Energy Division Central Files Document Coversheet

A. Document Name

Today's Date: 7/15/2019

1. Utility Name: Bear Valley Electric Service (BVES)
2. Document Submission Frequency (Annual, Semi-Annual, YTD, Quarterly, Monthly, Weekly, Ad-hoc, Once, Other Event): Annual
3. Report Name: 2018 Annual Electric Distribution Reliability Report D.16-01-008
4. Reporting Interval (for this submission, e.g. 2015 Q1 – that data date): Annual
5. Document File Name (format as 1+2 + 3 + 4): BVES 2018 Annual Electric Distribution Reliability Report D.16-01-008 2018 Annual
6. Append the confidential and/or cover sheet notation, as appropriate. BVES 2018 Annual Electric Distribution Reliability Report D.16-01-008 2018 Annual COV.docx
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.

Proceeding Number (starts with R, I, C, A, or P plus 7 numbers): Click here to enter text.

1. Decision Number (starts with D plus 7 numbers): D1601008
2. Ordering Paragraph (OP) Number from the decision: OP #1

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: Click here to enter text.

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.

BVES submits its 2018 Reliability Report in compliance with D.16-01-008, "Updating the Annual Reliability Reporting Requirements for California Electric Utilities". Reliability indices reported herein are determined by following IEEE Standard 1366-2012.

E. Sender Contact Information

1. Sender Name: Nguyen Quan
2. Sender Organization: Golden State Water Company, dba Bear Valley Electric Service
3. Sender Phone: 909-394-3600
4. Sender Email: nquan@gswater.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), and a signed declaration of confidentiality. Click here to enter text.

G. CPUC Routing

Energy Division Central Files Document Coversheet

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: Gabriel Petlin, David K Lee.

ver.12/05/2017

Golden State
Water Company
A Subsidiary of American States Water Company

July 15, 2019

Mr. Edward Randolph
Director, Energy Division
California Public Utilities Commission
505 Van Ness Ave.
San Francisco, CA 94102

Re: 2018 Annual Electric Distribution Reliability Report, D. 16-01-008

Dear Mr. Randolph:

Pursuant to the California Public Utilities Commission (Commission) Decision No. (D.) 16-01-008, "Updating the Annual Electric Reliability Reporting Requirements for California Electric Utilities," Bear Valley Electric Service (BVES), a division of Golden State Water Company, submits herewith its 2018 Annual Electric Distribution Reliability Report (Report).

BVES provides electric service to approximately 24,000 customers in the mountain resort community of Big Bear Lake, California. BVES owns and operates 86.8 miles of overhead 34.5 kilovolt sub-transmission, 2.7 miles of 34.5 kilovolt underground sub-transmission, 488.6 miles of overhead distribution, 86.4 miles of underground distribution, 13 sub-stations and a natural gas-fueled 8.4 MW peaking generation facility. The BVES service area is rural and mountainous and is served predominantly from overhead facilities.

The Report follows the Reliability Reporting Template provided in Appendix B to D.16-01-008. BVES notes that due to the small size and geography of its service territory, BVES does not sub-divide its distribution system and/or service territory into Divisions (or Districts); therefore, Division (or District) reliability indices are not reported separately. BVES records reliability indices at the System and Circuit level only. BVES does not operate and maintain any transmission systems; therefore, transmission system indices are not included in the Report. The BVES distribution system consists of three (3) sub-transmission circuits (34.5 kV) and twenty-three (23) distribution circuits (4.160 kV). These circuits are all included in the System reliability indices calculations.

The Report is BVES's third annual reliability report to be submitted to the Commission. Prior to the issuance of D.16-01-008, certain reliability requirements had never been implemented, imposed or required for BVES. Specifically, D.95-09-073 did not name BVES as a respondent, which meant that the requirements of D.96-09-045 never applied to BVES. Therefore, while BVES is subject to General Order 165 and General Order 166, the reliability reporting requirements established in D.96-09-045 have never been implemented or required for BVES until they were required by D.16-01-008. Since certain reporting requirements were not

previously required for BVES, BVES has made its best effort to generate outage data for the past ten (10) years from 2009 to 2018 to include in this Report. In addition, BVES made its best effort to generate outage data from the years 2004 to 2008 so that Major Event Day calculations in accordance with Institute of Electrical and Electronic Engineers (IEEE) Standard 1366 were possible.

The requirements of D.96-09-045 did not previously apply, therefore, BVES has not installed equipment to accurately measure outages at the circuit level. Also, BVES does not operate an Advanced Metering Infrastructure (AMI) system but instead operates an Automatic Meter Reading (AMR) system. Therefore, BVES uses a manual process to gather data for SAIDI, SAIFI, MAIFI and CAIDI reporting. Specifically, outage duration times are mostly recorded based on the time a customer calls in to report an outage and when the service crews record the restoration of services. It is very possible that many short and momentary outages in isolated areas are not detected and, therefore, not recorded. This significantly reduces the accuracy of the reliability indices.

On January 31, 2019, the Commission granted BVES's Petition for Modification of D. 16-01-008 authorizing BVES to establish a memorandum account to install equipment to accurately measure outages at the circuit level. This work is in progress and scheduled to be completed by December 31, 2019.

Pursuant to D.16-01-008, information on the number, date, and location of planned outages is provided under seal in a separate report to the Directors of the Energy Division and the Safety and Enforcement Division.

Sincerely,

Nguyen Quan
Manager Regulatory Affairs
Bear Valley Electric Service
A division of Golden State Water Company
630 East Foothill Blvd.
San Dimas, CA 91773

c: Gabriel Petlin, Energy Division
David A. Lee, Energy Division

Bear Valley Electric Service (BVES)
2018 Annual Electric Reliability Report

(D.16-01-008, Updating the Annual Electric Reliability Reporting Requirements for California Electric Utilities)

July 15, 2019

TABLE OF CONTENTS

Sections correspond to Reliability Reporting Template provided in Appendix B to D.16-01-008.

GENERAL

Bear Valley Electric Service (BVES) submits its 2018 Reliability Report in compliance with the California Public Utilities Commission (Commission) Decision No. (D.) 16-01-008, "Updating the Annual Electric Reliability Reporting Requirements for California Electric Utilities." Reliability indices reported herein are determined by following the methodology provided by the Institute of Electrical and Electronic Engineers (IEEE) Standard 1366-2012.

The report consists of the following sections:

Section	Description
1	System Indices (2009-2018)
2	Division (or District) Reliability Indices (2009-2018)
3	System Indices Including Planned Outages
4	Service Territory Map
5	Top 1% of Worst Performing Circuits (WPC)
6	Top 10 Major Unplanned Power Outage Events (2018)
7	Summary List of Major Event Day (2018)
8	Historical Ten Largest Unplanned Outage Events (2009-2018)
9	Customer Inquiries

BVES does not operate and maintain any transmission systems; therefore, transmission system indices are not included in this report. The BVES distribution system consists of three (3) sub-transmission circuits (34.5 kV) and twenty-three (23) distribution circuits (4.160 kV). These circuits are all included in the System reliability indices calculations.

Due to the small size and geography of the BVES Service Territory, BVES does not sub-divide its distribution system into Divisions (or Districts); therefore, Division (or District) reliability indices are not reported separately. BVES records reliability indices at the System and Circuit level only.

BVES notes that prior to the issuance of D.16-01-008, certain reliability requirements have never been implemented, imposed or required for BVES. Specifically, Decision ("D.") 95-09-073 did not name BVES as a respondent, which meant that the requirements of D.96-09-045 never applied to BVES. Therefore, while BVES is subject to GO 165 as well as GO 166, the reliability reporting requirements established in D.96-09-045 have never been implemented or required for BVES until they were required by D.16-01-008. Because certain reporting requirements were not previously required for BVES, BVES has made its best effort to generate outage data for the past ten (10) years (2009 to 2018) to include in this report. Additionally, BVES made its best effort to generate outage data from the years 2004 to 2008 so that Major Event Day calculations in accordance with the IEEE 1366 standard were possible.

Because the requirements of D.96-09-045 did not previously apply, BVES has not installed equipment to accurately measure outages at the circuit level. Also, BVES does not operate an

Advanced Metering Infrastructure (AMI) system but instead operates an Automatic Meter Reading (AMR) system. Therefore, BVES uses a manual process to gather data for SAIDI, SAIFI, MAIFI and CAIDI reporting. Specifically, outage duration times are mostly recorded based on the time a customer calls in to report an outage and when the service crews record the restoration of services. It is very possible that many short and momentary outages in isolated areas are not detected and, therefore, not recorded. This significantly reduces the accuracy of the reliability indices.

On January 31, 2019 the Commission granted BVES's Petition for Modification of D. 16-01-008 authorizing BVES to establish a memorandum account to install equipment to accurately measure outages at the circuit level. This work is in progress and scheduled to be completed by December 31, 2019.

SECTION 1

System Indices (2009-2018)[1]

Table 1 lists Distribution System Indices (MED Excluded): BVES includes in its distribution system sub-transmission circuits (3) that operate at 34.5 kV and distribution circuits (23) that operate at 4.160 kV.

