Meeting Connection

In compliance with Commission Decision D.16-01-008, PacifiCorp has scheduled a public in-person presentation to review the company's annual reliability report submitted to the Commission on July 15, 2021.

The meeting will take place virtually via the web link below but can also be attended via audio only.

Microsoft Teams meeting
Join on your computer or mobile app
CA Reliability Meeting Nov 18 at 6 PM
Join with a video conferencing device
berkshirehathawayenergy@m.webex.com
Video Conference ID: 111 090 343 1
Alternate VTC instructions
Or call in (audio only)
+1 563-275-5003,,636125652# United States, Davenport
Phone Conference ID: 636 125 652#
Find a local number | Reset PIN

Pacific Power's

2021 California Electric Reliability Report

November 18, 2021




PacifiCorp

Let's turn the answers on.

Introduction & Welcome

Todd Andres: Pacific Power Business Manager for Southern Oregon & Northern California

Proudly Serving Northern California

Service area

- Number of customers in the state: 47,133

Number of employees

- 43 employees

Line Miles

- Transmission, all states: 17,697
- Distribution, all states: 65,511

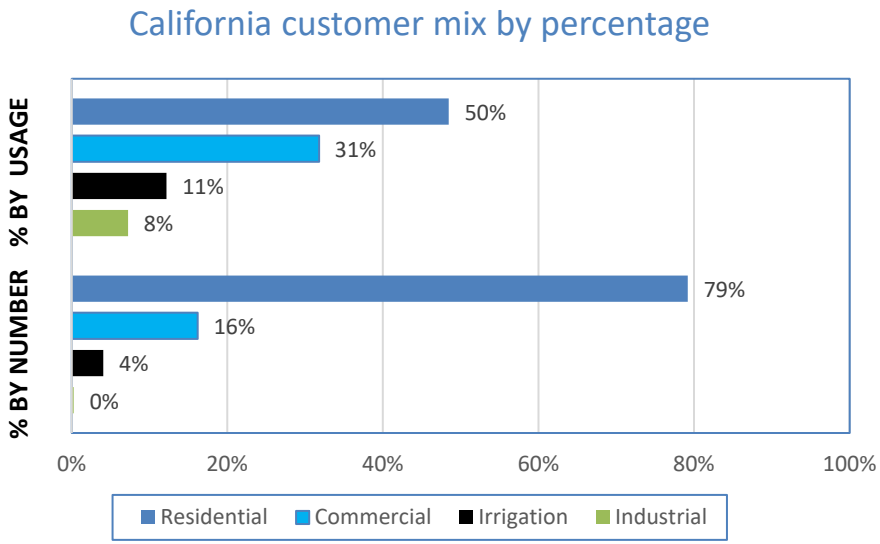
California grants and charitable donations in 2020

- Corporate: $33,704
- Pacific Power Foundation: $65,452

California property taxes paid for 2020

- Property Tax: $2,362,204

Proudly Serving Northern California



Promising Excellent Service

Our Customer Service Guarantees help ensure we're delivering to the highest standards.

Guarantees cover:

- Restoring power after outages
- Keeping appointments
- Switching on power
- Estimates for new power supply
- Billing questions
- Meter problems
- Planned interruptions

Should we fail to meet certain program features, you can file a claim and be eligible for a credit of $50.

Concurrently focused on Clean Energy Future

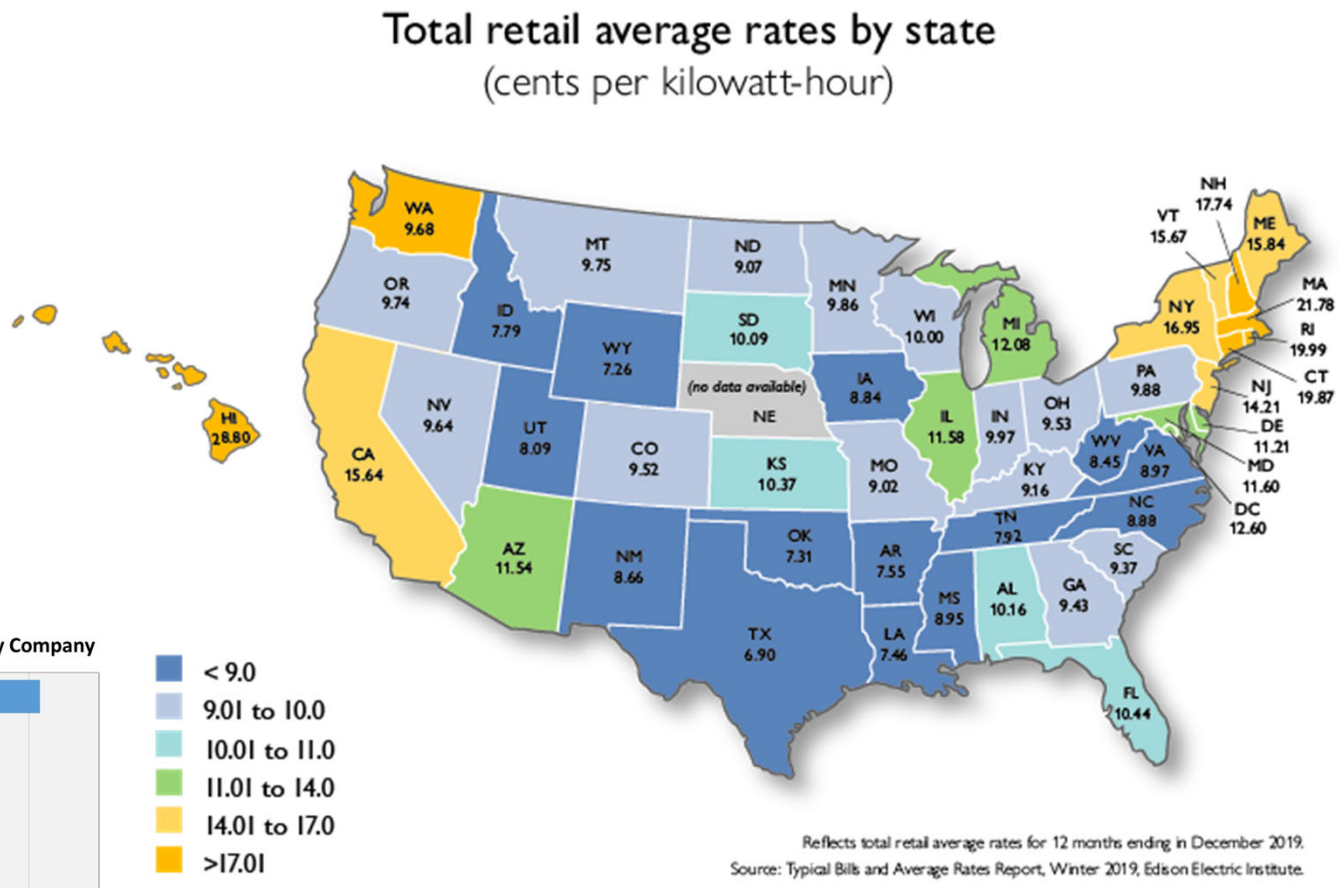
- Our 2021 Integrated Resource Plan identifies demand side resources, renewable energy, storage and nuclear all with a goal of reduced carbon emissions consistent with state targets.
- 74% reduction of greenhouse gas emissions from 2005 levels by 2030.
- See more here

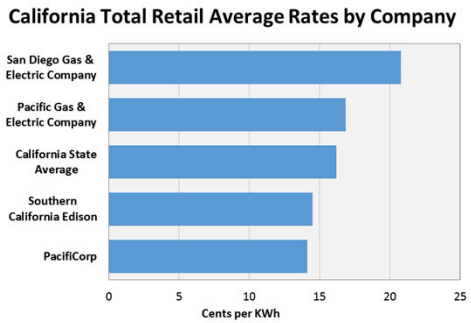
Planning for Improved Wildfire Resilience

