

# Meeting Connection

In compliance with Commission Decision D.16-01-008, PacifiCorp has scheduled a public presentation to review the company's annual reliability report submitted to the Commission on July 14, 2023.

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

**Microsoft Teams meeting**

[Teams meeting online link](#)

**Or call in (audio only)**

[+1 563-275-5003](#)

Phone Conference ID: 271 116 352#

# Pacific Power's 2023 California Electric Reliability Report February 21, 2024



# Introduction & Welcome

*Kevin Benson: PacifiCorp Director of Asset Risk*

# Proudly Serving Northern California



## Service area

- Number of customers in the state: 45,700

## Line miles

- Transmission, all states: 17,771
- Distribution, all states: 65,812

## Number of employees

- 50 employees

## California grants and charitable donations in 2023

- Corporate: \$22,500
- Pacific Power Foundation: \$27,500

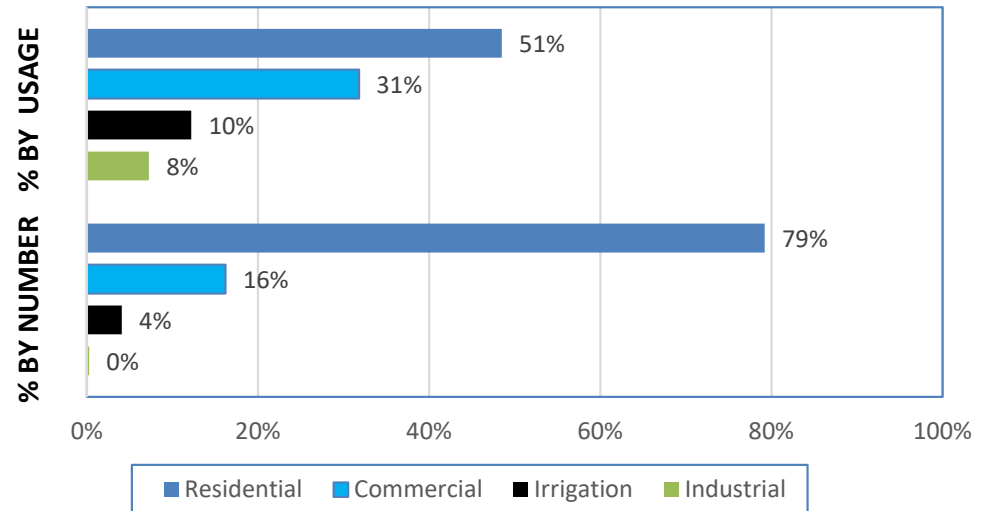
## California property taxes and fees paid for 2023-24 tax

- Franchise Tax: \$1,385,786
- Property Tax: \$4,532,523

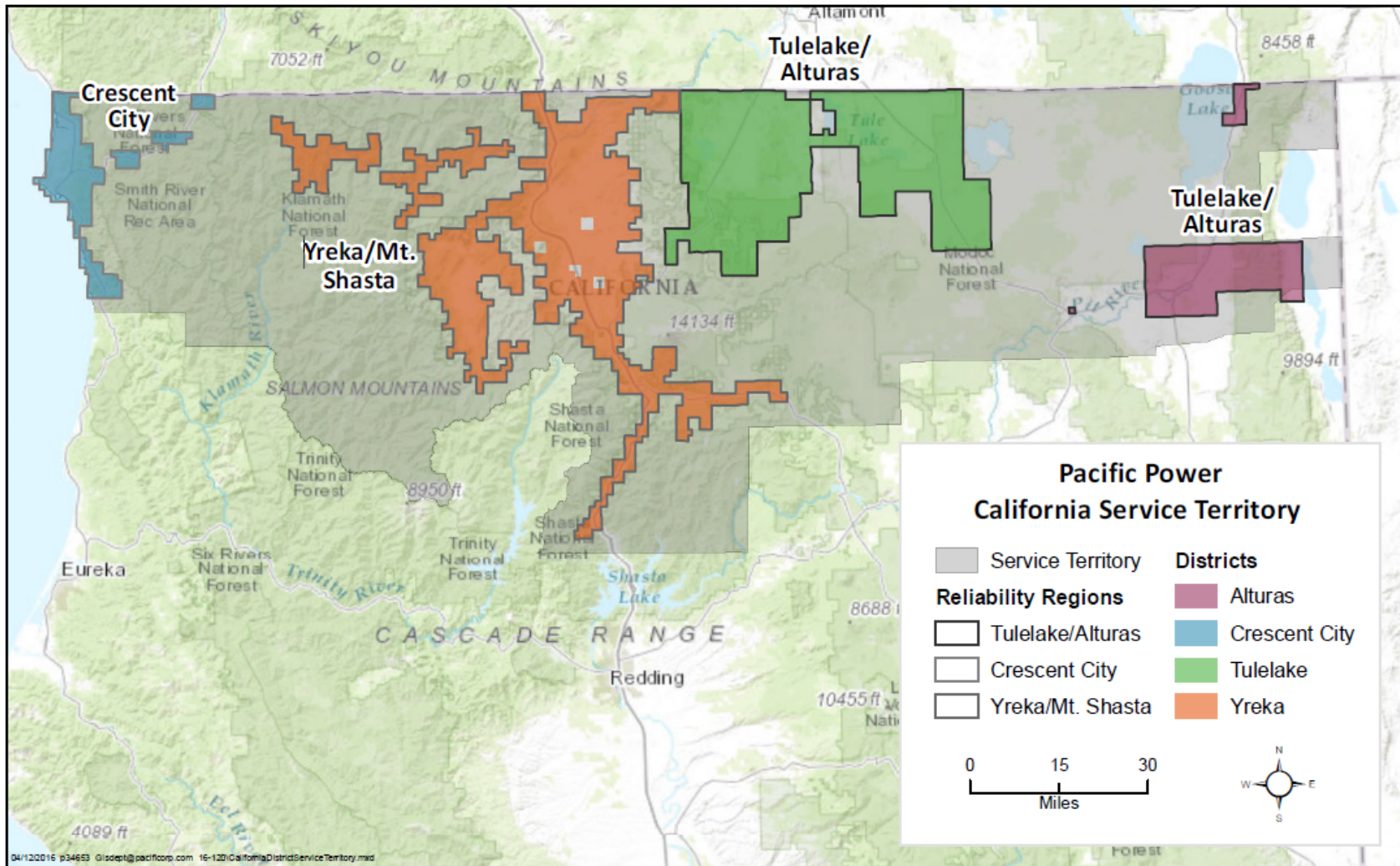
# Proudly Serving Northern California



California customer mix by percentage



# Service Territory



# 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.

# Focused on a Bright Energy Future

- Our 2023 Integrated Resource Plan identifies demand-side resources, renewable energy, storage and nuclear all with a goal of reduced carbon emissions consistent with state targets.
- See more at [PacifiCorp.com/IRP](https://PacifiCorp.com/IRP)



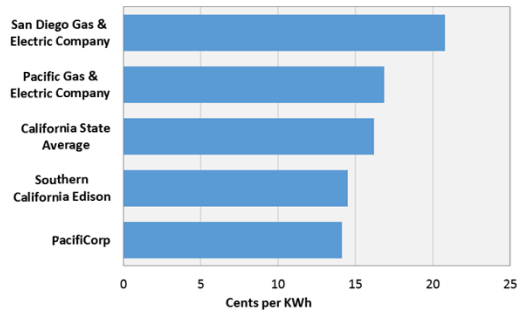
# Planning for Improved Wildfire Resilience