Table 1: MED Excluded

Year	SAIDI (Minutes)	SAIFI	MAIFI	CAIDI (Minutes)
2009	13.8	0.1	1.5	150.6
2010	47.6	0.6	1.1	81.4
2011	23.9	0.3	2.1	78.7
2012	29.8	0.2	1.0	182.2
2013	63.1	1.6	0.4	38.7
2014	47.6	1.3	0.0	36.1
2015	48.4	0.8	0.3	61.2
2016	72.4	0.8	0.0	91.7
2017	34.7	0.6	0.1	57.9
2018	74.4	0.8	0.1	87.9

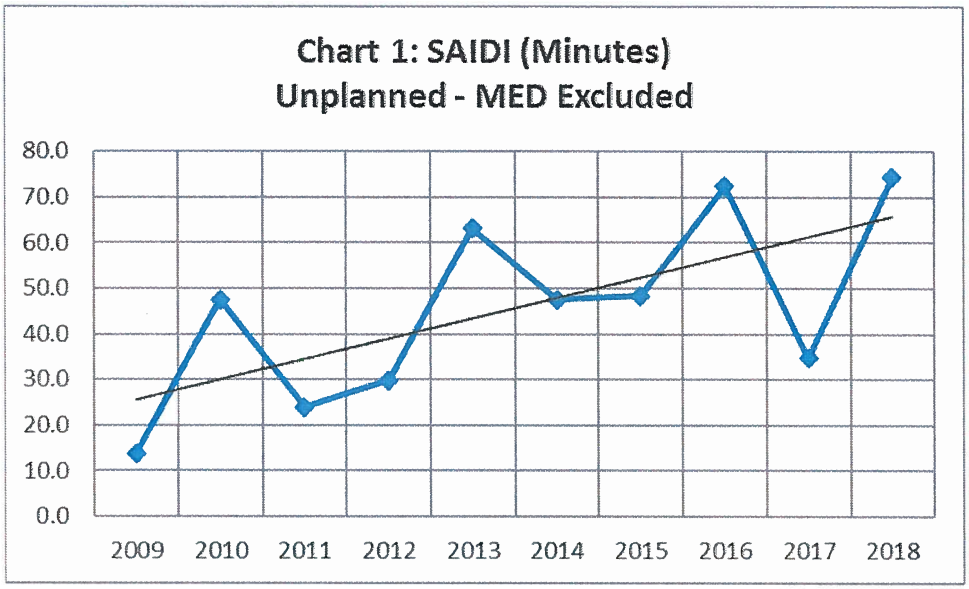
Table 2 lists Distribution System Indices (MED Included).

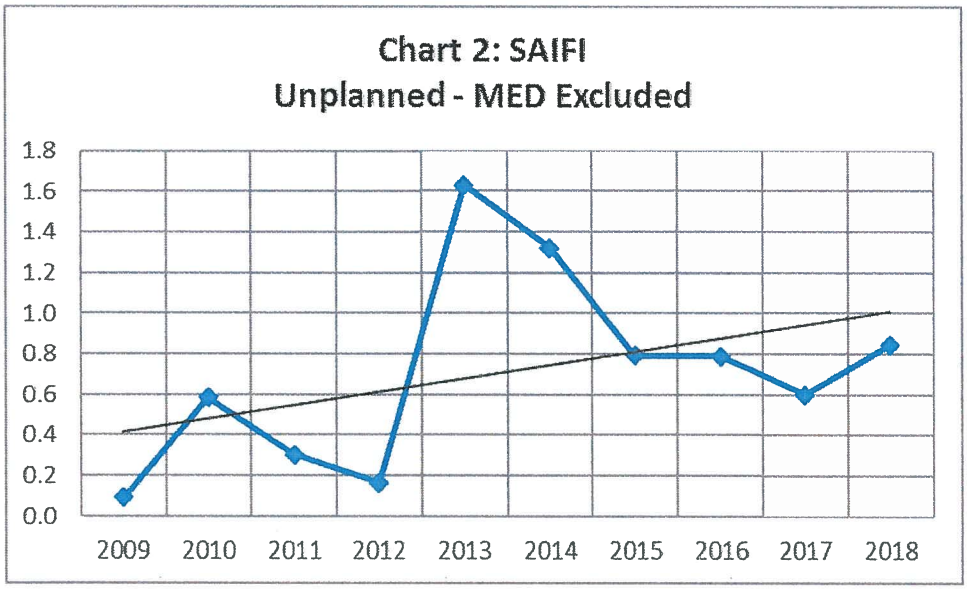
Table 2: MED Included

Year	SAIDI (Minutes)	SAIFI	MAIFI	CAIDI (Minutes)
2009	13.8	0.1	1.5	150.6
2010	118.6	0.6	1.1	194.4
2011	190.0	1.5	2.1	126.3
2012	29.8	0.2	1.0	182.2
2013	95.2	2.1	0.4	46.3
2014	71.6	2.1	0.0	33.8
2015	198.2	2.8	0.3	71.6
2016	323.6	2.5	1.3	129.0
2017	80.1	1.1	2.7	73.7
2018	181.8	2.1	1.1	84.9

[1] Calculations based on the IEEE 1366-2012 method.

Charts 1 through 4 provide line graphs of SAIDI, SAIFI, MAIFI and CAIDI for the past 10 years with linear trend line (MED Excluded).





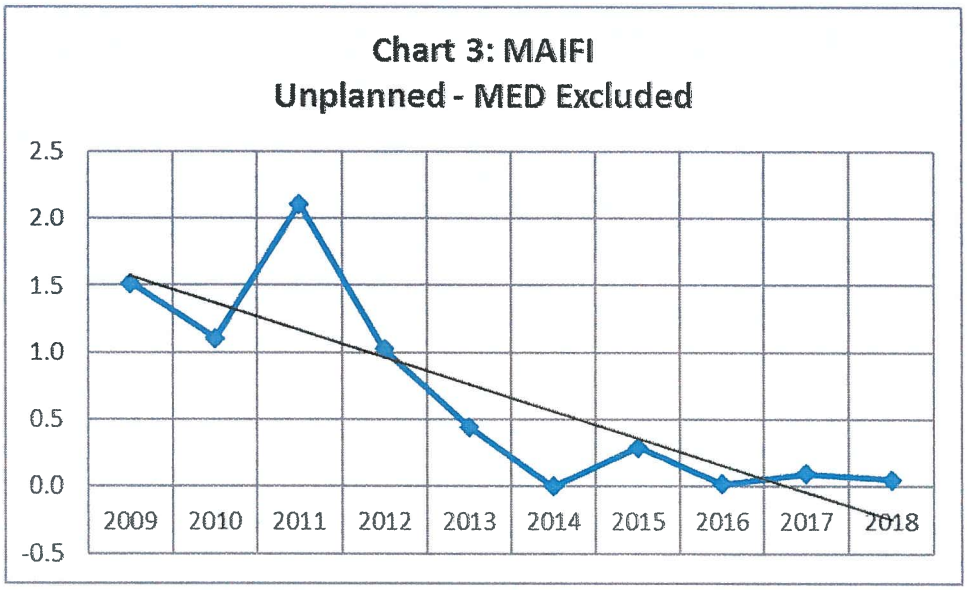


Chart 3: MAIFI
Unplanned - MED Excluded
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