Since 2019 PacifiCorp has been developing and implementing its Wildfire Mitigation Plan, including tactics such as:

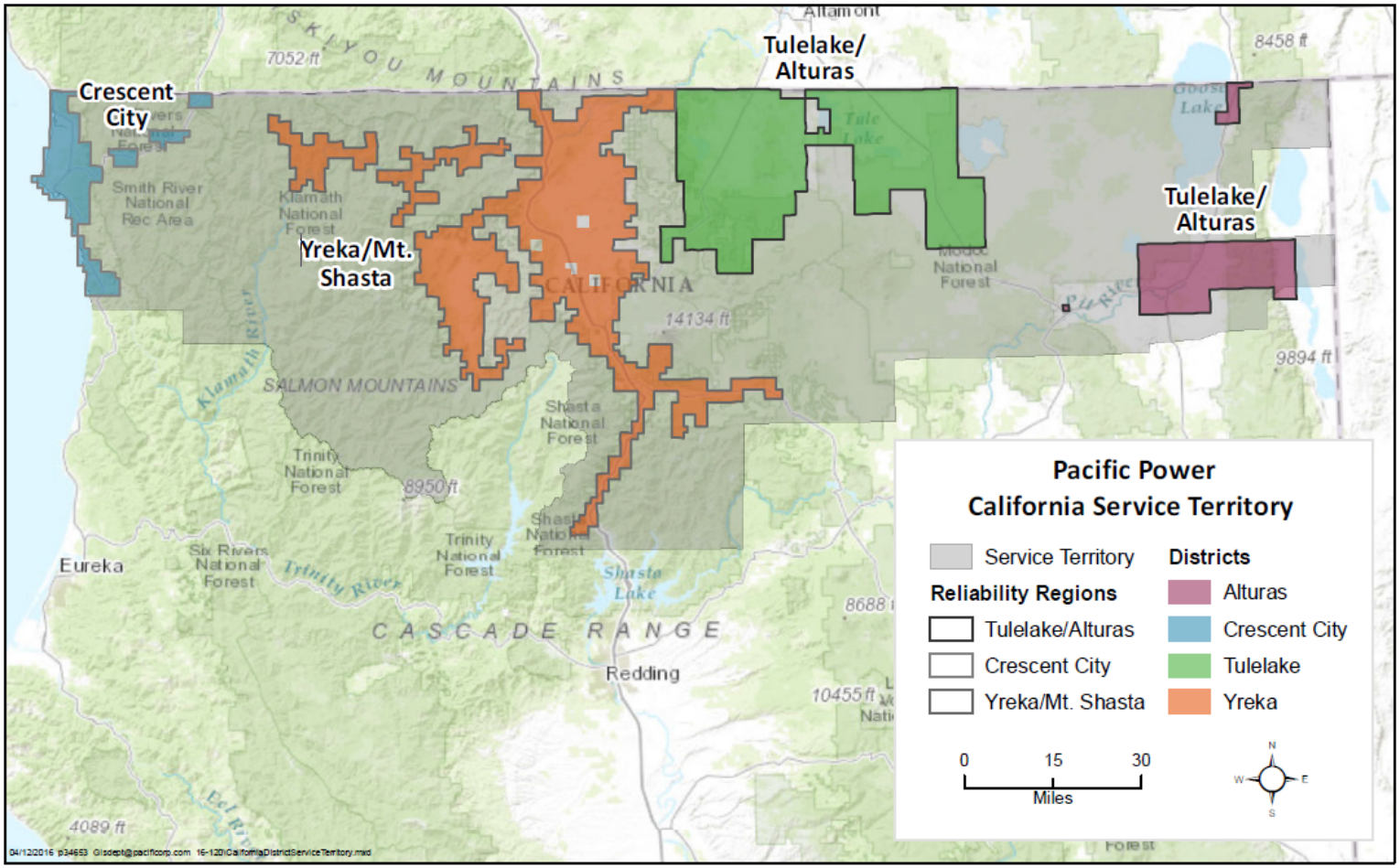
- Changing operational practices during periods of high risk
- Augmenting its emergency, meteorology and operational teams for real time response, including enhanced situational awareness
- Enhanced inspection, correction and vegetation management actions
- Hardening facilities for wildfire risk, including new protection control equipment and covered conductor

US Energy Prices



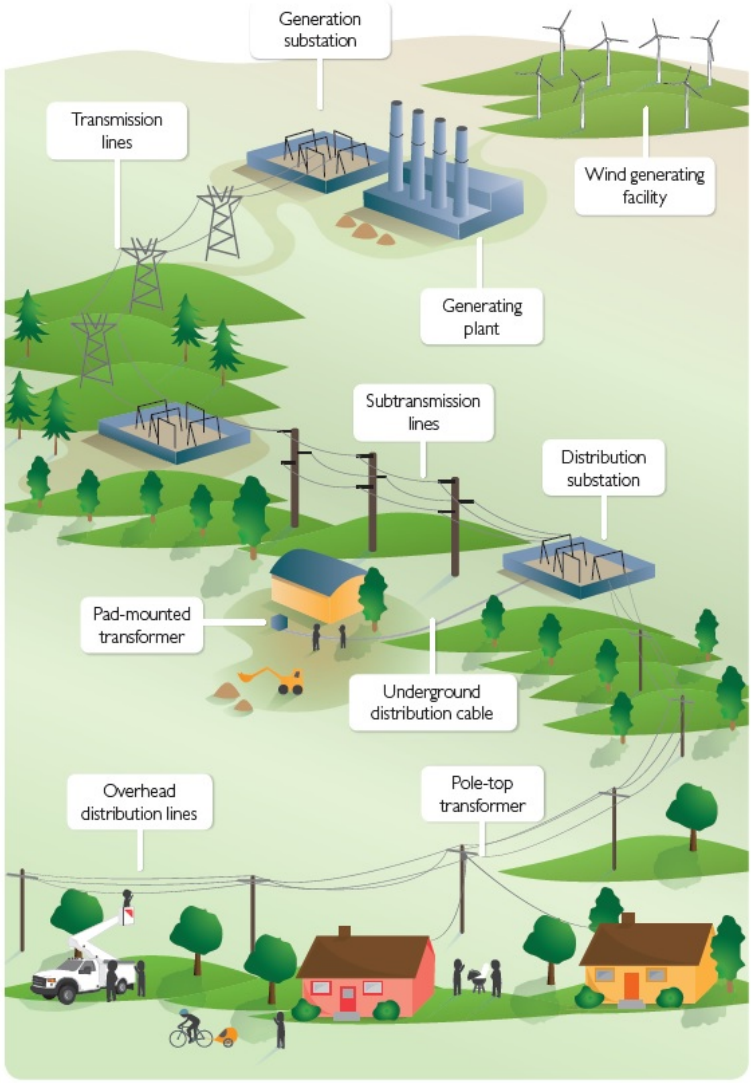


Service Territory

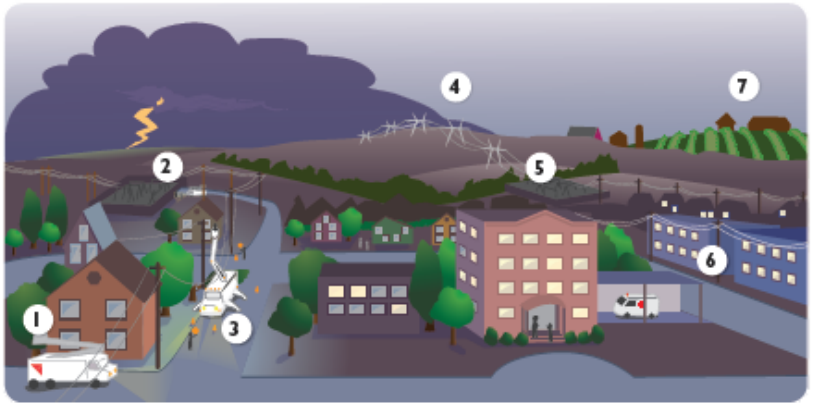


Delivering Reliable Electric Service

Power Delivery System



Restoring power



The drawing above depicts our priorities during an outage.