Since 2019 PacifiCorp has been developing and implementing its Wildfire Mitigation Plan by:

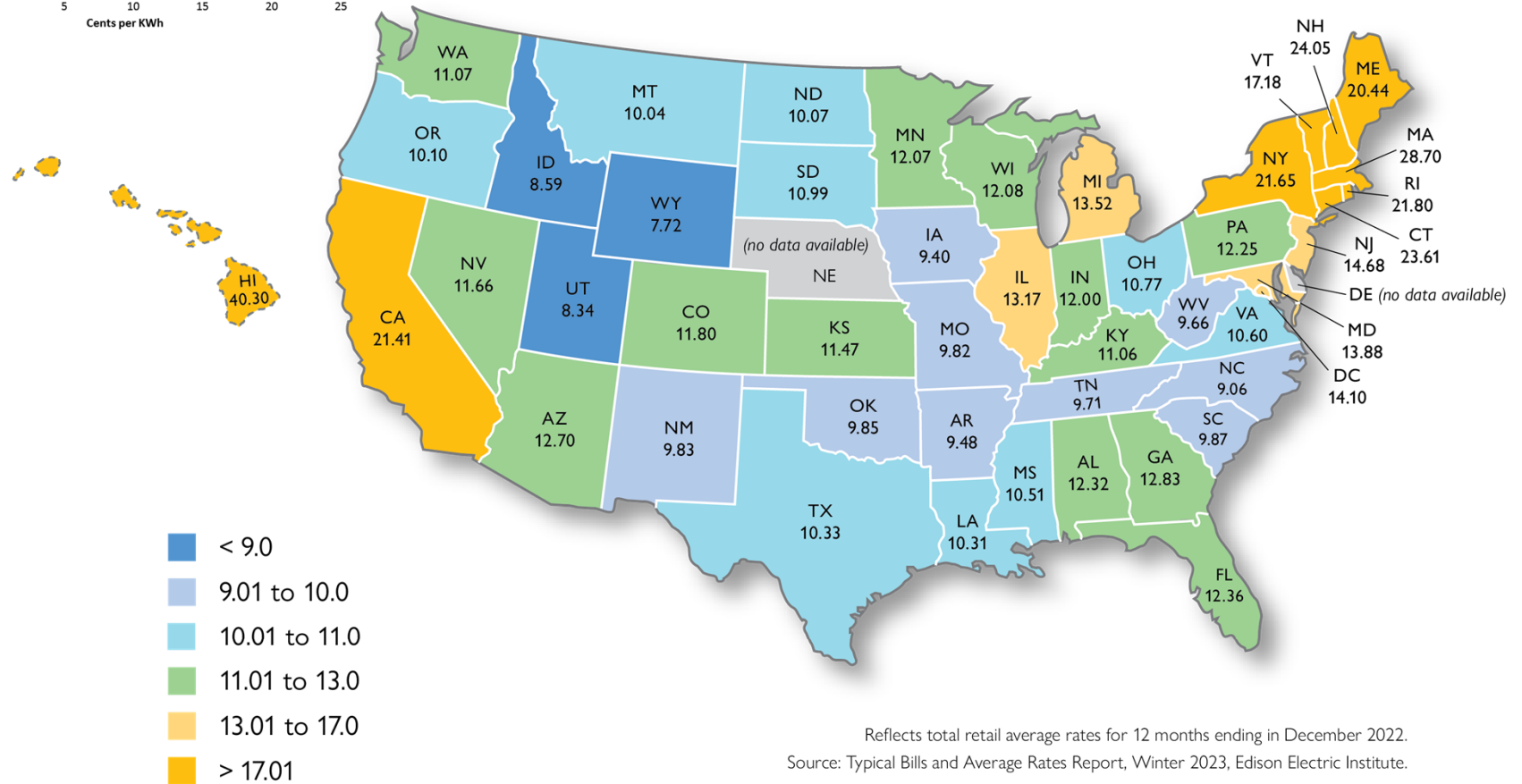
- Changing operational practices during periods of high risk.
- Augmenting its emergency, meteorology and operational teams for real-time response, including enhanced situational awareness.
- Enhanced inspection, correction and vegetation management actions.
- Hardening facilities for wildfire risk, including new protection control equipment and covered conductor.
- More at [PacificPower.net/Ready](https://www.pacificpower.net/Ready)

# US Energy Prices

California Total Retail Average Rates by Company



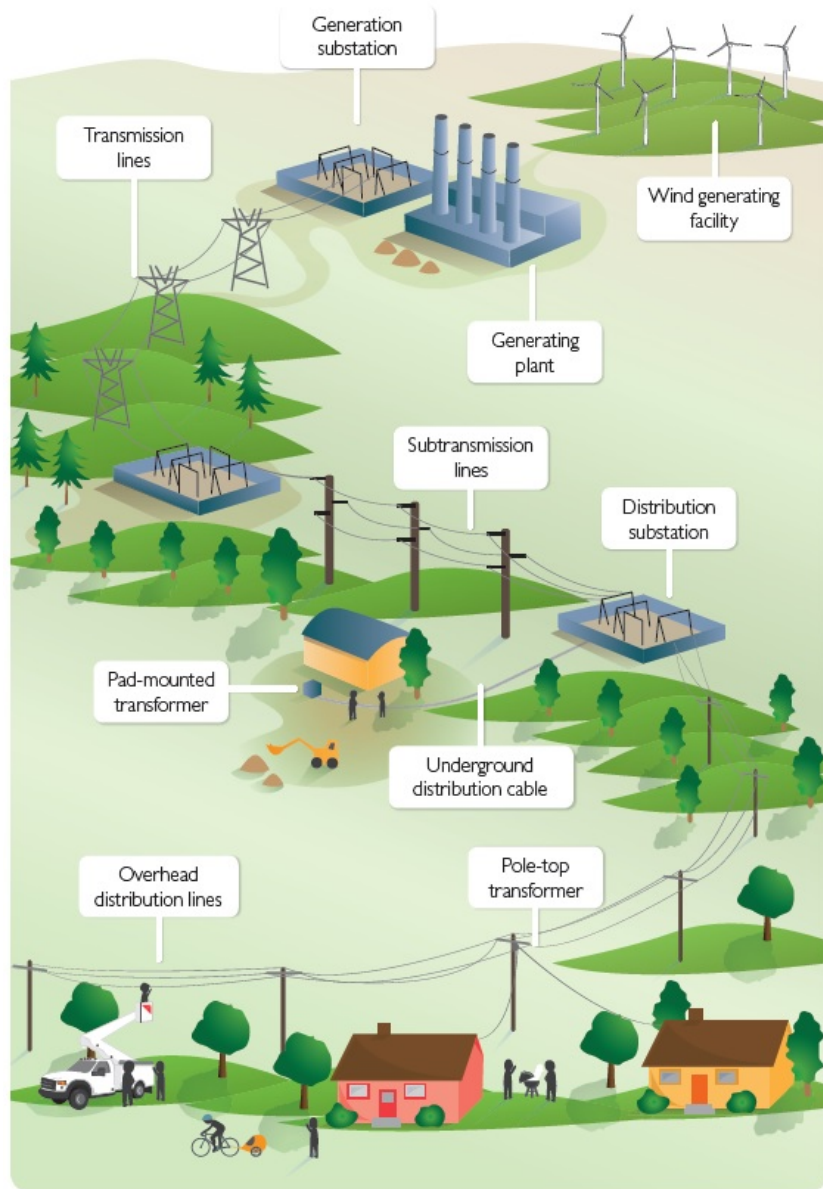
Total retail average rates by state  
(cents per kilowatt-hour)



Reflects total retail average rates for 12 months ending in December 2022.  
Source: Typical Bills and Average Rates Report, Winter 2023, Edison Electric Institute.