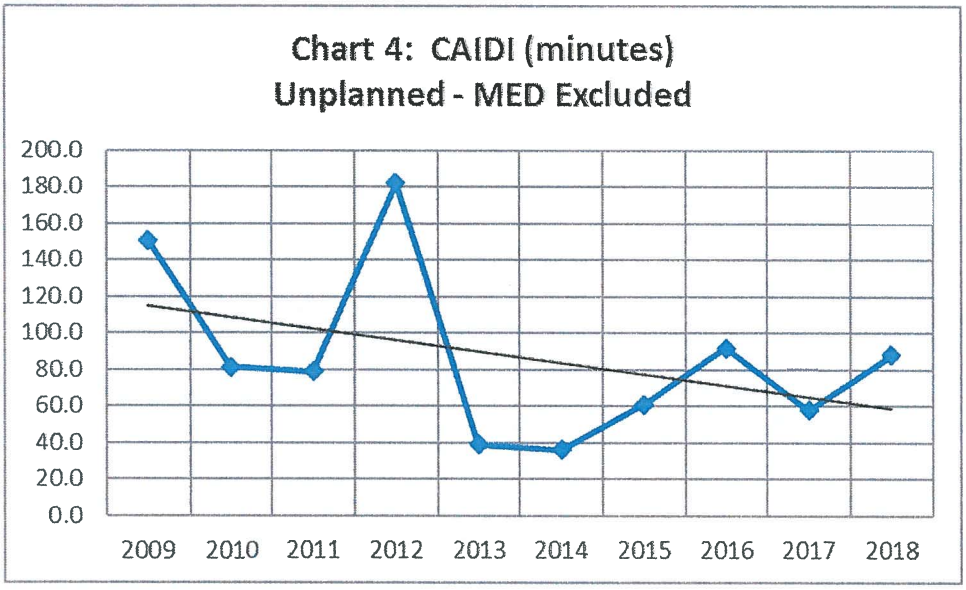
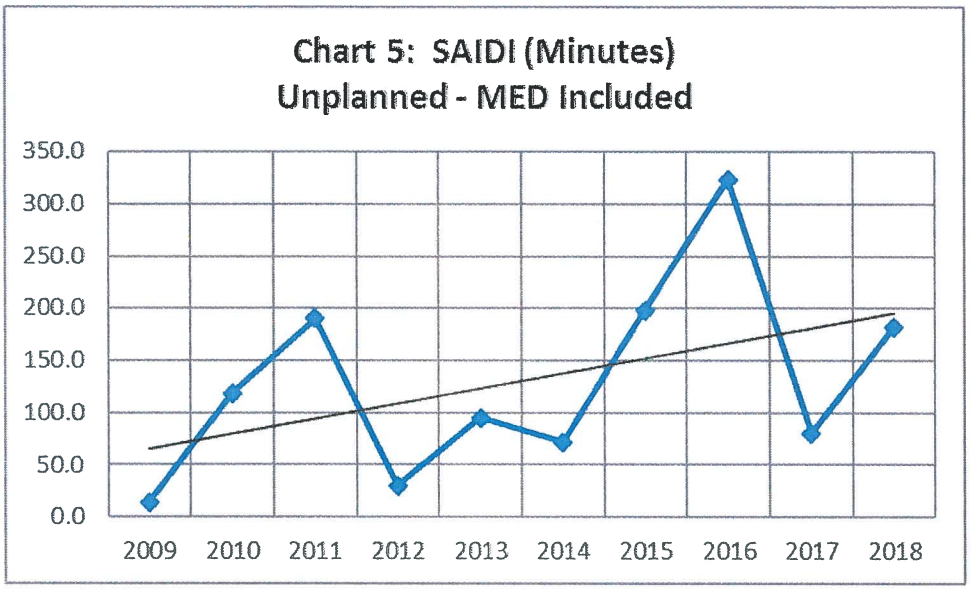
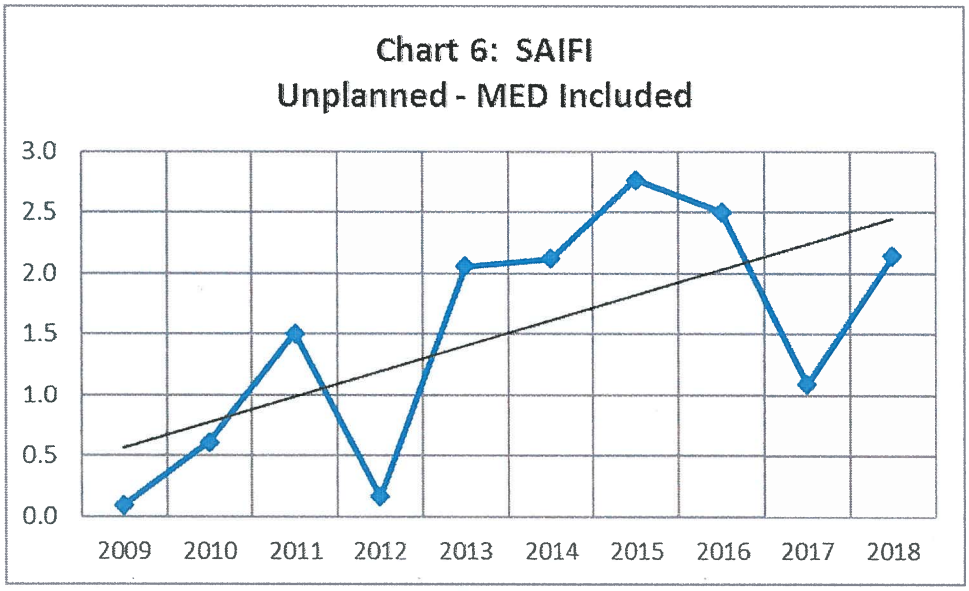


Chart 4: CAIDI (minutes)
Unplanned - MED Excluded
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

Charts 5 through 8 provide line graphs of SAIDI, SAIFI, MAIFI and CAIDI for the past 10 years with linear trend line (MED Included).





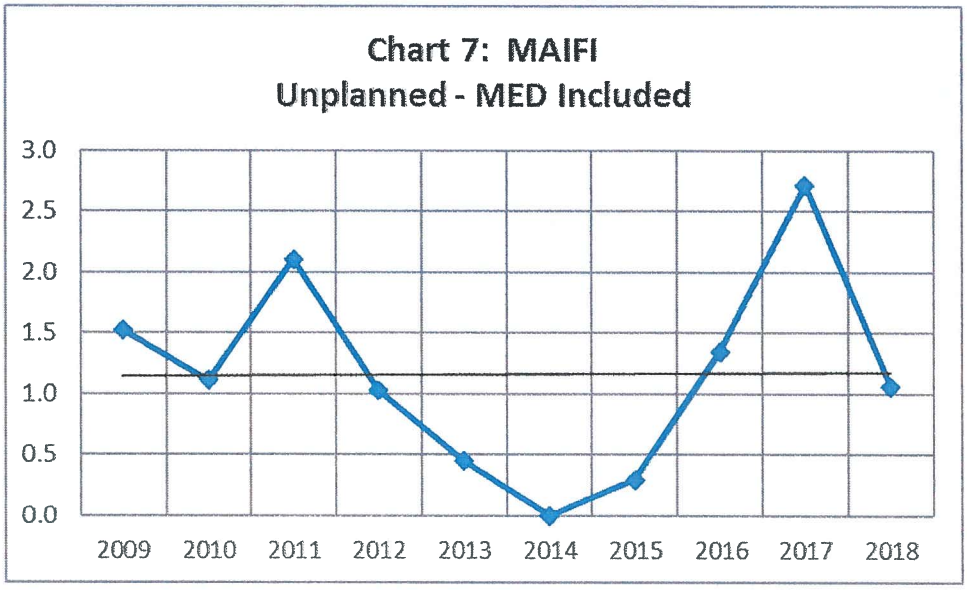


Chart 7: MAIFI
Unplanned - MED Included
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

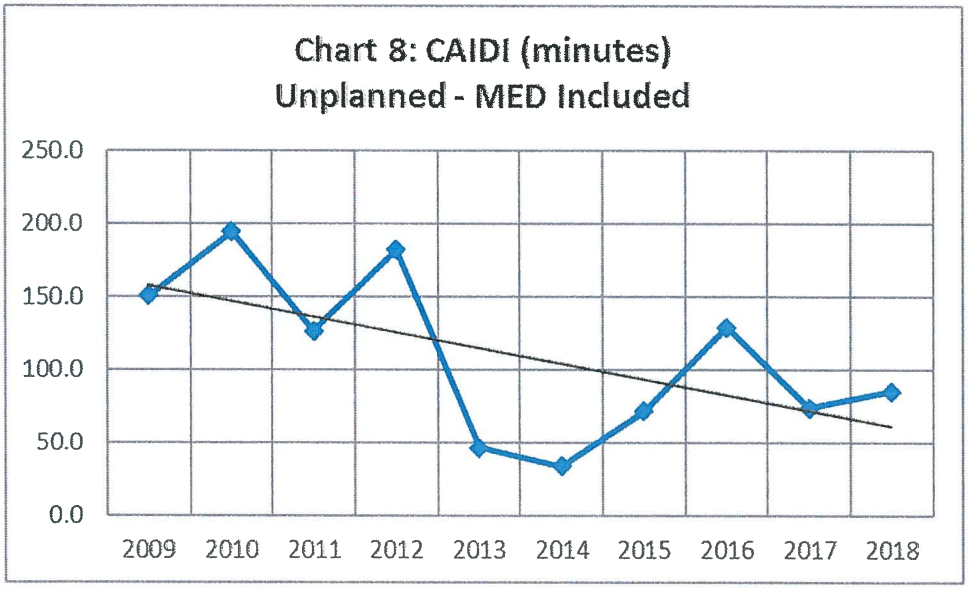


Chart 8: CAIDI (minutes)
Unplanned - MED Included
250.0
200.0
150.0
100.0
50.0
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

SECTION 2

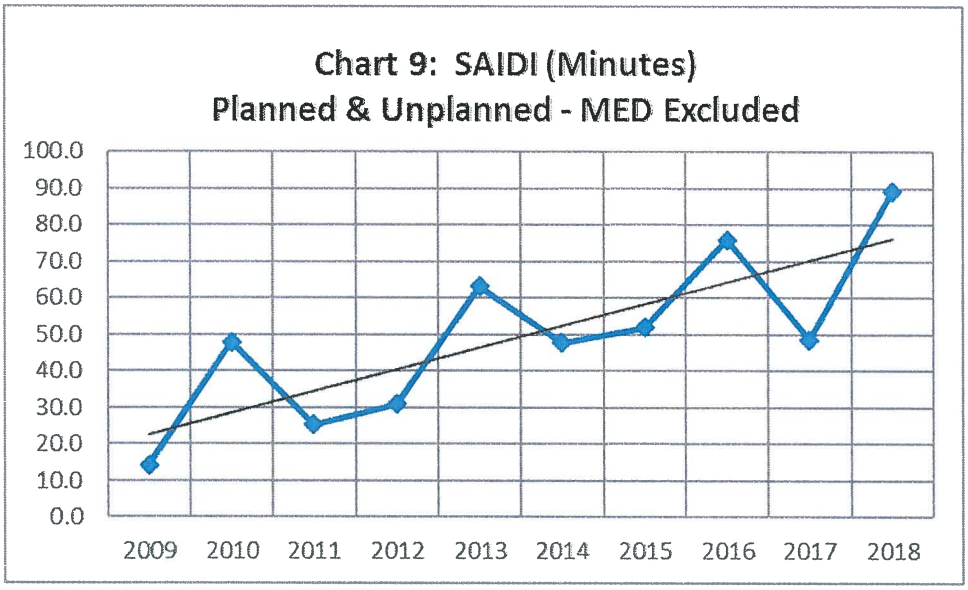
Division (or District) Reliability Indices (2009-2018)

