

Energy Division Central Files Document Coversheet

Directions: Submit all documents and submittal questions to Energy Division Central Files via email

EnergyDivisionCentralFiles@cpuc.ca.gov

1. Fill out coversheet completely. Coversheet can be embedded as page 1 of the electronic compliance filing, or can be submitted as a separate document that is attached to the email that delivers the compliance filing.
2. If the coversheet is submitted as separate document, please name the coversheet file with the same document name used in your primary document (see Section A) + plus the word "cov" (for coversheet). For example, the name of the coversheet file will be something like: **PacifiCorp Monthly Gas Report 201602 COV.docx**
3. If the document is confidential, add CONF (for confidential). For example, the name of the coversheet file will be something like: **PacifiCorp Monthly Gas Report 201602 CONF.docx** and **PacifiCorp Monthly Gas Report 201602 COV CONF.docx**
4. All documents are required to be submitted in an electronically *searchable* format.
5. Documents need to reference the reason for the mandate that ordered the filing in Section B or C. If you are unable to reference a proceeding or explain the origin of your filing, please contact Energy Division Central Files.
6. To find a proceeding number (if you only have a decision number), go to <http://docs.cpsc.ca.gov/DecisionsSearchForm.aspx>; enter the decision number, and the results shown include the proceeding number.

A. Document Name

Today's Date: 7/15/2019

1. Utility Name: PacifiCorp
2. Document Submission Frequency (Annual, Semi-Annual, YTD, Quarterly, Monthly, Weekly, Ad-hoc, Once, Other Event): Annual
3. Report Name: Annual Reliability Report
4. Reporting Interval (for this submission, e.g. 2015 Q1 – that data date): CY 2018
5. Document File Name (format as 1+2 + 3 + 4): PacifiCorp Annual Electric Reliability Report CY 2018
6. Append the confidential and/or cover sheet notation, as appropriate. PUBLIC

Sample Document Names:

Utility Name + Submittal Frequency + Report Name + Year + Reporting Interval + (COV or CONF or both or neither)

PacifiCorp Annual Electric Reliability Report CY 2018 PUBLIC	

7. Identify whether this filing is ☒ original or ☐ revision to a previous filing.
 - a. If revision, identify date of the original filing: [Click here to enter text.](#)

B. Documents Related to a Proceeding

All submittals should reference both a proceeding and a decision, if applicable. If not applicable, leave blank and fill out Section C.

1. Proceeding Number (starts with R, I, C, A, or P plus 7 numbers): R.14-12-014
2. Decision Number (starts with D plus 7 numbers): 16-01-008
3. Ordering Paragraph (OP) Number from the decision: Ordering Paragraph 1

Energy Division Central Files Document Coversheet

C. Documents Submitted as Requested by Other Requirements

If the document submitted is in compliance with something other than a proceeding, (e.g. Resolution, Ruling, Staff Letter, Public Utilities Code, or sender's own motion), please explain:

D. Document Summary

Provide a Document Summary that explains why this report is being filed with the Energy Division. This information is often contained in the cover letter, introduction, or executive summary.

D.16-01-008 OP 1 requires all electric utilities to submit system level and district or division level electric reliability information to the Commission on July 15 of each year.

E. Sender Contact Information

1. Sender Name: Katie Savarin
2. Sender Organization: PacifiCorp
3. Sender Phone: 503-813-5943
4. Sender Email: kathryn.savarin@pacificorp.com

F. Confidentiality

1. Is this document confidential? ☐ No ☒ Yes
 - a. If Yes, provide an explanation of why confidentiality is claimed and identify the expiration of the confidentiality designation (e.g. Confidential until December 31, 2020.) On January 14, 2016, the Commission approved D.16-01-008 updating the electric reliability reporting requirements for California electric utilities. D.16-01-008 requires utilities to submit annual information about planned outages to the Energy Division and the Safety and Enforcement Division on a confidential basis. As noted in D.16-01-008, "making planned outage data should be confidential to protect the public from potential harmful activities that could damage the grid and electric reliability." See D.16-01-008 at p.19. A signed declaration for confidential treatment is provided with submission of the annual electric reliability report for 2018.

G. CPUC Routing

Energy Division's Director, Ed Randolph, requests that you not copy him on filings sent to Energy Division Central Files. Identify below any Commission staff that were copied on the submittal of this document.

1. Names of Commission staff that sender copied on the submittal of this Document: Mr. David Lee

ver.5/19/2016

July 15, 2019

***VIA ELECTRONIC FILING AND
OVERNIGHT DELIVERY***

Edward Randolph, Director, Energy Division
Elizaveta Malashenko, Director, Safety Enforcement Division
California Public Utilities Commission
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San Francisco, California 94102-3298
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**RE: PacifiCorp (U 901-E) Annual Electric Reliability Report in Compliance
with D.16-01-008**

In compliance with California Public Utilities Commission Decision (D.) 16-01-008, enclosed is PacifiCorp's Annual Electric Reliability Report for January 1, 2018 – December 31, 2018.

Please note that the planned outage data is considered confidential subject to California Public Utilities Code Section 583, General Order 66-D and D.16-01-008. In compliance with D.16-01-008, this information is submitted under seal. A signed declaration in support of the request for confidential treatment is also provided with this submission.

If you have any questions, please contact Heide Caswell, Director of Transmission and Distribution Asset Performance/Wildfire Mitigation, at (503) 813-6216, or Pooja Kishore, Regulatory Affairs Manager, at (503) 813-7314.

Very truly yours,



Etta Lockey
Vice President, Regulation

Enclosure

C: David K. Lee



PacifiCorp, d/b/a Pacific Power

Annual California
Electric Reliability Report

(PUBLIC VERSION)

Calendar Year 2018 Review
(January 1 – December 31, 2018)

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Introduction

In rulemaking (R.)14-12-014, the California Public Utilities Commission developed rules regarding changes to the state's required reliability reporting requirements for California investor owned electric utilities (IOUs), as outlined in Decision (D.) 16-01-008¹ (the Order). The report is being filed in compliance with those rules. The scope of the rulemaking included the following tasks:

1. Review of current reliability reporting requirements;
2. Develop revised annual reporting requirements that include information about frequency and duration of outages;
3. Define the term "local area" for reliability reporting;
4. Clarify the term "major event day" (to align with definition of local area for reliability reporting);
5. Develop criteria and methodology for identifying worst performing circuits;
6. Develop an approach for demonstrating cost-effective remediation and determining cost recovery procedures;
7. Consider whether the IOUs should be allowed to set up memorandum accounts for remediation costs; and
8. Develop an annual outreach plan and related reporting to inform customers about planned and unplanned outages.

The Order includes the following requirements:

1. IOUs shall submit system level and district or division level electric reliability information to the Commission on July 15 of each year.
2. IOUs shall submit draft copies of the reports prepared for July 15, 2016 and July 15, 2017 to the Energy Division Director in electronic format at least 45 days prior to the July 15 deadline. Draft copies for subsequent reporting years shall be required at the discretion of the Energy Division Director.
3. Commission staff, in consultation with the IOUs, has the authority to require any necessary revisions to the draft reports before they are made public.
4. Pacific Gas and Electric Company shall combine in one single report the electric reliability reporting requirements pursuant to Decision (D.) 96-09-045 and D.04-10-034.
5. IOUs shall use the electric reliability reporting template at Appendix B of the Order to create their annual reports.
6. IOUs shall publish on their internet websites or provide to customers via U.S. mail, procedures for making requests about electric circuits that serve their homes or businesses.
7. IOUs shall conduct at least one annual public in-person presentation about the information in their annual electric reliability reports.
8. IOUs shall make webinar participation available for their annual in-person events so that their customers can attend the presentation remotely or in-person.
9. Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company shall annually report the worst performing one percent of the circuits among all the electric circuits in their respective service territories.
10. Bear Valley Electric Service, Liberty Utilities, LLC and PacifiCorp shall report the following number of circuits on their list of worst performing circuits: three circuits for PacifiCorp; two circuits for Liberty Utilities, LLC; and one circuit for Bear Valley Electric Service.
11. IOUs shall provide reliability data at both the system and the district level. Whatever major event days are determined for calculations at the system level shall also be used for reliability calculations at the district or division level.

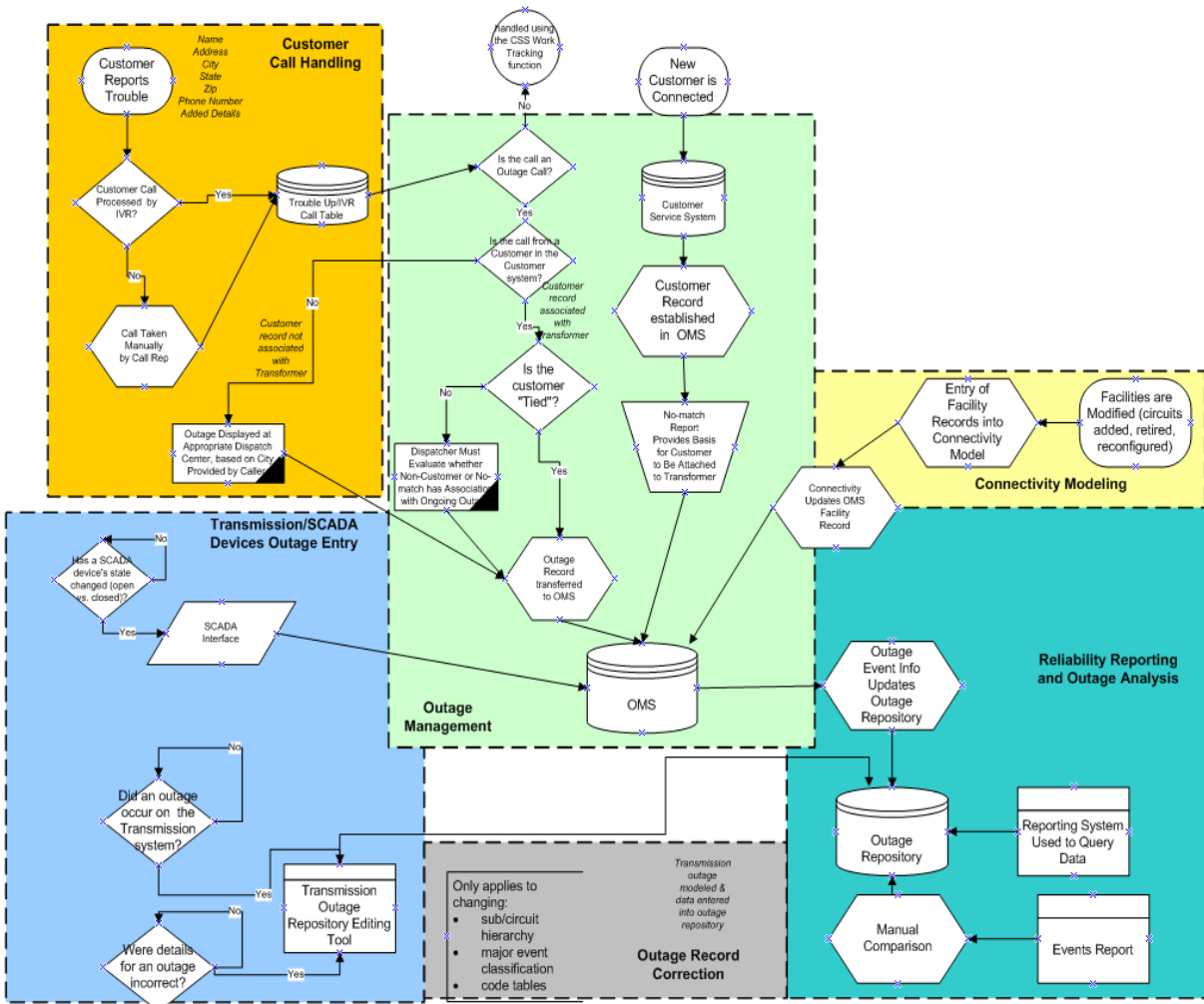
¹ D.16-01-008 <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M157/K724/157724560.PDF>

12. Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company shall respond to customer inquiries about electric reliability within 15 business days.
13. Bear Valley Electric Service, Liberty Utilities, LLC and PacifiCorp shall respond to customer inquiries about electric reliability within 30 business days.
14. IOUs should meet and confer to consolidate unidentified reliability reporting requirements from Commission decisions and General Orders into a single Commission decision and general order.
15. IOUs shall submit a single joint proposal for a proposed consolidated decision and general order to the directors of the Energy Division and the Safety and Enforcement Division within one year from the date of the Order.

This report serves to fulfill the foregoing reporting requirements of the Order. In addition, this report includes a description of PacifiCorp's outage data collection process, the applicable conventions, indices and definitions, methods used by PacifiCorp to determine cost-effective reliability improvement opportunities, PacifiCorp's worst performing circuits and PacifiCorp's service territory map.

Outage Data Collection Process

PacifiCorp operates automated outage management and reporting systems; a diagram of the data flow process is shown below. Customer trouble calls and SCADA events are interfaced with the Company's real-time network connectivity model, its CADOPS system (Computer Aided Distribution Operations System). By overlaying these events onto the network model, the program infers outages at the appropriate devices (such as a transformer, fuse or other interrupting device) for all customers down line of the interrupting device. The outage is then routed to appropriate field operations staff for restoration and the outage event is recorded in the Company's Prosper/US outage repository. In addition to this real-time model of the system's electrical flow, the Company relies heavily upon the SCADA system it has in place. This includes the Dispatch Log System (an SQL database application) which serves to collect all events on SCADA-operable circuits. That data is then analyzed for momentary interruptions to establish state-level and circuit-level momentary interruption indices. Only those circuits (and the customers who are served from those devices) outfitted with SCADA equipment are considered within the calculations.



Data Collected: Conventions, Indices and Certain Definitions

SAIDI, SAIFI, CAIDI and MAIFI are the most common indicators or indices used by utilities across the nation for measuring and reporting reliability. Along with other indices, they were first rigorously documented in Institute of Electrical and Electronics Engineers (IEEE) Standard 1366-1998, and since modified in IEEE 1366-2003/2012, IEEE Guide for Electric Power Distribution Reliability Indices.

For performance reporting as contained within this document, PacifiCorp uses the current standard indices, applied at the state level as well as to each of the districts in which it provides service; these serve as “local areas” as defined within reporting requirements. Major event days are calculated at the state level and then applied at each of these districts consistent with the requirements of D.16-01-008. PacifiCorp collects outage data on all outages on the source side of the electric meter. When it is required to interrupt power in order to perform work on the system, it records these outages with a separate designation to identify whether they were taken without notice, or whether the outages were pre-arranged or planned. For the purposes of the data provided in this report, Planned Outages are those in which either the customer or the Company made arrangements for the power interruption to occur, in certain situations the notice may be very short, while generally two days’ notice is the goal. These may also often be considered to be Maintenance Outages. Certain other outages may be performed intentionally by employees, without notice (such as when a car strikes a utility pole and the crew replacing the damaged pole takes an operational outage) but since they happen precipitously are not classified as Planned Outages. Furthermore, the Company also collects information about outages which happen on equipment at voltages higher than distribution level,

specifically the transmission or generation system; transmission voltages within PacifiCorp are those in excess of 34.5 kilovolt (kV). If an interruption occurs to distribution customers as a result of events at those facilities it designates these outages as Loss of Supply outages and denotes them in this report as Transmission.

Cost Effective Improvements

PacifiCorp uses its reliability data in a variety of ways that are designed to improve reliability to its customers. It has devised methods that are contained in the industry guide for electric reliability, IEEE 1782-2014.² Some of these analytical methods render the outage data in a tabular, graphical or geospatial manner. All of them serve as inputs to identify and develop projects that improve reliability using the Company's fuse coordination program (Fuse It or Lose It: FIOLI), its circuit hardening program (Saving SAIDI), and its capital construction program (Network Initiatives). It evaluates the history of outages within a circuit and at specific devices (fuses, reclosers, circuit breakers) across the entire service area and determines the probability of avoiding outages of specific cause categories. The programs (FIOLI, Saving SAIDI and Network Initiatives) are evaluated for their forecast improvements to network reliability, as measured by the avoidance of customer interruptions, customer minutes interrupted and momentary customer interruptions. Each project has a value calculated for the cost of the project divided by the avoided interruptions. PacifiCorp uses this cost per avoided customer interruption and customer minute interrupted to identify cost-effective reliability improvement projects. It assembles each of these candidate projects and their cost to benefit value into a project priority listing which rank orders the projects and based upon the best-cost projects, prepares a suite of projects that align with metric improvement and budget targets. As projects are completed the list is re-evaluated to determine whether reliability performance or funding levels have changed and warrant modifications to the plan.

Worst Performing Circuits

Additionally, PacifiCorp calculates a "Circuit Performance Indicator" which is a blended metric for the circuit, applying weighted circuit SAIDI, SAIFI, MAIFI and breaker lockout events. This metric ensures that no one index is emphasized for overall reliability, and that if a customer is experiencing a mix of sustained and momentary interruptions the combination of these events is being accorded proper consideration in elevating that circuit for improvement. This metric excludes outages which are Planned, Transmission or Major Events, and is identified as CPI99. The equation and weightings are detailed below.

CPI99

CPI99 is an acronym for Circuit Performance Indicator, which uses key reliability metrics of the circuit to identify underperforming circuits. It excludes Major Event and Loss of Supply or Transmission outages. The variables and equation for calculating CPI are:

$$CPI = \text{Index} * ((SAIDI * WF * NF) + (SAIFI * WF * NF) + (MAIFI_E * WF * NF) + (Lockouts * WF * NF))$$

Index: 10.645

SAIDI: Weighting Factor 0.30, Normalizing Factor 0.029

SAIFI: Weighting Factor 0.30, Normalizing Factor 2.439

MAIFI_E: Weighting Factor 0.20, Normalizing Factor 0.70

Lockouts: Weighting Factor 0.20, Normalizing Factor 2.00

Therefore, $10.645 * ((3\text{-year SAIDI} * 0.30 * 0.029) + (3\text{-year SAIFI} * 0.30 * 2.439) + (3\text{-year MAIFI}_E * 0.20 * 0.70) + (3\text{-year breaker lockouts} * 0.20 * 2.00)) = \text{CPI Score}$

Those circuits whose scores are poorer (higher) than may be warranted, given the number of customers it serves, the exposure and the location of the circuit are identified as candidate worst performing circuits. Within five years

² NEW P1782 (PE/T&D) Guide for Collecting, Categorizing and Utilization of Information Related to Electric Power Distribution Interruption Events was approved on March 27, 2014 and contains many of the approaches used by PacifiCorp to evaluate system reliability and determine areas where improvements should be deployed.

of selection the score must be improved (lowered) by a targeted amount. If that improvement has not been achieved additional work may be implemented to further improve the circuit performance.

In selecting its three worst performing circuits, PacifiCorp uses CPI99 as its preferred metric, as discussed above, and targets a 20% improvement in that metric within five years of selection. If a given circuit is identified as a worst performing circuit in successive years it would be asterisked and additional parameters would be required to be reported.

The Order directs utilities in the following manner regarding worst performing circuit selection.³

- b. Any circuit appearing on this list of "deficient" (WPC) circuits that also appeared on the previous year's list would be marked by an asterisk. For each asterisked circuit, each utility shall provide the following information:
 - i. An explanation of why it was ranked as a "deficient" circuit, i.e., the value of the metric used to indicate its performance;
 - ii. A historical record of the metric;
 - iii. An explanation of why it was on the deficiency list again;
 - iv. An explanation of what is being done to improve the circuit's future performance and the anticipated timeline for completing those activities (or an explanation why remediation is not being planned); and
 - v. A quantitative description of the utility's expectation for that circuit's future performance.

Below are the circuits selected as worst performers for 2018. Since no circuit was a repeat selection⁴ the details listed above are not required.

