYSTEM	584.1	1468.1	251.4%	Yes
CENTRAL COAST	418.5	70.9	16.9%	NO
DE ANZA	483.7	0.0	0.0%	NO
DIABLO	218.3	134.4	61.6%	NO
EAST BAY	270.3	562.1	207.9%	Yes
FRESNO	155.7	471.8	303.1%	Yes
HUMBOLDT	667.2	1341.4	201.1%	Yes
KERN	167.7	91.9	54.8%	NO
LOS PADRES	447.7	126.0	28.1%	NO
MISSION	203.8	292.4	143.5%	Yes
NORTH BAY	1239.9	1618.6	130.5%	Yes
NORTH VALLEY	319.3	815.7	255.5%	Yes
PENINSULA	150.8	0.0	0.0%	NO
SACRAMENTO	135.4	87.8	64.8%	NO
SAN FRANCISCO	103.8	33.0	31.8%	NO
SAN JOSE	269.0	249.6	92.8%	NO
SIERRA	507.4	1450.8	285.9%	Yes
SONOMA	2958.6	122.0	4.1%	NO
STOCKTON	169.0	2178.8	1289.4%	Yes
YOSEMITE	236.7	33.6	14.2%	NO

Table 35 – October 14, 2018 CAIDI Performance

3.1 System CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
SYSTEM	February 17-22, 2017	424.0	462
SYSTEM	April 6-7, 2017	294.6	383
SYSTEM	June 18, 2017	180.7	314
SYSTEM	September 3, 2017	193.4	214
SYSTEM	September 11, 2017	160.0	360
SYSTEM	October 8-9, 2017	2,384.2	483
SYSTEM	October 14, 2017	1,317.3	95
SYSTEM	October 20, 2018	165.8	296
SYSTEM	December 4, 2017	151.1	209
SYSTEM	December 16, 2017	171.5	319
	Average of 10 excludable major events	584.1	366
SYSTEM	October 14, 2018	1,468.1	164
	% Difference	151.4%	-55%

Table 36 – System Historical Performance

As indicated in Table 36, the system CAIDI value of 1,468.1 minutes for the October 14, 2018 major event day was 151.4% higher than the 584.1-minute average of the prior 10 weather-related excludable major events.

The following five outage events were the top contributing factors to the higher CAIDI value:

- Execution of PSPS in two-third of the service area. Of the 164 outages experienced, 113 were PSPS related.
- Bangor 1101 circuit – due to an outage of unknown cause (the line was patrolled, and nothing was found).
- West Point 1102 circuit – due to a tree falling into the line.
- Pinegrove 1102 circuit – due to (1) a broken cross-arm and (2) a tree falling into the line.

These five outages contributed 1,020.5 minutes to the October 14, 2018 overall CAIDI performance.

3.2 East Bay Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
EAST BAY	February 17-22, 2017	98.2	6
EAST BAY	April 6-7, 2017	405.2	29
EAST BAY	June 18, 2017	124.1	7
EAST BAY	September 3, 2017	106.7	6
EAST BAY	September 11, 2017	93.4	5
EAST BAY	October 8-9, 2017	209.4	6
EAST BAY	October 14, 2017	50.2	2
EAST BAY	October 20, 2018	43.7	10
EAST BAY	December 4, 2017	114.9	10
EAST BAY	December 16, 2017	65.4	6
	Average of 10 excludable major events	270.3	9
EAST BAY	October 14, 2018	562.1	2
	% Difference	107.9%	-78%

Table 37 – East Bay Division Historical Performance

As indicated in Table 37, the East Bay Division CAIDI value of 562.1 minutes for the October 14, 2018 major event day was 107.9% higher than the 270.3-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was an underground cable failure on the Hollywood 401 circuit. This outage contributed 514.8 minutes to the October 14, 2018 overall CAIDI performance.

3.3 Fresno Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
FRESNO	February 17-22, 2017	160.9	20
FRESNO	April 6-7, 2017	90.0	14
FRESNO	June 18, 2017	128.5	23
FRESNO	September 3, 2017	115.1	18
FRESNO	September 11, 2017	182.5	49
FRESNO	October 8-9, 2017	94.2	5
FRESNO	October 14, 2017	180.8	4
FRESNO	October 20, 2018	173.1	60
FRESNO	December 4, 2017	40.5	3
FRESNO	December 16, 2017	109.4	8
	Average of 10 excludable major events	155.7	19
FRESNO	October 14, 2018	471.8	4
	% Difference	203.1%	-79%

Table 38 – Fresno Division Historical Performance

As indicated in Table 38, the Fresno Division CAIDI value of 471.8 minutes for the October 14, 2018 major event day was 203.1% higher than the 155.7-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was a car-pole incident on the McCall 1102 circuit. This outage contributed 422.1 minutes to the October 14, 2018 overall CAIDI performance.

3.4 Humboldt Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
HUMBOLDT	February 17-22, 2017	328.5	24
HUMBOLDT	April 6-7, 2017	290.2	58
HUMBOLDT	June 18, 2017	411.0	4
HUMBOLDT	September 3, 2017	211.0	1
HUMBOLDT	September 11, 2017	108.9	5
HUMBOLDT	October 8-9, 2017	1,524.1	38
HUMBOLDT	October 14, 2017	12.4	3
HUMBOLDT	October 20, 2018	132.2	7
HUMBOLDT	December 4, 2017	128.6	3
HUMBOLDT	December 16, 2017	351.9	5
	Average of 10 excludable major events	667.2	21
HUMBOLDT	October 14, 2018	1,341.4	8
	% Difference	101.1%	-62%

Table 39 – Humboldt Division Historical Performance

As indicated in Table 39, the Humboldt Division CAIDI value of 1,341.4 minutes for the October 14, 2018 major event day was 101.1% higher than the 667.2-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was the execution of PSPS, which contributed 1,176.4 minutes to the October 14, 2018 overall CAIDI performance.

3.5 Mission Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
MISSION	February 17-22, 2017	99.1	8
MISSION	April 6-7, 2017	421.9	26
MISSION	June 18, 2017	255.6	23
MISSION	September 3, 2017	85.5	7
MISSION	September 11, 2017	144.5	10
MISSION	October 8-9, 2017	84.1	4
MISSION	October 14, 2017	324.9	3
MISSION	October 20, 2018	252.4	10
MISSION	December 4, 2017	130.5	4
MISSION	December 16, 2017	40.5	3
	Average of 10 excludable major events	203.8	11
MISSION	October 14, 2018	292.4	2
	% Difference	43.5%	-81%

Table 40 – Mission Division Historical Performance

As indicated in Table 40, the Mission Division CAIDI value of 292.4 minutes for the October 14, 2018 major event day was 43.5% higher than the 203.8-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was a tree that fell into the San Ramon 2108 circuit. This outage contributed 192.4 minutes to the October 14, 2018 overall CAIDI performance.

3.6 North Bay Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
NORTH BAY	February 17-22, 2017	210.0	22
NORTH BAY	April 6-7, 2017	272.7	23
NORTH BAY	June 18, 2017	237.5	19
NORTH BAY	September 3, 2017	295.5	7
NORTH BAY	September 11, 2017	262.8	9
NORTH BAY	October 8-9, 2017	2,974.8	91
NORTH BAY	October 14, 2017	514.6	11
NORTH BAY	October 20, 2018	208.7	13
NORTH BAY	December 4, 2017	194.9	25
NORTH BAY	December 16, 2017	72.2	19
	Average of 10 excludable major events	1239.9	28
NORTH BAY	October 14, 2018	1,618.6	30
	% Difference	30.5%	9%

Table 41 – North Bay Division Historical Performance

As indicated in Table 41, the North Bay Division CAIDI value of 1,618.6 minutes for the October 14, 2018 major event day was 30.5% higher than the 1,239.9-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was the execution of PSPS, which contributed 1,107.6 minutes to the October 14, 2018 overall CAIDI performance.

3.7 North Valley Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
NORTH VALLEY	February 17-22, 2017	270.7	22
NORTH VALLEY	April 6-7, 2017	224.1	29
NORTH VALLEY	June 18, 2017	248.1	12
NORTH VALLEY	September 3, 2017	95.7	2
NORTH VALLEY	September 11, 2017	69.5	5
NORTH VALLEY	October 8-9, 2017	510.5	45
NORTH VALLEY	October 14, 2017	92.6	6
NORTH VALLEY	October 20, 2018	168.9	13
NORTH VALLEY	December 4, 2017	498.5	5
NORTH VALLEY	December 16, 2017	235.1	17
	Average of 10 excludable major events	319.3	20
NORTH VALLEY	October 14, 2018	815.7	10
	% Difference	155.5%	-49%

Table 42 – North Valley Division Historical Performance

As indicated in Table 42, the North Valley Division CAIDI value of 815.7 minutes for the October 14, 2018 major event day was 155.5% higher than the 319.3-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was an outage on the Bangor 1101 circuit of unknown cause (the line was patrolled, but nothing was found). This outage contributed 653.2 minutes to the October 14, 2018 overall CAIDI performance.

3.8 Sierra Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
SIERRA	February 17-22, 2017	714.4	22
SIERRA	April 6-7, 2017	233.4	27
SIERRA	June 18, 2017	101.2	14
SIERRA	September 3, 2017	30.9	3
SIERRA	September 11, 2017	102.1	6
SIERRA	October 8-9, 2017	941.8	30
SIERRA	October 14, 2017	218.2	6
SIERRA	October 20, 2018	328.8	20
SIERRA	December 4, 2017	300.1	25
SIERRA	December 16, 2017	214.4	12
	Average of 10 excludable major events	507.4	19
SIERRA	October 14, 2018	1,450.8	30
	% Difference	185.9%	55%

Table 43 – Sierra Division Historical Performance

As indicated in Table 43, the Sierra Division CAIDI value of 1,450.8 minutes for the October 14, 2018 major event day was 185.9% higher than the 507.4-minute average of the prior 10 weather-related excludable major events.

The following were the top contributing factors to the higher CAIDI value:

- Execution of PSPS. Of the 30 outages experienced, 21 were PSPS related.
- Mountain Quarries 2101 circuit – an outage of unknown cause (the line was patrolled, but nothing was found).

These outages contributed 1,271.9 minutes to the October 14, 2018 overall CAIDI performance.

3.9 Stockton Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
STOCKTON	February 17-22, 2017	213.7	37
STOCKTON	April 6-7, 2017	71.8	12
STOCKTON	June 18, 2017	178.6	26
STOCKTON	September 3, 2017	98.3	9
STOCKTON	September 11, 2017	62.6	8
STOCKTON	October 8-9, 2017	145.8	8
STOCKTON	October 14, 2017	460.4	3
STOCKTON	October 20, 2018	112.2	13
STOCKTON	December 4, 2017	261.8	30
STOCKTON	December 16, 2017	112.8	40
	Average of 10 excludable major events	169.0	22
STOCKTON	October 14, 2018	2,178.8	61
	% Difference	1189.4%	175%

Table 44 – Stockton Division Historical Performance

As indicated in Table 44, the Stockton Division CAIDI value of 2,178.8 minutes for the October 14, 2018 major event day was 1,189.4% higher than the 169.0-minute average of the prior 10 weather-related excludable major events.

The following outages were the top contributing factors to the higher CAIDI value:

- Execution of PSPS. Of the 61 outages experienced, 55 were PSPS related.
- West Point 1102 circuit – due to (1) a tree falling into the line and (2) a broken cross-arm.
- Oleta 1101 circuit – due to two outages of unknown cause (the lines were patrolled, but nothing was found)
- Pine Grove 1102 circuit – due to (1) a broken cross-arm and (2) a tree falling into the line.

These outages contributed 2,178.8 minutes to the October 14, 2018 overall CAIDI performance.

4. November 8, 2018 Major Event Day

The fourth major event was for November 8, 2018 caused by the Camp fire. Table 45 summarizes the system and division CAIDI performances during this event and the average of the prior ten weather related major events.

(November 8, 2018 vs. Prior 10 MED)

System / Division	Average CAIDI of Prior 10 System / Division Specific Excludable ME	November 8, 2018 / Division Specific CAIDI	Percent Difference From the Prior CAIDI Average	Exceeds the Investigation Threshold?
SYSTEM	584.1	12188.2	2086.8%	Yes
CENTRAL COAST	418.5	43.6	10.4%	NO
DE ANZA	483.7	0.0	0.0%	NO
DIABLO	218.3	104.0	47.6%	NO
EAST BAY	270.3	51.9	19.2%	NO
FRESNO	155.7	126.9	81.5%	NO
HUMBOLDT	667.2	185.2	27.8%	NO
KERN	167.7	291.1	173.6%	Yes
LOS PADRES	447.7	166.3	37.1%	NO
MISSION	203.8	0.0	0.0%	NO
NORTH BAY	1239.9	198.2	16.0%	NO
NORTH VALLEY	319.3	21991.5	6888.4%	Yes
PENINSULA	150.8	163.8	108.6%	NO
SACRAMENTO	135.4	150.3	111.0%	NO
SAN FRANCISCO	103.8	361.0	347.8%	Yes
SAN JOSE	269.0	128.8	47.9%	NO
SIERRA	507.4	357.2	70.4%	NO
SONOMA	2958.6	102.5	3.5%	NO
STOCKTON	169.0	161.9	95.8%	NO
YOSEMITE	236.7	111.6	47.1%	NO

Table 45 – November 8, 2018 CAIDI Performance

4.1 System CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
SYSTEM	February 17-22, 2017	424.0	462
SYSTEM	April 6-7, 2017	294.6	383
SYSTEM	June 18, 2017	180.7	314
SYSTEM	September 3, 2017	193.4	214
SYSTEM	September 11, 2017	160.0	360
SYSTEM	October 8-9, 2017	2,384.2	483
SYSTEM	October 14, 2017	1,317.3	95
SYSTEM	October 20, 2018	165.8	296
SYSTEM	December 4, 2017	151.1	209
SYSTEM	December 16, 2017	171.5	319
	Average of 10 excludable major events	584.1	366
SYSTEM	November 8, 2018	12,188.2	616
	% Difference	1986.8%	68%

Table 46 – System Historical Performance

As indicated in Table 46, the System CAIDI value of 12,188.2 minutes for the November 8, 2018 major event day was 1,986.8% higher than the 584.1-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was due to the Camp fire. This wildfire outage contributed 1,1991.3 minutes to the November 8, 2018 overall CAIDI performance.

4.2 Kern Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
KERN	February 17-22, 2017	42.2	11
KERN	April 6-7, 2017	166.4	9
KERN	June 18, 2017	107.8	15
KERN	September 3, 2017	283.7	72
KERN	September 11, 2017	154.4	18
KERN	October 8-9, 2017	144.4	13
KERN	October 14, 2017	95.6	4
KERN	October 20, 2018	152.8	12
KERN	December 4, 2017	80.8	5
KERN	December 16, 2017	285.3	2
	Average of 10 excludable major events	167.7	14
KERN	November 8, 2018	291.1	4
	% Difference	73.6%	-72%

Table 47 – Kern Division Historical Performance

As indicated in Table 47, the Kern Division CAIDI value of 291.1 minutes for the November 8, 2018 major event day was 73.6% higher than the 167.7-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was due to a failed overhead conductor on the Ganso 1103 circuit. This outage contributed 105.9 minutes to the November 8, 2018 overall CAIDI performance.

4.3 North Valley Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
NORTH VALLEY	February 17-22, 2017	270.7	22
NORTH VALLEY	April 6-7, 2017	224.1	29
NORTH VALLEY	June 18, 2017	248.1	12
NORTH VALLEY	September 3, 2017	95.7	2
NORTH VALLEY	September 11, 2017	69.5	5
NORTH VALLEY	October 8-9, 2017	510.5	45
NORTH VALLEY	October 14, 2017	92.6	6
NORTH VALLEY	October 20, 2018	168.9	13
NORTH VALLEY	December 4, 2017	498.5	5
NORTH VALLEY	December 16, 2017	235.1	17
	Average of 10 excludable major events	319.3	20
NORTH VALLEY	November 8, 2018	21,991.5	520
	% Difference	6788.4%	2533%

Table 48 – North Valley Division Historical Performance

As indicated in Table 48, the North Valley Division CAIDI value of 21,991.5 minutes for the November 8, 2018 major event day was 6,788.47% higher than the 319.3-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was due to the Camp fire. This wildfire outage event contributed 21,862.5 minutes to the November 8, 2018 overall CAIDI performance.

4.4 San Francisco Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
SAN FRANCISCO	January 8-11, 2017	109.1	6
SAN FRANCISCO	January 18-23, 2017	85.2	4
SAN FRANCISCO	February 7, 2017	134.5	8
SAN FRANCISCO	February 17-22, 2017	161.7	2
SAN FRANCISCO	April 6-7, 2017	135.7	3
SAN FRANCISCO	June 18, 2017	324.0	1
SAN FRANCISCO	September 11, 2017	207.7	13
SAN FRANCISCO	October 9, 2017	279.0	1
SAN FRANCISCO	October 20, 2018	162.8	2
SAN FRANCISCO	December 4, 2017	53.1	1
	Average of 10 excludable major events	103.8	4
SAN FRANCISCO	November 8, 2018	361.0	2
	% Difference	247.8%	-50%

Table 49 – San Francisco Division Historical Performance

As indicated in Table 49, the San Francisco Division CAIDI value of 316.0 minutes for the November 8, 2018 major event day was 247.8% higher than the 103.8-minute average of the prior 10 weather-related excludable major events.

The following two outages were the top contributing factors to the higher CAIDI value:

- Randolph 403 circuit – due to (1) a failed overhead conductor and (2) a tree going into the line.

These two outages contributed 361.0 minutes to the November 8, 2018 overall CAIDI performance.

5. November 21, 2018 Major Event Day

The fifth major event was for November 21, 2018 caused by an early winter storm that brought heavy rain and gusty southerly winds through the service area. Table 50 summarizes the system and division CAIDI performances during this event and the average of the prior ten weather related major events.

(November 21, 2018 vs. Prior 10 MED)

System / Division	Average CAIDI of Prior 10 System / Division Specific Excludable ME	November 21, 2018 / Division Specific CAIDI	Percent Difference From the Prior CAIDI Average	Exceeds the Investigation Threshold?
SYSTEM	584.1	111.6	19.1%	NO
CENTRAL COAST	418.5	185.4	44.3%	NO
DE ANZA	483.7	168.6	34.9%	NO
DIABLO	218.3	97.5	44.7%	NO
EAST BAY	270.3	153.2	56.7%	NO
FRESNO	155.7	95.1	61.1%	NO
HUMBOLDT	667.2	60.8	9.1%	NO
KERN	167.7	112.8	67.3%	NO
LOS PADRES	447.7	59.1	13.2%	NO
MISSION	203.8	158.7	77.9%	NO
NORTH BAY	1239.9	250.2	20.2%	NO
NORTH VALLEY	319.3	109.4	34.3%	NO
PENINSULA	150.8	112.3	74.5%	NO
SACRAMENTO	135.4	202.2	149.3%	Yes
SAN FRANCISCO	103.8	79.2	76.3%	NO
SAN JOSE	269.0	326.0	121.2%	NO
SIERRA	507.4	89.0	17.5%	NO
SONOMA	2958.6	66.1	2.2%	NO
STOCKTON	169.0	234.6	138.8%	Yes
YOSEMITE	236.7	101.4	42.8%	NO

Table 50 – November 21, 2018 CAIDI Performance

5.1 Sacramento Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
SACRAMENTO	February 17-22, 2017	119.7	20
SACRAMENTO	April 6-7, 2017	102.5	12
SACRAMENTO	June 18, 2017	165.7	16
SACRAMENTO	September 3, 2017	67.0	4
SACRAMENTO	September 11, 2017	297.3	7
SACRAMENTO	October 8-9, 2017	325.2	61
SACRAMENTO	October 14, 2017	65.7	5
SACRAMENTO	October 20, 2018	109.0	23
SACRAMENTO	December 4, 2017	55.1	17
SACRAMENTO	December 16, 2017	85.1	68
	Average of 10 excludable major events	135.4	24
SACRAMENTO	November 21, 2018	202.2	22
	% Difference	49.3%	-8%

Table 51 – Sacramento Division Historical Performance

As indicated in Table 51, the Sacramento Division CAIDI value of 202.2 minutes for the November 21, 2018 major event day was 49.3% higher than the 135.4-minute average of the prior 10 weather-related excludable major events.

The following two outages were the top contributing factors to the higher CAIDI value:

- Dobbins 1105 circuit – due to a pole fire.
- Vacaville 1108 circuit – due to a broken pole.

These two outages contributed 91.2 minutes to the November 21, 2018 overall CAIDI performance.

5.2 Stockton Division CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
STOCKTON	February 17-22, 2017	213.7	37
STOCKTON	April 6-7, 2017	71.8	12
STOCKTON	June 18, 2017	178.6	26
STOCKTON	September 3, 2017	98.3	9
STOCKTON	September 11, 2017	62.6	8
STOCKTON	October 8-9, 2017	145.8	8
STOCKTON	October 14, 2017	460.4	3
STOCKTON	October 20, 2018	112.2	13
STOCKTON	December 4, 2017	261.8	30
STOCKTON	December 16, 2017	112.8	40
	Average of 10 excludable major events	169.0	22
STOCKTON	November 21, 2018	234.6	7
	% Difference	38.8%	-68%

Table 52 – Stockton Division Historical Performance

As indicated in Table 52, the Stockton Division CAIDI value of 234.6 minutes for the November 21, 2018 major event day was 38.8% higher than the 169.0-minute average of the prior 10 weather-related excludable major events.

The following two outages were the top contributing factors to the higher CAIDI value:

- Ripon 1704 circuit – due to a pole fire.
- Middle River 1101 circuit – due to a bird.

These two outages contributed 118.6 minutes to the November 21, 2018 overall CAIDI performance.

6. November 29, 2018 Major Event Day

The sixth major event was from November 29, 2018 caused by a dynamic winter storm system that brought heavy rain and strong southerly winds through the service area. Table 53 summarizes the system and division CAIDI performances during this event and the average of the prior ten weather related major events.

(November 29, 2018 vs. Prior 10 MED)

System / Division	Average CAIDI of Prior 10 System / Division Specific Excludable ME	November 29, 2018 / Division Specific CAIDI	Percent Difference From the Prior CAIDI Average	Exceeds the Investigation Threshold?
SYSTEM	584.1	168.2	28.8%	NO
CENTRAL COAST	418.5	377.9	90.3%	NO
DE ANZA	483.7	45.0	9.3%	NO
DIABLO	218.3	298.1	136.6%	Yes
EAST BAY	270.3	75.8	28.0%	NO
FRESNO	155.7	107.7	69.2%	NO
HUMBOLDT	667.2	138.0	20.7%	NO
KERN	167.7	162.4	96.8%	NO
LOS PADRES	447.7	107.7	24.1%	NO
MISSION	203.8	474.5	232.9%	Yes
NORTH BAY	1239.9	251.3	20.3%	NO
NORTH VALLEY	319.3	195.7	61.3%	NO
PENINSULA	150.8	118.1	78.3%	NO
SACRAMENTO	135.4	269.7	199.1%	Yes
SAN FRANCISCO	103.8	74.4	71.7%	NO
SAN JOSE	269.0	108.8	40.4%	NO
SIERRA	507.4	293.6	57.9%	NO
SONOMA	2958.6	282.3	9.5%	NO
STOCKTON	169.0	137.5	81.4%	NO
YOSEMITE	236.7	157.4	66.5%	NO

Table 53 – November 29, 2018 CAIDI Performance

6.1 Diablo CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
DIABLO	February 17-22, 2017	171.6	8
DIABLO	April 6-7, 2017	371.7	25
DIABLO	June 18, 2017	114.6	44
DIABLO	September 3, 2017	119.5	13
DIABLO	September 11, 2017	106.7	2
DIABLO	October 8-9, 2017	101.4	8
DIABLO	October 14, 2017	295.3	4
DIABLO	October 20, 2018	148.0	11
DIABLO	December 4, 2017	68.8	12
DIABLO	December 16, 2017	166.1	9
	Average of 10 excludable major events	218.3	13
DIABLO	November 29, 2018	298.1	10
	% Difference	36.6%	-20%

Table 54 – Diablo Division Historical Performance

As indicated in Table 54, the Diablo division CAIDI value of 298.1 minutes for the November 29, 2018 major event day was 36.6% higher than the 218.3-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was due to a failed elbow on the Lakewood 2110 circuit. This outage contributed 111.2 minutes to the November 29, 2018 overall CAIDI performance.

6.2 Mission CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
MISSION	February 17-22, 2017	99.1	8
MISSION	April 6-7, 2017	421.9	26
MISSION	June 18, 2017	255.6	23
MISSION	September 3, 2017	85.5	7
MISSION	September 11, 2017	144.5	10
MISSION	October 8-9, 2017	84.1	4
MISSION	October 14, 2017	324.9	3
MISSION	October 20, 2018	252.4	10
MISSION	December 4, 2017	130.5	4
MISSION	December 16, 2017	40.5	3
	Average of 10 excludable major events	203.8	11
MISSION	November 29, 2018	474.5	7
	% Difference	132.9%	-34%

Table 55 – Mission Historical Performance

As indicated in Table 55, the Mission division CAIDI value of 474.5 minutes for the November 29, 2018 major event day was 132.9% higher than the 203.8-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was due to a failed underground cable on the Vineyard 2108 circuit. This outage contributed 289.9 minutes to the November 29, 2018 overall CAIDI performance.

6.3 Sacramento CAIDI Assessment

System / Division	Major Event Day	CAIDI	SO / Day
SACRAMENTO	February 17-22, 2017	119.7	20
SACRAMENTO	April 6-7, 2017	102.5	12
SACRAMENTO	June 18, 2017	165.7	16
SACRAMENTO	September 3, 2017	67.0	4
SACRAMENTO	September 11, 2017	297.3	7
SACRAMENTO	October 8-9, 2017	325.2	61
SACRAMENTO	October 14, 2017	65.7	5
SACRAMENTO	October 20, 2018	109.0	23
SACRAMENTO	December 4, 2017	55.1	17
SACRAMENTO	December 16, 2017	85.1	68
	Average of 10 excludable major events	135.4	24
SACRAMENTO	November 29, 2018	269.7	22
	% Difference	99.1%	-8%

Table 56 – Sacramento Historical Performance

As indicated in Table 56, the Sacramento division CAIDI value of 269.7 minutes for the November 29, 2018 major event day was 99.1% higher than the 135.4-minute average of the prior 10 weather-related excludable major events.

The top contributing factor to the higher CAIDI value was due to a malfunctioning line recloser on the Zamora 1105 circuit. This outage contributed 106.5 minutes to the November 29, 2018 overall CAIDI performance.

3. System and Division Indices Based on IEEE 1366 for the past 10 years including Planned Outages and including and excluding MED

The seven-year trend (2009-2015) of continuous improved reliability did not continue in 2016-2018 in terms of the total duration of sustained outages per customer for the entire year (including planned outages but excluding major events). However, PG&E has reduced the total duration of power outages per customer from 158.0 minutes in 2009 to 126.3 minutes in 2018, a 20 percent improvement, as shown in Table 57 below.

Table 57: Combined Transmission and Distribution System Indices with Planned Outages

Year	Major Events Included				Major Events Excluded			
	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2009	235.7	1.369	1.554	172.1	158.0	1.173	1.404	134.7
2010	277.7	1.496	1.489	185.6	157.2	1.207	1.254	130.3
2011	312.5	1.402	1.478	222.9	141.7	1.097	1.170	129.3
2012	161.4	1.224	1.921	131.9	131.0	1.130	1.800	115.9
2013	137.3	1.171	1.637	117.3	116.1	1.070	1.527	108.5
2014	149.4	1.133	1.567	131.9	108.4	0.966	1.396	112.2
2015	147.2	1.052	1.820	139.9	95.9	0.871	1.594	110.1
2016	121.9	1.103	1.603	110.6	108.9	1.021	1.494	106.7
2017	374.2	1.549	2.406	241.6	113.4	0.958	1.568	118.3
2018	306.1	1.175	1.551	260.4	126.3	1.079	1.479	117.0

a. System and Division Indices Based on IEEE 1366 for the past ten years including Planned Outages and including MED, and excluding ISO Outages

Table 58:

Division	Year	SAIDI	SAIFI	MAIFI	CAIDI
CENTRAL COAST	2009	466.3	2.410	3.190	193.5
CENTRAL COAST	2010	430.0	2.151	3.945	200.0
CENTRAL COAST	2011	539.9	2.154	2.074	250.7
CENTRAL COAST	2012	174.4	1.420	2.376	122.8
CENTRAL COAST	2013	151.8	1.469	2.054	103.3
CENTRAL COAST	2014	214.1	1.432	2.134	149.5
CENTRAL COAST	2015	269.6	1.376	2.176	195.9
CENTRAL COAST	2016	202.8	1.714	2.739	118.3
CENTRAL COAST	2017	819.7	2.522	4.885	325.0
CENTRAL COAST	2018	217.7	1.733	2.807	125.6
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DE ANZA	2009	175.9	1.028	1.638	171.1
DE ANZA	2010	192.1	1.249	1.420	153.8
DE ANZA	2011	101.3	0.798	1.495	126.9
DE ANZA	2012	100.2	0.793	1.223	126.4
DE ANZA	2013	100.8	0.935	1.175	107.8
DE ANZA	2014	134.2	1.113	1.319	120.6
DE ANZA	2015	80.7	0.680	1.291	118.7
DE ANZA	2016	119.4	0.977	1.415	122.1
DE ANZA	2017	332.0	1.583	2.034	209.7
DE ANZA	2018	121.2	0.967	1.603	125.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DIABLO	2009	187.0	1.474	1.203	126.9
DIABLO	2010	142.8	1.477	1.310	96.7
DIABLO	2011	110.1	1.071	1.396	102.8
DIABLO	2012	127.4	1.339	1.403	95.2
DIABLO	2013	99.9	1.112	1.299	89.9
DIABLO	2014	97.0	1.060	1.375	91.5
DIABLO	2015	97.6	1.066	1.878	91.6
DIABLO	2016	97.8	1.121	1.736	87.3
DIABLO	2017	161.0	1.327	2.376	121.3
DIABLO	2018	122.1	1.278	1.906	95.6
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
EAST BAY	2009	145.1	1.166	0.944	124.4
EAST BAY	2010	134.6	1.123	0.754	119.9
EAST BAY	2011	123.3	1.039	1.060	118.7
EAST BAY	2012	119.0	1.405	1.347	84.7
EAST BAY	2013	130.4	1.059	1.267	123.1
EAST BAY	2014	89.1	0.883	1.520	100.9
EAST BAY	2015	65.9	0.749	1.179	87.9
EAST BAY	2016	137.1	1.246	1.243	110.0
EAST BAY	2017	162.1	1.271	2.080	127.6
EAST BAY	2018	120.9	1.089	1.229	111.1

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
FRESNO	2009	184.3	1.402	1.913	131.5
FRESNO	2010	204.2	1.379	1.955	148.1
FRESNO	2011	186.0	1.220	2.013	152.5
FRESNO	2012	121.4	1.159	2.360	104.7
FRESNO	2013	119.5	1.227	2.108	97.4
FRESNO	2014	101.0	1.088	1.782	92.8
FRESNO	2015	115.2	1.238	2.060	93.1
FRESNO	2016	99.4	1.206	1.978	82.4
FRESNO	2017	116.6	1.064	1.915	109.6
FRESNO	2018	128.0	1.142	1.557	112.1
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
HUMBOLDT	2009	358.5	2.042	2.488	175.5
HUMBOLDT	2010	745.1	2.892	1.687	257.6
HUMBOLDT	2011	762.1	2.437	2.282	312.8
HUMBOLDT	2012	387.3	1.918	4.660	201.9
HUMBOLDT	2013	344.6	1.552	2.627	222.0
HUMBOLDT	2014	350.5	1.528	1.941	229.4
HUMBOLDT	2015	738.9	2.388	2.739	309.4
HUMBOLDT	2016	251.0	1.757	2.100	142.9
HUMBOLDT	2017	955.5	2.526	3.513	378.2
HUMBOLDT	2018	445.7	2.278	1.590	195.7
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
KERN	2009	127.5	1.201	1.534	106.2
KERN	2010	152.4	1.265	1.582	120.5
KERN	2011	190.1	1.356	1.617	140.2
KERN	2012	105.9	1.071	1.225	98.9
KERN	2013	101.7	1.138	1.232	89.4
KERN	2014	127.0	1.198	1.853	106.0
KERN	2015	104.5	1.022	1.929	102.2
KERN	2016	101.9	0.998	2.078	102.1
KERN	2017	149.9	1.132	2.118	132.4
KERN	2018	83.3	0.859	1.930	97.0
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
LOS PADRES	2009	199.1	1.353	1.724	147.1
LOS PADRES	2010	293.2	1.826	2.048	160.6
LOS PADRES	2011	159.1	1.333	2.195	119.3
LOS PADRES	2012	121.2	1.116	1.659	108.6
LOS PADRES	2013	239.3	1.607	1.105	148.9
LOS PADRES	2014	201.8	1.322	1.354	152.6
LOS PADRES	2015	148.2	0.931	1.814	159.1
LOS PADRES	2016	130.2	1.255	1.674	103.7
LOS PADRES	2017	335.7	1.688	2.204	198.9
LOS PADRES	2018	166.1	1.459	1.173	113.8

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
MISSION	2009	103.6	0.845	0.865	122.7
MISSION	2010	123.0	1.043	0.794	117.9
MISSION	2011	88.5	0.937	0.656	94.4
MISSION	2012	106.1	0.991	0.862	107.2
MISSION	2013	89.4	0.878	0.837	101.9
MISSION	2014	82.7	0.812	0.820	101.9
MISSION	2015	71.7	0.654	1.152	109.6
MISSION	2016	95.2	0.828	0.972	114.9
MISSION	2017	149.1	1.074	1.574	138.8
MISSION	2018	79.5	0.738	0.984	107.6
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH BAY	2009	186.5	1.329	1.035	140.3
NORTH BAY	2010	182.4	1.321	1.401	138.0
NORTH BAY	2011	243.9	1.501	1.231	162.4
NORTH BAY	2012	164.4	1.046	1.950	157.2
NORTH BAY	2013	146.4	1.144	1.731	127.9
NORTH BAY	2014	253.7	1.352	2.724	187.7
NORTH BAY	2015	156.3	1.171	2.162	133.5
NORTH BAY	2016	133.5	1.040	1.436	128.3
NORTH BAY	2017	752.8	1.840	2.929	409.0
NORTH BAY	2018	204.7	1.145	2.014	178.9
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH VALLEY	2009	335.1	1.576	3.159	212.6
NORTH VALLEY	2010	609.0	2.007	2.001	303.4
NORTH VALLEY	2011	703.7	2.334	2.138	301.5
NORTH VALLEY	2012	543.0	2.004	2.951	271.0
NORTH VALLEY	2013	178.4	1.250	1.975	142.7
NORTH VALLEY	2014	212.2	1.302	1.816	163.0
NORTH VALLEY	2015	505.6	1.920	2.536	263.4
NORTH VALLEY	2016	194.4	1.357	2.195	143.3
NORTH VALLEY	2017	417.4	1.760	3.208	237.1
NORTH VALLEY	2018	4,231.1	1.774	1.498	2,385.7
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
PENINSULA	2009	144.4	1.144	0.896	126.2
PENINSULA	2010	184.7	1.635	1.475	112.9
PENINSULA	2011	131.7	1.279	0.939	102.9
PENINSULA	2012	114.8	1.200	1.710	95.7
PENINSULA	2013	106.8	0.946	1.322	112.9
PENINSULA	2014	110.7	1.129	1.363	98.1
PENINSULA	2015	90.5	0.941	1.798	96.2
PENINSULA	2016	102.6	1.065	1.383	96.3
PENINSULA	2017	181.4	1.394	2.546	130.1
PENINSULA	2018	106.1	0.991	1.382	107.0

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SACRAMENTO	2009	267.5	1.447	1.847	184.8
SACRAMENTO	2010	215.9	1.222	1.427	176.6
SACRAMENTO	2011	209.6	1.327	1.900	157.9
SACRAMENTO	2012	181.0	1.484	2.146	121.9
SACRAMENTO	2013	122.6	1.121	1.699	109.4
SACRAMENTO	2014	126.2	1.020	1.437	123.7
SACRAMENTO	2015	113.0	1.009	1.776	112.0
SACRAMENTO	2016	118.5	1.133	1.810	104.6
SACRAMENTO	2017	300.0	1.970	3.292	152.3
SACRAMENTO	2018	134.3	1.190	1.999	112.8
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN FRANCISCO	2009	83.0	0.847	0.139	97.9
SAN FRANCISCO	2010	67.8	0.771	0.086	88.0
SAN FRANCISCO	2011	58.8	0.621	0.217	94.6
SAN FRANCISCO	2012	61.6	0.673	1.051	91.5
SAN FRANCISCO	2013	64.8	0.708	0.332	91.6
SAN FRANCISCO	2014	141.7	0.858	0.353	165.1
SAN FRANCISCO	2015	44.2	0.569	0.553	77.7
SAN FRANCISCO	2016	49.7	0.597	0.398	83.3
SAN FRANCISCO	2017	127.0	0.906	0.553	140.3
SAN FRANCISCO	2018	62.2	0.506	0.334	123.0
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN JOSE	2009	102.5	0.907	0.831	113.1
SAN JOSE	2010	125.2	1.035	0.595	120.9
SAN JOSE	2011	131.6	1.080	0.794	121.9
SAN JOSE	2012	102.9	0.946	0.980	108.8
SAN JOSE	2013	121.4	1.087	1.039	111.6
SAN JOSE	2014	120.0	1.107	1.071	108.4
SAN JOSE	2015	90.2	0.873	1.164	103.4
SAN JOSE	2016	80.8	0.753	1.203	107.2
SAN JOSE	2017	201.1	1.342	1.945	149.8
SAN JOSE	2018	112.1	0.986	1.524	113.7
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SIERRA	2009	855.3	2.126	1.542	402.4
SIERRA	2010	808.8	2.416	1.607	334.8
SIERRA	2011	1,088.2	2.414	2.891	450.8
SIERRA	2012	268.7	1.586	3.226	169.4
SIERRA	2013	173.0	1.503	3.257	115.1
SIERRA	2014	208.2	1.478	2.419	140.9
SIERRA	2015	197.3	1.378	3.224	143.2
SIERRA	2016	188.4	1.341	1.887	140.4
SIERRA	2017	641.5	2.193	3.188	292.4
SIERRA	2018	445.6	1.692	1.515	263.3

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SONOMA	2009	217.4	1.305	1.610	166.6
SONOMA	2010	244.0	1.523	1.017	160.2
SONOMA	2011	286.4	1.435	1.532	199.6
SONOMA	2012	234.5	1.238	2.030	189.5
SONOMA	2013	208.9	1.253	2.537	166.7
SONOMA	2014	239.4	1.395	2.050	171.6
SONOMA	2015	140.7	0.985	1.993	142.8
SONOMA	2016	114.5	0.931	1.605	123.0
SONOMA	2017	1,868.6	2.064	2.950	905.3
SONOMA	2018	150.5	1.153	1.279	130.5
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
STOCKTON	2009	446.3	1.912	3.117	233.4
STOCKTON	2010	408.9	1.806	1.603	226.4
STOCKTON	2011	502.3	1.882	1.182	266.9
STOCKTON	2012	193.6	1.290	2.101	150.1
STOCKTON	2013	134.6	1.558	2.138	86.4
STOCKTON	2014	136.3	0.918	1.446	148.6
STOCKTON	2015	135.0	1.105	2.249	122.1
STOCKTON	2016	118.1	1.087	1.778	108.7
STOCKTON	2017	289.5	1.718	1.952	168.5
STOCKTON	2018	239.2	1.232	2.017	194.1
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
YOSEMITE	2009	287.1	1.507	1.760	190.5
YOSEMITE	2010	737.9	2.112	3.164	349.4
YOSEMITE	2011	1,201.6	2.107	2.632	570.3
YOSEMITE	2012	166.1	1.400	4.173	118.6
YOSEMITE	2013	204.0	1.436	3.432	142.1
YOSEMITE	2014	147.6	1.350	2.675	109.3
YOSEMITE	2015	130.6	1.162	3.098	112.4
YOSEMITE	2016	147.9	1.333	2.164	111.0
YOSEMITE	2017	323.8	1.796	3.083	180.2
YOSEMITE	2018	190.6	1.544	1.871	123.5
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SYSTEM	2009	235.7	1.369	1.554	172.1
SYSTEM	2010	277.7	1.496	1.489	185.6
SYSTEM	2011	312.5	1.402	1.478	222.9
SYSTEM	2012	161.4	1.224	1.921	131.9
SYSTEM	2013	137.3	1.171	1.637	117.3
SYSTEM	2014	149.4	1.133	1.567	131.9
SYSTEM	2015	147.2	1.052	1.820	139.9
SYSTEM	2016	121.9	1.103	1.603	110.6
SYSTEM	2017	374.2	1.549	2.406	241.6
SYSTEM	2018	306.1	1.175	1.551	260.4

b. System and Division Indices Based on IEEE 1366 for the past 10 years including Planned Outages and excluding ISO, and MED

Table 59:

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
CENTRAL COAST	2009	238.9	1.992	2.975	119.9
CENTRAL COAST	2010	210.4	1.677	2.932	125.4
CENTRAL COAST	2011	198.9	1.670	1.590	119.1
CENTRAL COAST	2012	159.7	1.348	2.197	118.5
CENTRAL COAST	2013	145.9	1.445	1.971	101.0
CENTRAL COAST	2014	136.9	1.168	1.835	117.2
CENTRAL COAST	2015	118.6	0.934	1.847	126.9
CENTRAL COAST	2016	180.2	1.548	2.485	116.4
CENTRAL COAST	2017	157.8	1.352	2.828	116.7
CENTRAL COAST	2018	193.0	1.582	2.485	122.0
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DE ANZA	2009	121.5	0.886	1.570	137.1
DE ANZA	2010	135.6	1.036	1.151	130.9
DE ANZA	2011	81.5	0.711	1.187	114.6
DE ANZA	2012	92.1	0.743	1.109	124.0
DE ANZA	2013	98.8	0.924	1.140	107.0
DE ANZA	2014	110.4	0.985	1.214	112.1
DE ANZA	2015	68.2	0.561	1.182	121.7
DE ANZA	2016	96.8	0.806	1.337	120.2
DE ANZA	2017	114.3	1.063	1.348	107.5
DE ANZA	2018	117.8	0.918	1.533	128.3
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
DIABLO	2009	172.5	1.378	1.165	125.1
DIABLO	2010	127.2	1.326	1.217	95.9
DIABLO	2011	98.0	0.942	1.237	104.0
DIABLO	2012	120.9	1.295	1.365	93.4
DIABLO	2013	96.9	1.089	1.238	89.0
DIABLO	2014	80.9	0.973	1.220	83.1
DIABLO	2015	87.5	0.939	1.671	93.2
DIABLO	2016	95.2	1.107	1.701	86.0
DIABLO	2017	97.9	0.982	1.758	99.8
DIABLO	2018	110.7	1.168	1.852	94.7
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
EAST BAY	2009	130.7	1.069	0.896	122.3
EAST BAY	2010	98.7	0.905	0.678	109.0
EAST BAY	2011	106.5	0.925	0.830	115.1
EAST BAY	2012	108.8	1.323	1.278	82.2
EAST BAY	2013	76.0	0.881	1.155	86.2
EAST BAY	2014	72.7	0.762	1.303	95.5
EAST BAY	2015	51.1	0.611	1.085	83.6
EAST BAY	2016	110.2	1.091	1.080	101.0
EAST BAY	2017	88.3	0.956	1.604	92.4
EAST BAY	2018	111.9	0.999	1.175	112.0

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
FRESNO	2009	167.5	1.276	1.765	131.3
FRESNO	2010	143.6	1.158	1.847	124.0
FRESNO	2011	97.3	0.893	1.686	109.0
FRESNO	2012	119.8	1.136	2.323	105.5
FRESNO	2013	116.8	1.195	2.067	97.8
FRESNO	2014	98.6	1.069	1.710	92.3
FRESNO	2015	84.8	0.935	1.832	90.7
FRESNO	2016	97.5	1.184	1.955	82.4
FRESNO	2017	85.9	0.874	1.590	98.2
FRESNO	2018	87.3	0.955	1.509	91.4
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
HUMBOLDT	2009	339.0	1.905	2.347	178.0
HUMBOLDT	2010	564.5	2.504	1.506	225.4
HUMBOLDT	2011	439.7	1.912	1.888	230.0
HUMBOLDT	2012	325.7	1.730	4.335	188.2
HUMBOLDT	2013	250.5	1.305	2.437	191.9
HUMBOLDT	2014	274.3	1.377	1.810	199.3
HUMBOLDT	2015	319.8	1.774	2.426	180.2
HUMBOLDT	2016	234.5	1.657	2.040	141.6
HUMBOLDT	2017	310.5	1.469	2.283	211.4
HUMBOLDT	2018	268.7	1.921	1.522	139.9
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
KERN	2009	116.1	1.129	1.439	102.8
KERN	2010	135.1	1.143	1.423	118.2
KERN	2011	132.7	1.062	1.340	125.0
KERN	2012	104.7	1.053	1.224	99.5
KERN	2013	97.9	1.092	1.138	89.6
KERN	2014	99.1	1.024	1.640	96.7
KERN	2015	92.8	0.938	1.855	99.0
KERN	2016	101.3	0.982	2.071	103.1
KERN	2017	88.5	0.790	1.549	112.0
KERN	2018	82.4	0.852	1.902	96.7
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
LOS PADRES	2009	121.4	1.088	1.334	111.6
LOS PADRES	2010	126.6	1.239	1.725	102.2
LOS PADRES	2011	113.5	1.073	1.667	105.8
LOS PADRES	2012	120.5	1.113	1.652	108.3
LOS PADRES	2013	113.3	0.837	0.961	135.3
LOS PADRES	2014	110.1	1.125	1.135	97.8
LOS PADRES	2015	88.1	0.773	1.438	113.9
LOS PADRES	2016	128.4	1.230	1.672	104.4
LOS PADRES	2017	126.3	1.054	1.511	119.8
LOS PADRES	2018	154.5	1.325	1.080	116.6

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
MISSION	2009	97.1	0.780	0.839	124.5
MISSION	2010	113.2	0.965	0.723	117.3
MISSION	2011	76.9	0.847	0.586	90.8
MISSION	2012	103.4	0.965	0.861	107.2
MISSION	2013	83.7	0.809	0.776	103.6
MISSION	2014	71.8	0.732	0.771	98.2
MISSION	2015	65.6	0.601	1.055	109.3
MISSION	2016	85.1	0.766	0.927	111.1
MISSION	2017	71.1	0.664	1.082	107.1
MISSION	2018	74.3	0.710	0.952	104.7
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH BAY	2009	143.6	1.151	0.920	124.8
NORTH BAY	2010	154.5	1.123	1.294	137.5
NORTH BAY	2011	150.6	1.239	1.094	121.5
NORTH BAY	2012	133.7	0.916	1.647	146.0
NORTH BAY	2013	133.8	1.057	1.456	126.5
NORTH BAY	2014	132.9	0.974	2.509	136.4
NORTH BAY	2015	117.9	1.014	1.978	116.2
NORTH BAY	2016	107.2	0.887	1.210	120.8
NORTH BAY	2017	167.7	1.033	1.864	162.3
NORTH BAY	2018	156.0	1.082	1.948	144.2
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
NORTH VALLEY	2009	257.1	1.362	3.026	188.8
NORTH VALLEY	2010	213.6	1.384	1.836	154.3
NORTH VALLEY	2011	239.3	1.517	1.562	157.7
NORTH VALLEY	2012	251.8	1.622	2.581	155.3
NORTH VALLEY	2013	157.8	1.192	1.917	132.4
NORTH VALLEY	2014	150.0	1.092	1.559	137.3
NORTH VALLEY	2015	158.7	1.195	1.938	132.9
NORTH VALLEY	2016	165.7	1.220	1.959	135.9
NORTH VALLEY	2017	130.9	0.949	2.053	138.0
NORTH VALLEY	2018	218.6	1.510	1.430	144.8
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
PENINSULA	2009	101.0	0.905	0.773	111.5
PENINSULA	2010	138.9	1.395	1.060	99.6
PENINSULA	2011	102.7	1.131	0.782	90.8
PENINSULA	2012	100.4	1.054	1.529	95.3
PENINSULA	2013	82.5	0.845	1.114	97.6
PENINSULA	2014	89.4	0.965	1.164	92.7
PENINSULA	2015	74.8	0.826	1.602	90.6
PENINSULA	2016	94.4	0.984	1.197	96.0
PENINSULA	2017	75.6	0.704	1.307	107.3
PENINSULA	2018	99.7	0.940	1.328	106.0

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SACRAMENTO	2009	150.6	1.160	1.563	129.9
SACRAMENTO	2010	141.3	0.982	1.086	143.9
SACRAMENTO	2011	135.2	1.114	1.696	121.4
SACRAMENTO	2012	158.4	1.344	1.973	117.9
SACRAMENTO	2013	117.2	1.075	1.568	109.1
SACRAMENTO	2014	112.4	0.913	1.258	123.1
SACRAMENTO	2015	100.7	0.913	1.561	110.3
SACRAMENTO	2016	102.6	1.042	1.545	98.5
SACRAMENTO	2017	137.9	1.168	1.777	118.1
SACRAMENTO	2018	126.6	1.152	1.889	110.0
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN FRANCISCO	2009	80.0	0.826	0.103	96.8
SAN FRANCISCO	2010	60.7	0.713	0.067	85.1
SAN FRANCISCO	2011	55.0	0.590	0.211	93.1
SAN FRANCISCO	2012	57.0	0.632	1.009	90.1
SAN FRANCISCO	2013	58.8	0.655	0.303	89.8
SAN FRANCISCO	2014	52.2	0.535	0.236	97.5
SAN FRANCISCO	2015	41.8	0.551	0.516	75.8
SAN FRANCISCO	2016	48.7	0.577	0.356	84.4
SAN FRANCISCO	2017	46.5	0.543	0.402	85.6
SAN FRANCISCO	2018	58.9	0.466	0.305	126.5
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SAN JOSE	2009	88.6	0.807	0.808	109.8
SAN JOSE	2010	91.0	0.873	0.525	104.2
SAN JOSE	2011	119.2	0.990	0.686	120.4
SAN JOSE	2012	98.3	0.895	0.953	109.8
SAN JOSE	2013	118.2	1.039	0.979	113.7
SAN JOSE	2014	96.8	0.935	1.031	103.6
SAN JOSE	2015	80.4	0.787	1.020	102.3
SAN JOSE	2016	77.4	0.719	1.155	107.6
SAN JOSE	2017	92.9	0.837	1.276	111.0
SAN JOSE	2018	110.1	0.972	1.497	113.3
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SIERRA	2009	294.9	1.455	1.254	202.6
SIERRA	2010	227.9	1.461	1.163	156.0
SIERRA	2011	232.8	1.387	1.528	167.8
SIERRA	2012	207.8	1.427	2.908	145.7
SIERRA	2013	125.9	1.370	3.120	91.9
SIERRA	2014	155.5	1.277	2.198	121.8
SIERRA	2015	138.4	1.218	2.887	113.6
SIERRA	2016	135.8	1.118	1.728	121.4
SIERRA	2017	176.3	1.308	1.903	134.8
SIERRA	2018	198.9	1.482	1.413	134.3

Division/System	Year	SAIDI	SAIFI	MAIFI	CAIDI
SONOMA	2009	187.1	1.195	1.357	156.5
SONOMA	2010	190.2	1.270	0.818	149.8
SONOMA	2011	143.2	1.045	1.341	137.0
SONOMA	2012	143.5	1.024	1.730	140.1
SONOMA	2013	140.4	0.979	2.257	143.5
SONOMA	2014	138.2	1.024	1.588	135.0
SONOMA	2015	94.3	0.790	1.535	119.5
SONOMA	2016	107.7	0.887	1.508	121.3
SONOMA	2017	139.0	0.998	1.592	139.3
SONOMA	2018	148.0	1.134	1.239	130.5
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
STOCKTON	2009	194.5	1.383	2.697	140.7
STOCKTON	2010	188.8	1.406	1.402	134.3
STOCKTON	2011	209.0	1.350	0.898	154.9
STOCKTON	2012	118.3	1.113	1.978	106.3
STOCKTON	2013	125.3	1.522	2.026	82.3
STOCKTON	2014	118.3	0.823	1.311	143.7
STOCKTON	2015	106.5	0.944	1.952	112.8
STOCKTON	2016	102.1	0.994	1.664	102.7
STOCKTON	2017	102.3	1.033	1.282	99.1
STOCKTON	2018	121.8	1.115	1.896	109.3
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
YOSEMITE	2009	209.1	1.277	1.487	163.6
YOSEMITE	2010	252.8	1.570	2.598	161.0
YOSEMITE	2011	237.2	1.401	1.811	169.4
YOSEMITE	2012	159.2	1.361	4.093	117.0
YOSEMITE	2013	202.6	1.418	3.262	142.8
YOSEMITE	2014	129.6	1.286	2.452	100.8
YOSEMITE	2015	120.4	1.073	2.641	112.2
YOSEMITE	2016	141.3	1.277	2.032	110.6
YOSEMITE	2017	155.5	1.242	2.168	125.2
YOSEMITE	2018	171.4	1.433	1.808	119.6
Division/System	**Year**	**SAIDI**	**SAIFI**	**MAIFI**	**CAIDI**
SYSTEM	2009	158.0	1.173	1.404	134.7
SYSTEM	2010	157.2	1.207	1.254	130.3
SYSTEM	2011	141.7	1.097	1.170	129.3
SYSTEM	2012	131.0	1.130	1.800	115.9
SYSTEM	2013	116.1	1.070	1.527	108.5
SYSTEM	2014	108.4	0.966	1.396	112.2
SYSTEM	2015	95.9	0.871	1.594	110.1
SYSTEM	2016	108.9	1.021	1.494	106.7
SYSTEM	2017	113.4	0.958	1.568	118.3
SYSTEM	2018	126.3	1.079	1.479	117.0

c. Charts for System and Division Indices Based on IEEE 1366 for the past 10 years including Planned Outages and including and excluding MED

i. Charts for System and Division Reliability Indices based on IEEE 1366 for the past 10 years with linear trend line, and including planned outages and excluding ISO, and MED