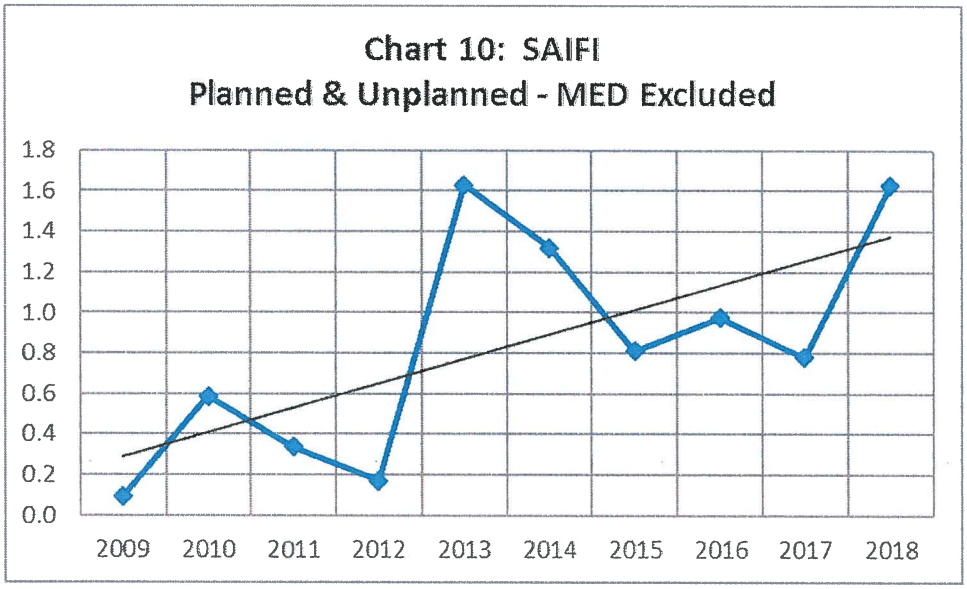
Due to the relatively small size and geography of the BVES Service Territory, BVES does not sub-divide its system into Divisions (or Districts); therefore, Division (or District) Reliability Indices are not reported separately in this report. Section 1 of this report provides BVES System reliability indices in tabular and chart format (MED Included and Excluded).

SECTION 3

System Indices Including Planned Outages

Charts 9 through 12 provide line graphs of SAIDI, SAIFI, MAIFI and CAIDI for the past 10 years with linear trend line for planned and unplanned outages (MED Excluded).





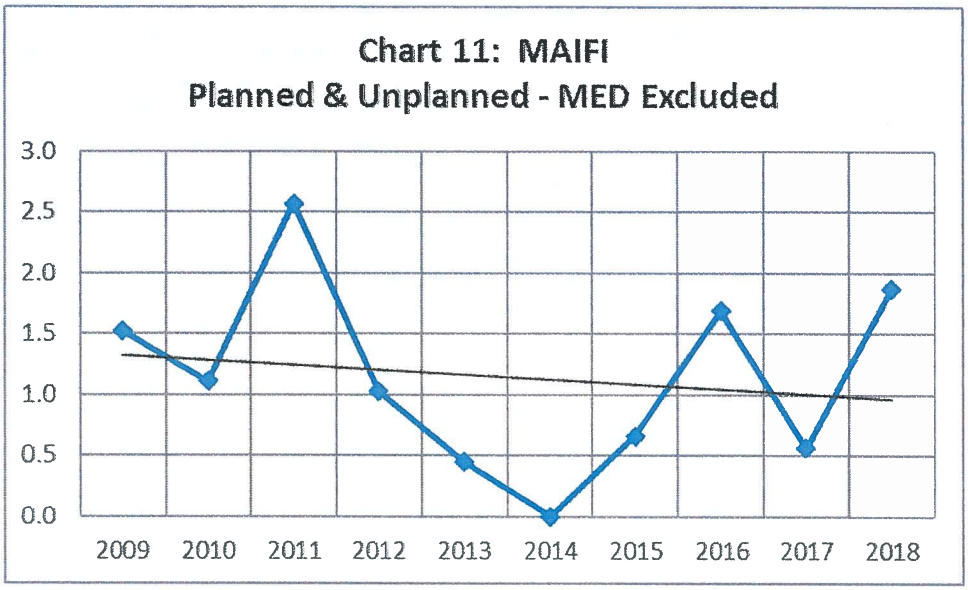


Chart 11: MAIFI
Planned & Unplanned - MED Excluded
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

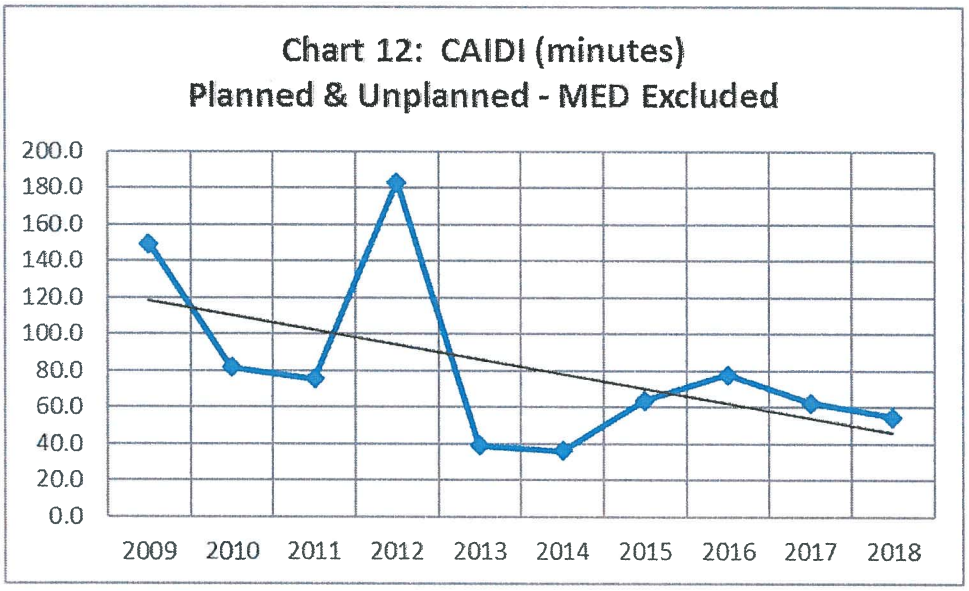
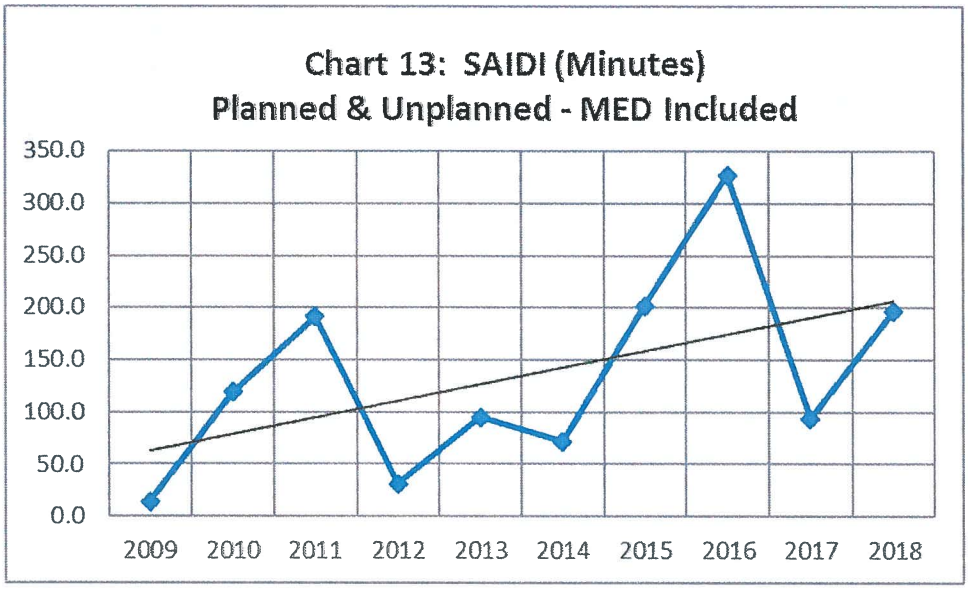
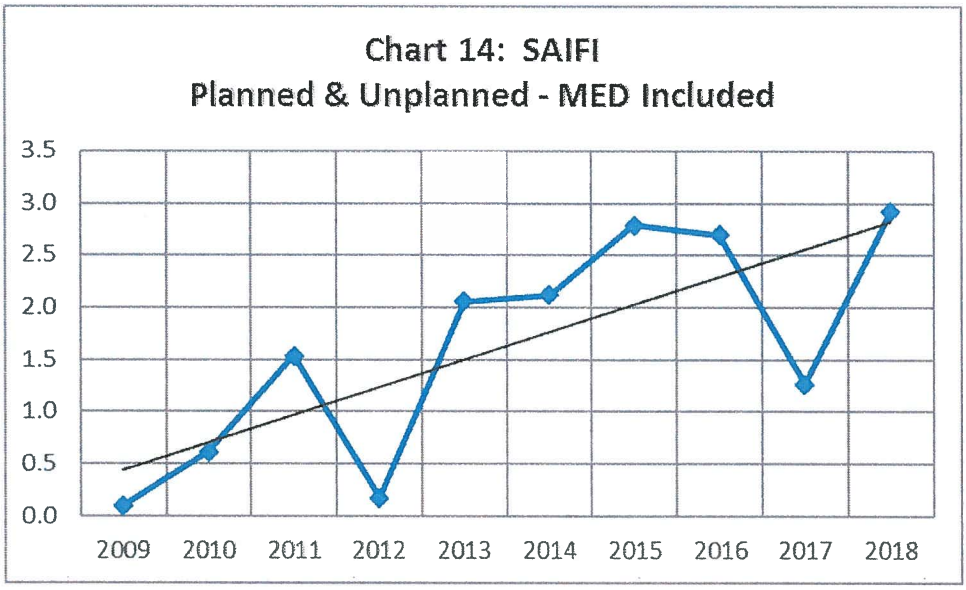


Chart 12: CAIDI (minutes)
Planned & Unplanned - MED Excluded
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

Charts 13 through 16 provide line graphs of SAIDI, SAIFI, MAIFI and CAIDI for the past 10 years with linear trend line for planned and unplanned outages (MED Included).