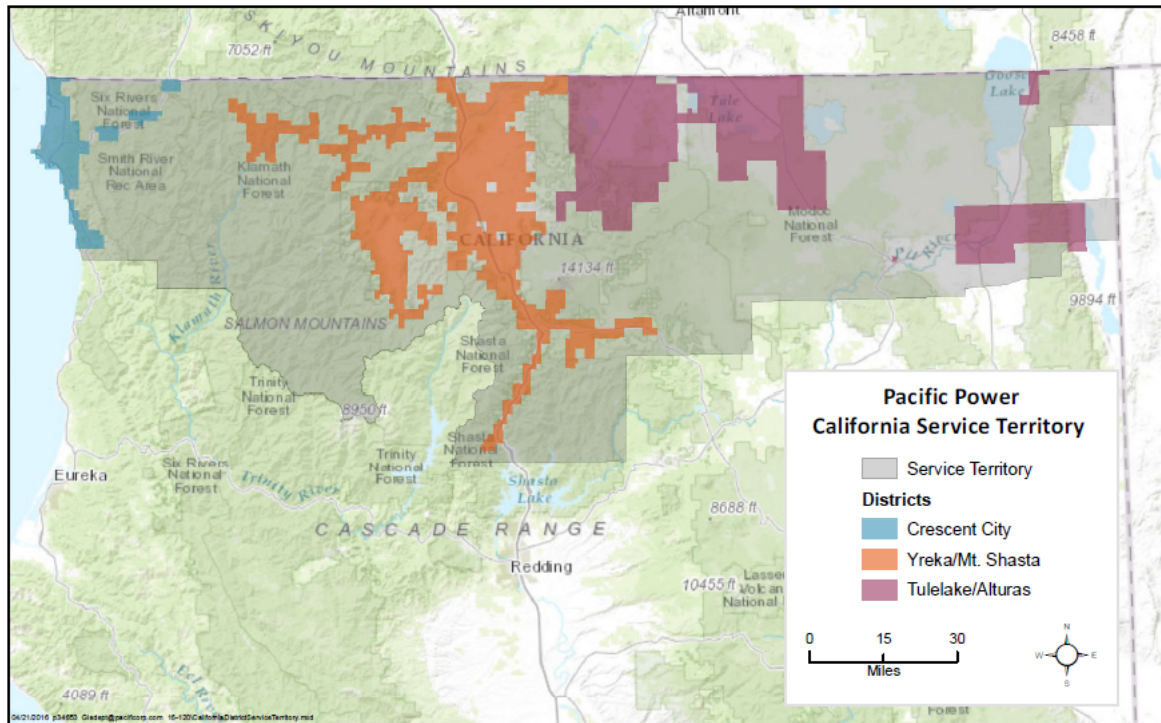
Top 3 Worst Performing Circuits			
Program Year 20: (CY2019)			
Circuit Name	Bell-Air (5G83)	Peach Orchrđ (5G2)	Southbank (5R165)
District	Yreka/Mt. Shasta	Yreka/Mt. Shasta	Crescent City
Customer Count	1,925	1,183	656
Substation Name	Weed	Ft. Jones	Smith River
Circuit-Miles	129 miles	122 miles	32 miles
% OH	64%	71%	66%
% UG	36%	29%	34%
# Breaker/Recloser Operations ⁵	15	4	0
CPI99 Baseline	60	104	95
Preferred Baseline	48	83	76
Designated as Worst Performer in Prior Year?	PY 11 & 8	PY 7	PY 16 & PY 3

³ D.16-01-008 p. 3.

⁴ In 2018, the three distribution circuits identified as concerns were Town (5G16), South (5G99), and Patrick's Creek (6R3). In 2017, the three distribution circuits identified as concerns were Scott Bar (5G40), Etna Tie (5G41), and Pine Grove (5R152). In 2016, the three distribution circuits identified as concerns were Sawmill (5R171), Pioneer (5G79), and Town (5L83).

⁵ 2018 Substation breaker reads are based on logged breaker counter readings entered during substation inspections.

The graphic below shows PacifiCorp's service territory and identifies the districts used in this report.



State Reliability Underlying Indices - Excluding Planned Outages: Ten-Year SAIDI, SAIFI, MAIFI and CAIDI Results

PacifiCorp uses the current standard indices for performance reporting, as described within this document, at the state level and at newly-defined reliability reporting regional levels. System Indices are calculated based on the IEEE 1366 method, which excludes Planned and ISO outages and includes generation outages. Major Events are determined using the “2.5 beta” statistical method to determine the threshold for a major event, as outlined in IEEE P1366. Major event days are removed from the reliability indices calculation. For more on the current year’s major events see Section 7.

Distribution

Distribution outages include any outage where the device which operates is downstream of the high side disconnect of the substation down to the customer’s meter.

Distribution System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 β P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	202.5	1.036	195	2.478	72.0	0.688	105	2.478
2017	421.8	1.426	296	4.422	75.5	0.607	125	4.422
2016	130.8	0.858	152	2.554	96.2	0.719	134	2.554
2015	297.5	1.110	268	4.330	100.0	0.674	148	4.330
2014	199.4	0.889	224	2.640	160.8	0.840	191	2.640
2013	127.4	0.740	172	4.171	123.1	0.705	174	4.171
2012	341.3	1.248	273	6.936	165.5	1.015	163	6.936
2011	143.0	1.047	137	8.550	143.0	1.047	137	8.550
2010	725.7	1.726	421	16.266	205.0	1.302	157	16.266
2009	173.5	1.145	151	7.597	173.4	1.145	151	7.597

Notes:

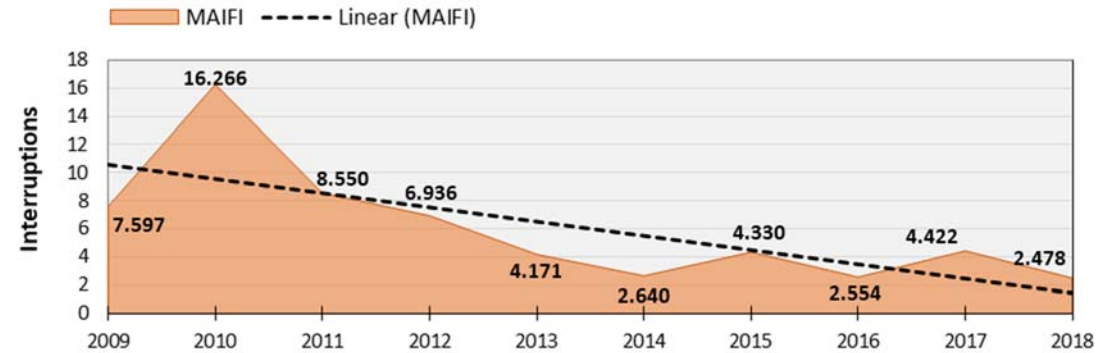
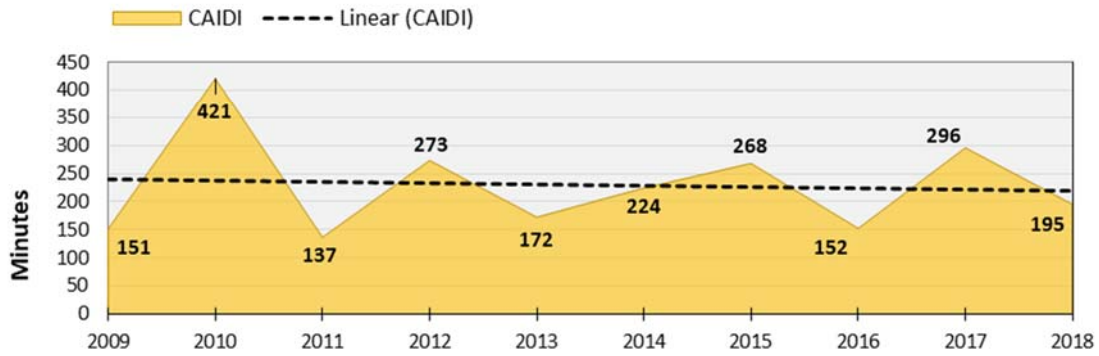
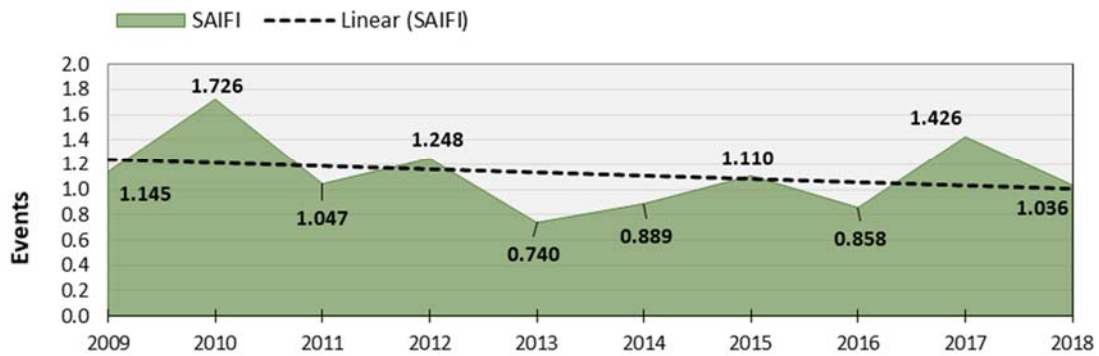
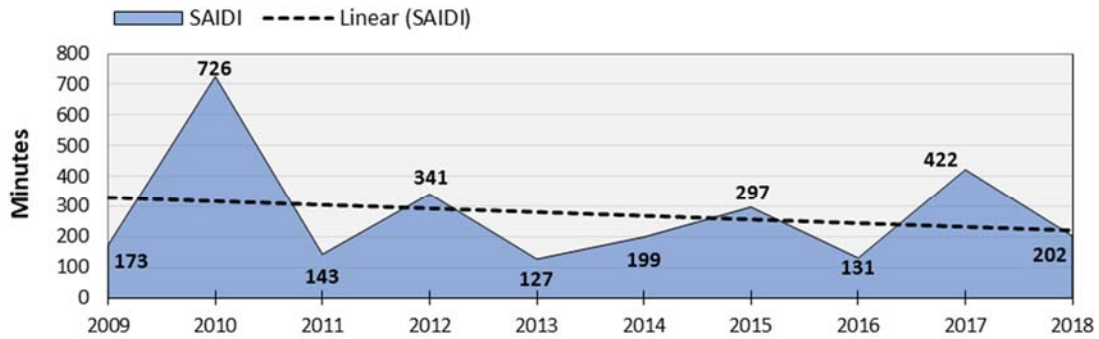
1 - Excludes outages that are customer requested, pre-arranged (which can include short notice emergency prearranged outages), forced outages mandated by public authority, or resulting from a failure of another company's system.

2 - In 2016 R. 14-12-014, D.16- approved local Major Event exclusion. 2015 Local events were reviewed and are excluded from the indices going forward.

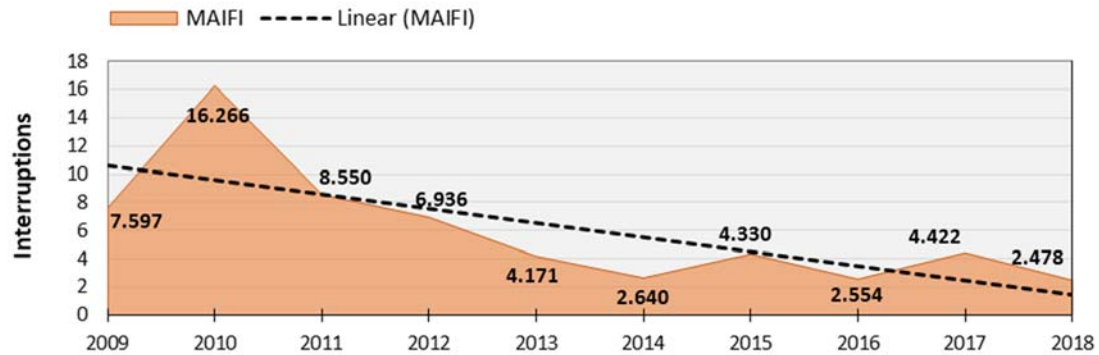
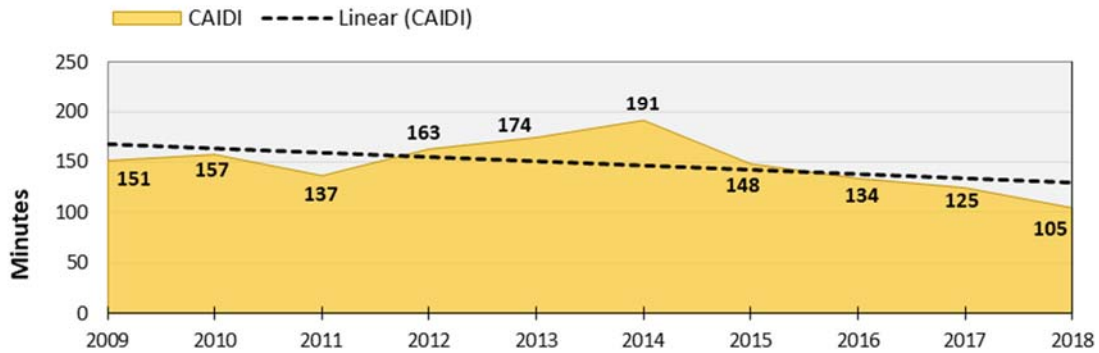
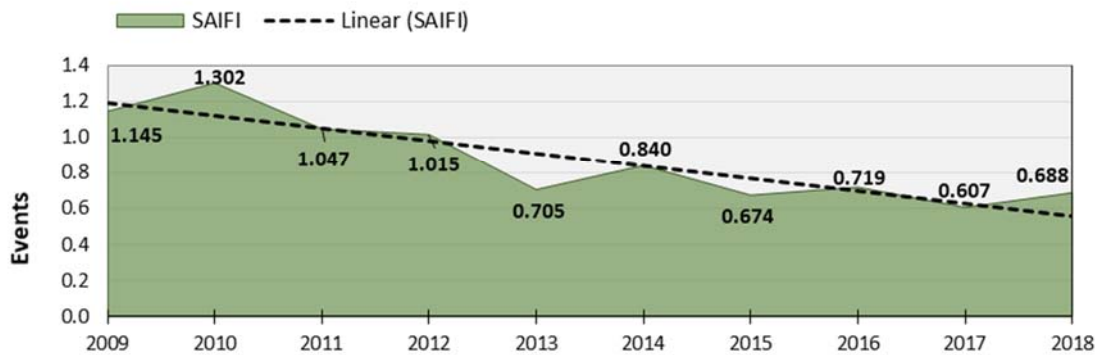
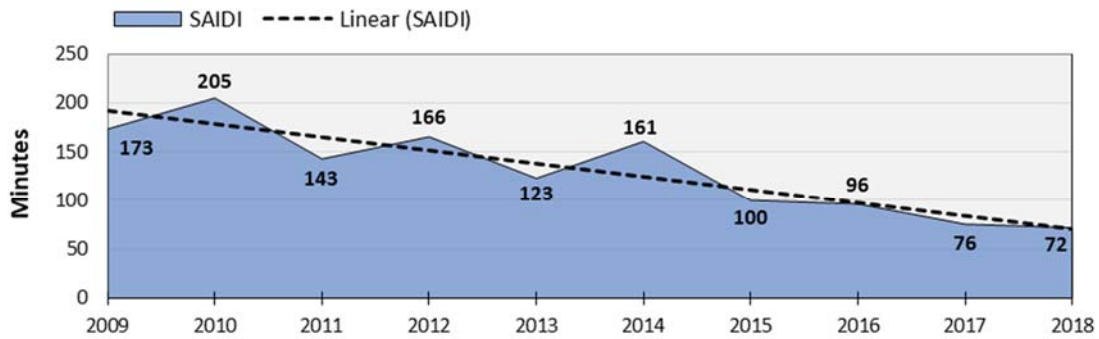
3 - Momentary indices are reported within distribution system metrics and are inclusive of outages that occurred during major events.

Distribution Reliability History - Including Major Events

(excludes customer notice given and customer requested)



Distribution Reliability History - Excluding Major Events (excludes customer notice given and customer requested)



Transmission

Transmission outages include any outage where the device which operates is upstream of the substation transformer. This can include outages that are the result of generator operations. Transmission voltages are in excess of 34.5 kilovolt (kV).

Transmission System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 & P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	89.6	1.805	50	0	37.0	1.275	29	0
2017	269.1	2.245	120	0	46.6	1.144	41	0
2016	88.1	1.057	83	0	46.5	0.714	65	0
2015	230.4	1.824	126	0	81.9	1.013	81	0
2014	230.5	1.089	212	0	72.7	0.586	124	0
2013	189.9	2.117	90	0	88.8	1.535	58	0
2012	160.5	1.742	92	0	94.0	1.225	77	0
2011	134.2	1.248	107	0	134.2	1.248	107	0
2010	462.2	2.826	164	0	247.3	2.529	98	0
2009	157.0	1.377	114	0	102.3	0.929	110	0

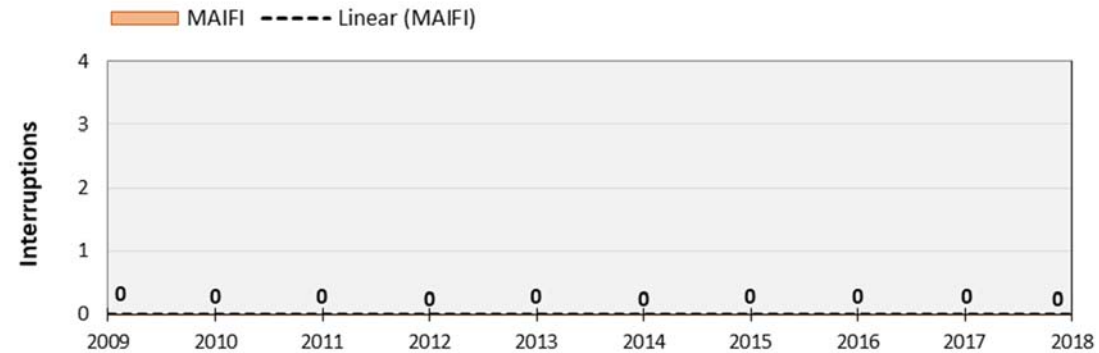
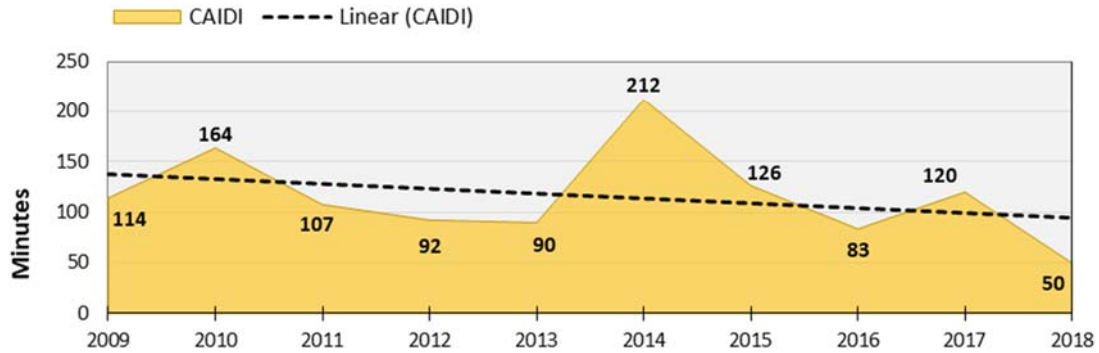
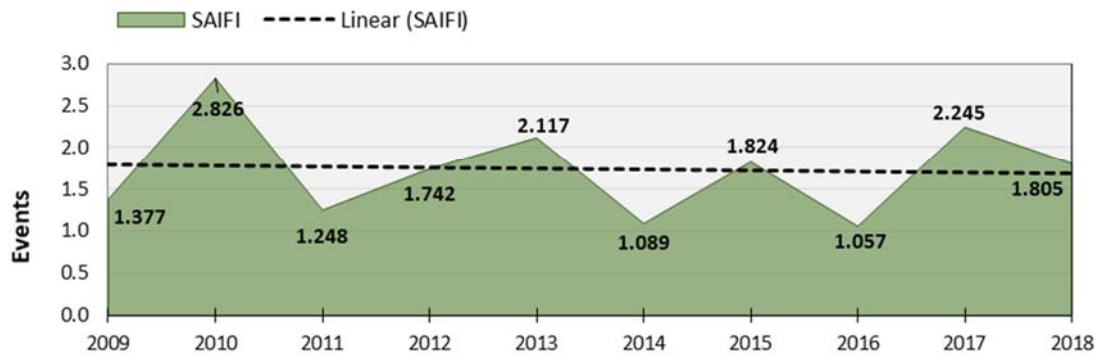
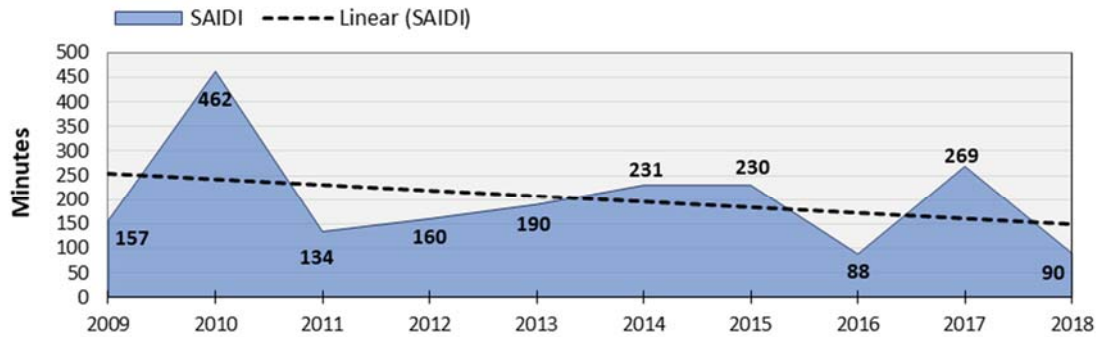
Notes:

1 - Excludes outages that are customer requested, pre-arranged (which can include short notice emergency prearranged outages), forced outages mandated by public authority, or resulting from a failure of another company's system.