1. SAIDI Performance Results (MED Excluded)

Chart 191: Division Reliability – AIDI Indices

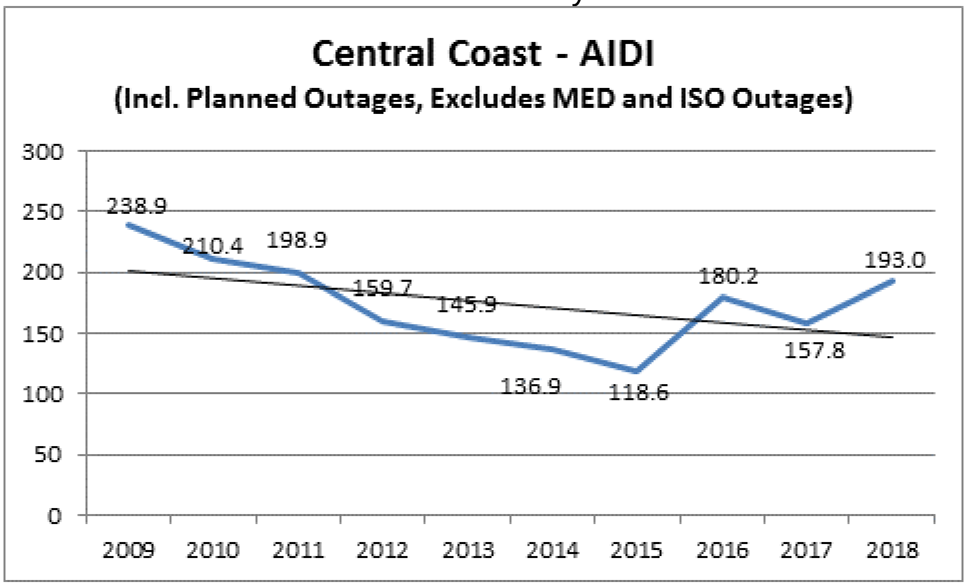


Chart 192: Division Reliability – AIDI Indices

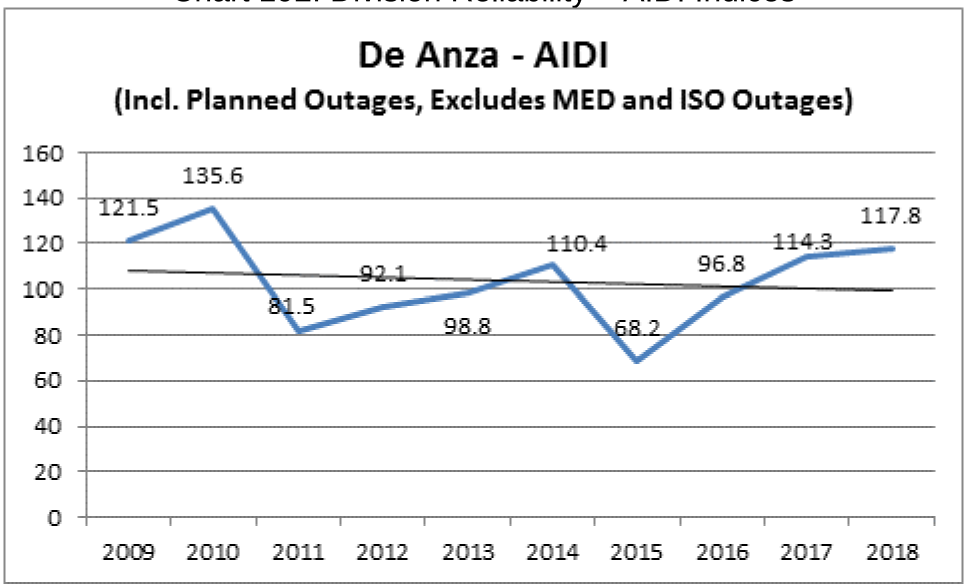


Chart 193: Division Reliability – AIDI Indices

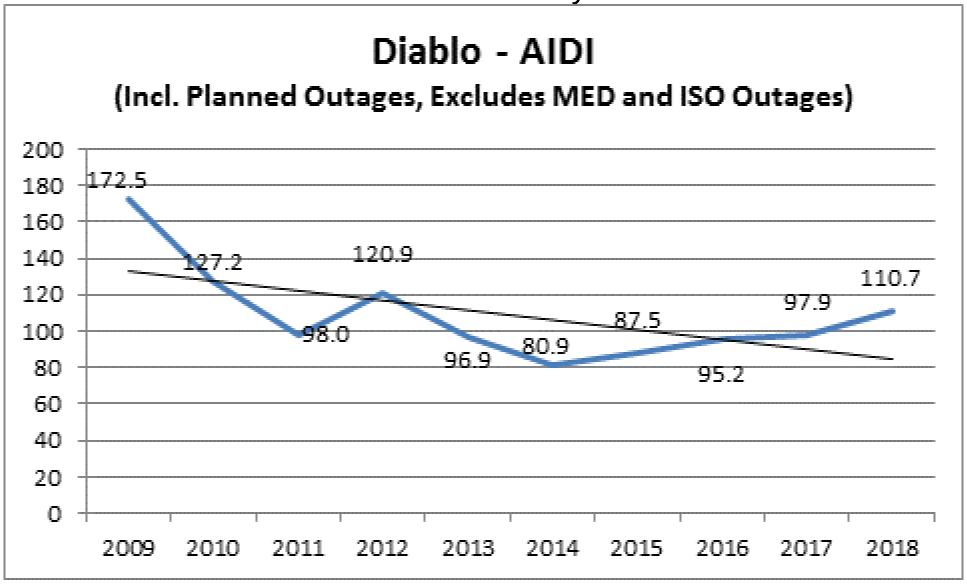


Chart 194: Division Reliability – AIDI Indices

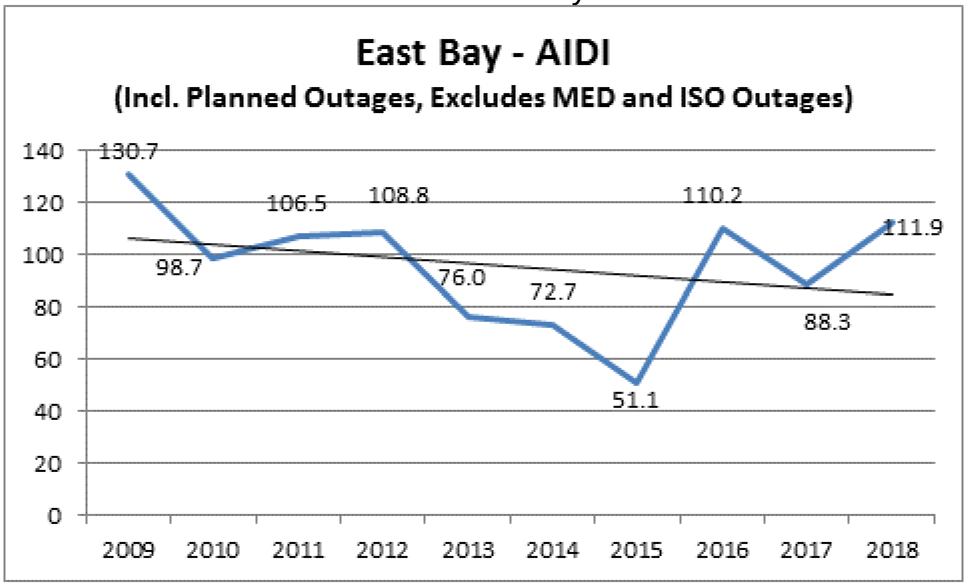


Chart 195: Division Reliability – AIDI Indices

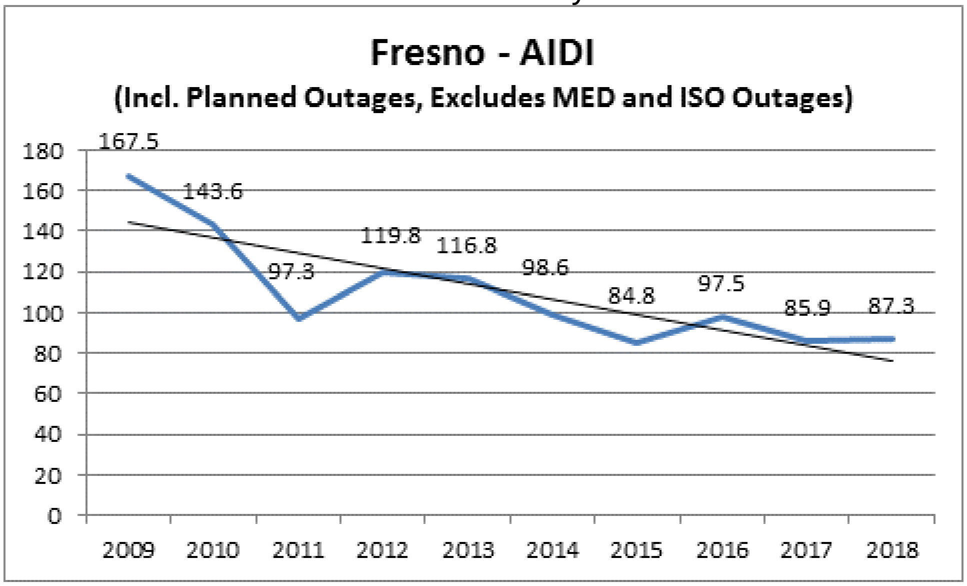


Chart 196: Division Reliability – AIDI Indices

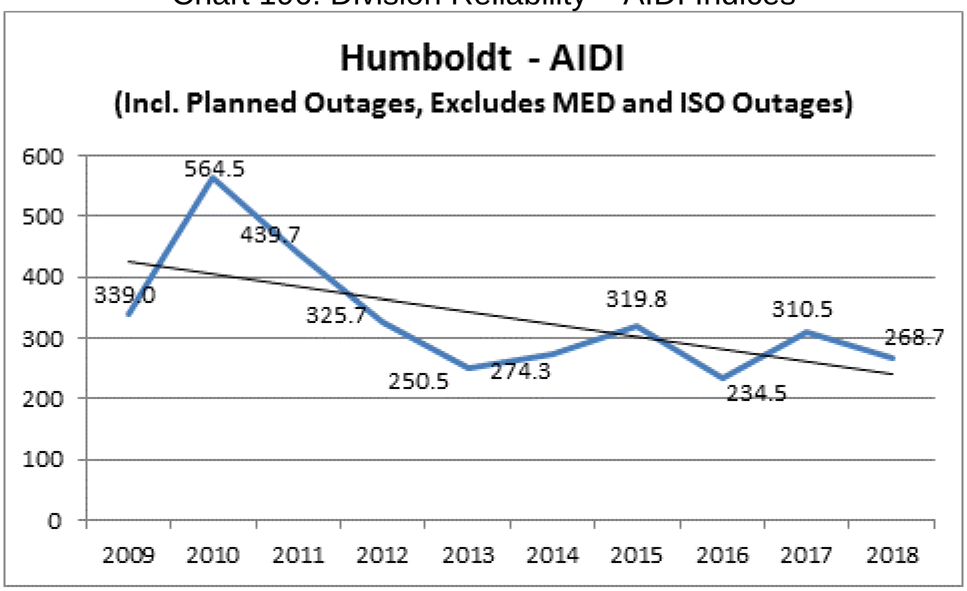


Chart 197: Division Reliability – AIDI Indices

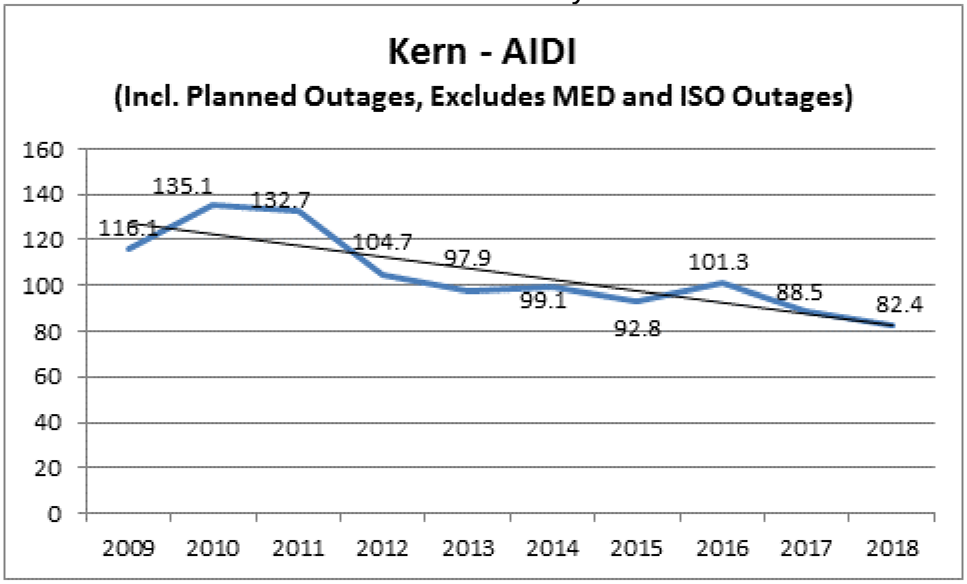


Chart 198: Division Reliability – AIDI Indices

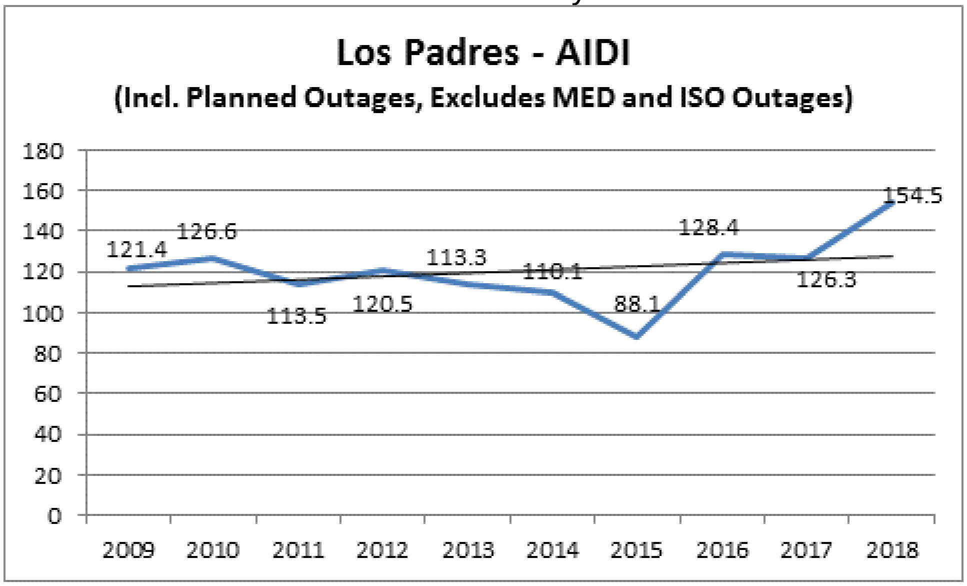


Chart 199: Division Reliability – AIDI Indices

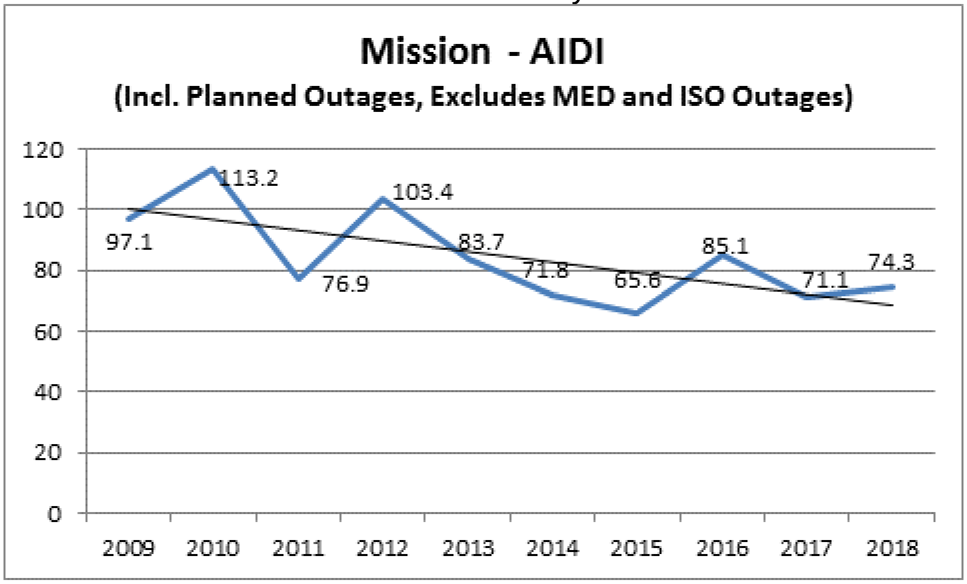


Chart 200: Division Reliability – AIDI Indices

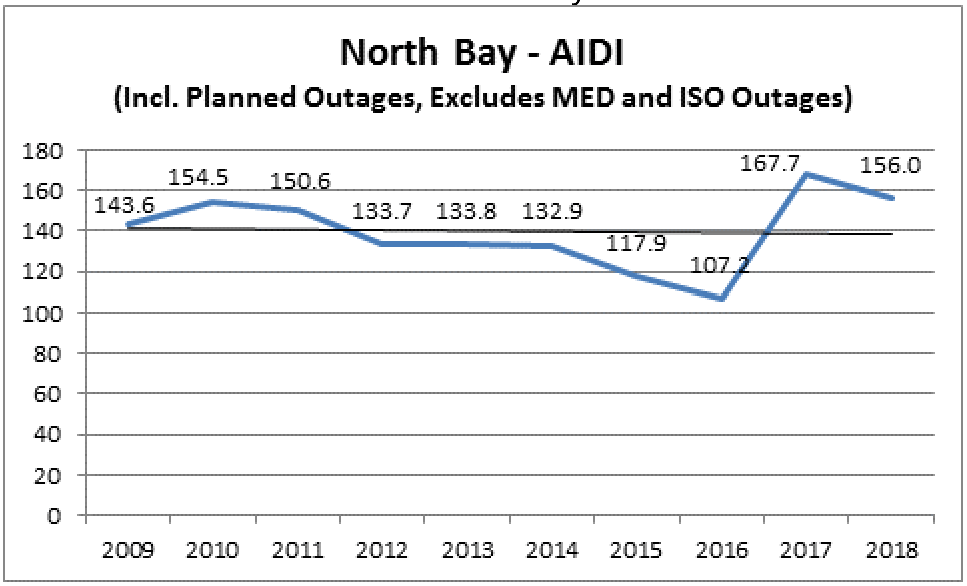


Chart 201: Division Reliability – AIDI Indices

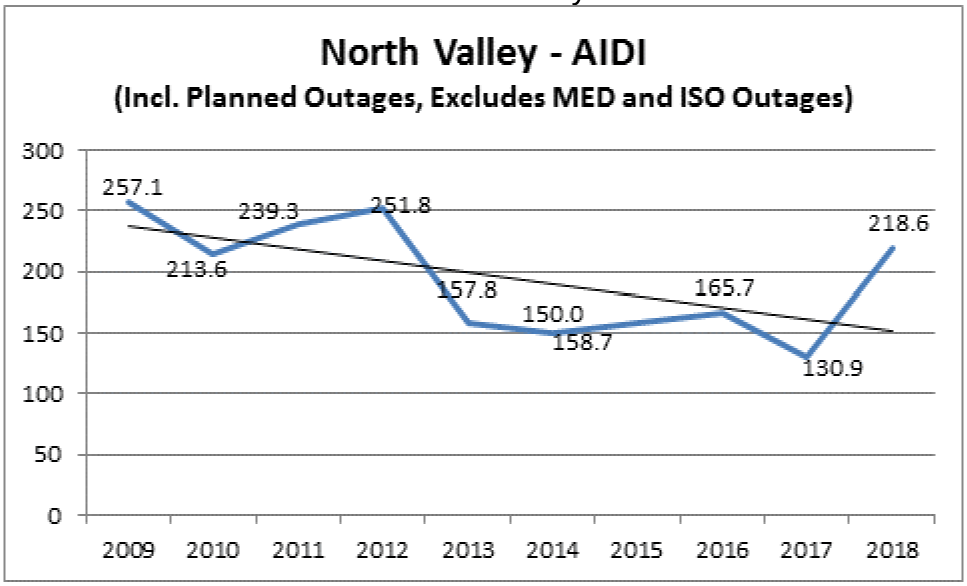


Chart 202: Division Reliability – AIDI Indices

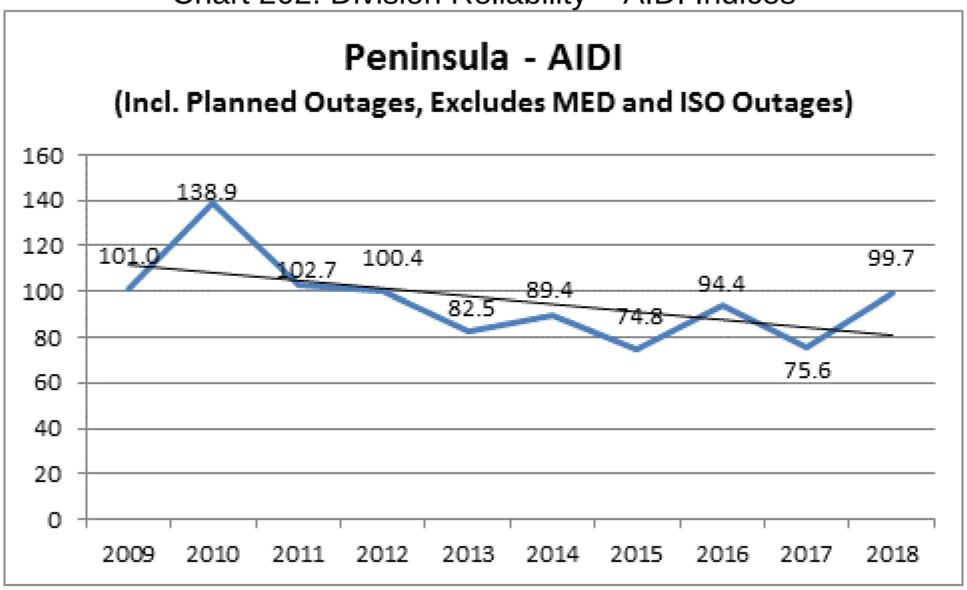


Chart 203: Division Reliability – AIDI Indices

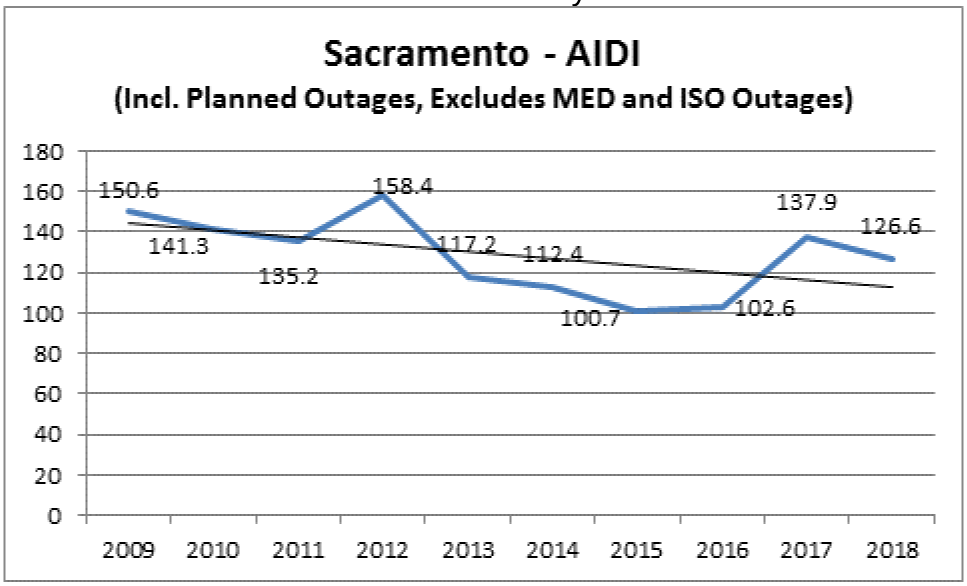


Chart 204: Division Reliability – AIDI Indices

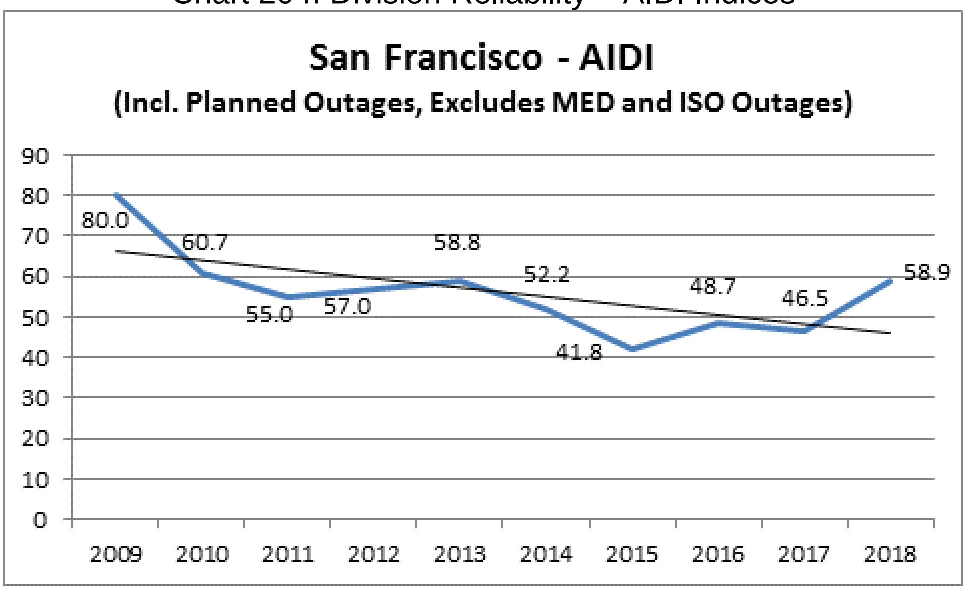


Chart 205: Division Reliability – AIDI Indices

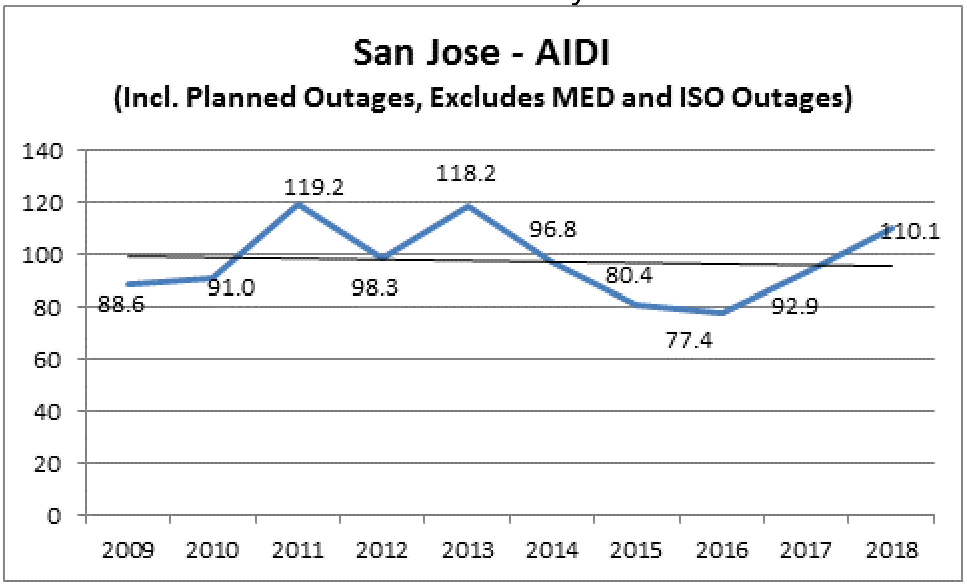


Chart 206: Division Reliability – AIDI Indices

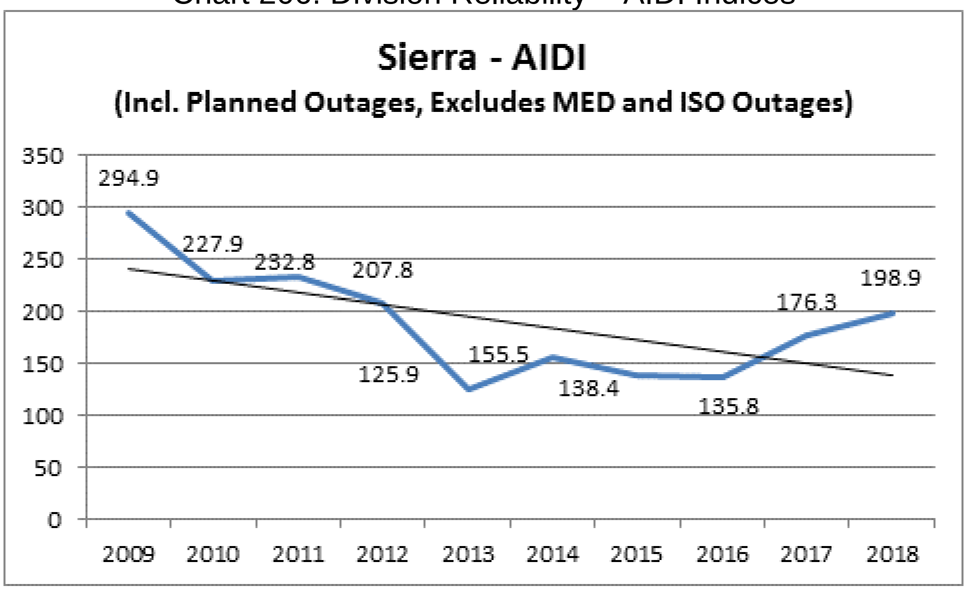


Chart 207: Division Reliability – AIDI Indices

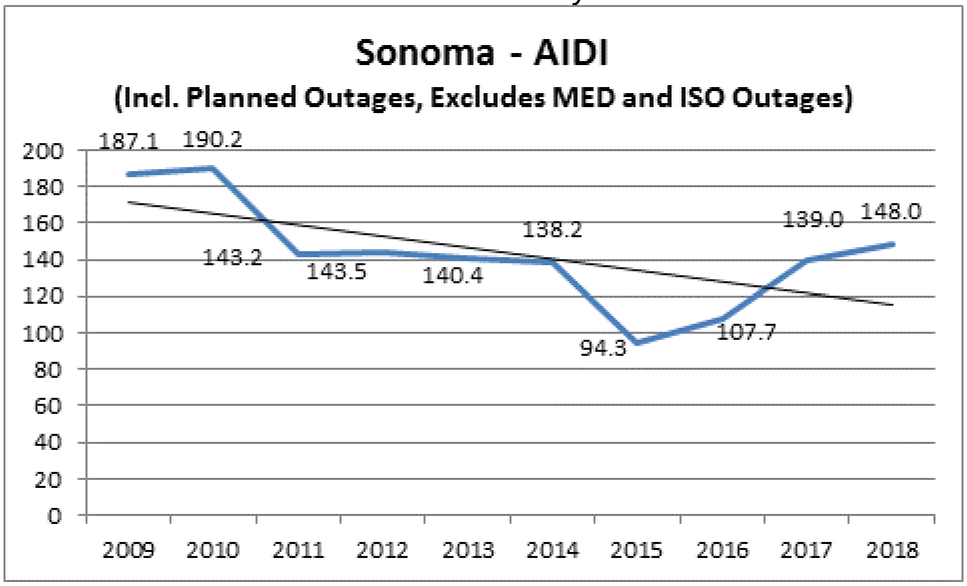


Chart 208: Division Reliability – AIDI Indices

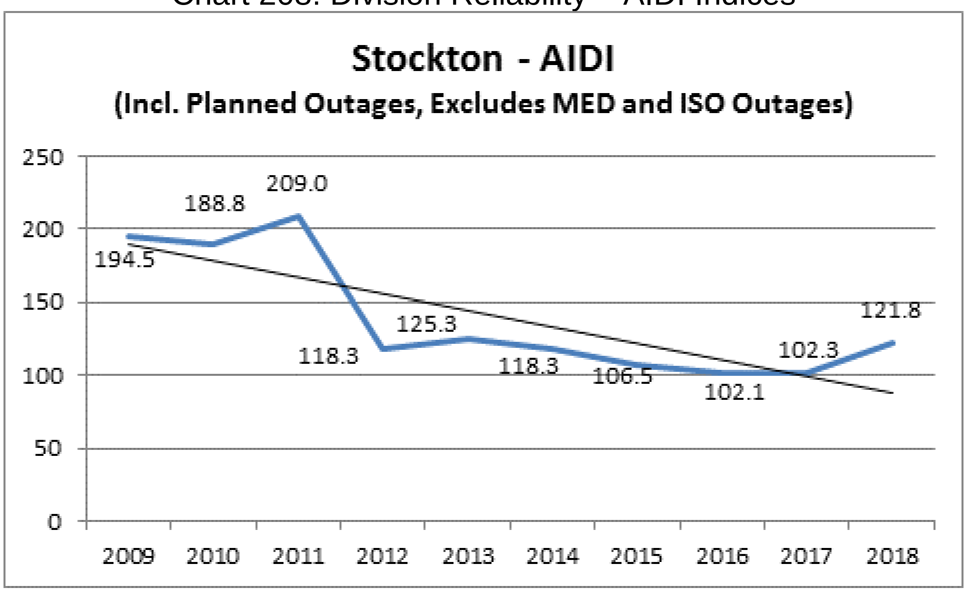


Chart 209: Division Reliability – AIDI Indices

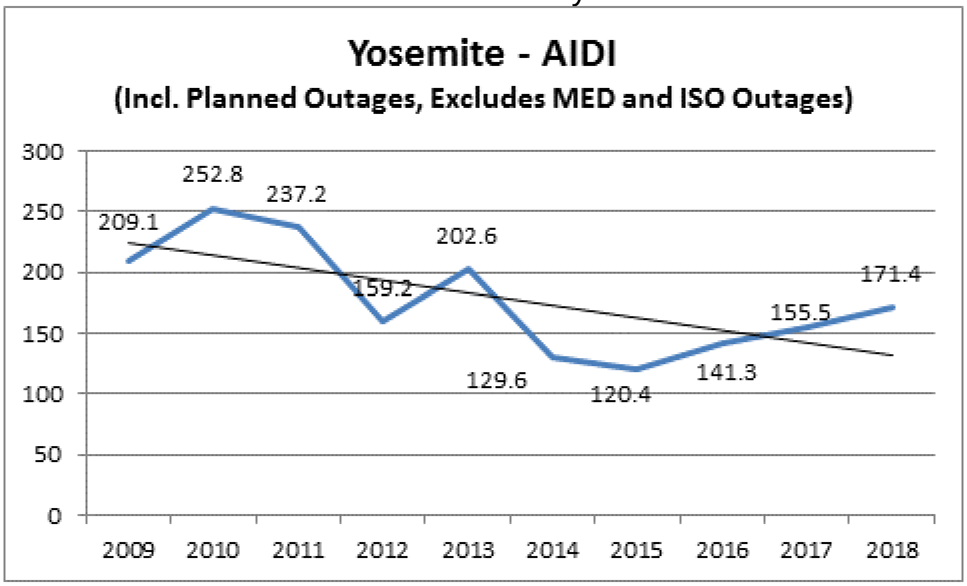
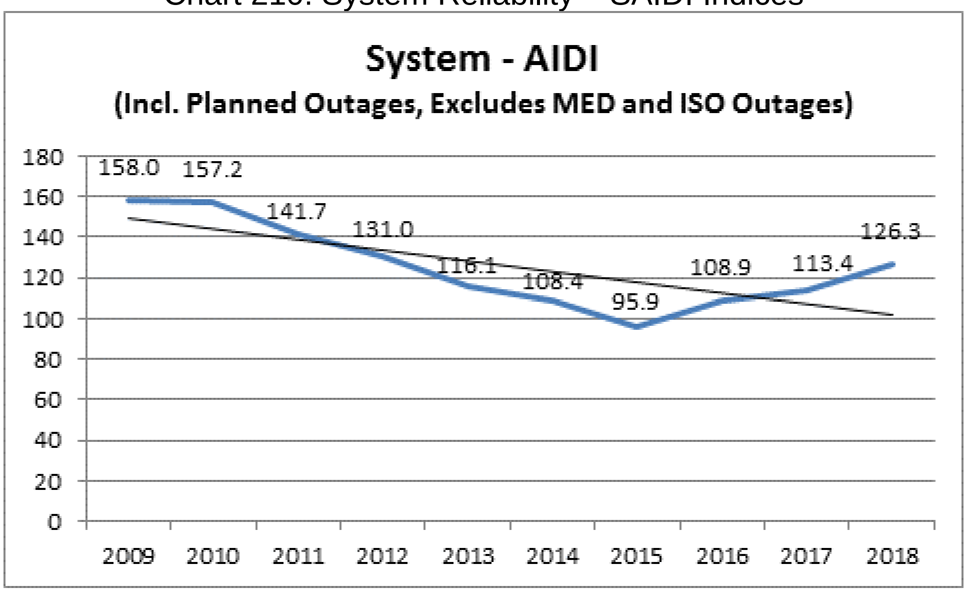