# 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?

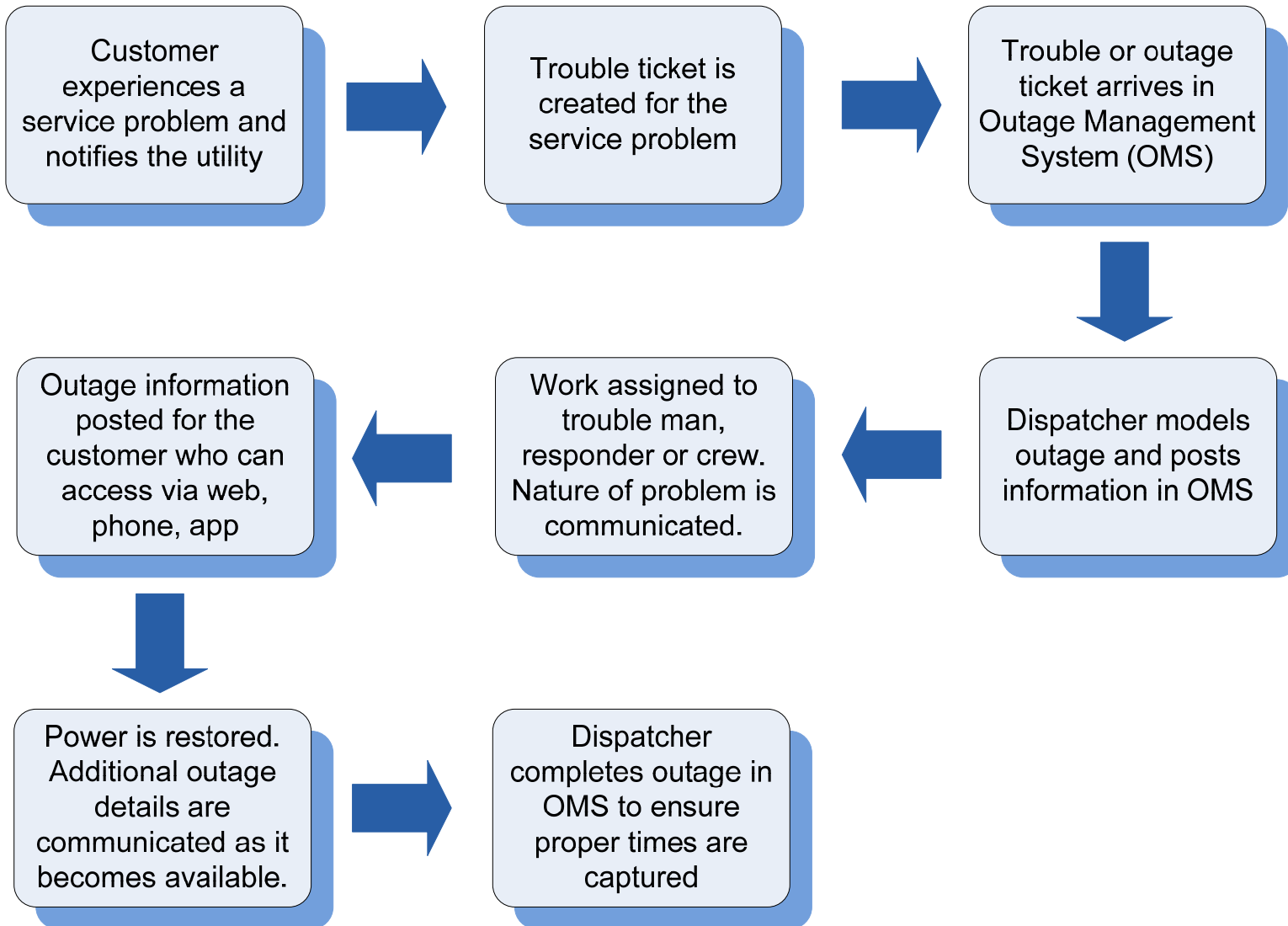
- Faults occur when unexpected objects contact the power lines or when equipment fails.
- An outage is a designed response to a fault event. If the fuses or other protective devices didn't exist, the system would create bigger outages and pose safety risks.
- When possible, we attempt to respond to certain faults by having equipment de-energize and then quickly re-energize, which may cause a short service interruption, 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.