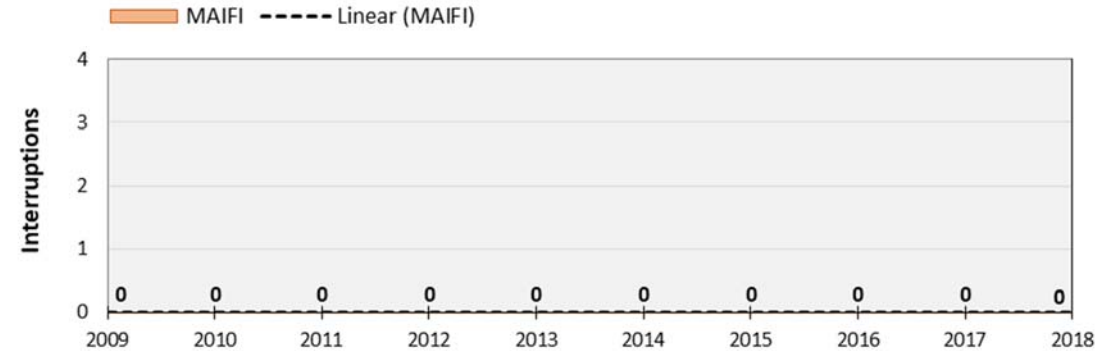
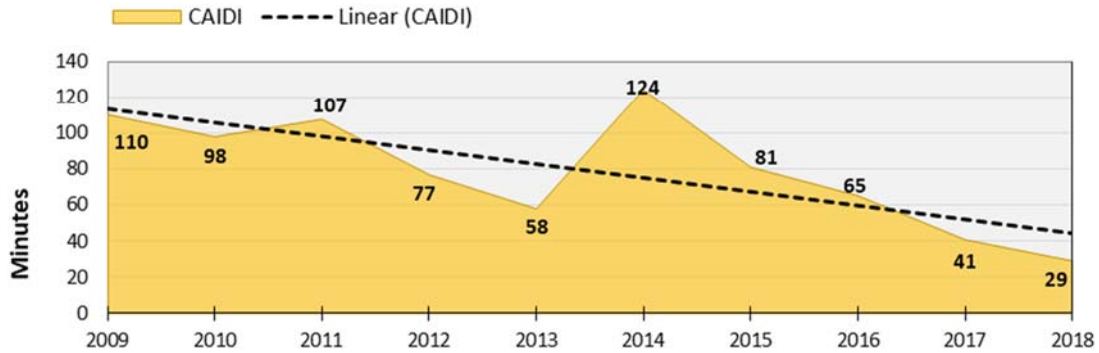
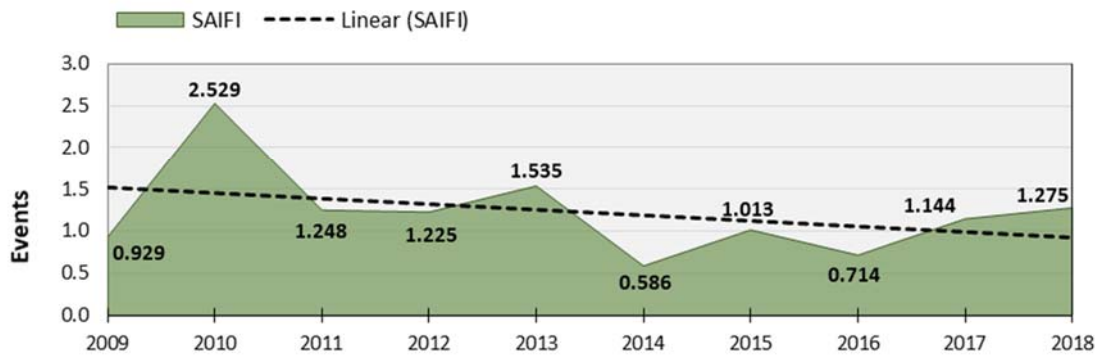
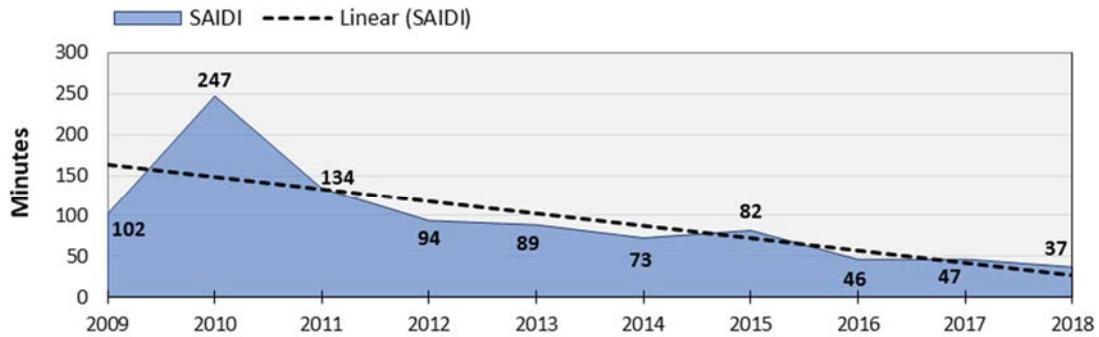
2 - In 2016 D.16-01-008, approved local Major Event exclusion. 2015 Local events were reviewed and are excluded from the indices going forward.

3 - Momentary indices are reported within distribution system metrics and are inclusive of outages that occurred during major events.

Transmission Reliability History - Including Major Events (excludes customer notice given and customer requested)



Transmission Reliability History - Excluding Major Events (excludes customer notice given and customer requested)



Combined Transmission and Distribution

Combined Transmission and Distribution System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 & P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	292.1	2.841	103	2.478	108.9	1.963	55	2.478
2017	690.9	3.671	188	4.422	122.2	1.751	70	4.422
2016	218.9	1.915	114	2.554	142.7	1.433	100	2.554
2015	527.8	2.934	180	4.330	181.9	1.687	108	4.330
2014	430.0	1.978	217	2.640	233.6	1.426	164	2.640
2013	317.3	2.857	111	4.171	211.9	2.240	95	4.171
2012	501.8	2.990	168	6.936	259.5	2.240	116	6.936
2011	277.2	2.295	121	8.550	277.2	2.295	121	8.550
2010	1187.9	4.552	261	16.266	452.3	3.831	118	16.266
2009	330.5	2.522	131	7.597	275.7	2.074	133	7.597

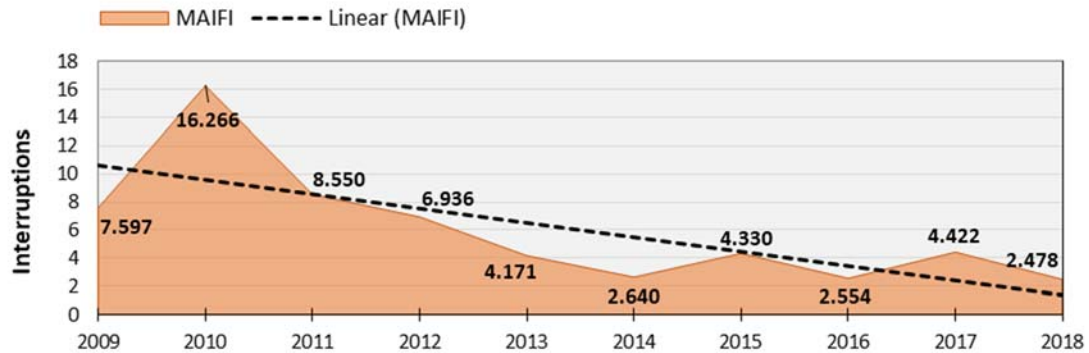
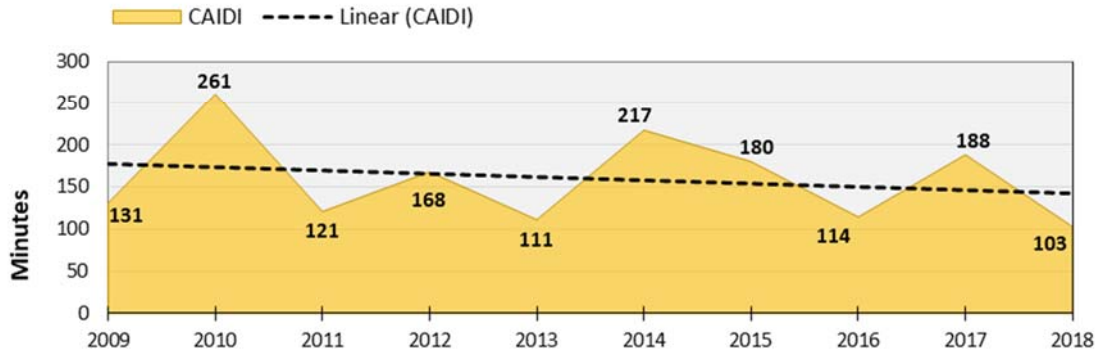
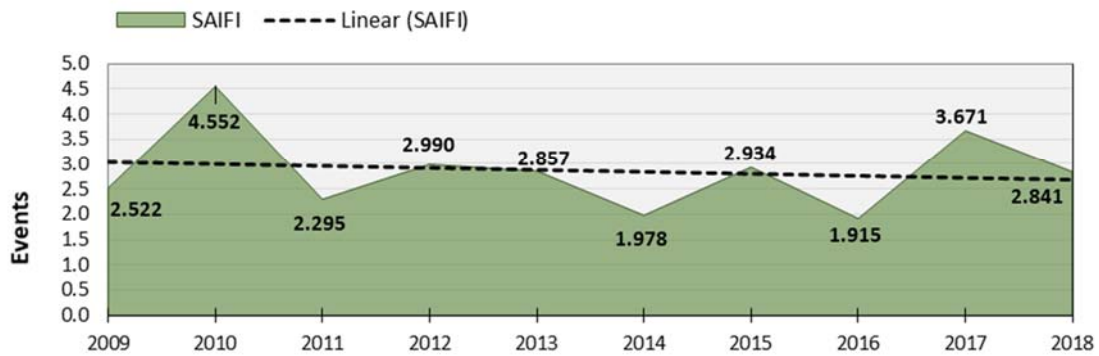
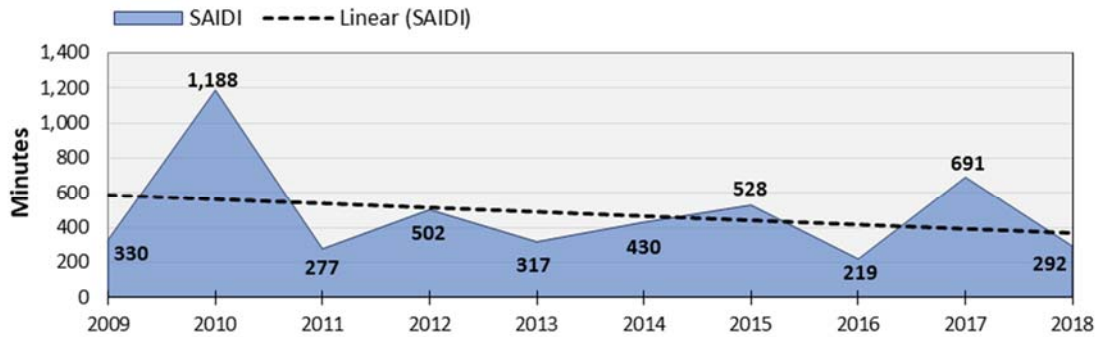
Notes:

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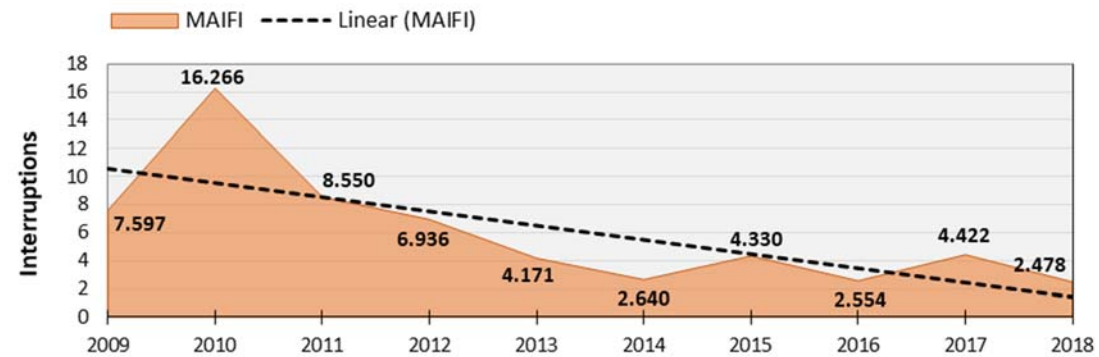
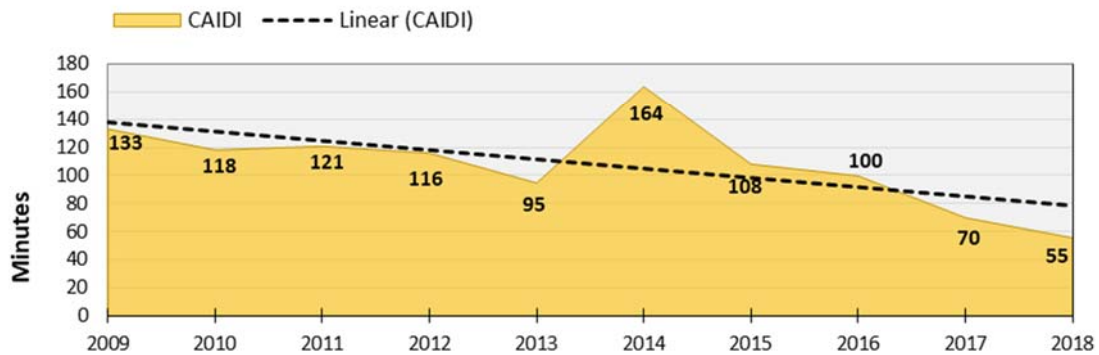
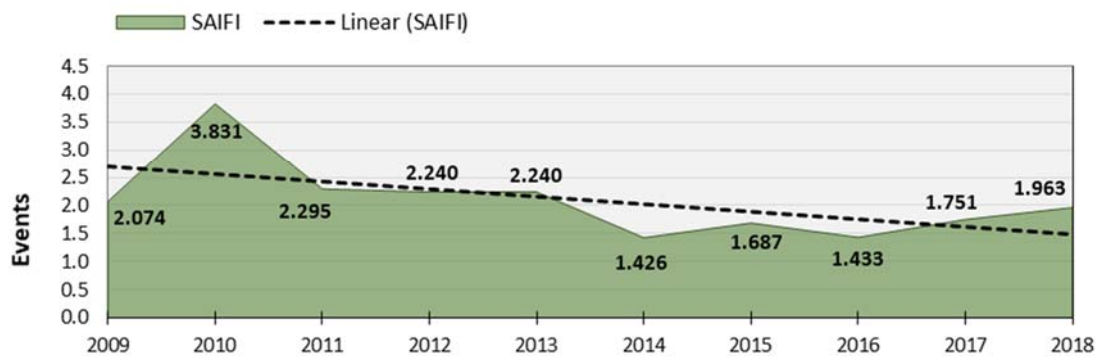
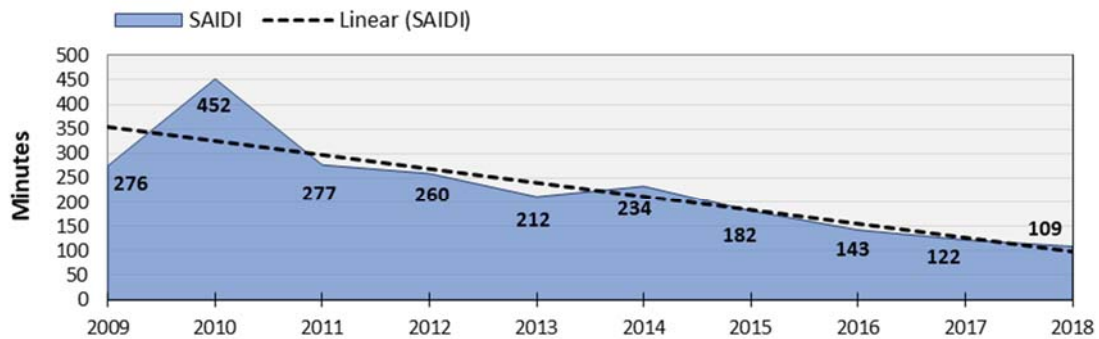
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Transmission and Distribution Reliability History - Including Major Events (excludes customer notice given and customer requested)



Transmission and Distribution Reliability History - *Excluding Major Events* (excludes customer notice given and customer requested)



District Reliability Underlying Indices - Excluding Planned Outages: Ten-Year SAIDI, SAIFI and CAIDI Results

Crescent City

Crescent City - District System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 ß P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	600.7	6.847	88	0	104.6	3.607	29	0.0
2017	1027.6	4.792	214	0	124.6	1.178	106	0.0
2016	343.7	2.644	130	0	161.6	1.431	113	0.0
2015	949.5	2.495	381	2.482	96.7	0.776	125	2.482
2014	846.7	2.967	285	0	318.2	1.592	200	0
2013	105.4	0.615	171	0	105.4	0.615	171	0
2012	453.0	4.115	110	0	391.4	3.770	104	0
2011	191.9	1.263	152	0	191.9	1.263	152	0
2010	228.2	1.944	117	0.895	227.5	1.939	117	0.895
2009	265.3	1.902	139	3.176	265.3	1.902	139	3.176

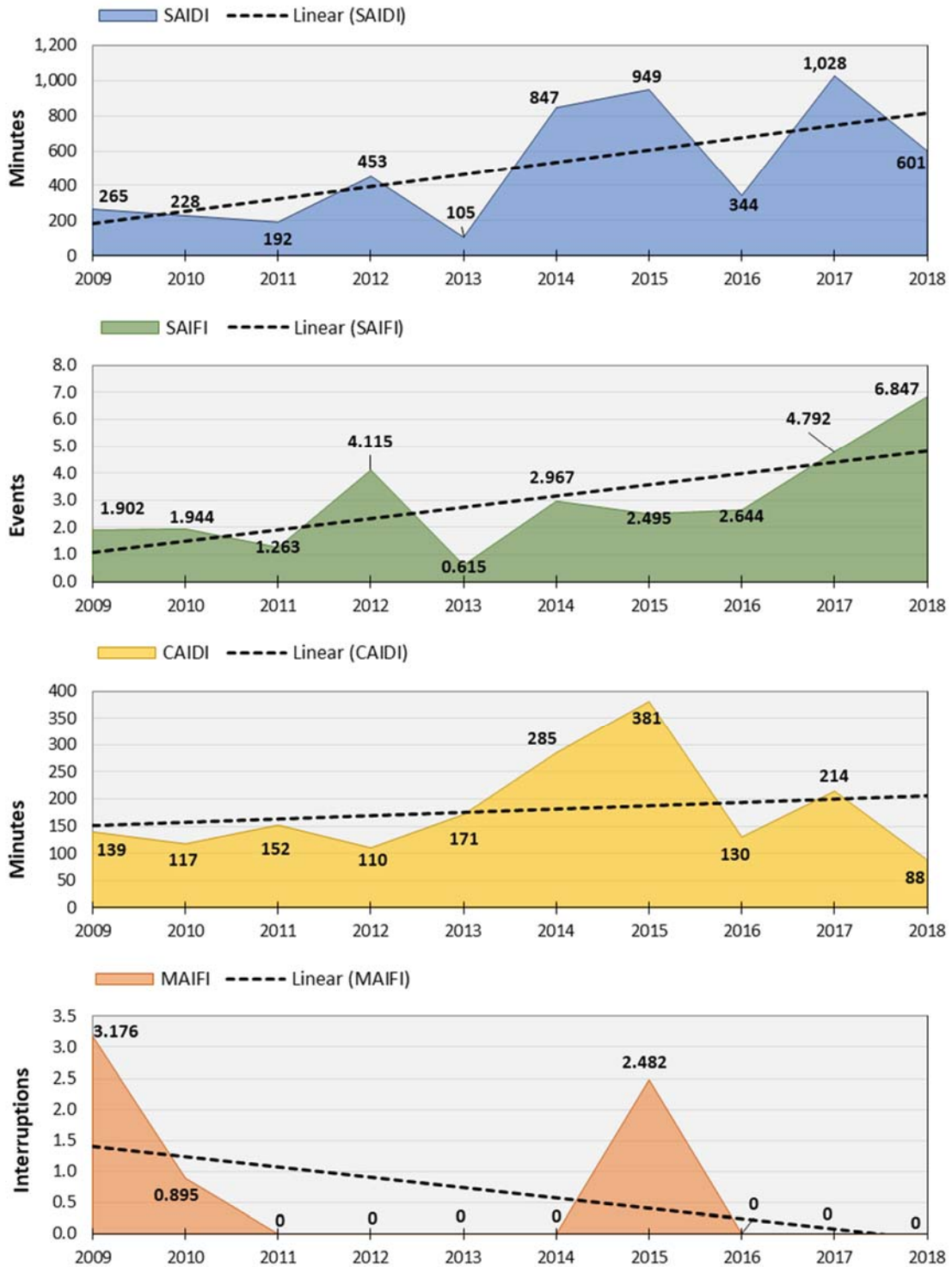
Notes:

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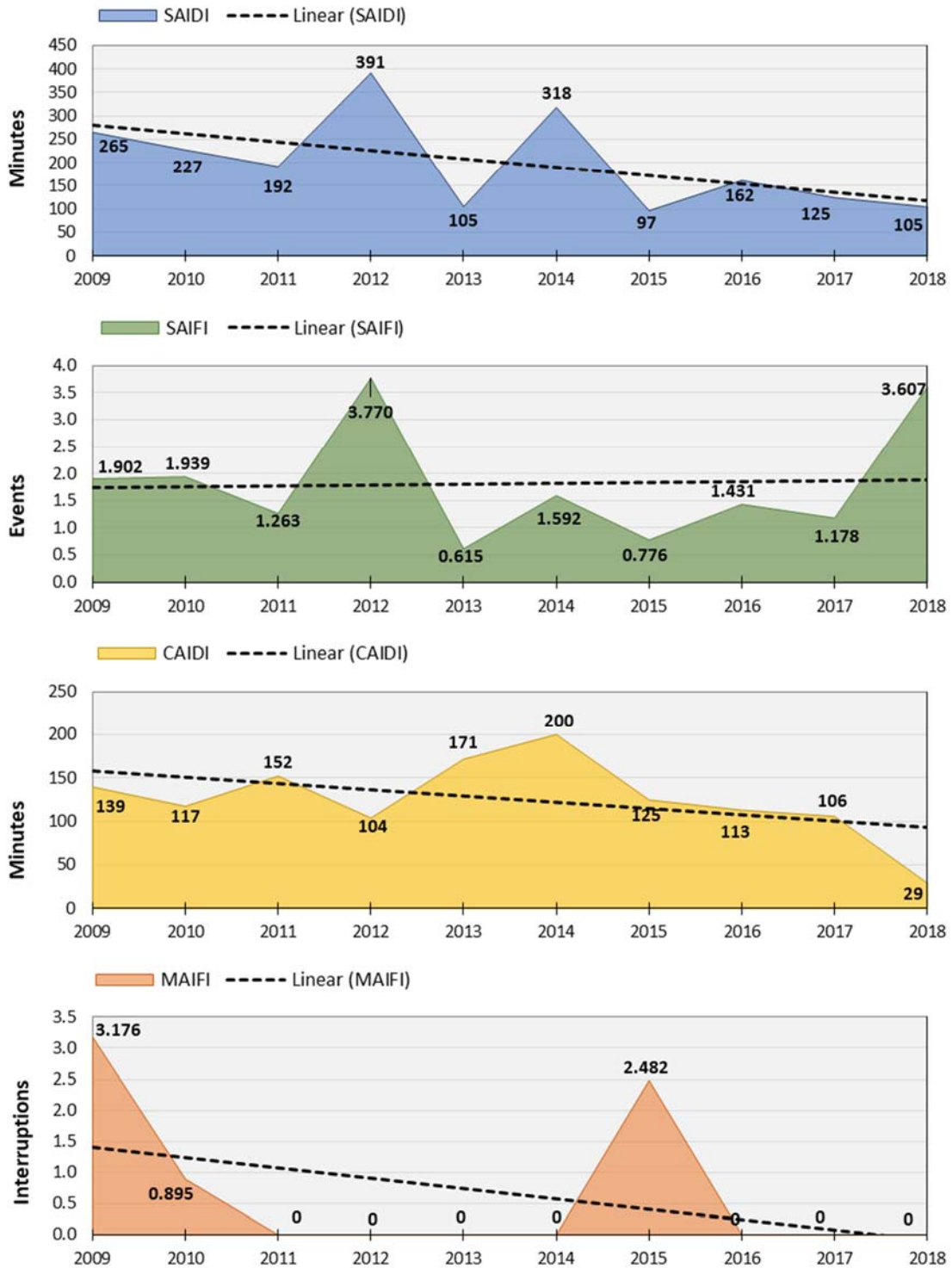
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Crescent City Reliability History - Including Major Events (excludes customer notice given and customer requested)



Crescent City Reliability History - Excluding Major Events (excludes customer notice given and customer requested)



Yreka/Mt. Shasta - District System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 & P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	190.5	1.289	148	2.329	106.5	1.283	83	2.329
2017	648.0	3.259	199	3.459	121.8	1.905	64	3.459
2016	184.6	1.689	109	1.923	146.4	1.455	101	1.923
2015	349.2	3.188	110	4.328	230.3	2.290	101	4.328
2014	303.0	1.738	174	2.666	222.0	1.437	155	2.666
2013	409.8	3.847	107	4.042	231.3	2.821	82	4.042
2012	616.1	2.967	208	7.268	228.1	1.838	124	7.268
2011	349.9	2.913	120	9.436	349.9	2.913	120	9.436
2010	1724.0	5.618	307	18.208	464.7	4.389	106	18.208
2009	346.8	2.302	151	7.978	255.7	1.608	159	7.978

Notes:

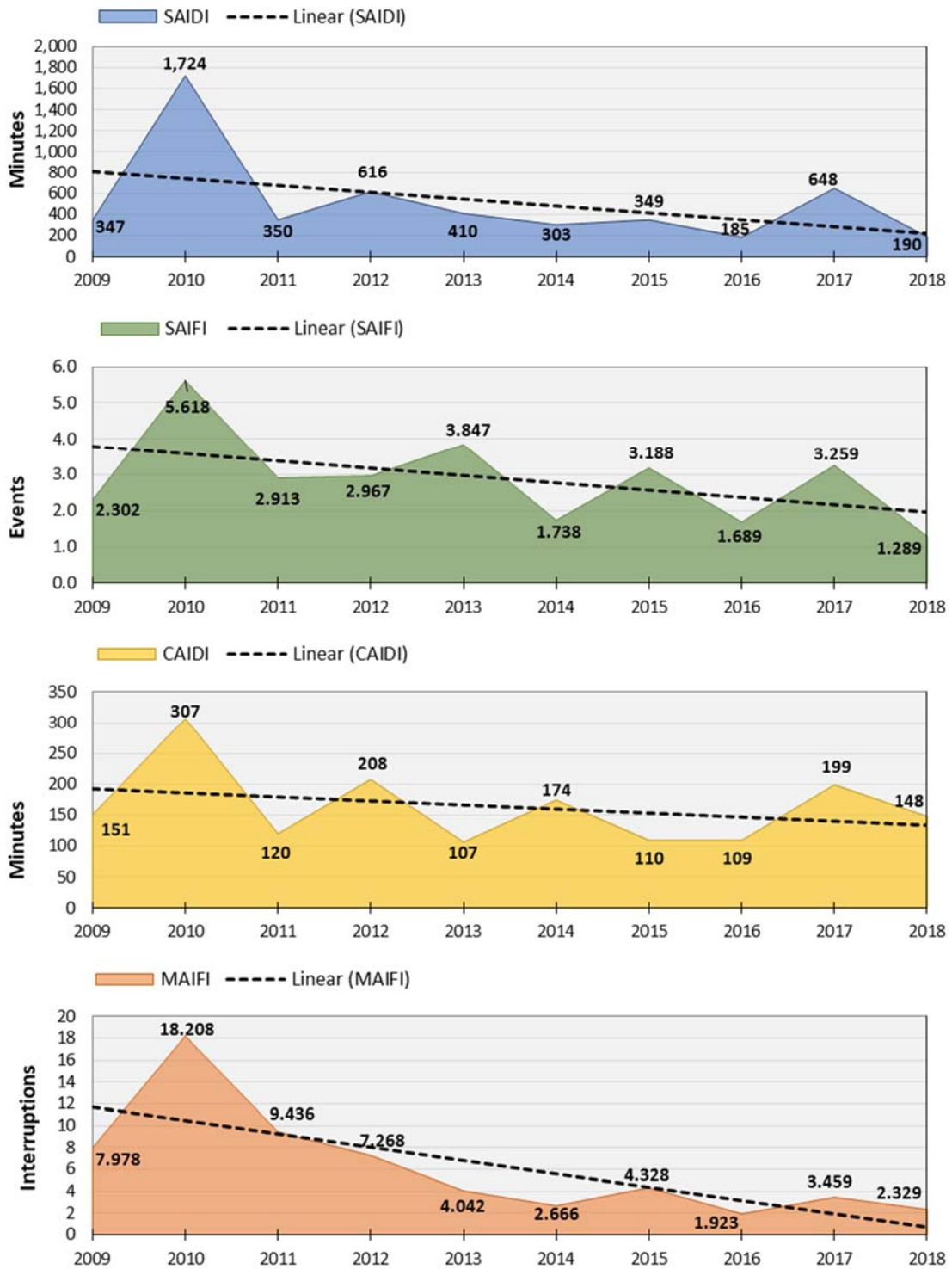
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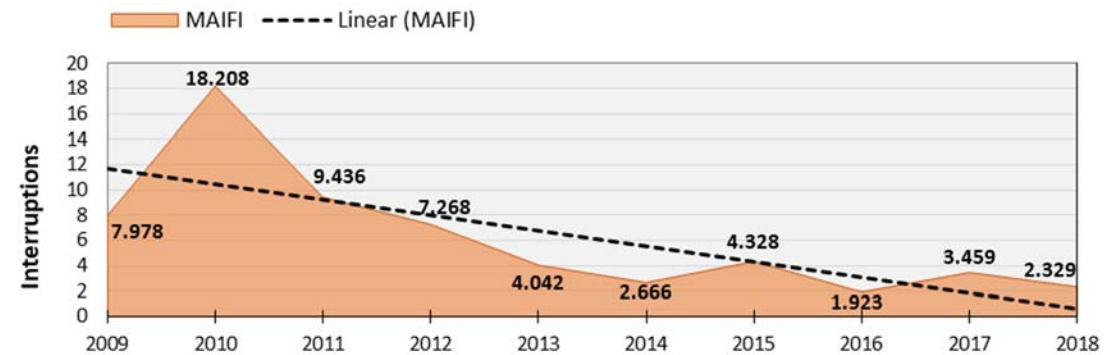
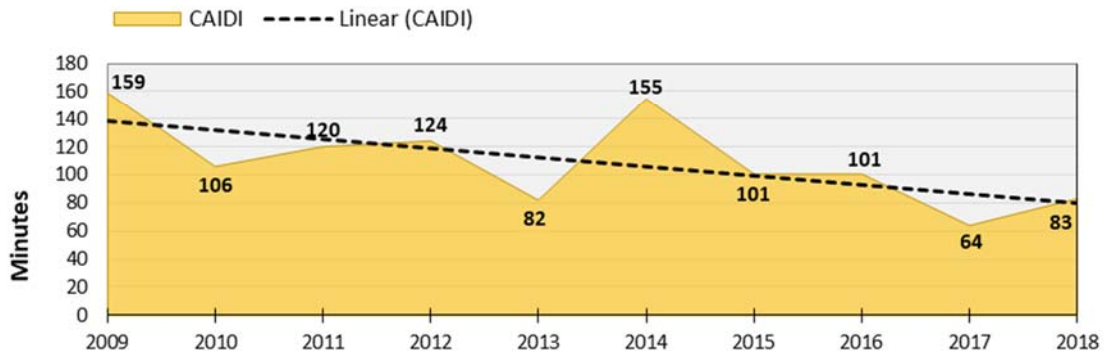
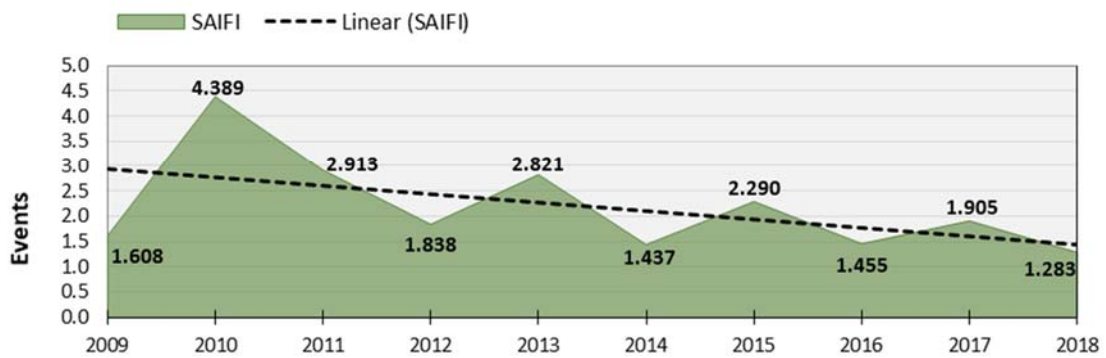
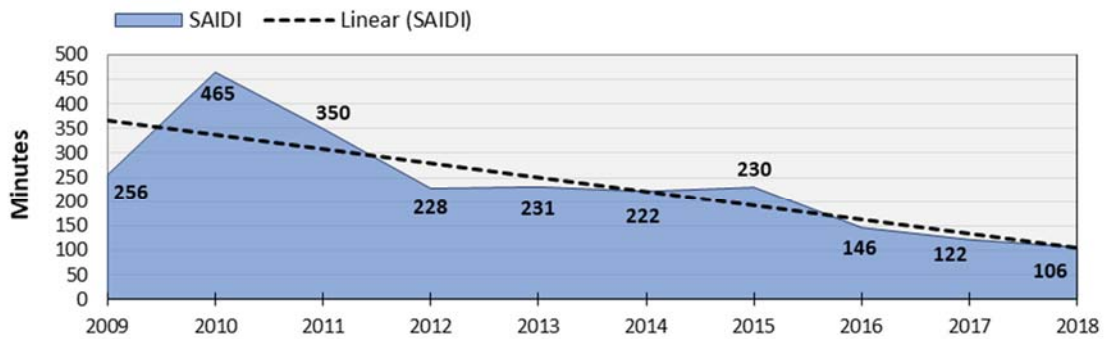
3 - Momentary indices are reported within distribution system metrics and are inclusive of outages that occurred during major events.

Yreka/Mt. Shasta Reliability History - Including Major Events

(excludes customer notice given and customer requested)



Yreka/Mt. Shasta Reliability History - Excluding Major Events (excludes customer notice given and customer requested)



Tulelake/Alturas - District System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 & P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	128.4	1.667	77	5.133	127.0	1.658	77	5.133
2017	235.5	3.248	72	16.151	119.3	2.198	54	16.151
2016	128.7	1.518	85	9.386	95.3	1.389	69	9.386
2015	462.3	2.739	169	5.237	147.1	0.978	150	5.237
2014	171.2	1.126	152	4.755	125.0	1.083	115	4.755
2013	341.4	3.067	111	8.754	329.6	2.925	113	8.754
2012	142.7	1.033	138	10.761	142.7	1.033	138	10.761
2011	146.2	1.745	84	9.851	146.2	1.745	84	9.851
2010	828.5	5.114	162	16.017	814.1	5.084	160	16.017
2009	385.0	4.518	85	10.354	373.6	4.217	89	10.354

Notes:

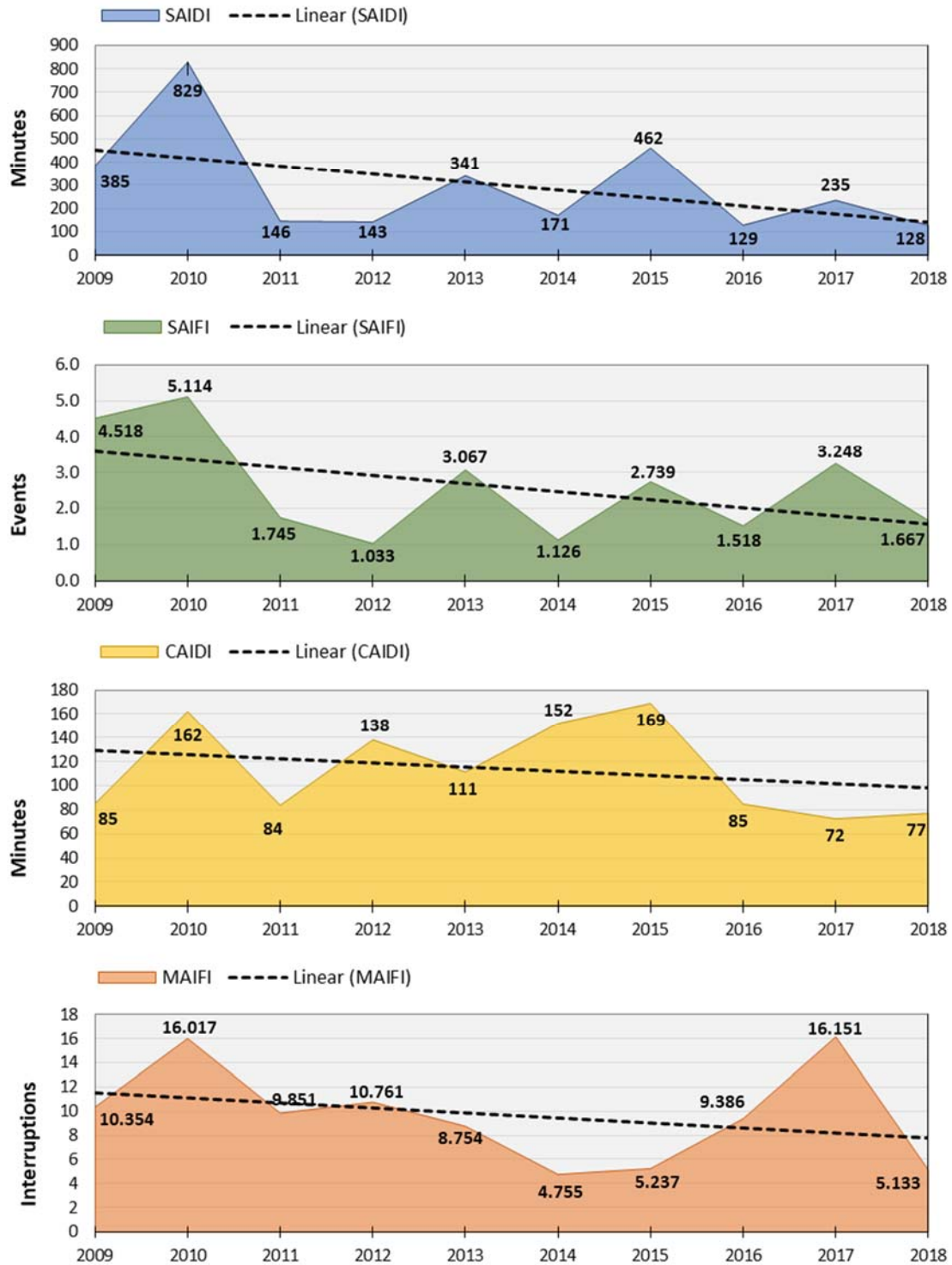
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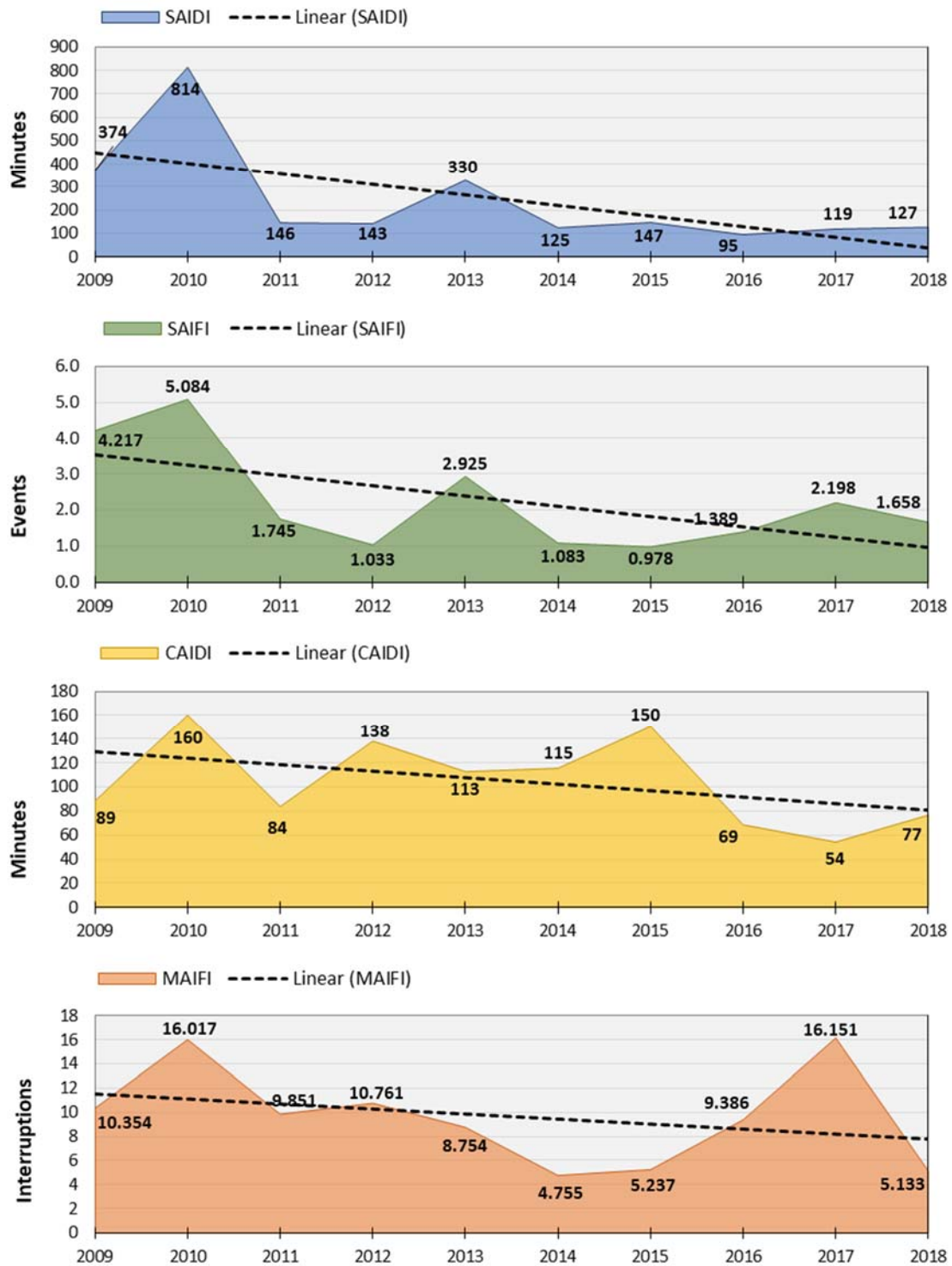
Tulelake/Alturas Reliability History - Including Major Events