Chart 210: System Reliability – SAIDI Indices



2. SAIFI Performance Results (MED Excluded)

Chart 211: Division Reliability – AIFI Indices

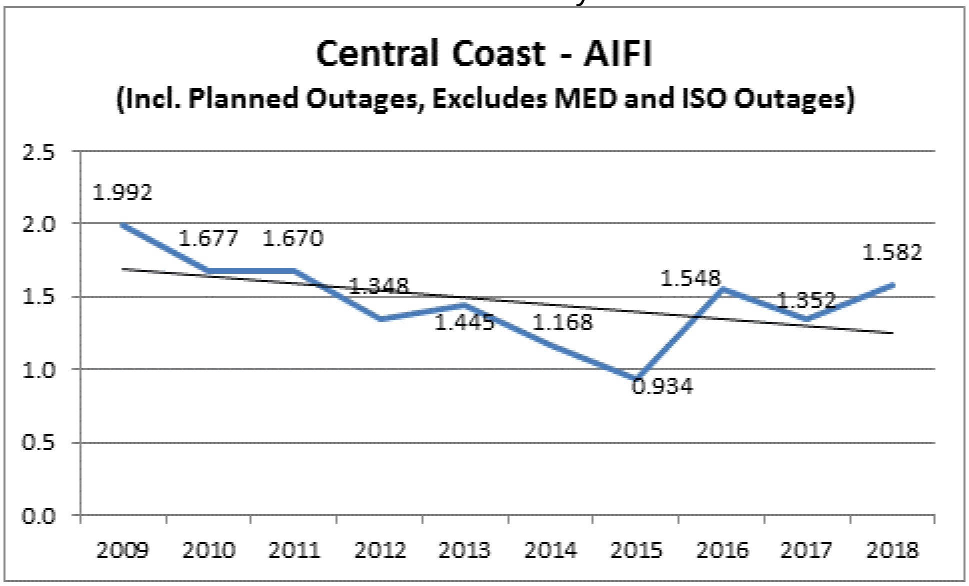


Chart 212: Division Reliability – AIFI Indices

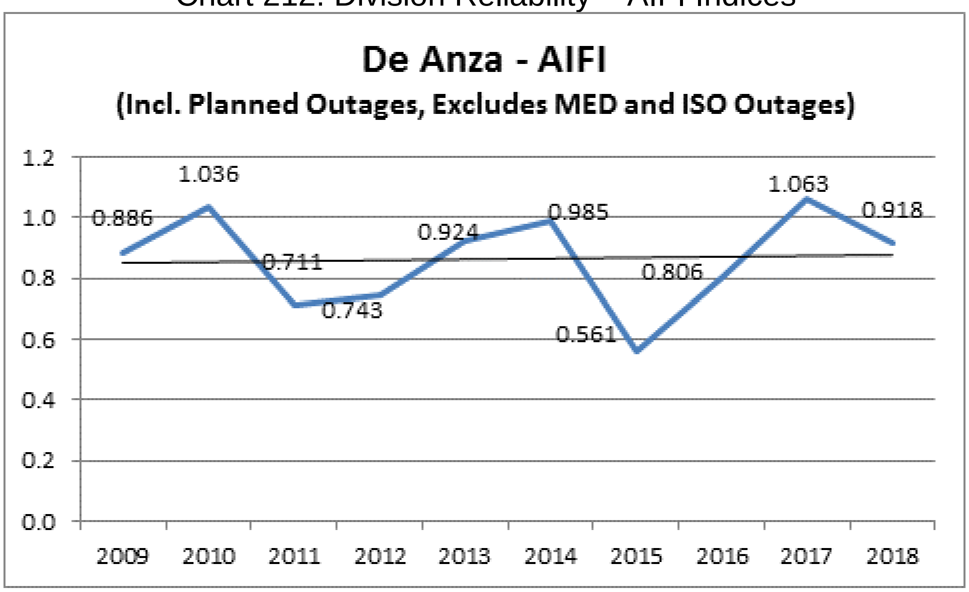


Chart 213: Division Reliability – AIFI Indices

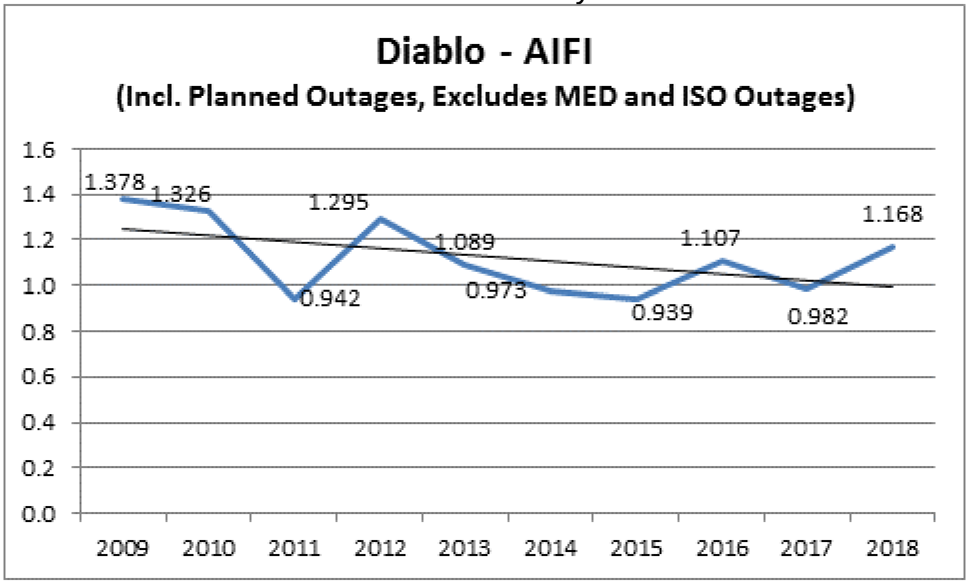


Chart 214: Division Reliability – AIFI Indices

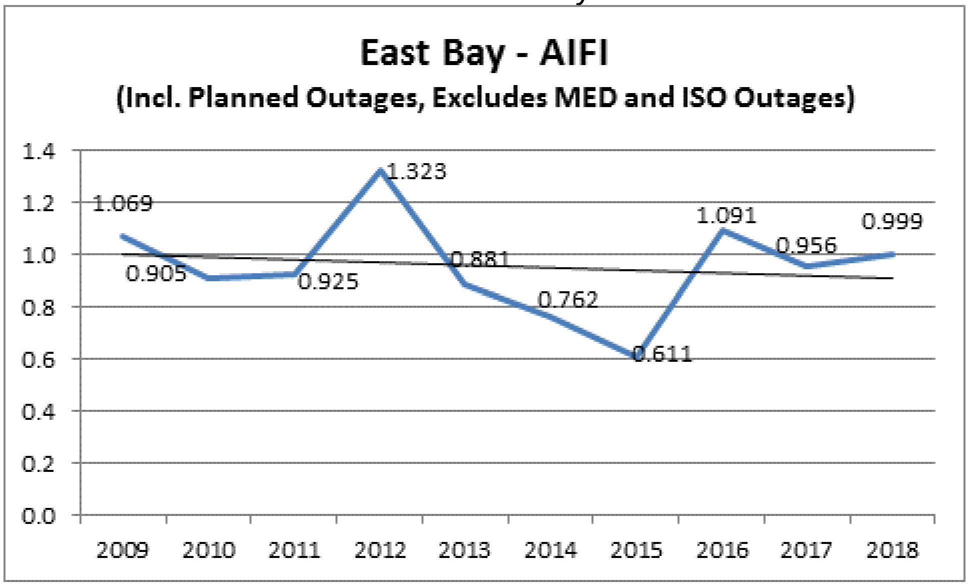


Chart 215: Division Reliability – AIFI Indices

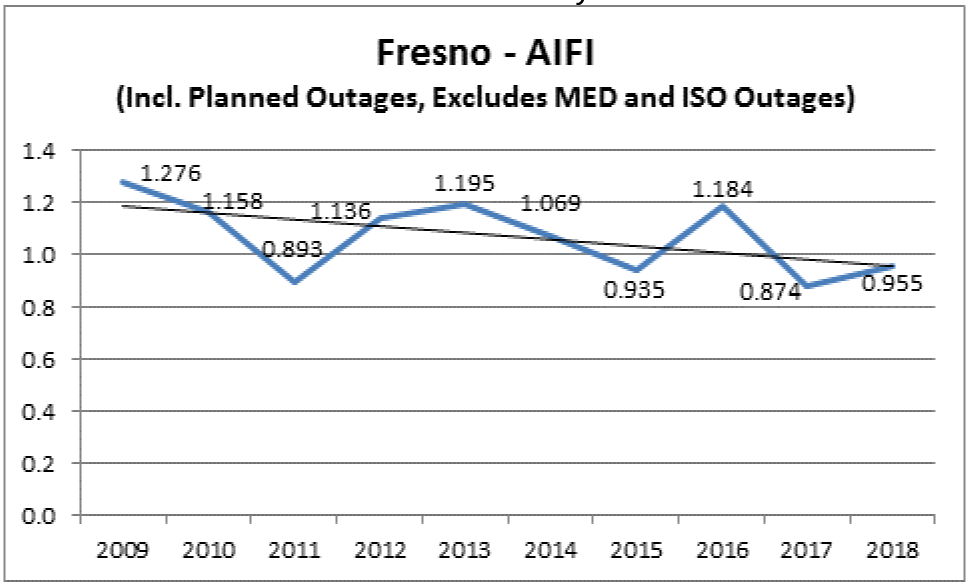


Chart 216: Division Reliability – AIFI Indices

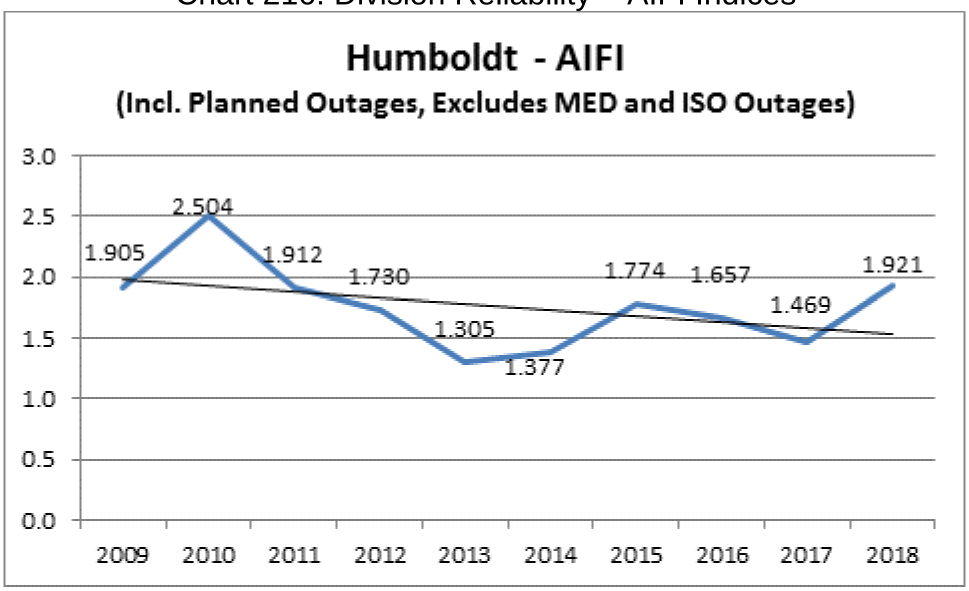


Chart 217: Division Reliability – AIFI Indices

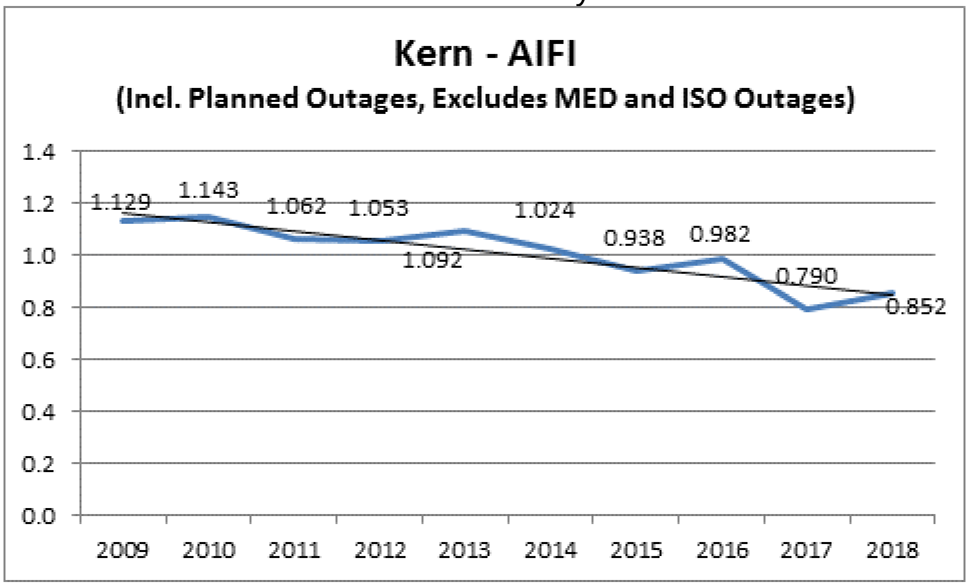


Chart 218: Division Reliability – AIFI Indices

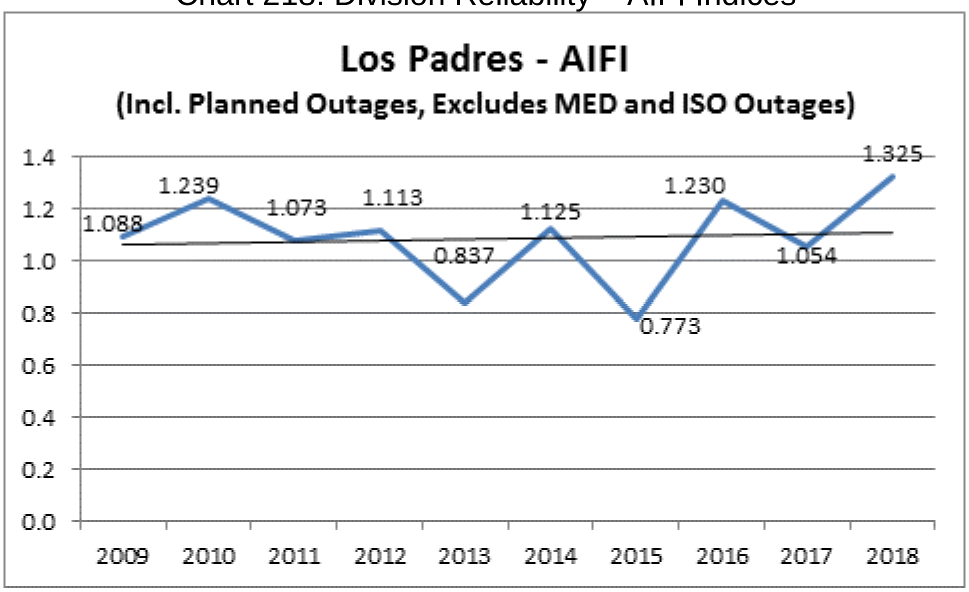


Chart 219: Division Reliability – AIFI Indices

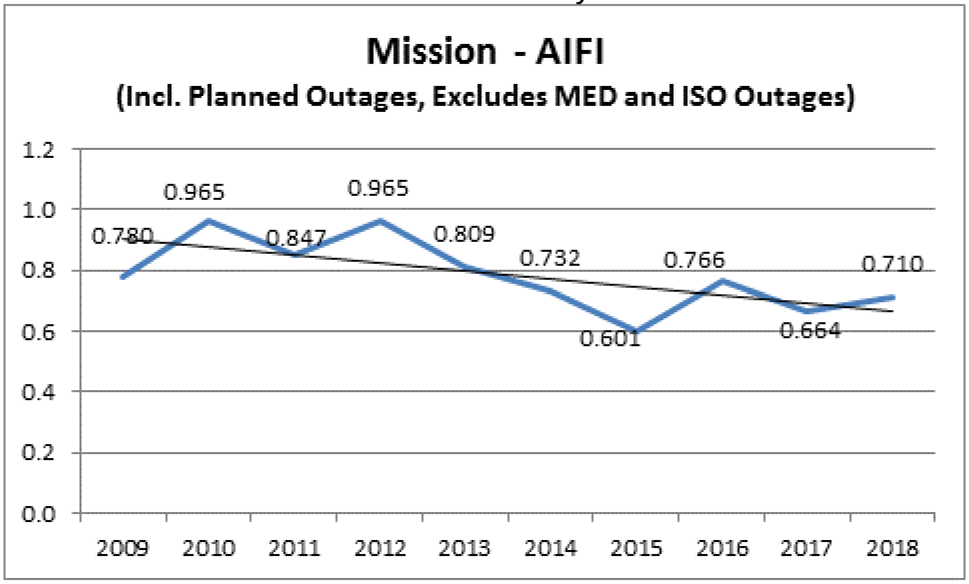


Chart 220: Division Reliability – AIFI Indices

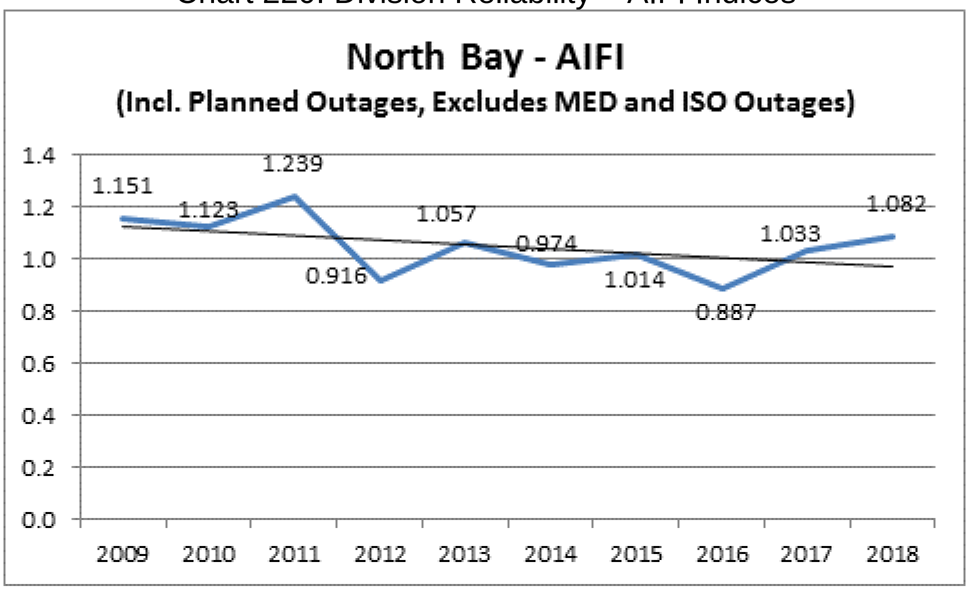


Chart 221: Division Reliability – AIFI Indices

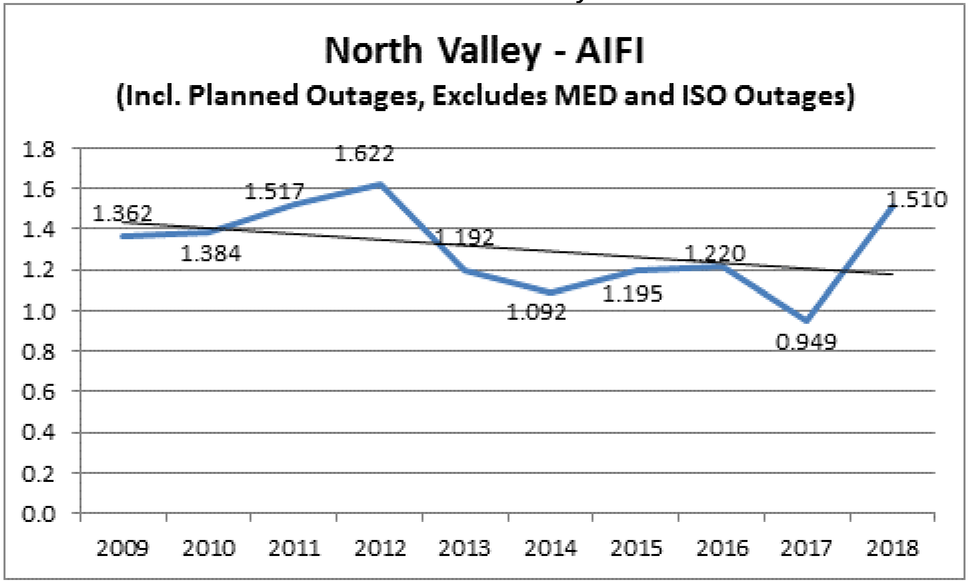


Chart 222: Division Reliability – AIFI Indices

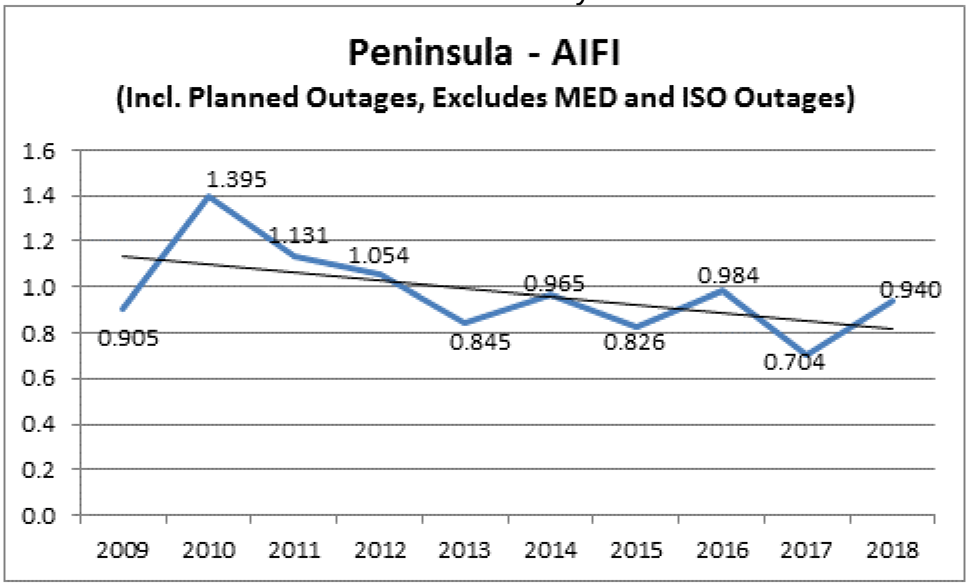


Chart 223: Division Reliability – AIFI Indices

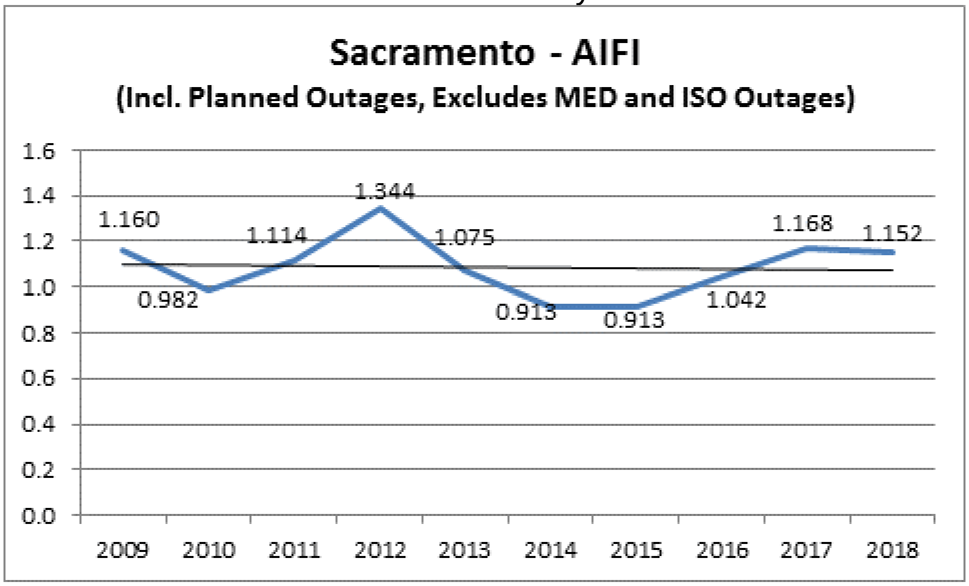


Chart 224: Division Reliability – AIFI Indices

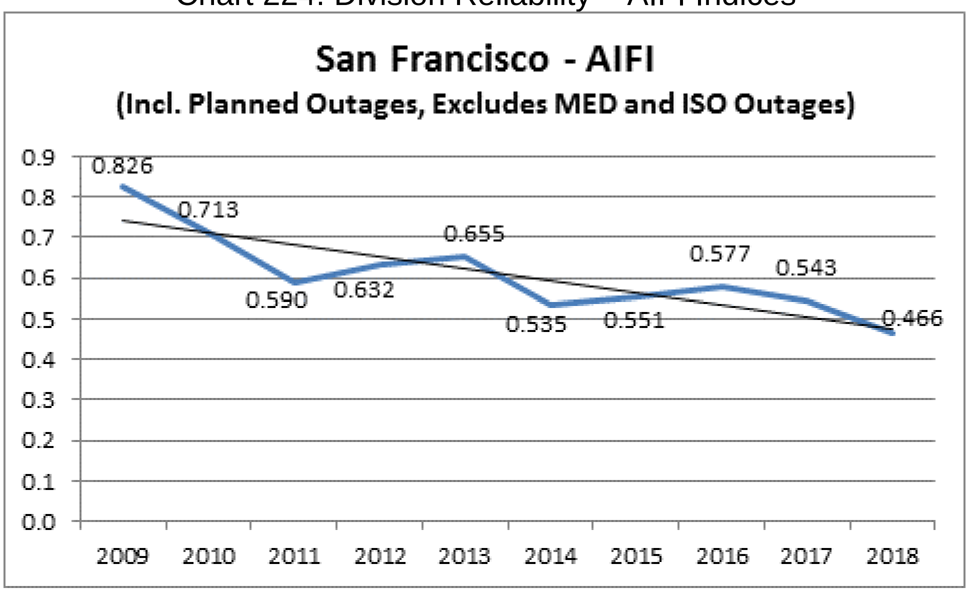


Chart 225: Division Reliability – AIFI Indices

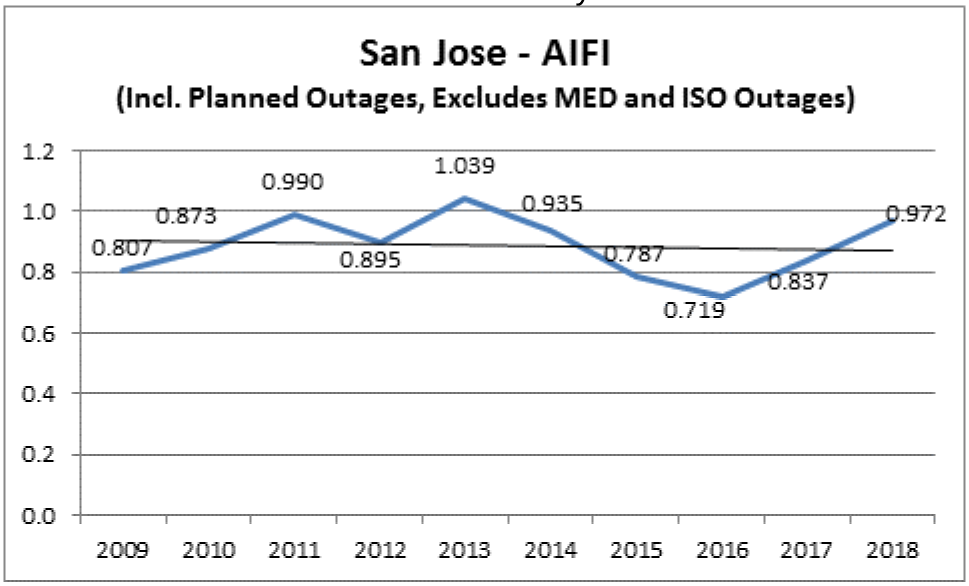


Chart 226: Division Reliability – AIFI Indices

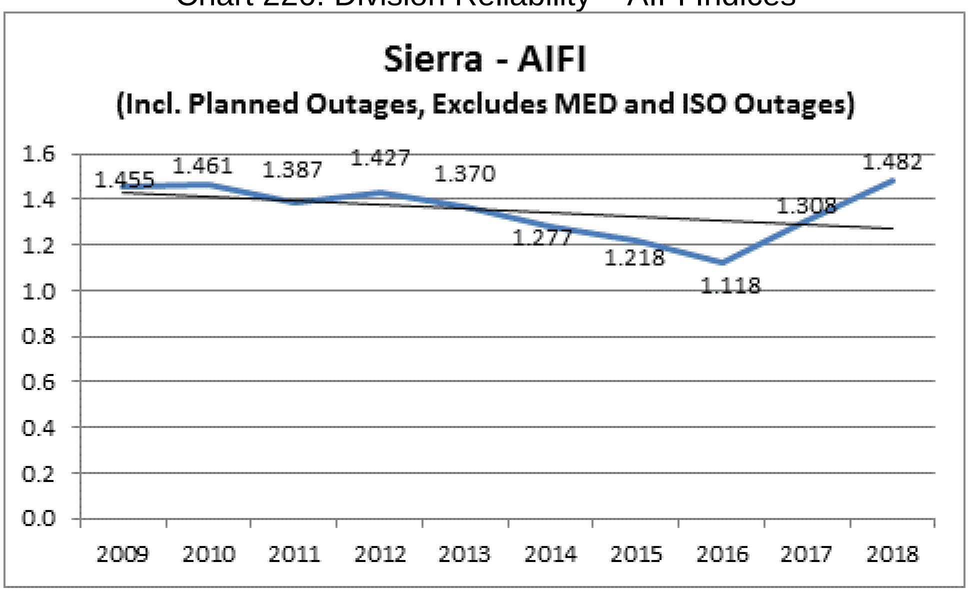


Chart 227: Division Reliability – AIFI Indices

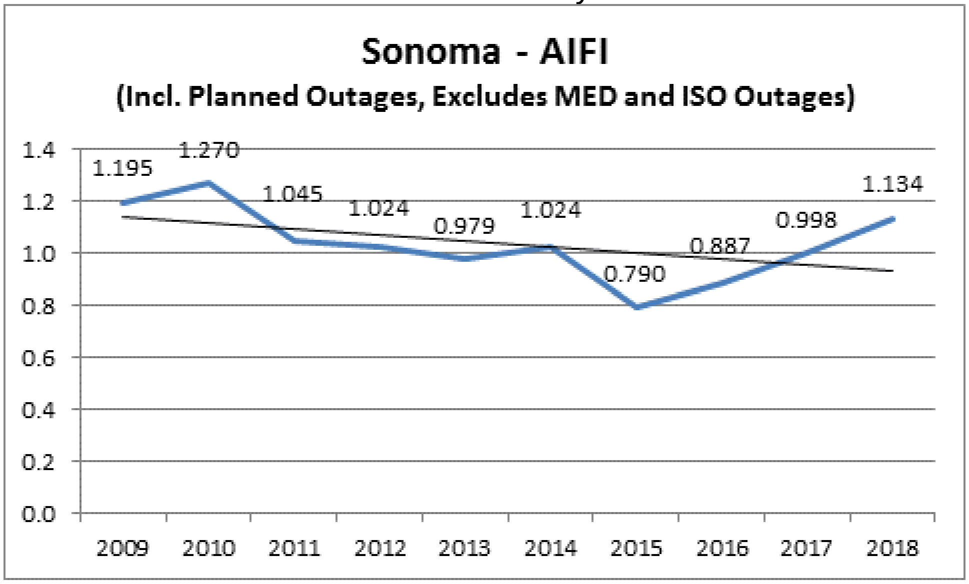


Chart 228: Division Reliability – AIFI Indices

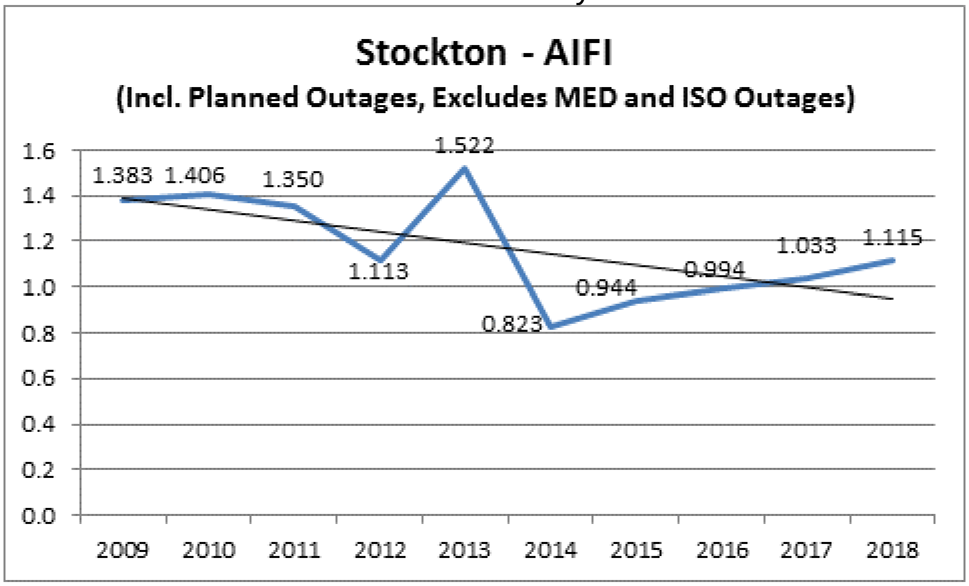


Chart 229: Division Reliability – AIFI Indices

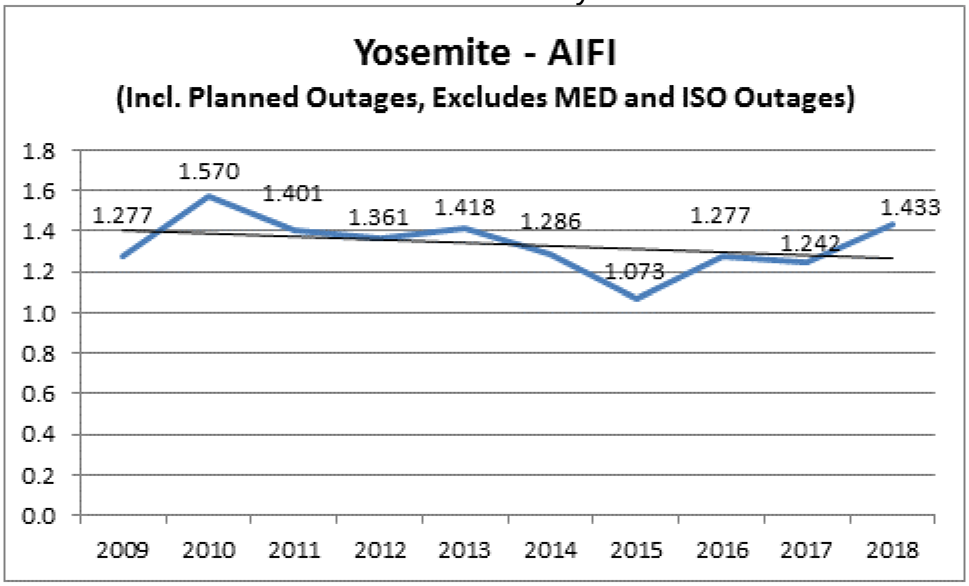
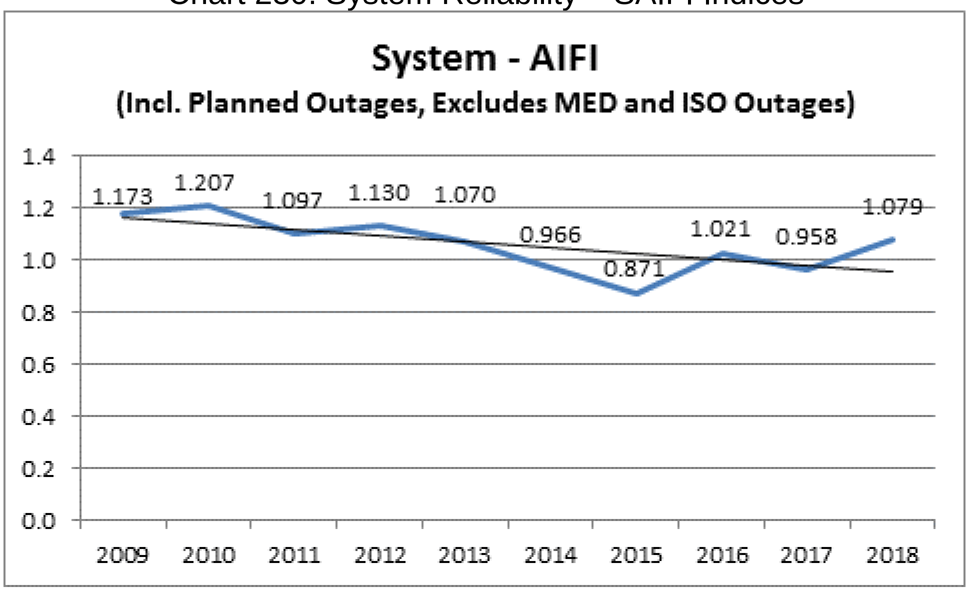


Chart 230: System Reliability – SAIFI Indices



3. MAIFI[10] Performance Results (MED Excluded)

Chart 231: Division Reliability – MAIFI Indices

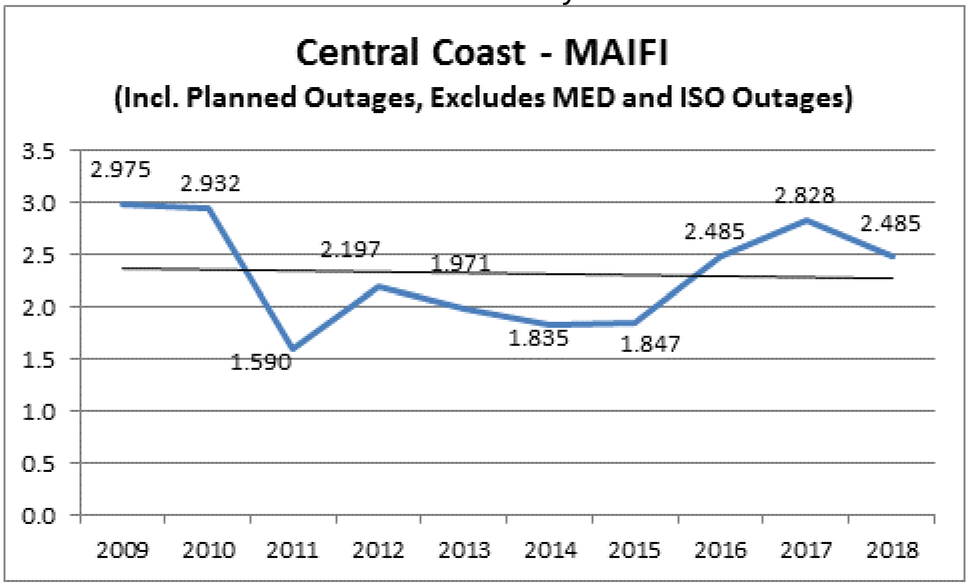
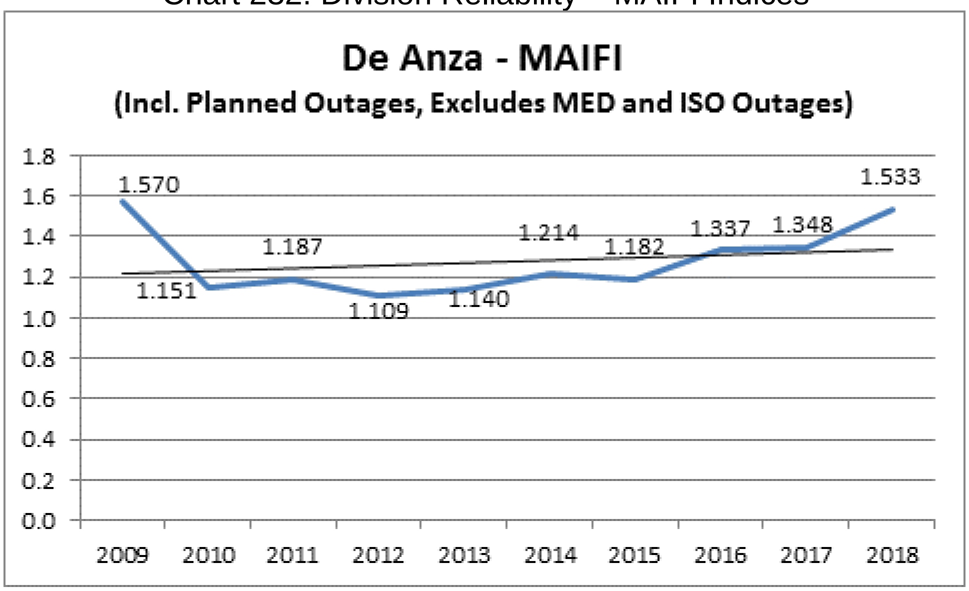


Chart 232: Division Reliability – MAIFI Indices



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10 See footnote 4.

Chart 233: Division Reliability – MAIFI Indices

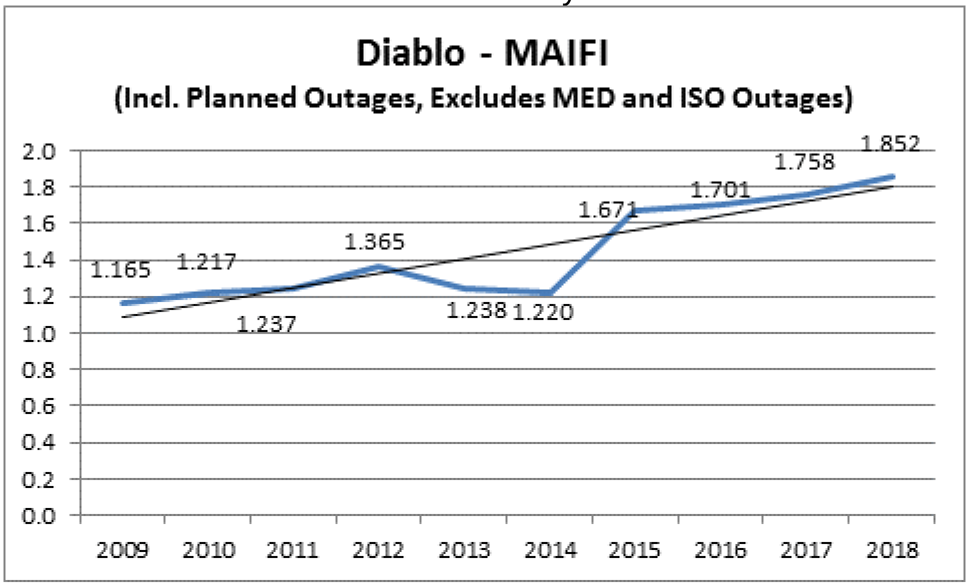


Chart 234: Division Reliability – MAIFI Indices

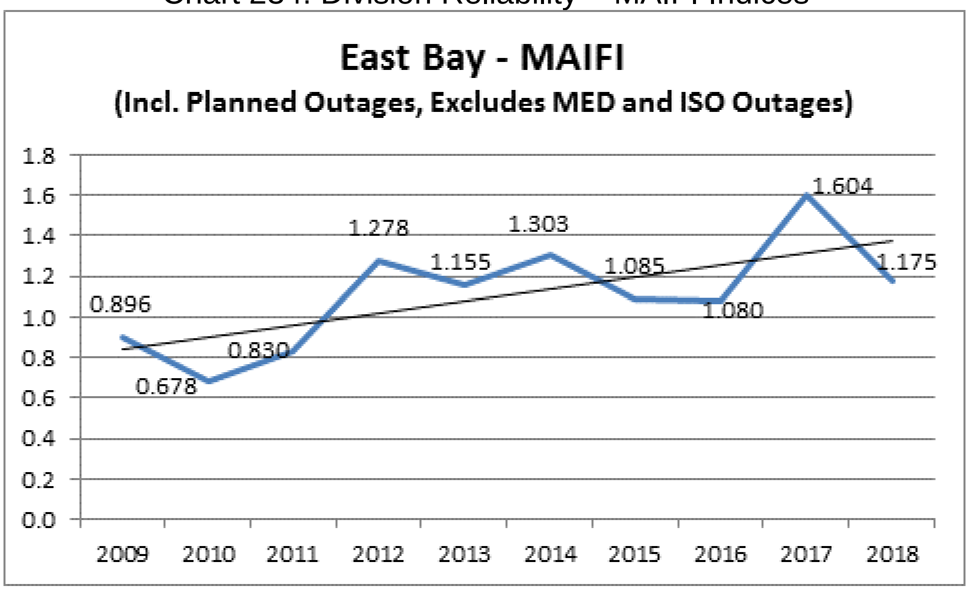


Chart 235: Division Reliability – MAIFI Indices

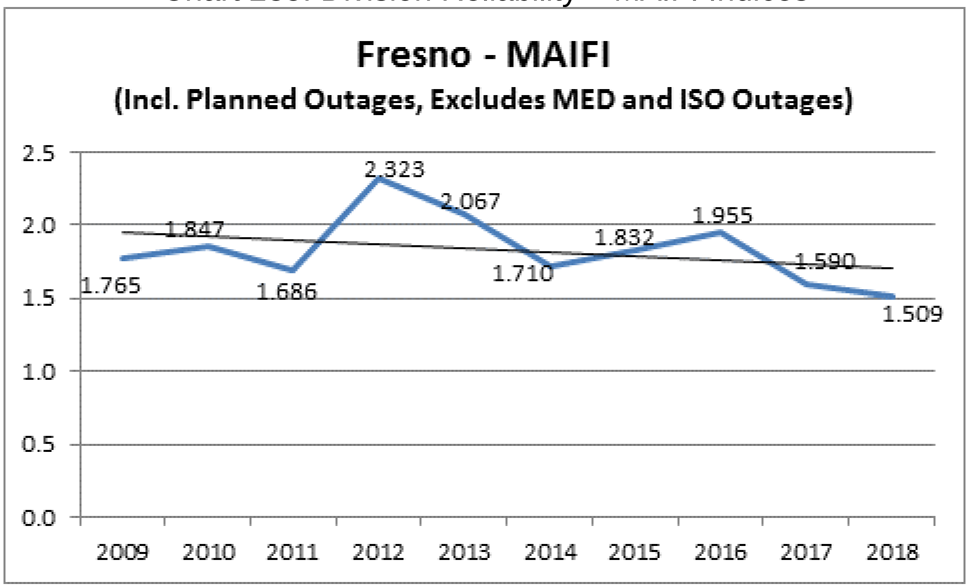


Chart 236: Division Reliability – MAIFI Indices

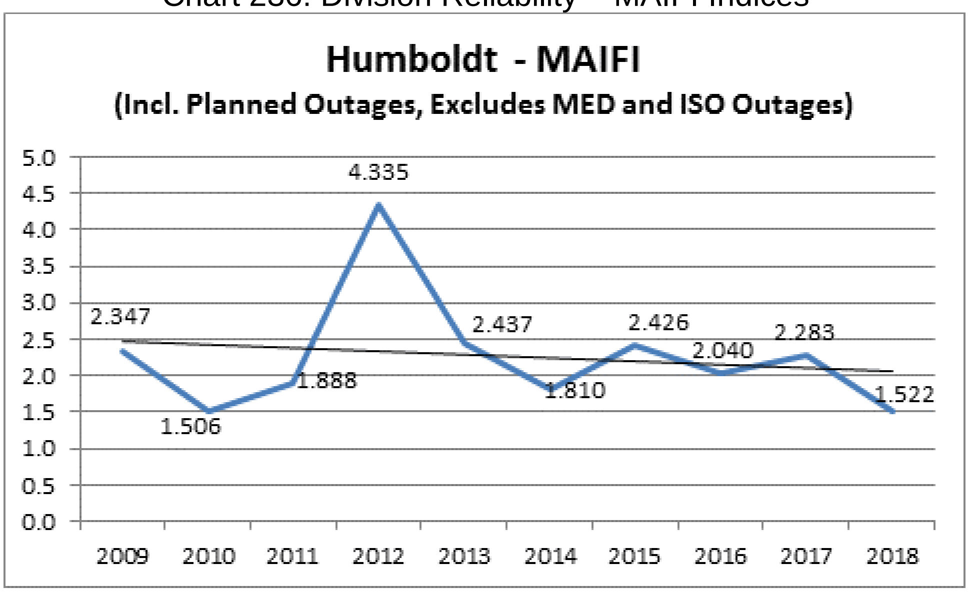


Chart 237: Division Reliability – MAIFI Indices

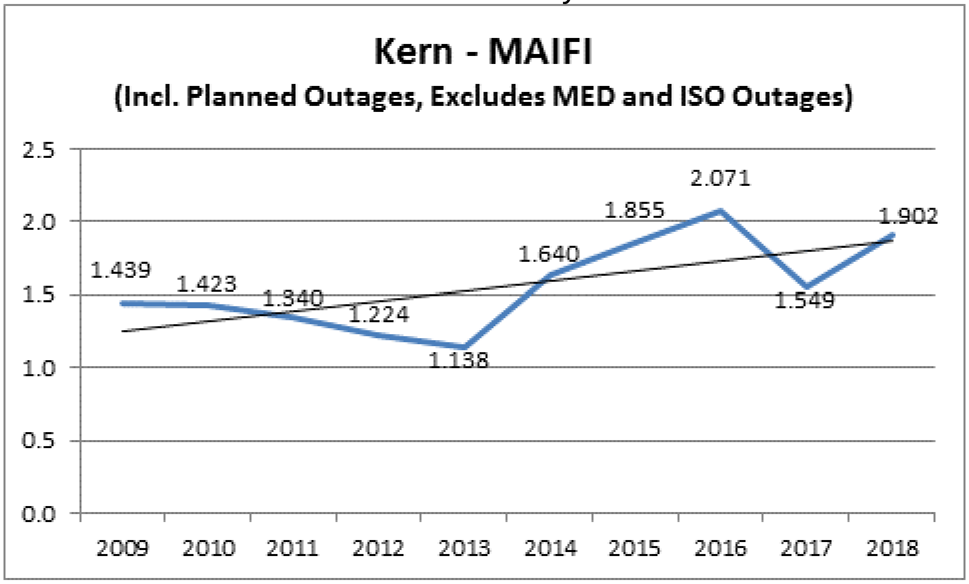


Chart 238: Division Reliability – MAIFI Indices

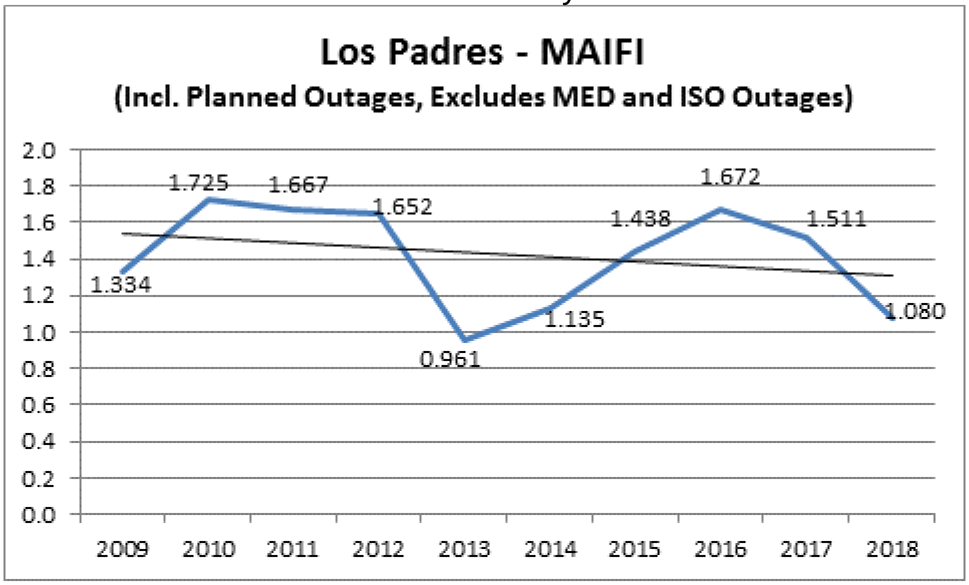


Chart 239: Division Reliability – MAIFI Indices

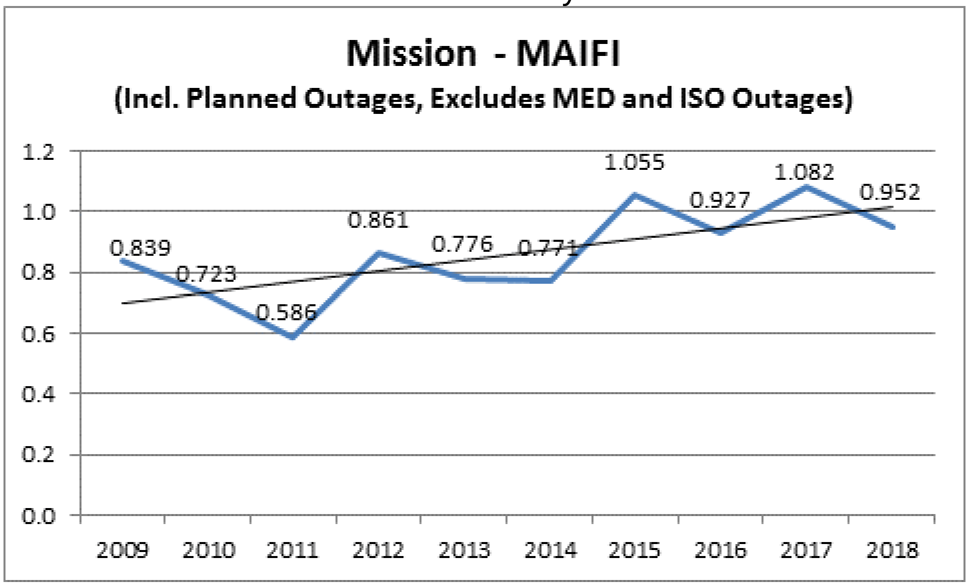


Chart 240: Division Reliability – MAIFI Indices

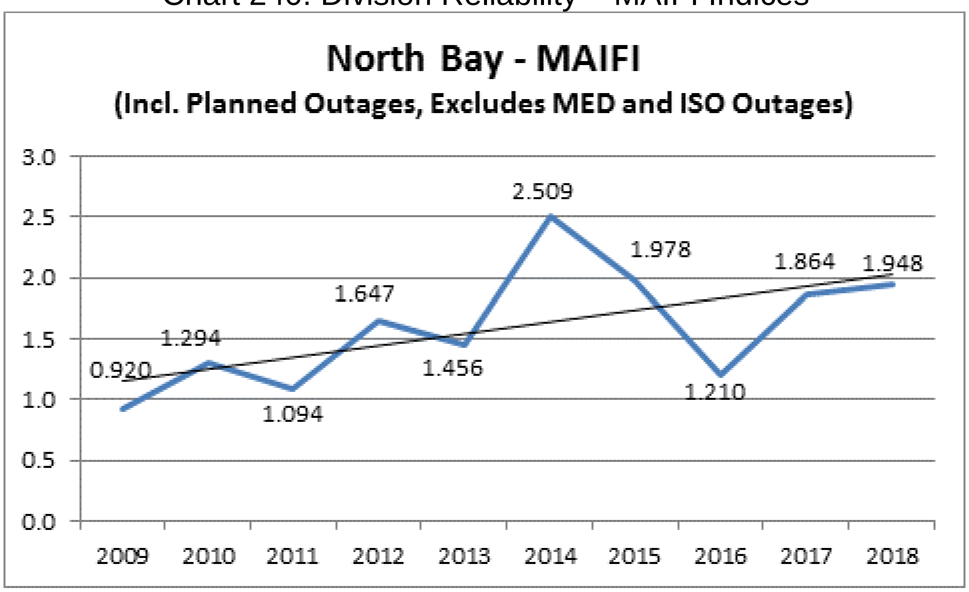


Chart 241: Division Reliability – MAIFI Indices

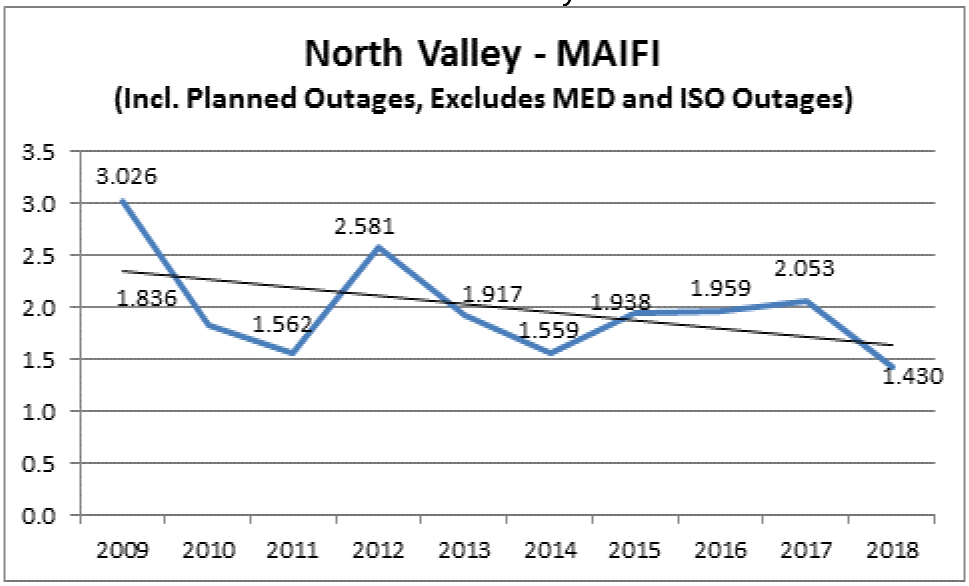


Chart 242: Division Reliability – MAIFI Indices

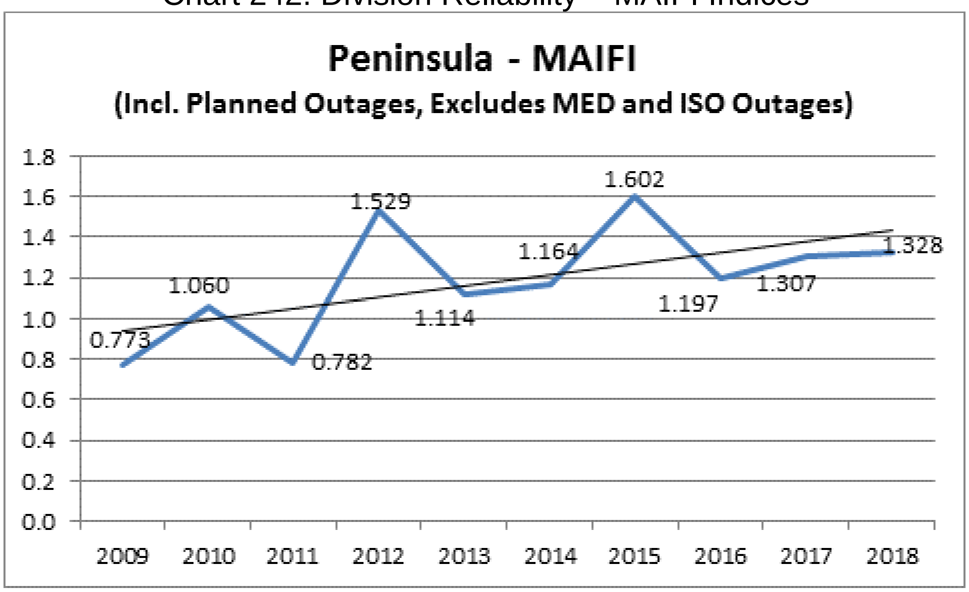


Chart 243: Division Reliability – MAIFI Indices

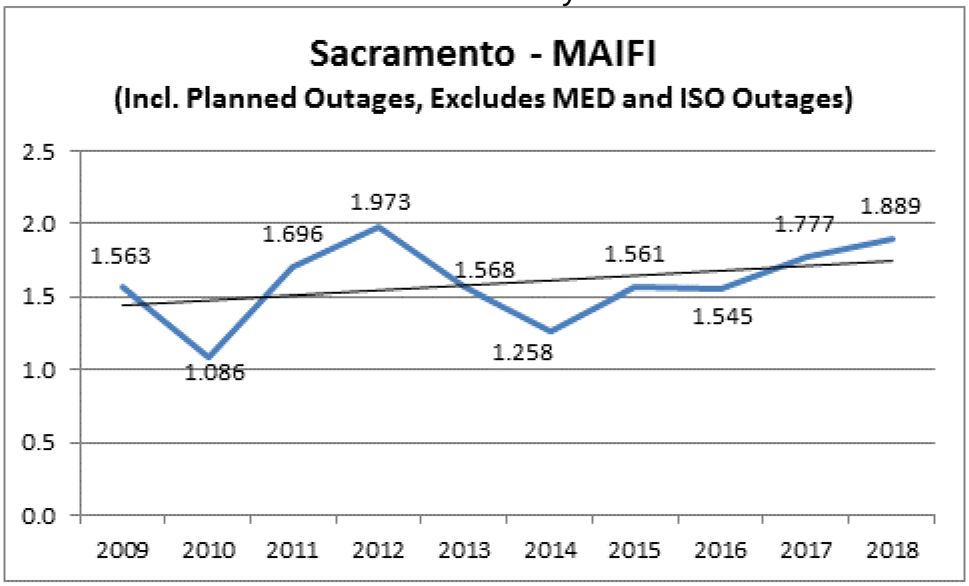


Chart 244: Division Reliability – MAIFI Indices

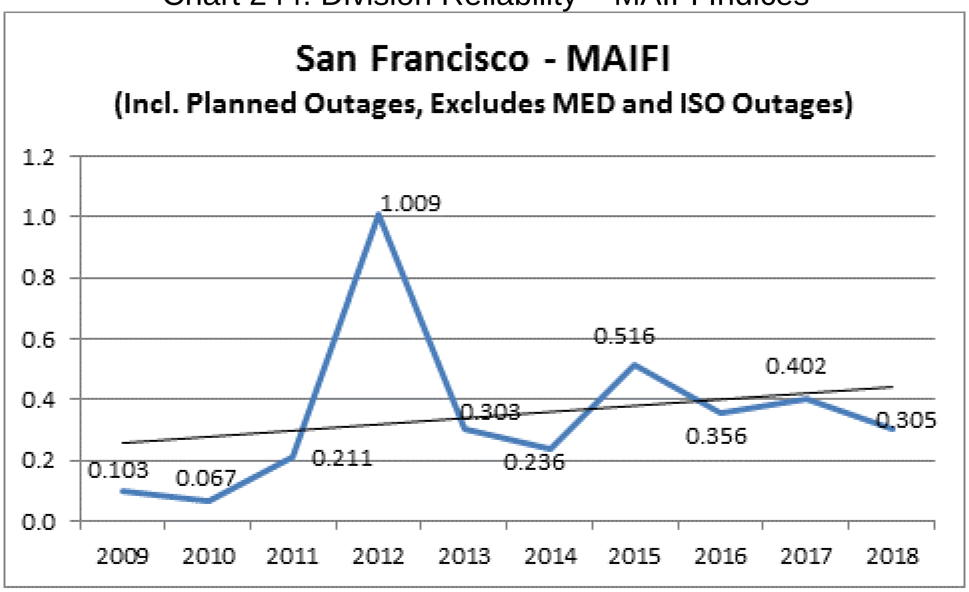


Chart 245: Division Reliability – MAIFI Indices

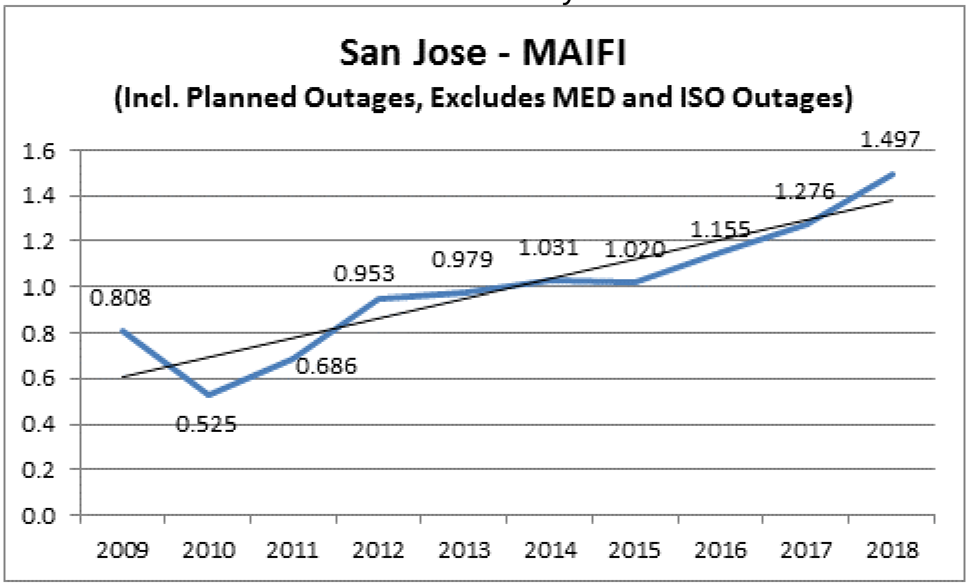


Chart 246: Division Reliability – MAIFI Indices

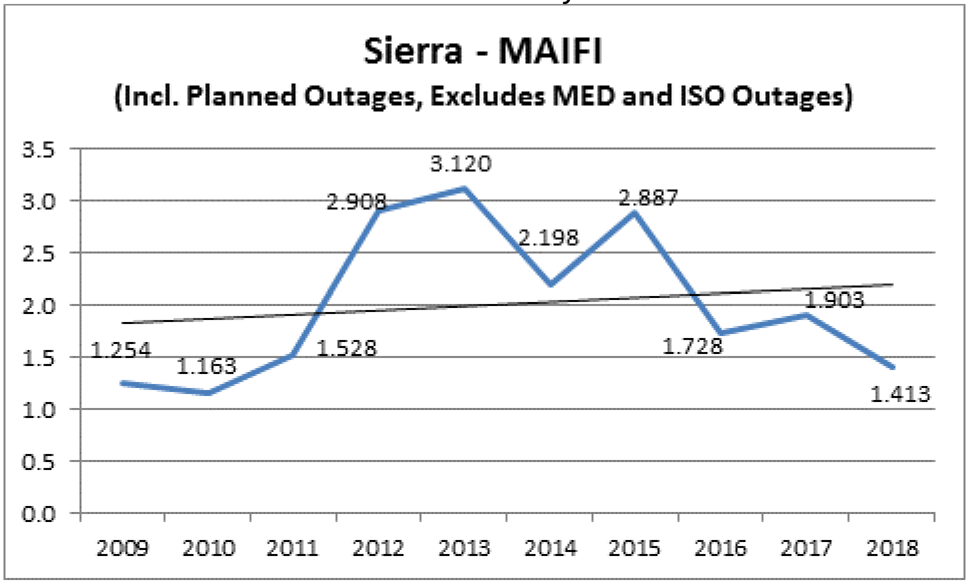


Chart 247: Division Reliability – MAIFI Indices

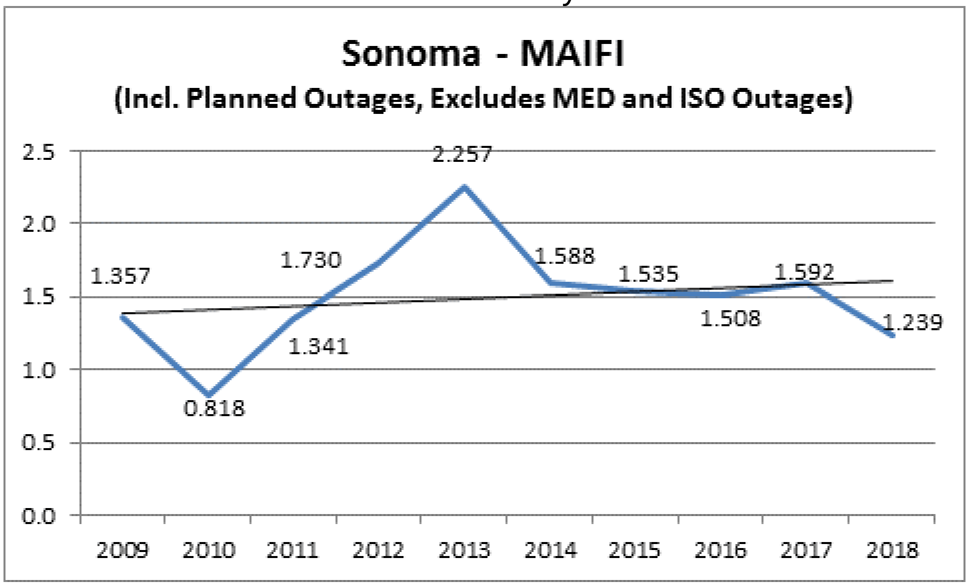


Chart 248: Division Reliability – MAIFI Indices

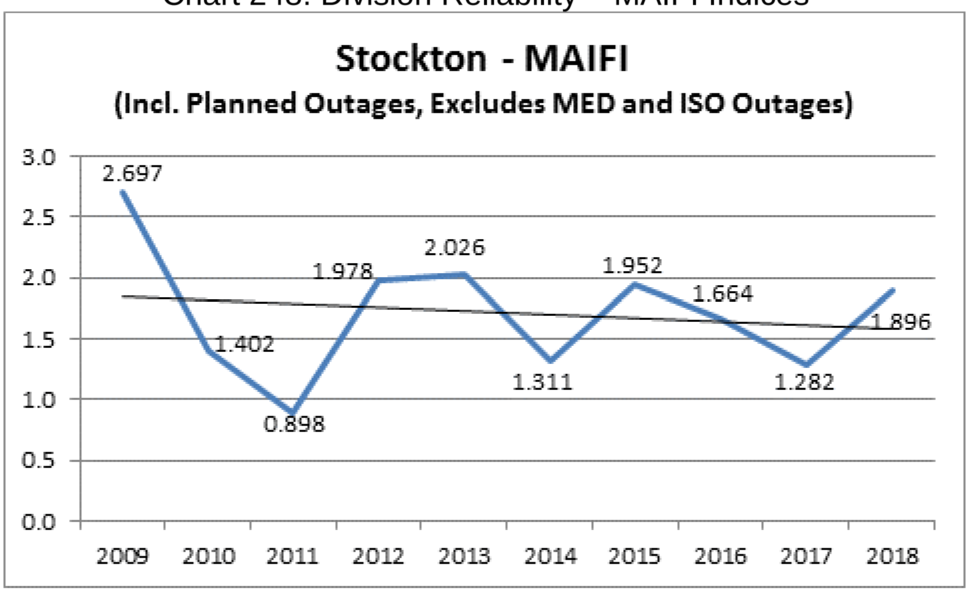


Chart 249: Division Reliability – MAIFI Indices

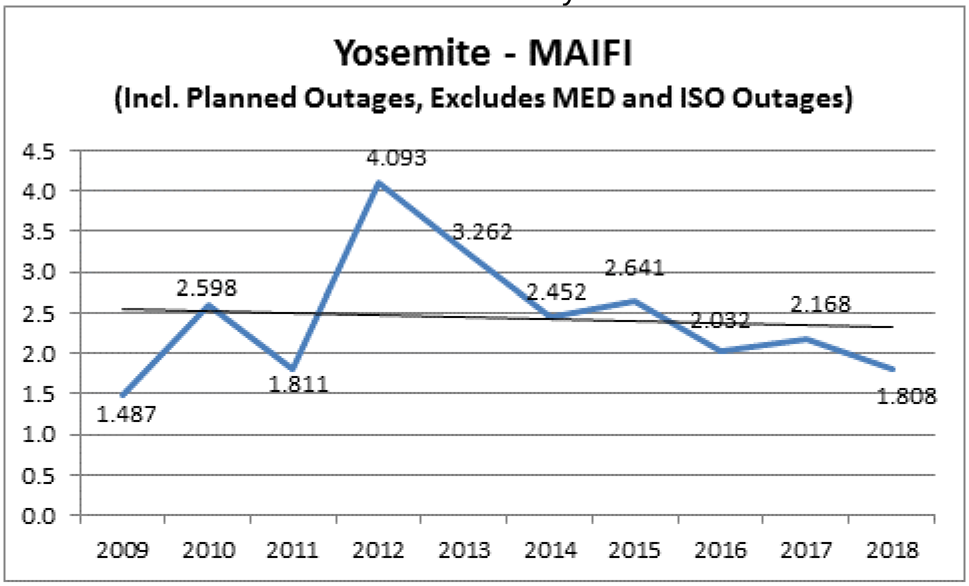
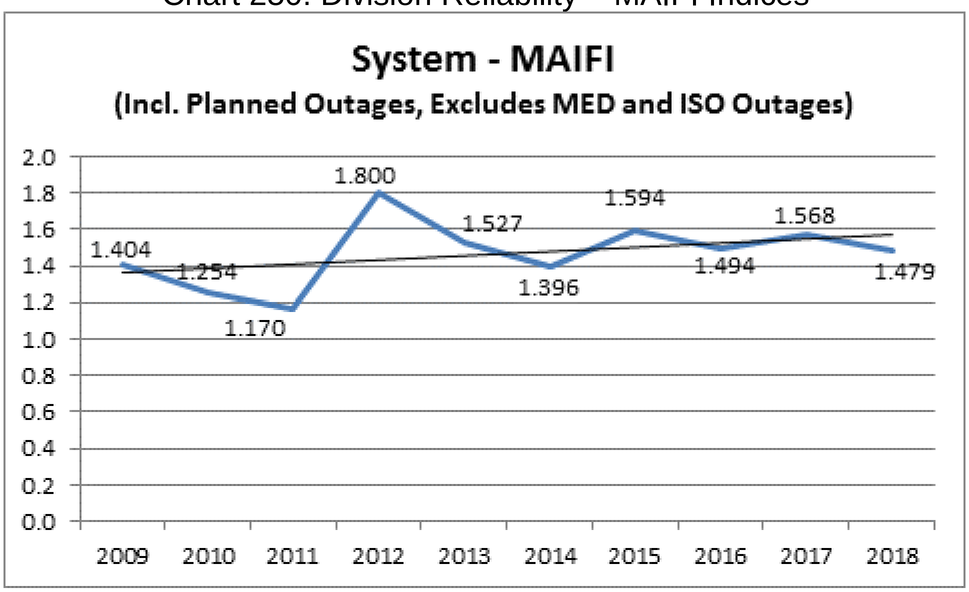