# Customer and Company Communication Processes

# Typical Outage Restoration Process

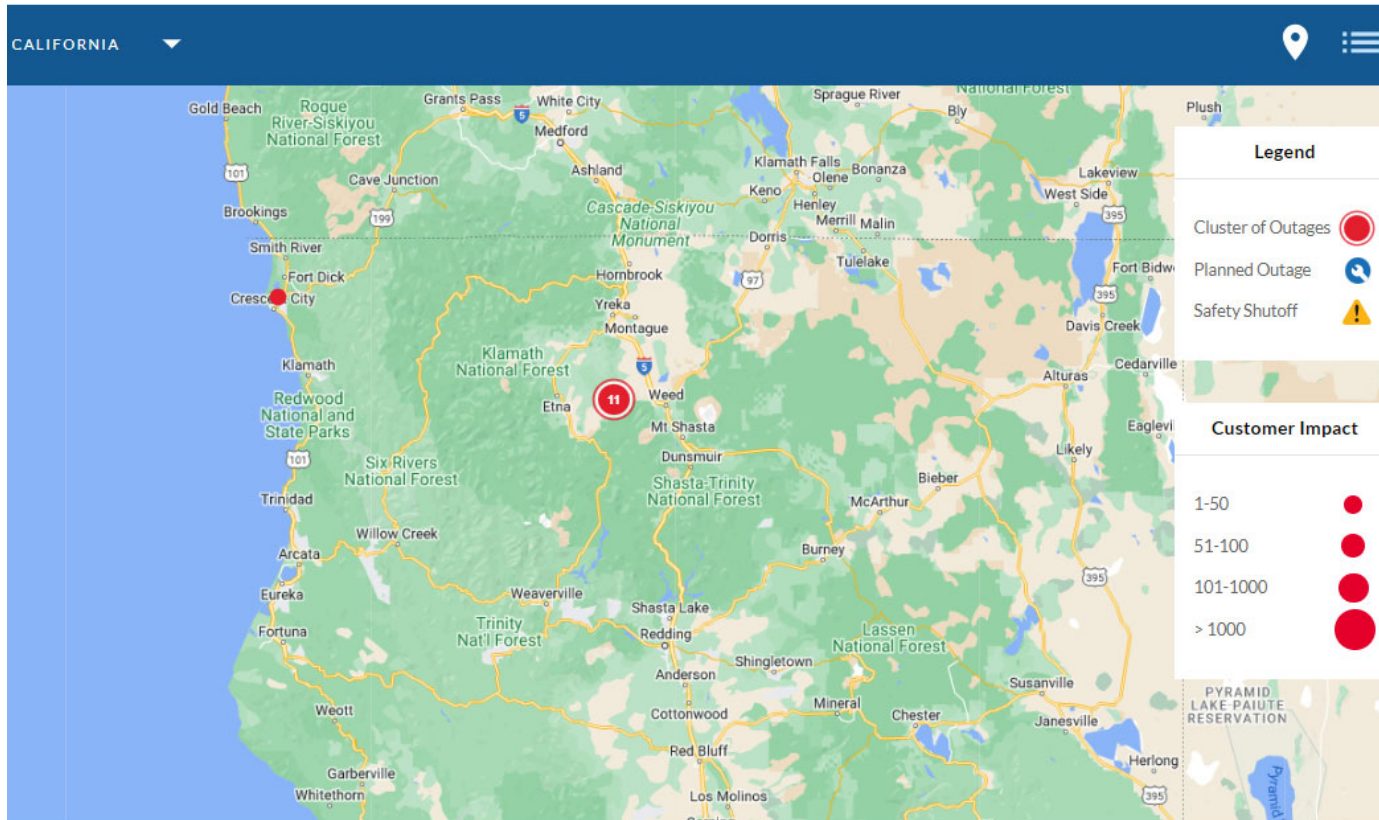




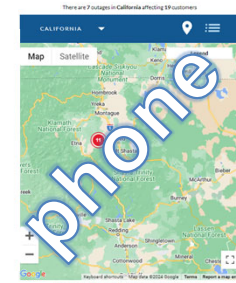
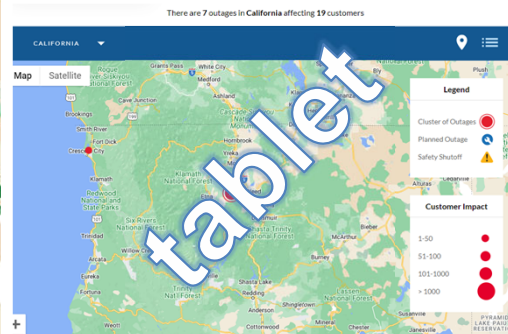
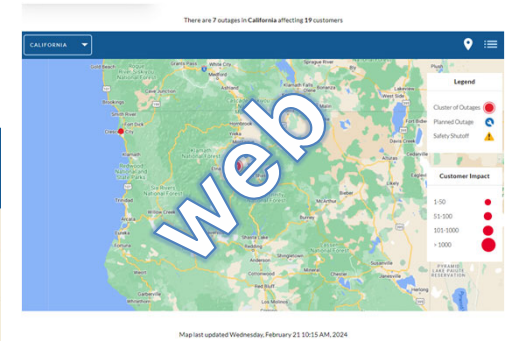
# Outage Map on All Devices

[PacificPower.net/Outage](https://PacificPower.net/Outage)

There are 7 outages in California affecting 19 customers



Map last updated Wednesday, February 21 10:15 AM, 2024

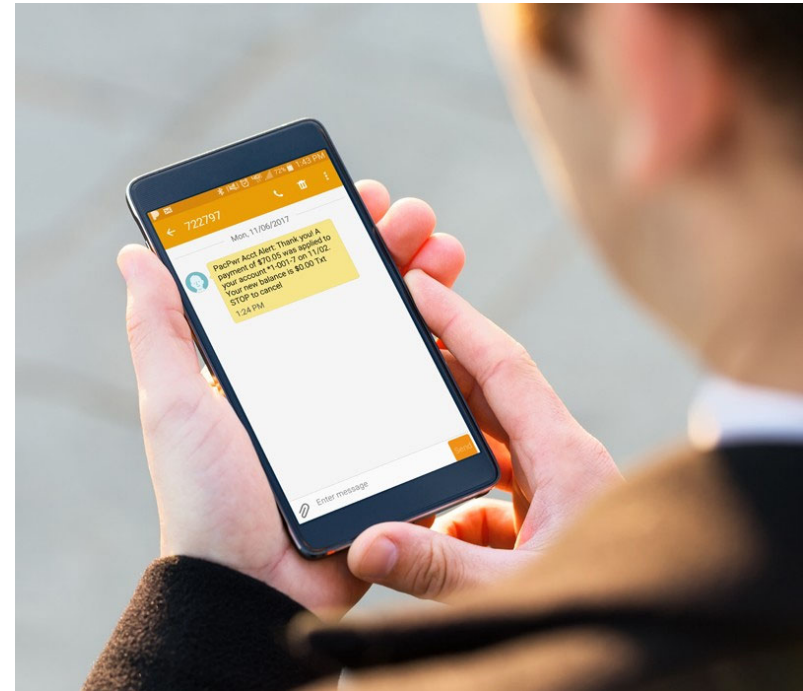


# Outage Updates Your Way

Receive alerts to stay informed of outages that affect you. Sign up for alerts by text, email or phone at [PacificPower.net/Alerts](http://PacificPower.net/Alerts)

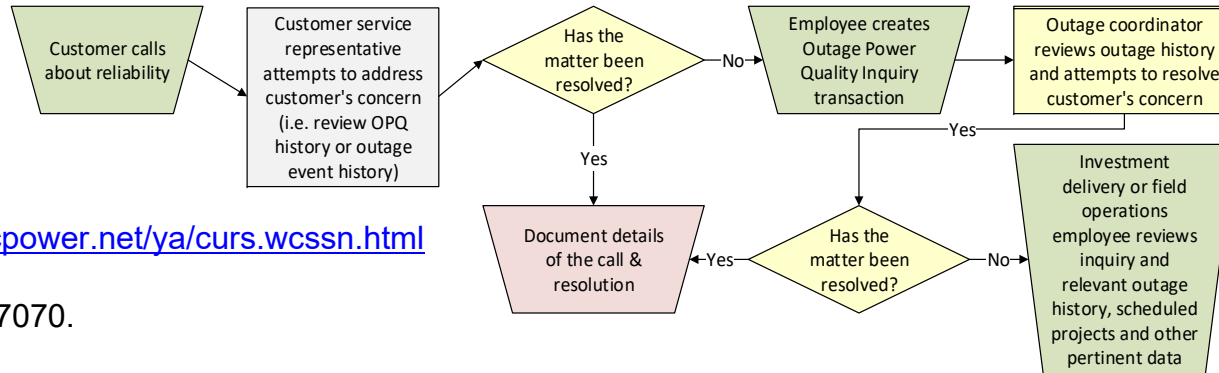
Use our Pacific Power mobile app to track outages, update your contact info and more.

Text OUT to 722797 to report your outage or STAT to check status.



# Customer Reliability Communications

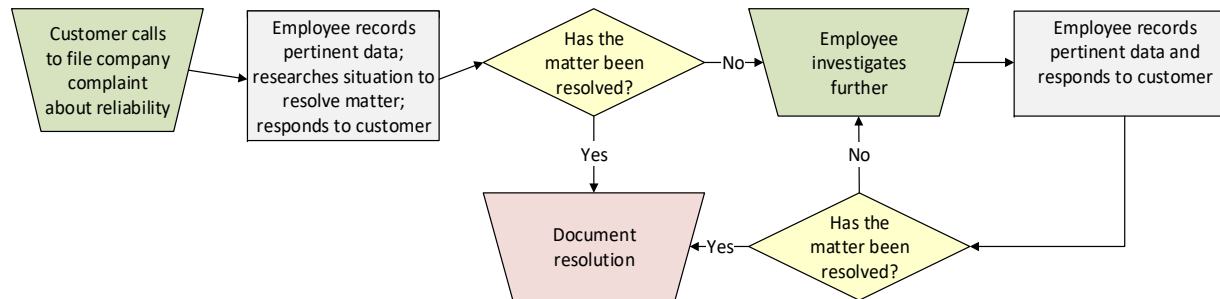
## Outage Power Quality Inquiry



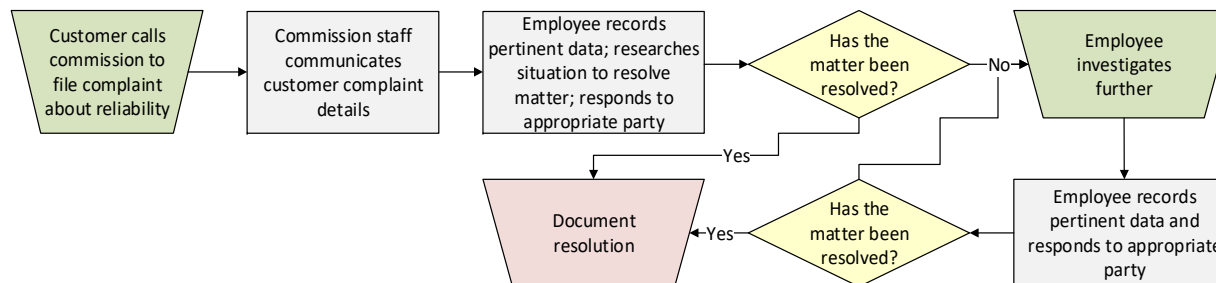
<https://www.pacificpower.net/ya/curs.wcssn.html>