(excludes customer notice given and customer requested)



Tulelake/Alturas Reliability History - Excluding Major Events

(excludes customer notice given and customer requested)



State and District Reliability Underlying Indices - Including Planned Outages: Ten-Year Year SAIDI, SAIFI and CAIDI Results

State

State - District System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 § P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	366.8	3.004	122	2.478	183.6	2.126	86	2.478
2017	727.6	3.936	185	4.422	158.7	2.014	79	4.422
2016	273.8	2.179	126	2.554	197.6	1.697	116	2.554
2015	554.5	3.042	182	4.330	208.6	1.795	116	4.330
2014	455.4	2.107	216	2.640	259.0	1.554	167	2.640
2013	344.6	2.959	116	4.171	239.1	2.342	102	4.171
2012	512.9	3.046	168	6.936	270.7	2.296	118	6.936
2011	298.9	2.414	124	8.550	298.9	2.414	124	8.550
2010	1209.4	4.725	256	16.266	473.7	4.003	118	16.266
2009	351.8	2.594	136	7.597	297.0	2.146	138	7.597

Notes:

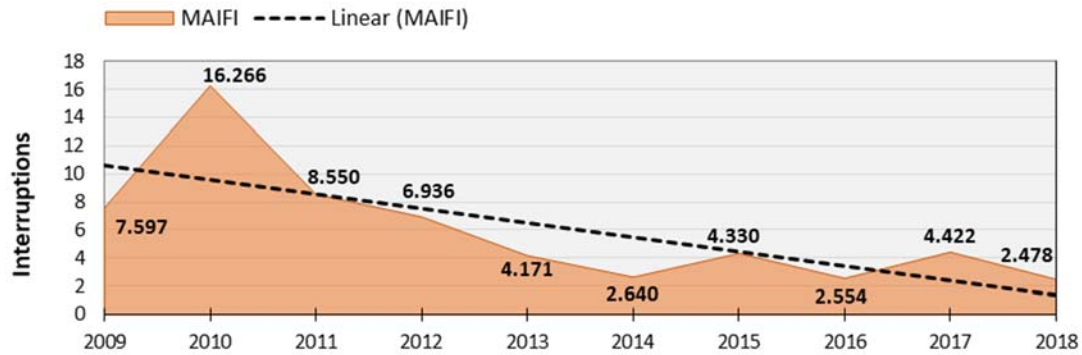
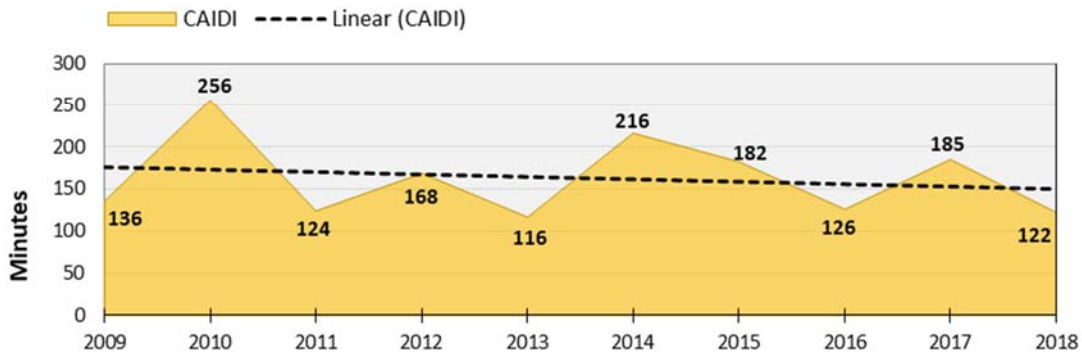
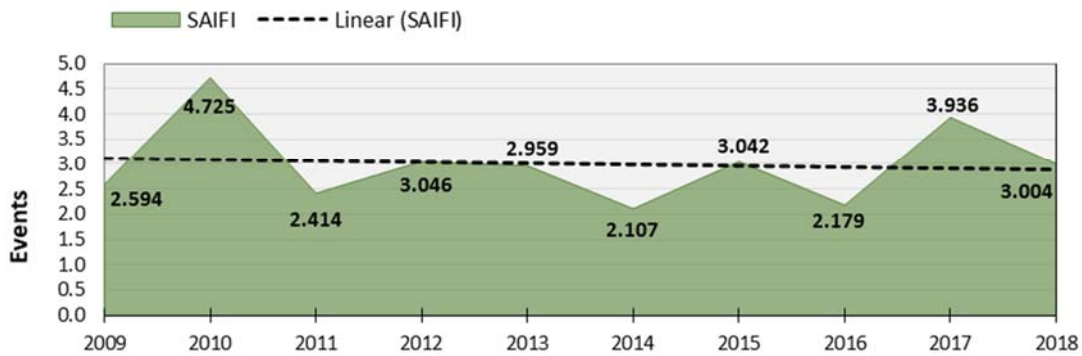
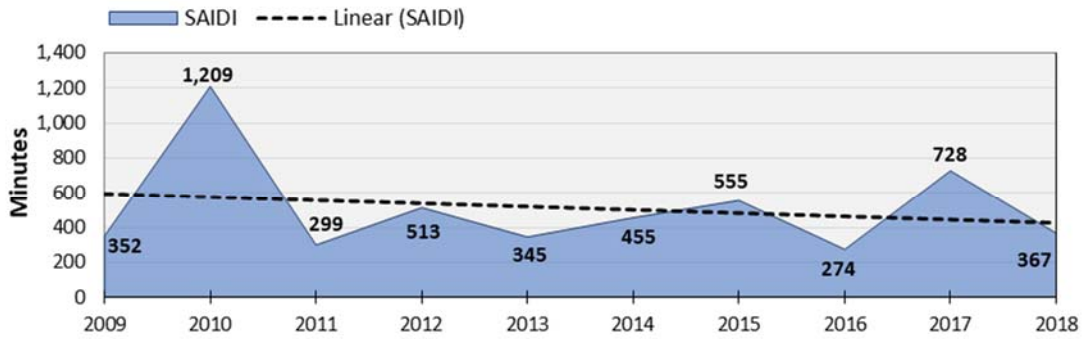
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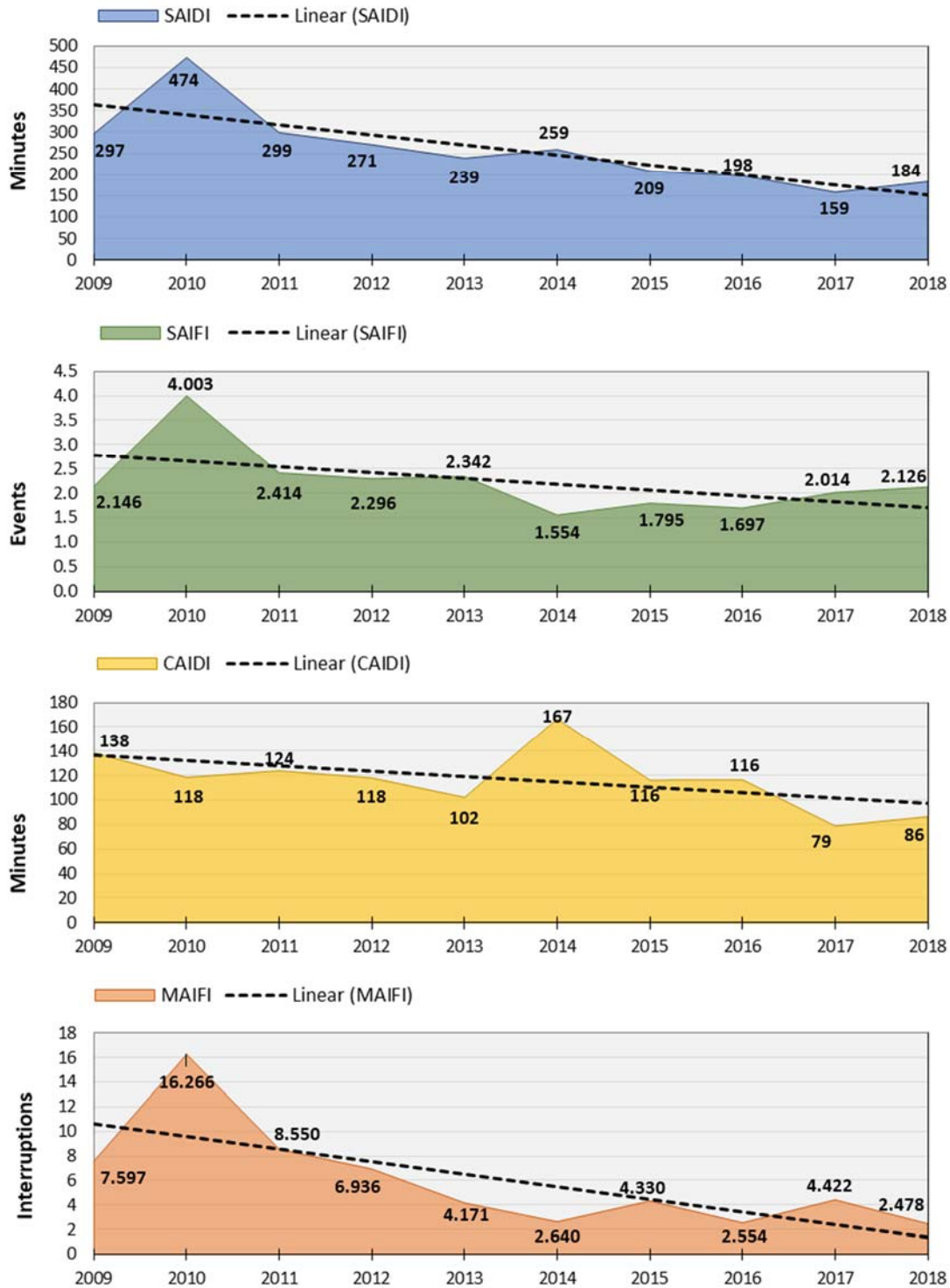
State Reliability History - Including Major Events

(includes customer notice given and customer requested)



State Reliability History - Excluding Major Events

(includes customer notice given and customer requested)



Crescent City - District System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 & P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	603.6	6.864	88	0	107.6	3.624	30	0
2017	1042.6	4.909	212	0	139.4	1.294	108	0
2016	361.4	2.796	129	0	179.2	1.583	113	0
2015	966.9	2.570	376	2.482	114.0	0.851	134	2.482
2014	871.1	3.103	281	0	342.6	1.728	198	0
2013	147.7	0.744	199	0	147.7	0.743	199	0
2012	457.4	4.142	110	0	395.8	3.797	104	0
2011	208.0	1.353	154	0	208.0	1.353	154	0
2010	232.7	1.970	118	0.895	231.9	1.964	118	0.895
2009	272.3	1.934	141	3.176	272.3	1.934	141	3.176

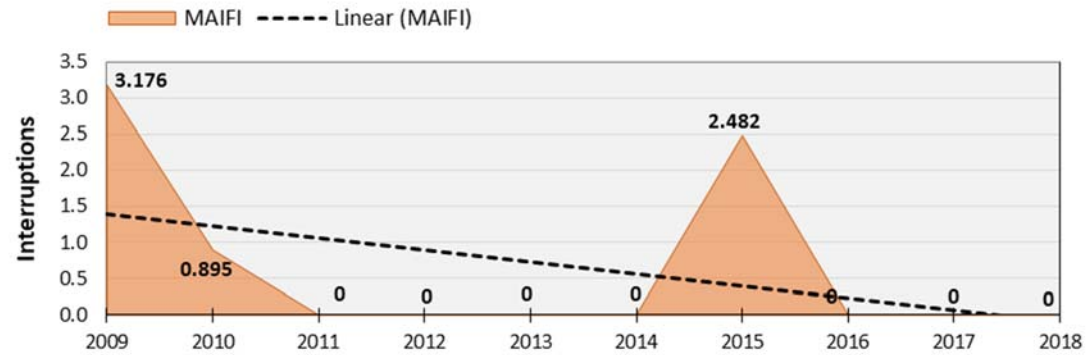
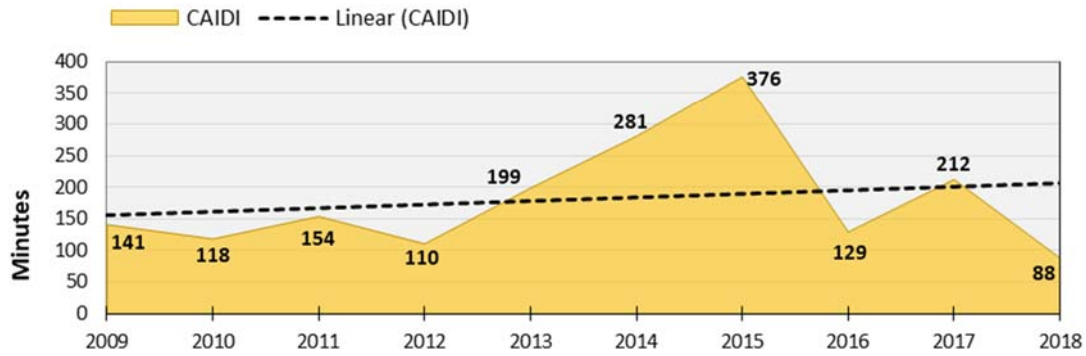
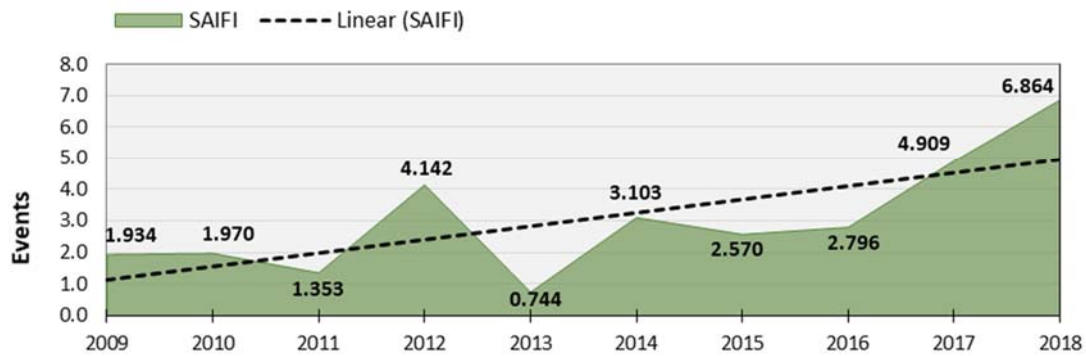
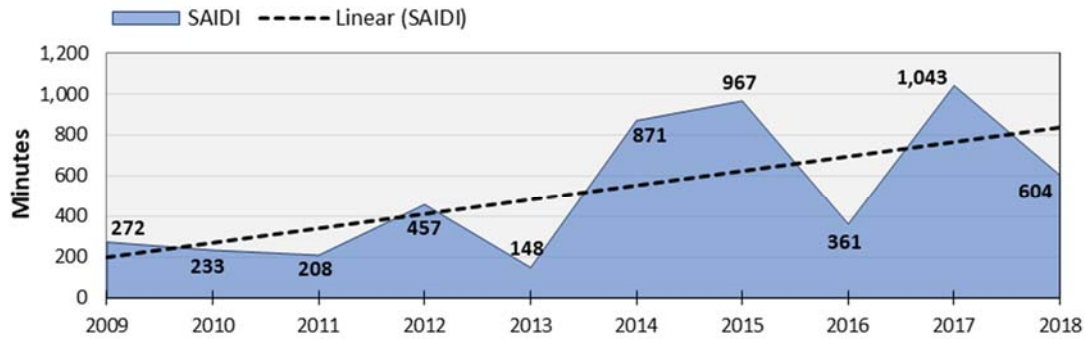
Notes:

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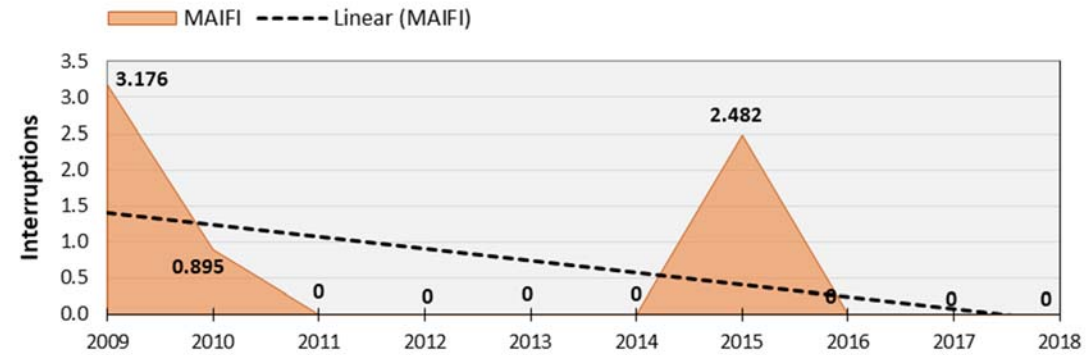
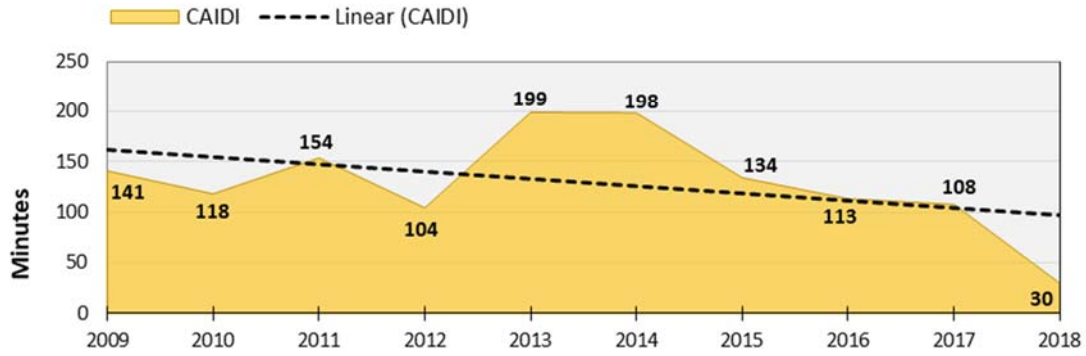
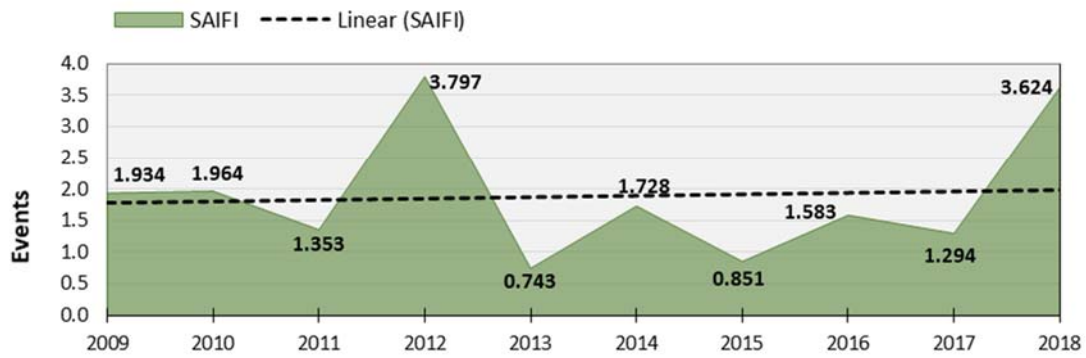
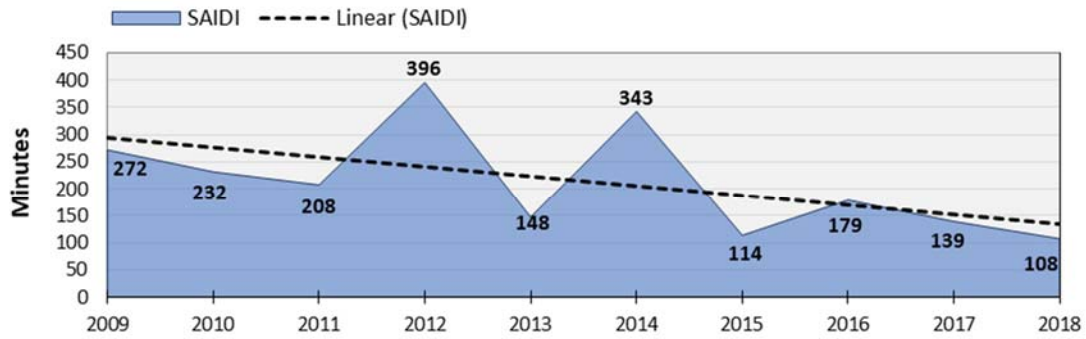
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Crescent City Reliability History - Including Major Events (includes customer notice given and customer requested)



Crescent City Reliability History - Excluding Major Events (includes customer notice given and customer requested)



Yreka/Mt. Shasta - District System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 & P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	313.5	1.520	206	2.329	229.5	1.514	152	2.329
2017	699.9	3.586	195	3.459	173.5	2.231	78	3.459
2016	270.3	2.069	131	1.923	232.2	1.836	126	1.923
2015	382.2	3.325	115	4.328	263.2	2.427	108	4.328
2014	332.6	1.842	181	2.666	251.7	1.540	163	2.666
2013	422.0	3.911	108	4.042	243.5	2.885	84	4.042
2012	633.1	3.048	208	7.268	244.9	1.919	128	7.268
2011	368.0	3.010	122	9.436	368.0	3.010	122	9.436
2010	1743.9	5.749	303	18.208	489.6	4.524	108	18.208
2009	369.4	2.385	155	7.978	278.6	1.694	164	7.978

Notes:

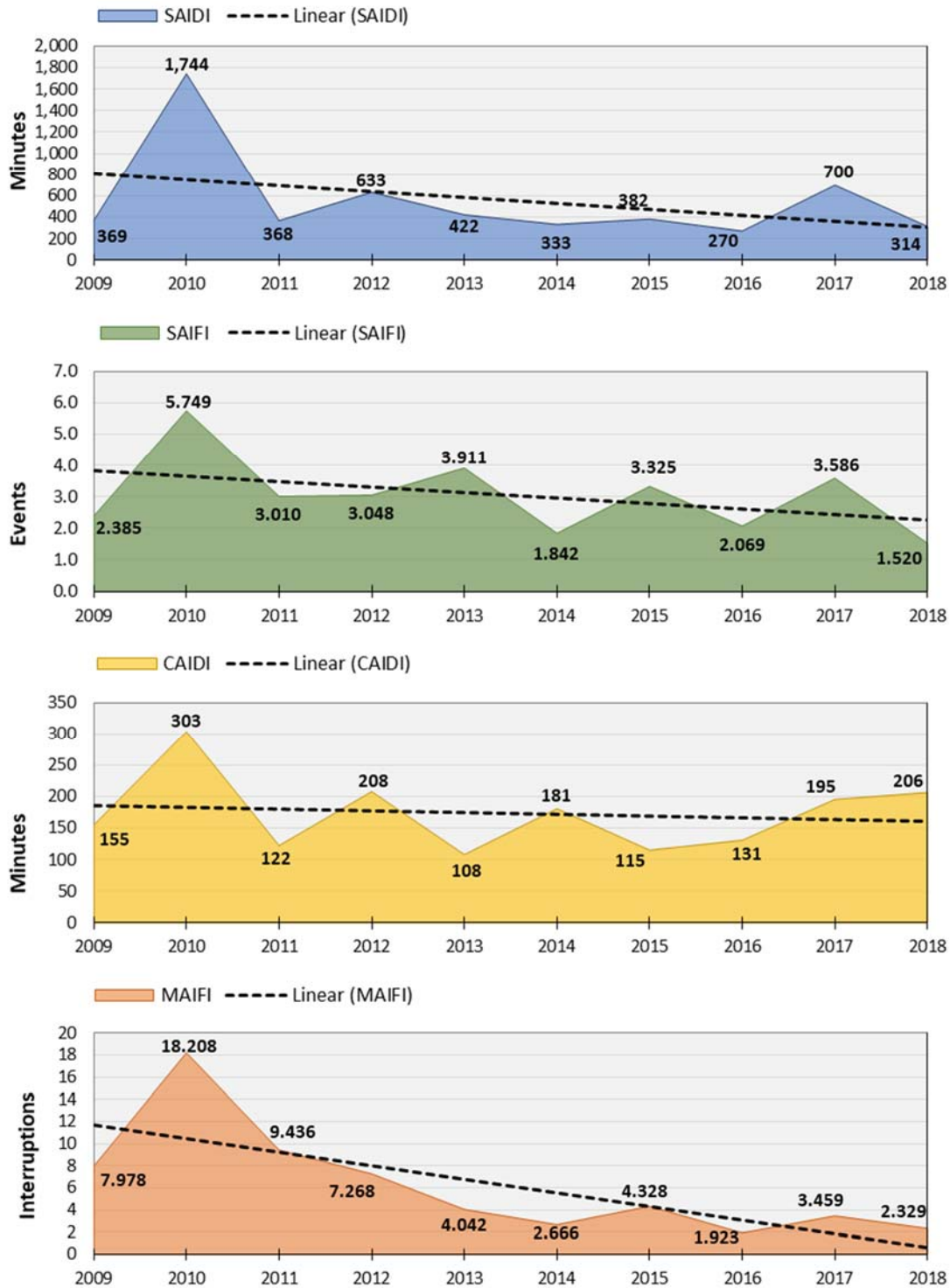
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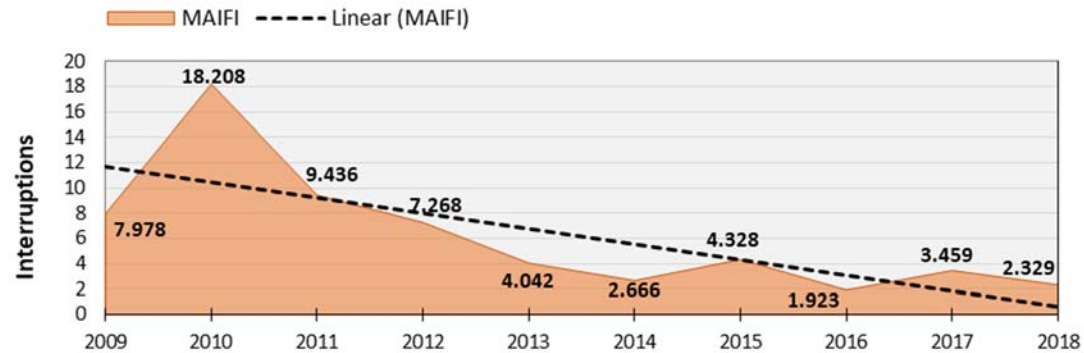
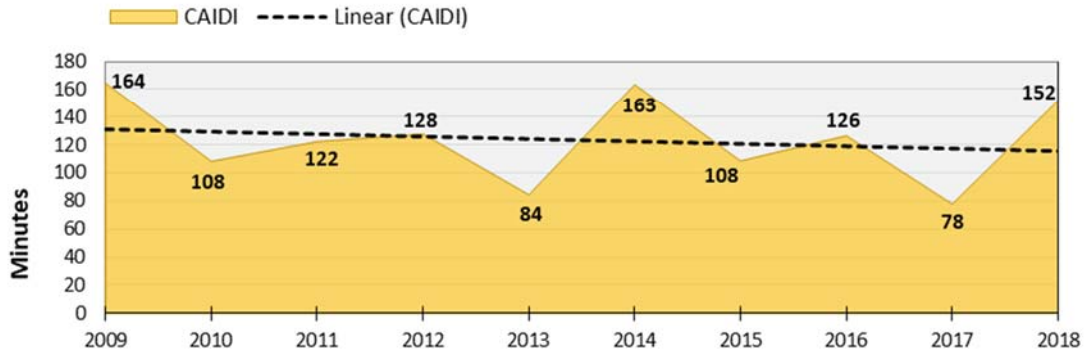
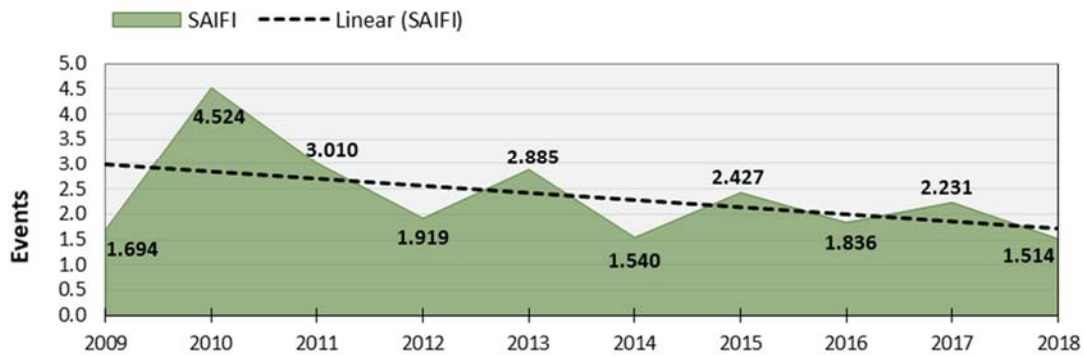
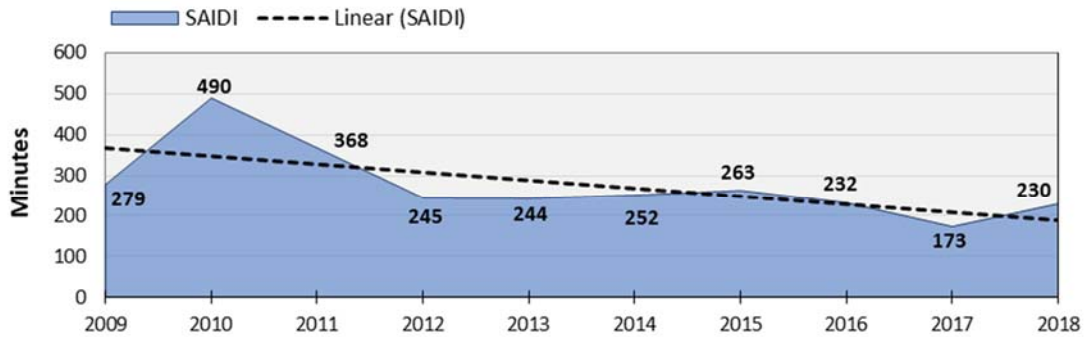
Yreka/Mt. Shasta Reliability History - Including Major Events

(includes customer notice given and customer requested)



Yreka/Mt. Shasta Reliability History - Excluding Major Events

(includes customer notice given and customer requested)



Tulelake/Alturas - District System Indices								
	Major Events Included ¹				Major Events Excluded ² (2.5 & P1366)			
Year	SAIDI	SAIFI	CAIDI	MAIFI ³	SAIDI	SAIFI	CAIDI	MAIFI ³
2018	140.0	1.822	77	5.133	138.7	1.813	76	5.133
2017	251.0	3.534	71	16.151	158.7	2.014	79	16.151
2016	128.9	1.519	85	9.386	95.5	1.390	69	9.386
2015	481.1	2.794	172	5.237	165.9	1.033	161	5.237
2014	182.3	1.338	136	4.755	136.0	1.295	105	4.755
2013	399.7	3.263	123	8.754	388.1	3.123	124	8.754
2012	143.1	1.035	138	10.761	143.0	1.034	138	10.761
2011	192.1	1.999	96	9.851	192.1	1.999	96	9.851
2010	866.0	5.681	152	16.017	851.6	5.652	151	16.017
2009	422.5	4.583	92	10.354	411.1	4.283	96	10.354

Notes:

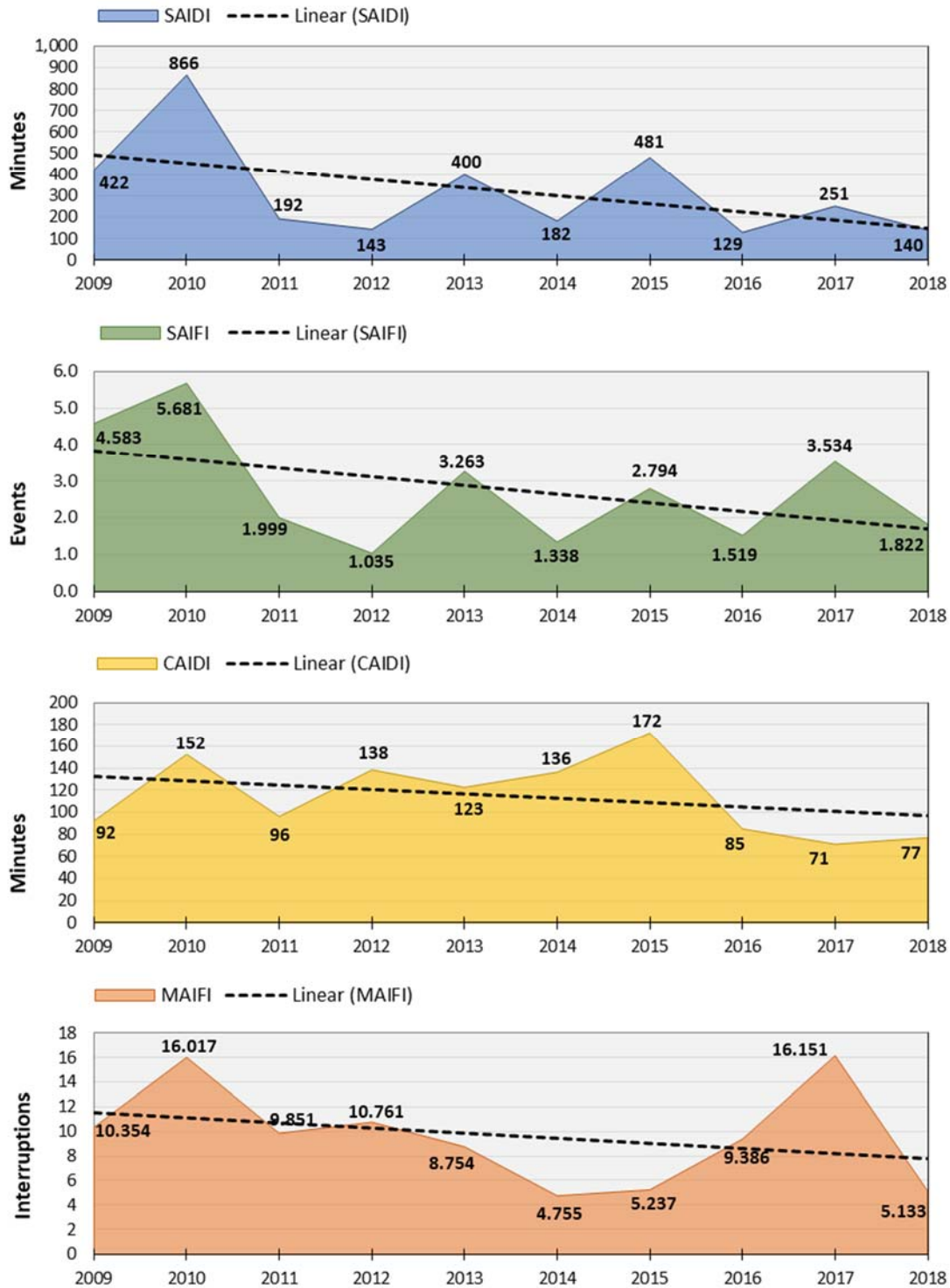
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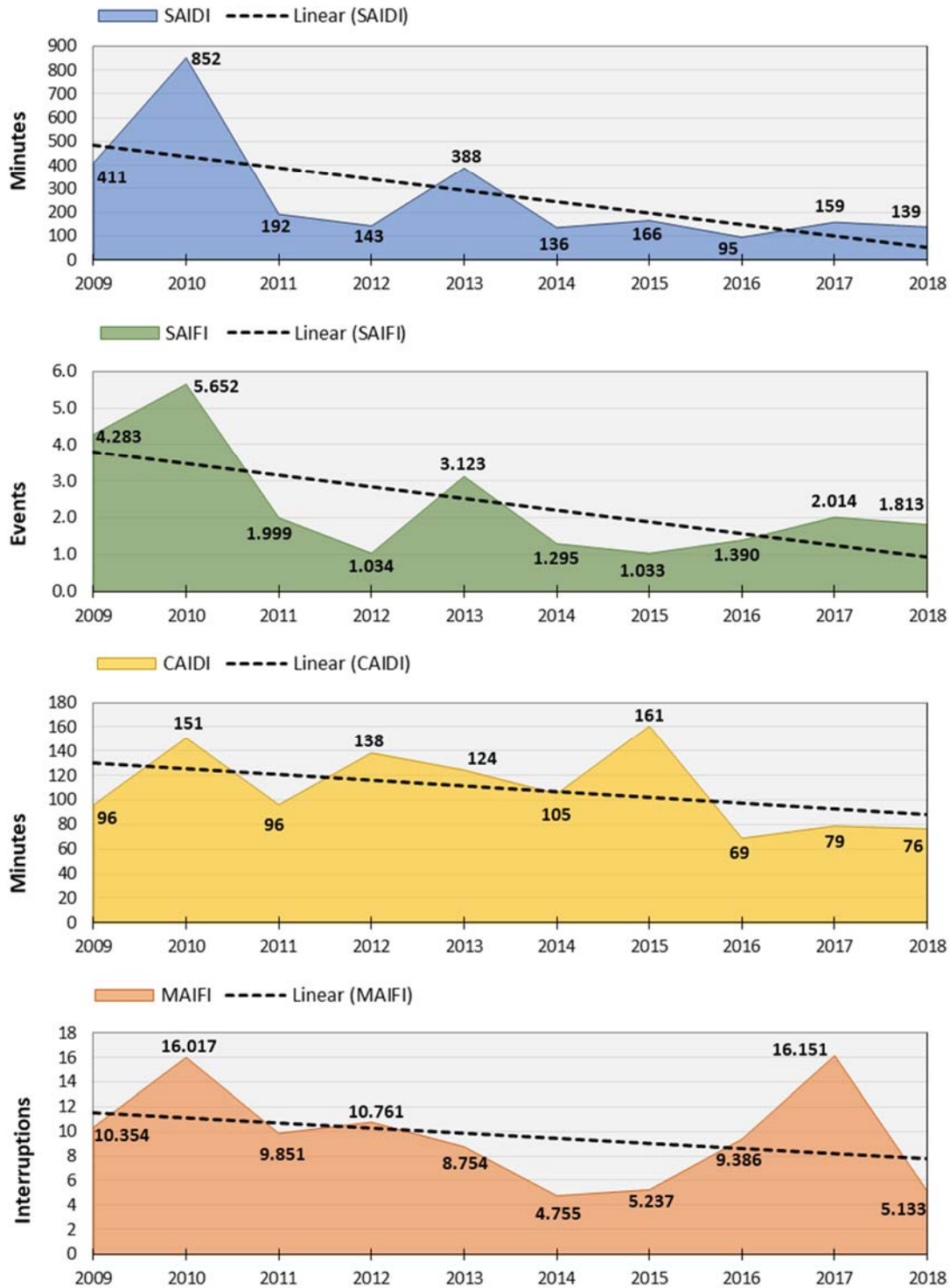
Tulelake/Alturas Reliability History - Including Major Events

(includes customer notice given and customer requested)



Tulelake/Alturas Reliability History - Excluding Major Events

(includes customer notice given and customer requested)



Planned Outage by District

The below table shows planned outage events which occurred annually, by district and month.