1. Dispatch crews and assess conditions for public and crew safety.
2. Patrol lines and check substations.
3. Clear downed power lines.
4. Restore power to the greatest number of people as quickly as possible through first clearing transmission lines that can serve multiple substations.
5. Restore power to substations that convert high-voltage power to levels people can safely use at home.
6. Restore power to concentrated areas through distribution and tap lines. Distribution lines travel from the substations to neighborhoods and serve between 1,000 and 3,000 customers. Tap lines then feed into pockets of 20 to 30 homes.
7. Restore power to individual (typically suburban or rural) homes and businesses. This task usually takes the longest.

Why are there Power Interruptions?

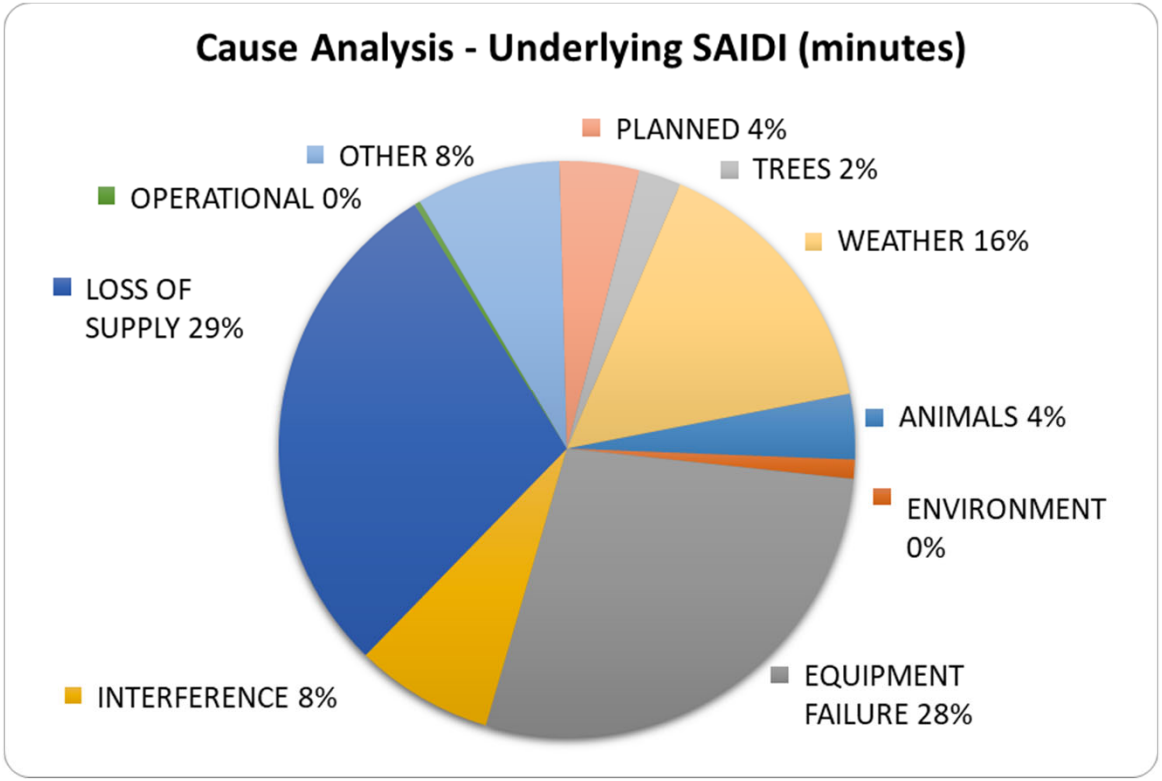
- Faults occur when unexpected objects contact the power lines or when equipment fails
- An outage is a designed response to a fault event. If the fuses or other protective devices didn't exist, the system would create bigger outages and pose safety risks
- When possible, we attempt to respond to certain faults by having equipment de-energize and then quickly re-energize, which may cause a short interruption in power, but avoids the time it takes for a crew to respond
- In other cases, a trouble-man or crew response will be required and the restoration time will vary depending on what work is required
- Normally, outages impact small numbers of customers, however sometimes these events can occur on the transmission system or in a substation and they will affect larger amounts of customers, as shown on the previous slide

Key Causes of Power Outages

- Weather and its effects: trees or branches knocked down by wind, snow or ice into power lines
- Lightning strikes a transformer or other electrical facilities
- Car accidents where utility poles are knocked over or sway enough to knock the lines together and trip off the circuit
- Equipment overload, especially on hot days when air conditioning is cranked up, or during extremely cold weather when electric heaters are turned on all over the system
- Animals that contact the lines
- Digging too close to lines or cutting into a line
- Sometimes the outage is a result of a circuit overload within your own home. Check your fuses and breakers first. If they continue to trip off, call a local electrician to handle the problem.