Chart 250: Division Reliability – MAIFI Indices



4. CAIDI Performance Results (MED Excluded)

Chart 251: Division Reliability – CAIDI Indices

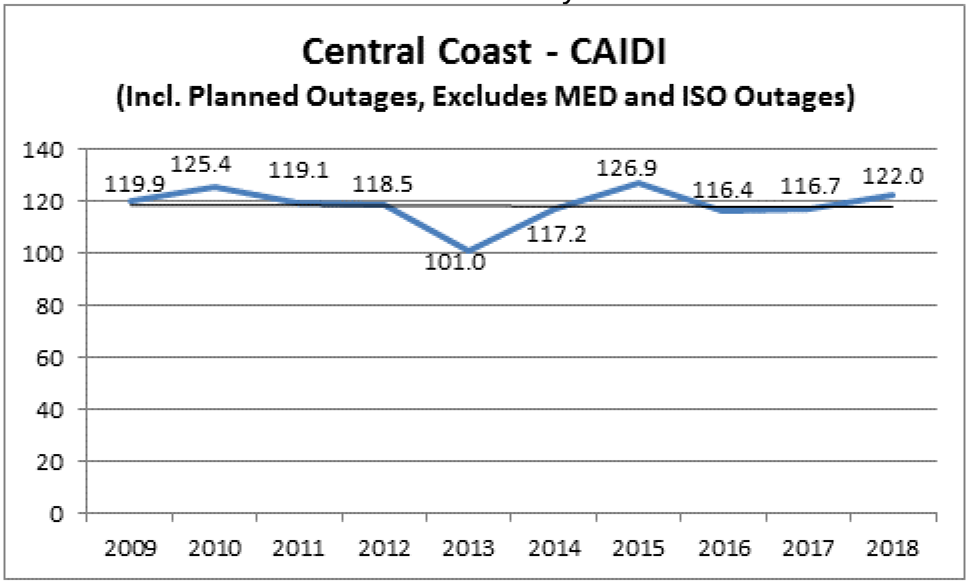


Chart 252: Division Reliability – CAIDI Indices

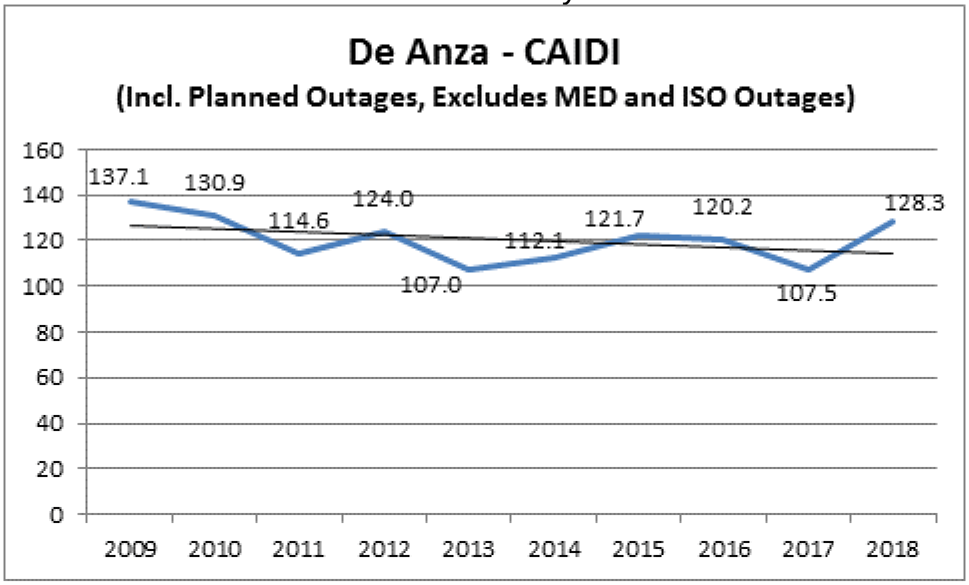


Chart 253: Division Reliability – CAIDI Indices

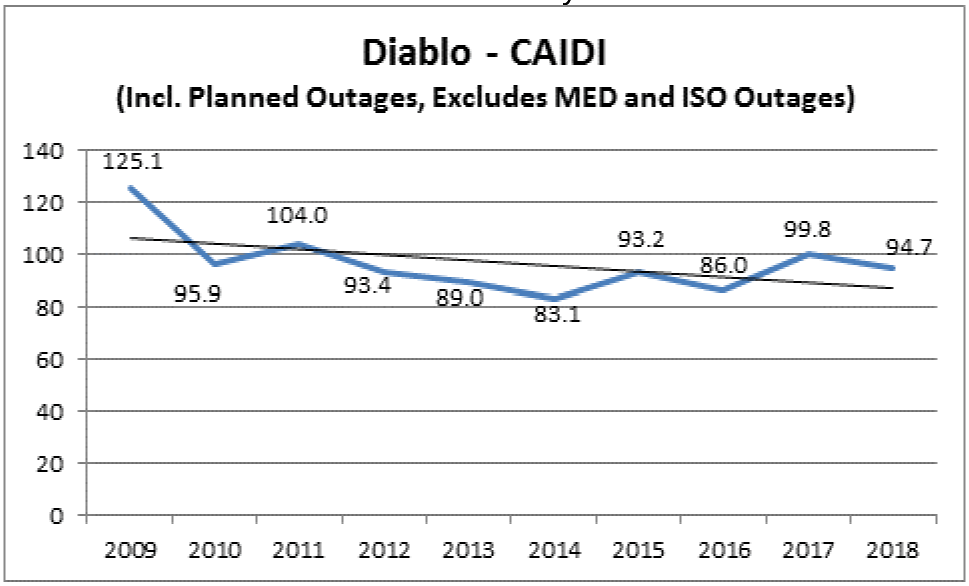


Chart 254: Division Reliability – CAIDI Indices

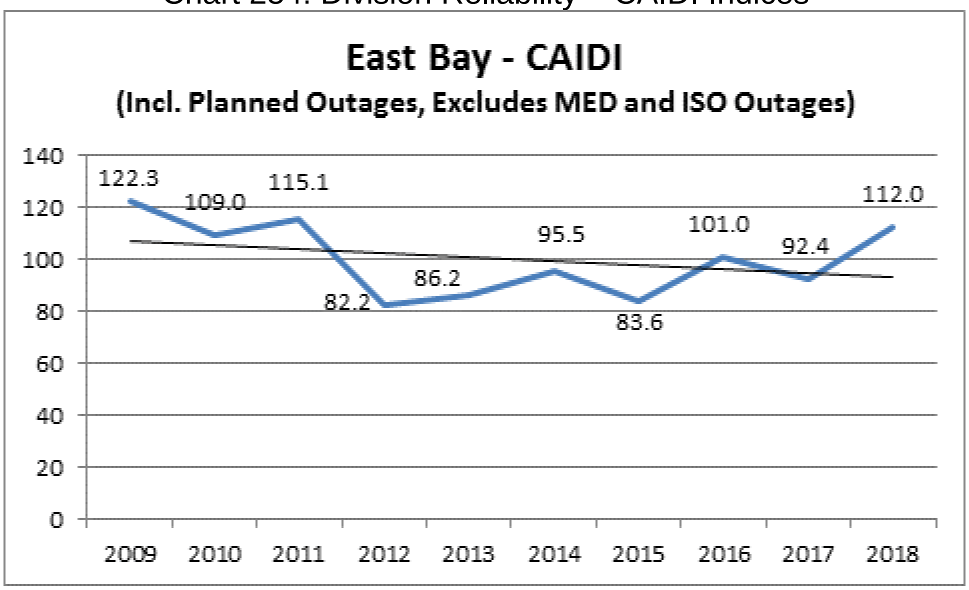


Chart 255: Division Reliability – CAIDI Indices

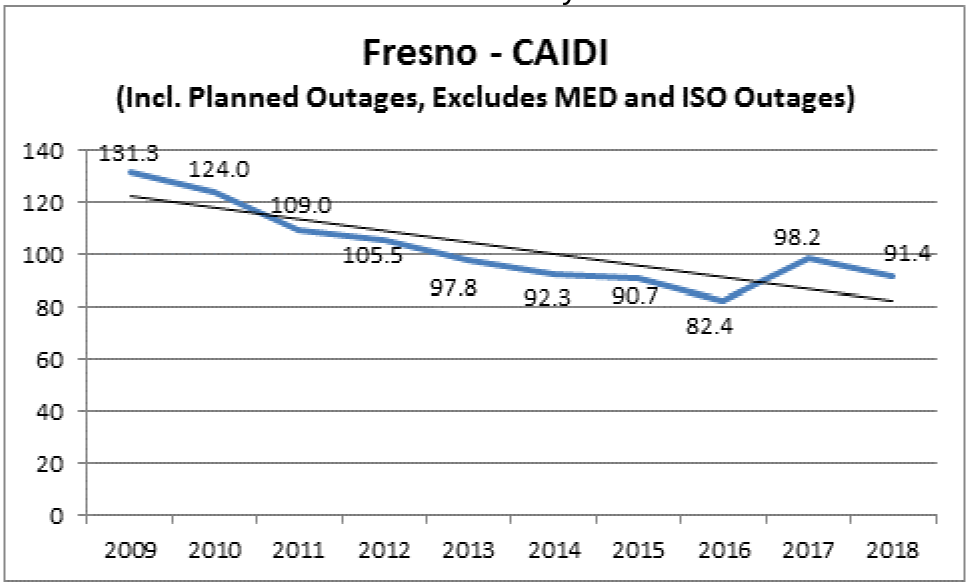


Chart 256: Division Reliability – CAIDI Indices

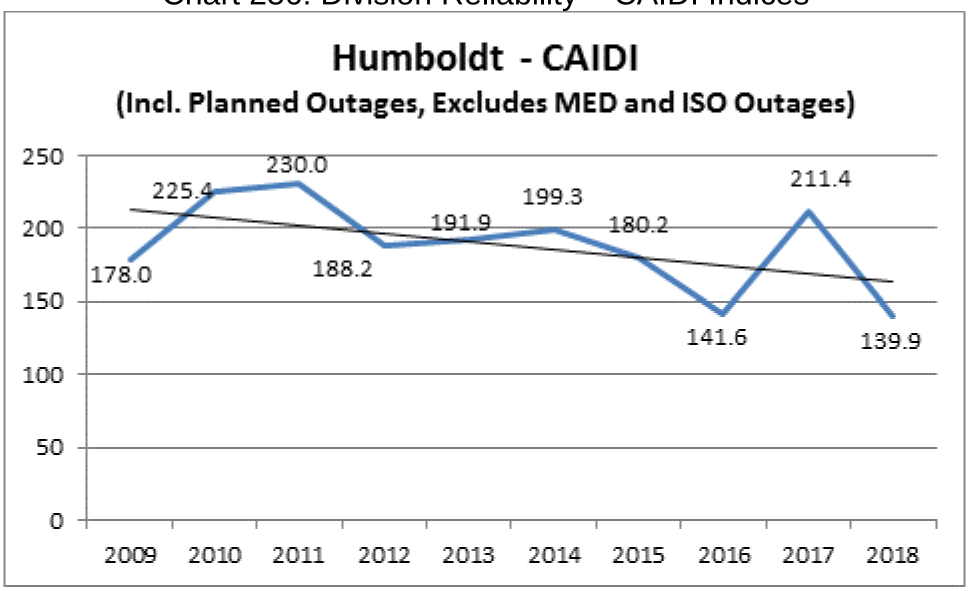


Chart 257: Division Reliability – CAIDI Indices

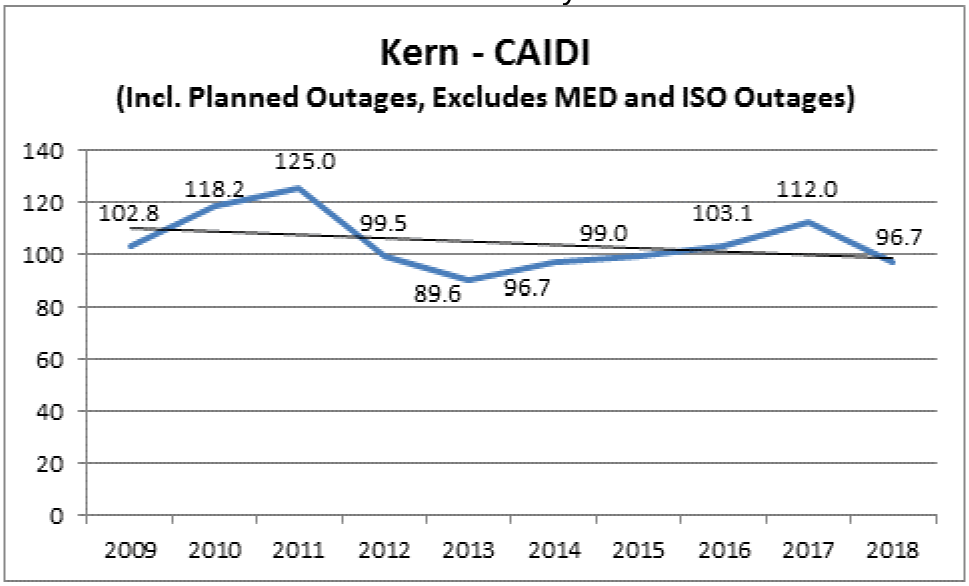


Chart 258: Division Reliability – CAIDI Indices

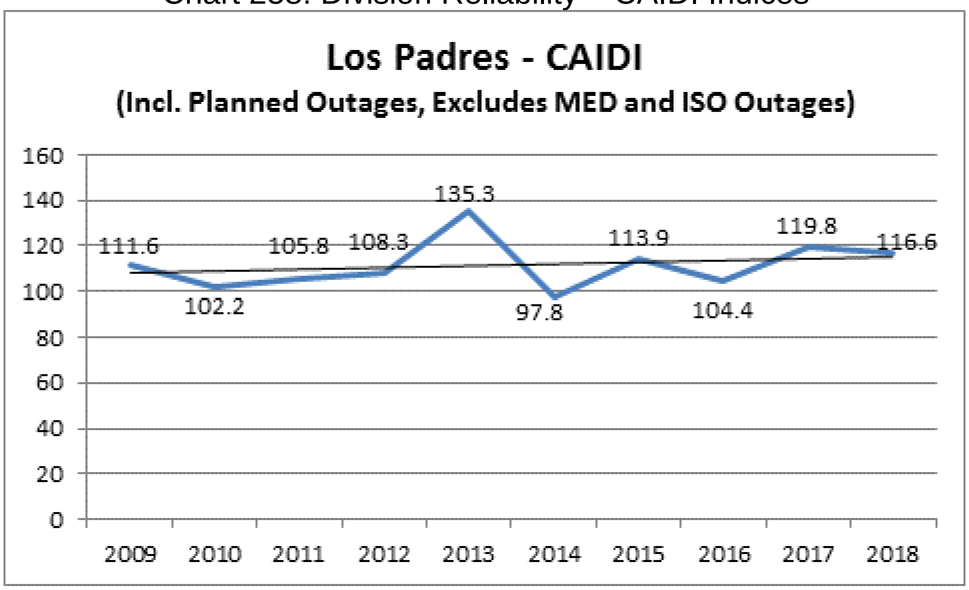


Chart 259: Division Reliability – CAIDI Indices

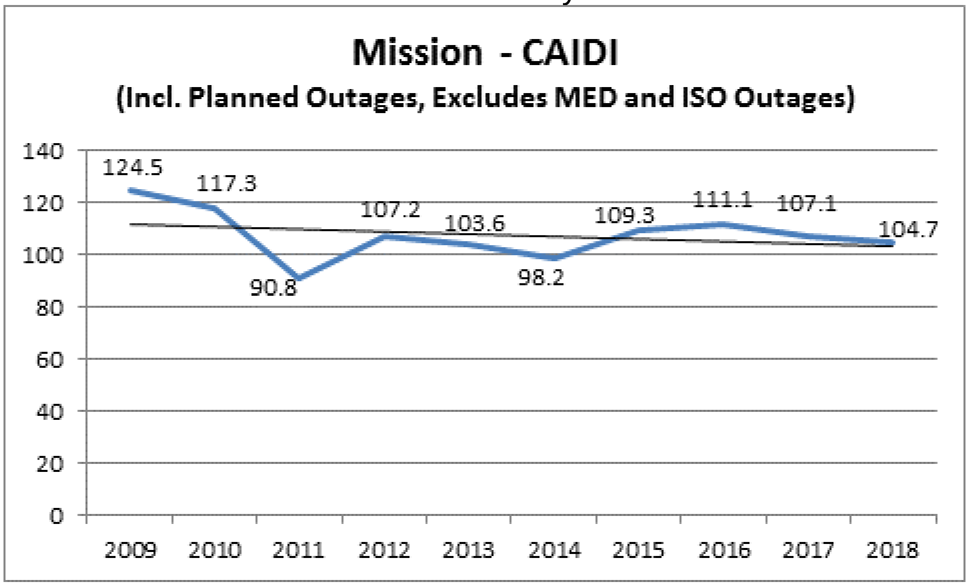


Chart 260: Division Reliability – CAIDI Indices

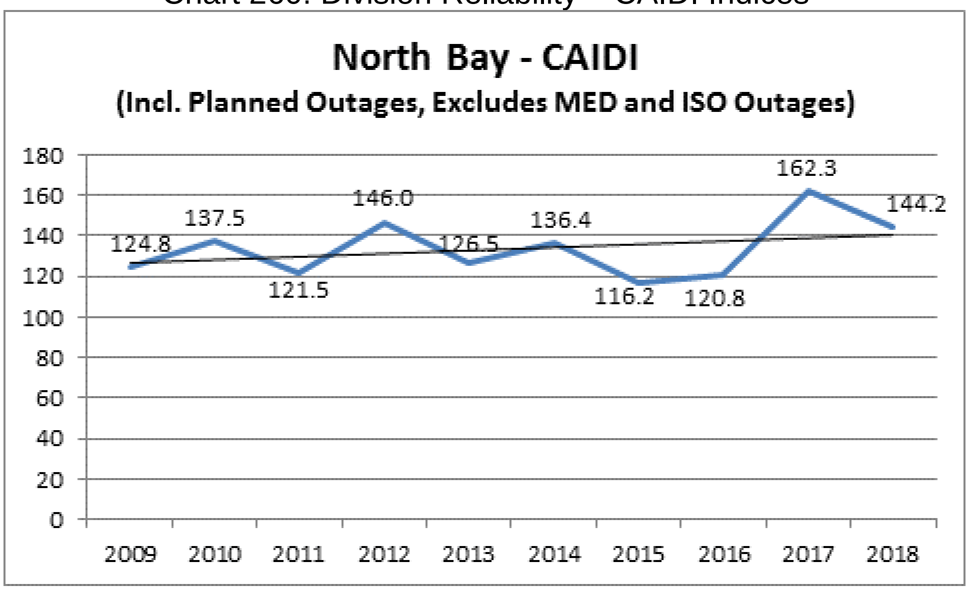


Chart 261: Division Reliability – CAIDI Indices

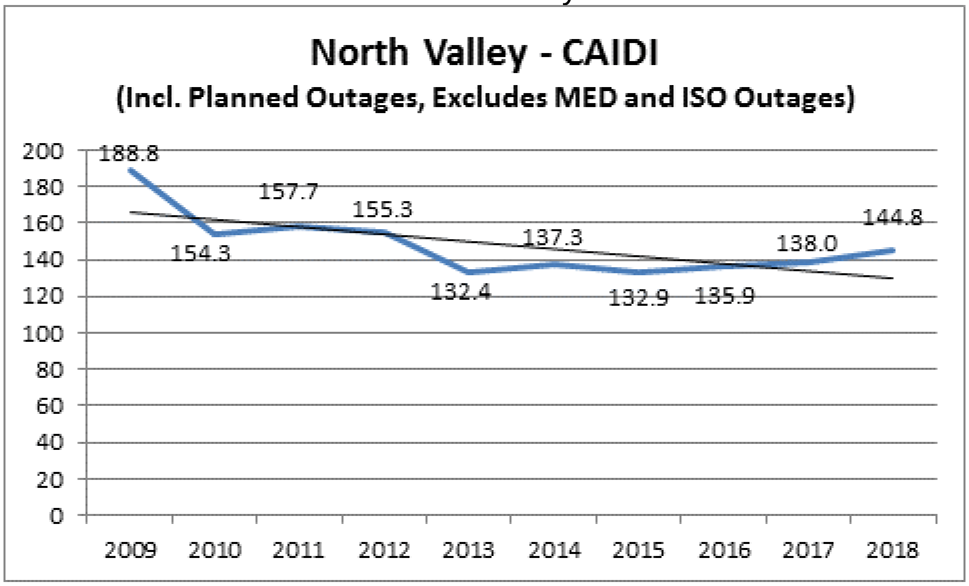


Chart 262: Division Reliability – CAIDI Indices

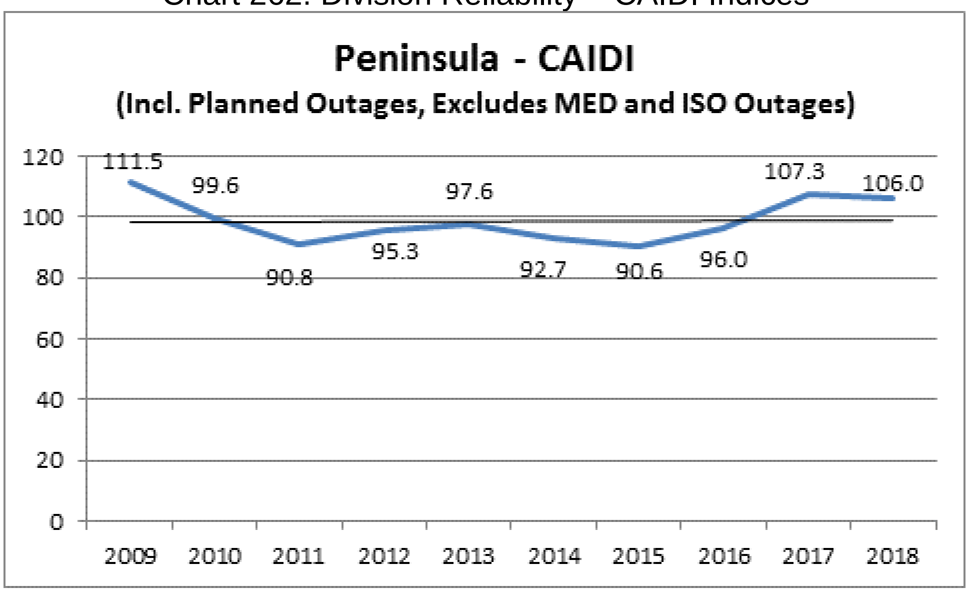


Chart 263: Division Reliability – CAIDI Indices

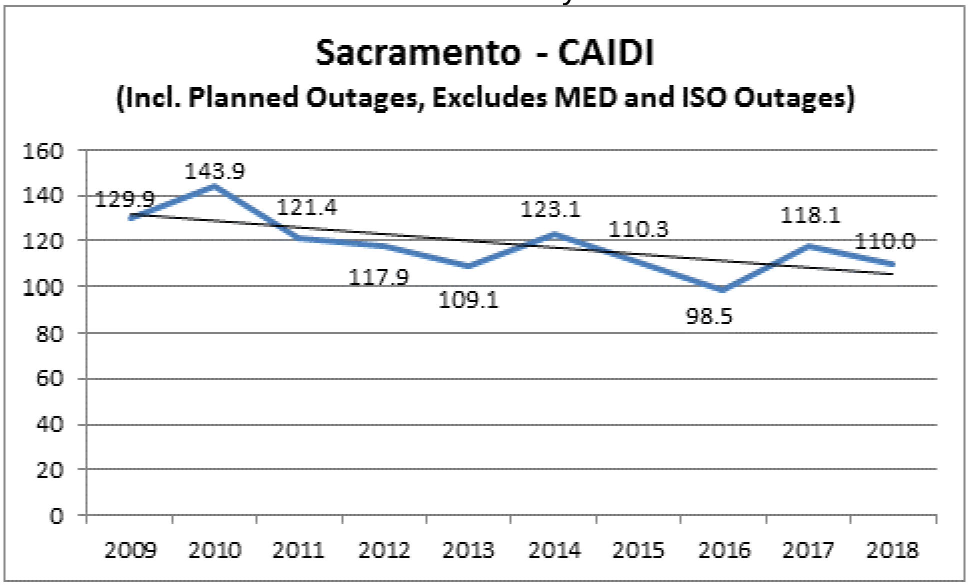


Chart 264: Division Reliability – CAIDI Indices

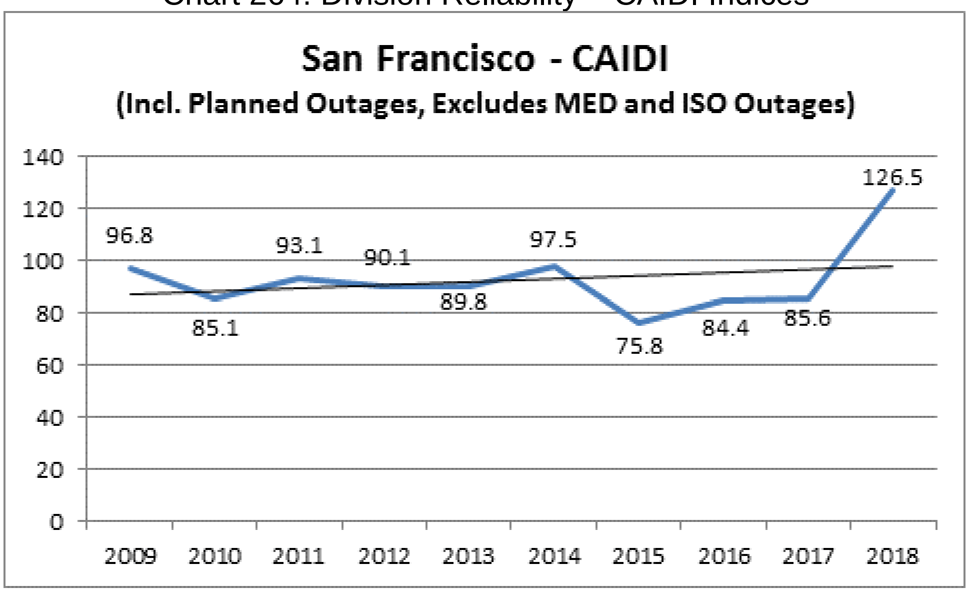


Chart 265: Division Reliability – CAIDI Indices

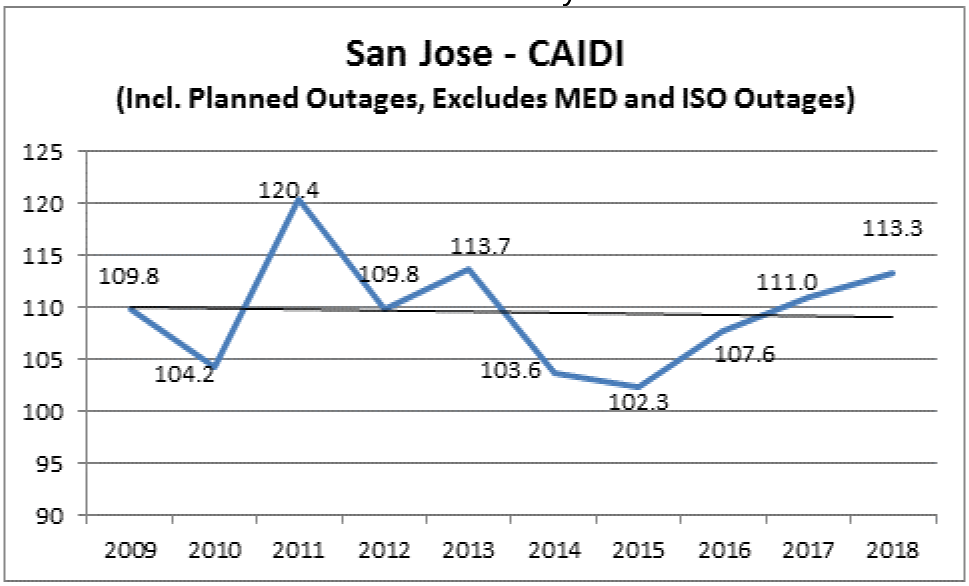


Chart 266: Division Reliability – CAIDI Indices

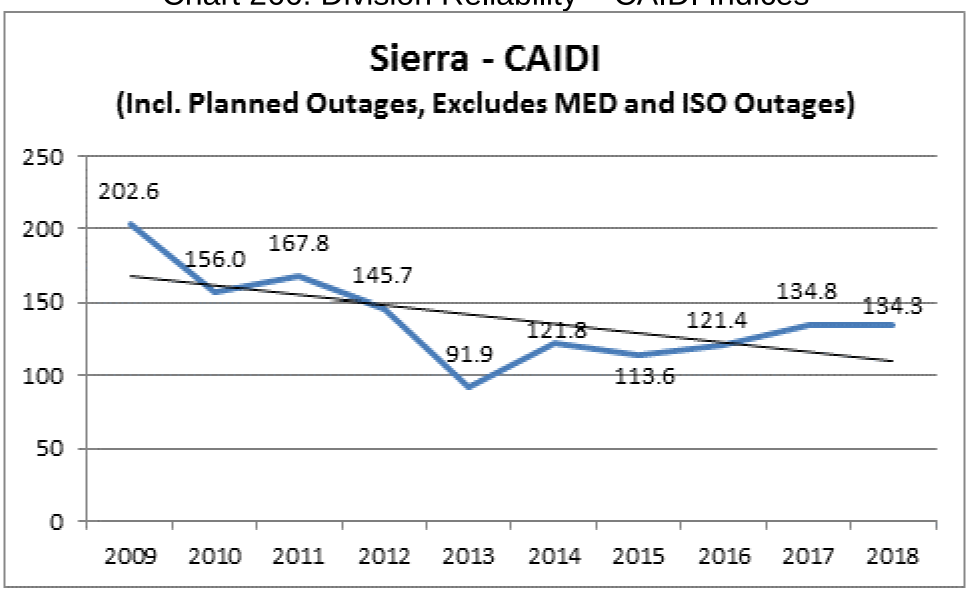


Chart 267: Division Reliability – CAIDI Indices

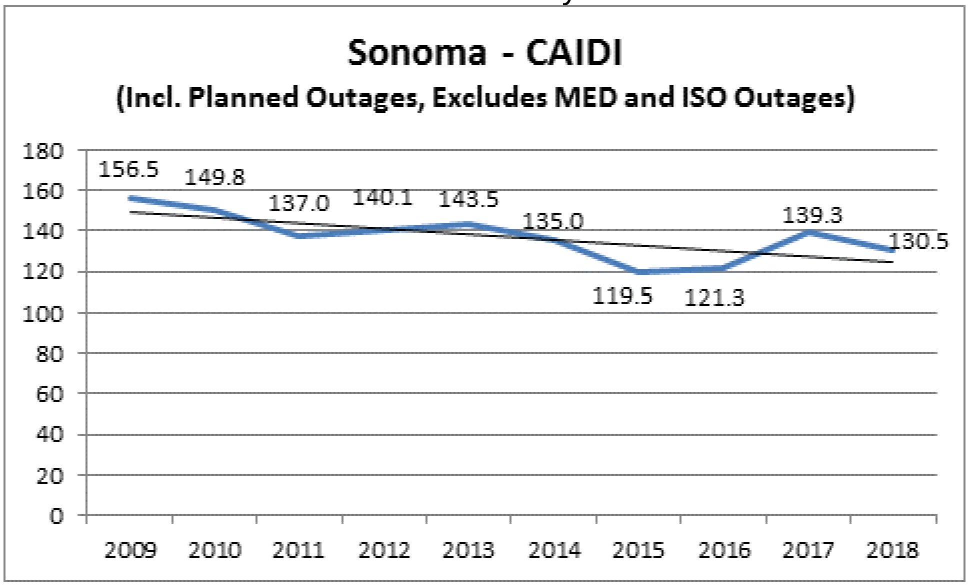


Chart 268: Division Reliability – CAIDI Indices

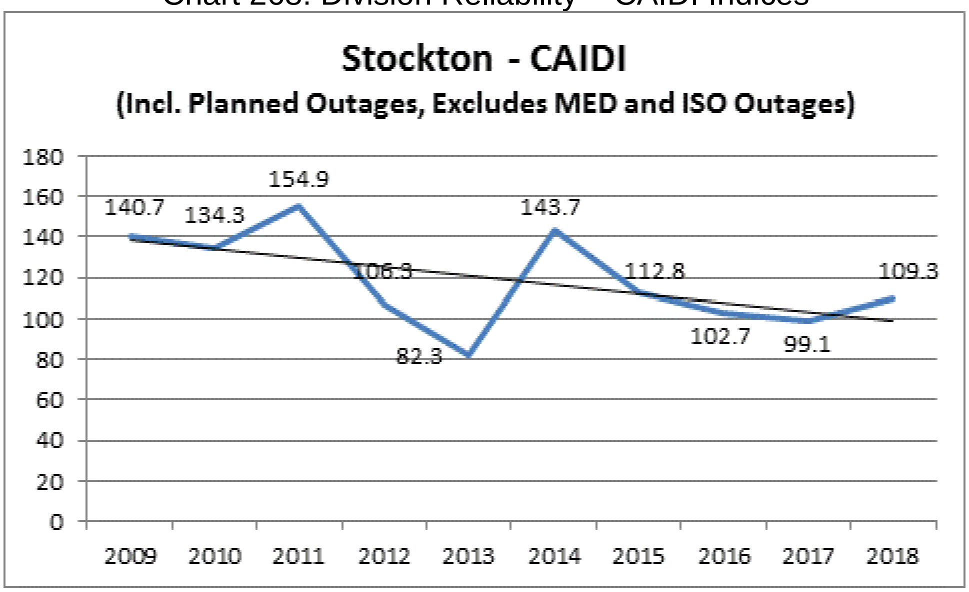


Chart 269: Division Reliability – CAIDI Indices

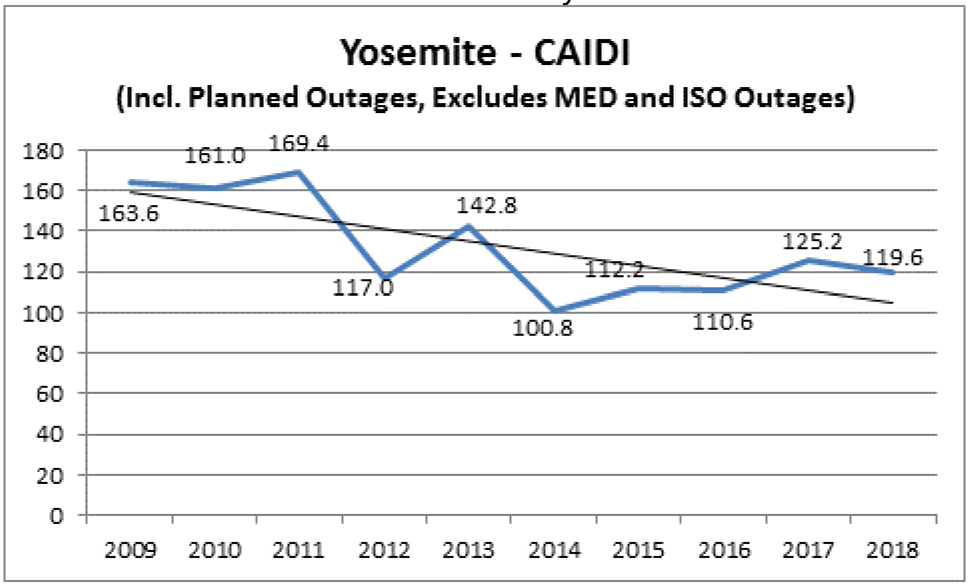
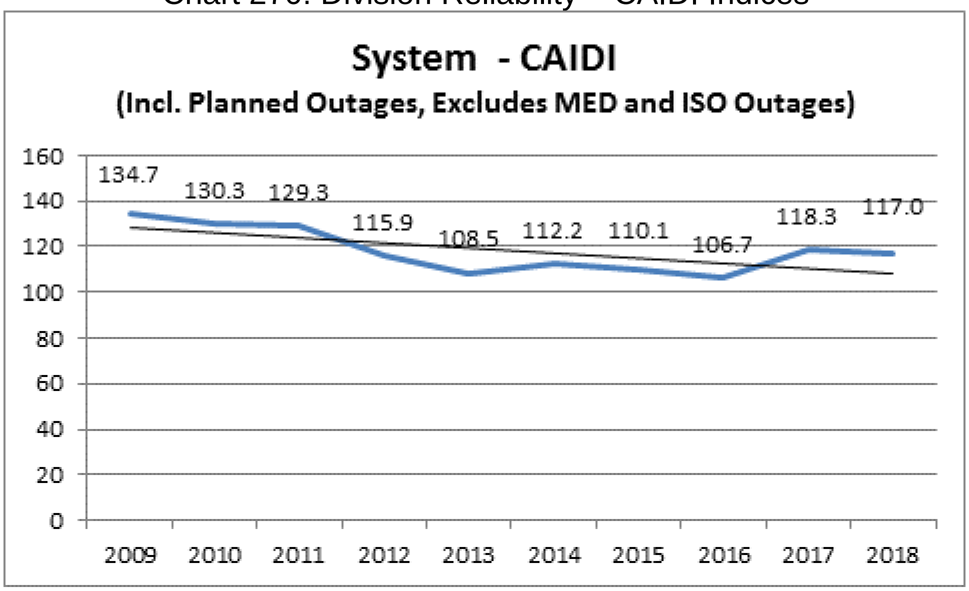


Chart 270: Division Reliability – CAIDI Indices



ii. Charts for System and Division Reliability Indices based on IEEE 1366 for the past 10 years including planned outages and including MED