Planned Outages ¹				
		Crescent City	Tulelake/Alturas	Yreka/Mt. Shasta
2018	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			
2017	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			
2016	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			
2015	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			

Planned Outages ¹				
		Crescent City	Tulelake/Alturas	Yreka/Mt. Shasta
2014	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			
2013	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			
2012	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			
2011	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			

CONFIDENTIAL DATA SUBJECT TO PUBLIC UTILITIES CODE SECTION 583, GENERAL ORDER 66-D AND D.16-01-008

Planned Outages ¹				
		Crescent City	Tulelake/Alturas	Yreka/Mt. Shasta
2010	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			
2009	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			

1 - Includes outages that are customer requested, pre-arranged (which can include short notice emergency prearranged outages), forced outages mandated by public authority, or resulting from a failure of another company's system.

Top Ten Unplanned Power Outage Events for 2018

The table below displays the top 10 unplanned outages in 2018 based on the total customer minutes lost.

Top 10 Unplanned Outage Events – 2018					
Date	District	Description	Major Event?	Total Customer Minutes Lost	Total Customers in Incident
9/5/2018	Yreka/Mt Shasta	Wildfire	Y	1,317,536	140
11/23/2018	Crescent City	Loss of Substation	Y	604,033	2,230
11/22/2018	Crescent City	Loss of Substation	Y	589,598	3,723
9/5/2018	Yreka/Mt Shasta	Wildfire	Y	516,658	290
9/5/2018	Yreka/Mt Shasta	Wildfire	Y	464,656	76
11/23/2018	Crescent City	Loss of Substation	Y	453,669	1,672
11/23/2018	Crescent City	Loss of Substation	Y	392,788	1,447
11/23/2018	Crescent City	Loss of Substation	Y	364,652	1,345
11/23/2018	Crescent City	Loss of Transmission Line	Y	276,210	1,023
12/14/2018	Crescent City	Loss of Transmission Line	Y	271,134	424

Major Event Summary

PacifiCorp's service territory in California consists of the three operating areas: Crescent City, Yreka/Mt. Shasta, and Tulelake/Alturas. Each operating area has been designated as a reliability reporting region in accordance with the Order. Each year the major event threshold for the state is determined using the t_{Med} methodology, as defined in IEEE P1366 and known as the "2.5 beta" method. The state t_{Med} is then applied to each operating area⁶. The table below depicts the major events which have occurred during 2018.

2018 Major Event Summary								
Date	District	Cause	Customers out for a duration of:					
			5 min - 3 hrs.	3 - 24 hrs.	24 - 48 hrs.	48 - 72 hrs.	72 - 96 hrs.	96 + hrs.
June 19, 2018	Crescent City	Loss of Substation	12,726	-	-	-	-	-
September 5, 2018	Yreka/Mt. Shasta	Wildfire	-	-	-	-	17	150
November 22-23, 2018	California (State)	Tree Downed Transmission Line and Equipment Damage	9,662	14,082	-	-	-	-
December 14, 2018	Crescent City	Wind Storm	1,184	829	-	-	-	-
December 18, 2018	Crescent City	Tree Downed Line	2,664	-	-	-	-	-

Historical Top Ten Unplanned Power Outage Events – 2017 through 2008

Historical Top Ten Unplanned Outage Events by Year						
Year	Date	District	Description	Excluded Major Event?	Total Customer Minutes Lost	Total Customers in Incident
2017	1/18/2017	Yreka/Mt Shasta	Damaged Equipment	Y	1,957,567	1,604
	4/7/2017	Crescent City	Wind Blown Tree	Y	1,119,257	1,474
	4/7/2017	Crescent City	Wind Blown Tree	Y	987,987	3,396
	1/9/2017	Yreka/Mt Shasta	Heavy Snow Storm	Y	985,255	1,776
	4/7/2017	Crescent City	Wind Blown Tree	Y	947,025	5,175
	1/19/2017	Yreka/Mt Shasta	Loss of Transmission Line	Y	886,326	763
	1/3/2017	Yreka/Mt Shasta	Loss of Transmission Line	Y	869,891	1,524
	1/19/2017	Yreka/Mt Shasta	Damaged Equipment	Y	714,873	561
	1/18/2017	Yreka/Mt Shasta	Heavy Snow Storm	Y	689,554	2,298
	1/18/2017	Yreka/Mt Shasta	Loss of Transmission Line	Y	674,919	352

⁶ Due to the size and irregularity of outage occurrences by operating area, it was deemed appropriate to apply the state t_{Med} to each operating area, in an attempt to balance major event occurrence throughout the operating areas and state.

Historical Top Ten Unplanned Outage Events by Year						
Year	Date	District	Description	Excluded Major Event?	Total Customer Minutes Lost	Total Customers in Incident
2016	10/17/2016	Crescent City	Loss of Transmission Line	Y	926,778	10,972
	6/5/2016	Yreka/Mt Shasta	Loss of Transmission Line	Y	853,260	4,736
	6/17/2016	Yreka/Mt Shasta	Loss of Transmission Line	N	478,225	6,248
	12/21/2016	Crescent City	Wind Blown Tree	Y	388,500	420
	8/28/2016	Yreka/Mt Shasta	Forest Fire	N	363,287	1,404
	12/21/2016	Crescent City	Wind Blown Tree	Y	311,097	336
	2/5/2016	Yreka/Mt Shasta	Loss of Transmission Line	N	302,123	8,349
	4/13/2016	Yreka/Mt Shasta	Wind Storm	N	291,507	6,016
	1/13/2016	Crescent City	Pole Fire	N	278,218	8,577
	2/5/2016	Yreka/Mt Shasta	Loss of Transmission Line	N	274,030	3,724
2015	2/5/2015	Crescent City	Loss of Transmission Line	Y	1,852,631	3,150
	2/7/2015	Crescent City	Wind Blown Tree	Y	1,036,585	1,222
	2/6/2015	Crescent City	Wind Blown Tree	Y	922,607	1,047
	2/7/2015	Crescent City	Wind Blown Tree	Y	922,282	1,884
	2/7/2015	Crescent City	Wind Blown Tree	Y	713,868	380
	2/5/2015	Crescent City	Loss of Transmission Line	Y	649,753	2,100
	2/7/2015	Crescent City	Loss of Transmission Line	Y	636,947	1,719
	7/7/2015	Yreka/Mt. Shasta	Loss of Transmission Line	Y	538,624	3,156
	4/25/2015	Yreka/Mt. Shasta	Tree	N	528,711	9,320
	2/7/2015	Crescent City	Emergency Damage Repair	Y	455,081	3,024
2014	10/25/2014	Crescent City	Loss of Transmission Line	Y	2,424,849	7,448
	10/25/2014	Crescent City	Loss of Transmission Line	Y	1,084,725	1,533
	9/15/2014	Yreka/Mt. Shasta	Loss of Transmission Line	Y	890,396	13,280
	9/15/2014	Yreka/Mt. Shasta	Loss of Transmission Line	Y	802,134	5,660
	10/25/2014	Crescent City	Loss of Transmission Line	Y	517,764	453
	9/15/2014	Yreka/Mt. Shasta	Intentional to Clear Trouble	Y	498,809	1,205
	3/24/2014	Crescent City	Loss of Transmission Line	N	484,466	798
	10/25/2014	Crescent City	Loss of Transmission Line	Y	478,808	1,176
	5/5/2014	Yreka/Mt. Shasta	Pole fire	N	472,976	1,875
	8/17/2014	Yreka/Mt. Shasta	Loss of Transmission Line	N	471,399	3,070
2013	8/25/2013	Yreka/Mt. Shasta	Loss of Transmission Line	Y	2,210,746	14,259
	8/25/2013	Yreka/Mt. Shasta	Loss of Transmission Line	Y	2,087,998	10,500
	9/5/2013	Yreka/Mt. Shasta	Loss of Substation	N	731,594	1,451
	10/27/2013	Yreka/Mt. Shasta	Loss of Transmission Line	N	466,576	1,452
	5/11/2013	Yreka/Mt. Shasta	Loss of Transmission Line	N	398,507	2,093
	8/22/2013	Tulelake/Alturas	Loss of Transmission Line	N	361,772	2,407
	7/9/2013	Tulelake/Alturas	Emergency Damage Repair	N	301,141	970
	9/30/2013	Crescent City	Tree	N	299,295	458
	5/20/2013	Yreka/Mt. Shasta	Loss of Substation	N	297,838	1,042
	12/9/2013	Yreka/Mt. Shasta	Loss of Substation	N	297,317	1,663

Historical Top Ten Unplanned Outage Events by Year						
Year	Date	District	Description	Excluded Major Event?	Total Customer Minutes Lost	Total Customers in Incident
2012	12/20/2012	Yreka/Mt. Shasta	Weather	Y	1,789,753	3,108
	12/20/2012	Yreka/Mt. Shasta	Emergency Damage Repair	Y	1,691,153	11,788
	11/29/2012	Yreka/Mt. Shasta	Tree	N	876,375	12,070
	9/30/2012	Yreka/Mt. Shasta	Loss of Transmission Line	Y	807,000	3,078
	12/23/2012	Yreka/Mt. Shasta	Loss of Transmission Line	Y	697,305	373
	12/22/2012	Yreka/Mt. Shasta	Intentional to Clear Trouble	Y	681,990	508
	9/30/2012	Yreka/Mt. Shasta	Loss of Transmission Line	Y	568,353	6,469
	12/21/2012	Yreka/Mt. Shasta	Weather	Y	560,115	414
	12/24/2012	Yreka/Mt. Shasta	Tree	Y	509,765	438
	12/13/2012	Yreka/Mt. Shasta	Loss of Transmission Line	N	389,226	1,653
2011	10/10/2011	Yreka/Mt. Shasta	Loss of Transmission Line	N	870,734	3,612
	7/31/2011	Yreka/Mt. Shasta	Loss of Transmission Line	N	664,757	7,652
	3/24/2011	Yreka/Mt. Shasta	Loss of Transmission Line	N	550,141	1,042
	9/15/2011	Yreka/Mt. Shasta	Emergency Damage Repair	N	516,786	3,608
	7/31/2011	Yreka/Mt. Shasta	Loss of Transmission Line	N	501,237	6,308
	7/31/2011	Yreka/Mt. Shasta	Loss of Transmission Line	N	449,576	5,189
	12/10/2011	Yreka/Mt. Shasta	Loss of Transmission Line	N	430,949	546
	2/17/2011	Yreka/Mt. Shasta	Loss of Transmission Line	N	383,111	1,043
	3/18/2011	Yreka/Mt. Shasta	Weather	N	354,489	9,340
	12/23/2011	Crescent City	Loss of Transmission Line	N	332,817	839
2010	1/19/2010	Yreka/Mt. Shasta	Weather	Y	4,234,449	16,164
	1/20/2010	Yreka/Mt. Shasta	Loss of Transmission Line	Y	4,091,276	2,082
	1/20/2010	Yreka/Mt. Shasta	Weather	Y	3,681,730	17,420
	1/20/2010	Yreka/Mt. Shasta	Tree	Y	3,058,895	12,084
	1/19/2010	Yreka/Mt. Shasta	Tree	Y	2,053,386	2,832
	1/19/2010	Yreka/Mt. Shasta	Loss of Transmission Line	Y	1,375,369	1,041
	1/20/2010	Yreka/Mt. Shasta	Loss of Transmission Line	Y	1,189,230	1,400
	1/1/2010	Yreka/Mt. Shasta	Loss of Transmission Line	N	1,074,337	7,588
	1/19/2010	Yreka/Mt. Shasta	Weather	Y	1,040,447	8,472
	1/24/2010	Yreka/Mt. Shasta	Loss of Transmission Line	Y	1,012,477	1,041
2009	12/24/2009	Yreka/Mt. Shasta	Loss of Transmission Line	Y	2,337,570	10,853
	3/2/2009	Yreka/Mt. Shasta	Unknown - Weather	N	470,105	3,117
	10/27/2009	Yreka/Mt. Shasta	Equipment	N	422,256	9,568
	10/14/2009	Crescent City	Loss of Transmission Line	N	419,144	6,616
	3/1/2009	Crescent City	Tree	N	383,888	918
	8/1/2009	Tulelake/Alturas	Loss of Transmission Line	N	363,394	2,123
	5/14/2009	Crescent City	Loss of Transmission Line	N	360,703	833
	3/3/2009	Tulelake/Alturas	Loss of Transmission Line	N	327,020	2,128
	2/15/2009	Yreka/Mt. Shasta	Tree	N	320,727	764
	12/27/2009	Crescent City	Transformer Failure	N	302,232	9,630

Historical Top Ten Unplanned Outage Events by Year						
Year	Date	District	Description	Excluded Major Event?	Total Customer Minutes Lost	Total Customers in Incident
2008	1/4/2008	Yreka/Mt. Shasta	Loss of Transmission Line	Y	1,548,177	511
	1/8/2008	Crescent City	Loss of Transmission Line	Y	1,329,586	7,066
	1/4/2008	Crescent City	Wind	Y	1,252,667	1,033
	1/10/2008	Yreka/Mt. Shasta	Loss of Transmission Line	Y	1,126,251	1,037
	1/5/2008	Yreka/Mt. Shasta	Loss of Transmission Line	Y	1,100,672	1,037
	2/23/2008	Yreka/Mt. Shasta	Loss of Transmission Line	N	951,224	1,052
	1/8/2008	Yreka/Mt. Shasta	Tree	Y	936,169	1,037
	1/4/2008	Yreka/Mt. Shasta	Loss of Transmission Line	Y	895,726	1,037
	1/8/2008	Yreka/Mt. Shasta	Weather - Snow	Y	834,993	16,730
	1/4/2008	Yreka/Mt. Shasta	Wind	Y	803,229	5,400

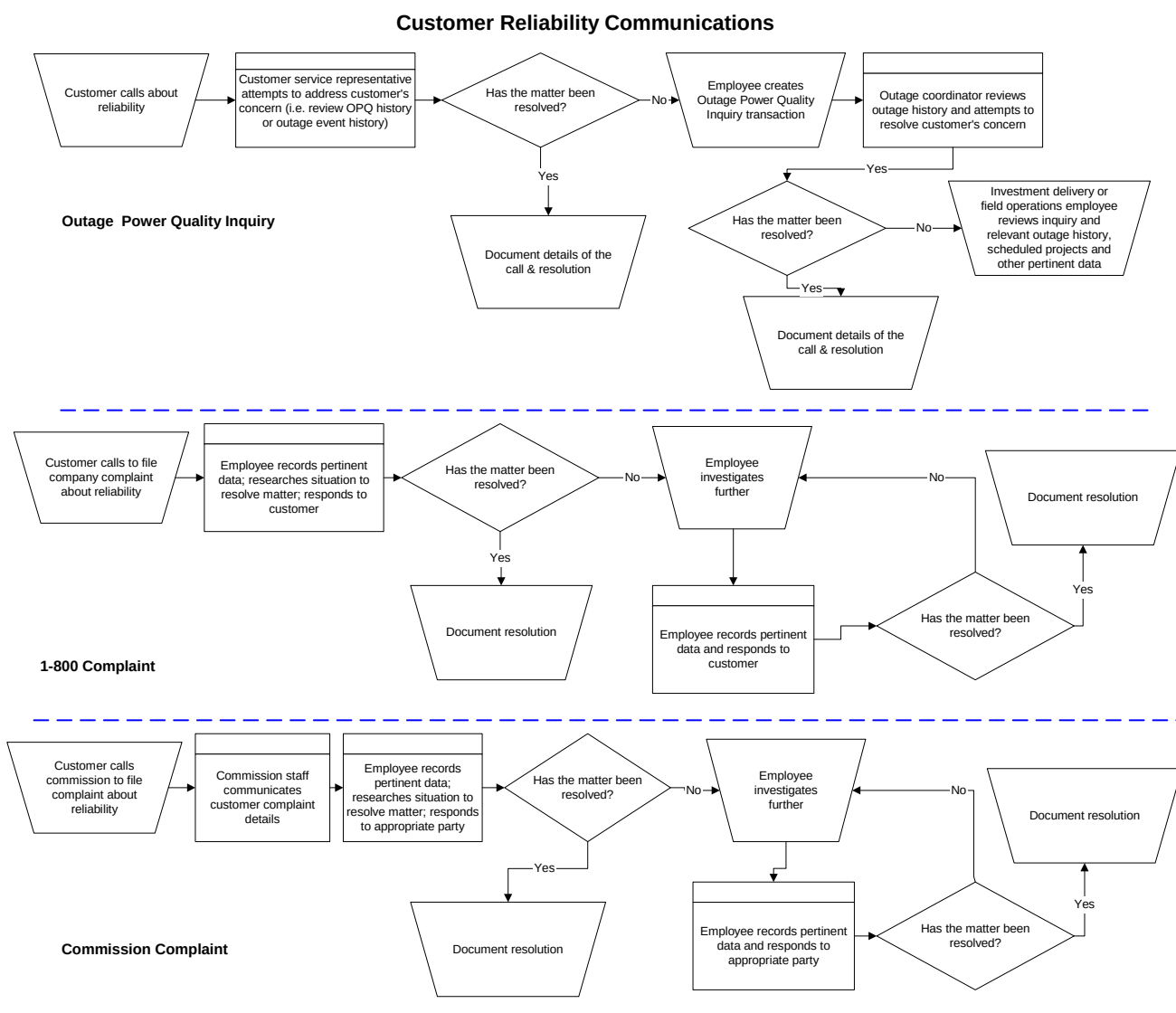
Customer Inquiries and Response

Customer Reliability Communications

PacifiCorp has internet addresses to provide customer guidance on how to request reliability information as well as to view reliability overview metrics and the year's reliability report. The metric information is located at <https://www.pacificpower.net/ca-report> while the link to request reliability information for a specific customer is located at <https://www.pacificpower.net/reliability>. Further, in compliance with the rules, PacifiCorp will be scheduling its annual meeting in the fall to review these results in the ordered public meeting.

Reliability Inquiry and Complaint Process Overview

The Company's process for managing customers' concerns about reliability are to provide opportunities to hear customer concerns, respond to those concerns, and where necessary, provide customers an opportunity to elevate those concerns.



Customer Reliability Inquiry/Complaint Tracking

Listed below are the various avenues available to a customer to resolve concerns about reliability performance.

- **Customer Reliability Inquiry**

The company records customer inquiries about reliability as Outage Power Quality transactions in its customer service system, referred to as “OPQ” transactions.

- **Customer Complaint**

If a customer’s reliability concerns are not met through the process associated with the OPQ transaction, a customer can register a 1-800 complaint with the company. This is recorded in a complaint repository from which regular reports are prepared and circulated for resolution.

- **Commission Complaint**

If a customer’s reliability concerns are not met through the process associated with a 1-800 complaint, a customer can register a complaint with the Commission. This is recorded by the Commission staff and also by the company in a complaint repository. Regular reports are prepared and circulated for resolution of these items.

2018 Customer Reliability Inquiry Responses

The table below illustrates PacifiCorp’s response periods for each customer reliability inquiry received in 2018. The response time for each inquiry is calculated from the date of the initial inquiry to the date on which the company contacts the customer to discuss the specific circumstances associated with the inquiry.

Response Time (Days)	Customer Inquiries (non-outage Related)	Customer Outage Inquiries	Response Time (Days)	Customer Inquiries (non-outage Related)	Customer Outage Inquiries
1	51	62	16	0	0
2	5	0	17	0	0
3	16	0	18	0	0
4	11	0	19	0	0
5	0	0	20	0	0
6	51	14	21	0	0
7	38	0	22	0	0
8	0	0	23	0	0
9	0	0	24	0	0
10	15	0	25	0	0
11	0	0	26	0	0
12	22	0	27	0	0
13	0	0	28	0	0
14	0	0	29	0	0
15	11	0	30	0	0

Appendix A: Historical Top Ten Unplanned Power Outage Events Due to Wildfire

On April 17, 2018, California Public Utilities Commission's Energy Division requested that companies also report information regarding wildfire-related power outages in their annual electric reliability reports. While PacifiCorp was not a direct recipient of this request, it was forwarded by other utility contacts as below.