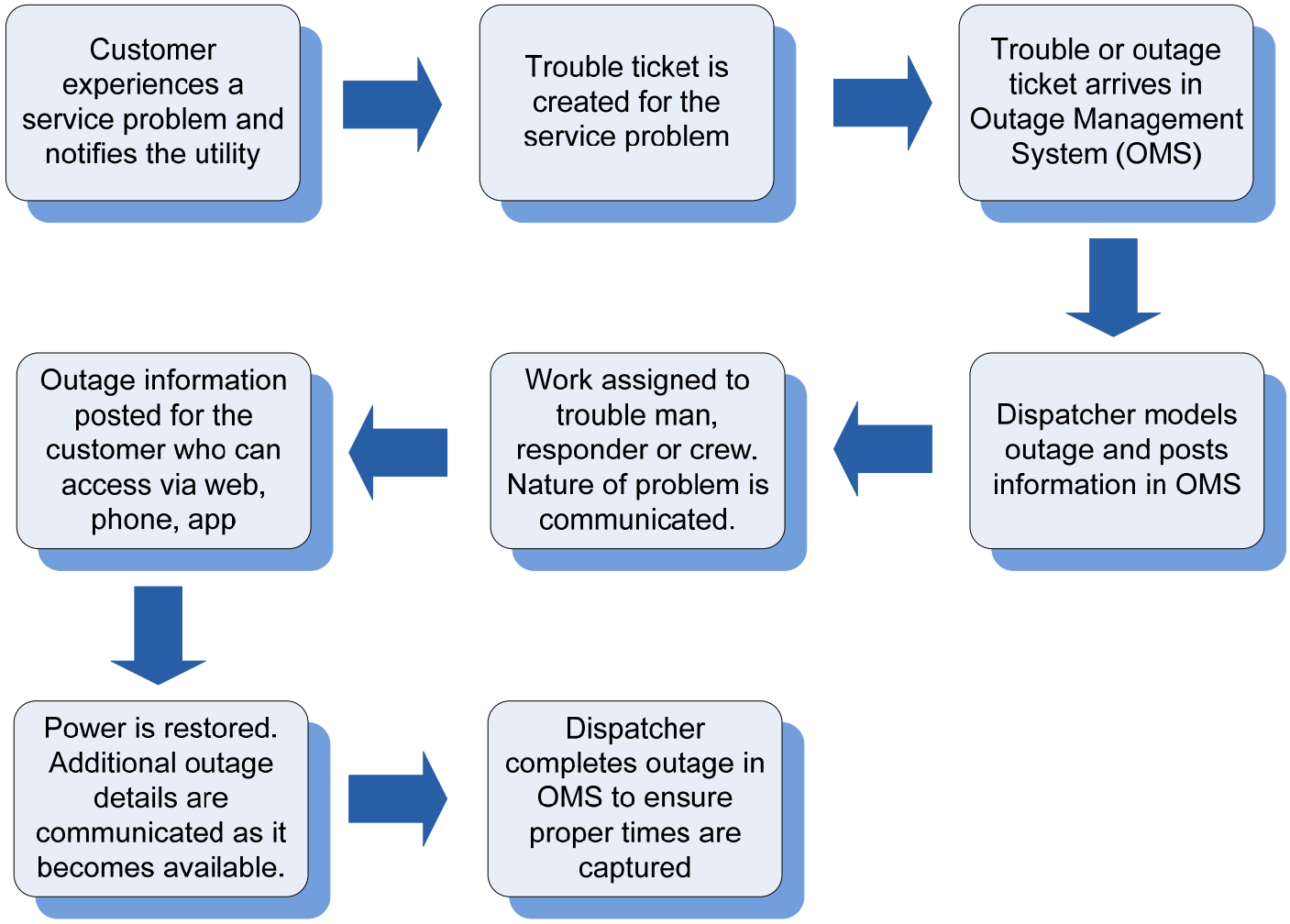
California Outages by Cause

2020



Customer and Company Communication Processes

Typical Outage Restoration Process



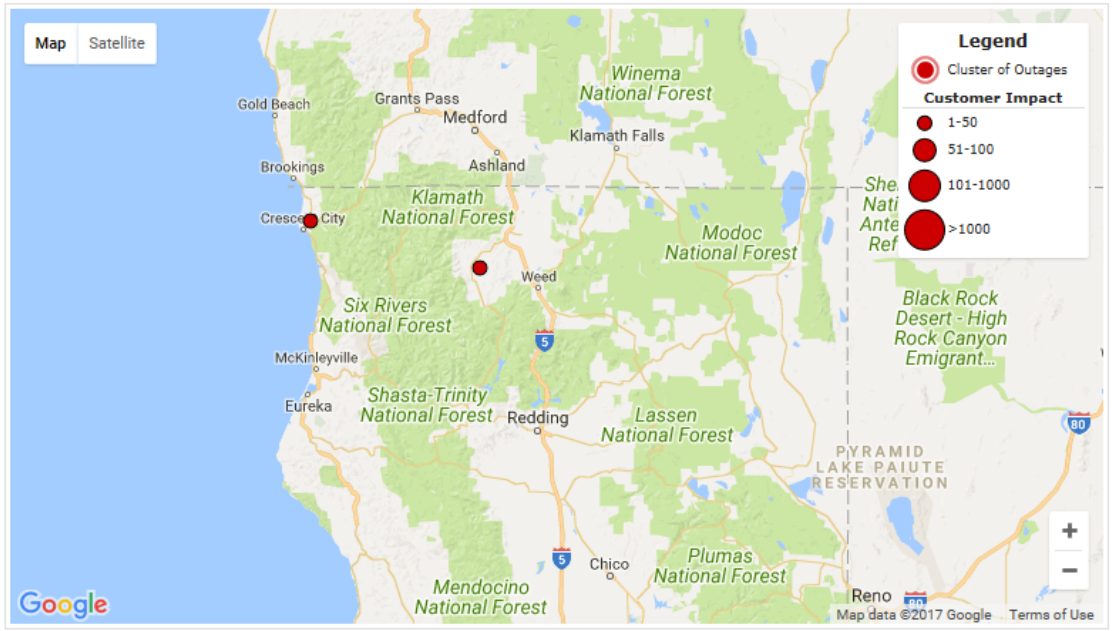
Outage Map on Smart Devices

https://www.pacificpower.net/outages-safety.html

California Outages Map

There are 3 outages in California affecting 3 customers.

Report an Outage | List of Outages

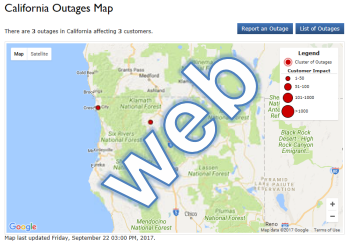


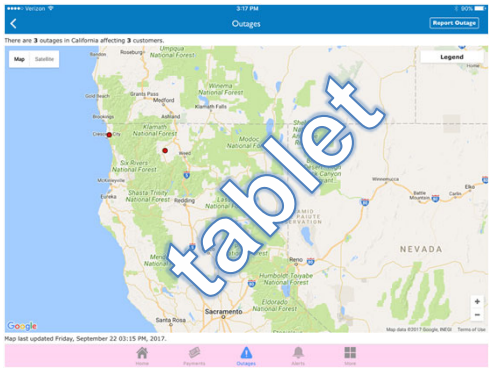
Map last updated Friday, September 22 03:00 PM, 2017.

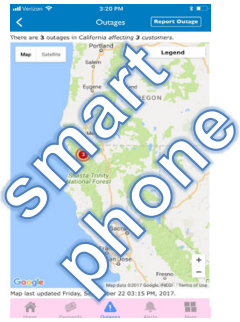
Outage locations generalized to protect customer privacy. Information is typically refreshed every 15 minutes. Understanding the map and estimated time of restoration.

Report Outages 24/7: 1-877-508-5088

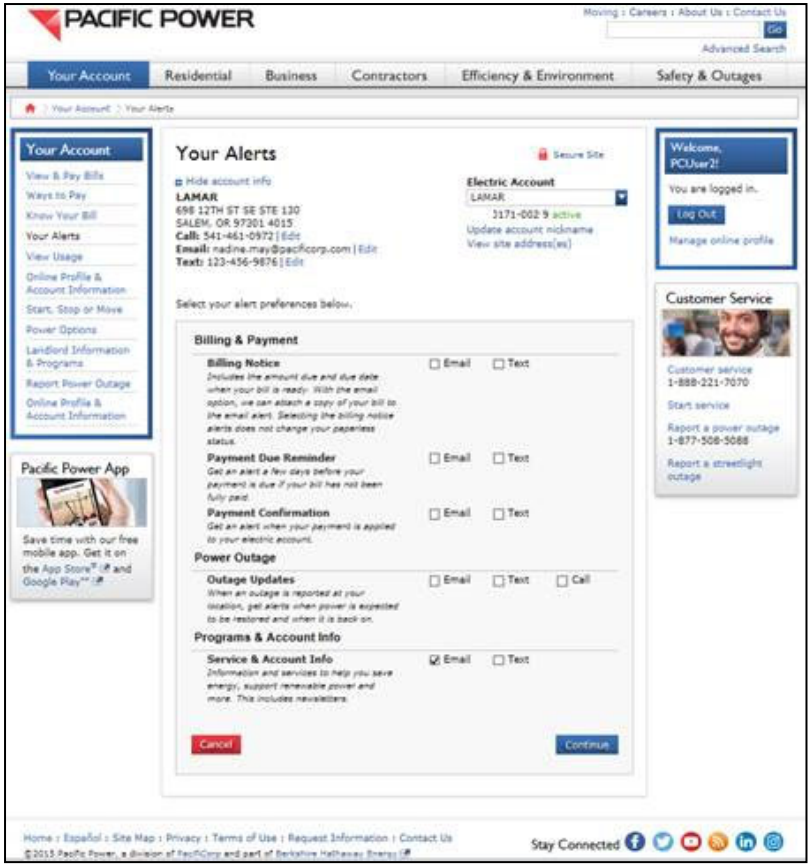
Storm Center: Check out our storm and safety information