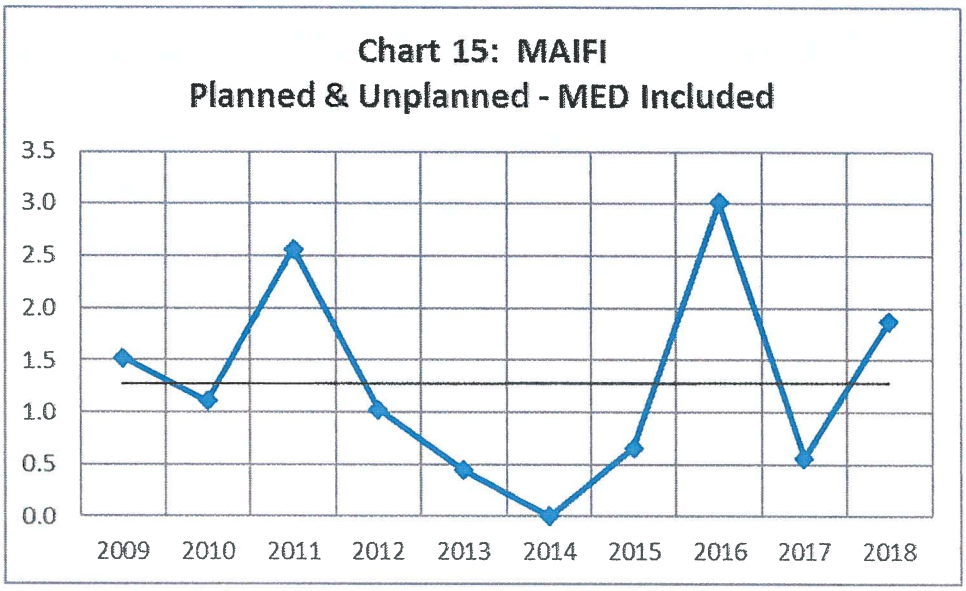


Chart 15: MAIFI
Planned & Unplanned - MED Included
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

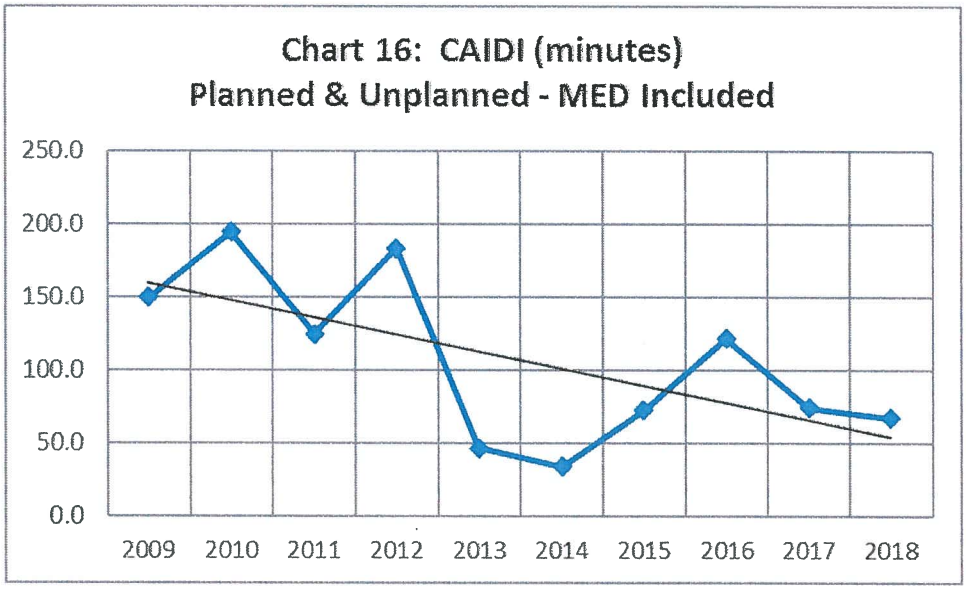


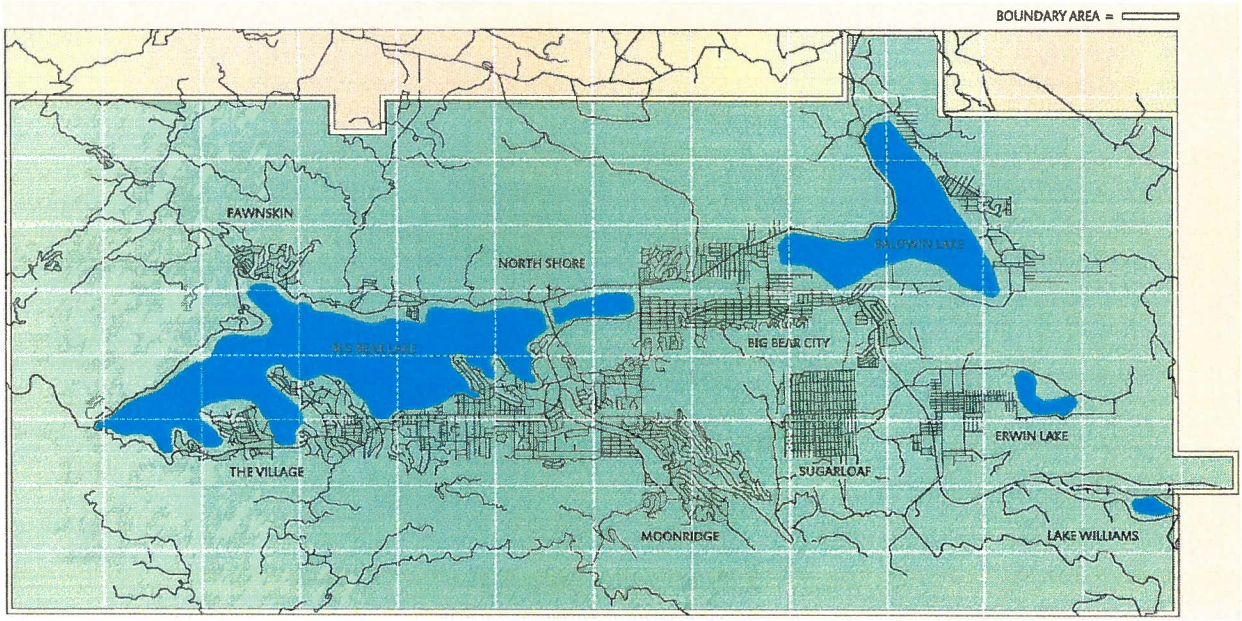
Chart 16: CAIDI (minutes)
Planned & Unplanned - MED Included
250.0
200.0
150.0
100.0
50.0
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

SECTION 4

Service Territory Map

BVES provides electric service to approximately 24,000 customers in the mountain resort community of Big Bear, California. BVES owns and operates 86.8 miles of overhead 34.5 kilovolt sub-transmission, 2.7 miles of 34.5 kilovolt underground sub-transmission, 488.6 miles of overhead distribution, 86.4 miles of underground distribution, 13 sub-stations and a natural gas-fueled 8.4 MW peaking generation facility. The BVES service area is rural and mountainous and is located in the San Bernardino Mountains of Southern California, 80 miles east of Los Angeles. The BVES Main Office is located at 42020 Garstin Dr., Big Bear Lake, CA 92315.

Below is the BVES Service Territory Map:



SECTION 5

Top 1% of Worst Performing Circuits (WPC)

Table 3 lists the Top 1% of WPCs, which for BVES is 1 circuit.

Table 3: Top 1% of Worst Performing Circuits (WPC)

Reporting Year	Circuit	Customer Count	Substation	Circuit-miles	% UG	% OH	Number of Mainline Outages		Prefered Reliability Metrics			
							Sustained	Momentary	SAIDI-3YR Period	SAIDI 1YR Period	SAIFI-3YR Period	SAIFI-1YR Period
2018	Eagle	959	Pineknot	8.9	83	17	3	0	414.2	405.6	2.7	2.6

There were no circuits on the list of WPC this year (2018) that appeared on the list of WPC for the previous year (2017).

The Eagle Circuit (4.160 kV) made the WPC list due to it having the highest 3-year SAIDI, which is the preferred metric for evaluating circuit reliability. The high circuit SAIDI was driven primarily by weather events and an equipment failure at the Pineknot Substation. In one case, during a major winter storm with high winds, a tree fell across a span on the Eagle Circuit causing an outage. Due to BVES not having remote indications (such as Supervisor Control and Data Acquisition – SCADA) crews had to patrol the circuit to find the tree. Pineknot Substation is an aging substation and with equipment that is programmed to be upgraded in 2019.

To improve Eagle Circuit reliability BVES is requesting in its most recent General Rate Case to implement a Grid Automation program to install SCADA throughout its grid. Additionally, BVES has increased minimum clearance zone for its power lines beyond those specified in General Order 95 with the changes directed by Commission D.17-12-024 Adopting Regulations To Enhance Fire Safety In The High Fire-Threat District of December 14, 2017. Furthermore, BVES is in the process of upgrading the Pineknot Substation.