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, once 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

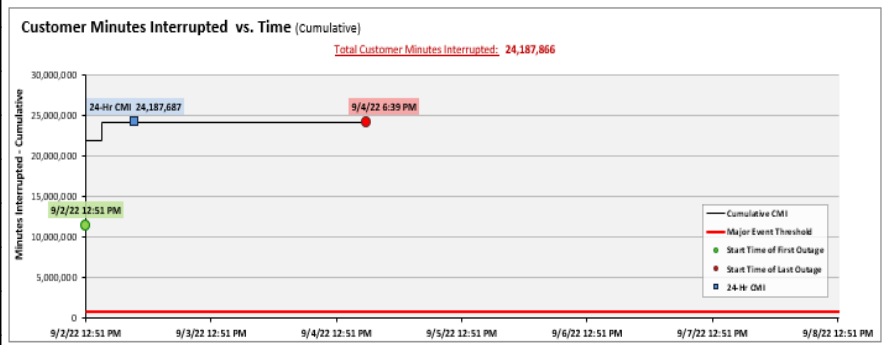
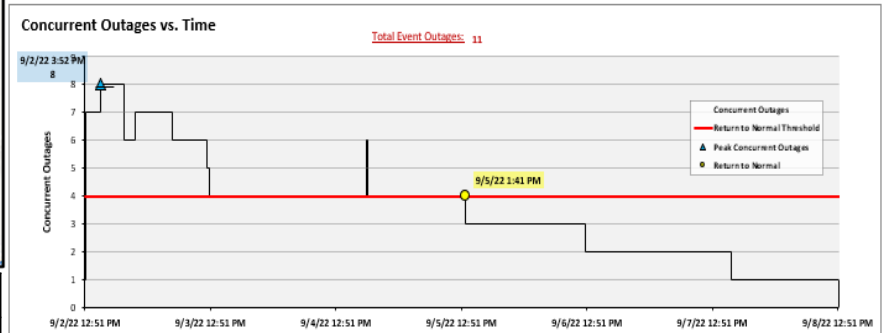
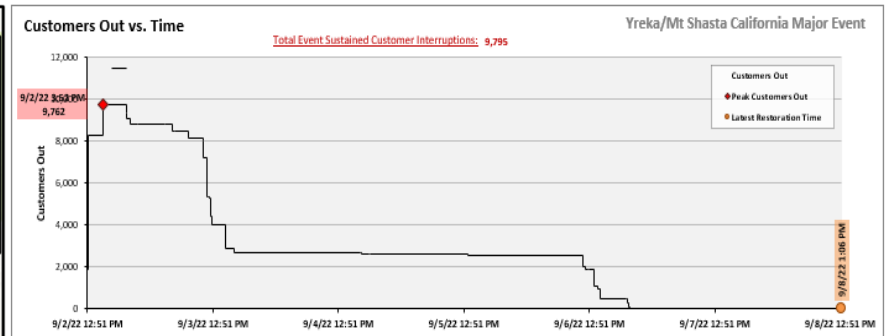
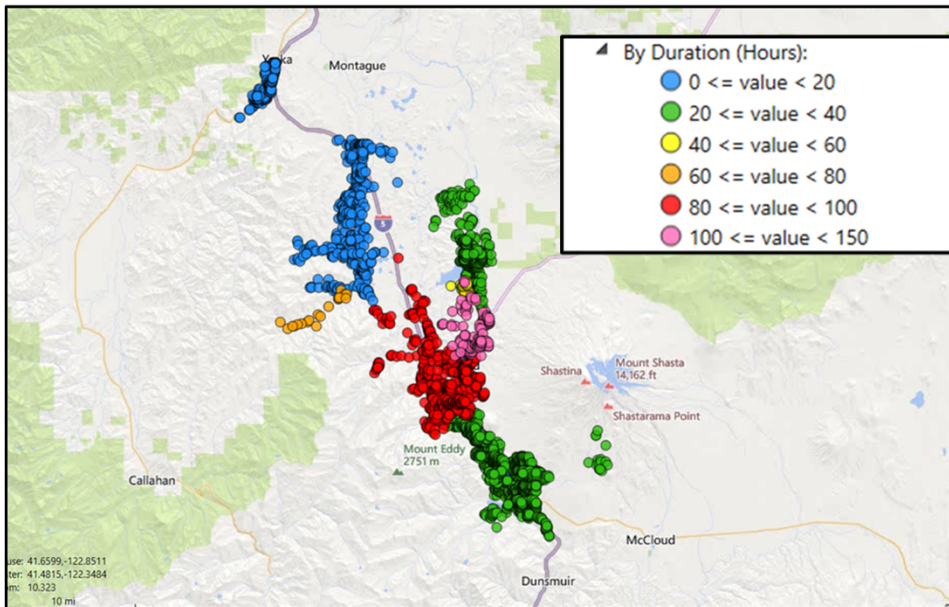
2022 Major Event Summary

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.
March 12, 2022	California (State)	Loss of Transmission Line	14,150	10,870	-	-	-	-
April 10-11 2022	Crescent City	Loss of Transmission Line	10,455	-	-	-	-	-
July 29, 2022	Yreka/Mt Shasta	Environment - Fire/Smoke (Not due to faults)	413	352	342	342	342	342
August 8, 2022	Yreka/Mt Shasta	Loss of Transmission Line	3,567	2,127	-	-	-	-
September 2, 2022	Yreka/Mt Shasta	Environment - Fire/Smoke (Not due to faults)	9,795	9,786	2,884	2,684	2,588	1,912
October 20, 2022	Crescent City	Loss of Substation	12,851	-	-	-	-	-
December 10, 2022	California (State)	Loss of Transmission line and Damaged Equipment	22,102	4,554	14	-	-	-



# Major Event Example

September 2, 2022: Environment – Fire/Smoke (Not due to faults)



Outage Cause Impact During the Major Event

Outage Cause	Total Customer minutes lost	Total Customers Impacted
EMERGENCY DAMAGE REPAIR	1%	7%
EQUIPMENT FAILURE	1%	3%
LOSS OF TRANSMISSION LINE	29%	22%
OTHER	7%	11%
TREE - NON-PREVENTABLE	31%	28%
TREE - TRIMMABLE	2%	1%
WEATHER (SNOW, SLEET, WIND)	29%	28%
<b>Grand Total</b>	<b>100%</b>	<b>100%</b>