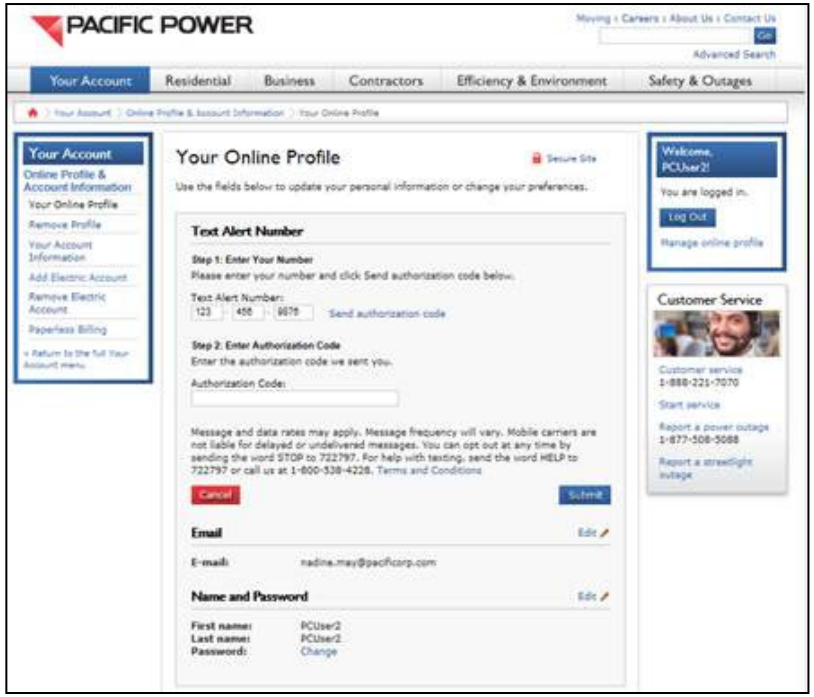






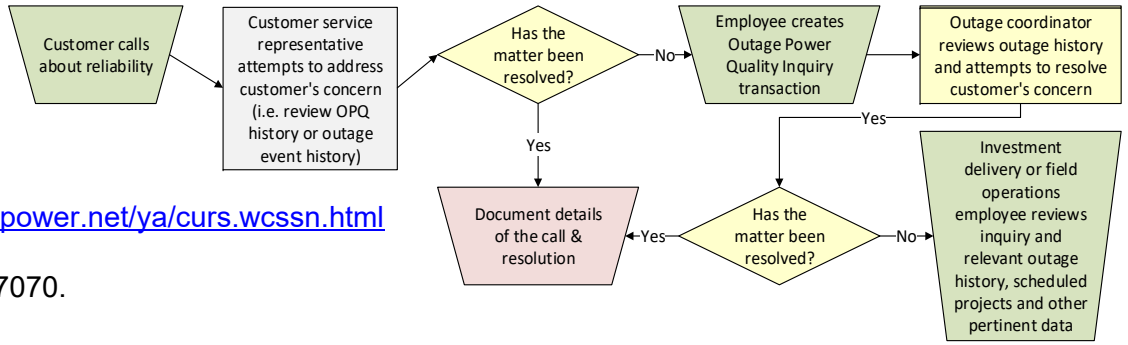
Outage Updates Your Way





Customer Reliability Communications

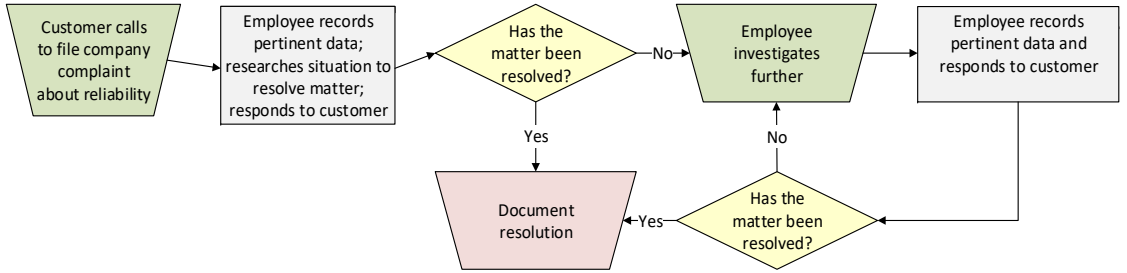
Outage Power Quality Inquiry



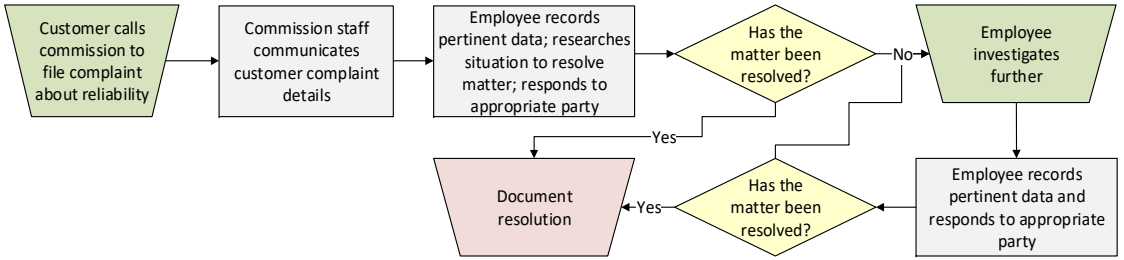
https://www.pacificpower.net/ya/curs.wcssn.html

Or call 1-888-221-7070.

1-800 Complaint



Commission Complaint



Measuring and Improving Reliability

Outage Classifications

The company classifies outages according to industry definitions, in Institute of Electrical and Electronics Engineers (IEEE) standards.

Momentary Outage

An outage less than 5 minutes in duration.

Sustained Outage

An outage equal to or greater than 5 minutes in duration.

Planned Outage

Outages which are customer or public official-requested or where the company has provided notice to the customer.

Major Event

A set of outages which occurred during a specific time and location and which combined, exceeds historically expected outage duration (SAIDI) for at least one day (as defined in IEEE 1366-2012)

Standard Reliability Measures

SAIDI - (system average interruption duration index)
The average duration summed for all sustained outages a customer experiences in a given time-frame.

SAIFI - (system average interruption frequency index)
The frequency of all sustained outages that the average customer experiences during a given time-frame.

CAIDI - (customer average interruption duration index)
The result of dividing the duration of the average customer's sustained outages by frequency of outages for that average customer. It represents the average duration of an outage.

MAIFIe - (momentary average interruption event frequency index)
The frequency of all momentary interruption events (< 5 minutes) that the average customer experiences during a given time-frame.