1. SAIDI Performance Results (MED Included)

Chart 271: Division Reliability – AIDI Indices

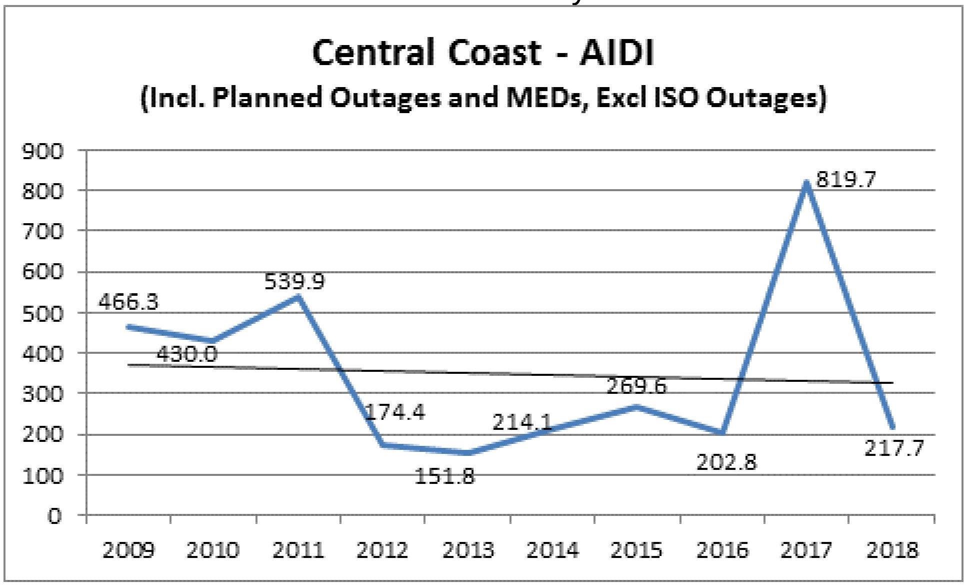


Chart 272: Division Reliability – AIDI Indices

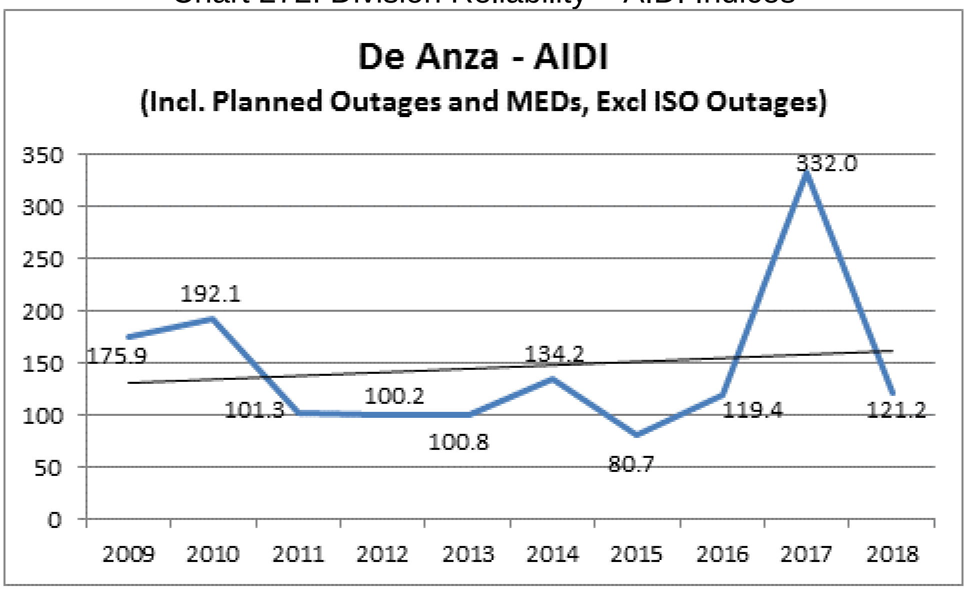


Chart 273: Division Reliability – AIDI Indices

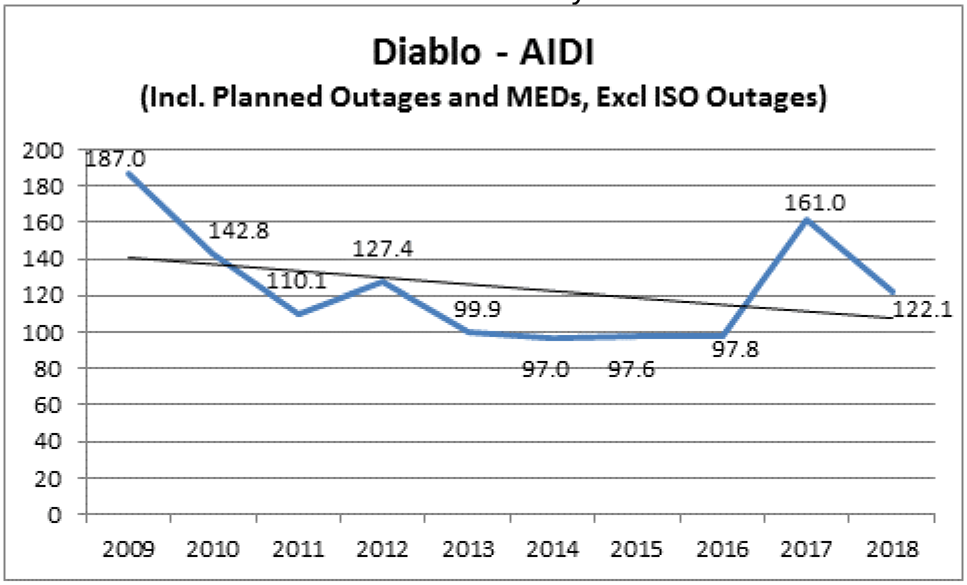


Chart 274: Division Reliability – AIDI Indices

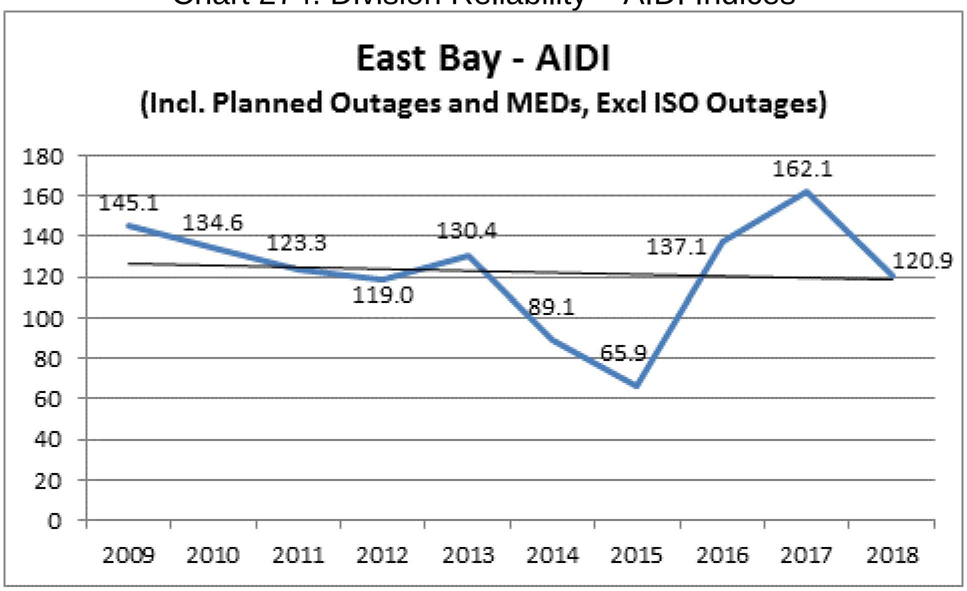


Chart 275: Division Reliability – AIDI Indices

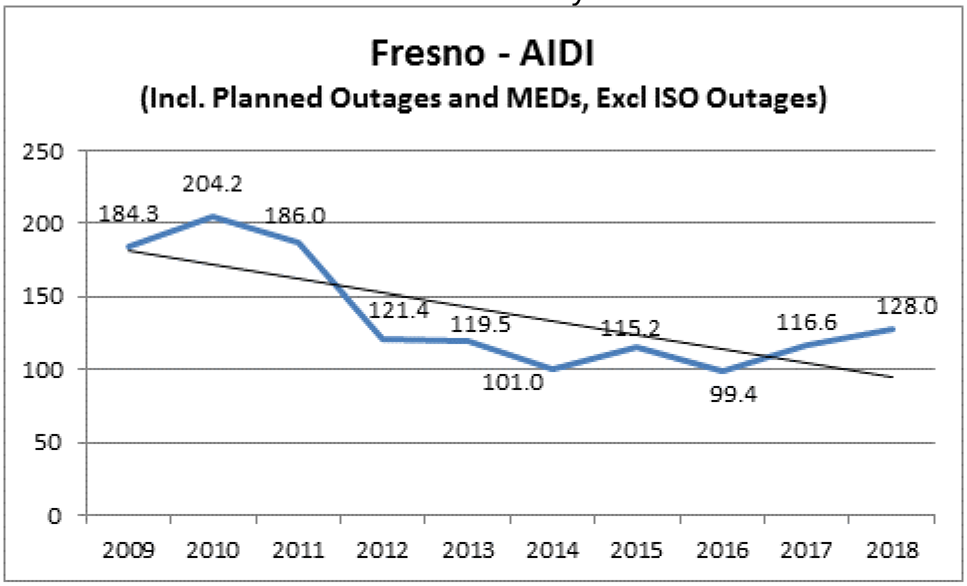


Chart 276: Division Reliability – AIDI Indices

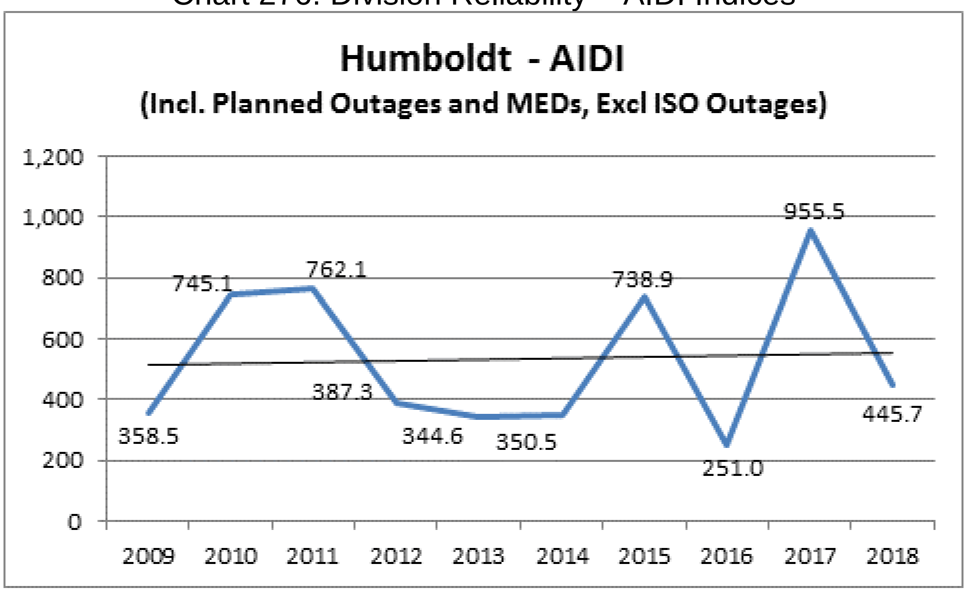


Chart 277: Division Reliability – AIDI Indices

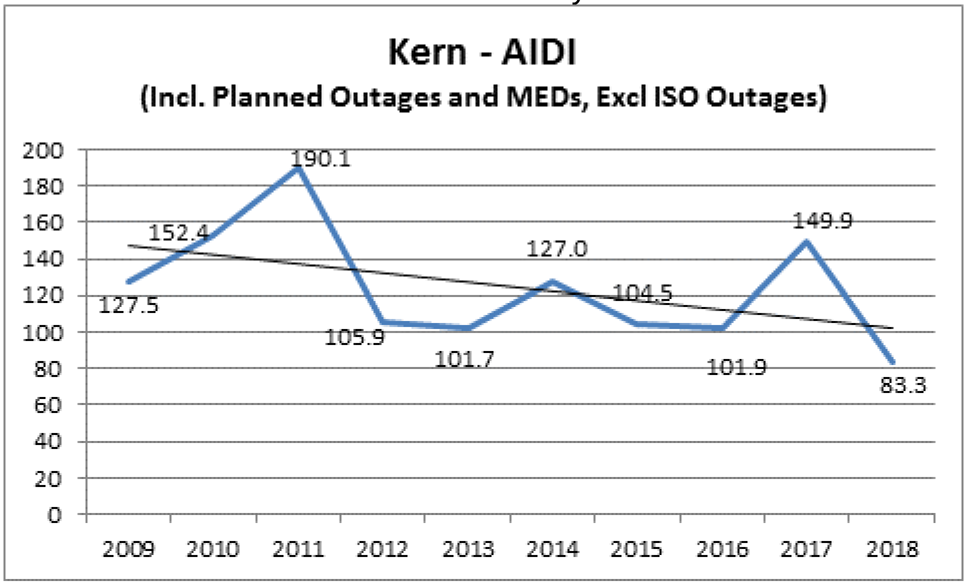


Chart 278: Division Reliability – AIDI Indices

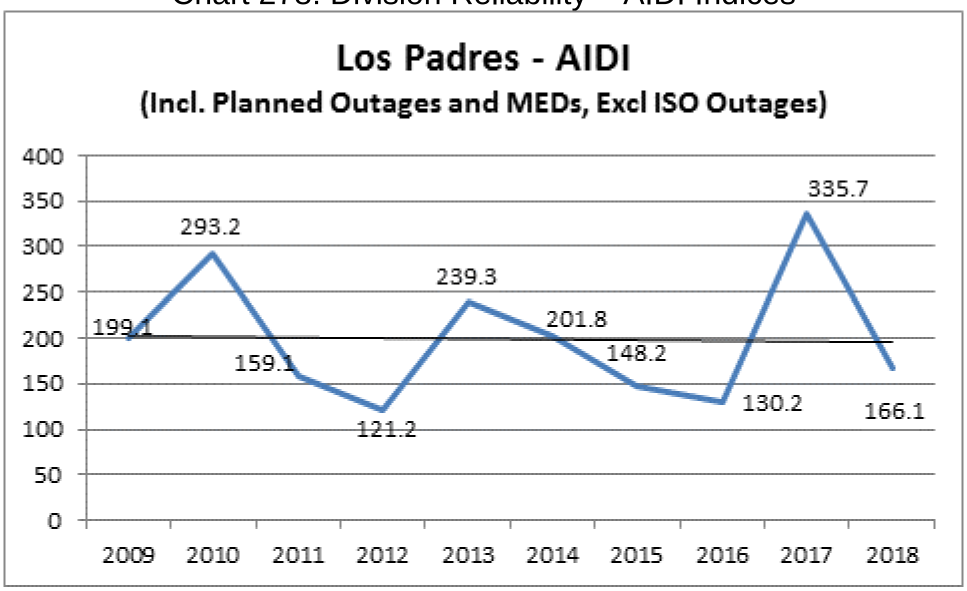


Chart 279: Division Reliability – AIDI Indices

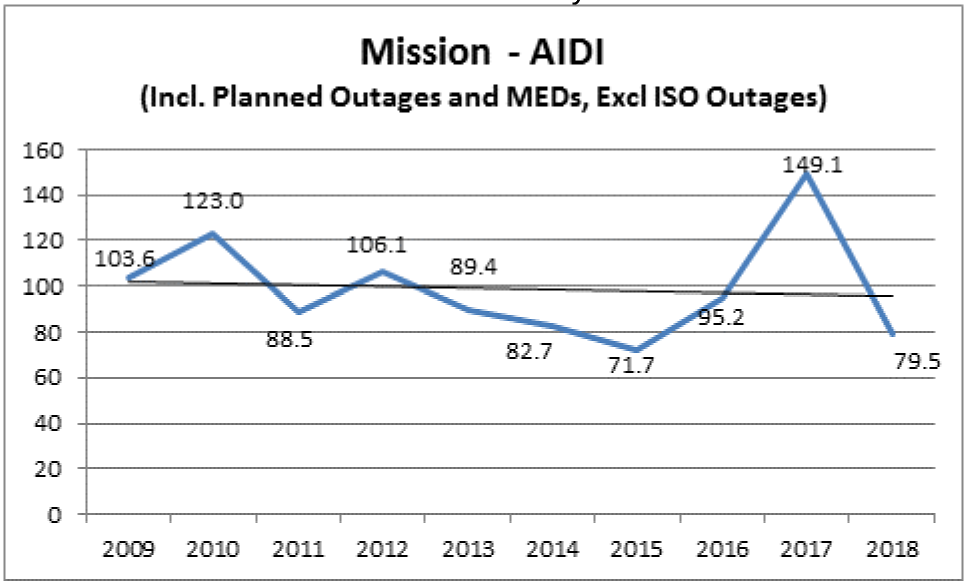


Chart 280: Division Reliability – AIDI Indices

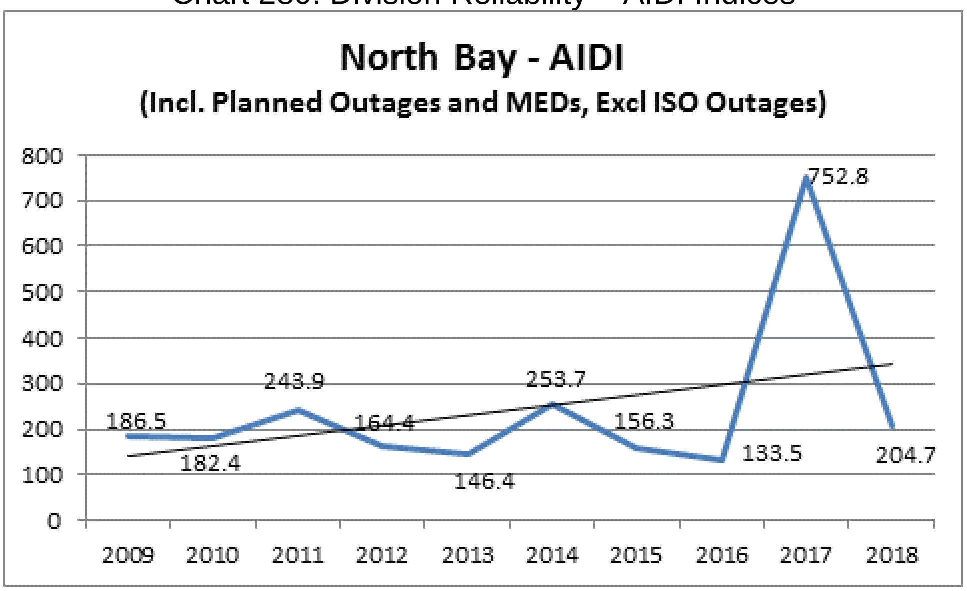


Chart 281: Division Reliability – AIDI Indices

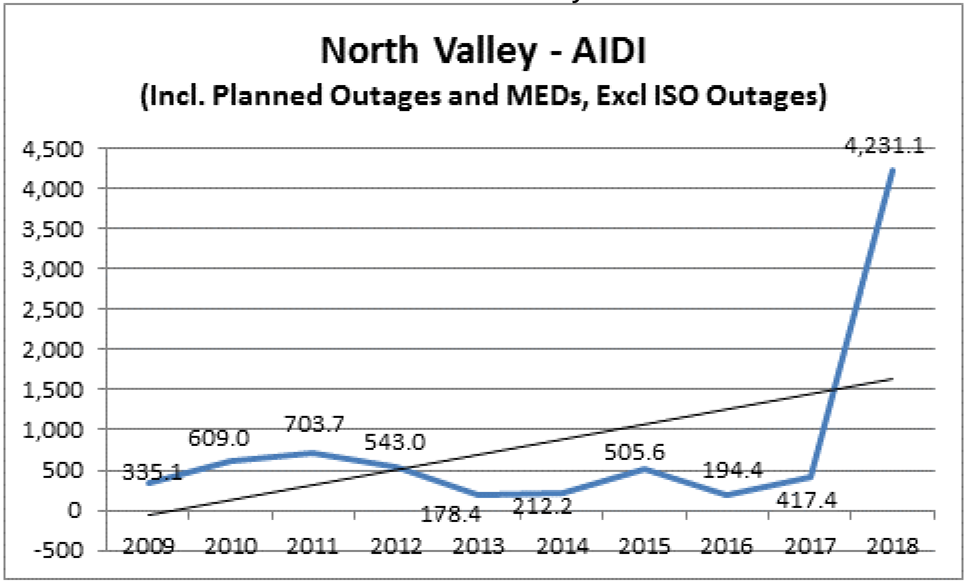


Chart 282: Division Reliability – AIDI Indices

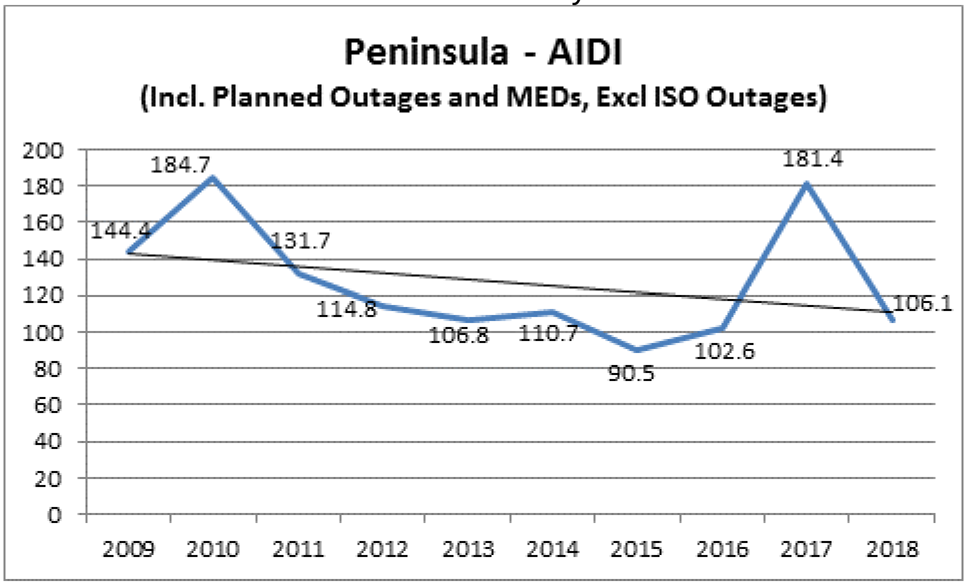


Chart 283: Division Reliability – AIDI Indices

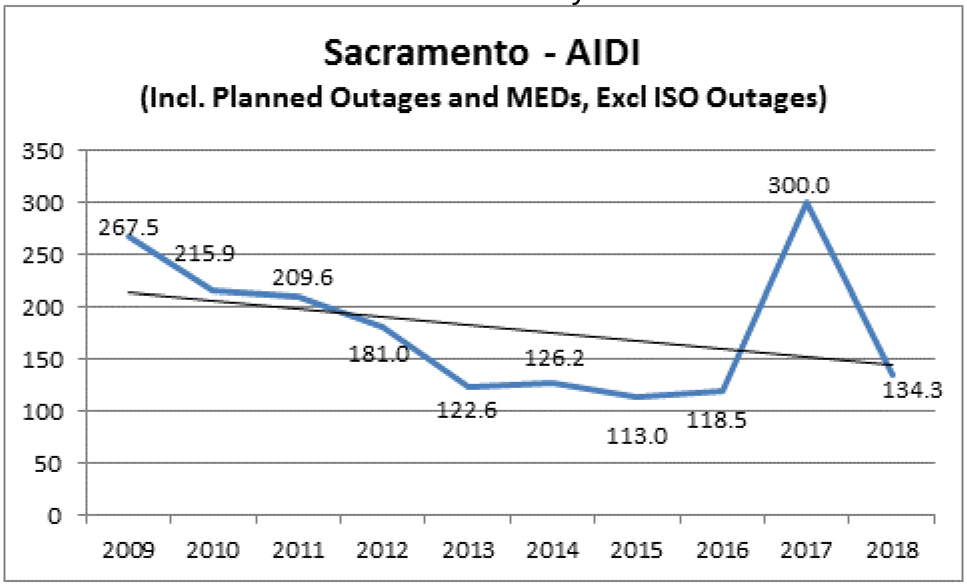


Chart 284: Division Reliability – AIDI Indices

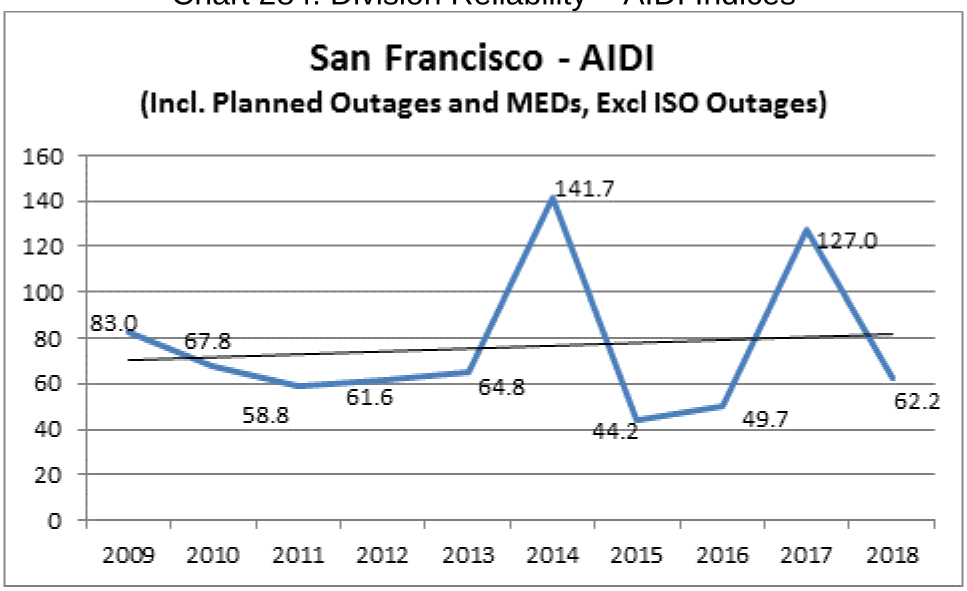


Chart 285: Division Reliability – AIDI Indices

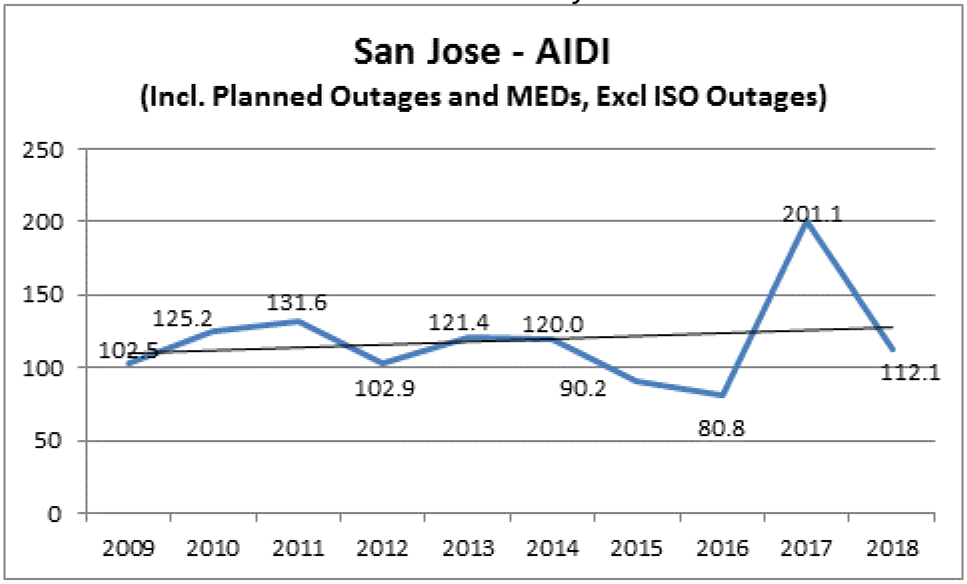


Chart 286: Division Reliability – AIDI Indices

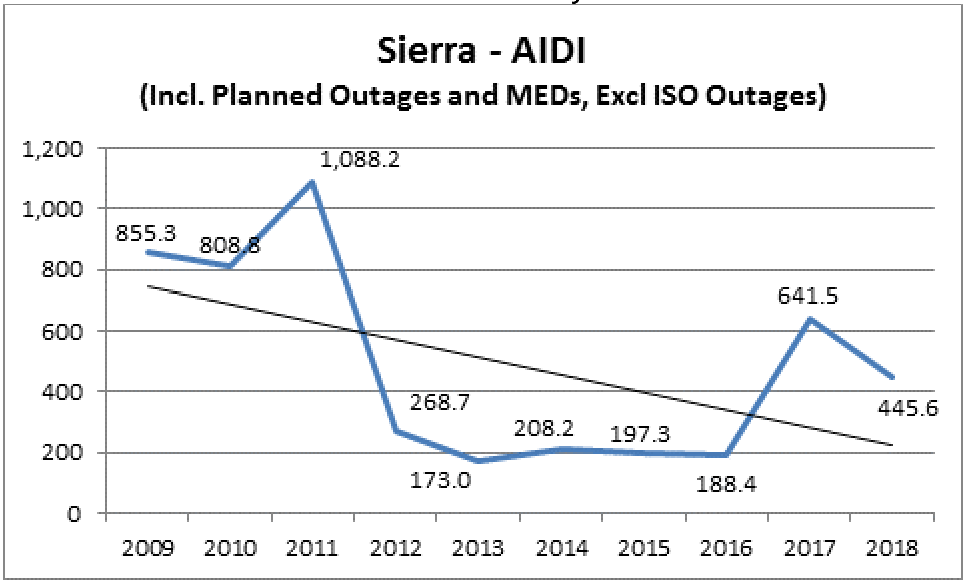


Chart 287: Division Reliability – AIDI Indices

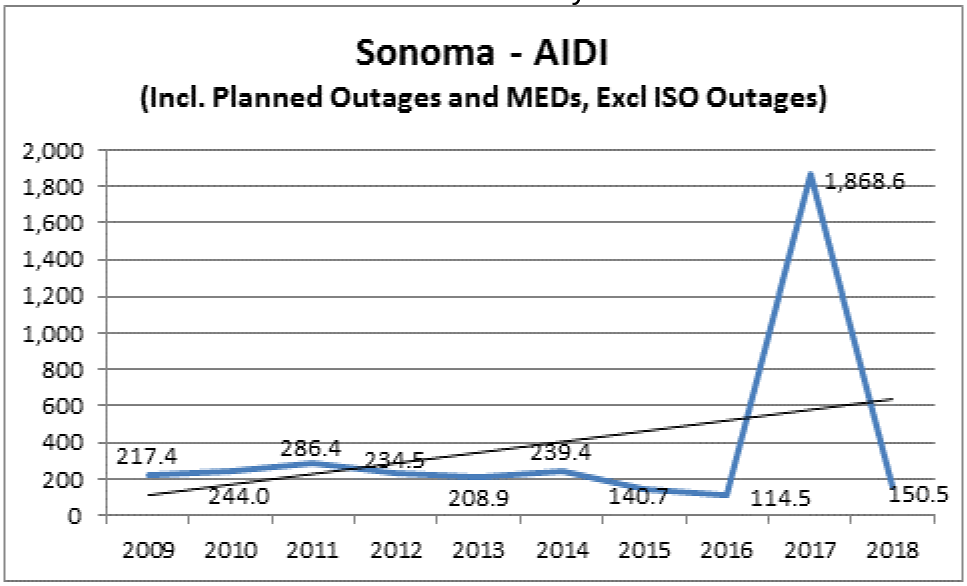


Chart 288: Division Reliability – AIDI Indices

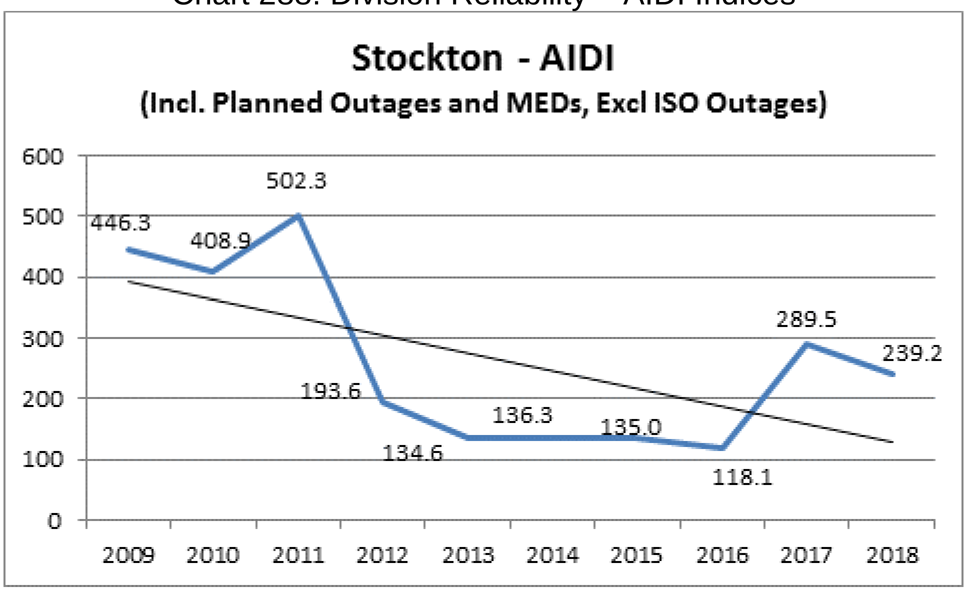


Chart 289: Division Reliability – AIDI Indices

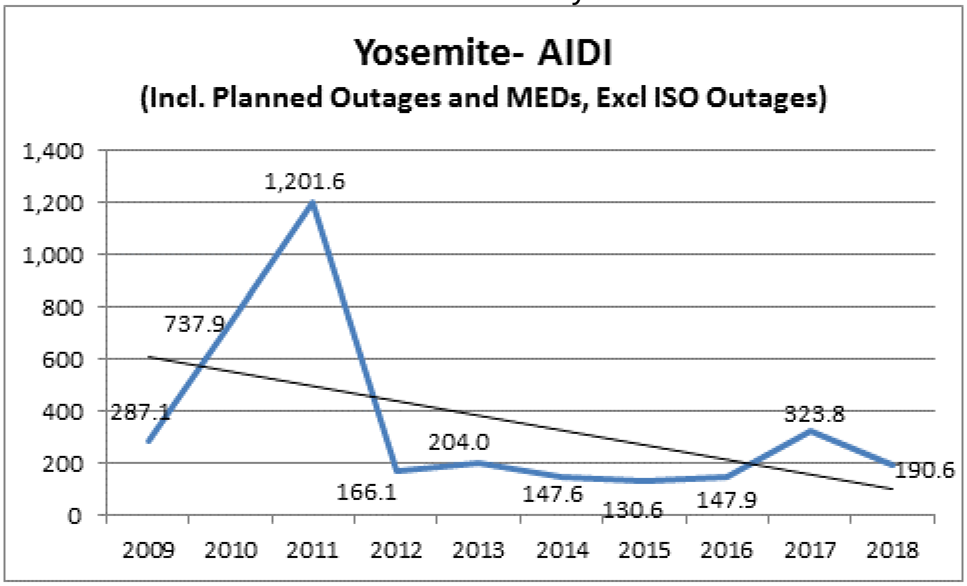
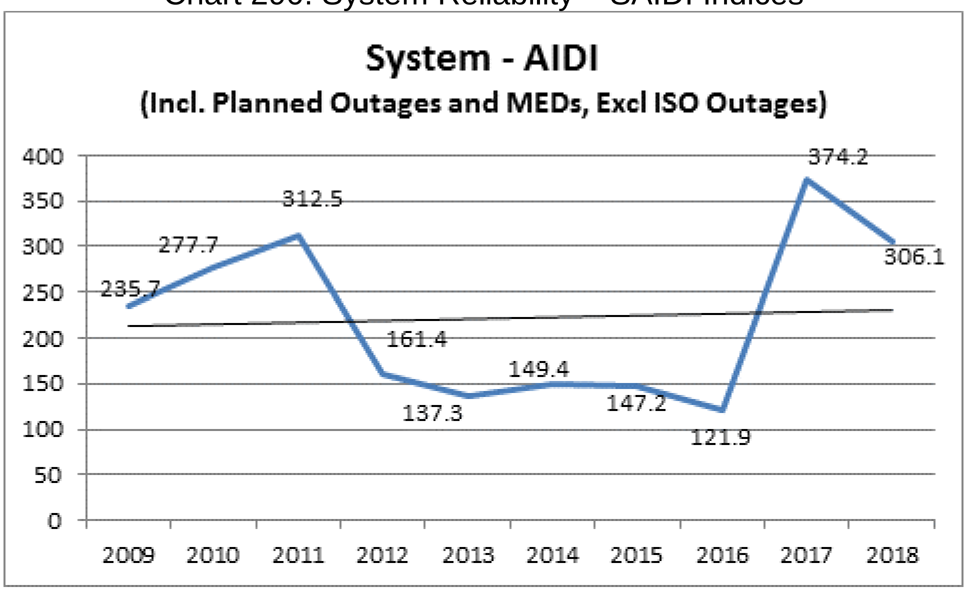


Chart 290: System Reliability – SAIDI Indices



2. SAIFI Performance Results (MED Included)

Chart 291: Division Reliability – AIFI Indices

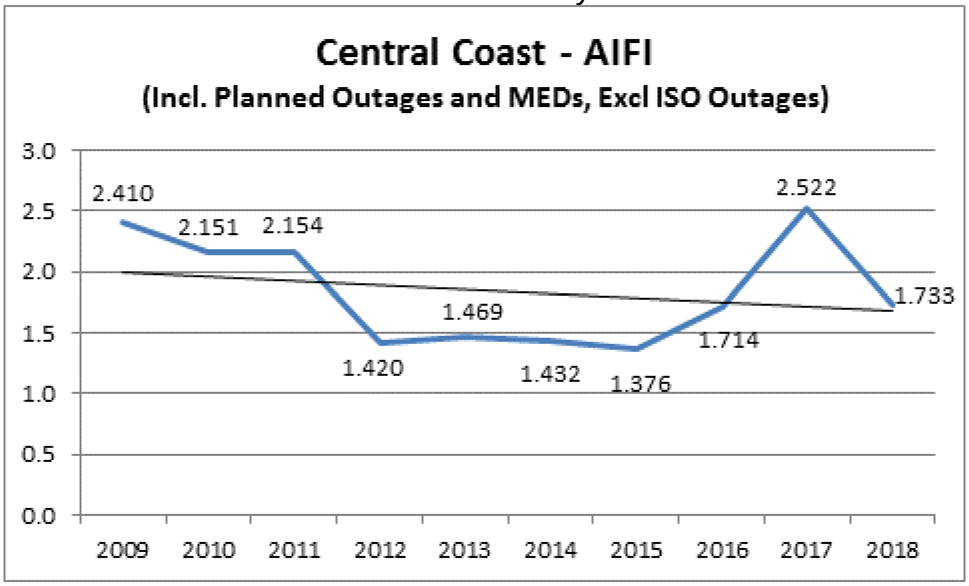


Chart 292: Division Reliability – AIFI Indices

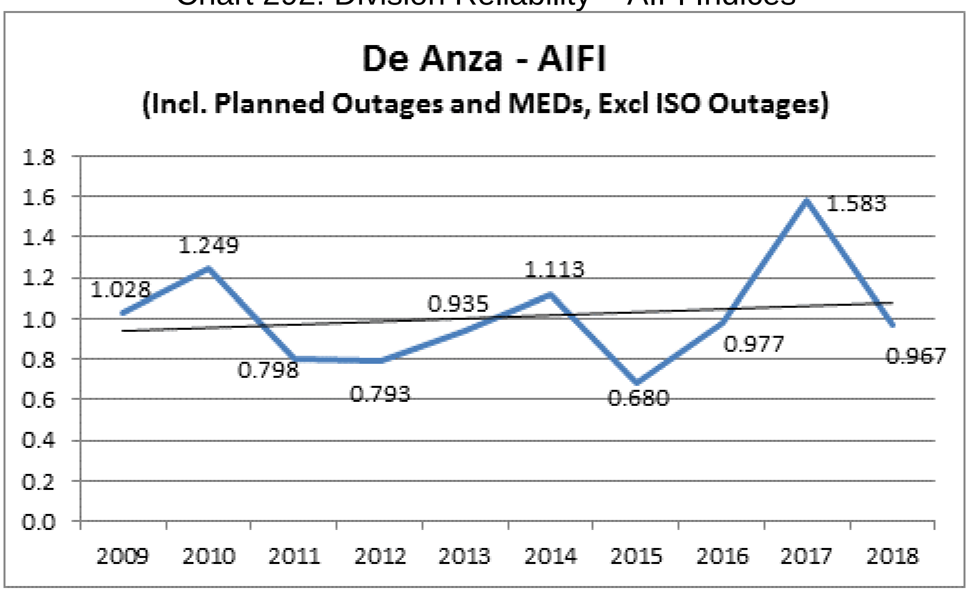


Chart 293: Division Reliability – AIFI Indices

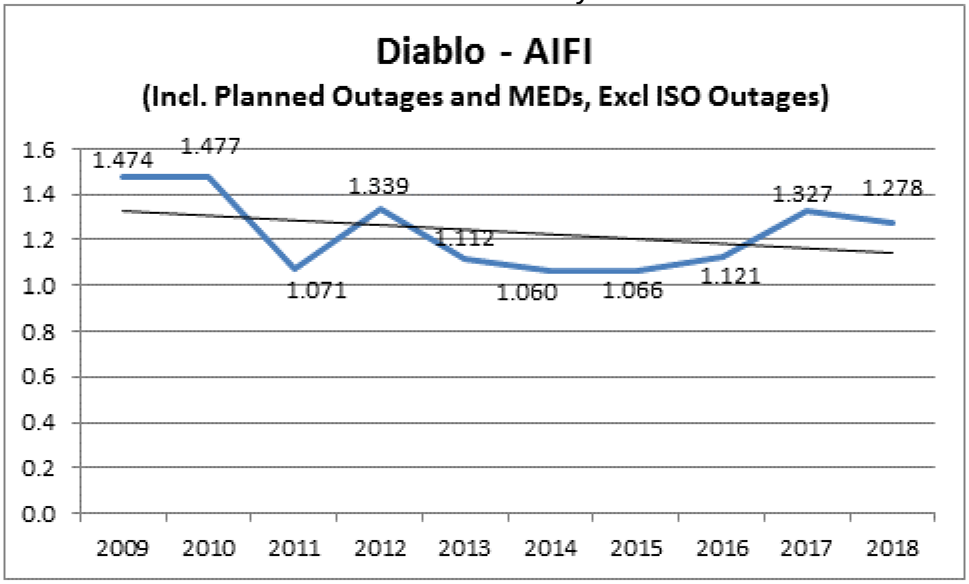


Chart 294: Division Reliability – AIFI Indices

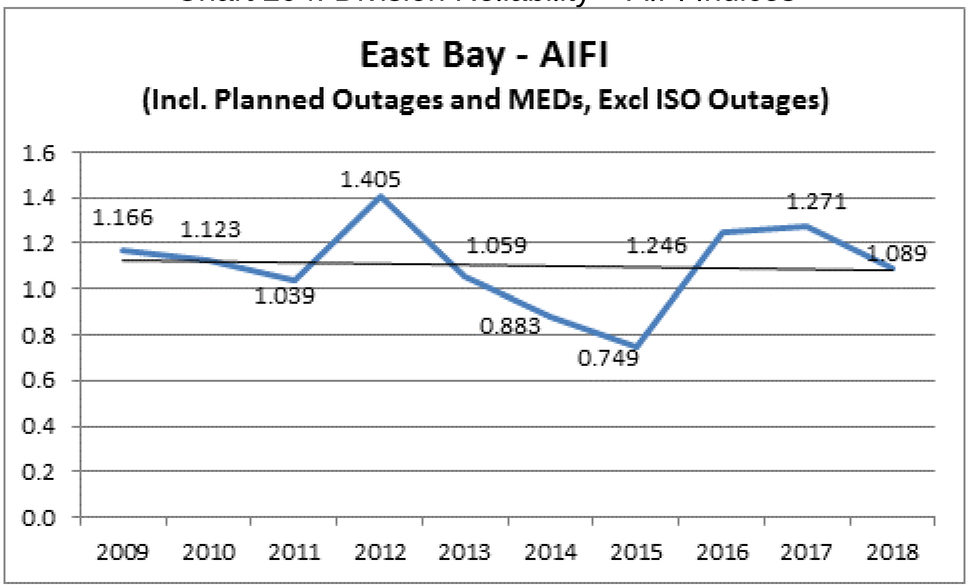


Chart 295: Division Reliability – AIFI Indices

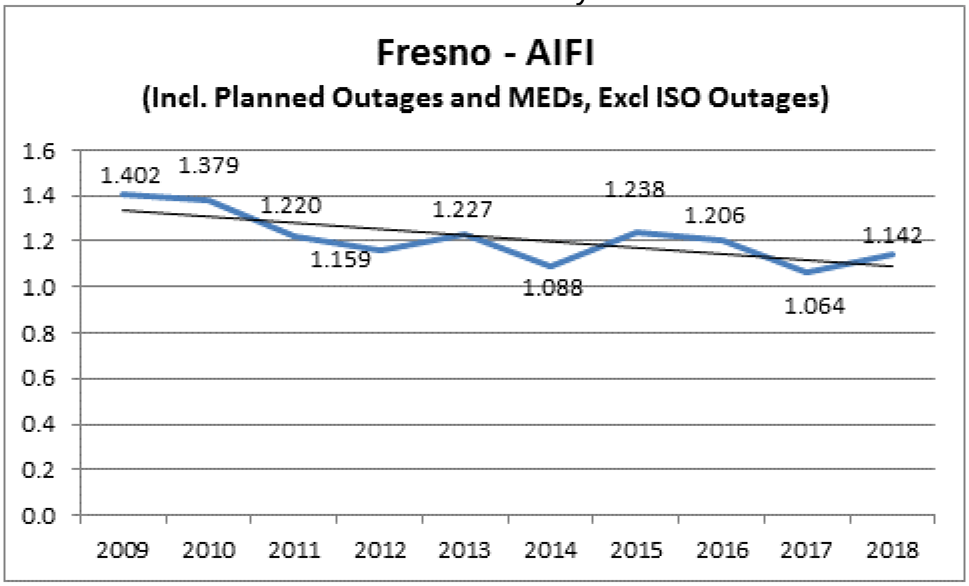


Chart 296: Division Reliability – AIFI Indices

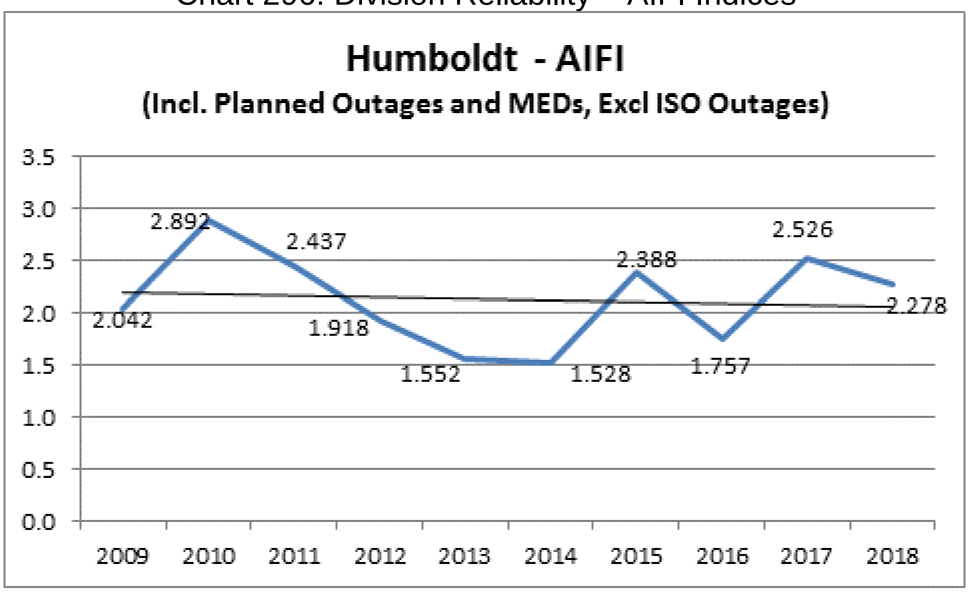


Chart 297: Division Reliability – AIFI Indices

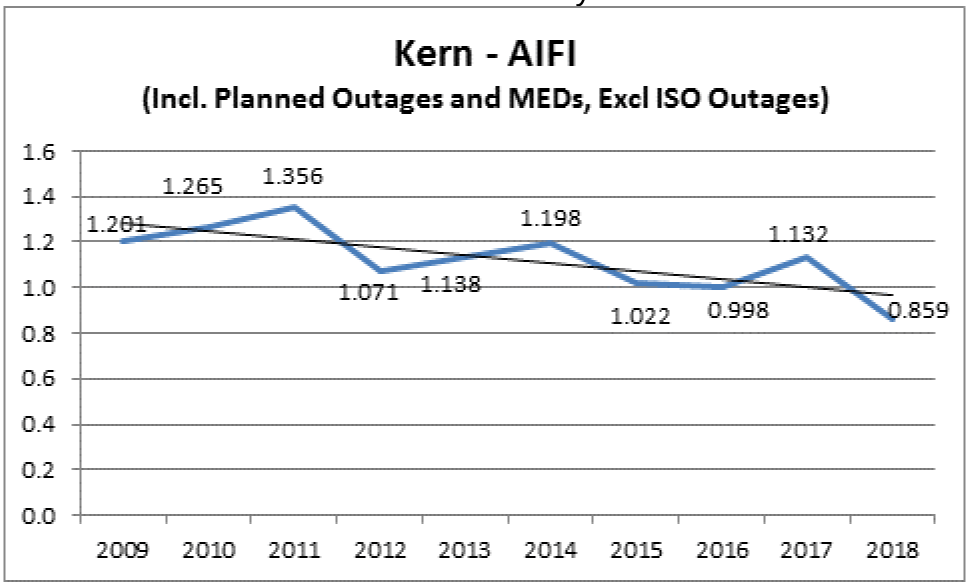


Chart 298: Division Reliability – AIFI Indices

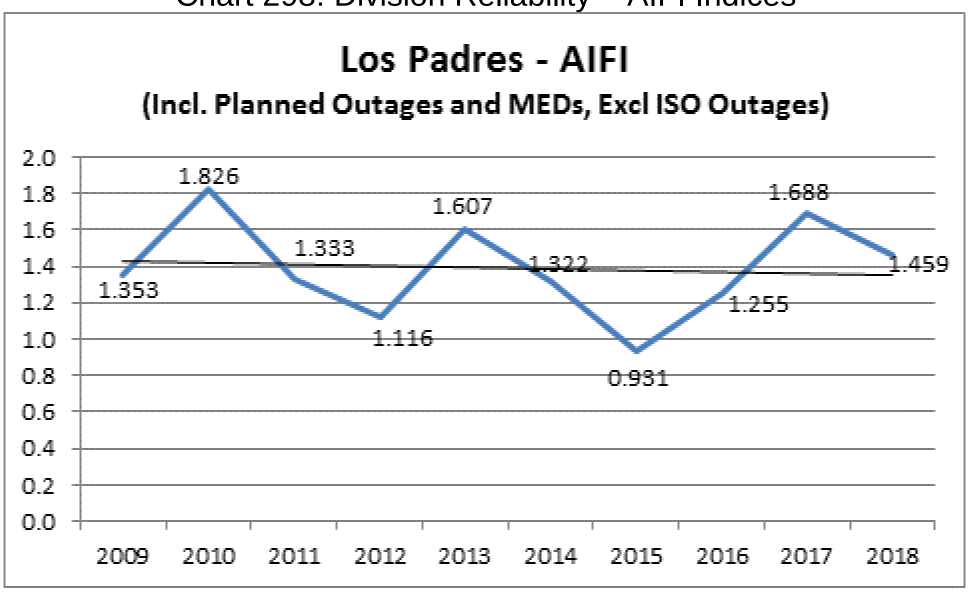


Chart 299: Division Reliability – AIFI Indices

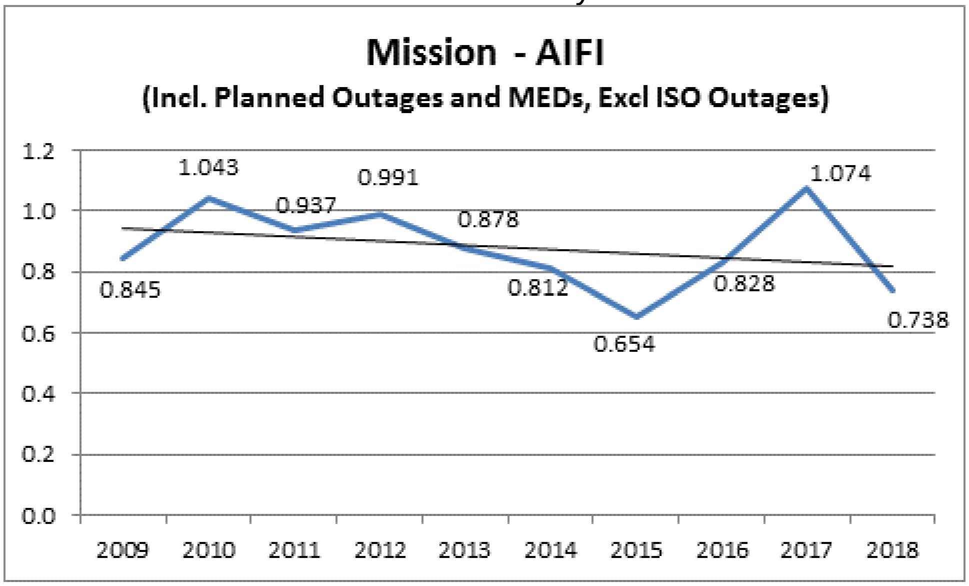


Chart 300: Division Reliability – AIFI Indices

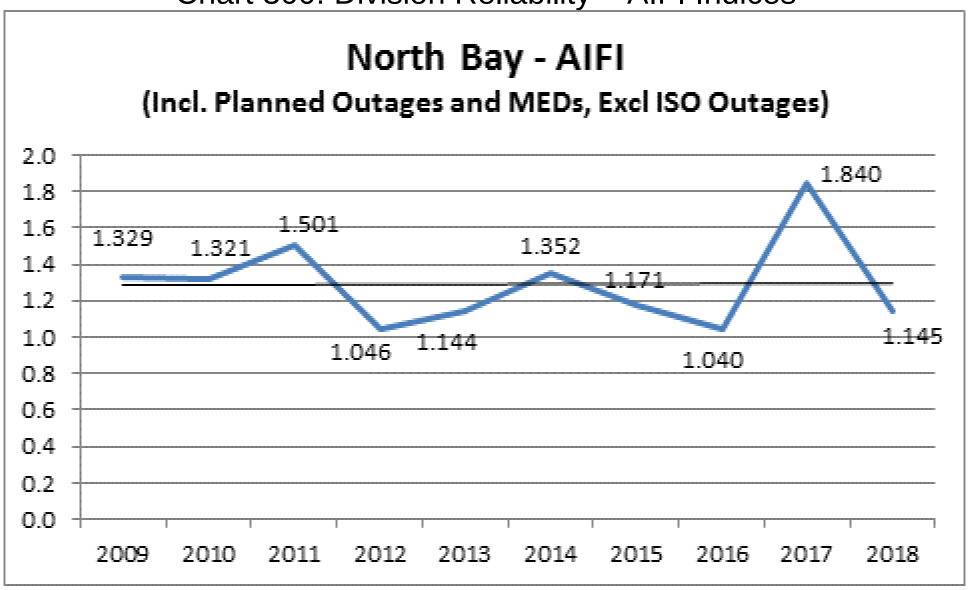


Chart 301: Division Reliability – AIFI Indices

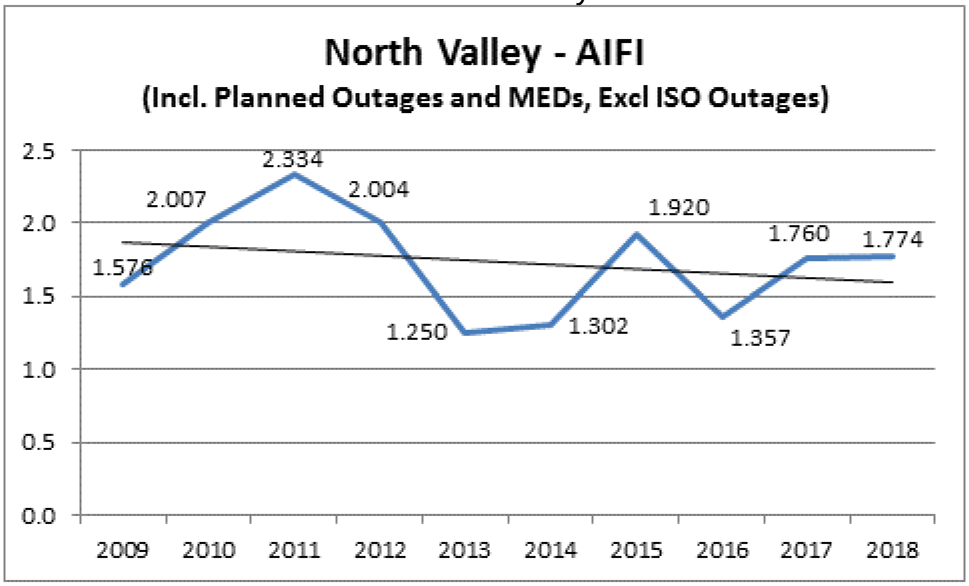


Chart 302: Division Reliability – AIFI Indices

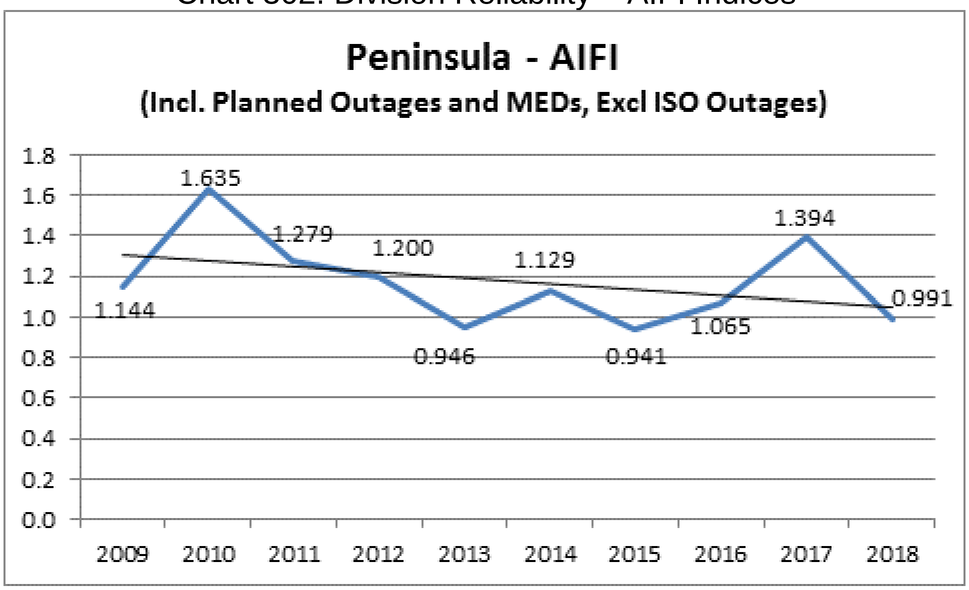


Chart 303: Division Reliability – AIFI Indices

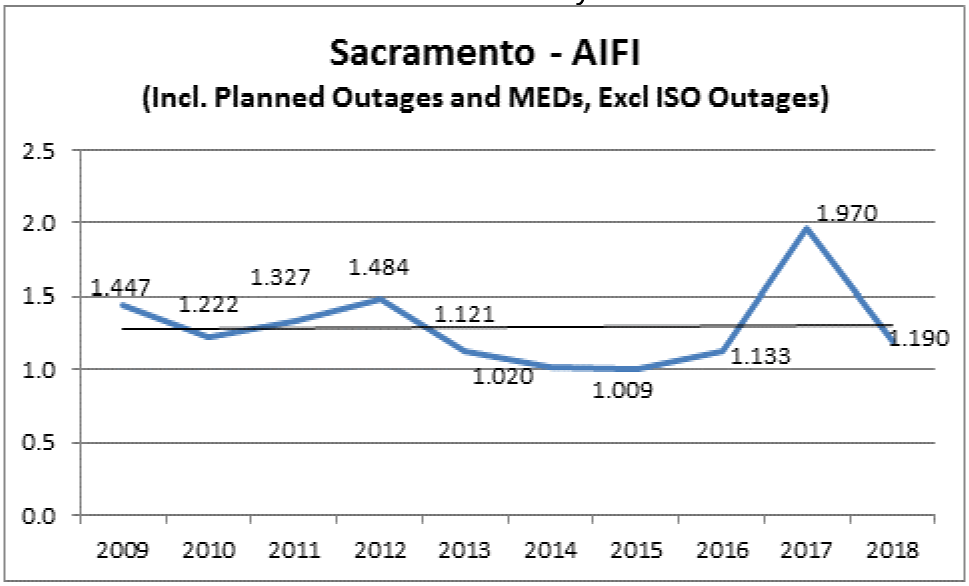


Chart 304: Division Reliability – AIFI Indices

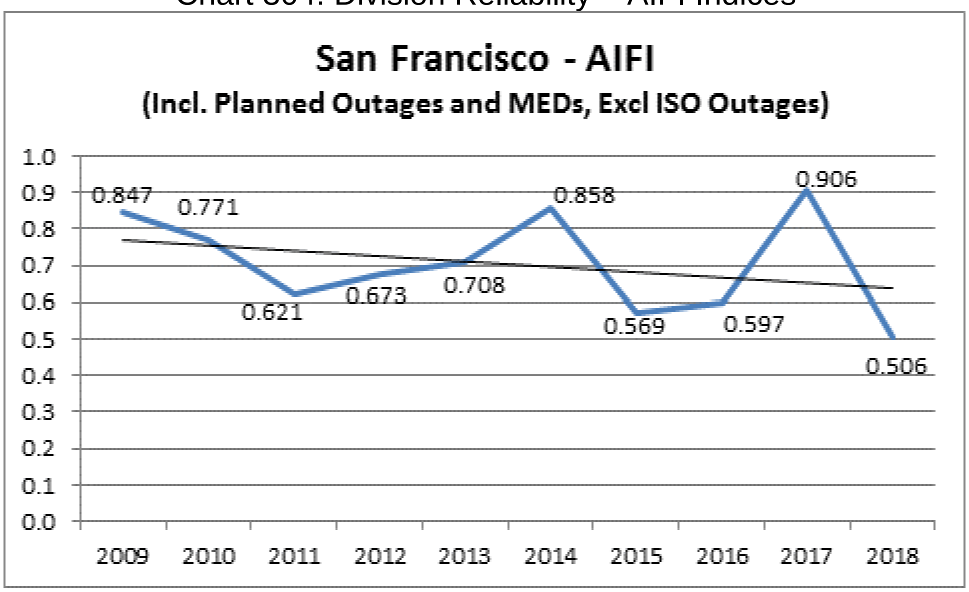


Chart 305: Division Reliability – AIFI Indices

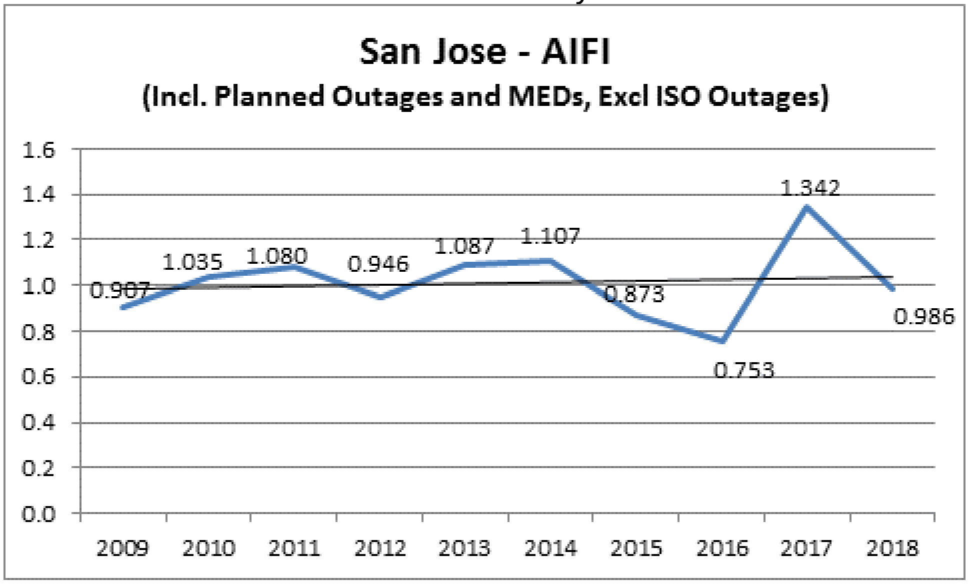


Chart 306: Division Reliability – AIFI Indices

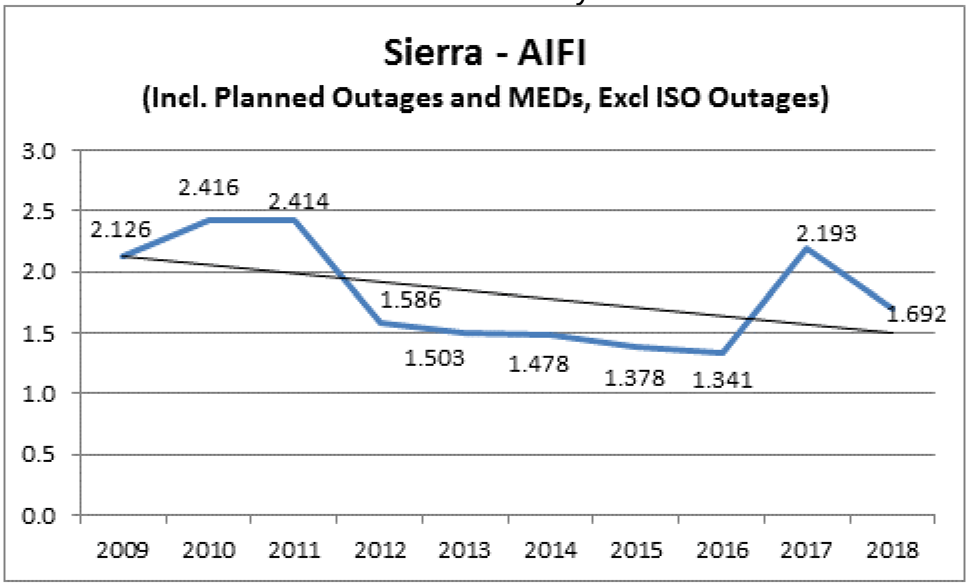


Chart 307: Division Reliability – AIFI Indices

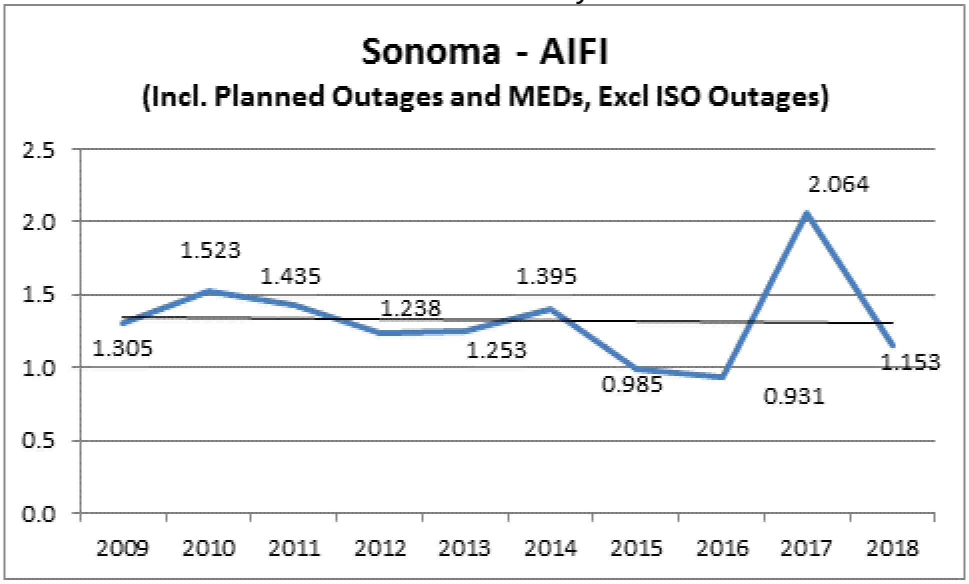


Chart 308: Division Reliability – AIFI Indices

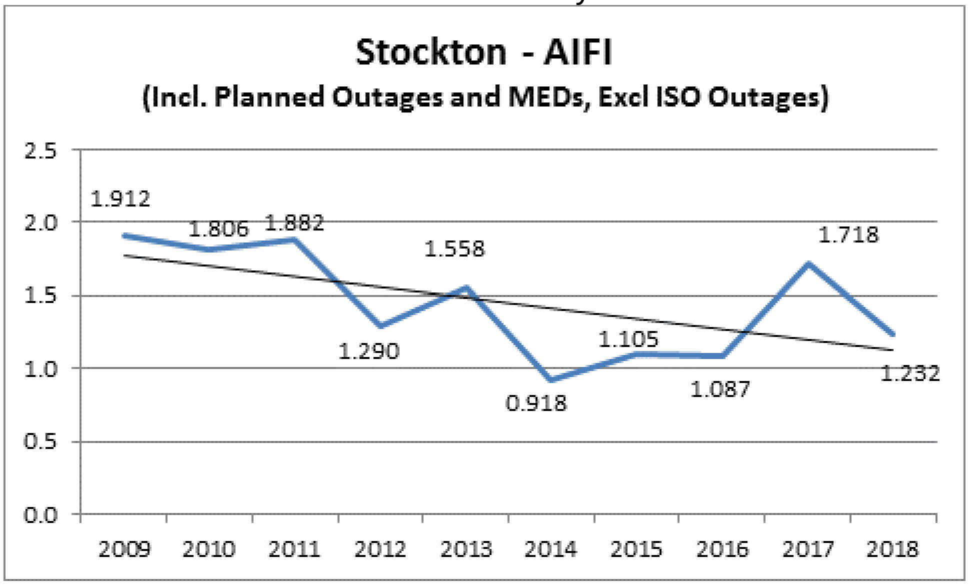


Chart 309: Division Reliability – AIFI Indices

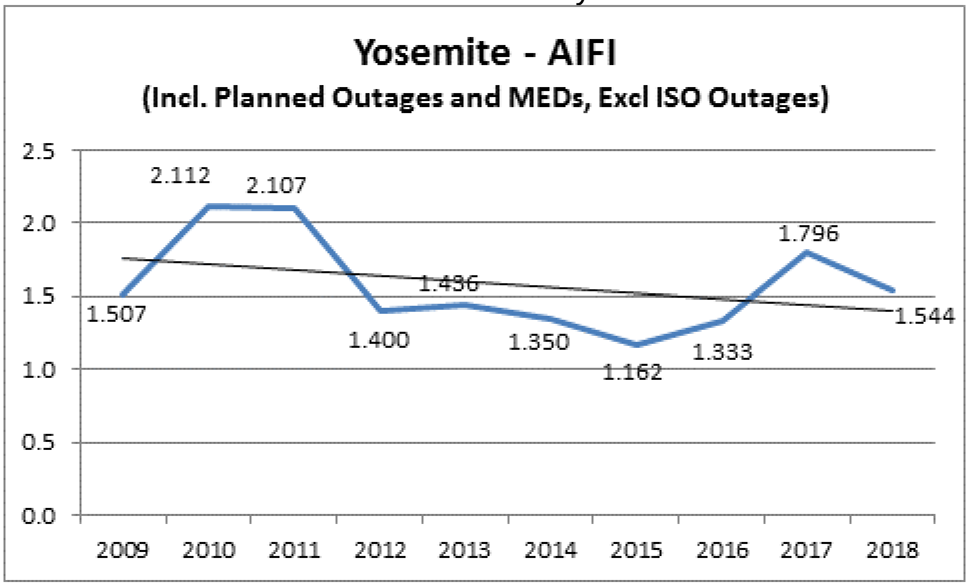
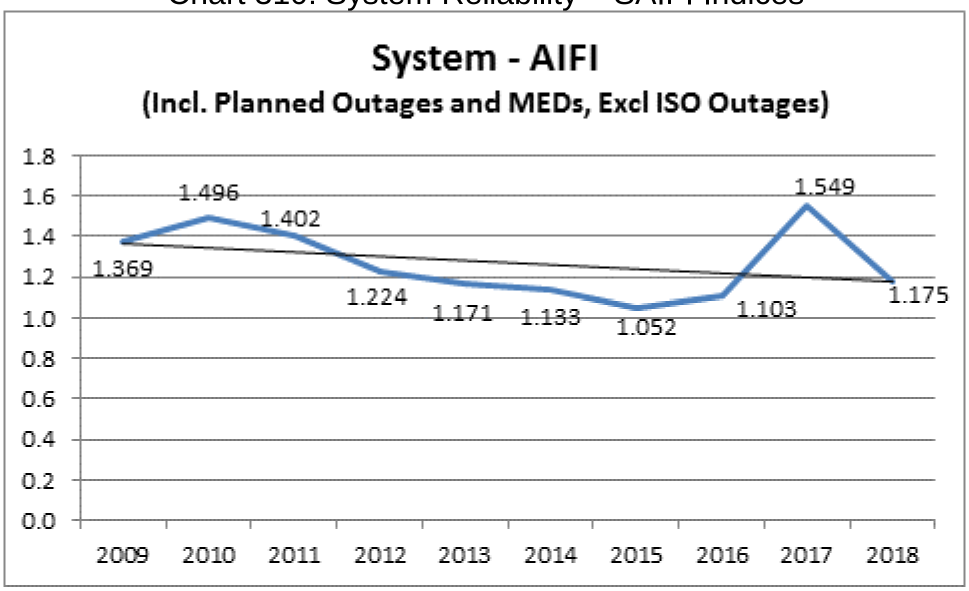


Chart 310: System Reliability – SAIFI Indices



3. MAIFI[11] Performance Results <u>(MED Included)</u>

Chart 311: Division Reliability – MAIFI Indices

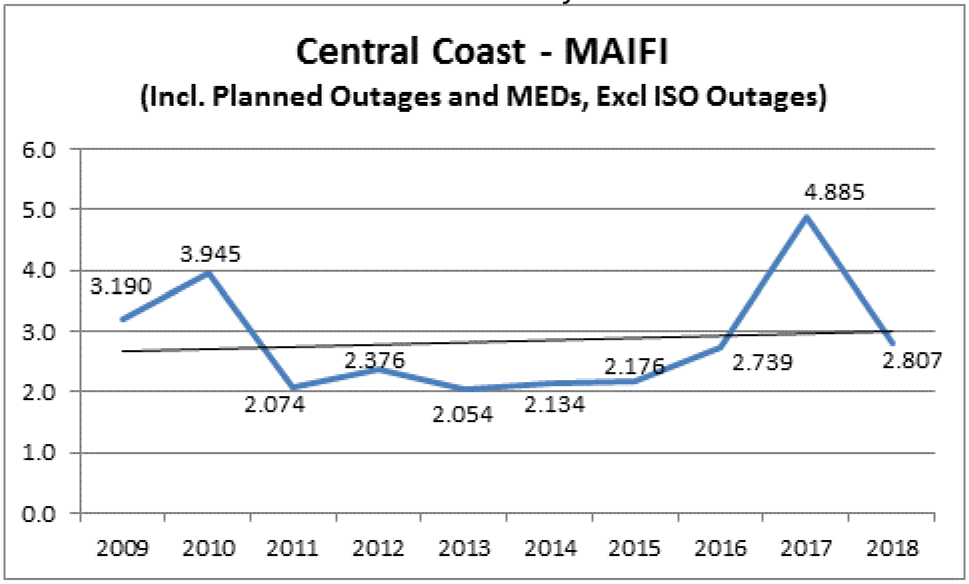
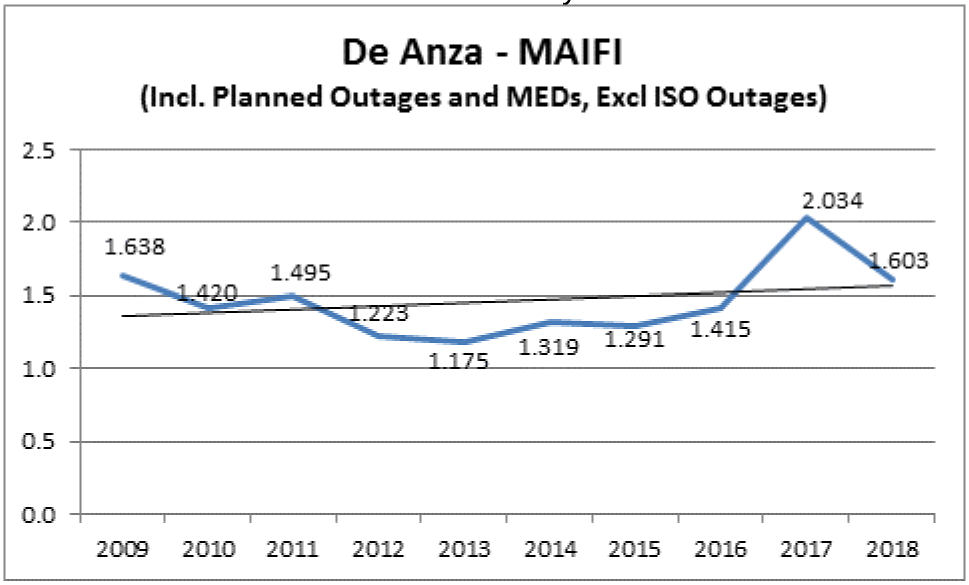