The Preferred Metric for evaluating WPC is to evaluate the circuit SAIDI over a 3-year period (SAIDI-3YR Period), which is reported in Table 3. This method involves the summation of sustained outages (>5 minutes) over the previous 3 years divided by the customer count on the circuit for that period. BVES also evaluates circuit SAIFI calculated over a 3-year period SAIFI-3YR as well as circuit SAIDI and SAIFI calculated over a 1-year period. These values are also reported in Table 3.

WPC Process Evaluation

BVES's WPC program uses a top-down, system-wide approach to assess reliability trends and requirements of its 26 circuits. This approach employs a long-term and short-term analysis process. The WPCs are determined based upon at least the past three years of average duration of outages and average frequency of outages reliability statistics. BVES reviews these reliability performance metrics (SAIDI, SAIFI, MAIFI, and CAIDI) for each circuit using the following quantitative and qualitative analysis process:

- Reliability performance metrics for each circuit are calculated over a 3-year period (e.g., metrics reported for 2018 include outage data from 2016-2018, metrics reported for 2017 include outage data from 2015-2017, etc.). Four basic comparisons are then made with the results and the top 3 WPCs are selected:

    - The circuit reliability metrics based on a 3-year period are compared to the 10-year reliability metrics based on 3-year period averages for each circuit.
    - The circuit reliability metrics based on a 3-year period are compared to the service area reliability metrics for the reported year.
    - The circuit reliability metrics based on a 3-year period are compared to reliability metrics for the other circuits in the reported year.
    - Trends for each circuit are analyzed looking at the last 10 years of circuit reliability metrics based on a 3-year period.

- Reliability performance metrics for each circuit are calculated over a 1-year period. Four basic comparisons are then made with the results and the top 3 WPCs are selected:

    - The circuit reliability metrics based on a 1-year period are compared to the 10-year reliability metrics based on 1-year period averages for each circuit.
    - The circuit reliability metrics based on a 1-year period are compared to the service area reliability metrics for the reported year.
    - The circuit reliability metrics based on a 1-year period are compared to reliability metrics for the other circuits in the reported year.
    - Trends for each circuit are analyzed looking at the last 10 years of circuit reliability metrics based on a 1-year period.

- The results are then reviewed and a detailed analysis is performed for each circuit to determine the driver(s) of the results. The results using the 3-year periods are given more weight but the results using the 1-year period are also checked to determine if there is an emerging reliability issue that may be addressed sooner than waiting 3 years for the data to collect. Based on this analysis, the WPC for the reported year is selected.
- BVES management also reviews the outage log monthly so that any emergent issues at the circuit level may be detected and more urgent action taken if warranted.

Once a WPC is designated for the reporting year, the BVES Planning Group reviews the mitigation projects and/or maintenance actions necessary to bring the WPC's reliability performance to, at least, the 10-year system average and determines the cost of mitigation measures. Further analysis is performed to take into consideration impact on rates and budgets (capital and operations and maintenance (O&M)), the number of customers affected, the benefit to the affected customers, the benefit to the customer base, and the safety and reliability risks and consequences of not taking any action. This process takes about a year and generally work orders are developed to be executed in the following year. Hence, for a WPC identified in 2018, it might take BVES until 2020 to execute the

improvement project. It should be noted that reliability projects that require substantial investment such as substation reconstruction may require more time to garner Commission approval through the General Rate Case (GRC) process or Advice Letter process depending on when the project must be executed.

The BVES service area is rural and mountainous and is served predominantly from overhead facilities. Therefore, circuit hardening projects, projects to install monitoring instrumentation, and projects to install automatic circuit sectionalizing equipment generally will produce increased reliability.

Despite the top-down approach, BVES is also sensitive to its customer service requirements. Thus, BVES maintains the flexibility to take action on recurring customer reliability issues. BVES frequently reviews the outage logs and looks for repeated outages to an individual customer or small groups of customers. Such occurrences are then referred to the BVES Planning Group to determine if and what mitigation action is necessary.

Currently, BVES uses a manual process to gather data for SAIDI, SAIFI and MAIFI reporting. Hence, the accuracy of reliability performance metrics is significantly reduced. Specifically, outage duration times are mostly recorded based on the time a customer calls in to report an outage and when the service crews record the restoration of services. It is very possible that many short and momentary outages in isolated areas are not detected and, therefore, not recorded. This significantly reduces the accuracy of the reliability indices. BVES plans to install equipment to provide recorded data of circuit level performance metrics by December 31, 2019.

SECTION 6

Top 10 Major Unplanned Power Outage Events (2018)

Table 4 lists the Top 10 major unplanned power outage events within the reporting year (2018) including (a) the cause of each outage event; and (b) the location of each outage event.

Table 4: Top 10 Major Unplanned Power Outages (2018)

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
9/19/18	Shay	Various	12,381	Various	1,448,607	59.62	**Equipment Failure:** Termination on pole dip to underground failed.
8/27/18	Shay	Various	13,030	89	1,159,670	47.73	**Equipment Failure:** Termination on pole dip to underground failed.
3/22/2018	Shay	584 Elm St., Big Bear Lake	9,627	93	673,890	27.74	**Weather:** Winter storm high winds caused tree branch fall across 34.5kV lines.
1/30/2018	Erwin Lake	217 Greenspot Blvd., Big Bear City	482	Various	342,451	14.09	**Third Party:** Car hit pole.
12/31/18	Eagle Georgia	Pineknot Substation	622	Various	298,380	12.28/	**Equipment Failure:** Substation voltage regulator failed and required replacement.
12/6/18	Eagle	Big Bear Blvd & Eureka Dr., Big Bear Lake	900	203	182,700	7.52	**Weather:** Winter storm heavy snow storm caused tree branch to fall across 4kV lines.
2/9/2018	Bear City	Michael Ave. & W. Meadow Lane, Big Bear City	1,587	88	139,656	5.75	**Unknown:** Possible over current - cause investigated but not determined.
11/25/18	North Shore	YMCA Camp Whittle, Fawnskin	93	Various	61,600	2.54	**Third Party:** Car hit pole.
12/29/2018	Goldmine	Moonridge Substation, Big Bear Lake	300	180	54,000	2.22	**Other:** Over current requiring refusing at substation.
7/19/2018	SCE Goldhill Ute Lines	Service Area Wide	24,335	1	24,335	1.00	**Supply:** SCE's 115 kV line to Lugo Substation relayed causing the SCE Goldhill Switch Station to open and reclose for one cycle resulting in short loss of supplies.

The BVES Service Area did not have any wildfires during 2018.

SECTION 7

Summary List of Major Event Days (2018)

Table 5 provides a summary list of Major Event Days (MED per IEEE 1366) and includes (a) the average number of customers without service for each MED; (b) the cause of each ME (Major Event); and (c) the location of each MED.

Table 5: Summary List of Major Event Days (MED) (2018)

Date	Affected Circuit	Location	Average Number of Customers	Event SAIDI	Cause
9/19/2018	Shay	Various	12,381	59.62	**Equipment Failure:** Termination on pole dip to underground failed.
8/27/2018	Shay	Various	13,030	47.7	**Equipment Failure:** Termination on pole dip to underground failed.

The Reliability Reporting Template provided in Appendix B to D.16-01-008 requests the number of customers without service at periodic intervals for each MED. BVES does not have the equipment or the resources to record periodic (normally hourly) event data. BVES anticipates having this capability installed by December 31, 2019.

SECTION 8

Historical Ten Largest Unplanned Outage Events (2009-2018)

Table 6 provides a summary of the historical ten largest unplanned outage events for each of the past 10 years (2009-2018).

Table 6: Top 10 Major Unplanned Power Outages Last 10 Years (2009 - 2018)

2018

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
9/19/18	Shay	Various	12,381	Various	1,448,607	59.62	**Equipment Failure:** Termination on pole dip to underground failed.
8/27/18	Shay	Various	13,030	89	1,159,670	47.73	**Equipment Failure:** Termination on pole dip to underground failed.
3/22/2018	Shay	584 Elm St., Big Bear Lake	9,627	93	673,890	27.74	**Weather:** Winter storm high winds caused tree branch fall across 34.5kV lines.
1/30/2018	Erwin Lake	217 Greenspot Blvd., Big Bear City	482	Various	342,451	14.09	**Third Party:** Car hit pole.
12/31/18	Eagle Georgia	Pineknot Substation	622	Various	298,380	12.28/	**Equipment Failure:** Substation voltage regulator failed and required replacement.
12/6/18	Eagle	Big Bear Blvd & Eureka Dr., Big Bear Lake	900	203	182,700	7.52	**Weather:** Winter storm heavy snow storm caused tree branch to fall across 4kV lines.
2/9/2018	Bear City	Michael Ave. & W. Meadow Lane, Big Bear City	1,587	88	139,656	5.75	**Unknown:** Possible over current - cause investigated but not determined.
11/25/18	North Shore	YMCA Camp Whittle, Fawnskin	93	Various	61,600	2.54	**Third Party:** Car hit pole.
12/29/2018	Goldmine	Moonridge Substation, Big Bear Lake	300	180	54,000	2.22	**Other:** Over current requiring refusing at substation.
7/19/2018	SCE Goldhill Ute Lines	Service Area Wide	24,335	1	24,335	1.00	**Supply:** SCE's 115 kV line to Lugo Substation relayed causing the SCE Goldhill Switch Station to open and reclose for one cycle resulting in short loss of supplies.