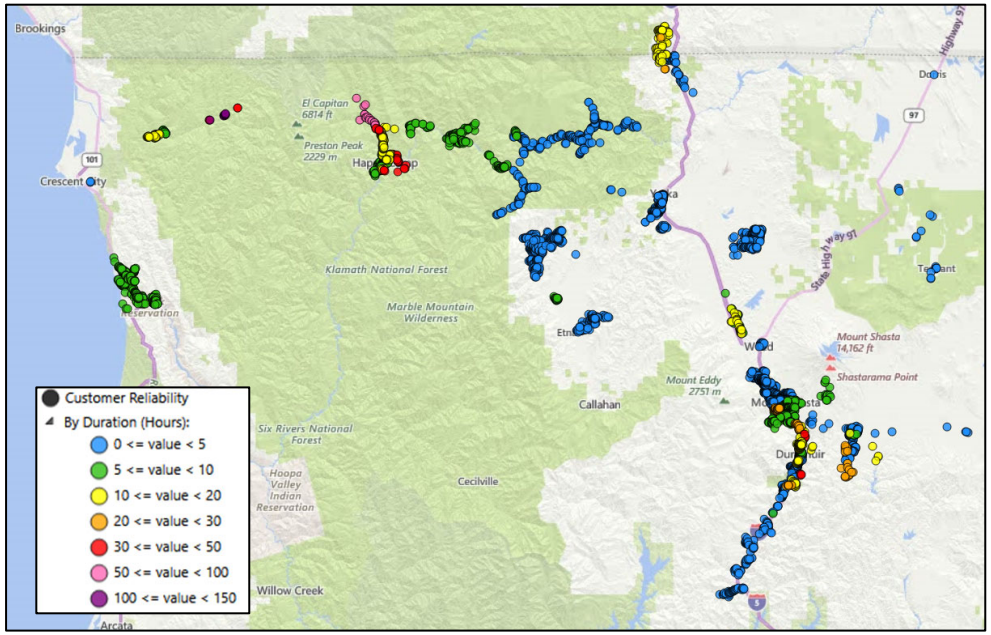
Major Events

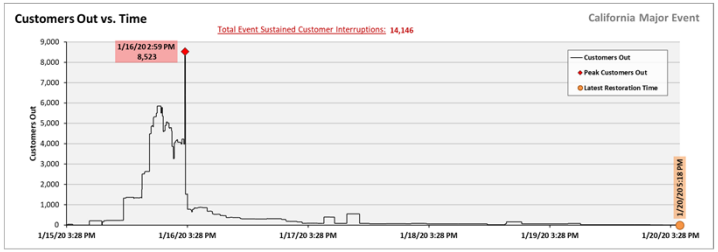
2020

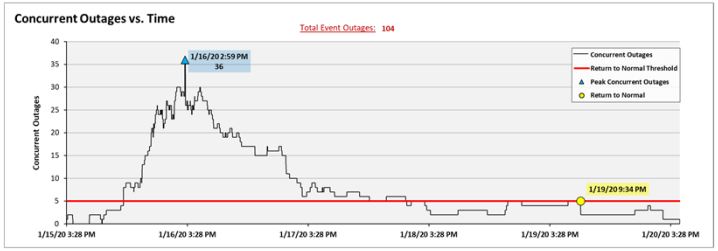
2020 Major Event Summary								
Date	District	Cause	Customers out for a duration of:					
			5 min - 3 hrs	3 - 24 hrs	24 - 48 hrs	48 - 72 hrs	72 - 96 hrs	96 + hrs
January 15-20, 2020	California (State)	Snow Storm	7,533	6,400	154	48	-	11
January 21, 2020	Crescent City	Loss of Transmission Line	3,339	352	-	-	-	-
August 5, 2020	Tulelake/Alturas	Loss of Transmission Line	922	298	-	-	-	-
August 15-16, 2020	Yreka/Mt Shasta	Loss of Transmission Line	6,407	722	-	-	-	-
September 8-17, 2020	California (State)	Wildfires	153	776	475	-	14	369

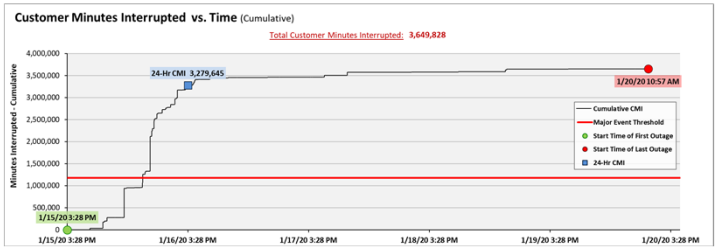
Major Event Example

January 15-20, 2020: Snowstorm









Outage Cause Impact During the Major Event		
Outage Cause	**Total Customer minutes lost**	**Total Customers Impacted**
B/O EQUIPMENT	3%	4%
OTHER	1%	0%
EMERGENCY DAMAGE REPAIR	3%	2%
LOSS OF TRANSMISSION LINE	57%	72%
TREE - NON-PREVENTABLE	16%	4%
Weather (Snow, Sleet, Wind)	20%	18%
Grand Total	**100%**	**100%**

Improving Reliability

- Reliability Work Includes:
  1) Installation or replacement of devices, such as fuses, recloser or breaker, that can limit how much of the circuit may be involved when a fault event occurs
  2) Replacement of equipment which may no longer be functioning in a reliable manner, as an example, replacing deteriorated underground cable
  3) Hardening the circuit so that it is more resilient to events which could result in a fault, such as targeted tree trimming or animal guarding
- Cost Effective Improvements

  1) evaluates performance across the system, and

  2) determines for historic outages what actions could be taken to either eliminate them or minimize the effect for the specific cause, then

  3) it calculates a cost per avoided customer minute interrupted, and

  4) rank orders the most impactful and lowest cost projects, then

  5) constructs the work and evaluates the effectiveness of the project.

History of Improving Reliability in California

Annually the company evaluates the system's performance and looks for opportunities to improve reliability based upon outage events; this assessment has led to these projects below.

Year	California Circuit Projects
2011	7
2012	7
2013	17
2014	5
2015	5
2016	12
2017	8
2018	12
2019	9
2020	5

Reliability Current Efforts

- Worst Performing Circuits

  We calculate a performance indicator value for each circuit that

  - considers how long the customers were without power (SAIDI),
  - how many times they have been interrupted for both sustained (SAIFI) and
  - short outages (MAIFI).

  This metric excludes outages which are Planned, Transmission or Major Events.

- Targeted Reliability Projects

  In addition, the company also selects other projects that are targeted to improve reliability, building on the success we've had with our reliability program

Improving Reliability

Three Selected Worst Performing Circuits

Top 3 Worst Performing Circuits			
Calendar Year 2021			
Circuit Name	**Crescent Ctr (5R160)**	**Nutglade (8G95)**	**Shastina (5G45)**
District	Crescent City	Yreka/Mt. Shasta	Yreka/Mt. Shasta
Customer Count	1,454	290	658
Substation Name	Northcrest	Nutglade	Weed
Circuit-Miles	57 miles	23 miles	48 miles
% UG	71%	64%	52%
% OH	29%	36%	48%
Work proposed	21	1	10
# Breaker/Recloser Operations	14	1	5
CPI99 Baseline	81	84	41
Preferred Baseline	**65**	**67**	**33**