Chart 312: Division Reliability – MAIFI Indices



11 See footnote 4 above.

Chart 313: Division Reliability – MAIFI Indices

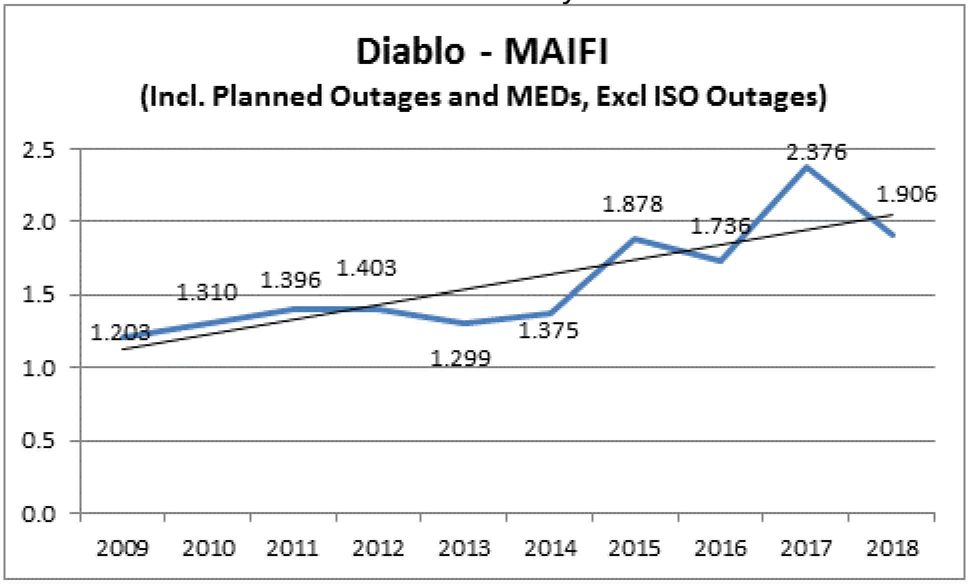


Chart 314: Division Reliability – MAIFI Indices

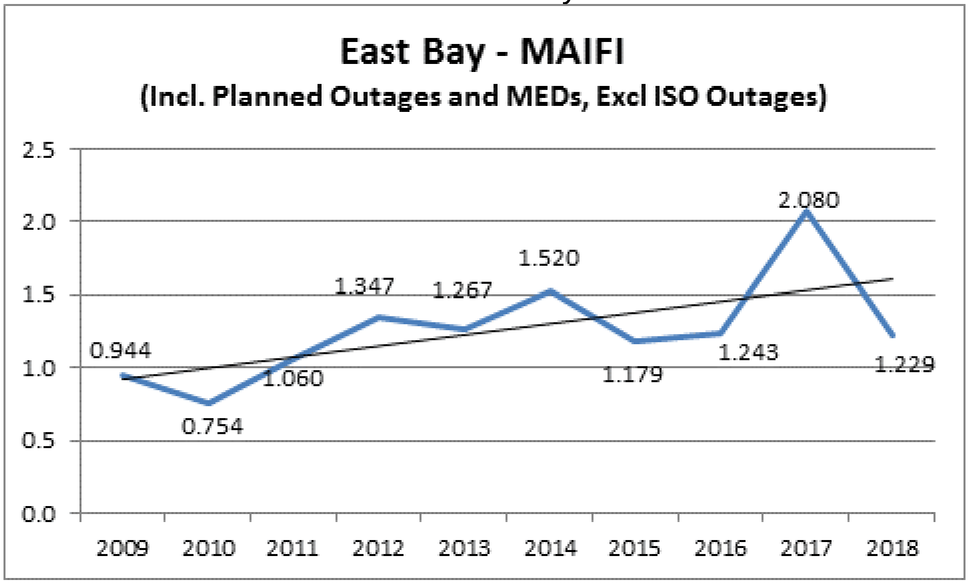


Chart 315: Division Reliability – MAIFI Indices

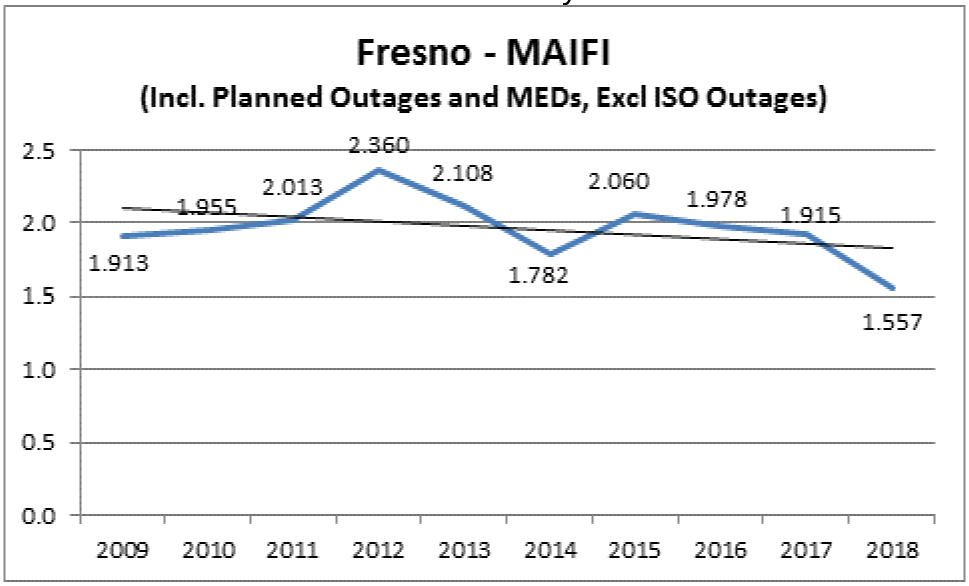


Chart 316: Division Reliability – MAIFI Indices

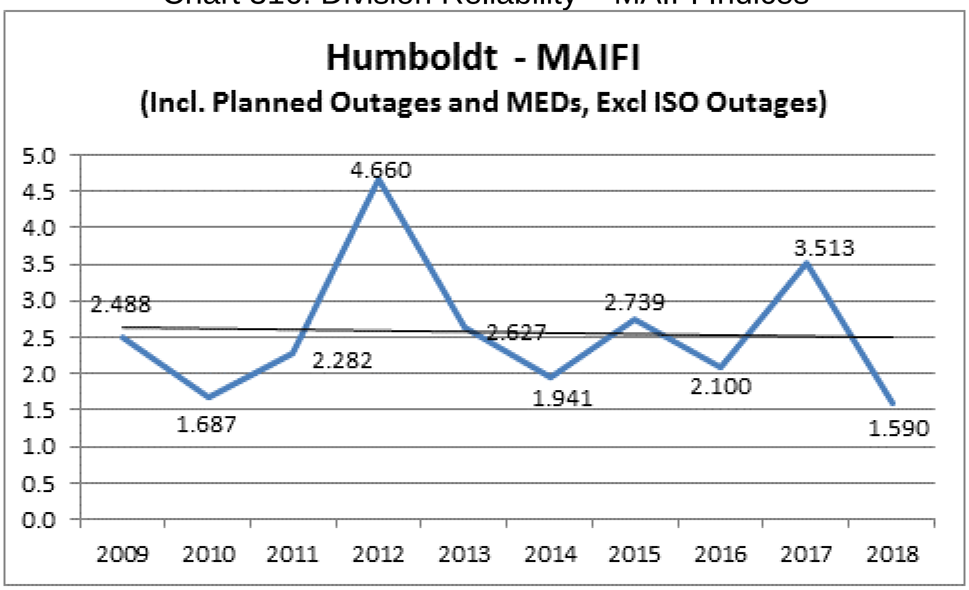


Chart 317: Division Reliability – MAIFI Indices

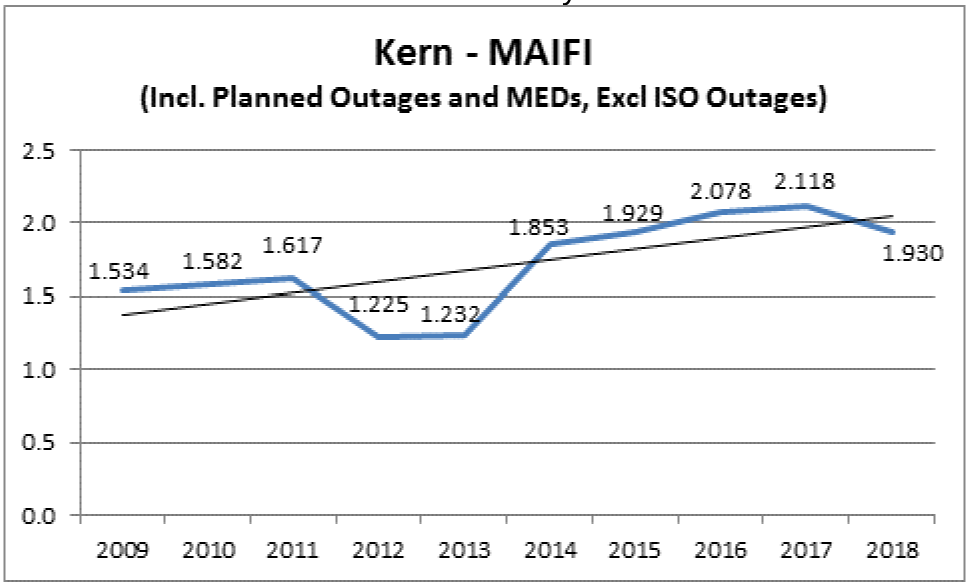


Chart 318: Division Reliability – MAIFI Indices

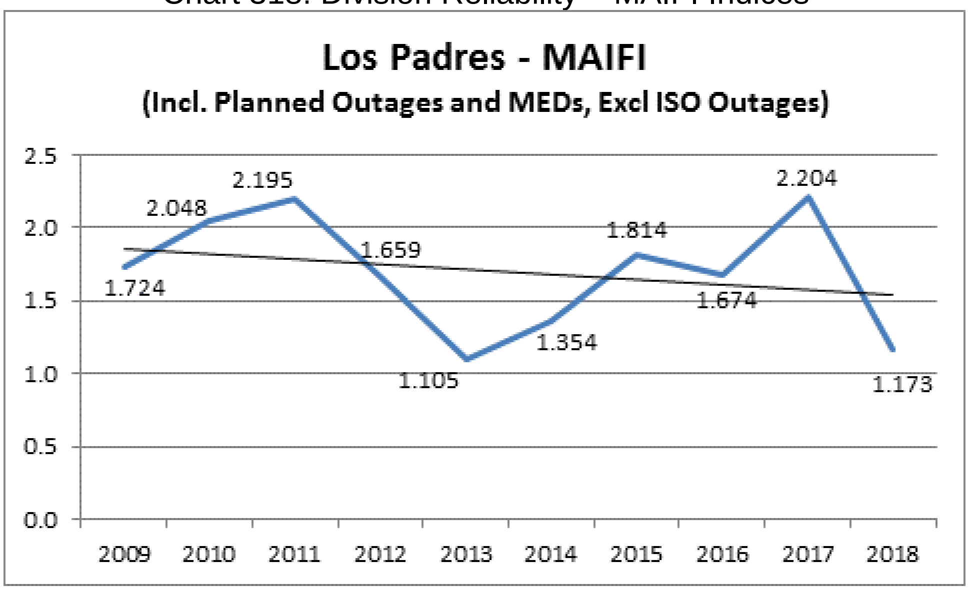


Chart 319: Division Reliability – MAIFI Indices

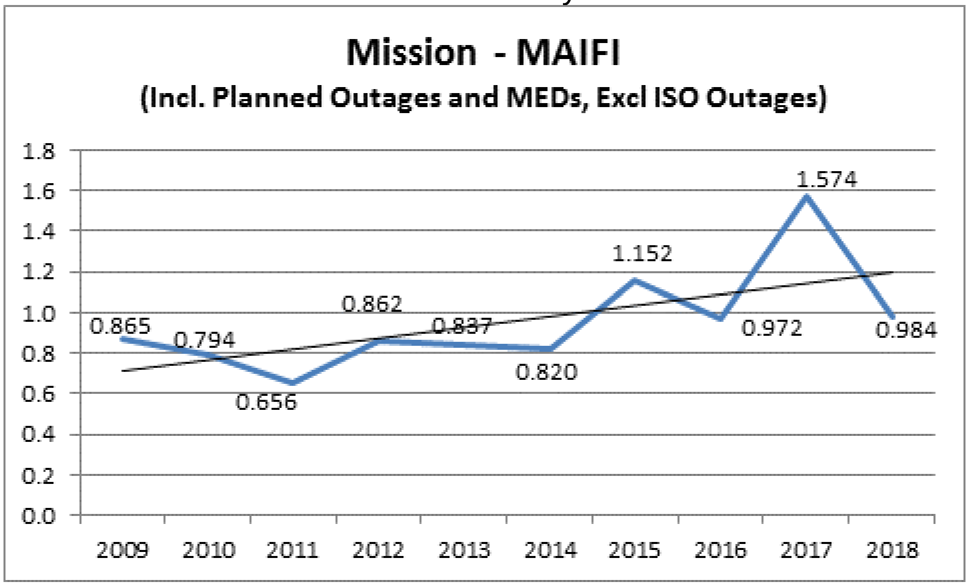


Chart 320: Division Reliability – MAIFI Indices

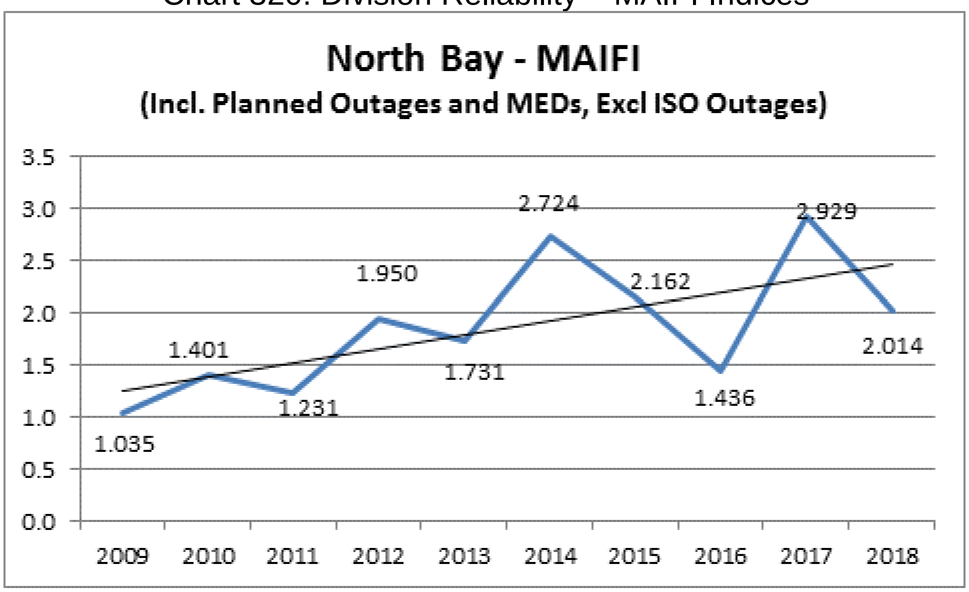


Chart 321: Division Reliability – MAIFI Indices

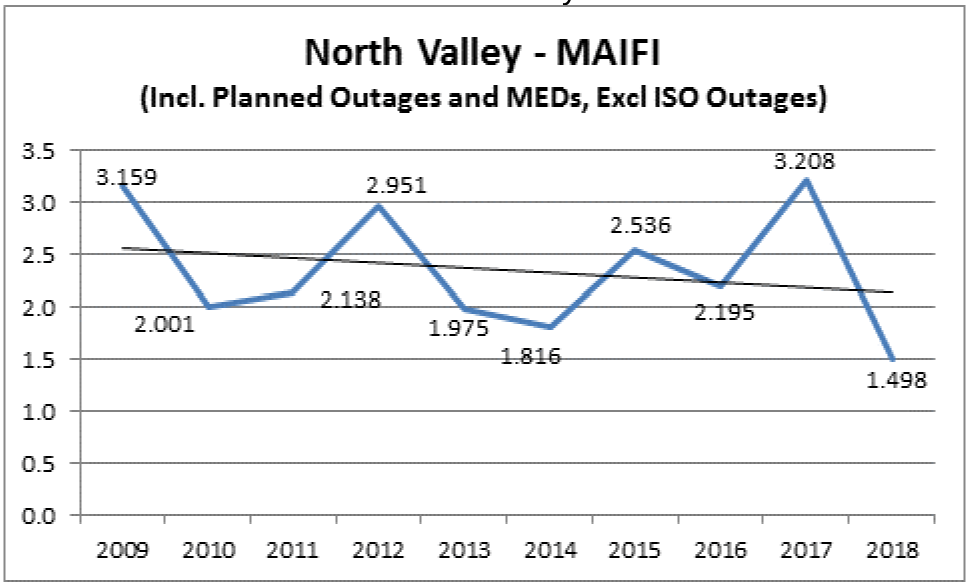


Chart 322: Division Reliability – MAIFI Indices

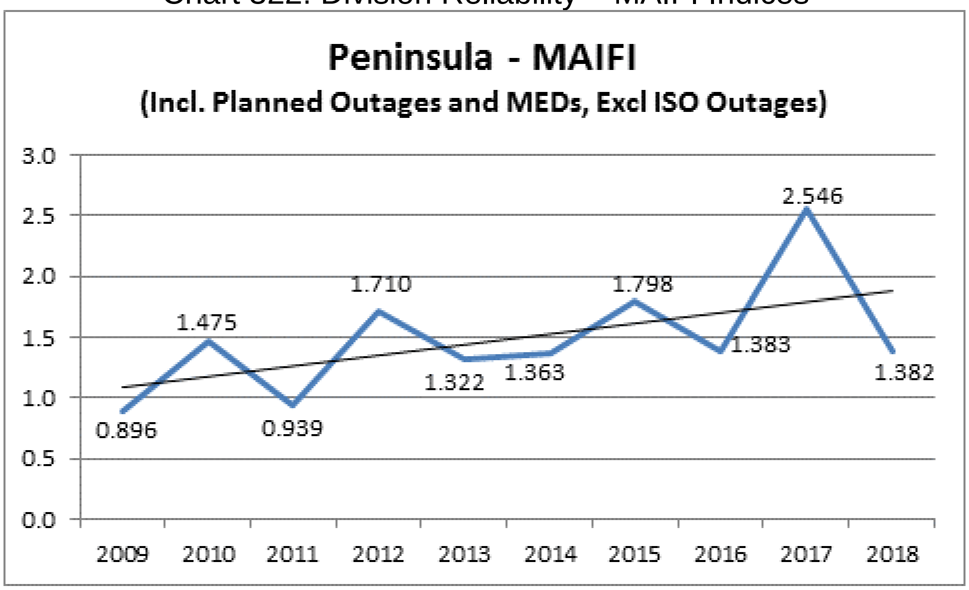


Chart 323: Division Reliability – MAIFI Indices

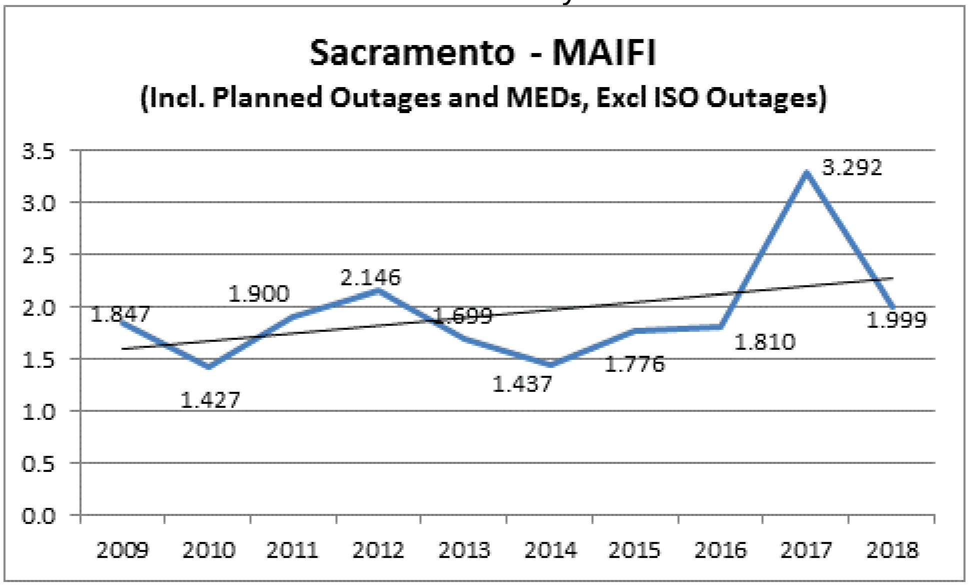


Chart 324: Division Reliability – MAIFI Indices

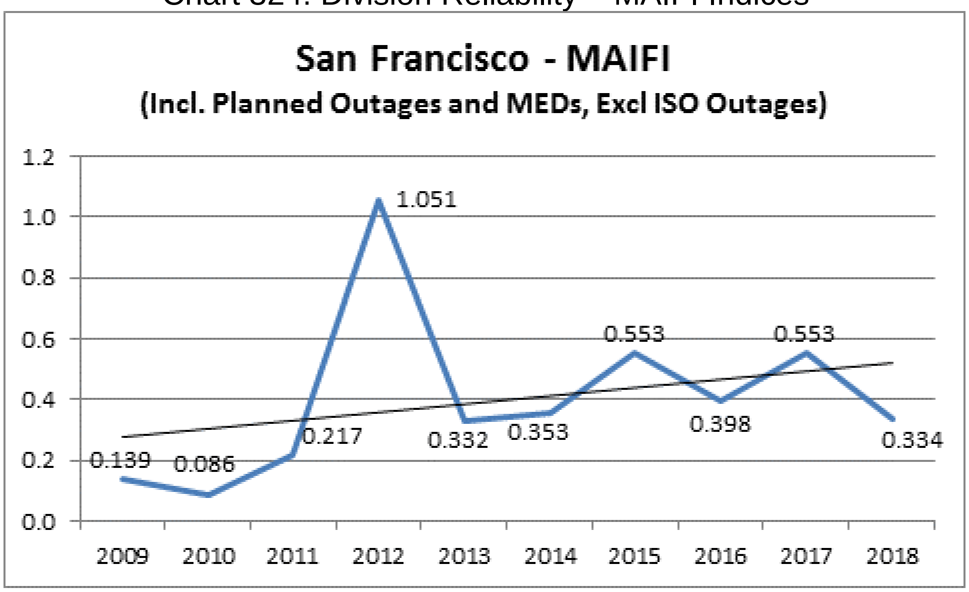


Chart 325: Division Reliability – MAIFI Indices

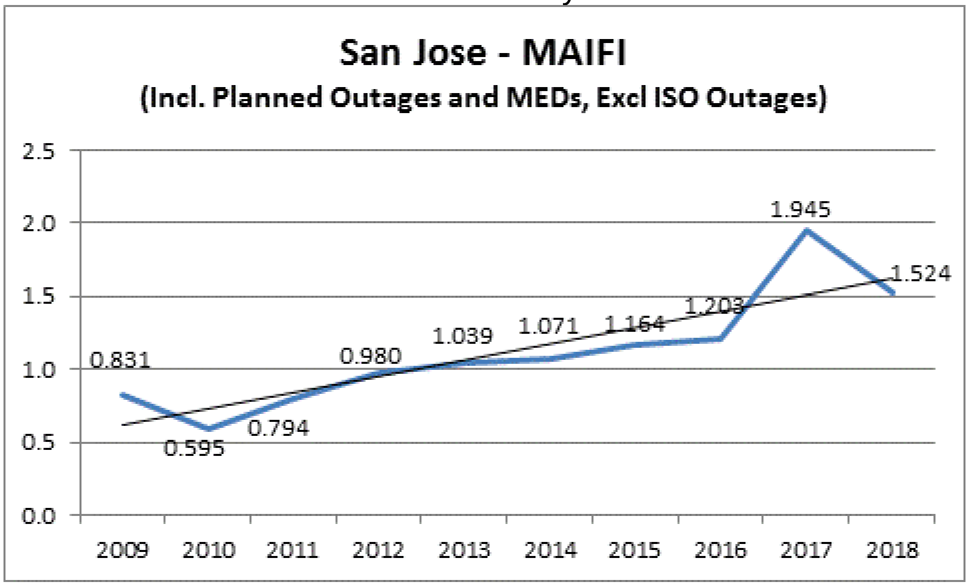


Chart 326: Division Reliability – MAIFI Indices

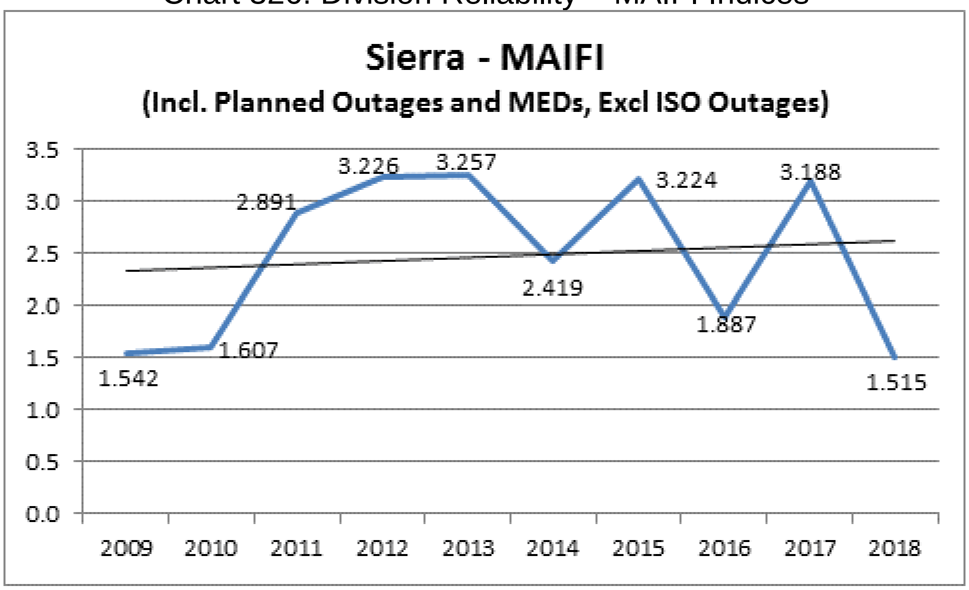


Chart 327: Division Reliability – MAIFI Indices

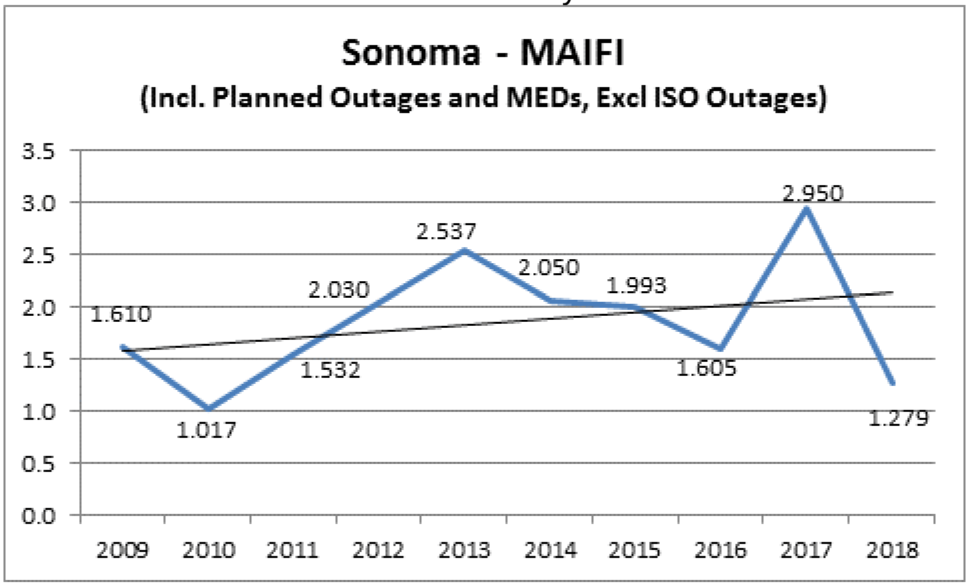


Chart 328: Division Reliability – MAIFI Indices

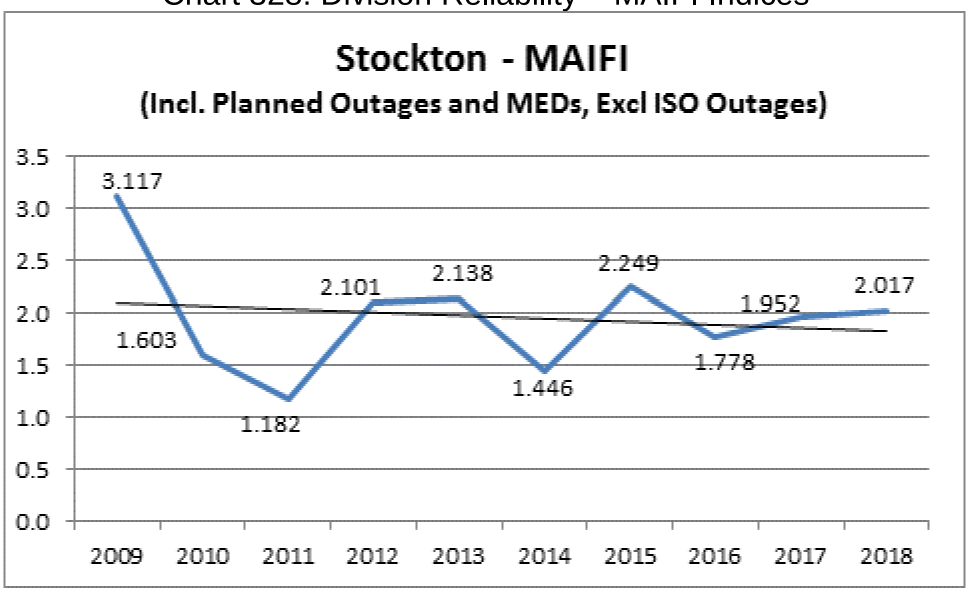


Chart 329: Division Reliability – MAIFI Indices

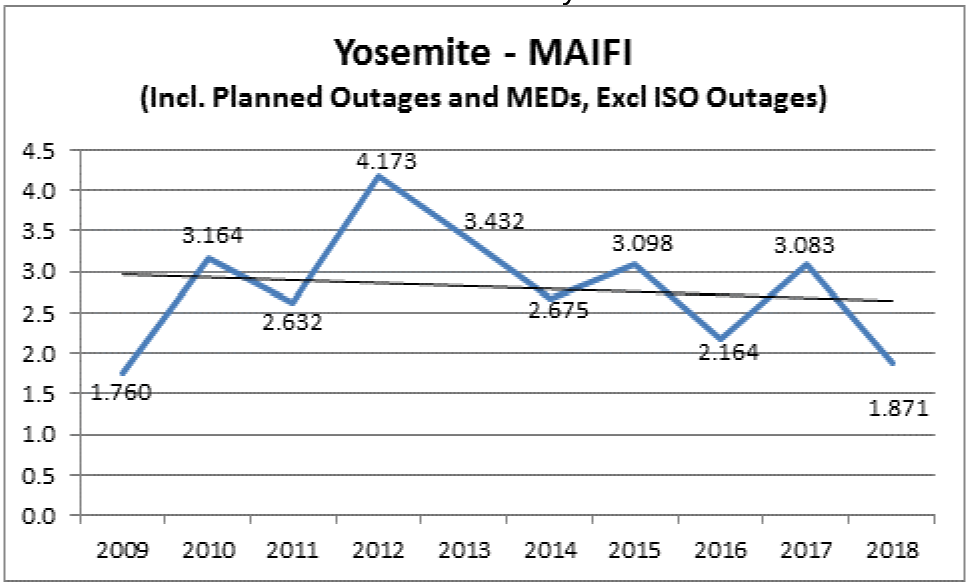
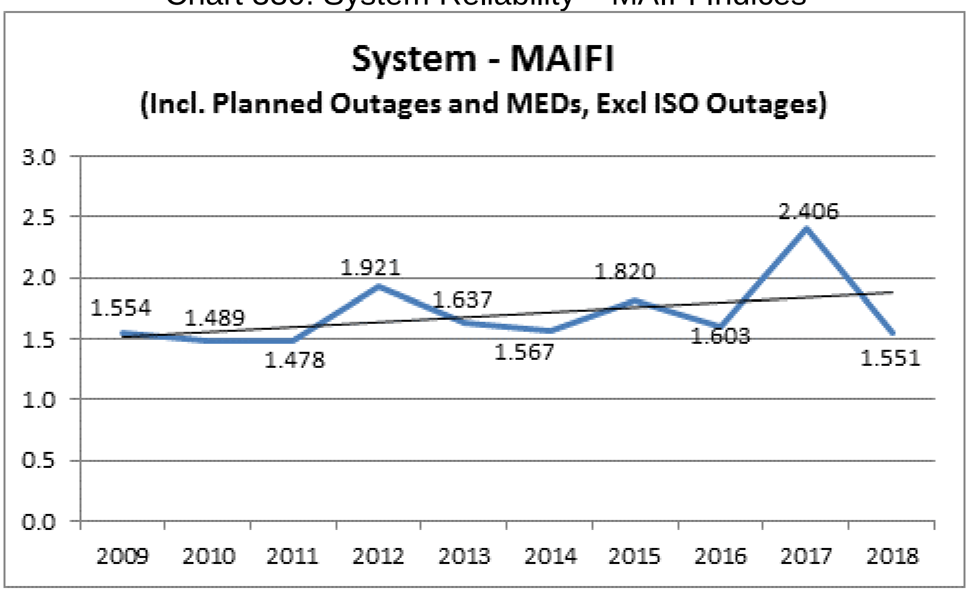


Chart 330: System Reliability – MAIFI Indices



4. CAIDI Performance Results (MED Included)

Chart 331: Division Reliability – CAIDI Indices

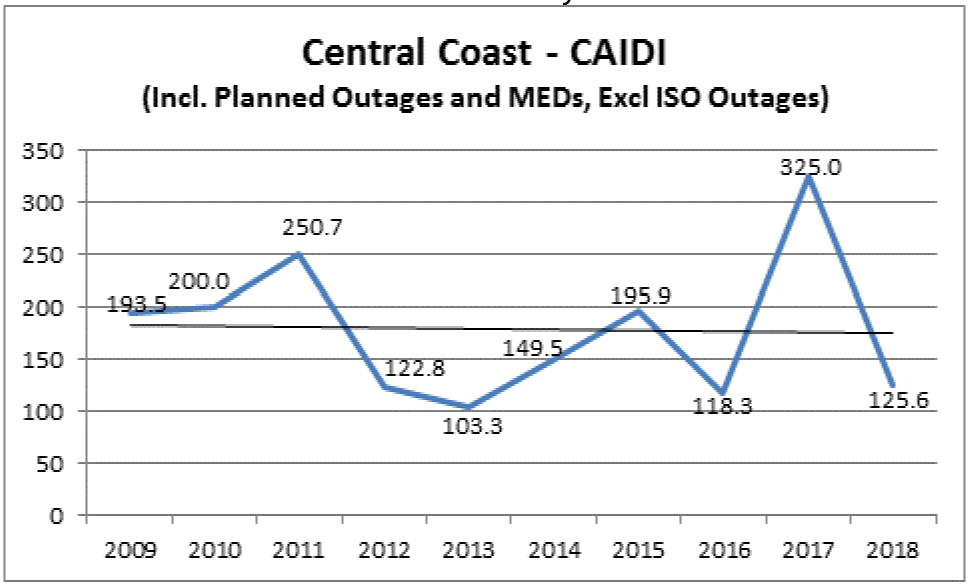


Chart 332: Division Reliability – CAIDI Indices

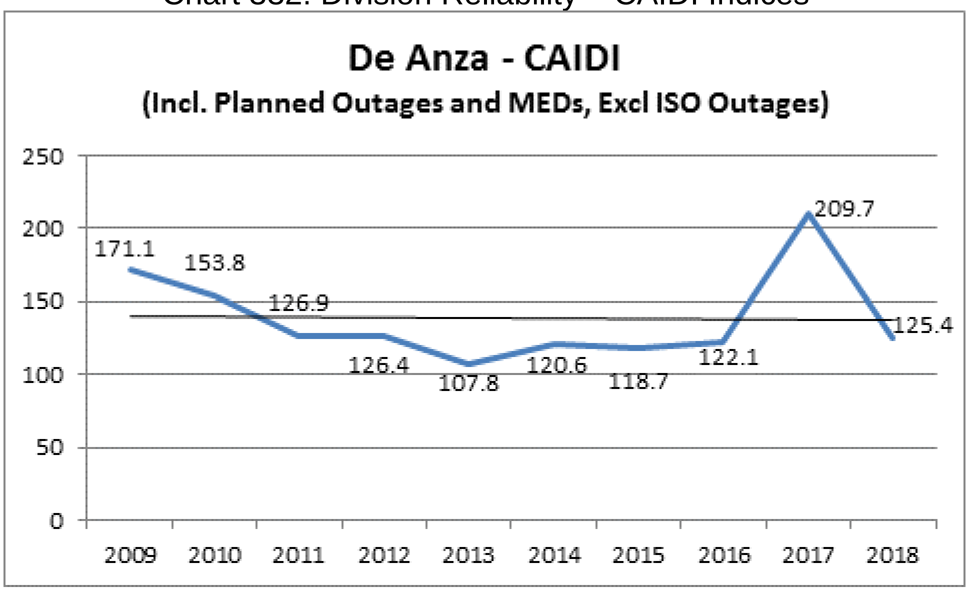


Chart 333: Division Reliability – CAIDI Indices

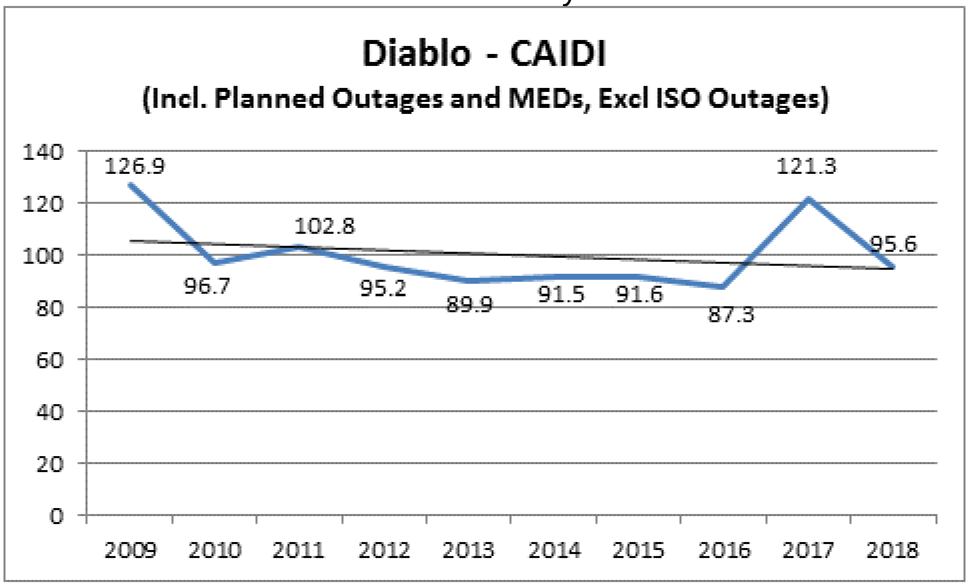


Chart 334: Division Reliability – CAIDI Indices

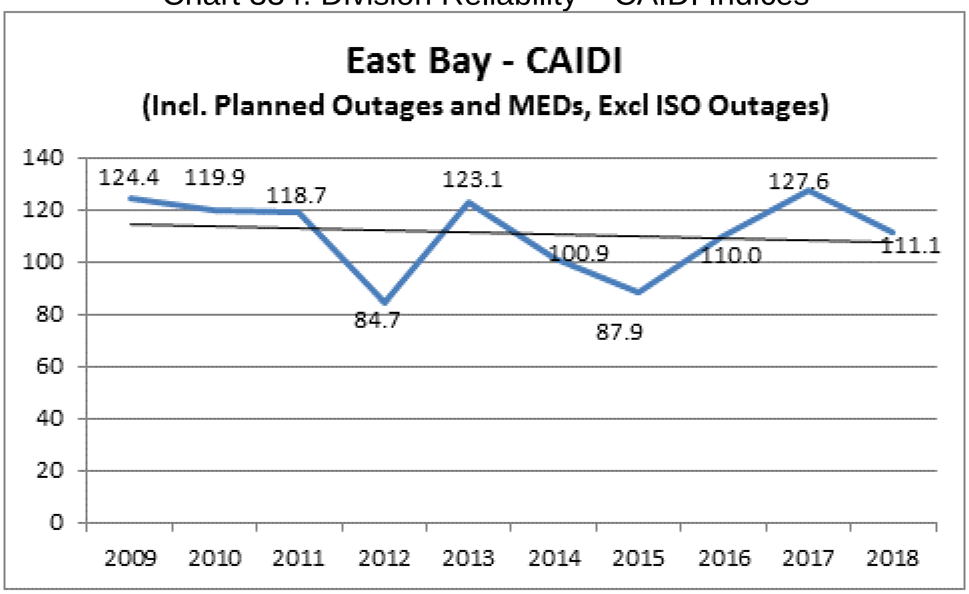


Chart 335: Division Reliability – CAIDI Indices

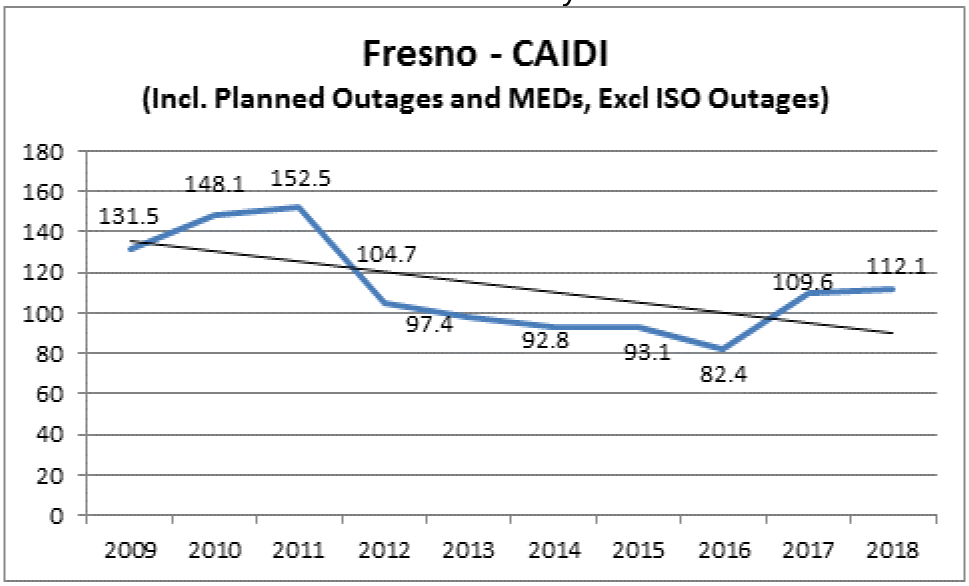


Chart 336: Division Reliability – CAIDI Indices

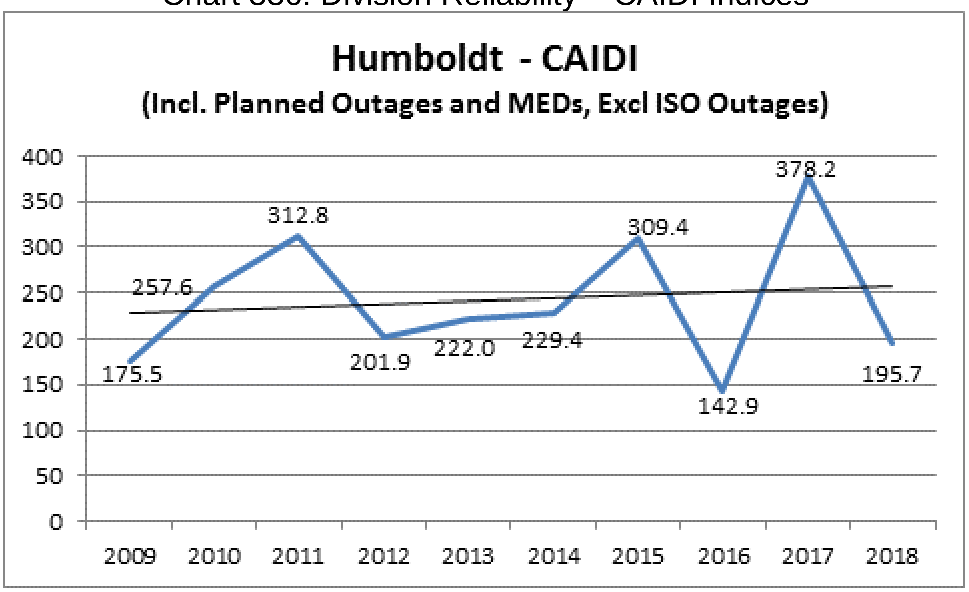


Chart 337: Division Reliability – CAIDI Indices

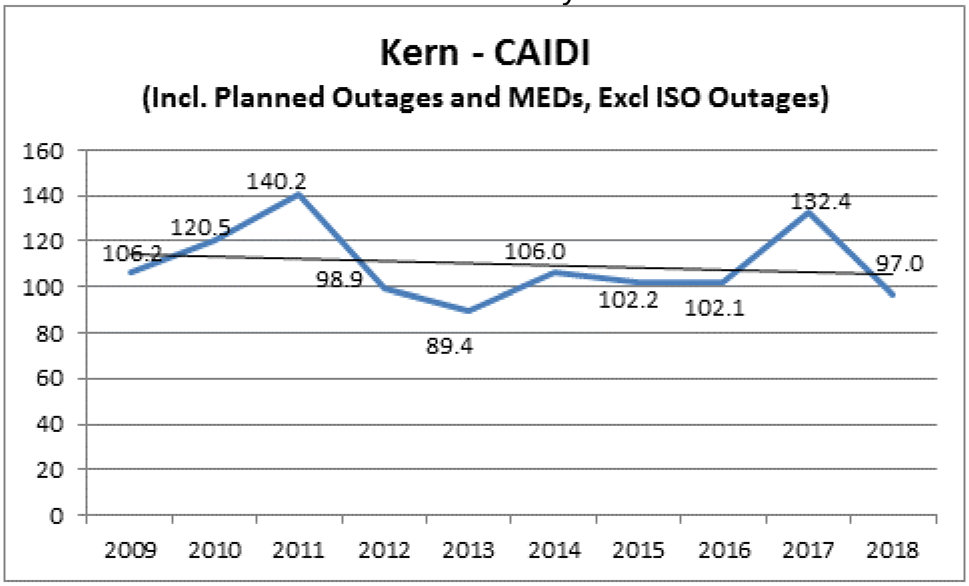


Chart 338: Division Reliability – CAIDI Indices

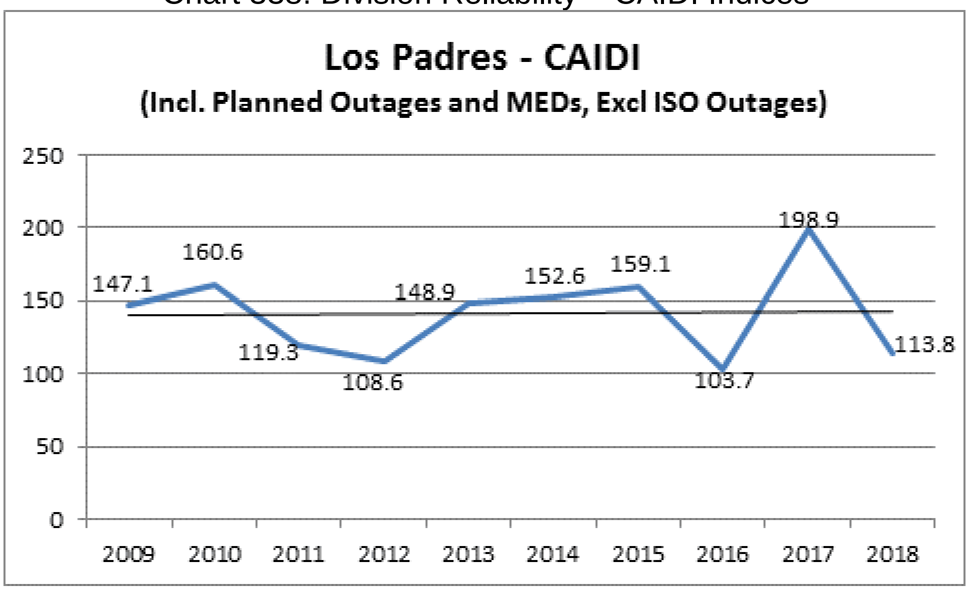


Chart 339: Division Reliability – CAIDI Indices

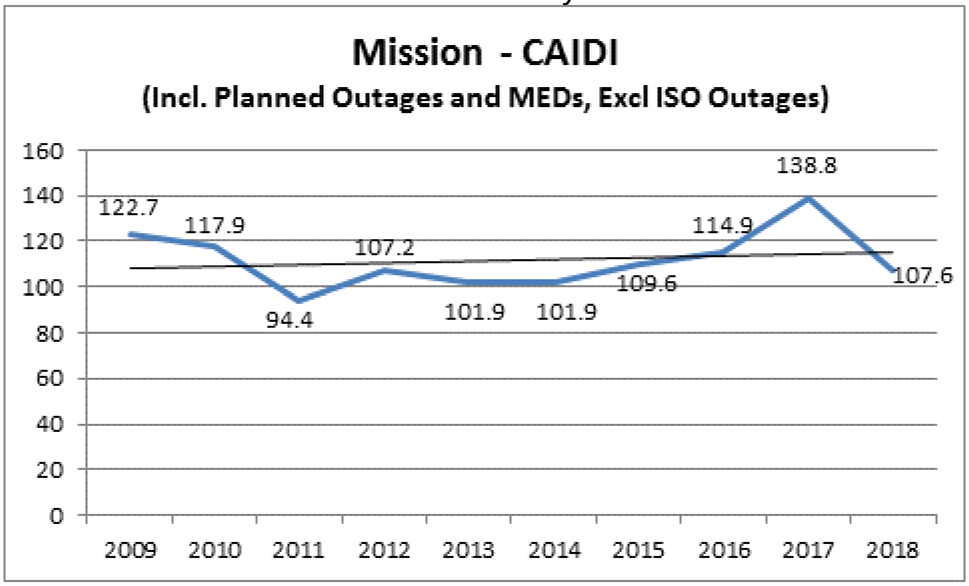


Chart 340: Division Reliability – CAIDI Indices

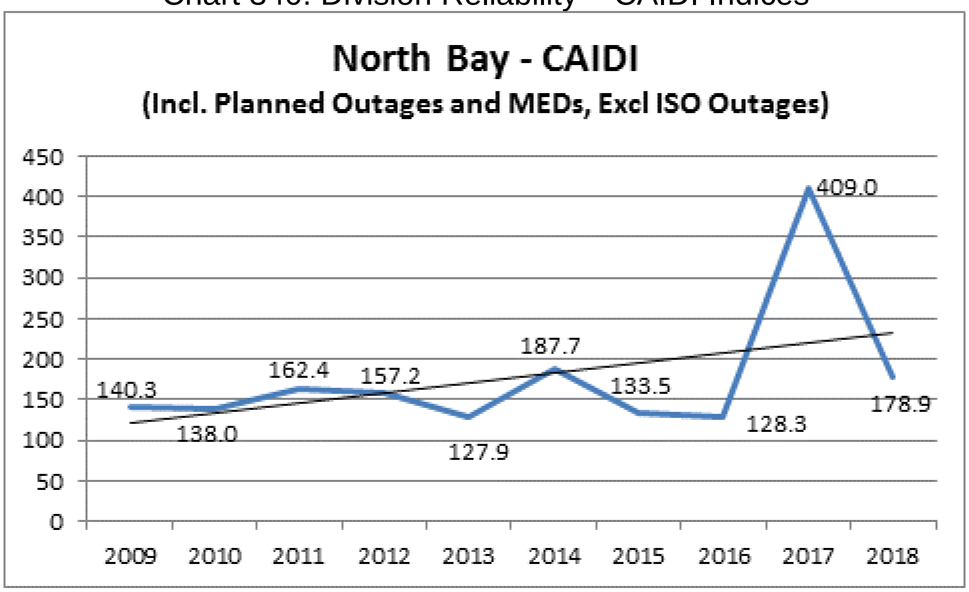


Chart 341: Division Reliability – CAIDI Indices

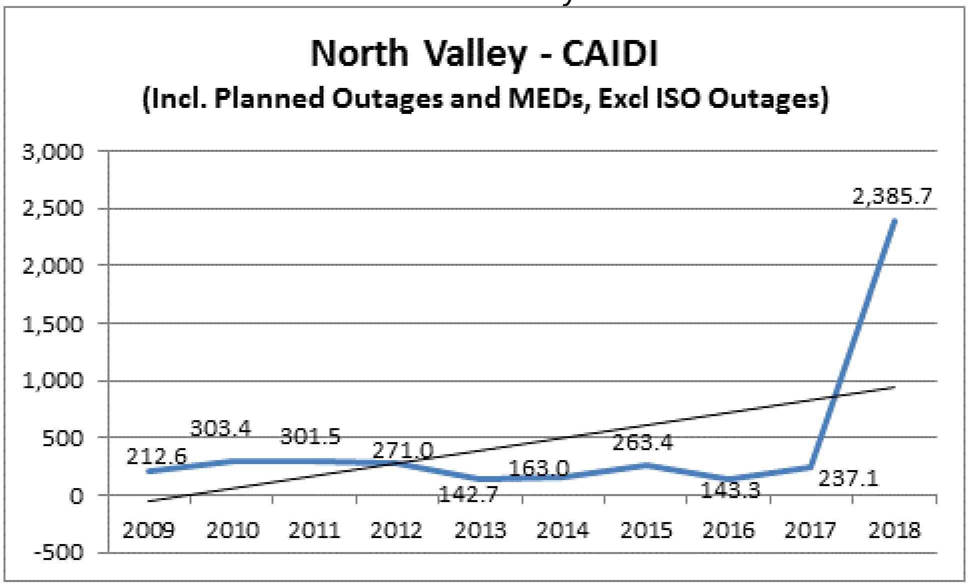


Chart 342: Division Reliability – CAIDI Indices

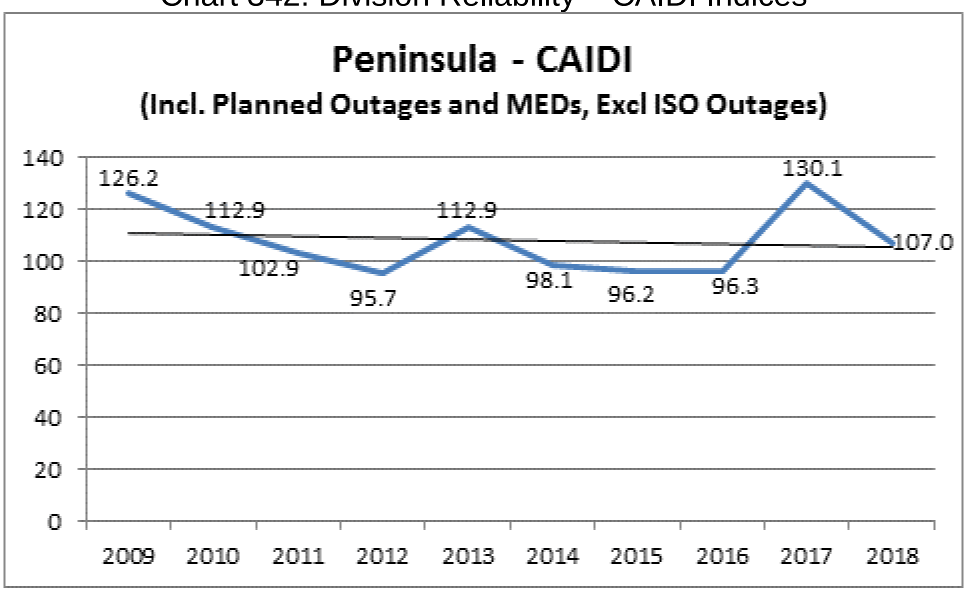


Chart 343: Division Reliability – CAIDI Indices

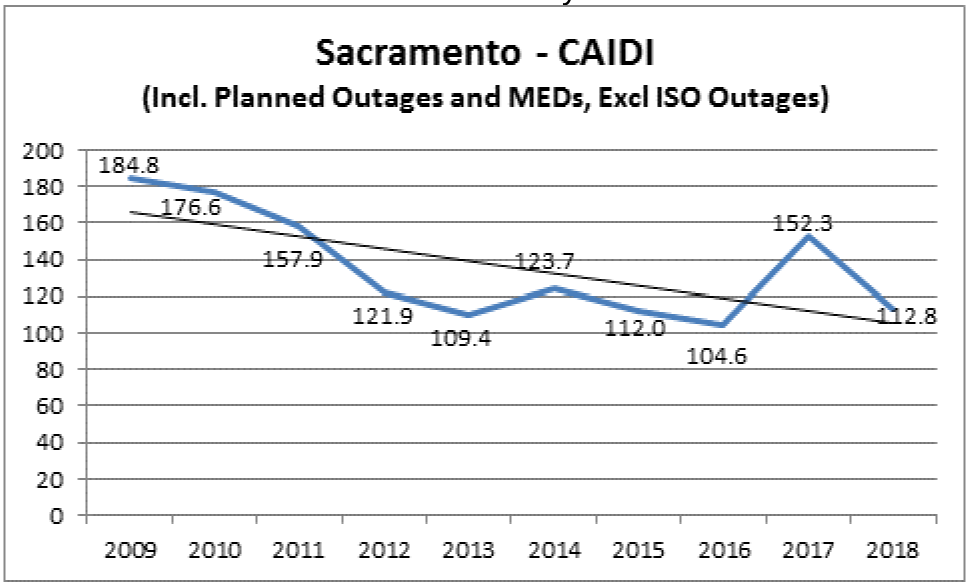


Chart 344: Division Reliability – CAIDI Indices

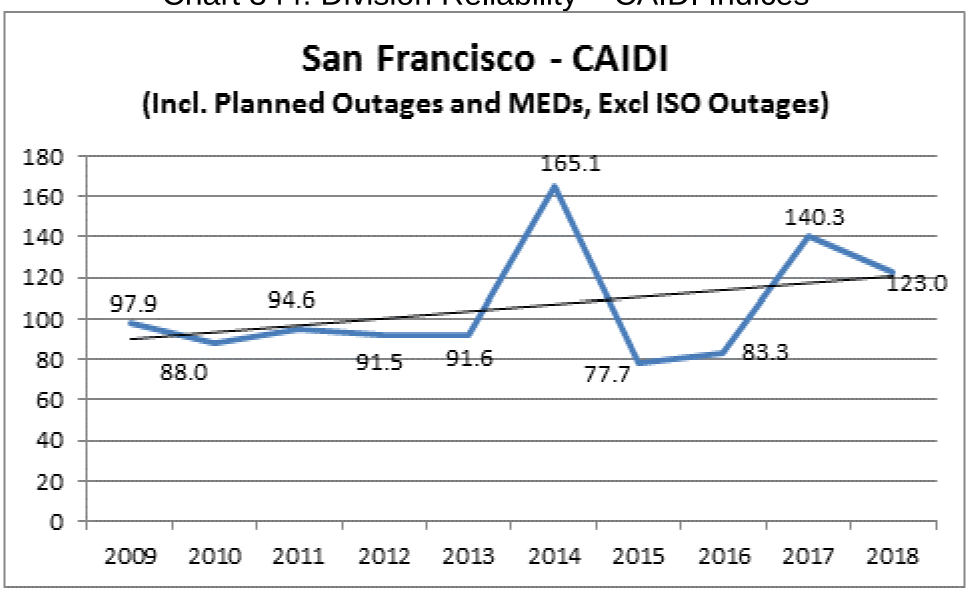


Chart 345: Division Reliability – CAIDI Indices

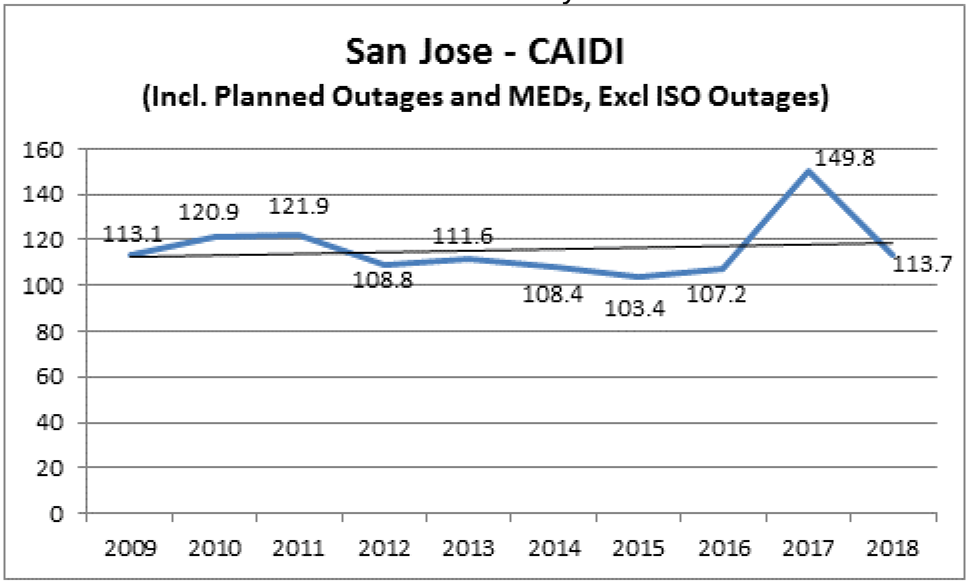


Chart 346: Division Reliability – CAIDI Indices

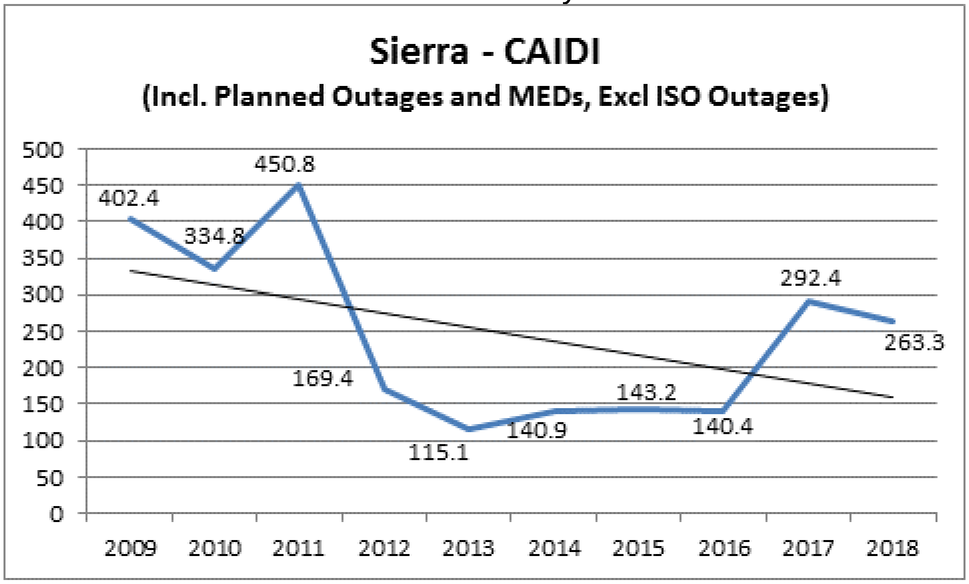


Chart 347: Division Reliability – CAIDI Indices

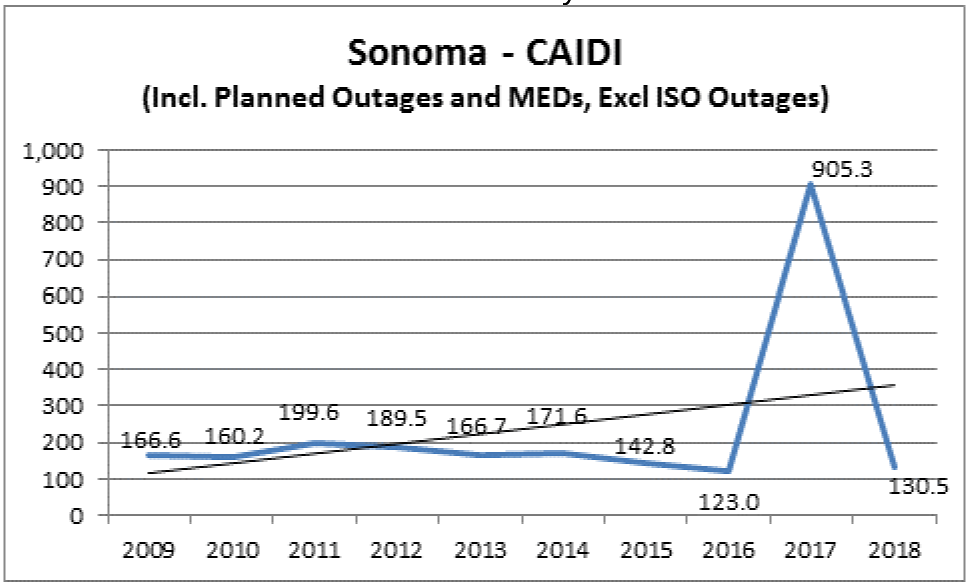


Chart 348: Division Reliability – CAIDI Indices

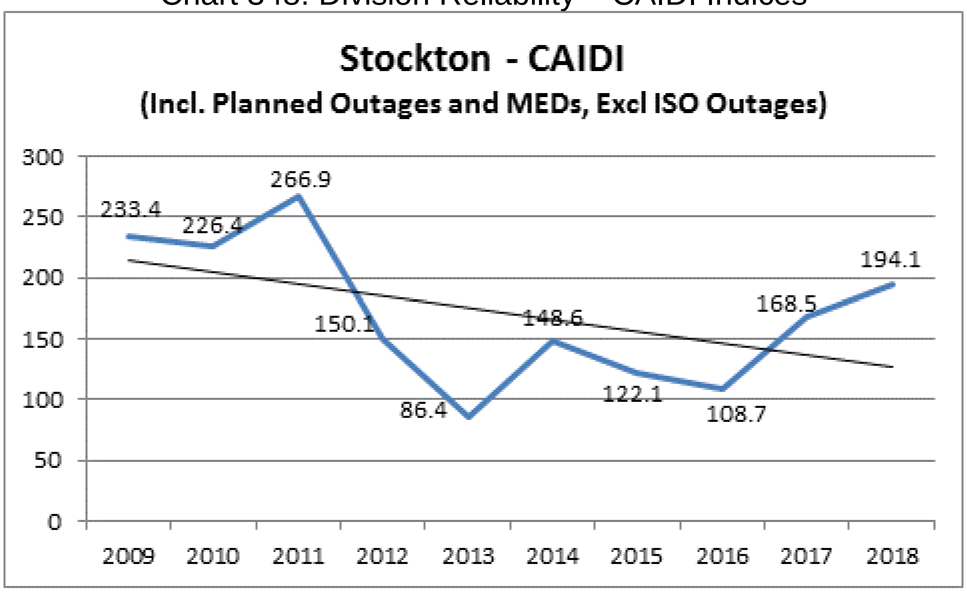


Chart 349: Division Reliability – CAIDI Indices

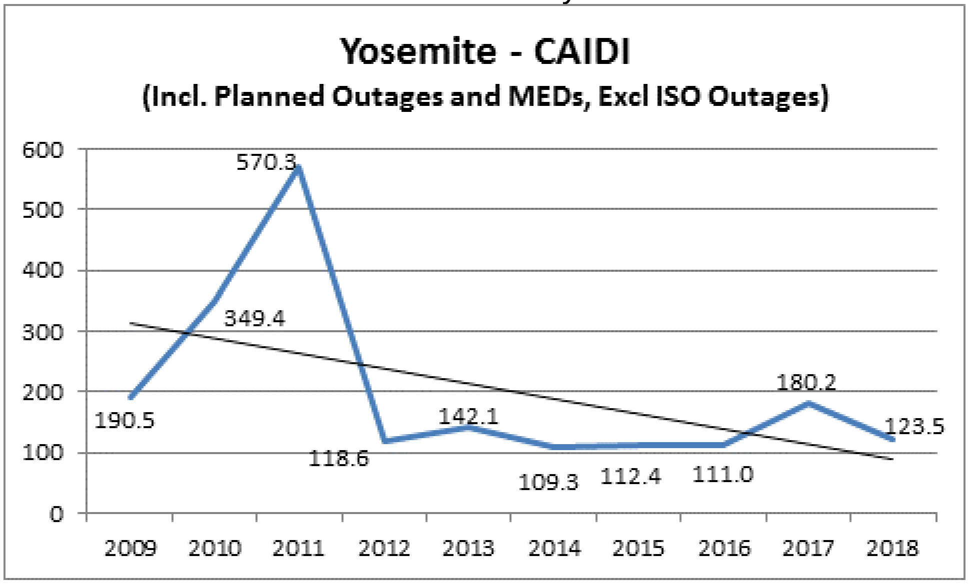
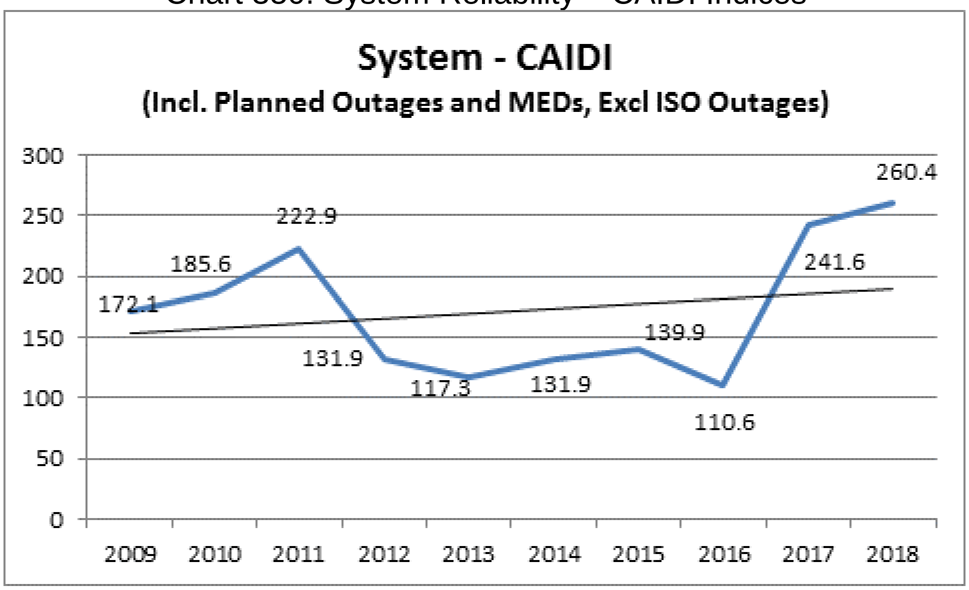


Chart 350: System Reliability – CAIDI Indices



d. The number of planned outages, date, and location of planned outages in each division on an annual basis.