2017

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
6/19/2017 to 6/24/2017	Various	Various	Various	Various	11,952,822	498.56	**Supply:** Loss of Southern California Supply sub-transmission line (34.5 kV) from Lucerne Valley due to **Holcomb Fire**.
1/20/17	Baldwin	Meadow, Division, Bear City, Maltby, Fawnskin, and Lake Substations	11,305	90	1,017,450	42.44	**Weather:** High winds caused Baldwin sub-transmission line to open.
8/7/2017	Garstin	42134 Big Bear Boulevard, Big Bear Lake	2,255	93	209,715	8.75	**Weather:** PMS 3407 opened due to lightening strike.
2/18/17	Clubview	987 Clubview Drive (at Pole 8105BV), big Bear Lake	1,698	120	203,760	8.50	**Weather:** High winds caused tree branch fall across 34.5kV and 4kV lines.
4/21/2017	SCE Goldhill Ute Lines	Southern California Edison's Cottonwood Substation	20,932	3	62,796	2.62	**Supply:** Fault at Southern California Edison Cottonwood Substation.
11/8/2017	Radford	Knickerbocker Road (P.S. 3459), Big Bear Lake	3,600	15	54,000	2.25	**Equipment Failure:** Pole Switch rod failed during field switching operations.
1/22/17	Goldmine	43607 Sand Canyon road, Big Bear Lake	100	500	50,000	2.09	**Weather:** High winds caused tree branch fall across primary and secondary lines.
1/20/17	Maple	555 Spruce Lane, Big Bear City	100	405	40,500	1.69	**Weather:** High winds caused tree branch fall across primary and secondary lines.
12/14/2017	Clubview	Moonridge Substation, Big Bear Lake	1,120	30	33,600	1.40	**Other:** Contractor inadvertently de-energized 4 kV switch position at Moonridge Sub-station while performing equipment testing for maintenance.
7/21/2017	Boulder	Big Bear Boulevard (West of Skyline Trail), Big Bear Lake	200	164	32,800	1.37	**Weather:** High winds caused tree to fall across primary lines.

2016

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
1/7/2016	Shay	Southern rim of Bear Valley	9,711	100	971,100	40.7	**Weather:** Major winter snow storm.
3/11/2016	Shay	Southeastern rim of Bear Valley	9,711	100	971,100	40.7	**Weather:** Extremely high winds blew broken branch into 34kV Line.
1/31/2016	Lagonita	40174 Lakeview Dr., Big Bear Lake, CA	800	1,030	824,000	34.5	**Third Party:** Car Hit pole shearing pole.
1/7/2016	Clubview	Moonridge area, Big Bear Lake, CA	1,140	435	495,900	20.8	**Weather:** Major winter snow storm.
3/28/2016	Shay	Elm St. & Peregrine Ave, Big Bear Lake, CA	9,711	47	456,417	19.1	**Weather:** Wind storm caused tree branch to fall across two line phased causing short-circuit relay.
1/13/2016	Shay	Southern rim of Bear Valley	7,781	57	443,517	18.6	**Equipment Failure:** Transformer at Pineknot Substation faulted and failed.
1/6/2016	Clubview	Moonridge area, Big Bear Lake, CA	1,900	228	433,200	18.1	**Weather:** Major winter snow storm.
1/6/2016	Boulder	Central Big Bear Lake area, Big Bear Lake, CA	2,000	164	328,000	13.7	**Weather:** Major winter snow storm.
1/13/2016	Georgia	Pineknot Substation, Big Bear Lake, CA	965	311	300,115	12.6	**Equipment Failure:** Transformer at Pineknot Substation faulted and failed.
12/16/2016	Paradise	304 Big Bear Blvd., Big Bear Lake, CA	542	490	265,580	11.1	**Weather:** Tree top broke of and fell into overhead circuit lines taking down wire and crossarm.

2015

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
6/12/2015	Baldwin	Baldwin connected load - exact location unknown. Big Bear Lake, CA	9,678	182	1,761,396	74.2	Weather: Lightning storm moving through the service area.
6/12/2015	Shay	Shay connected load - exact location unknown. Big Bear Lake, CA	13,311	81	1,078,191	45.4	Weather: Lightning storm moving through the service area.
6/13/2015	Shay & Baldwin	System-wide connected load - - exact location unknown. Big Bear Lake, CA	22,989	29	666,681	28.1	Weather: Lightning storm moving through the service area.
10/13/2015	Baldwin	929 Michael Ave., Big Bear City, CA 92314	6,533	49	320,117	13.5	Vegetation: Large tree limb fell onto 33KV and then contacted 4kV.
10/13/2015	Garstin	929 Michael Ave., Big Bear City, CA 92314	2,900	76	220,400	9.3	Vegetation: Garstin tripped when Baldwin tripped due to large tree limb falling onto 33KV and then contacted 4kV.
4/7/2015	Boulder	SCE's Bear Valley 33kV supply line (Radford Line)	2,000	80	160,000	6.7	Weather: SCE experienced an outage on the Bear Valley 33kV supply line (Radford Line) due to high winds.
4/7/2015	Lagonita	SCE's Bear Valley 33kV supply line (Radford Line)	1,400	80	112,000	4.7	Weather: SCE experienced an outage on the Bear Valley 33kV supply line (Radford Line) due to high winds.
10/13/2015	Bear City	929 Michael Ave., Big Bear City, CA 92314	1,320	76	100,320	4.2	Vegetation: Bear City tripped when Baldwin tripped due to large tree limb falling onto 33KV and then contacted 4kV.
10/13/2015	Division	929 Michael Ave., Big Bear City, CA 92314	825	90	74,250	3.1	Vegetation: Division tripped when Baldwin tripped due to large tree limb falling onto 33KV and then contacted 4kV.
6/12/2015	Erwin	Maltby Substation, S/E Corner of Maltby Blvd. and Shore Dr., Big Bear City, CA 92314	1,000	53	53,000	2.2	Weather: Lightning storm moving through the service area.
12/31/2015	Goldmine	Intersection of Wolf Rd. and Alameda Rd., Big Bear Lake, CA 92315	150	228	34,200	1.4	Equipment Failure: Overloaded line segment.

2014

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
7/7/2014	Baldwin	Sandalwood Dr & Business Center Dr, Big Bear Lake, CA	9,500	30	285,000	12.0	Third Party: Remote controlled airplane flew into 34.5 kV lines.
7/7/2014	Shay	Sandalwood Dr & Business Center Dr, Big Bear Lake, CA	9,500	30	285,000	12.0	Third Party: Remote controlled airplane flew into 34.5 kV lines.
7/27/2014	Sunset	Maple Substation, Big Bear City, CA	1,600	160	256,000	10.8	Weather: Lightning strike caused fault.
10/15/2014	Boulder	Big Bear Blvd & Lark Rd, Big Bear City, CA	2,000	124	248,000	10.4	Vegetation: Tree branch fell across power lines.
6/21/2014	Maple	Maple Substation, Big Bear City, CA	1,500	150	225,000	9.5	Equipment Failure: Problem with OCB Controller.
8/10/2014	Garstin	41734 Comstock Ln, Big Bear Lake, CA	1,000	183	183,000	7.7	Vegetation: Tree fell onto power lines breaking them.
3/3/2014	Shay & Baldwin	SCE Gold Hill Substation	23,500	7	164,500	6.9	Supply: SCE reported capacitor bank failure on SCE side.
6/20/2014	Maple	Maple Substation, Big Bear City, CA	1,500	18	27,000	1.1	Equipment Failure: Problem with OCB Controller. Diagnosed 6/21/2016.
1/1/2014	Eagle	Eureka Dr & Condor Dr, Big Bear Lake, CA	52	118	6,136	0.3	Equipment Failure: Blown fuse.
11/3/2014	Boulder	39077 Bayview Ln, big Bear Lake, CA	22	166	3,652	0.2	Equipment Failure: Blown transformer fuse due to overload.
12/26/2014	Division	206 W. Aeroplane Blvd, big Bear City, CA	23	113	2,599	0.1	Equipment Failure: Transformer bank had blown fuse due to overload.

2013

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
10/9/2013	Shay	Park Ave & Thrush Rd, Big Bear Lake, CA	10,111	75	758,325	32.1	Vegetation: Tree branches fell into 34.5 kV lines.
10/2/2013	Shay	100 W. Sherwood, Big Bear City, CA	10,111	48	485,328	20.5	Third Party: Tree trimming contractors dropped a tree limb across two phases of a 34.5 kV feeder.
2/9/2013	Radford	Village Substation, Big Bear Lake, CA	3,600	109	392,400	16.6	Supply: Unknown problem on SCE side of Radford Line.
4/3/2013	Shay & Baldwin	SCE Goldhill Ute Lines	23,000	15	345,000	14.6	Supply: Unknown problem on SCE side.
5/19/2013	Garstin	Across from 42020 Garstin Dr., Big Bear Lake, CA	1,000	170	170,000	7.2	Third Party: Car-hit-pole (Commercial Truck).
9/8/2013	Division	Division Substation, Big Bear City, CA	500	98	49,000	2.1	Weather: Lightning strike caused fault.
6/8/2013	Boulder	Mill Creek Rd, Big Bear Lake, Ca	100	280	28,000	1.2	Vegetation: Rotted tree fell and knocked another tree over onto power lines causing blown fuse.
9/8/2013	Division	42236 Eagle Ridge Dr, big Bear City, CA	15	324	4,860	0.2	Third Party: Car hit UG transformer on pad.
7/21/2013	Garstin	Comstock Ln & St. Moritz Dr, Big Bear Lake, CA	10	465	4,650	0.2	Weather: Lightning strike caused fault.
9/7/2013	Country Club	504 W Aeroplane Blvd, Big Bear Lake, CA	17	113	1,921	0.1	Weather: Lightning strike caused fault.
1/24/2013	Bear City	Unknown	1,320	1	1,320	0.1	Vegetation: Phase-to-ground fault. Exact location unknown but strongly suspect cause was vegetation.