# 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.

Year	California Circuit Projects
2012	7
2013	17
2014	5
2015	5
2016	12
2017	8
2018	12
2019	9
2020	5
2021	3
2022	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			
Circuit Name	Mill (5L62)	South (5G31)	East (5L82)
District	Tulelake	Yreka/Mt. Shasta	Tulelake
Customer Count	106	258	455
Substation Name	Dorris	Montague	Tulelake
Circuit-Miles	59 miles	29 miles	95 miles
% OH	98%	85%	99.8%
% UG	2%	15%	0.2%
# Breaker/Recloser Operations	0	6	191
CPI99 Baseline	122	90	78
Preferred Baseline	98	72	62

Reliability Performance Measure

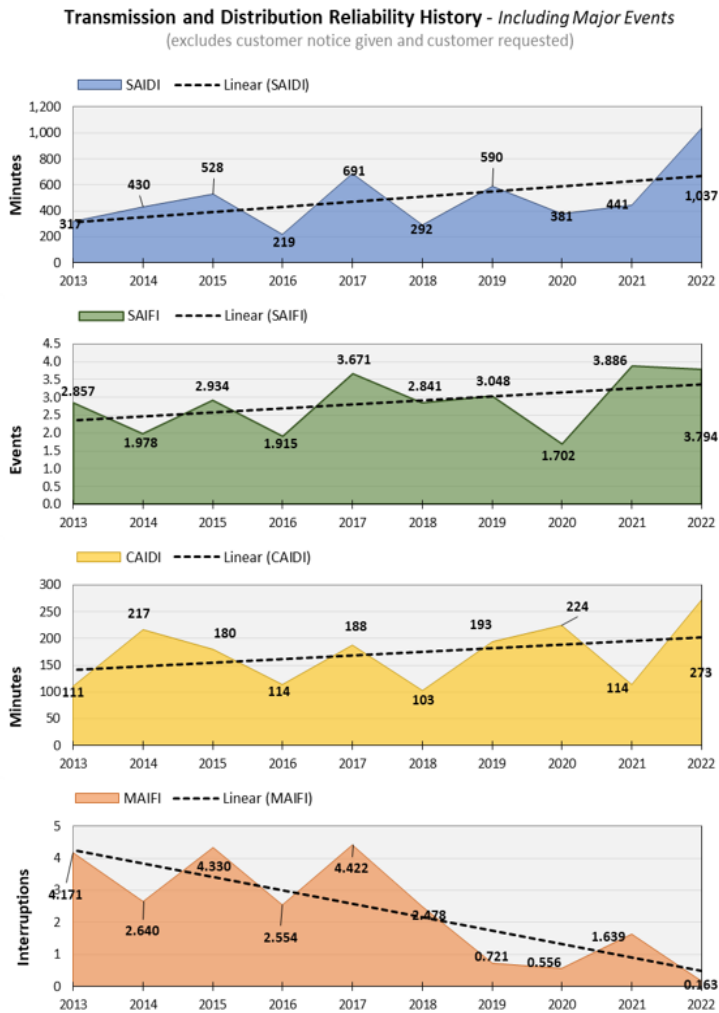
Target Performance Measure

# State & District Performance

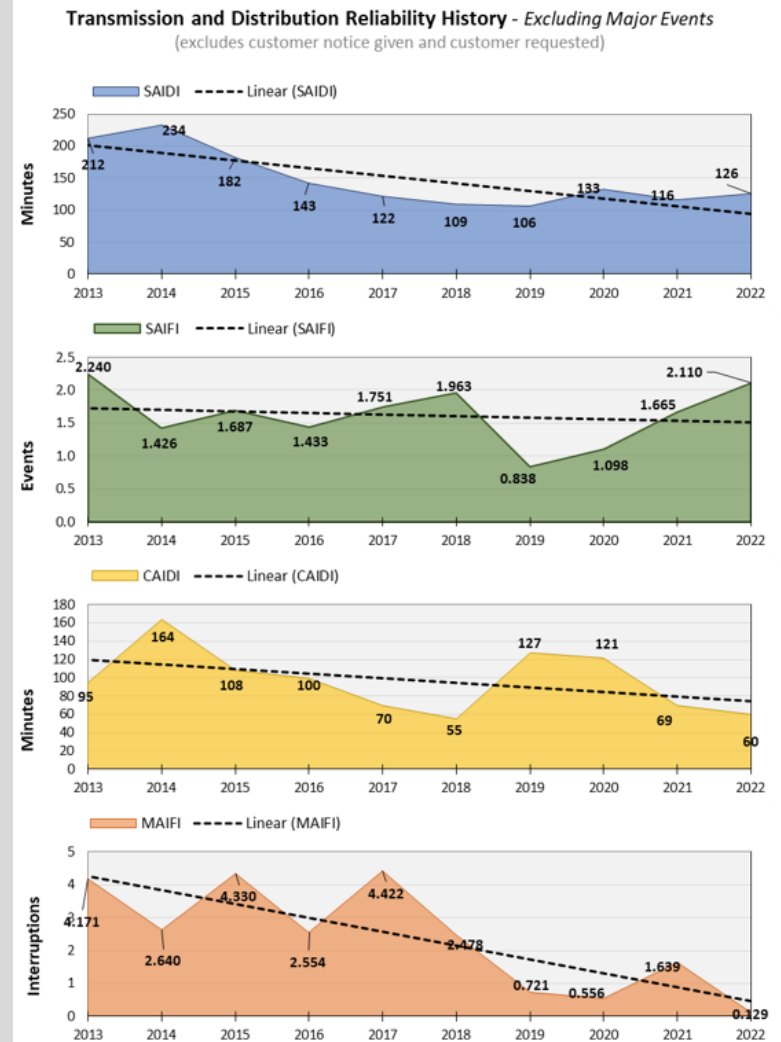
# 10 Year State Reliability Results

## Combined - Transmission and Distribution

Including Major Events



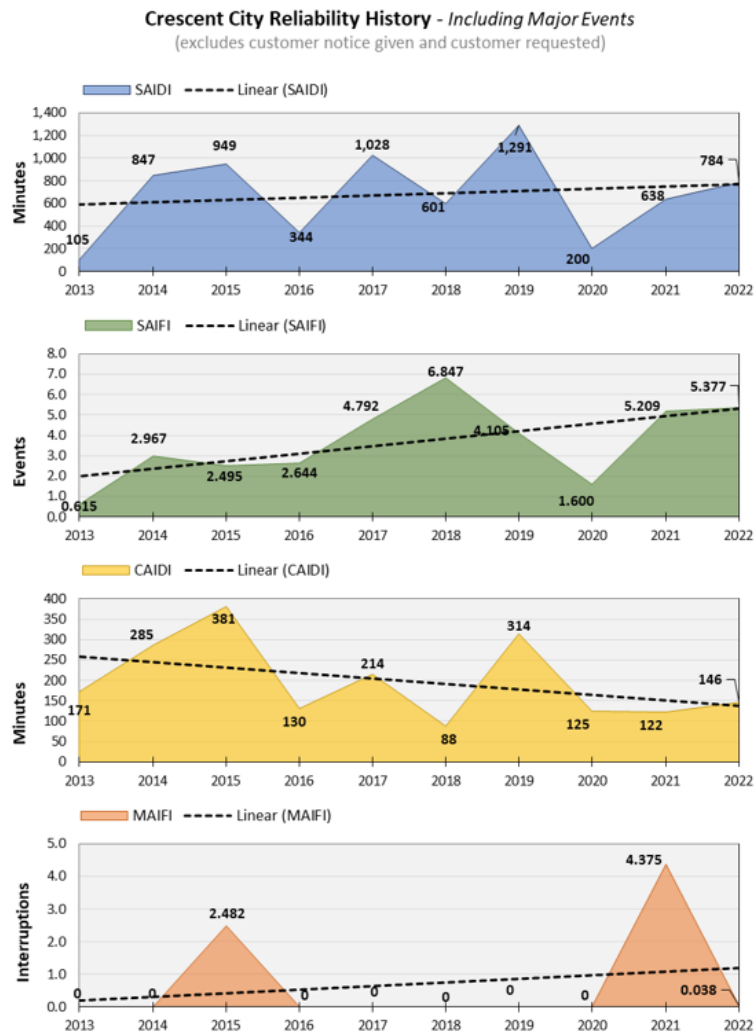
Excluding Major Events



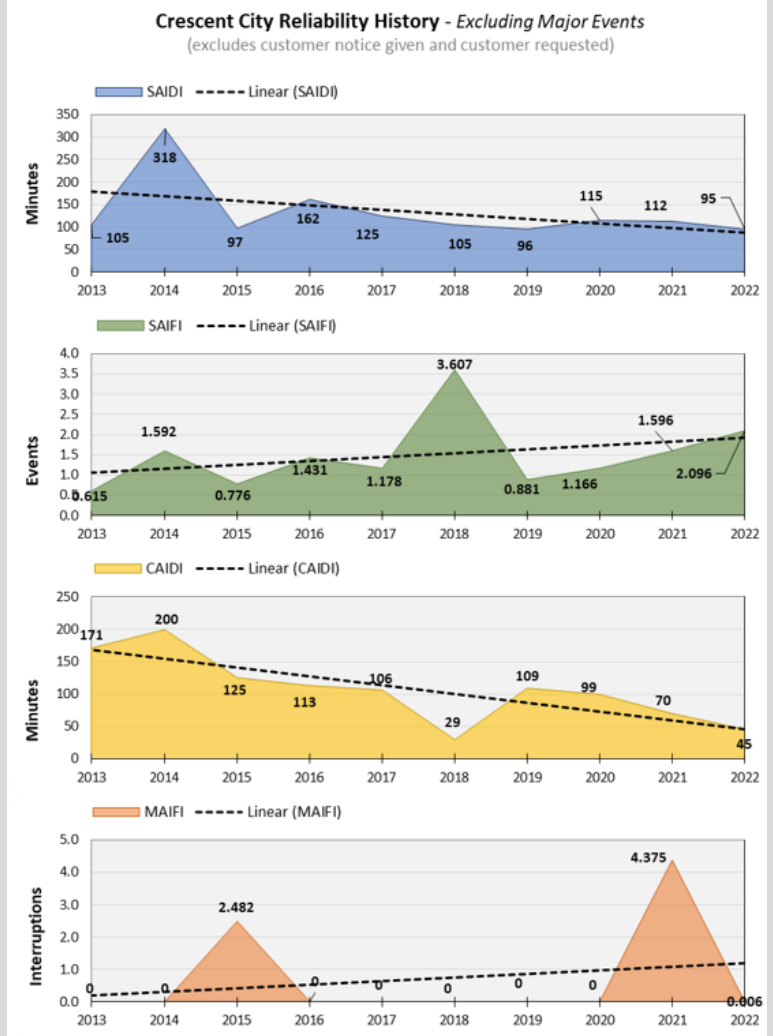
# 10 Year Crescent City Reliability Results

## Combined - Transmission and Distribution

Including Major Events



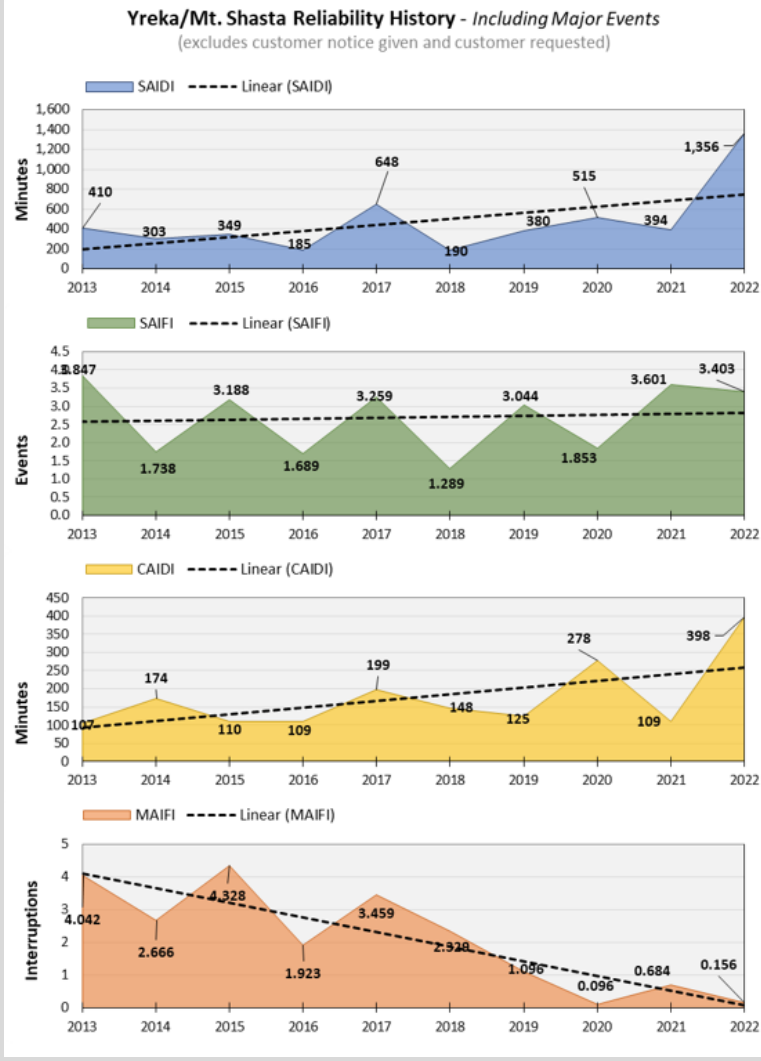
Excluding Major Events



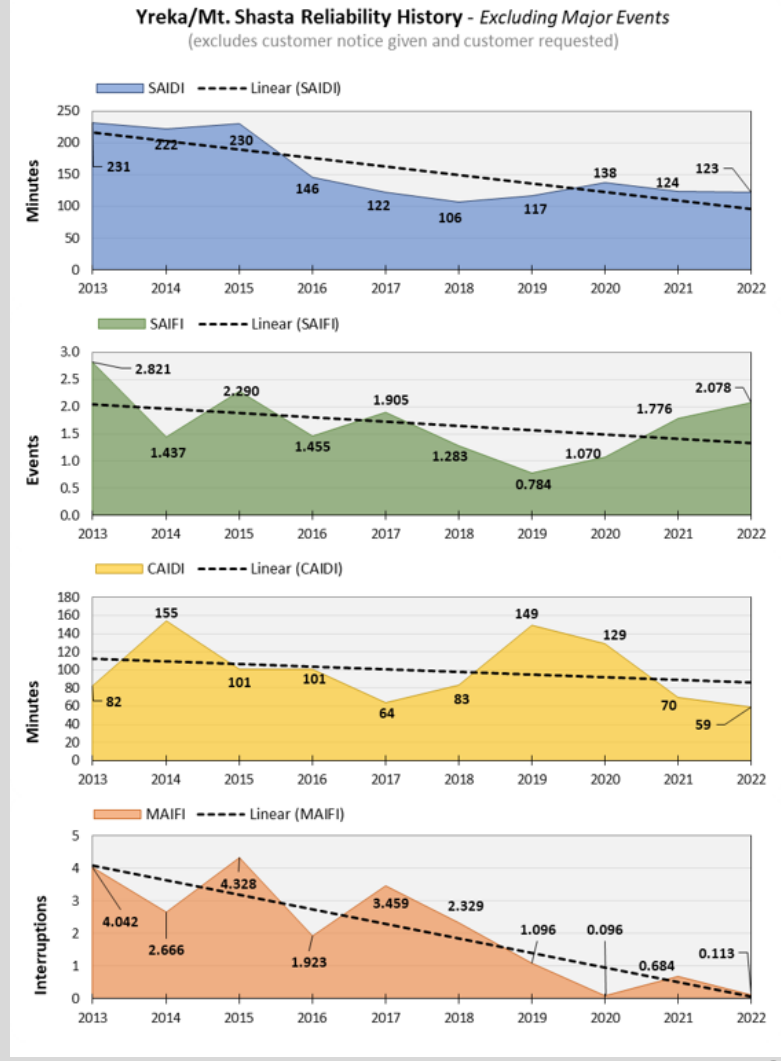
# 10 Year Yreka/Mt. Shasta Reliability Results