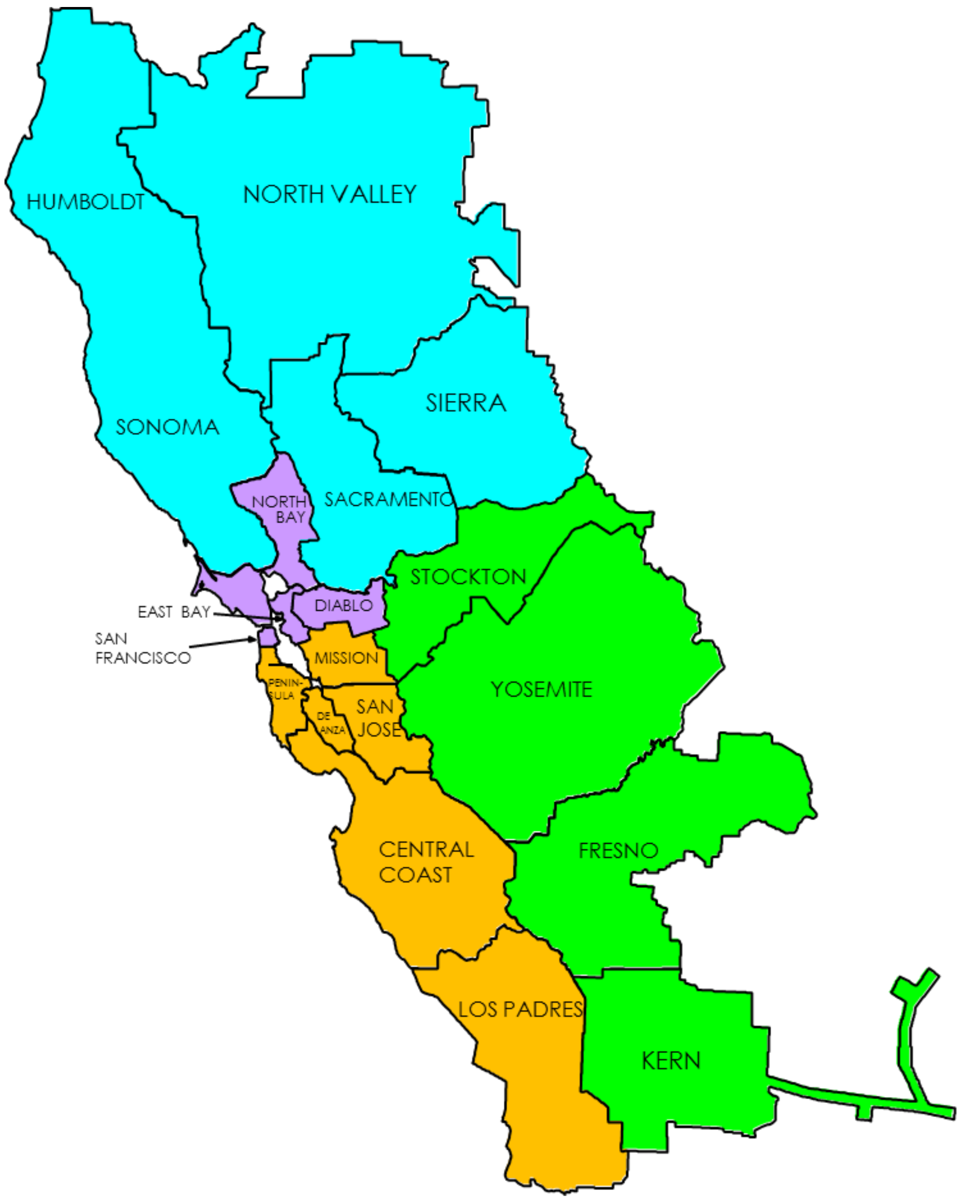
PG&E is submitting detailed planned outage information on a confidential basis under seal as required by Appendix B of Decision 16-01-008, at footnote 7. Listed below is a summary of planned outages by year from 2009 through 2018:

Table 60: Ten Years Planned Outage Summary (2009-2018)

Year	Total Planned Outages
2009	11,315
2010	12,373
2011	17,244
2012	17,006
2013	21,982
2014	18,026
2015	18,891
2016	20,253
2017	18,912
2018	36,575

4. Service Territory Map

PG&E Service Territory



5. Top 1% of Worst Performing Circuits (WPC) excluding Major Event Day (MED)

PG&E's selection of its worst performing circuits is comprised of two lists. List #1 (see Table 61 below) is ranked by the highest number of sustained outages the average customer on the circuit experienced on a three-year average annual basis (AIFI). List #2 (see Table 62 below) is ranked by the highest total number of sustained outage minutes that the average customer on the circuit experienced on a three-year average annual basis (AIDI). PG&E recognizes that a given circuit may appear on both the AIDI and AIFI lists of worst performing circuits based on outage characteristics. In consideration of this overlap, PG&E identified 18 circuits on each list with three circuits appearing on both lists. The net total of 33 individual circuits represents one percent of the total number of circuits in PG&E's distribution system.

For purposes of this reliability report, PG&E's focus in developing the worst performing circuit lists has been on the outage impacts to the *average customer on the circuit*. This approach is different than adopting a focus on a circuit's contribution to PG&E's overall system reliability performance. For example, a circuit serving 50 customers who experience a three-year average of five sustained outages (a total of 250 sustained customer outages per year) would have a higher ranking than a circuit serving 1,000 customers where each customer experienced a three-year average of three sustained outages (a total of 3,000 sustained customer outages per year). For purposes of the worst performing circuit list, the fact that the average customer on the smaller circuit experienced five sustained outages caused that circuit to rank as performing worse than a circuit where the average customer only experienced three sustained outages.

Consistent with the direction provided in Decision 16-01-008, PG&E used three years (2016 - 2018) of outage data in developing the worst performing circuit lists. PG&E has excluded outage data involving planned outages, CAISO outages and major event days. PG&E has also limited its review to mainline circuit outages only (in other words, only outages involving a circuit breaker, a line recloser, or an interrupter). Finally, PG&E has excluded those outages which occurred when the circuit was temporarily switched into an abnormal configuration. An abnormal circuit configuration may occur when customers are temporarily added to or transferred from a circuit to support construction or maintenance work performed on an adjacent circuit. Analysis has shown that outages associated with abnormal circuit configurations would disproportionately skew the results of the worst performing circuit lists. PG&E believes that this approach best defines a worst performing circuit.

Table 61 lists the worst performing circuits by outage frequency and indicates the worst AIFI circuit was the Garberville 1101 circuit. The average customer on the Garberville 1101 circuit experienced 4.99 sustained mainline outages per year from 2016-2018 (resulting from the operation of a circuit breaker or an automatic recloser).

Table 62 focuses on the duration of the sustained outages. Here, the Echo Summit 1101 circuit was identified as the worst AIDI performing circuit. For this circuit, the average customer on the circuit experienced 1,400 sustained mainline outage minutes per year from 2016-2018 (resulting from the operation of a circuit breaker or an automatic recloser).

Three circuits (Garberville 1102, Tulare Lake 2108, and Otter 1102) appear on both lists. These three circuits are highlighted in red within Tables 61 and 62. Additionally, sixteen circuits marked with an asterisk (*) indicates that they are “deficient”. A “deficient” circuit is defined as a circuit that has appeared consecutively on the WPC lists for the previous two years (see the *“Deficient” Worst Performing Section* below for further details). [12]

Table 61: AIFI Worst Performing Circuit for 2018[13]

#	DIVISION	SUBSTATION	CIRCUIT NAME	TOTAL CUSTOMERS	CIRCUIT MILES	% OH	% UG	HFTD	3 YR AVG MAINLINE OUTAGES	3 YR AVG AIFI
1	HUMBOLDT	GARBERVILLE	GARBERVILLE 1101*	1,276	166	98	2	1 & 2	14.7	4.99
2	DE ANZA	LOS GATOS	LOS GATOS 1106*	1,597	74	97	3	2 & 3	10.3	4.51
3	FRESNO	TULARE LAKE	TULARE LAKE 2108*	104	58	99	1	1	5.0	4.49
4	HUMBOLDT	GARBERVILLE	GARBERVILLE 1102*	1,801	146	94	6	2	11.7	4.01
5	CENTRAL COAST	OTTER	OTTER 1102*	530	65	84	16	2 & 3	5.3	3.84
6	STOCKTON	ALPINE	ALPINE 1102*	309	3	0	100	1	3.3	3.33
7	STOCKTON	ALPINE	ALPINE 1101	280	7	0	100	1	3.3	3.33
8	CENTRAL COAST	SAN JUSTO	SAN JUSTO 1101	646	60	94	6	1 & 2	4.0	3.09
9	KERN	BLACKWELL	BLACKWELL 1102	126	31	99	1	1	3.7	3.08
10	SIERRA	EL DORADO PH	EL DORADO PH 2101*	4,623	170	98	2	1, 2 & 3	14.3	2.99
11	HUMBOLDT	TRINIDAD	TRINIDAD 1102*	766	24	86	14	1	5.0	2.95
12	SACRAMENTO	GRAND ISLAND	GRAND ISLAND 2224	610	63	99	1	1	6.7	2.90
13	CENTRAL COAST	ROB ROY	ROB ROY 2105*	8,104	100	72	28	1, 2 & 3	7.3	2.80
14	HUMBOLDT	FRUITLAND	FRUITLAND 1141	393	28	100	0	2	7.7	2.80
15	CENTRAL COAST	GREEN VALLEY	GREEN VALLEY 2101	3,099	167	94	6	1, 2 & 3	7.0	2.68
16	NORTH BAY	NORTH TOWER	NORTH TOWER 1108	4,473	40	33	67	1	3.0	2.62
17	STOCKTON	EIGHT MILE	EIGHT MILE 2106*	194	31	98	2	1	3.0	2.52
18	CENTRAL COAST	VIEJO	VIEJO 2201	1,761	32	57	43	1 & 2	5.0	2.51

[12] The three-year average AIFI values are determined by the three-year average of the customers that experienced a sustained outage divided by the three-year average of the total customers served by that circuit. The three-year average AIDI values are determined by the three-year average of the customer-outage minutes divided by the three-year average of the total customers served by that circuit. These calculations are slightly different than determining the three-year average of just the actual recorded metric values for each of the three years.

[13] The circuit mileage data in this report is determined through the use of PG&E’s Electric Distribution Geographic Information System (EDGIS). PG&E recently expanded the use of its EDGIS technology to map and analyze assets across its system and provide more accurate information about the expanse of its system and the mileage of particular circuits. As a result of using this more accurate technology, mileages for particular circuits may vary from prior reports.

Table 62: AIDI Worst Performing Circuit for 2018

#	DIVISION	SUBSTATION	CIRCUIT NAME	TOTAL CUSTOMERS	CIRCUIT MILES	% OH	% UG	HFTD	3 YR AVG MAINLINE OUTAGES	3 YR AVG AIDI
1	SIERRA	ECHO SUMMIT	ECHO SUMMIT 1101	406	19	78	22	1 & 2	3.3	1,400
2	SACRAMENTO	WILKINS SLOUGH	WILKINS SLOUGH 1103	120	35	99	1	1	1.7	1,386
3	NORTH VALLEY	BUCKS CREEK	BUCKS CREEK 1103*	322	26	51	49	2 & 3	2.0	1,175
4	HUMBOLDT	GARBERVILLE	GARBERVILLE 1102*	1,801	146	94	6	2	11.7	1,083
5	CENTRAL COAST	OTTER	OTTER 1102*	530	65	84	16	2 & 3	5.3	976
6	KERN	POSO MOUNTAIN	POSO MOUNTAIN 2101*	143	60	100	0	1 & 2	3.7	884
7	SACRAMENTO	CORDELIA	CORDELIA 1104	331	69	90	10	1	3.0	826
8	NORTH BAY	CALISTOGA	CALISTOGA 1101	1,607	123	92	8	1, 2, & 3	7.3	754
9	HUMBOLDT	HOOPA	HOOPA 1101*	2,074	151	92	8	1, 2, & 3	6.7	751
10	FRESNO	TULARE LAKE	TULARE LAKE 2108*	104	58	99	1	1	5.0	686
11	NORTH VALLEY	ELK CREEK	ELK CREEK 1101	917	183	99	1	1 & 2	4.7	684
12	HUMBOLDT	LOW GAP	LOW GAP 1101	744	74	99	1	2	4.7	661
13	SIERRA	ALLEGHANY	ALLEGHANY 1101*	1,071	79	98	2	1, 2, & 3	6.3	630
14	HUMBOLDT	WILLOW CREEK	WILLOW CREEK 1103*	1,556	87	99	1	2 & 3	4.3	628
15	STOCKTON	SALT SPRINGS	SALT SPRINGS 2101	393	46	48	52	1 & 2	4.3	568
16	NORTH VALLEY	CHALLENGE	CHALLENGE 1101*	704	49	99	1	3	1.7	533
17	NORTH VALLEY	OREGON TRAIL	OREGON TRAIL 1102	872	55	89	11	1 & 2	0.3	522
18	FRESNO	DUNLAP	DUNLAP 1103	949	77	93	7	2	3.7	517

Cost Effective Reliability Remediation:

The Targeted Circuit Program has been PG&E's primary reliability improvement program to cost effectively remediate PG&E's worst performing circuits. Under the Targeted Circuit Program, PG&E's distribution engineers analyzed the causes and characteristics of historical outages as well as reviewed the current circuit design to cost effectively identify work that would improve the circuit's reliability performance. The typical targeted circuit work included, as appropriate for the circuit, installing new protection equipment, replacing overhead and underground conductors, installing new fault indicators, reframing poles to increase phase separation, installing animal/bird guards, repairing or replacing deteriorated equipment, completing pending reliability related maintenance work, performing infrared inspections, and trimming trees. The goal of each targeted circuit improvement project was to achieve a 25 percent reliability improvement from its 3-year historical AIFI and AIDI average performance. The typical timeline for a targeted circuit project to be initiated, engineered, and constructed was three years.

Over a 10-year period, the Targeted Circuit Program successfully completed work on 485 targeted circuits. The 2018 AIFI and AIDI actual performance results observed for a targeted circuit on average had shown a 31% and 39% improvement respectively in comparison to its respective three-year historical average. Although historical reliability metric results have shown the Targeted Circuit Program to be effective in remediating worst performing circuit performance, PG&E has suspended funding for the Targeted Circuit Program in the 2020 General Rate Case (GRC) in order to focus on overhead system hardening and wildfire risk reductions efforts.

As reported in the Wildfire Mitigation Plan (Rulemaking (R.) 18-10-007), PG&E submitted a Wildfire Safety Plan to minimize the risk of catastrophic wildfires. A key component in the Wildfire Safety Plan submittal is the System Hardening Program. Under the System Hardening Program, PG&E’s distribution engineers evaluate a rebuild of overhead distribution circuits in the High Fire Threat District (HFTD) areas. The typical system hardening work included, as appropriate for the circuit, replacing bare wire with insulated conductor, increasing strength requirements for poles, installing new system automation and protection equipment, and targeted conversion of overhead equipment to underground equipment. The anticipated goal of each system hardened circuit is to minimize the risk of an asset failure that could result in a fire ignition. The anticipated reliability improvement of each system hardened circuit is to minimize vegetation, equipment failure, third party, animal, and other (unknown) caused outages that could result in a fire ignition. As forecasted in PG&E’s Wildfire Safety Plan, PG&E intends to begin the System Hardening Program in 2019 by completing 150 circuit miles of system hardening work in HFTD areas. In 2020-2022, PG&E forecasts completing 600 circuit miles per year during this period. At the end of the System Hardening Program, PG&E intends to complete 7,100 circuit miles of system hardening work.

Another key component of the Wildfire Safety Plan is the Enhanced Vegetation Management (EVM) Program. Under the EVM Program, PG&E will aggressively expand its vegetation management around its assets in the HFTD areas. The typical EVM work included, as appropriate for the circuit, clearing overhang, targeted trimming/removal of specific tree species, and performing “ground to conductor” vegetative fuel reduction. The anticipated goal of each EVM circuit is to minimize the risk of a fire ignition due to vegetation-conductor contact. The anticipated reliability improvement of each EMV circuit is to minimize vegetation caused outages. As forecasted in PG&E’s Wildfire Safety Plan, PG&E intends to perform EVM work on approximately 2,450 circuit miles in HFTD areas in 2019. The program will be a multi-year effort to address the approximately 25,200 distribution circuit miles in the HFTD areas.

Despite reductions in some reliability programs, PG&E teams continue to perform internal reviews of unplanned outages on a regular basis through the company’s Outage Review Team (ORT) Process. The objective of the ORT process is to identify and minimize chronic reliability issues that affect smaller number of customers. Cost effective remediation work that addresses those circuits identified from the ORT process are incorporated into PG&E’s base reliability work.

As identified in Tables 60 and 61, 10 and 15 of PG&E’s worst performing AIFI and AIDI circuits respectively are in Tiers 2 or 3 HFTD areas. As a result, these worst performing circuits have or would be incorporated into the Wildfire Safety Plan. For the worst performing circuits located in Tier 1 HFTD area, PG&E will evaluate what remedial action, if any, as appropriate through the ORT process. This includes determining whether any cost-effective remedial action will be performed through PG&E’s base reliability improvement work. Any future funding requests for PG&E’s Targeted Circuit Program would be submitted in the 2023 General Rate Case.

"Deficient" Worst Performing Circuits:

The circuits listed below are "deficient" (WPC) circuits in response to section 5b of CPUC D 16-008-001, Appendix B:

1. GARBERVILLE 1101
   i. An explanation of why it was ranked as a "deficient" circuit:
      - Three-year (2014-2016) average AIFI score of 4.98
      - Three-year (2015-2017) average AIFI score of 4.95
      - Three-year (2016-2018) average AIFI score of 4.99
   ii. A historical record of the metric:
      - AIFI 2014 = 3.90
      - AIFI 2015 = 2.27
      - AIFI 2016 = 8.76
      - AIFI 2017 = 3.81
      - AIFI 2018 = 2.49
   iii. An explanation of why it was on the deficiency list again:

      The Garberville 1101 circuit provides electric service to approximately 1,239 customers in Southern Humboldt and Northern Mendocino Counties through 166 circuit-miles of primarily overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk). The Garberville 1101 circuit is comprised of three main branches. The eastern branch serves approximately 272 customers through a 22 circuit-mile line section that travels through remote, mountainous terrain including zones with intermediate and heavy snow loading. The western branch serves approximately 171 customers through a 12 circuit-mile line section that traverses through coastal mountains to the community of Whitethorn. The southern branch serves approximately 745 customers through a 28 circuit-mile line section that follows the Hwy 101 corridor between Garberville and Leggett. The southern branch also runs along the South Fork of the Eel River and crosses several State Parks including Richardson's Grove, Smith Redwoods, and Standish Hickey Recreation Area. The major factors driving the Garberville 1101 reliability performance are the remote mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support.
   iv. An explanation of what is being done to improve the circuit's future performance:

      This circuit was part of the 2012 Targeted Circuit program. Specifically, the 2012 targeted circuit project upgraded 700 feet of overhead conductor, installed two overhead switches, and performed miscellaneous reliability work like pole reframing and self-protecting transformer replacement. An additional 4,400 feet of mainline conductor was successfully replaced in 2016 as part of the OH Conductor Replacement Program. A system hardening project to replace 9,000' of OH conductor has been initiated as part of the Wildfire Safety Plan.

v. A quantitative description of the utility's expectation for that circuit's future performance:

A 13% percent increase in 2018 AIFI reliability performance compared to the three-year outage history from 2007-2009 was observed after the completion of the 2012 targeted circuit project. This reflects the reliability performance challenges that still exist on the Garberville 1101 circuit. Incremental reliability improvement is anticipated after completion of the system hardening project, but the anticipated reliability benefits have not been quantified. This includes the associated reliability benefits after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 2 High Fire Threat District.

2. GARBERVILLE 1102

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIFI score of 3.34 and AIDI score of 726
- Three-year (2015-2017) average AIFI score of 4.41 and AIDI score of 970
- Three-year (2016-2018) average AIFI score of 4.01 and AIDI score of 1,083

ii. A historical record of the metric:

- AIFI 2014 = 3.50
- AIFI 2015 = 2.66
- AIFI 2016 = 3.87
- AIFI 2017 = 6.68
- AIFI 2018 = 1.50

- AIDI 2014 = 936
- AIDI 2015 = 510
- AIDI 2016 = 732
- AIDI 2017 = 1,665
- AIDI 2018 = 853

iii. An explanation of why it was on the deficiency list again:

The Garberville 1102 circuit provides electric service to approximately 1,239 customers in Humboldt County through 146 circuit-miles of primarily overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk). The primary mainline section of Garberville 1102 circuit travels through a 50 mile stretch of mountainous terrain along the northern coast. The primary mainline section also crosses an area known in the outdoor/hiking community as "The Lost Coast" and portions of the Humboldt Redwoods State Park. The primary mainline section splits near the town of Briceland, approximately 10 circuit miles northwest of Garberville. The north branch extends 37 miles to Petrolia while the south branch extends 14 miles to the community of Whitethorn. The major factors driving the Garberville 1102 reliability performance are the remote mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support. A 15% and 32% contribution to the 2017 AIFI and AIDI performance respectively was driven by a single vegetation caused outage that resulted in a wire down occurrence and a broken pole.

iv. An explanation of what is being done to improve the circuit's future performance:

This circuit was part of the 2011 Targeted Circuit program. Specifically, the 2011 targeted circuit project installed twelve fuses, three reclosers and performed miscellaneous reliability improvement work like pole reframing and self-protecting transformer replacement. A 2013 reconductor project successfully replaced over one mile of overhead conductor with a larger conductor. A reliability improvement project to allow a temporary generator to be interconnected at the town of Petrolia was successfully completed in 2018. This project was part of a pilot program to minimize outage restoration time. A system hardening project has been initiated to replace 4,000’ of OH conductor as part of the Wildfire Safety Plan.

v. A quantitative description of the utility's expectation for that circuit's future performance:

A 66% and 45% percent improvement in 2018 AIFI and AIDI reliability performance respectively were observed after the completion of the 2011 targeted circuit project compared to the three-year outage history from 2006-2008. Although difficult to quantify the anticipated reduction in outage restoration time after completion of a 2018 distribution generation interconnection project, AIDI improvement was observed from 2017 to 2018. Incremental reliability improvement is also anticipated after completion of the system hardening project, but the anticipated reliability benefits have not been quantified. This includes the associated reliability benefits after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 2 High Fire Threat District.

3. HOOPA 1101

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIDI score of 828
- Three-year (2015-2017) average AIDI score of 907
- Three-year (2016-2018) average AIDI score of 751

ii. A historical record of the metric:

- AIDI 2014 = 222
- AIDI 2015 = 1,152
- AIDI 2016 = 1,105
- AIDI 2017 = 459

- AIDI 2018 = 691

iii. An explanation of why it was on the deficiency list again:

The Hoopa 1101 circuit provides electric service to approximately 1,985 customers in Humboldt County through 151 circuit-miles of primarily overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk). The Hoopa 1101 circuit is comprised of two main branches. The eastern branch serves approximately 522 customers through a 24 circuit-mile line section that traverses through remote mountainous terrain including the Six Rivers and Klamath National Forests. The western branch is a 20 circuit-mile line section that runs along the Klamath River and follows the Hwy 169 corridor between the communities of Weitchpec and Johnsons. The major factors driving the Hoopa 1101 reliability performance are the remote mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support.

iv. An explanation of what is being done to improve the circuit's future performance:

A reliability improvement project to allow a temporary generator to be interconnected on the eastern branch at Orleans was successfully completed in 2017. A second distribution generation interconnection project to support the circuit breaker zone is targeted for 2019-20 installation. As of the date of this report, no system hardening project has been initiated for the Hoopa 1101 circuit.

v. A quantitative description of the utility's expectation for that circuit's future performance:

Although difficult to quantify the anticipated reduction in outage restoration time after completion of the 2017 distribution generation interconnection project, AIDI improvement was observed from 2016 to 2018. Incremental reliability improvement is also anticipated after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 2 High Fire Threat District.

4. CHALLENGE 1101

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIDI score of 1,017
- Three-year (2015-2017) average AIDI score of 766
- Three-year (2016-2018) average AIDI score of 533

ii. A historical record of the metric:

- AIDI 2014 = 1,087
- AIDI 2015 = 942
- AIDI 2016 = 1,022
- AIDI 2017 = 331
- AIDI 2018 = 250

iii. An explanation of why it was on the deficiency list again:

The Challenge 1101 circuit provides electric service to approximately 690 customers in Yuba, Butte and Plumas Counties through 49 circuit-miles of primarily overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 3 (Extreme Risk). The Challenge 1101 circuit is comprised of one main branch that travels northeast through remote, mountainous terrain including the Plumas National Forest. The major factors driving the Challenge 1101 reliability performance are the remote mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support. A 71% contribution of the 2016 AIDI performance was driven by a single vegetation caused outage resulting in wire down occurrences at multiple locations.

iv. An explanation of what is being done to improve the circuit's future performance:

This circuit was part of the 2013 Targeted Circuit program. Specifically, the 2013 targeted circuit project installed 13 fuses, 1 recloser, 2 switches, and performed miscellaneous reliability work like pole reframing and pole replacement. As of the date of this report, no system hardening project has been initiated for the Challenge 1101 circuit.

v. A quantitative description of the utility's expectation for that circuit's future performance:

A 77% percent improvement in 2018 AIDI reliability performance was observed after the completion of the 2013 targeted circuit project compared to the three-year outage history from 2008-2010. Incremental reliability improvement is also anticipated after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 3 High Fire Threat District.

5. ALLEGHANY 1101

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIDI score of 711
- Three-year (2015-2017) average AIDI score of 562
- Three-year (2016-2018) average AIDI score of 630

ii. A historical record of the metric:

- AIDI 2014 = 1,340
- AIDI 2015 = 205
- AIDI 2016 = 590
- AIDI 2017 = 846
- AIDI 2018 = 420

iii. An explanation of why it was on the deficiency list again:

The Alleghany 1101 circuit provides electric service to approximately 1,074 customers in Sierra County through 79 circuit-miles of primarily overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 3 (Extreme Risk). The Alleghany 1101 circuit is comprised of about 45 miles of mainline with various branches that travel through a mix of rural highway and cross-country access. Its most northern branch travels through mountainous terrain including the Plumas National Forest. The major factors driving the Alleghany 1101 reliability performance are the remote service territory, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support. In a specific instance, 2014 performance was driven by two outages that resulted in over one million customer outage minutes. Restoration in those outages was delayed due to severe weather and its remote location.

iv. An explanation of what is being done to improve the circuit's future performance:

This circuit was part of PG&E's 2013 Targeted Circuit program. Specifically, the 2013 targeted circuit project replaced 2,700 feet of overhead conductor with larger wire to be more resilient to snow loading conditions. This project also upgraded 2 reclosers to provide remote operation capability. As of the date of this report, no system hardening project has been initiated for the Alleghany 1101 circuit.

v. A quantitative description of the utility's expectation for that circuit's future performance:

A 57% percent improvement in 2018 AIDI reliability performance was observed after the completion of the 2013 targeted circuit project compared to the three-year outage history from 2008-2010. Incremental reliability improvement is also anticipated after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 3 High Fire Threat District.

6. WILLOW CREEK 1103

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIDI score of 558
- Three-year (2015-2017) average AIDI score of 807
- Three-year (2016-2018) average AIDI score of 628

ii. A historical record of the metric:

- AIDI 2014 = 797
- AIDI 2015 = 576
- AIDI 2016 = 303
- AIDI 2017 = 1,540
- AIDI 2018 = 49

iii. An explanation of why it was on the deficiency list again:

The Willow Creek 1103 circuit provides electric service to approximately 1,529 customers in Humboldt and Trinity Counties through 87 circuit-miles of primarily overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk) and Tier 3 (Extreme Risk). The Willow Creek 1103 circuit is comprised of two main branches that travel south and southeast through remote, mountainous terrain including the Six Rivers and Trinity National Forests. The major factors driving the

Willow Creek 1103 reliability performance are the remote mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support. A 63% contribution of the 2017 AIDI performance was driven by a single vegetation caused outage that resulted in a wire down occurrence.

iv. An explanation of what is being done to improve the circuit's future performance:

This circuit was part of the 2014 Targeted Circuit program. Specifically, the 2014 targeted circuit project replaced over 900 feet of conductor, installed 5 fuses, 6 switches, and performed miscellaneous reliability work like pole reframing and pole replacement. A system hardening project has been initiated to replace 6,300' of OH conductor as part of the Wildfire Safety Plan.

v. A quantitative description of the utility's expectation for that circuit's future performance:

A 63% percent improvement in 2018 AIDI reliability performance was observed after the completion of the 2014 targeted circuit project compared to the three-year outage history from 2009-2011. Incremental reliability improvement is anticipated after completion of the system hardening project, but the anticipated reliability benefits have not been quantified. This includes the associated reliability benefits after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tiers 2 and 3 High Fire Threat Districts.

7. OTTER 1102

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIFI score of 4.29 and AIDI score of 1,224
- Three-year (2015-2017) average AIFI score of 3.06 and AIDI score of 687
- Three-year (2016-2018) average AIFI score of 3.84 and AIDI score of 976

ii. A historical record of the metric:

- AIFI 2014 = 5.54
- AIFI 2015 = 1.44
- AIFI 2016 = 5.90
- AIFI 2017 = 1.84
- AIFI 2018 = 3.80

- AIDI 2014 = 1,714
- AIDI 2015 = 844
- AIDI 2016 = 1,110
- AIDI 2017 = 103

- AIDI 2018 = 1,713

iii. An explanation of why it was on the deficiency list again:

The Otter 1102 circuit provides electric service to approximately 530 customers in Monterey County through 65 circuit-miles of primarily overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk). The primary mainline section of Otter 1102 circuit travels south along Central California's coastline through a 26 mile stretch of mountainous terrain including Andrew Molera and Pfeiffer Big Sur State Parks. The major factors driving the Otter 1102 reliability performance are the remote mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure with elevated corrosion conditions, and minimal ties to adjacent circuits for outage restoration support.

iv. An explanation of what is being done to improve the circuit's future performance:

This circuit was part of the 2014 Targeted Circuit program. Specifically, the targeted circuit project replaced 1,000 feet of overhead conductor, installed seven fuses, replaced 7 poles, reframed 14 cross arms, and installed 9 animal guards. An additional 19,100 feet of reconductor work was completed from 2015-2016 with another 10,100 feet of reconductor work planned for 2019 completion. As of the date of this report, no system hardening project has been initiated for the Otter 1102 circuit.

v. A quantitative description of the utility's expectation for that circuit's future performance:

A 10% increase and 4% percent improvement in 2018 AIFI and AIDI reliability performance, respectively, compared to the three-year outage history from 2009-2011were observed after the completion of the 2014 targeted circuit project. This reflects the reliability performance challenges that still exist on the Otter 1102 circuit. Incremental reliability improvement is anticipated after completion of the overhead reconductor work in 2019 and the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 2 High Fire Threat District.

8. EL DORADO PH 2101

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIFI score of 3.61
- Three-year (2015-2017) average AIFI score of 3.55
- Three-year (2016-2018) average AIFI score of 2.99

ii. A historical record of the metric:

- AIFI 2014 = 3.09
- AIFI 2015 = 4.29
- AIFI 2016 = 3.36
- AIFI 2017 = 3.00
- AIFI 2018 = 2.62

iii. An explanation of why it was on the deficiency list again:

The El Dorado PH 2101 circuit provides electric service to approximately 4,611 customers in El Dorado County through 170 circuit-miles of primarily overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk) and Tier 3 (Extreme Risk). The El Dorado PH 2101 circuit is comprised of one main branch that travels east along Highway 50 through a 30 mile stretch of mountainous terrain including El Dorado National Forest. The primary mainline section splits near the town of Polluck Pines, approximately 4 miles southeast of El Dorado PH (Power House). The southwest branch extends 8 miles to Pleasant Valley while the south branch extends 10 miles to the community of Grizzly Flat. The major factors driving the El Dorado PH 2101 reliability performance are the remote mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support.

iv. An explanation of what is being done to improve the circuit's future performance:

This circuit was part of the 2011 Targeted Circuit program. Specifically, the targeted circuit project installed 2 fuses and reframed 13 poles. As part of PG&E's base reliability work, a project was initiated to install additional line reclosers, add remote operating capabilities to existing line reclosers, replace overhead conductor to increase capacity, and install automated switches with a 2019 completion timeframe. Several system hardening projects have been initiated to replace over 102 miles of OH conductor as part of the Wildfire Safety Plan.

v. A quantitative description of the utility's expectation for that circuit's future performance:

A 26% percent improvement in 2018 AIFI reliability performance was observed after the completion of the 2011 targeted circuit project compared to the three-year outage history from 2006-2008. Incremental reliability improvement is anticipated after completion of the 2019 base reliability improvement project and system hardening projects, but the anticipated reliability benefits have not been quantified. This includes the associated reliability benefits after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tiers 2 and 3 High Fire Threat Districts.

9. TULARE LAKE 2108

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIFI score of 3.15 and average AIDI score of 823
- Three-years (2015-2017) average AIFI score of 3.43 and average AIDI score of 659
- Three-year (2016-2018) average AIFI score of 4.49 and average AIDI score of 686

ii. A historical record of the metric:
- AIFI 2014 = 5.57
- AIFI 2015 = 1.99
- AIFI 2016 = 2.68
- AIFI 2017 = 5.57
- AIFI 2018 = 5.21

- AIDI 2014 = 1,506
- AIDI 2015 = 712
- AIDI 2016 = 473
- AIDI 2017 = 789
- AIDI 2018 = 805

iii. An explanation of why it was on the deficiency list again:

The Tulare Lake 2108 circuit provides electric service to approximately 104 customers in Kings County through 58 circuit-miles of primarily overhead conductor. The Tulare 2108 circuit is comprised of several branches that supports a predominately agriculture community. The major factors driving the Tulare Lake 2108 reliability performance are equipment failure and animal caused outages.

iv. An explanation of what is being done to improve the circuit's future performance:

A targeted circuit project has been initiated on the Tulare Lake 2108 with the work scope to be developed. The typical installation of mainline protective devices and performing miscellaneous reliability improvement work is anticipated. As of the date of this report, no funding for the Targeted Circuit Program has been submitted with any future funding requests to be submitted in the 2023 General Rate Case.

v. A quantitative description of the utility's expectation for that circuit's future performance:

Based on results shown by other similar circuits after targeted circuit work, PG&E anticipates that the work proposed will improve reliability performance by 25 percent or more.

10. ALPINE 1102

i. An explanation of why it was ranked as a "deficient" circuit:
- Three-year (2014-2016) average AIFI score of 4.58
- Three-year (2015-2017) average AIFI score of 4.00
- Three-year (2016-2018) average AIFI score of 3.33

ii. A historical record of the metric:
- AIFI 2014 = 3.00
- AIFI 2015 = 5.99
- AIFI 2016 = 4.00
- AIFI 2017 = 2.00

- AIFI 2018 = 4.00

iii. An explanation of why it was on the deficiency list again:

The Alpine 1102 circuit provides electric service to approximately 309 customers in Alpine County through 3 circuit-miles of entirely underground conductor. Specifically, the Alpine 1102 circuit supports the Bear Valley community. The Salt Springs 2101 circuit provides the primary service to the Alpine 1102 circuit through 21/12 kV voltage step down transformers. The major factor driving the Alpine 1102 reliability performance is the reliability performance of the Salt Springs 2101 circuit. The Salt Springs 2101 circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk).

iv. An explanation of what is being done to improve the circuit's future performance:

It is anticipated that the improvement work on the Salt Springs 2101 will improve the Alpine 1102 reliability performance. A targeted circuit project had been initiated on the Salt Springs 2101 circuit but has since been repurposed to support the wildfire mitigation efforts. As of the date of this report, no system hardening project has been initiated for the Salt Springs 2101 circuit.

v. A quantitative description of the utility's expectation for that circuit's future performance:

Incremental reliability improvement is anticipated after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 2 High Fire Threat District.

11. POSO MOUNTAIN 2101

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIDI score of 1,078
- Three-year (2015-2017) average AIDI score of 1,088
- Three-year (2016-2018) average AIDI score of 884

ii. A historical record of the metric:

- AIDI 2014 = 245
- AIDI 2015 = 1,691
- AIDI 2016 = 1,379
- AIDI 2017 = 192
- AIDI 2018 = 1,082

iii. An explanation of why it was on the deficiency list again:

The Poso Mountain 2101 circuit provides electric service to approximately 146 customers in Kern County through 60 circuit-miles of entirely overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk). The Poso Mountain 2101 circuit is comprised of several branches that support a predominately unincorporated community north of Bakersfield. The major factors driving the Poso Mountain 2101 reliability performance are overhead conductor exposure, animal caused outages, and minimal ties to adjacent circuits for outage restoration support.

iv. An explanation of what is being done to improve the circuit's future performance:

As part of PG&E's base reliability work, three failed reclosers were replaced with bird guard protection in 2016. As of the date of this report, no system hardening project has been initiated for the Poso Mountain 2101 circuit.

v. A quantitative description of the utility's expectation for that circuit's future performance:

Although difficult to quantify the anticipated reliability benefits after completion of the 2016 base reliability project, AIDI improvement was observed from 2016 to 2018. Incremental reliability improvement is also anticipated after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 2 High Fire Threat District.

12. LOS GATOS 1106

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIFI score of 2.58
- Three-year (2015-2017) average AIFI score of 2.94
- Three-year (2016-2018) average AIFI score of 4.51

ii. A historical record of the metric:

- AIFI 2014 = 2.51
- AIFI 2015 = 0.82
- AIFI 2016 = 4.42
- AIFI 2017 = 3.58
- AIFI 2018 = 5.54

iii. An explanation of why it was on the deficiency list again:

Los Gatos is located approximately seven miles southwest of San Jose in De Anza Division. The Los Gatos 1106 circuit provides electric service to approximately 1,597 customers in Santa Clara county through 74 miles of primary overhead conductor. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk) and Tier 3 (Extreme Risk). The Los Gatos 1106 circuit is comprised of one main branch that travels south along Highway 50 through a 3 mile stretch of mountainous terrain including Lexington Reservoir Park. The primary mainline section splits into various branches near the Lexington Reservoir and extends into the Santa Cruz mountains. The major factors driving the Los Gatos 1106 reliability performance are the mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support.

iv. An explanation of what is being done to improve the circuit's future performance:

A targeted circuit project had been initiated on the Los Gatos 1106 circuit but has since been repurposed to support the wildfire mitigation efforts. Several system hardening projects have been initiated to replace over 30 miles of OH conductor as part of the Wildfire Safety Plan.

v. A quantitative description of the utility's expectation for that circuit's future performance:

Incremental reliability improvement is anticipated after completion of the system hardening projects, but the anticipated reliability benefits have not been quantified. This includes the associated reliability benefits after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tiers 2 and 3 High Fire Threat Districts.

13. EIGHT MILE 2106

i. An explanation of why it was ranked as a "deficient" circuit:
- Three-year (2014-2016) average AIFI score of 2.50
- Three-year (2015-2017) average AIFI score of 2.79
- Three-year (2016-2018) average AIFI score of 2.52

ii. A historical record of the metric:
- AIFI 2014 = 0.00
- AIFI 2015 = 1.63
- AIFI 2016 = 5.91
- AIFI 2017 = 0.85
- AIFI 2018 = 0.82

iii. An explanation of why it was on the deficiency list again:

The Eight Mile 2106 circuit provides electric service to approximately 196 customers in San Joaquin County through 31 circuit-miles of mainly overhead conductor. The Eight Mile 2106 circuit is comprised of several branches that support a predominately King Island and Empire Tract north east of Stockton. The major factors driving the Eight Mile 2106 reliability performance are equipment failures, remote access challenges, and minimal ties to adjacent circuits for outage restoration support.

iv. An explanation of what is being done to improve the circuit's future performance:

A base reliability improvement project to install 1 recloser and 2 fuses has been initiated for 2020 completion.

v. A quantitative description of the utility's expectation for that circuit's future performance:

Incremental reliability improvement is anticipated after completion of the 2020 base reliability improvement project, but the anticipated reliability benefits have not been quantified. PG&E will continue to explore cost effective reliability improvement opportunities such as installing additional remotely operable devices and replacing traditional fuses with single phase reclosers.

14. TRINIDAD 1102

i. An explanation of why it was ranked as a "deficient" circuit:
   - Three-year (2014-2016) average AIFI score of 2.98
   - Three-year (2015-2017) average AIFI score of 2.82
   - Three-year (2016-2018) average AIFI score of 2.95

ii. A historical record of the metric:
   - AIFI 2014 = 1.63
   - AIFI 2015 = 2.29
   - AIFI 2016 = 5.01
   - AIFI 2017 = 1.17
   - AIFI 2018 = 2.68

iii. An explanation of why it was on the deficiency list again:

   The Trinidad 1102 circuit provides electric service to approximately 761 customers in Humboldt County through 24 circuit-miles of primarily overhead conductor. The Trinidad 1102 circuit is comprised of one main branch that travels north along Patrick’s Point Drive and paralleling Highway 101 through a 7 mile stretch of densely forested coastal mountainous terrain including Patrick’s Point State Park to the community of Big Lagoon. The major factors driving Trinidad 1102 reliability performance are the mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support.

iv. An explanation of what is being done to improve the circuit's future performance:

   As of the date of this report, no targeted circuit project has been initiated for the Trinidad 1102 circuit.

v. A quantitative description of the utility's expectation for that circuit's future performance:

   PG&E will continue to explore cost effective reliability improvement opportunities through the Outage Review Team Process such as installing additional remotely operable devices and replacing traditional fuses with single phase reclosing devices. This includes exploring cost effective reliability improvement opportunities to minimize wildfire ignition risks in the Tier 1 High Fire Threat District through proactive asset replacement or targeted vegetation management work.

15. ROB ROY 2105

i. An explanation of why it was ranked as a "deficient" circuit:
   - Three-year (2014-2016) average AIFI score of 2.54
   - Three-year (2015-2017) average AIFI score of 2.66
   - Three-year (2016-2018) average AIFI score of 2.80

ii. A historical record of the metric:
   - AIFI 2014 = 0.23
   - AIFI 2015 = 1.80

- AIFI 2016 = 5.61
- AIFI 2017 = 0.59
- AIFI 2018 = 2.29

iii. An explanation of why it was on the deficiency list again:

The Rob Roy 2105 circuit provides electric service to approximately 8,104 customers to the city of Aptos and Santa Cruz County through 72 circuit-miles of overhead conductor and 28 circuit-miles of underground cable. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 2 (Elevated Risk) and Tier 3 (Extreme Risk). The Rob Roy 2105 circuit is comprised of several branches that travels along the coast line from Seacliff Beach to La Selva Beach including Nisene Marks State Park. The major factors driving Rob Roy 2105 reliability performance are equipment failures, vegetation, 3rd party (vehicle accidents), and overhead conductor exposure.

iv. An explanation of what is being done to improve the circuit's future performance:

A reliability improvement project for installing additional sectionalizing devices (2 UG switches) was completed in 2017. A system hardening project to replace 2.16 miles of OH conductor was initiated for 2019 completion. An additional system hardening project has been initiated to replace 9 miles of OH conductor as part of the Wildfire Safety Plan. A third project has been initiated to replace 0.88 miles in the Tier 1 High Fire Threat Districts under the OH Conductor Replacement Program.

v. A quantitative description of the utility's expectation for that circuit's future performance:

Incremental reliability improvement is anticipated after completion of the system hardening projects, but the anticipated reliability benefits have not been quantified. This includes the associated reliability benefits after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tiers 2 and 3 High Fire Threat Districts.

16. BUCKS CREEK 1103

i. An explanation of why it was ranked as a "deficient" circuit:

- Three-year (2014-2016) average AIDI score of 744
- Three-year (2015-2017) average AIDI score of 1,106
- Three-year (2016-2018) average AIDI score of 1,175

ii. A historical record of the metric:

- AIDI 2014 = 0
- AIDI 2015 = 1,036
- AIDI 2016 = 1,199
- AIDI 2017 = 1,084
- AIDI 2018 = 1,242

iii. An explanation of why it was on the deficiency list again:

The Bucks Creek 1103 circuit provides electric service to approximately 322 customers in Plumas County through 26 circuit-miles of OH conductor and UG cable. This circuit also serves customers located in the CPUC High Fire Threat District - Tier 3 (Extreme Risk). The Bucks Creek 1103 circuit is comprised of one main branch that travels east along OHV Road 9 through a 15 mile stretch of mountainous terrain including Plumas National Forest to the Bucks Lake community. The major factors driving Bucks Creek 1103 reliability performance are the remote mountainous service territory with increased vegetation caused outage risks, overhead conductor exposure, and minimal ties to adjacent circuits for outage restoration support.

iv. An explanation of what is being done to improve the circuit's future performance:

As of the date of this report, no system hardening project has been initiated for the Bucks Creek 1103 circuit.

v. A quantitative description of the utility's expectation for that circuit's future performance:

Incremental reliability improvement is anticipated after completion of the comprehensive Wildfire Safety Plan to minimize wildfire ignition risks in the Tier 3 High Fire Threat District.

6. Top 10 major unplanned power outage events of 2018

Significant Outage Events Of 2018

Table below lists the ten largest outage events experienced during 2018. PG&E interprets this reporting requirement as the ten events (individual days or in some cases a group of consecutive days) with a significant number of customer interruptions in the system or a portion of the system. These events are listed in descending order of customer interruptions.

Table 63 - Ten Largest 2018 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service	CPUC Major Event?
1	A trio of early winter-season storms generated a significant amount of outage activity due to gusty south winds and heavy rain with considerable flashover activity across the interior south.	11/21/2018 – 11/23/2018	224,103	97	460	Yes (11/21 only)
2	Carr Fire	7/28/2018 – 7/30/2018	121,187	248	132	Yes (7/28 only)
3	Early season low pressure system brought the first rain in months to the territory resulting in significant flashover-related outages with widespread thunderstorm activity across the interior and south on 10/3 producing over 2,000 lightning strikes.	10/2/2018 – 10/3/2018	115,705	30		
4	A dynamic Pacific weather system delivered gusty south winds, heavy rain, scattered thunderstorms and heavy mountain snow to the territory; causing significant outage activity, especially in Central Coast division.	11/28/2018 – 11/29/2018	109,891	99	741	Yes (11/29 only)
5	A strong winter storm impacted the territory with heavy rain, heavy mountain snow and gusty south winds followed by a secondary wave generating low snow and thunderstorms the next day	3/1/2018 – 3/2/2018	108,654	100		
6	Not weather related	5/17/2018	75,292	19	120	Yes
7	An offshore wind event developed across the northern two thirds of the territory and produced Extreme-Plus fire danger resulting in execution of PSPS.	10/14/2018	70,326	89	441	Yes
8	Camp Fire	11/8/2018	68,468	936	214	Yes
9	Breezy to gusty northeast winds developed across the territory producing considerable outage activity in San Jose and Central Coast divisions	12/31/2018	57,736	31		
10	A moist, atmospheric-river storm system delivered copious amounts of rainfall to parts of the territory with thunderstorm activity across the interior producing over 900 lightning strikes and widespread outage activity.	3/22/2018	55,598	39		

* Note: Values exclude planned outages

7. Summary List of Major Event Day (MED) per IEEE 1366

Major Event Day

IEEE Standard 1366 defines MED as follows:

IEEE Standard 1366-2003 uses a statistically-based method of identifying excludable events. Specifically, the IEEE standard provides for the exclusion of all outages occurring on any day where its SAIDI is greater than "TMED" where:

$$T_{MED} = e^{\text{average over 5 yrs. of Ln (daily SAIDI) + 2.5 * STD DEV of 5 yrs. of Ln (daily SAIDI)}}$$

The IEEE 1366 Standard includes outage resulting from the failure of a single line transformer.

Table 64 – 2018 Major Event Day

Date	Description	Reason
3/16/2018	A late winter storm system that moved into PG&E's service territory producing rain, gusty winds, and mountain snow at lower elevations	IEEE MED
7/28/2018	The Carr Fire	IEEE MED
10/14/2018	An offshore wind event developed across the northern two thirds of the territory and produced Extreme-Plus fire danger resulting in execution of PSPS.	IEEE MED
11/8/2018	Camp Fire	IEEE MED
11/21/2018	A trio of early winter-season storms generated a significant amount of outage activity due to gusty south winds and heavy rain with considerable flashover activity across the interior south.	IEEE MED
11/29/2018	A dynamic Pacific weather system delivered gusty south winds, heavy rain, scattered thunderstorms and heavy mountain snow to the territory; causing significant outage activity	IEEE MED

*MED is defined as Major Events Day

7.1 Major Event Day (MED) Discussions:

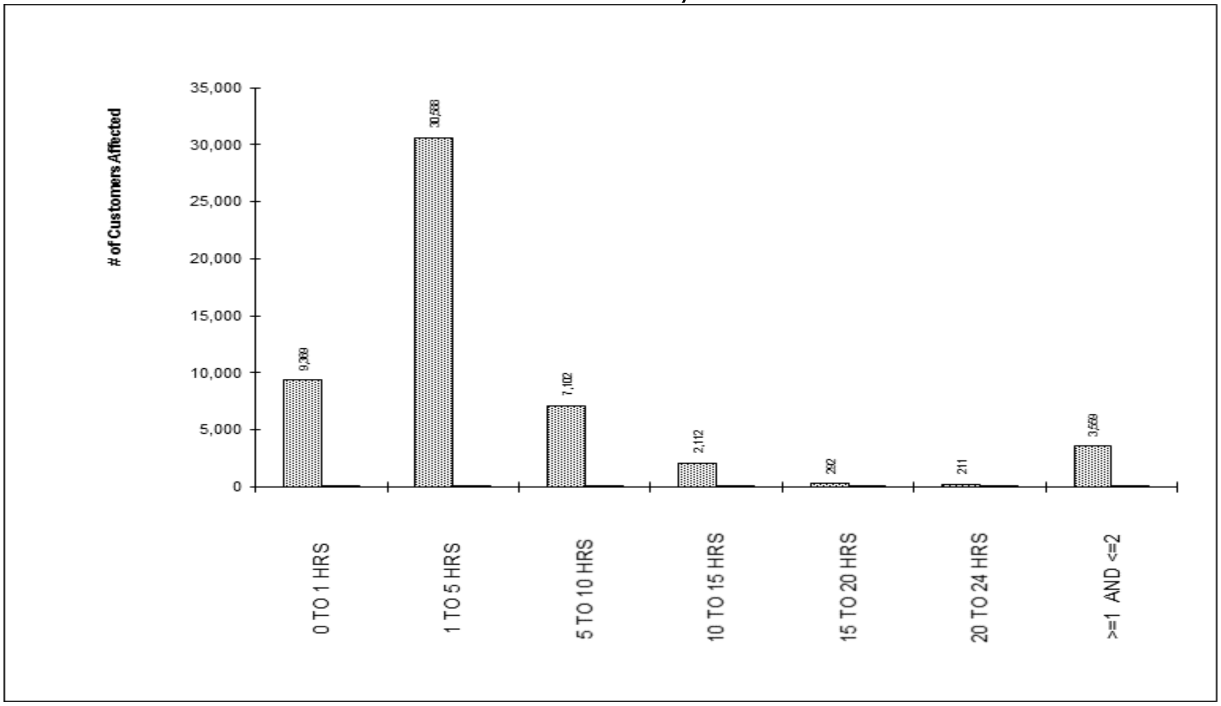
March 16, 2018 Major Event Day

Table 65 below indicates the number of customers without service at periodic intervals for this event (03/16/2018). The numbers of customers noted in the table are for only those divisions impacted by this event.

Table 65 – March 16

Outage Duration	Customers Affected	Cumulative %
0 TO 1 HRS	9,369	17.21%
1 TO 5 HRS	30,588	73.39%
5 TO 10 HRS	7,102	86.44%
10 TO 15 HRS	2,112	90.31%
15 TO 20 HRS	292	90.85%
20 TO 24 HRS	211	91.24%
>=1 AND <=2	3,559	97.78%
>=2 AND <=3	1,133	99.86%
>=3 AND <=4	78	100.00%
>=4 AND <=5	0	100.00%
>=5 AND <=6	0	100.00%
>=6 AND <=7	0	100.00%
> 7	0	100.00%
Total	54,444	

Chart 250: March 16, 2018 MED



Note: The number of customer outages segmented by hourly restoration periods requires a level of detail not normally maintained by PG&E in its central computerized records. The information shown here is what PG&E has been able to reconstruct from several databases and may have a margin of error of up to 5%.