2012

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
11/8/2012	Interlaken	CATALINA Rd & Big Bear Blvd, Big Bear Lake, CA (Pole 5753BV)	1,200	420	504,000	21.5	Third Party: Car-hit-pole.
8/10/2012	Fawnskin	39111 North Shore Dr, Fawnskin, CA	300	270	81,000	3.5	Vegetation: Tree fell across power lines.
9/4/2012	Fawnskin	39188 Rim of the World Dr, Fawnskin, CA	300	205	61,500	2.6	Third Party: Contractor cutting tree down lost control of tree and it fell on power lines.
6/6/2012	Village	7891 Talmage Rd, Big Bear Lake, CA	1,800	11	19,800	0.8	Other: While transferring 4 kV lines to a new pole, crew error resulted in phase to neutral contact.
1/10/2012	Radford	Radford AR #3470	3,600	5	18,000	0.8	Other: AR inadvertently opened during maintenance.
12/13/2012	Lagonita	Forest Rd & Arroyo Dr, Big Bear Lake, CA	70	104	7,280	0.3	Weather: Snow storm caused line to break.
8/18/2012	Maple	401 Pine Ln, Big Bear City, CA	18	255	4,590	0.2	Weather: Lightning strike resulted in blown transformer fuse.
8/20/2012	Division	137 W Aeroplane Blvd, Big Bear City, CA	18	190	3,420	0.1	Weather: Lightning strike resulted in blown transformer fuse.
4/14/2012	Georgia	806 Knight Ave, Big Bear Lake, CA	16	210	3,360	0.1	Vegetation: Tree branches contacted lines causing phase-to-neutral contact.
3/17/2012	Goldmine	1594 Trinity Ct, Big Bear Lake, CA	13	210	2,730	0.1	Vegetation: Tree branches rubbed service, broke neutral, and rubbed insulation off of phases resulting in blown transformer fuse.
8/28/2012	Eagle	41571 Mockingbird Dr, big Bear Lake, CA	6	420	2,520	0.1	Weather: Lightning strike resulted in blown transformer fuse.

2011

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
4/7/2011	Shay & Baldwin	SCE Doble Line	19,389	120	2,326,680	99.0	Supply: Snow storm caused damage on SCE's Doble Line, which supplies BVES.
3/20/2011	Erwin	Erwin Ranch Rd & Hwy 38, big Bear City, CA	1,500	497	745,500	31.7	Weather: High winds caused tree to fall on lines resulting in breaking six cross arms and two conductors.
2/18/2011	Radford	Village Substation, Big Bear Lake, CA	3,600	157	565,200	24.0	Supply: Snow storm resulted in loss of the Radford line on SCE side.
12/1/2011	Radford	Village Substation, Big Bear Lake, CA	3,600	55	198,000	8.4	Supply: Snow storm resulted in loss of the Radford line on SCE side.
4/10/2011	Bear City	1041 Mound St, Big Bear City, CA	1,320	125	165,000	7.0	Animal: Large bird flew into primary lines.
4/8/2011	Goldmine	43135 Moonridge Rd, Big Bear Lake, CA	1,700	85	144,500	6.1	Third Party: Car-hit-pole (Commercial Truck).
11/4/2011	Village	40833 Maryland Rd, Big Bear Lake, CA	300	200	60,000	2.6	Weather: Snow storm caused tree to fall on lines at two locations.
3/20/2011	Erwin	Erwin Ranch Rd & Hwy 38, Big Bear City, CA	1,000	53	53,000	2.3	Weather: High winds caused tree to fall on lines resulting in breaking six cross arms and two conductors.
3/20/2011	Erwin	Erwin Ranch Rd & Hwy 38, Big Bear City, CA	1,000	53	53,000	2.3	Weather: High winds caused tree to fall on lines resulting in breaking six cross arms and two conductors.
9/30/2011	Paradise	836 E Country Club Blvd, Big Bear City, CA	1,085	45	48,825	2.1	Weather: Lightning strike caused fault.
1/12/2011	Palomino	Baldwin Lake Rd between Ponderosa Ranch Rd & Selenium Ln, Big Bear City, CA	300	85	25,500	1.1	Equipment Failure: Fuse blown due to overload.

2010

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
1/18/2010	Palomino	Baldwin Lake Rd (between Arastre Rd & Pioneertown Rd), Big Bear City, CA	400	3,240	1,296,000	55.7	Weather: Winter wind storm Wind resulted in four poles falling.
7/15/2010	Fox Farm	Big Bear Blvd & Fox Farm Rd, Big Bear Lake, CA	4,928	80	394,240	17.0	Weather: Lightning strike caused fault.
1/18/2010	Palomino	Baldwin Lake Rd (between Arastre Rd & Pioneertown Rd), Big Bear City, CA	200	1,780	356,000	15.3	Weather: Winter wind storm Wind resulted in four poles falling.
10/9/2010	Erwin	Stanfield Cutoff, Big Bear Lake, CA	4,923	60	295,380	12.7	Animal: Large bird landed 34 kV lines causing phase-to-phase short.
12/22/2010	Country Club	Division Substation	825	180	148,500	6.4	Weather: Snow storm caused unknown fault and circuit to lock out.
5/25/2010	Erwin	Hemlock LN, Big Bear City, CA	225	325	73,125	3.1	Third Party: Vehicle hooked communications cable and one pole (CIT37123) over and broke 100' Ft span.
5/25/2010	Erwin	Hemlock LN, Big Bear City, CA	300	205	61,500	2.6	Third Party: Vehicle hooked communications cable and one pole (CIT37123) over and broke 100' Ft span.
2/28/2010	Paradise	East Big Bear Blvd & Shore Dr, big Bear City, CA	1,400	20	28,000	1.2	Third Party: Car-hit-pole incident.
12/19/2010	Goldmine	Primrose Dr & Shasta Rockspray St, Big Bear Lake, CA	200	84	16,800	0.7	Vegetation: Tree fell into primary lines.
12/19/2010	Goldmine	Sand Canyon Rd & Sand Canyon Ct, Big Bear Lake, CA	100	115	11,500	0.5	Vegetation: Tree top broke off and fell on primary lines.
1/19/2010	Garstin	Moonridge Rd & Siskiyou Dr, Big Bear Lake, CA	75	149	11,175	0.5	Weather: High winds resulting in short and blown fuse.

2009

Date	Affected Circuit	Location	Number of Customers	Outage Duration (minutes)	Customer Minutes Out (minutes)	Event SAIDI (minutes)	Cause
1/7/2009	Bear City	Bear City Substation, Big Bear City, CA	1,320	110	145,200	6.2	Equipment Failure: One 34 kV pothead failed.
2/9/2009	Goldmine	Moonridge Rd & Lassen Dr, Big Bear Lake, CA	100	370	37,000	1.6	Weather: Snow and wind storm caused fault resulting in blown fuse.
3/24/2009	Georgia	41044 Big Bear Blvd (Leisure Bear Mobile Home Park), Big Bear Lake, CA	80	371	29,680	1.3	Equipment Failure: Failed transformer and blown fuse.
4/14/2009	SCE Goldhill Ute L	SCE Doble Line	19,389	1	24,236	1.0	Supply: Broken cross-arms on SCE Doble Line resulted in phase-to-phase faults.
6/3/2009	Interlaken	447 Catalina Rd, Big Bear Lake, CA	150	130	19,500	0.8	Weather: High winds caused tree to break and fall on a vehicle and power line span.
4/14/2009	Goldmine	Villa Grove Ave & Wolf Rd, Big Bear Lake, CA	60	260	15,600	0.7	Weather: Wind storm cause tree branches to impact lines and blow fuse.
12/22/2009	Boulder	Millcreek Rd (Lease Cabin #75), Big Bear Lake, CA	55	240	13,200	0.6	Vegetation: Dead tree fell over hitting pole and line.
12/12/2009	Fawnskin	38925 North Shore Dr (Pole BV9716N), Fawnskin, CA	20	330	6,600	0.3	Vegetation: Tree fell on lines causing blown fuse.
12/30/2009	Interlaken	42024 Skyview Ridge Dr., Big Bear Lake, CA	14	341	4,774	0.2	Equipment Failure: 25KVA UG Transformer overloaded.
3/22/2009	Clubview	890 Tehama Dr., Big Bear Lake, CA	38	120	4,560	0.2	Weather: High winds caused tree branch to fall and hit 4 kV lines, which resulted in blown fuse.
1/1/2009	Eagle	Finch Dr. & Swallow Dr., Big Bear Lake, CA	60	70	4,200	0.2	Equipment Failure: Blown fuse due to overload.

SECTION 9

Customer Inquires

Table 7 provides a summary list of customer inquiries on reliability data and the number of days per response (average response time) for the reporting year (2018). BVES did not receive any customer inquiries regarding reliability data in 2018.

Table 7: Summary of Customer Inquiries 2018	
Number of Customer Inquiries	**Average Response Time (days)**
0	NA