Reliability Performance Measure

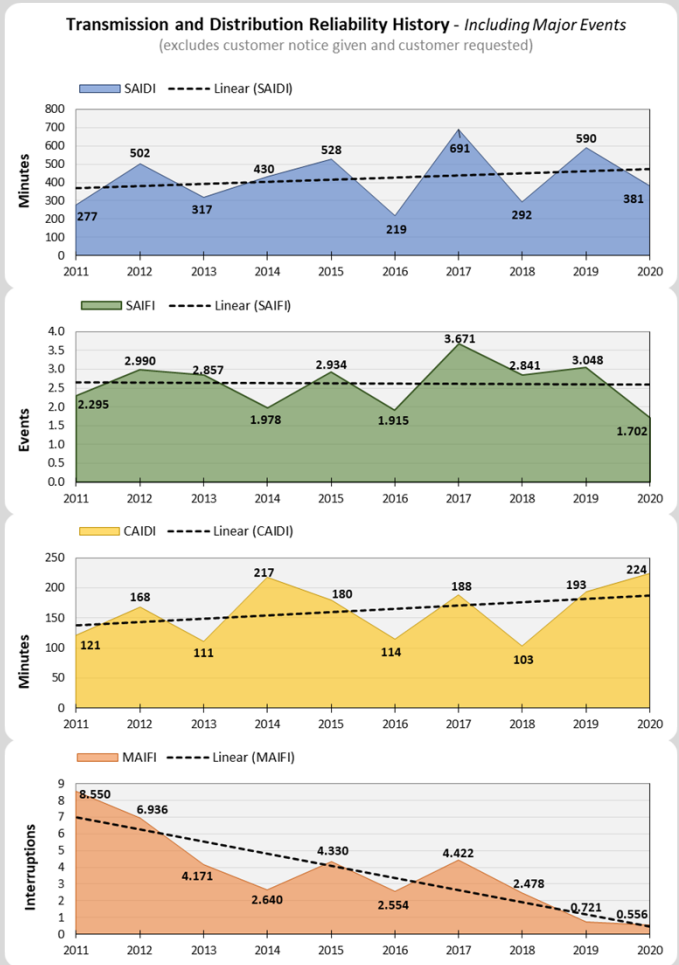
Target Performance Measure

State & District Performance

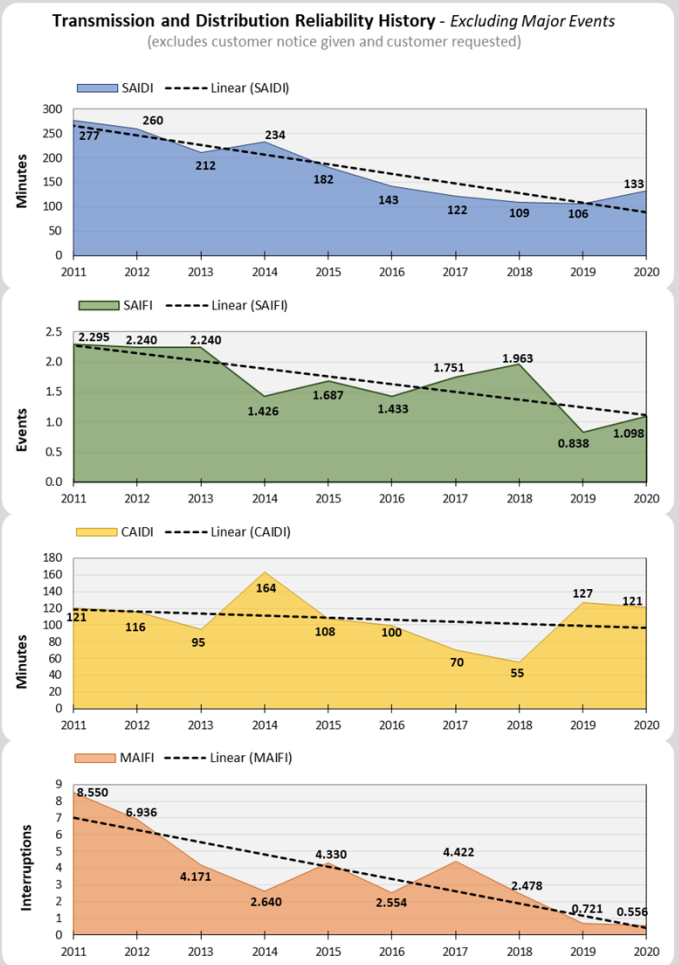
10 Year State Reliability Results

Combined - Transmission and Distribution

Including Major Events



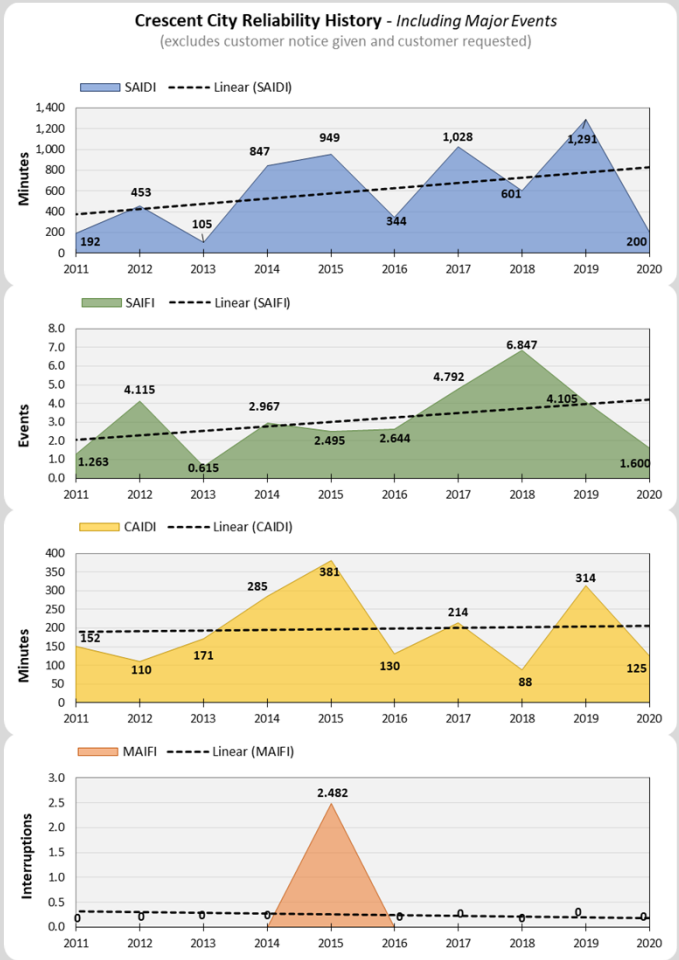
Excluding Major Events



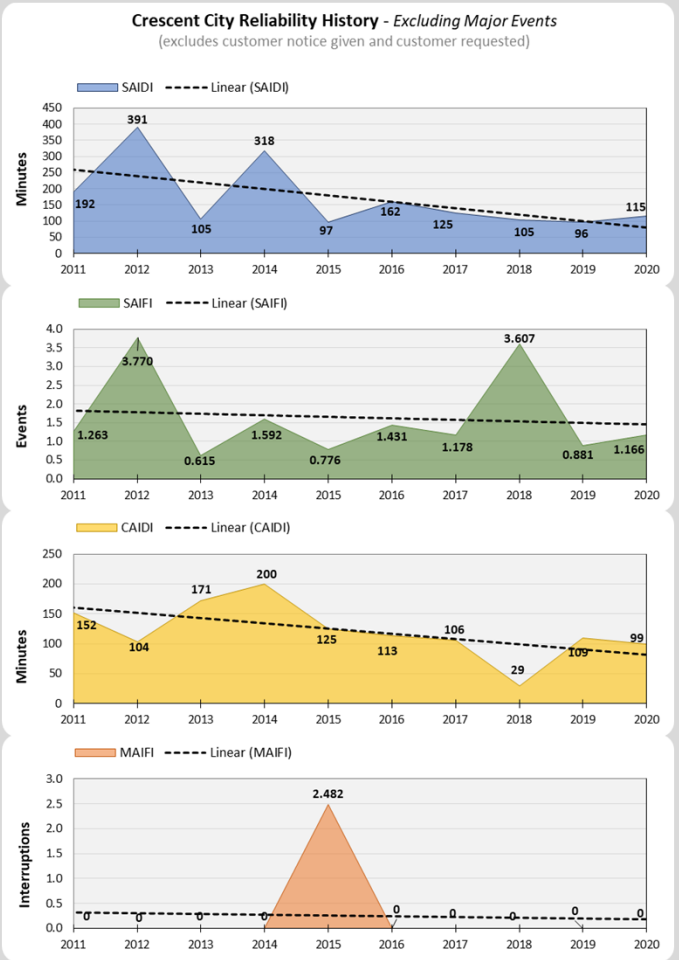
10 Year Crescent City Reliability Results