From: "Lee, David K." <david.lee@cpuc.ca.gov>
Date: April 17, 2018 at 12:56:18 PM GMT-6
To: "'Wright, Jennifer'" <JWright@semprautilities.com>, "'Plummer, Matthew'" <M3Pu@pge.com>, "'Wendy.Phan@sce.com'" <Wendy.Phan@sce.com>, "'Moore, Ronald K.'" <RKMOORE@gswater.com>, "'Quan, Nguyen'" <Nguyen.Quan@gswater.com>, "FTP Admin" <ftpadmin@cpuc.ca.gov>, "Ken Wittman (ken.wittman@libertyutilities.com)" <ken.wittman@libertyutilities.com>, "Prabhakaran, Vidhya" <VidhyaPrabhakaran@dwt.com>
Cc: "Regnier, Justin" <Justin.Regnier@cpuc.ca.gov>, "Petlin, Gabriel" <gabriel.petlin@cpuc.ca.gov>
Subject: Please include detailed information of Wildfire Related Power Outages in the Electric Annual Reliability Reports

Dear All,

Appendix B of Decision (D.) 16-01-008 (Reliability Reporting Template) requires utilities to report the top 10 unplanned power outage events each year. However, for each of the top 10 unplanned power outage events and Major Event Days (MED) that are due to wildfire, please also include all the following information in your Electric Annual Reliability Reports:

- A description of the event (cause, location, etc.)
- Dates of the event
- The number of customer affected by the event
- Longest customer interruption in hours
- # of utility staff and other utility staff (mutual assistance) to restore service
- Coordination with other electric, gas, and telecommunication companies
- The number of customers who have repeated power interruptions during the event (due to weather, equipment failure, etc.)
- The number of customers whose power was interrupted in order to restore power service.
- The number of customer without power during the event in hourly interval
- The factors that affect the restoration of power (lesson-learned, communication, safety, access, weather, etc.)
- Estimated cost for the utility to restore electric services for the event

Please include these additional reporting requirements in the 2017 Electric Annual Reliability Report (Due on 7/15/2018).

PacifiCorp has determined that one of its historic top ten outages qualified and is reported upon below.

9/5/2018 Mt. Shasta Wildfire Event Detail

Outage Detail

The Delta Fire started in multiple locations on September 5th, 2018, at approximately 12:30 pm and was ultimately deemed human caused, but was not ruled an arson. The fire quickly grew affecting 63,311 acres, causing several road closures including several miles of Interstate-5. Company personnel coordinated response and area recovery efforts to restore power to key locations such as the local water treatment plant, CalFire station, and other facilities deemed critical at the request of the Incident Commander or Siskiyou County Emergency Operations Center. Vegetation crews were also dispatched to the area to mitigate hazards, continuing to work throughout the area dealing with hazards left behind by the fire. As areas were deemed safe for entry Pacific Power crews were able to begin repairing damaged equipment and restoring power. In total the fire damaged approximately 190 transmission poles, and 48 distribution poles, all of which were replaced.

Event Outage Summary	
Date	9/5/2018
District	Yreka/Mt. Shasta
Cause	Wildfire
# Interruptions (sustained)	3
Total Customer Interrupted (sustained)	166
Longest Customer Interruption	27 days 4 hours 55 minutes
Total Personnel Utilized during event	235
Internal crewmembers	84
Vegetation crewmembers	151
Other Utility Coordination	None
# Customers experiencing multiple outages	0
# Customers indirectly affected	0
Estimated Cost	\$ 29,117,924.20
Expense	\$ 1,446,757.98
Capital	\$ 27,671,166.22

Restoration Intervals

# Customers without power by hourly intervals									
Hours	Customers Out	Hours	Customers Out	Hours	Customers Out	Hours	Customers Out	Hours	Customers Out
< 1-73	166	171-191	111	260-263	76	308-318	11	652	0
74-170	149	192-260	77	264-308	15	319-651	9		

CalFire's report on the fire incident resulting in de-energization is displayed below⁷:

Delta Fire Incident Information:		
Last Updated:	January 4, 2019 9:07 am	FINAL
Date/Time Started:	September 5, 2018 12:51 pm	
Administrative Unit:	<u>USFS Shasta-Trinity National Forest</u>	
County:	Shasta County	
Location:	I-5 and Lamoine, 2 miles NW of Lakehead	
Estimated - Containment:	63,111 acres - 100% contained	

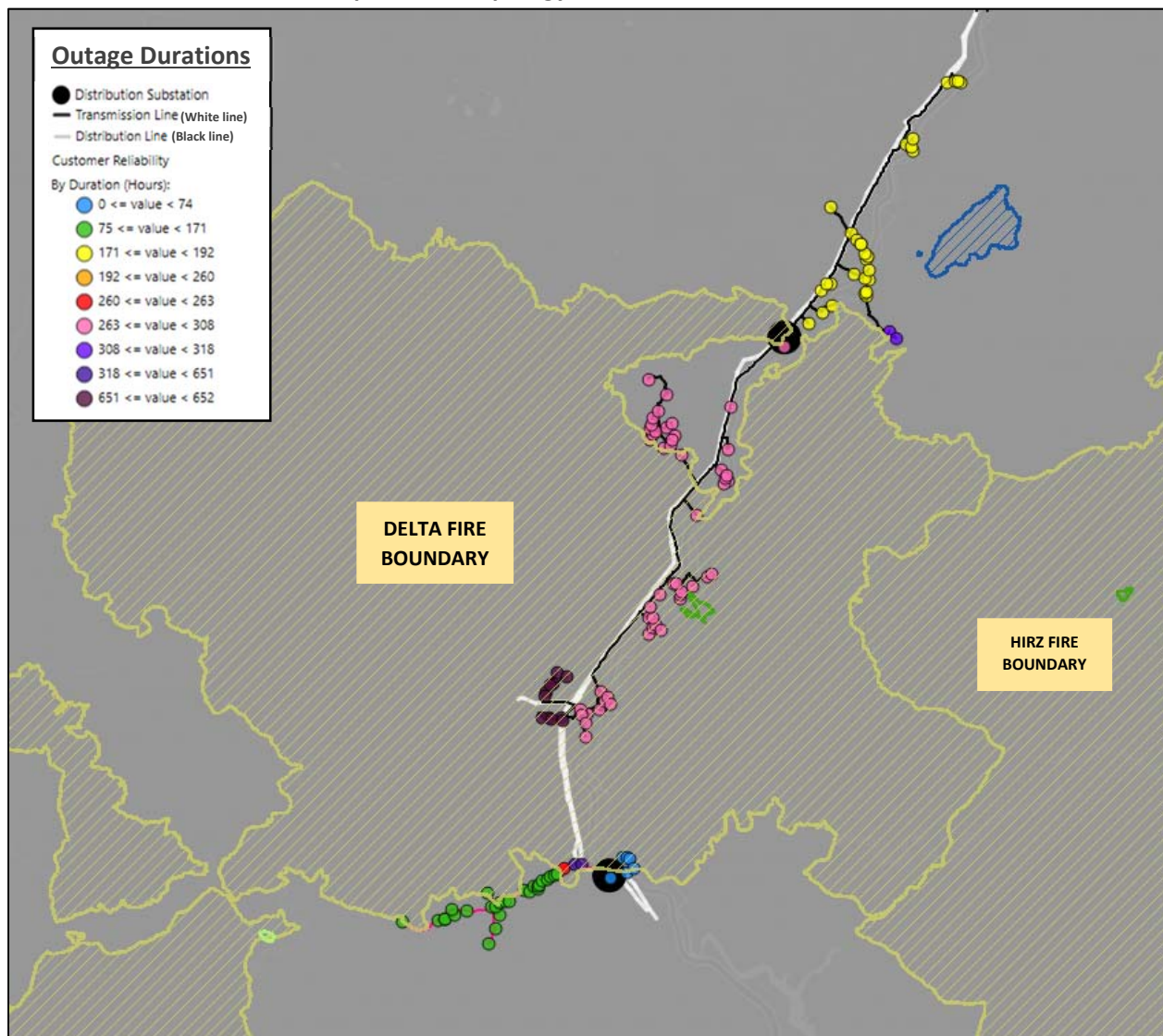
Delta Fire equipment damage photographic impact



⁷ http://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=2242



Delta Fire overlaid on PacifiCorp's circuit topology



8/26/2016 Yreka Wildfire Event Detail

Outage Detail

On August 28, 2016, the United States Forest Service notified company officials in Yreka of a forest fire burning near company equipment and requested that the circuit be de-energized as fire crews worked to extinguish the fire. The fire incident was called the Gap Fire and the fire incident report information is contained below. The outage event affected a total of 351 customers with 63 customers' power restored in 59 minutes, 12 customers' power restored in 16 hours 14 minutes, 234 customers' power restored in 17 hours 14 minutes, and 42 customers' power restored in 42 hours 4 minutes.

Event Outage Summary	
Date	8/28/2016
District	Yreka/Mt. Shasta
Cause	Wildfire
# Interruptions (sustained)	1
Total Customer Interrupted (sustained)	351
Longest Customer Interruption	42 hours 4 minutes
Total Personnel Utilized during event	30
Internal crewmembers	9
Vegetation crewmembers	21
Other Utility Coordination	None
# Customers experiencing multiple outages	0
# Customers indirectly affected	0
Estimated Cost	\$90,319

Restoration Intervals

# Customers without power by hourly intervals									
Hours	Customers Out	Hours	Customers Out	Hours	Customers Out	Hours	Customers Out	Hours	Customers Out
< 1	351	10	288	20	42	30	42	40	42
> 1	288	11	288	21	42	31	42	41	42
2	288	12	288	22	42	32	42	42	42
3	288	13	288	23	42	33	42	43	0
4	288	14	288	24	42	34	42	44	0
5	288	15	288	25	42	35	42	45	0
6	288	16	288	26	42	36	42	46	0
7	288	17	276	27	42	37	42	47	0
8	288	18	42	28	42	38	42	48	0
9	288	19	42	29	42	39	42	49	0

Other correspondence

On August 29, 2016 PacifiCorp filed incident report 1915, communicating about the impact of the Gap fire to its customers, and subsequently was told that since the incident did not meet reporting thresholds it should not have communicated such information to the incident reporting system. The information communicated is conveyed below.

-----Original Message-----

From: kathleen.sauer@pacificorp.com [<mailto:kathleen.sauer@pacificorp.com>]

Sent: Monday, August 29, 2016 5:33 PM

To: Lee, David K.; Blumer, Werner M.; rae@cpuc.ca.gov; Clanon, Paul

Subject: NEW Incident Reported - Incident No: 1915

A new Electric incident has been reported as follows: Reporting Date: 8/29/2016 5:30:13 PM. Incident

Date: 8/27/2016. Incident Time: 6:00 p.m.. Reported By: Kathleen Sauer. Utility Name: Pacific Power. Phone Number:

503-703-8571. Email Address: kathleen.sauer@pacificorp.com. Est. Ending Date: . Est. Ending Time: 00:00

a.m.. Location: Five miles east of Seiad, CA and two miles north of O'Neil Campground. Description: Gap Fire - five miles east of Seiad, CA and two miles north of O'Neil Campground. Comments: Saturday, August 27, 2016 @ 18:00 PM

Pacific Power was advised of the Gap Fire that started at 18:00 PM about five miles east of Seiad, California and two miles north of O'Neil Campground, on Highway 95.

Fire resources responded to the scene Saturday evening and began initial attack activities. Fire behavior increased late Sunday afternoon and through the night due to heavy fuels, many years of drought and strong erratic winds.

Mandatory evacuations were issued for the communities of Hamburg and Horse Creek. An advisory evacuation notice was issued for the community of Scott Bar. Highway 96 was closed from the junction of Highway 263 to the junction of Scott River Road.

Local residents have access on the section of Highway 96 to Cherry Flat. The section of Highway 96 from Cherry Flat to the junction of Scott River Road is "hard" closure and only fire fighter vehicles are allowed.

Sunday, August 28, 2016 @ 22:17 PM

At the request of the local fire authorities Pacific Power de-energized 320 customers out of the Scotts Bar area on circuit 5G40.

At this time there are first responders in the area to assist fire crews. There are no estimated restoration times for the outages and no damage assessments available.

Monday, August 29, 2016 @ 8:43 AM

Pacific Power issued the following media alert:

In order to help firefighters safely battle the Seid Fire, Pacific Power has de-energized about 320 customers in the area of Scotts Bar. This will allow the fire crews a freer hand in doing their work. Pacific Power is on stand-by in the area should any further actions become necessary.

Monday, August 29, 2016 @ 9:22 AM

Pacific Power was advised that the fire has grown to approximately 3,500 acres and is 0% contained. Highway 96 is closed at the junction of Highway 263. Evacuations are in place for Horse Creek, Scott Bar and Hamburg.

Because of fire restrictions, no damage assessments have been made. There are 42 customers who remain without power.

There is no estimated time to gain access for damage assessment until fire resources gives us permission. We have one serviceman staged at their incident command for response.

Monday, August 29, 2016 @ 16:59 PM

By Monday morning the size of the fire had increased to 5,000 acres.

Pacific Power received approval to assess some of the area but the majority of the damaged area is restricted. At this time our information shows the fire moving away from our transmission and distribution structures.

At 13:30 PM Pacific Power was given permission to energize some of our lines following inspection and to restore service to those areas safe from the fire. There are 42 customers who remain without power.

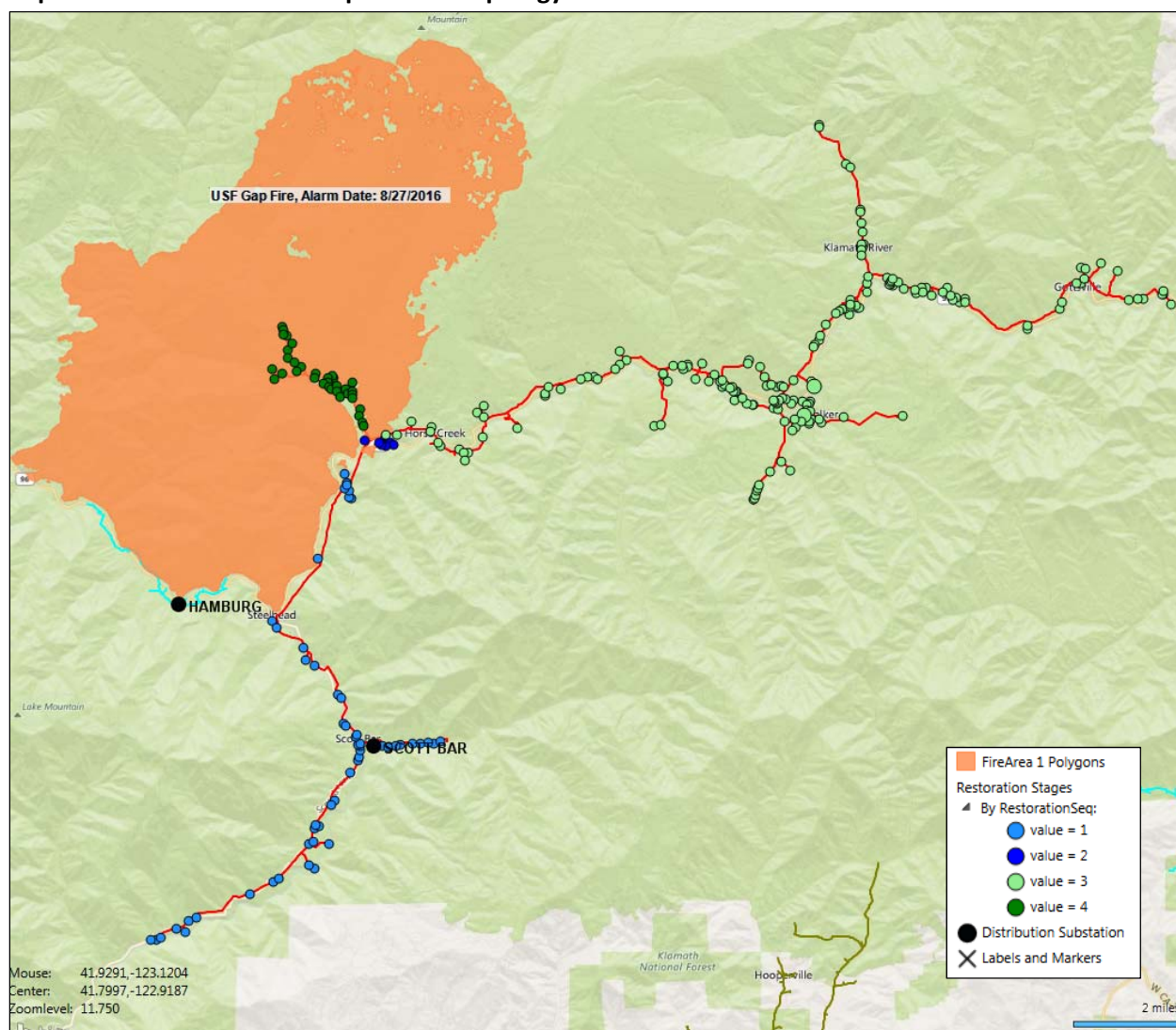
There is very little containment and the winds are predicted to pick up this afternoon. A first responder is stationed in the area overnight and will work directly with fire authorities. There are no estimated time of restoration or prediction of entry into the fire damaged areas for assessment at this time.

The cause of the Gap fire is under investigation.

CalFire's report on the fire incident resulting in de-energization is displayed below⁸:

Gap Fire Incident Information:		
Last Updated:	August 28, 2016 6:15 pm	FINAL
Date/Time Started:	August 27, 2016 6:00 pm	
Administrative Unit:	USFS Klamath National Forest	
County:	Siskiyou County	
Location:	off Seiad Creek Rd, 5 miles northeast of Seiad Valley	
Estimated - Containment:	33,867 acres - 100% contained **This is NOT a CAL FIRE incident. For more information from the US Forest Service, click on the link above.	

Gap Fire overlaid on PacifiCorp's circuit topology



⁸ http://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=1400

**DECLARATION OF
HEIDEMARIE C. CASWELL (PACIFICORP)**

1. My name is Heidemarie C. Caswell. My business address is 825 NE Multnomah Street, Suite 1500, Portland, Oregon 97232.

2. I am Director of Transmission and Distribution Asset Performance/Wildfire Mitigation for PacifiCorp d/b/a Pacific Power (PacifiCorp or the Company). Mr. David Lucas, Vice President Transmission and Distribution Operations, has delegated authority to me, Heidemarie C. Caswell, to sign this declaration. PacifiCorp is a multi-jurisdictional utility providing electric retail service to customers in California, Idaho, Oregon, Utah, Washington, and Wyoming. PacifiCorp serves approximately 45,000 customers in portions of Del Norte, Modoc, Shasta, and Siskiyou Counties in northern California.

3. This declaration is based on my information and belief and is submitted for the purpose of requesting confidential treatment of portions of PacifiCorp's annual reliability report submitted to the Commission on July 15, 2019,¹ in accordance with General Order (GO) 66-D of the California Public Utilities Commission (Commission). PacifiCorp submitted both confidential and public versions of the report. Planned outage data is redacted from the public version.

4. Section 3.2 of GO 66-D provides that when a utility submits to the Commission or Commission staff documents for which the utility seeks confidential treatment outside of a formal proceeding, the utility must mark the document or applicable portions thereof confidential and provide a specific citation to the California Public Records Act that authorizes confidential

¹ PacifiCorp is concurrently submitting a copy of this report to the Energy Division Central Files, Ms. Elizaveta Malashenko, and Mr. David Lee with the same claim of confidentiality.

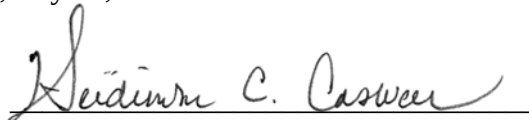
treatment. Additionally, any such request must be accompanied by a declaration signed by an officer of the requesting entity.

5. PacifiCorp requests confidential treatment of the planned outage data in the confidential version under Decision (D.) 16-01-008, as explained below, and Government Code Sections 6254(e) and (k). The pages of the confidential version of the report with planned outage data for which confidential treatment is requested have been marked in compliance with Section 3.2(a) of GO 66-D.

6. Under D. 16-01-008, the Commission updated the electric reliability reporting requirements for California electric utilities. D.16-01-008 requires utilities to submit annual information about planned outages to the Energy Division and the Safety and Enforcement Division on a confidential basis.² As noted in D.16-01-008, “making planned outage data public poses a potential risk as the data could expose grid vulnerabilities. Therefore, planned outage data should be confidential to protect the public from potential harmful activities that could damage the grid and electric reliability.” See D.16-01-008 at p.19.

I declare under penalty of perjury of the laws of the state of California that the foregoing is true and correct.

Executed in Portland, Oregon, July 15, 2019.

A handwritten signature in dark ink, appearing to read "Heidemarie C. Caswell", is written over a horizontal line.

Heidemarie C. Caswell
Director, Transmission & Distribution Asset
Performance/Wildfire Mitigation
PacifiCorp

² D.16-01-008, at p.18.