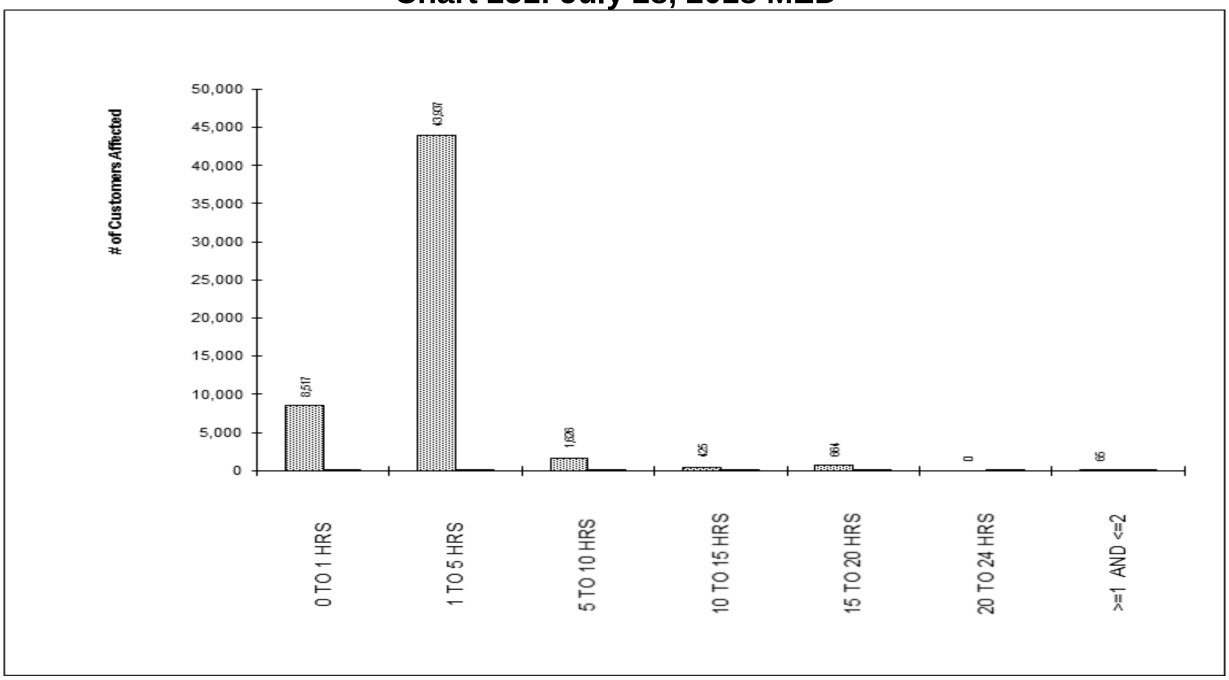
July 28, 2018 Major Event Day

Table 66 below indicates the number of customers without service at periodic intervals for this event (07/28/2018). The numbers of customers noted in the table are for only those divisions impacted by this event.

Table 66 – July 28

Outage Duration	Customers Affected	Cumulative %
0 TO 1 HRS	8,517	15.15%
1 TO 5 HRS	43,937	93.29%
5 TO 10 HRS	1,626	96.18%
10 TO 15 HRS	425	96.93%
15 TO 20 HRS	664	98.11%
20 TO 24 HRS	0	98.11%
>=1 AND <=2	65	98.23%
>=2 AND <=3	19	98.26%
>=3 AND <=4	256	98.72%
>=4 AND <=5	250	99.16%
>=5 AND <=6	35	99.23%
>=6 AND <=7	71	99.35%
> 7	364	100.00%
Total	56,229	

Chart 251: July 28, 2018 MED



Note: The number of customer outages segmented by hourly restoration periods requires a level of detail not normally maintained by PG&E in its central computerized records. The information shown here is what PG&E has been able to reconstruct from several databases and may have a margin of error of up to 5%.

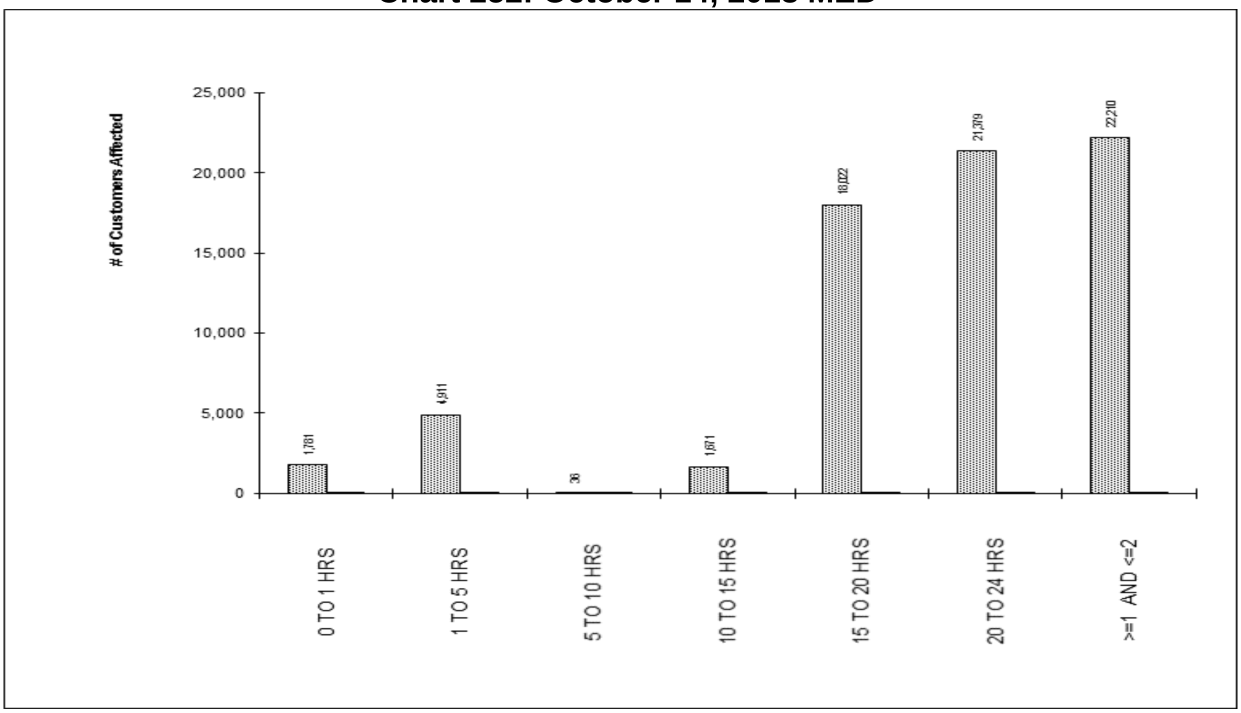
October 14, 2018 Major Event Day

Table 67 below indicates the number of customers without service at periodic intervals for this event (10/14/2018). The numbers of customers noted in the table are for only those divisions impacted by this event.

Table 67 – October 14

Outage Duration	Customers Affected	Cumulative %
0 TO 1 HRS	1,781	2.53%
1 TO 5 HRS	4,911	9.50%
5 TO 10 HRS	36	9.55%
10 TO 15 HRS	1,671	11.93%
15 TO 20 HRS	18,022	37.52%
20 TO 24 HRS	21,379	67.88%
>=1 AND <=2	22,210	99.42%
>=2 AND <=3	410	100.00%
>=3 AND <=4	1	100.00%
>=4 AND <=5	0	100.00%
>=5 AND <=6	0	100.00%
>=6 AND <=7	0	100.00%
> 7	0	100.00%
Total	70,421	

Chart 252: October 14, 2018 MED



Note: The number of customer outages segmented by hourly restoration periods requires a level of detail not normally maintained by PG&E in its central computerized records. The information shown here is what PG&E has been able to reconstruct from several databases and may have a margin of error of up to 5%.

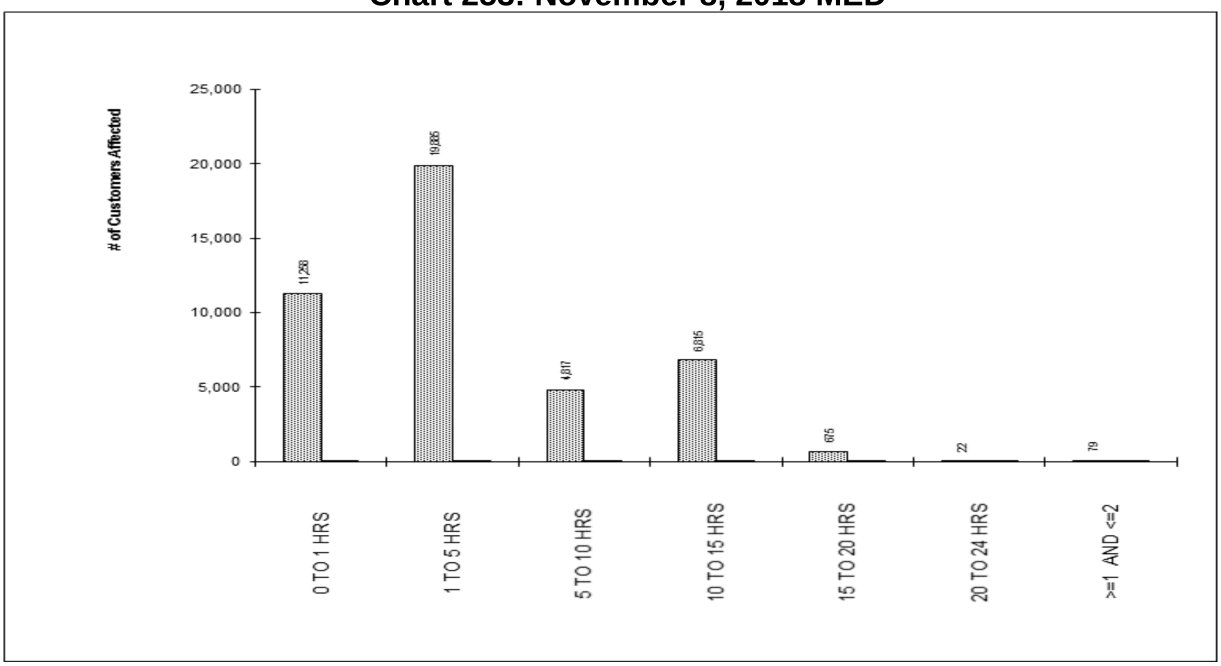
November 8, 2018 Major Event Day

Table 68 below indicates the number of customers without service at periodic intervals for this event (11/8/2018). The numbers of customers noted in the table are for only those divisions impacted by this event.

Table 68 – November 8

Outage Duration	Customers Affected	Cumulative %
0 TO 1 HRS	11,258	18.66%
1 TO 5 HRS	19,885	51.61%
5 TO 10 HRS	4,817	59.59%
10 TO 15 HRS	6,815	70.88%
15 TO 20 HRS	675	72.00%
20 TO 24 HRS	22	72.04%
>=1 AND <=2	79	72.17%
>=2 AND <=3	115	72.36%
>=3 AND <=4	197	72.69%
>=4 AND <=5	668	73.79%
>=5 AND <=6	730	75.00%
>=6 AND <=7	172	75.29%
> 7	14,913	100.00%
Total	60,346	

Chart 253: November 8, 2018 MED



Note: The number of customer outages segmented by hourly restoration periods requires a level of detail not normally maintained by PG&E in its central computerized records. The information shown here is what PG&E has been able to reconstruct from several databases and may have a margin of error of up to 5%.

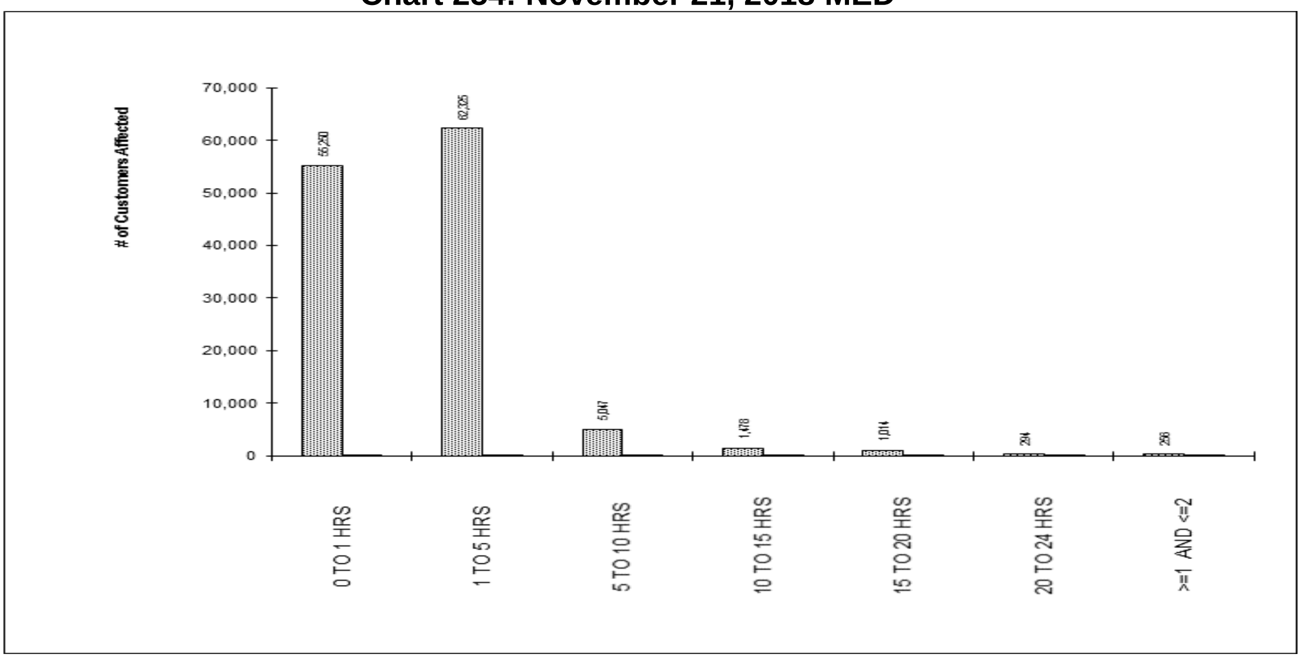
November 21 Major Event Day

Table 69 below indicates the number of customers without service at periodic intervals for this event (11/21/2018). The numbers of customers noted in the table are for only those divisions impacted by this event.

Table 69 – November 21

Outage Duration	Customers Affected	Cumulative %
0 TO 1 HRS	55,250	43.96%
1 TO 5 HRS	62,325	93.55%
5 TO 10 HRS	5,047	97.56%
10 TO 15 HRS	1,478	98.74%
15 TO 20 HRS	1,014	99.54%
20 TO 24 HRS	294	99.78%
>=1 AND <=2	256	99.98%
>=2 AND <=3	24	100.00%
>=3 AND <=4	0	100.00%
>=4 AND <=5	0	100.00%
>=5 AND <=6	0	100.00%
>=6 AND <=7	0	100.00%
> 7	0	100.00%
Total	125,688	

Chart 254: November 21, 2018 MED



Note: The number of customer outages segmented by hourly restoration periods requires a level of detail not normally maintained by PG&E in its central computerized records. The information shown here is what PG&E has been able to reconstruct from several databases and may have a margin of error of up to 5%.

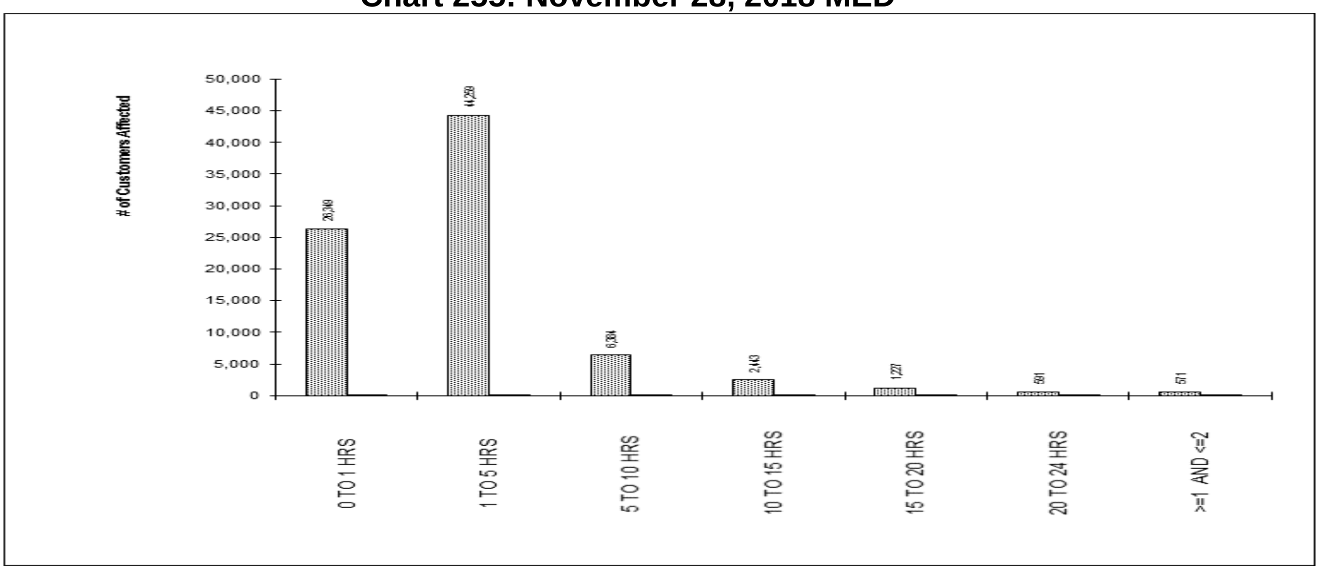
November 29 Major Event Day

Table 70 below indicates the number of customers without service at periodic intervals for this event (11/28/2018). The numbers of customers noted in the table are for only those divisions impacted by this event.

Table 70 – November 28

Outage Duration	Customers Affected	Cumulative %
0 TO 1 HRS	26,349	32.20%
1 TO 5 HRS	44,259	86.28%
5 TO 10 HRS	6,384	94.08%
10 TO 15 HRS	2,443	97.07%
15 TO 20 HRS	1,227	98.57%
20 TO 24 HRS	591	99.29%
>=1 AND <=2	571	99.99%
>=2 AND <=3	6	100.00%
>=3 AND <=4	0	100.00%
>=4 AND <=5	3	100.00%
>=5 AND <=6	0	100.00%
>=6 AND <=7	0	100.00%
> 7	0	100.00%
Total	81,833	

Chart 255: November 28, 2018 MED



Note: The number of customer outages segmented by hourly restoration periods requires a level of detail not normally maintained by PG&E in its central computerized records. The information shown here is what PG&E has been able to reconstruct from several databases and may have a margin of error of up to 5%.

8. Historical Ten Largest Unplanned Outage Events for 2008-2017

Table 71 - Ten Largest 2017 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service	CPUC Major Event?
1	A series of atmospheric river storm events impacted the territory with heavy rain and strong south winds. Extensive damage occurred on the Central Coast where Salinas Airport recorded a gust to 69 mph. This was caused by a rapidly intensifying area of low pressure, also known as 'bombogenesis'.	02/17/2017 – 02/22/2017	732,590	235	3,496 Total 3,186 PG&E 310 Mutual Assistance	Y (except Feb 19)
2	Another winter storm series comprised of three storms impacted the territory from 1/18 – 1/23 with heavy rain, mountain snow, and strong south winds.	1/18/2017 – 1/23/2017	653,502	170	3,274 Total 3,151 PG&E 123 Mutual Assistance	Y
3	A vigorous storm produced significant damage across the territory on 1/8/17 due to a combination of very heavy rain and strong south winds. The heavy rain resulted in flooding along rivers, creeks, and streams. A second strong winter storm impacted the territory 1/10/2017 to 1/11/2017.	1/8/2017 – 1/11/2017	560,246	450	3,357 Total 3,180 PG&E 177 Mutual Assistance	Y
4	A strong and dynamic winter storm impacted the territory 4/6 to 4/7 and produced significant outage activity. The storm was the most impactful April storm in the 22+ year PG&E outage record (back to 1995). This storm put the capstone on the wettest water year in PG&E's history.	4/6/2017 – 4/7/2017	249,024	328	1,945	Y
5	October wildfires	10/8/2017 – 10/9/2017	211,812	587	2,336 Total 2,125 PG&E 211 Mutual Assistance	Y
6	A winter storm brought heavy rain and gusty southerly winds through the northern two thirds of the service area, causing significant outage activity	2/7/2017	146,210	127	2,103	Y
7	An offshore wind event developed across the northern two thirds of the territory and produced wind gusts up to 45 mph across lower elevations. Multiple Red Flag Warnings were posted.	12/16/2017	112,218	59	1,385	Y
8	A winter storm moved in the territory and produced considerable outage activity due to rain, gusty south winds, and mountain snow	1/3/2017 – 1/4/2017	102,123	172	1,227	Y (except Jan 4)
9	This event was not weather related. Bad breaker at Larkin Sub in San Francisco.	4/21/2017	93,863	13	220	Y
10	A weather system moved into the territory from the Pacific and generated wind and rain-related outage activity	10/20/2017	70,839	101	499	Y

* Note: Values exclude planned outages

Table 72 - Ten Largest 2016 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service	CPUC Major Event?
1	A strong winter storm passed through northern and central CA producing strong south winds of 30 - 50 mph across the lower elevations and 60+ across the exposed higher terrain, as well as moderate to heavy rain. A strong squall line nearly 200 miles long developed in the Sacramento Valley.	3/5/2016 – 3/7/2016	266,173	87	2,405	Yes (Mar 5th)
2	A series of three storms impacted northern and central CA with periods of moderate to heavy rain and gusty south winds. Some locations saw rain totals near 10 inches and gusts 50+ mph were also observed.	10/14/2016 – 10/16/2016	255,680	59	1,553	Yes (Oct 14th)
3	A dynamic weather system moved through the PG&E territory late Wednesday into Thursday with strong south winds. Wind gusts were generally 25 - 40 mph across the Sacramento and northern San Joaquin valley, but very strong gusts to 50 - 60 were observed over the Sierra foothills.	2/17/2016 – 2/18/2016	166,492	46	1,292	Yes (Feb 17th)
4	A weather system produced breezy northwest winds 25 – 35 mph with gusts to 50 mph in some locations. Thunderstorms were also reported in the Sacramento, San Joaquin Valleys and the Sierra foothills.	4/24/2016 – 4/25/2016	96,897	24		No
5	Tropical moisture interacted with a Pacific weather system and associated cold front to wring out significant rain across the PG&E territory. 4 – 7 inches of rain were observed along with wind gusts from 20 – 40+ mph.	12/15/2016 – 12/16/2016	91,581	38		No
6	Generally fair and seasonably cool weather was observed across the PG&E territory.	6/16/2016	82,691	15		No
7	A winter storm brought moderate to heavy rain showers, prompting flash flood watches for recent burn scars (e.g., Rim, King, Butte).	1/5/2016 – 1/6/2016	79,600	44		No
8	A very wet weather system produced considerable rain across central CA. 24 hours rain totals topped 6 inches in the wettest locations in the Sierra Nevada.	12/10/2016	77,546	56		No
9	A winter storm and associated cold front pushed west to east across the territory today bringing moderate to heavy rain and gusty southeast winds 25 to 35 with higher gusts over elevated and exposed terrain	3/11/2016	52,342	47		No
10	A strong storm system across southern CA produced low elevation snow in the southern Sierra down to near 2500 ft. and gusty northwest winds from 30 – 40 mph.	1/31/2016	48,120	52		No

* Note: Values exclude planned outages

Table 73 - Ten Largest 2015 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service	IEEE Major Event?
1	A series of strong Pacific storms moved into CA producing very heavy rain and gusty south winds. South wind gusts near 50 mph were observed along the coast with gusts near 60 mph observed in the northern Sacramento Valley. Generally 4 - 8 inches of rain were observed across the elevated terrain in the northern part of the territory. Some locations topped 8 inches with Bucks Lake for example, recording 9 inches of rain during the series.	2/6/2015 - 2/8/2015	389,567		2836	Yes
2	Tropical moisture associated with former Hurricane Dolores drifted over the territory. Atmospheric instability combined with the abundant tropical moisture initiated a widespread thunderstorm outbreak across the San Joaquin Valley and Central Coast. More than 6000 cloud to ground strikes were recorded.	7/18/2015 - 7/19/2015	154,459		925	Yes
3	A strong cold front (squall line) moved into the northern part of the territory and produced strong wind gusts, a period of very heavy rainfall, and significant outage activity. The front swiftly progressed south through the remainder of the territory. Widespread wind gusts from 40 - 55 mph were observed across the Sacramento Valley and Redding recorded a gust near 60 mph.	12/13/2015	142,059		364	Yes
4	A late winter-storm moved through the territory producing moderate rain showers, gusty south winds from 30 - 40 mph, and thunderstorms. Nearly 1000 cloud to ground lighting strikes were recorded across the Sacramento and San Joaquin Valleys	4/6/2015 - 4/7/2015	134,789		442	Yes
5	A strong high pressure ridge developed over the territory and produced the first significant heat of the season. Some selected high temperature readings: Redding 107, Fresno 106, Livermore 106, Sacramento 104, Santa Rosa 99, and San Jose 91.	6/8/2015	99,439		1104	Yes
6	The first widespread rain and snow producing system of the fall/winter season passed through the territory. Thunderstorms also developed and near 500 cloud to ground lightning strikes were recorded. Wind gusts from 25 - 35 mph were observed.	11/2/2015	92,777		33	No
7	A large transmission outage in the central coast at Moss Landing occurred. No significant adverse weather was recorded.	10/18/2015	69,906		1080	No
8	A potent Pacific weather system produced wind gusts to 40 - 50 mph across the lower elevations with gusts near 60 - 70 mph across the exposed, higher terrain. Most of the adverse weather and resultant outage impacts were observed across the northern part of the PG&E service territory.	12/10/2015	64,533		602	No
9	A cold frontal system with moderate rain showers moved through the territory and was followed by gusty northwest winds primarily along the coast. Peak winds gusts from 40 - 50 mph were observed.	11/15/2015	59,547		554	No
10	An upper level weather system moved over the territory and produced rain showers, breezy winds, and thunderstorms. The PG&E lightning detection network recorded 456 lightning strikes in the territory.	5/7/2015	57,241		1740	No

* Note: Values exclude planned outages

Table 74 - Ten Largest 2014 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service (Major Events) **	IEEE Major Event?
1	The strongest storm event in more than 3 years slammed the territory with strong winds and heavy rain showers starting on 12/11. Rain and unsettled weather began Wednesday along the north coast and then a very strong cold front developed and intensified Wednesday evening and overnight into Thursday and very slowly progressed through the territory bringing very heavy rain and strong southerly winds. The gusty southerly winds reached up to 50 mph across the Santa Cruz mountains, near 70 mph across elevated Bay Area terrain, and near 120 mph across the Sierra Crest. Over 3 inches of rain fell across many Bay Area locations and over 2 inches for northern Central Valley by Thursday afternoon.	12/11/2014 - 12/12/2014	467,394	77		Yes
2	A strong but dry storm system originating from Western Canada dropped south through the Service Area and produced very strong north to northeast winds from Tuesday morning through early Wednesday. Gusts in excess of 60 mph were reported across the Bay Area elevated terrain and foothills across the Sierra Nevada. A strong mountain wave moved into San Jose division from the east, resulting in reported gusts above 50 mph in downtown San Jose.	12/30/2014 – 12/31/2014	296,402	67		Yes (Dec 30th)
3	A strong storm moved in from the southwest, bringing heavy rain and gusty southeast winds to many areas, especially the Central Coast and San Joaquin Valley. A secondary line of heavy showers with imbedded thundershowers developed over the San Joaquin Valley during the early afternoon hours, which caused significant outage activity. Wind gusts up to 47 mph were also observed across the lower elevations.	2/28/2014 – 3/1/2014	167,137	55		N
4	Two strong Pacific weather systems produced an impressive round of precipitation across the territory Tuesday and Wednesday. Accompanying the rain showers were breezy to gusty southerly winds that developed through the San Joaquin Valley and adjacent elevated terrain. Rainfall totals were 7 inches across the Santa Cruz Mountains and the Central Sierra and generally 2 - 4 inches across the lower elevations in the Bay Area.	12/02/2014 – 12/04/2014	138,447	34		Yes (Dec 3rd)
5	An "Atmospheric River" weather event delivered significant rain and high-elevation mountain snow to the territory. The abundant rain and gusty south winds to 40 mph at times produced a prolonged stretch of light to moderate elevated outage activity. Rain totals from the event were highest across the central Sierra and the north coast where 7 – 15 inches of rain fell during the event.	2/7/2014 – 2/8/2014	102,832	35		N
6	At 3:20 AM on Sun 8/24/2014 a magnitude 6.0 earthquake was observed in the North Bay Area near American Canyon, Ca. An earthquake summary poster from USGS can be found here: http://earthquake.usgs.gov/earthquakes/eqarchives/poster/2014/20140824.pdf	8/24/2014	99,705	30		Yes
7	A strong ridge of high pressure and lack of the marine layer and sea-breeze combined to produce hot temperatures for Bay Area interior valleys and across the interior. Maximum temperatures reached over 100 in Santa Rosa and Livermore on Sunday and up to 105 across the interior Central Valley.	6/8/2014 – 6/9/2014	83,962	39		N
8	A wet weather system delivered heavy rain across Northern California and the Sierra, along with moderate rain throughout the Bay Area. After the front moved through, thunderstorms developed and produced 331 lightning strikes within the PG&E territory.	9/25/2014	61,597	23		N
9	A weather system delivered the first widespread rain of the season south of a Salinas to Sonora line and also produced a northwest gust front down the San Joaquin Valley where gusts up to 40 mph were observed in Fresno and Bakersfield.	10/31/2014	55,145	22		N
10	The weather system with a very moist air mass slid through the Bay Area early Thursday morning and produced light showers and drizzly conditions that resulted in isolated significant outage activity in the east Bay Area.	9/18/2014	39,860	17		N

* Note: Values exclude planned outages.
** Note: This data is requested only for Major Event days.

Table 75 - Ten Largest 2013 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service (Major Events) **	CPUC Major Event?
1	On 11/19 into 11/20, a weather system moved into the territory and delivered up to 2 inches of rain over elevated terrain. It was the first significant rain storm of the season. Then on 11/21 into 11/22 surface low pressure over southern California combined with developing high pressure in Nevada to deliver very strong north to northeast winds across the north half of the Service Territory. Winds were very strong over elevated terrain; wind gusts up to 65 mph were observed in the Oakland hills (Oakland North RAWS) and to 101 mph in the northern Sierra Nevada. (The wind gust at Oakland north was second only to the January 4th mega-storm gust of 71 mph). Wind speeds near 45 - 50 mph were also observed over lower elevation locations such as Oakland and Santa Rosa.	11/19/2013 - 11/22/2013	385,017	143		N
2	The marine layer surged onto the coast and delivered coastal mist and drizzle which ultimately resulted in an insulator flashover event. The event was preceded by a series of brisk wind events which may have increased salt contamination along the coast.	6/23/2013	170,429	15		N
3	Fair and dry weather was observed on 11/12/2013. An unplanned outage occurred in the Bellota substation.	11/12/2013	113,266	10		N
4	High pressure built over California and maximum temperatures from 99 - 107 were observed along the Central Valley. Temperature maximums near the coast were in the 60s to 70s with 70s - 90s for coastal to intermediate valleys. Most customers were impacted by trouble on the Transmission system.	7/19/2013	99,738	18		N
5	Overnight Sunday into the early morning hours of Monday April 8, 2013, a strong Pacific Jet Stream drove a small but intense cold front with very gusty northwest winds into the California coast and Bay Area. Gusts along the coast reached generally into the 50 - 60 mph range with the peak gust of 75 mph recorded at a station on the west edge of San Francisco County.	4/8/2013	93,200	42		N
6	A strong ridge of high pressure built over California bringing extreme heat to all locations except the coast and immediate coastal valleys. High temperatures on 7/1 near the coast ranged from the 70s - 80s with 90s - low 100s for coastal Valleys. Temperatures were extreme in the interior with maximum temperatures up to 111 in the Central Valley. The heat intensified on 7/2 where maximum soared again into the 100s, with Redding observing a 116-degree maximum.	7/1/2013- 7/2/2013	93,194	29		N
7	On Sunday a weak area of low pressure moved west to east through the Territory bringing increasing clouds, light showers and snow showers over the Sierra and a few light stray showers elsewhere, primarily across the south. Most customers were impacted by a fault on a substation relay.	3/3/2013	69,578	11		N
8	A classic California October offshore wind event unfolded 10/3/2013 as surface high pressure built north of the Service Territory. Wind speeds were generally 20 – 35 mph with gusts to 40 – 55 across the Sacramento valley, northern Sierra Nevada and elevated terrain around the Bay Area.	10/3/2013	56,573	25		N
9	The ridge of high pressure dramatically amplified delivering significant heat across the Territory. Maximum temperatures across the interior valley locations reached above 105 with Red Bluff reaching 112 degrees. Overnight temperatures remained warm on the far ends of the valley, with minimum temperatures only dipping into the upper 70s in the southern San Joaquin and mid 80s in the northern Sacramento Valley.	6/8/2013	52,442	22		N
10	A cold and dynamic weather system dropped southwestward into the territory and brought cooler and very unsettled weather in the form of rain, snow and gusty winds. Winds were strongest over elevated terrain of the Bay Area – Altamont pass gusted to 69 mph.	10/27/2013	49,692	36		N

* Note: Values exclude planned outages.
** Note: This data is requested only for Major Event days.

Table 76 - Ten Largest 2012 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service (Major Events) **	CPUC Major Event?
1	The final and strongest storm of an 'Atmospheric River' series moved through the territory on 12/02/2012 delivering widespread gusts of 50-70 mph in the northern Sacramento Valley. The strongest wind observed was in Plumas National Forest where a gust of 102 mph was recorded. This system also brought heavy amounts of rain across northern California where localized flooding and mudslides were reported in numerous locations. Precipitation totals from the entire series (See Rank #3) topped 20 inches in the wettest locations in the north.	12/02/2012	298,393	80		N
2	A series of moderate to strong storms impacted the Service Area delivering rain, wind, thunderstorms and several feet of snow across the northern mountains and Sierra. The second storm in the series moved onto the Humboldt coast during the evening of 12/21 and then progressed south and east through the territory overnight into 12/22. The third and strongest storm of the series developed just off the coast and pushed a vigorous cold front through the Service Area on 12/23. Gusts up to 80 mph were observed over elevated terrain. Yet another round of heavy mountain snow fell across the north and the Sierra. Up to 6 feet of snow fell in some locations across the north during the series making restoration difficult.	12/21/2012 – 12/23/2012	195,099	172		N
3	The first storm of the 'Atmospheric River' series moved into the territory on 11/28 and delivered strong south winds up to 50-60 mph and heavy rains. The second and stronger system impacted the Territory 11/29 through 11/30. This system brought significant rainfall totals across the north half of the Territory with up to 10" observed in the wettest locations across elevated terrain. After a brief break on 12/1 the final and strongest storm of the series moved through on 12/2 (see Rank 1).	11/28/2012 – 11/30/2012	183,145	71		N
4	On 1/20 a strong Pacific weather system with an associated well-organized frontal band pushed north to south through the territory. This system delivered heavy rains and gusty southerly winds to most locations and was the first rain in a month or more for many locations across the south half of the territory.	1/20/2012 – 1/21/2012	168,496	40		N
5	On 3/16 a system impacted Northern Region and the Bay Area with heavy showers, gusty southerly winds, and a few lightning strikes. On 3/17 this system progressed south through Central Coast and Central Valley Divisions bringing heavy rains, thunderstorms and gusty winds. On 3/18, snow levels fell as cold air filtered in resulting in low snow outage activity from Grass Valley south into Fresno division.	3/16/2012 – 3/18/2012	146,602	63		N
6	Overnight Sunday, 10/21/2012 into Monday, 10/22/2012 a cold front associated with a unusually cold, early-season storm swept west to east across the PG&E Service Area bringing a variety of adverse weather including rain, wind, thunderstorms and low snow. Two tornados also formed in the eastern Sacramento Valley and Sierra foothills.	10/22/2012	129,801	22		N
7	A vigorous late season weather system swept through the Service Area on 6/4 – 6/5 and brought a variety of adverse weather conditions. This system delivered over 700 lightning strikes across the Service Territory with the majority occurring in the northern Sacramento Valley. Winds gusting to 40 mph came up abruptly in the San Joaquin causing numerous wind related outages.	6/4/2012 – 6/5/2012	93,735	22		N
8	On 12/17 a weakening front moved through the Service Area bringing rain showers and breezy southerly winds up to 35-40 mph across the Sacramento Valley. Showers progressed into the southern San Joaquin overnight into 12/18. Post-frontal northwest winds then developed across the San Joaquin Valley, with gusts up to 35 mph observed at Fresno.	12/17/2012 – 12/18/2012	83,063	18		N
9	A Pacific storm system and associated cold front and swept through the north half of the PG&E Service Area. The front brought brisk south winds of 30 to 40 mph, with higher gusts over elevated terrain. During the afternoon, thunderstorms formed along the north coast and northern Sacramento Valley in the post-frontal environment.	3/31/2012	68,165	21		N
10	Non-weather-related event.	7/21/2012	47,182	30		N

* Note: Values exclude planned outages. ** Note: This data is requested only for Major Event days.

Table 77 - Ten Largest 2011 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service (Major Events) **	CPUC Major Event?
1	A series of cold and powerful storms moved through the Service Area with the majority of outages resulting from low snow and gusty winds. The bulk of outage activity occurred overnight Sat 19th to Sun 20th as strong southeasterly wind gusts were observed in many locations (SF Apt 45 mph, Stockton 44 mph, Redding 45 mph, Bakersfield 40 mph). Excessive low elevation snowfall caused significant outage activity. Yosemite Division was hard hit with low snow (snow totals - 38" reported at 4200' above Oakhurst)	Mar 17 -22	581,949	256	1,839***	Y-Partial (See Table 4)
2	After a short respite from inclement weather, another strong and cold storm moved into the Service Area on March 24th. Once again, strong southerly wind gusts were observed (SF Apt 38 mph, Oakland 37 mph). Low elevation snow was the main adverse weather issue with Sierra, North Valley, Stockton, and Yosemite Divisions hard hit with low snow. (snow totals - 13" in Shingletown, 25" at 3700' along Highway 88, 34" at the 4200' above Oakhurst)	Mar 24 – 27	464,767	504	1,839***	Y-Partial (See Table 4)
3	A series of cold storms moved across the Service Area starting Valentine's day until Feb 19. On the 17th very cold air filtered into the region lowering snow levels enough to create low snow related outages across the Coast Ranges of Humboldt Divisions, and down the entire Sierra Nevada foothills. The hardest hit divisions were Humboldt, Yosemite, and Sierra. (Snow totals - 14" in Shingletown, 38" at 3700' on Highway 88, 12" at 2600' in Humboldt County). Snow recorded down to 500 feet in Humboldt.	Feb 15 – 19	357,802	151		N
4	High pressure in the Great Basin and low pressure off the southern California coast set the stage for strongest northeast wind event to hit the Service Area in the last 20 years. Gusts up to 50 mph were common in the Sierra with the highest gust of 94 mph recorded on Mt. Elizabeth in the Yosemite division. Winds were quite strong in the Valley as well (Stockton 52 mph, Redding 40 mph, Fresno 36 mph)	Nov 30 – Dec 1	325,942	131		N
5	A strong and cold storm affected the entire Service Area with low snow falling in the Northern Region and gusty southerly winds and heavy rains further east and south. The hardest hit divisions were Humboldt, North Valley, and Sierra. (Snow totals – 18" in Shingletown, 20" in Susanville, 19" in Grass Valley). Snow recorded down to 500 feet in Humboldt.	Feb 24 - 25	187,851	152		N
6	An early season storm moved through the Service Area bringing moderate southerly winds and heavy precipitation rates. In Ukiah, more than a half inch of rain fell within one hour in the early morning. The Central Valley Region experienced the most outages. These were mainly pole fires/flashover caused by the first rain to fall in the area after months of prolonged dry weather.	Oct 5	100,357	24		N
7	Widespread thunderstorm activity broke out across the southern part of the Service Area early in the morning with the biggest impacts in Fresno and Kern divisions. The Bakersfield area in Kern was hit particularly hard by lightning, with Kern Division recording 3833 lightning strikes for the day.	Sept 10	77,443	69		N
8	A late season cold storm moved through the Service Area with low snow outage conditions across divisions in the Sierra Nevada, especially the Sierra Division. (8" of snow at 3700' along Highway 88) Thunderstorms and associated lightning also broke out across the Central Valley. Impacts were minimal in the Bay Area and Central Coast Regions.	May 15	62,863	30		N
9	A non-weather-related outage day with maximum temperatures along the Central Valley in the mid-80s. The outage count was only slightly above average for a June day; however, a large number of customers in the East Bay were affected by two distribution substation outages.	Jun 12	50,028	15		N
10	The first warm day of the spring was observed in many areas. San Jose had a high of 84. This could have contributed to the above average outage total. No other adverse weather was reported. The largest impacts were recorded in the San Francisco and San Jose Divisions.	Apr 1	44,177	6		N

***** Note: Values exclude single distribution line transformer and planned outages. ** Note: This data is requested only for Major Event days.

*** Note: During the course of the March 17-27, 2011 storms, approximately 1,839 PG&E Operations, Maintenance and Construction (OM&C) employees responded. These employees included electric and gas construction crews, troublemen, meter technicians, clerical staff, gas and electric estimators and meter readers. Resources were dispatched and moved from lesser impacted areas to the more heavily impacted areas. In addition to PG&E personnel, 110 vegetation crews, 10 contract crews (approximately 200 individuals), and 36 mutual aid crews (approximately 175 individuals) were utilized to supplement existing resources.

Table 78 - Ten Largest 2010 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service (Major Events) **	CPUC Major Event?
1	A strong jet stream developed over the Eastern Pacific, which spawned a series of outage producing weather events that included: - Three impulses of strong winds; gust above 50 mph each day (Jan 18, 19, 20) - Periods of moderate to heavy rainfall (Jan 18, 19, 20, 21) - Bands of thundershower activity (several thousand strikes Jan 18-21) - Heavy snowfall at low elevations of the Sierra Nevada (Jan 21, 22)	Jan 18-24	1,169,513	497	3,830 ***	Y
2	A strong storm system with several impulses moved through the entire Service Area during the Dec 17 – 20 period bringing gusty winds and heavy rain. Wind gusts during the period: 43 mph at Stockton, 43 mph at Salinas, 46 mph at SFO, 43 at Red Bluff.	Dec 17-20	215,116	120		N
3	A series of cold storms brought significant snow to low elevations in the Sierra Nevada foothills. The snow came early in the season, when deciduous trees still retained most of their leaves. Excessive snow loading occurred on trees causing large limbs to break off and fall onto power lines. Snowfall amounts ranged from near 1 foot at the 3000' elevation, to several feet above 5000'. This storm produced the most low elevations snow in November in the last 15 years.	Nov 20-21	215,245	186		N
4	Storm system with strong south winds on Dec 28 (gusts to 47 mph at Marysville, 41mph at Stockton, 46 mph SFO) followed by strong northwest winds on Dec 29 (gusts to 46 mph at San Jose, 41 mph at Stockton, 43 at Bakersfield, 46 mph at SFO).	Dec 28-29	180,370	47		N
5	A late season storm brought rain, thunderstorms, and wind. Over 500 lightning strikes were recorded. The storm was particularly strong along the Central Coast and in the southern San Joaquin Valley. Reported wind gusts: 45 mph at Salinas, 46 mph at Santa Maria, 46 mph at Bakersfield 46.	Apr 11-12	122,050	73		N
6	Early season storm brought thunderstorms to Northern Region (over 1000 strikes recorded) along with rain to other parts of the Service Area. In many cases, this was the first rain of the season causing flashover outages.	Sep 8-10	114,402	60		N
7	An early season storm brought high winds and heavy rain to primarily the Northern Region. Redding recorded a peak wind gust of 49 mph. Santa Rosa recorded 4.75" of rainfall.	Oct 24	111,522	43		N
8	Storm system swept across the Service Area bringing rain and gusty winds. Reported wind gusts: 41 mph at Salinas, 41 mph at Bakersfield.	Dec 4-5	98,041	21		N
9	Heat wave conditions resulted in the hottest two days of the summer. Maximum temperatures exceeded 110 in portions of the Central Valley (111 at Bakersfield on 8/25). Maximum temperatures between 100 and 110 were reported both days at many coastal valley areas (109 at Ukiah on 8/25, 107 at Santa Rosa on 8/24, 105 at Livermore on 8/25).	Aug 24-25	97,616	82		N
10	Heat wave affected the service area, on both days Central Valley maximum temperatures ranged between 100 and 110; maximum temperatures above 100 were reported in coastal valleys on 6/27.	Jun 27-28	87,751	38		N

* Note: Values exclude single distribution line transformer and planned outages.
*** Note: This data is requested only for Major Event days.
*** Note: During the course of the January 18, 2010 Storm approximately 3,830 PG&E Operations, Maintenance and Construction (OM&C) employees responded. These employees included electric and gas construction crews, troublemen, gas service representatives, meter technicians, clerical staff, gas and electric estimators and meter readers. Resources were dispatched and moved from lesser areas to the more heavily impacted areas. In addition to PG&E personnel, 1000 vegetation workers and 60 contract crews (approximately 360 individuals) were utilized to supplement existing resources.
impacted areas to the more heavily impacted areas. In addition to PG&E personnel, 1000 vegetation workers and 60 contract crews (approximately 360 individuals) were utilized to supplement existing resources.

Table 79 - Ten Largest 2009 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service (Major Events) **	CPUC Major Event?
1	A strong early season storm affected the entire service area with many stations reporting wind gusts over 50 mph (57 mph at Ft. Funston (SF), 56 mph at Fairfield, 55 mph at Oroville, 51 mph at Monterey). Single day rainfall totals ranged between two and five inches at many locations (4.54 in. at Watsonville, 4.27 in. at Fairfield, and 3.66 in. at Napa). National Weather Service records indicate this storm was the strongest October rain and wind event since 1962.	10/13–10/14	617,589	244***	4,400 ****	Y
2	A strong cold front produced significant snowfall on Feb. 13 in the 1500-3000 ft. range of the northern and central Sierra foothills (up to 2 feet of snow at 3000 ft. and @ 1 foot at 2000 ft.). A second storm followed on Feb.15 producing widespread heavy rain and strong wind gusts to the entire Service Area (67 mph at Valley Ford, 59 mph at Oroville, 50 mph at Redding, and Ft. Funston (SF), 47 mph at Salinas, 43 mph at San Luis Obispo. A third storm on Feb 16 delivered additional rainfall and wind gusts in the 30 to 40 mph range at several locations.	2/13-2/17	340,582	107		N
3	A large cluster of thunderstorms produced widespread lightning activity in the Bay Area and Sacramento Valley on Sep. 12. The lightning activity was followed by a weak weather front the next day that produced the first light rain of the season over much Northern California resulting in flashover related outages.	9/12-9/14	190,671	92		N
4	A strong cold front produced significant snowfall at the 1000-3000 ft. range of the Sierra foothills (up to 2 feet of snow was observed at 3000 ft., @ 1 foot at 1500 ft.) Light snow was reported at locations in the Central Valley.	12/7	147,630	113		N
5	Strong northerly winds developed across the entire Service Area with the gusts in the 45 to 55 mph range in the Bay Area and Sacramento Valley (52 mph at Fairfield, 49 mph at Sacramento, 45 mph at Red Bluff)	11/28	119,504	84		N
6	Strong north to northwest winds in the 40 to 60 mph range followed the passage of a weak weather front through the service area (58 mph at Ft. Funston (SF), 58 mph at SF Airport, 50 mph at San Carlos, 46 mph at Stockton)	4/14	116,406	45		N
7	An area of low pressure produced a large outbreak of thunderstorms with widespread lightning overnight on Jun. 3, continuing into the morning of June 4.	6/3-6/4	98.187	38		N
8	Strong north to northwest winds in the 45 to 55 mph range were recorded throughout the Sacramento and San Joaquin Valleys following the passage of a weak weather front (52 mph at Merced, 49 mph at Stockton, 47 mph at Modesto and Madera, 46 mph at Red Bluff, 45 mph at Fresno).	10/27	70,901	20		N
9	A winter storm accompanied by periods of moderate to heavy rainfall and scattered thundershower activity crossed the service area. Rainfall totals of up to 2 inches were reported.	12/12	54,111	41		N
10	Widespread thunderstorm activity resulted in several hundred lightning strikes in Areas 4, 5, 6 and 7.	5/28	52,705	22		N

* Note: Values exclude single distribution line transformer and planned outages.
** Note: This data is requested only for Major Event days.
*** Note: This duration was due to the lack of access caused by flooding in the Stockton area. Access was granted after waters receded. Work was the completed and service was restored to the six customers remaining out of service.
**** Note: Approximately 4,400 PG&E Operations, Maintenance & Construction (OM&C) employees responded. In addition to PG&E personnel, 400 vegetation workers and 42 contract crews (approximately 210 individuals) were utilized to supplement existing resources.

Table 80 - Ten Largest 2008 Outage Events

Rank	Description	Date	Number of Customers Affected *	Longest Customer Interruption (Hours)	# of People Used To Restore Service (Major Events) **	CPUC Major Event?
1	Strongest storm system since December 1995 affected the entire service area on Jan 4. Wind gusts exceeded 65 mph at many low elevation sites throughout the service area (Redding 70 mph, Beale AFB 69 mph, Sacramento Apt. 66 mph, Pt. San Pablo 83 mph), with some coastal hills and foothill sites gusting to over 80 mph (Los Gatos, elev. 2000 ft. 105 mph, Big Rock Marin Co. elev. 1500 ft. 83 mph). Rainfall totals on Jan 4 ranged up to 4 inches with storm totals above 6 inches in the North Bay counties. Multiple lightning strikes were reported on Jan 4 and 5.	1/3 – 1/6	1,631,765	290	7,130 ***	Y
2	A series of cold winter storms crossed the state. The first system (Jan 24-25) delivered gusty winds (generally in the 30 to 50 mph range), up to 2 inches of rain and snow below 2000 ft. A second system focused on the southern half of the service territory brought additional rain and thundershower activity along with even gustier winds (Santa Maria 67 mph, Bakersfield 49 mph).	1/24 – 1/27	303,168	172		N
3	A storm system with wind gusts in the 25 to 40 mph range crossed the state. Most locations reported under one inch of rain with a few coastal stations reaching two inches total.	10/31 – 11/1	189,811	50		N
4	The first rains of the winter season were accompanied by winds generally gusting from 25 to 35 mph (Red Bluff 44 mph). A large number of flashover incidents were likely triggered by the combination of light rain and power lines heavily sooted after the widespread summer season wildfires.	10/3 – 10/4	147,703	65		N
5	Gusty winds with periods of moderate rain accompanied a weather system that crossed the state. Wind gusts were generally in the 30 to 50 mph range (SF Airport 47 mph, Stockton 47 mph, Merced 45 mph).	2/2 – 2/3	121,865	65		N
6	Gusty winds from this storm were strongest in the southern half of the service area. Gusts between 50 and 55 mph were reported at SF Airport, Salinas, Santa Maria, Red Bluff and Bakersfield.	2/23 – 2/24	113,086	101		N
7	A weather front brought gusty winds and periods of moderate to heavy rain to the state. Post-frontal west to northwest wind gusts were strongest in the Bay Area (SF Apt 54 mph, Hayward 63 mph, Oakland 47 mph, Salinas 51 mph)	12/25	111,134	102		N
8	Gusty north winds generally in the 25 to 35 mph range were reported in the north. San Joaquin and Central Coast winds gusted from 30 to over 50 mph (Santa Maria 41 mph, Stockton 45 mph, Madera 52 mph, Merced 47 mph)	5/22	105, 635	102		N
9	Gusty north winds developed on the evening of Feb 13 and continued through Feb 14. Winds were generally in the 30 to 45 mph range, with strongest gusts in the Central Valley (Redding 48 mph, Marysville 48 mph, Sacramento 47 mph)	2/13 – 2/14	98,788	47		N
10	Gusty north winds between 20 and 35 mph resulted in a record breaking early season heat wave. Bay Area and Central Valley temperatures ranged from 100 to 105F	5/15	84,659	28		N

* Note: Values exclude single distribution line transformer and planned outages.
** Note: This data is requested only for Major Event days.
*** Note: Approximately 6,000 PG&E Operations, Maintenance & Construction (OM&C) employees responded. In addition to PG&E personnel, 300-350 vegetation crews (approximately 700 individuals), 70 contract crews (approximately 450 individuals) and 28 mutual assistance crews (approximately 170 individuals) from Southern California Edison (SCE), San Diego Gas and Electric (SDG&E), City of Gridley, City of Redding, and Sierra Pacific Power were utilized to supplement existing resources

9. The Number of Customer Inquiries on Reliability Data and the Number of Days per Response

The following table provides the total number of customer inquiries, and PG&E response times for the year 2018.

	YTD 2018 ESR CLOSED CASES						
	Total Cases	Closed 0-7 Days	Closed 8-14 Days	Closed > 14 Days	% Closed 0-7 Days	% Closed 8-14 Days	% Closed > 14 Days
BAY AREA REGION	**327**	**323**	**3**	**1**	**99%**	**1%**	**0%**
Diablo	133	133	0	0	100%	0%	0%
East Bay	87	87	0	0	100%	0%	0%
North Bay	76	72	3	1	95%	4%	1%
San Francisco	31	31	0	0	100%	0%	0%
CENTRAL COAST REGION	**448**	**447**	**1**	**0**	**100%**	**0%**	**0%**
Central Coast	92	92	0	0	100%	0%	0%
De Anza	100	100	0	0	100%	0%	0%
Los Padres	33	33	0	0	100%	0%	0%
Mission	74	74	0	0	100%	0%	0%
Peninsula	55	55	0	0	100%	0%	0%
San Jose	94	93	1	0	99%	1%	0%
CENTRAL VALLEY REGION	**169**	**168**	**1**	**0**	**99%**	**1%**	**0%**
Fresno	54	53	1	0	98%	2%	0%
Kern	26	26	0	0	100%	0%	0%
Stockton	44	44	0	0	100%	0%	0%
Yosemite	45	45	0	0	100%	0%	0%
NORTHERN REGION	**402**	**378**	**24**	**0**	**94%**	**6%**	**0%**
Humboldt	17	17	0	0	100%	0%	0%
North Valley	43	43	0	0	100%	0%	0%
Sacramento	134	112	22	0	84%	16%	0%
Sierra	132	130	2	0	98%	2%	0%
Sonoma	76	76	0	0	100%	0%	0%
GRAND TOTAL	**1346**	**1316**	**29**	**1**	**98%**	**2%**	**0%**

Note: ESR = Electric Service Reliability (Recurring Outages). This Includes ESR cases created on or after January 1, 2018 and closed as of December 31, 2018.

10. Appendix A – Definitions, Acronyms & Abbreviations

AIDI – Average Interruption Duration Indices

AIFI – Average Interruption Frequency Indices for sustained outages only

Customer: A metered electrical service point for which an active bill account is established at a specific location.

CAIDI: Customer Average Interruption Duration Index - The Customer Average Interruption Duration Index (CAIDI) represents the average time required to restore service.

CESO: A term that counts the number of Customers Experiencing Sustained Outages.

DART – Distribution Asset Reconciliation Tools – a distribution asset database used by PG&E.

Distribution system: That portion of an electric system that delivers electric energy from transformation points on the transmission system to the customer. PG&E defines its distribution system as line voltage less than 60 kilovolts (KV). The distribution system is generally considered to be anything from the distribution substation fence to the transformer prior to stepping down the voltage to the customer premise.

EON: EON stands for Enhanced Outage Notification, now retired, that was used to identify and record momentary outages. Customers agreed to put EON devices in their homes and the device would send PG&E information when the customer experienced and outages. The EON project was used prior to the availability of Smart Meter data.

IEEE – Institute of Electrical and Electronics Engineers, Inc.

ILIS – Integrated Logging and Information System – The tool PG&E's distribution operators use to log electric outages.

ISO: The California Independent System Operator. The ISO operates the transmission system throughout most of the State of California, including throughout PG&E's service territory.

Major Event: Designates an event that exceeds reasonable design and or operational limits of the electric power system. A Major Event includes at least one Major Event Day. *See also:* **Major Event Day**.

Major Event Day (MED): A day in which the daily system, System Average Interruption Duration Index (SAIDI) exceeds a Major Event Day threshold value. For the purposes of calculating daily system SAIDI, any interruption that spans multiple calendar days is accrued to the day on which the interruption began.

MAIFI: Momentary Average Interruption Frequency Index

The Momentary Average Interruption Frequency Index (MAIFI) indicates the average frequency of momentary interruptions. PG&E's momentary outage reporting tools were originally designed to track momentary outages based on D96-09-045. As provided in D.16-01-008, the provided MAIFI metric is the same as what PG&E has used in its prior annual reliability reports and corresponds to the $MAIFI_E$ definition contained in the IEEE Guide for Electric Power Distribution Reliability Indices (IEEE 1366 standard), which counts multiple outage interruptions that occur close to each other in time as a single momentary outage event. This metric is equal to the total number of customer momentary interruption events divided by the total number of customers served and does not include the events immediately preceding a sustained interruption.

Momentary interruption: The brief (five minutes or less) loss of power delivery to one or more customers caused by the opening and closing operation of an interrupting device**.**

Non-Restorable Outage Process – PG&E utilizes a non-restorable outage designation and process for unique outage events involving requests by customers or agencies requiring that facilities be de-energized, access not permitted, and/or restoration be delayed due to circumstances not initiated or controlled by PG&E. This process includes adjusting the outage minutes to accurately reflect these situations and to measure PG&E's actual true performance.

ODB – Operations Database - ODB is the outage database for PG&E

Planned outage: The intentional disabling of a component's capability to deliver power, done at a preselected time, usually for the purposes of construction, preventative maintenance, or repair.

SAIDI: System Average Interruption Duration Index

The System Average Interruption Duration Index (SAIDI) indicates the total duration of interruption for the average customer during a predefined period of time. It is commonly measured in minutes or hours of interruption.

SAIFI: System Average Interruption Frequency Index

The System Average Interruption Frequency Index (SAIFI) indicates how often the average customer experiences a sustained interruption over a predefined period of time.

SCADA: Supervisory Control and Data Acquisition – an online database for distribution operators to remotely gather information and control the distribution system.

Sustained interruption: Any interruption not classified as a part of a momentary event. That is, any interruption that lasts more than five minutes.

Unplanned interruption: The loss of electric power to one or more customers that does not result from a planned outage.