Combined - Transmission and Distribution

Including Major Events



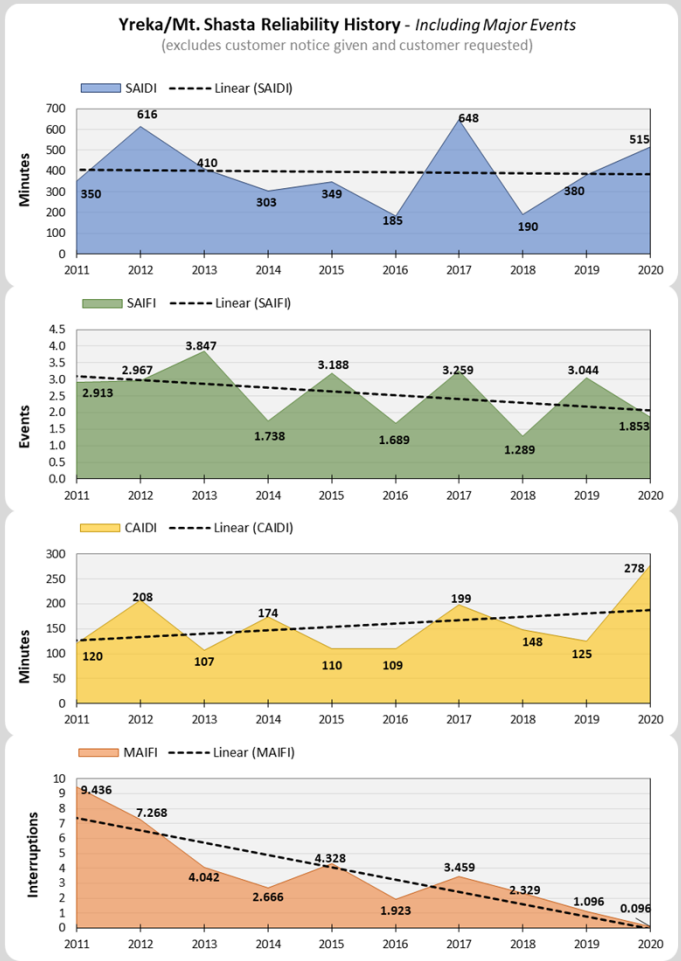
Excluding Major Events



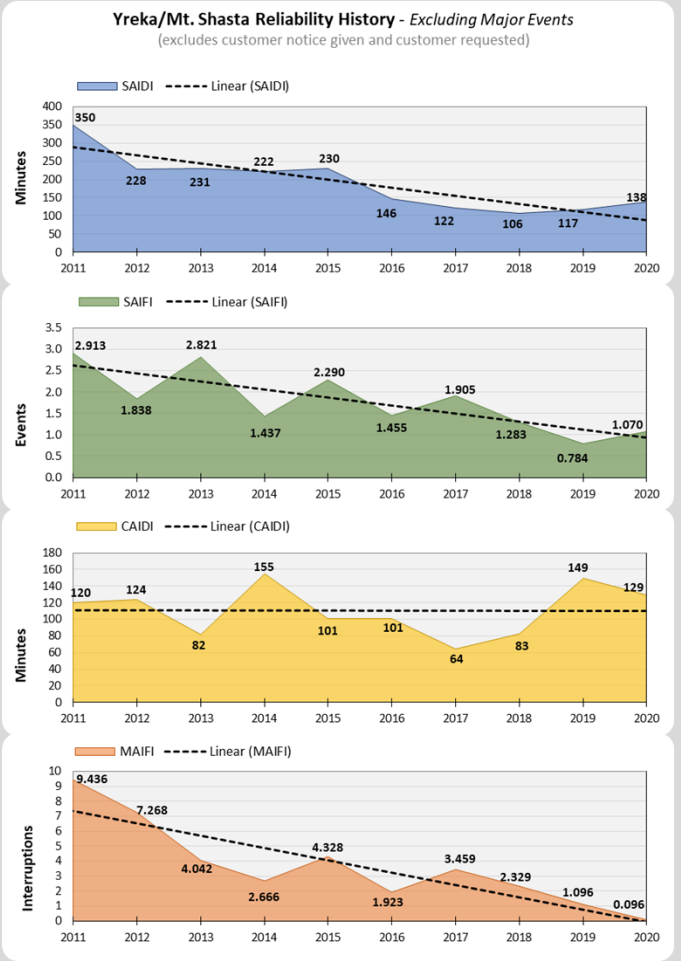
10 Year Yreka/Mt. Shasta Reliability Results

Combined - Transmission and Distribution

Including Major Events



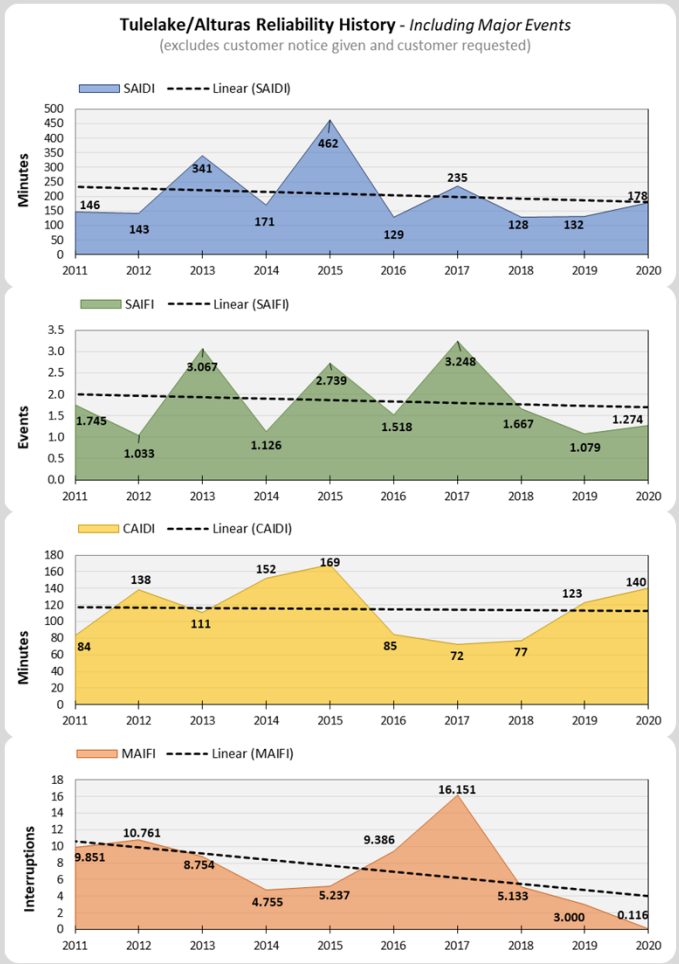
Excluding Major Events



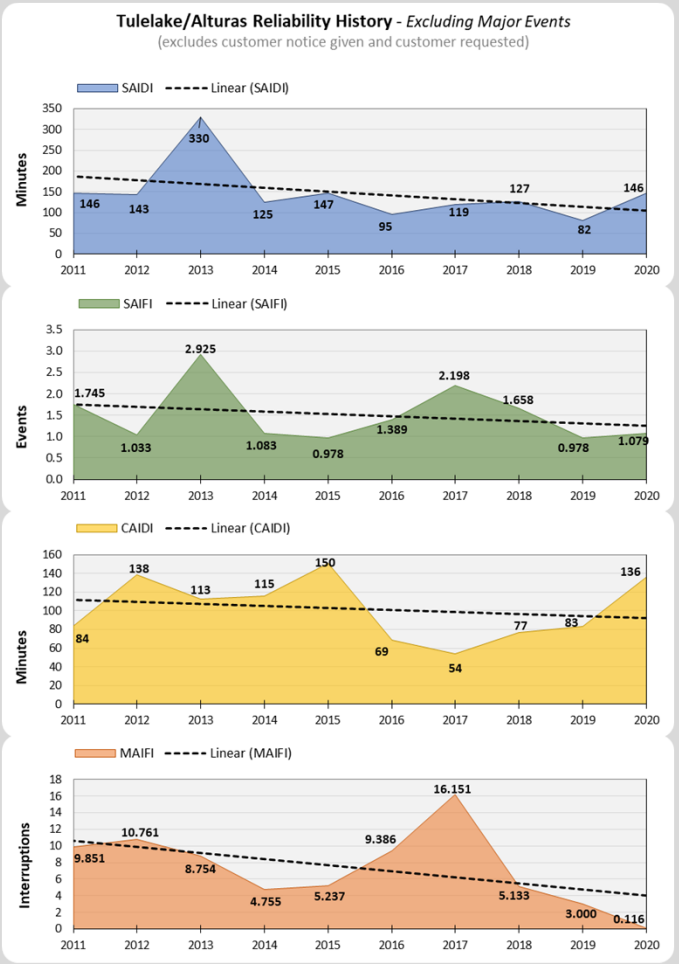
10 Year Tulelake/Alturas Reliability Results

Combined - Transmission and Distribution

Including Major Events



Excluding Major Events



Summary

- The company has made cost effective improvements in order to deliver higher reliability while minimizing cost impacts to customers
- We have shown demonstrated improvements as measured by industry indices
- We intend to continue to improve the service reliability you receive
- We welcome the opportunity to talk with customers about reliability
- Thank you for your attention!

Website Information

- Information on reliability and annual reports
  - https://www.pacificpower.net/outages-safety/reliability/california-reliability-report.html
- Real-time outage viewer and other outage information
  - https://www.pacificpower.net/outages-safety.html
- Contact us at
  - https://csapps.pacificpower.net/public/about/contact-us