## Combined - Transmission and Distribution

Including Major Events



Excluding Major Events

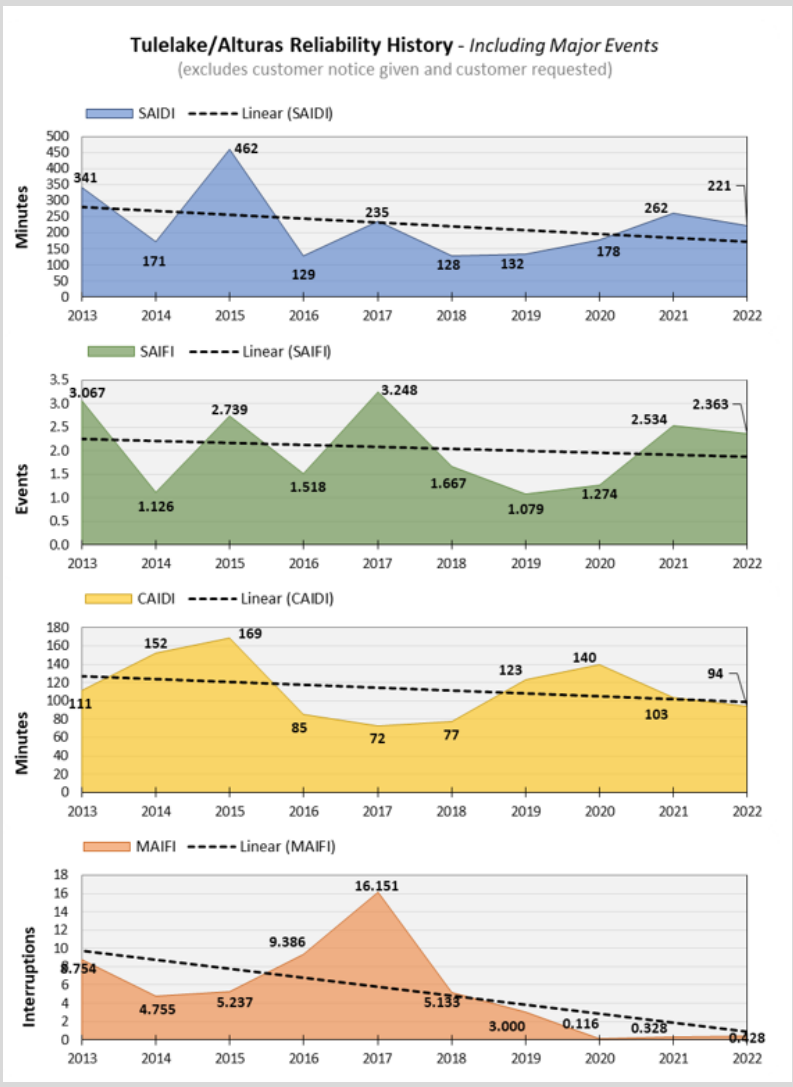




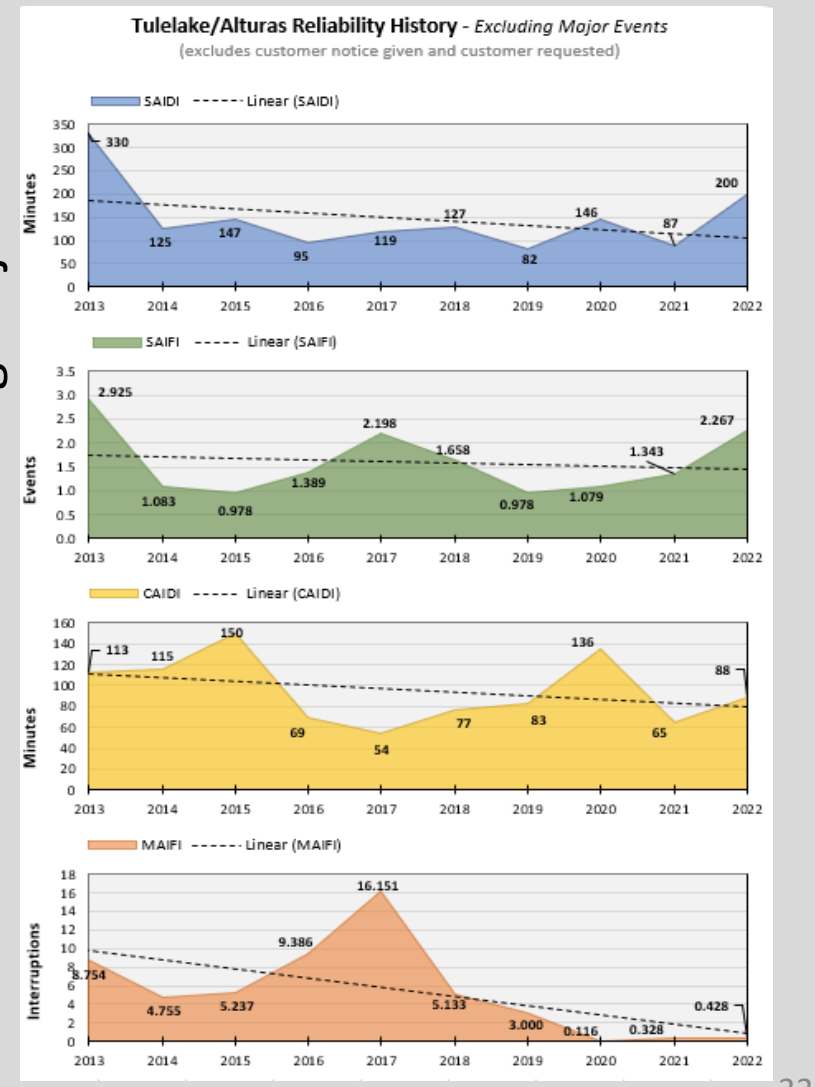
# 10 Year Tulelake/Alturas Reliability Results

## Combined - Transmission and Distribution

Including Major Events



Excluding Major Events



# Summary

- The company has made cost-effective improvements to deliver enhanced reliability while minimizing cost impacts to customers.
- We have shown demonstrated improvements as measured by industry metrics.
- We are constantly working to improve your service.
- We welcome the opportunity to talk with customers about reliability.
- Thank you for your participation.

# More Information

- Information on reliability and annual reports
  - [PacificPower.net/CA-Report](http://PacificPower.net/CA-Report)
- Real-time outage map and outage details
  - [PacificPower.net/Outage](http://PacificPower.net/Outage)
- Contact us
  - [PacificPower.net/Contact](http://PacificPower.net/Contact)