

Welcome

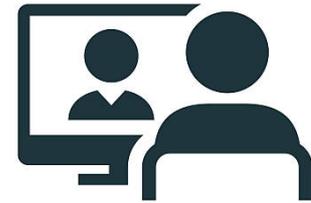
**Liberty Utilities Reliability
Reporting Workshop for
2019 Calendar Year**

December 2, 2020



Virtual Meeting Info for You

- The audience will be on mute. You will be able to hear and see the presenters.
- If you have questions, please type them in the chat/question box area which should be to the right of your screen.
- Questions will be answered at the end of the presentation.
- Sometimes there can be technical difficulties. Please bear with us in case we need to work through them.



Agenda

- Purpose of Workshops
- System Overview
- Key Utility Initiatives
- Reliability Performance
- Questions





Service Territory Overview

- Purchased NV Energy's (SPPCo) California service territory in 2011
- 1,476 square miles; 49,000 customers
- Two office locations: South Lake Tahoe and Tahoe Vista
- Pay \$2.8 million in annual property taxes and franchise fees in 7 counties
- Approximately 100 employees currently
- Regulated by the California Public Utilities Commission (CPUC)
- Winter Peaking Utility





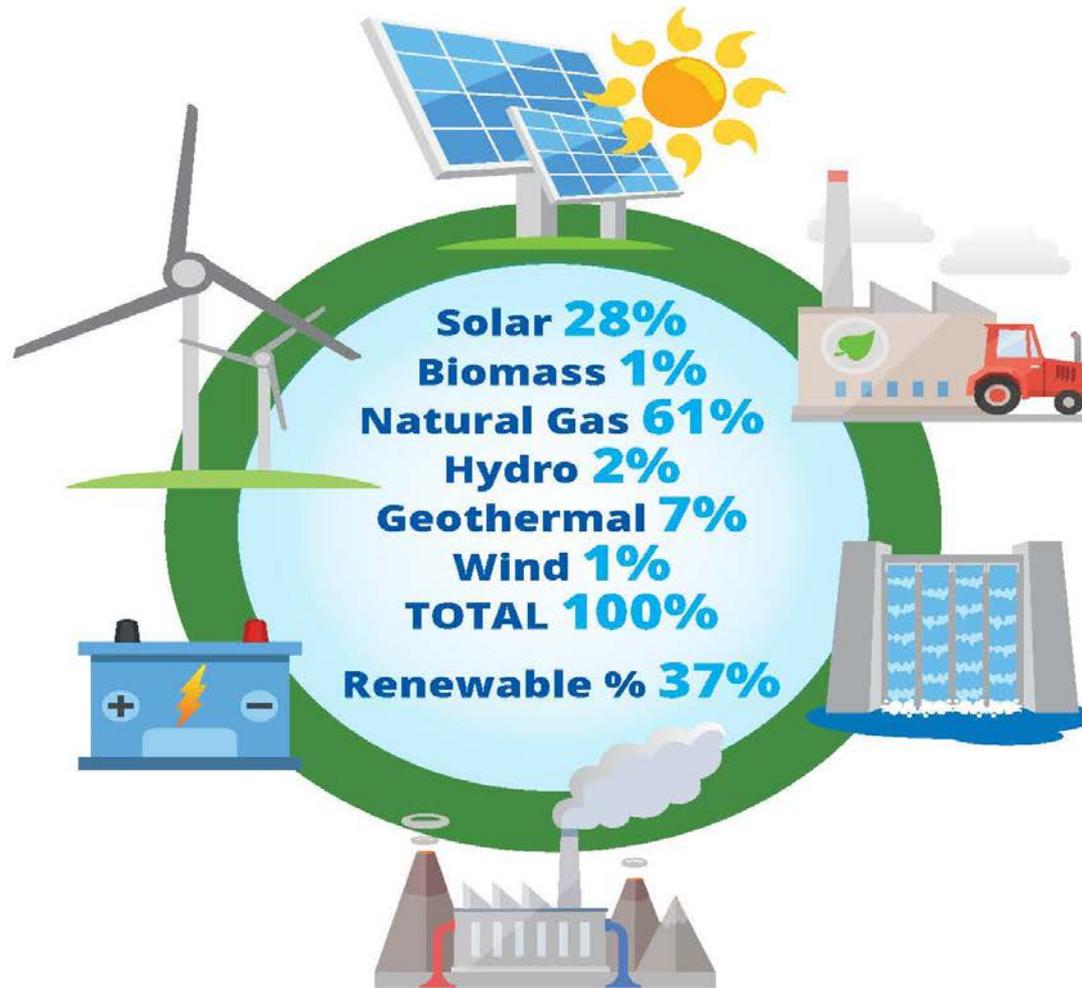
Service Territory Overview

- 1,880 miles Distribution lines
 - 1,400 Overhead (O/H)
 - 480 Underground (U/G)
- 13 Substations
- 12MW of Emergency Diesel Generation
- Max System Load: 144.5 MW (Dec 2012)
- 88% Residential, 12% Commercial





Where Does The Power Come From





Factors for Customer Satisfaction

- Reliability
- Safe Service
- Outage Notification

Region	Incidents	Aff Served	%	Estimated Restoration Times
Alpine	0	0	477	0%
El Dorado	0	0	23721	0%
Mono	0	0	661	0%
Nevada	0	0	1310	0%
Placer	0	65	16614	0.4%
Plumas	0	0	1774	0%
Sierra	0	0	791	0%
Total	0	65	45348	0.1%

Liberty Utilities

News & Events - Energy Efficiency - Renewable Energy - Safety - Emergencies & Outages - Rates - My Account -

Home > Residential > Emergencies > Outages Map

Customer Care: 1-800-782-2506 Emergencies & Outages: 1-844-245-6868

Outage Map

We work hard to provide our customers with safe and reliable service. Despite our best efforts to prevent outages, there are factors beyond our control that will occasionally knock out power. Scroll down to view map and outage information; be sure to refresh your page if you have this bookmarked.

We Are Social!
Get connected to Liberty Utilities

Outages Map | Report an Outage | What To Do | Planned Outages | Storm Preparation | Emergency Disaster Relief



Outage Reporting and Tracking

Please Call 1-844-245-6868

Region	Incidents	Aff Served	%	Estimated Restoration Times
	0	0	1	0%
Alpine	0	0	477	0%
El Dorado	0	0	23820	0%
Mono	0	0	662	0%
Nevada	0	0	1302	0%
Placer	0	0	16511	0%
Plumas	0	0	1777	0%
Sierra	0	0	789	0%
Total	0	0	45339	0%

The screenshot shows a web browser window with the following details:

- Browser tabs: Home - Tahoe Chamber, CA; Kathy Carter - Outlook We...; Outages Map
- Address bar: <https://california.libertyutilities.com/south-lake-tahoe/residential/emergencies/electrical/outages-map.html#>
- Map: Shows California with a green-shaded region in the north-central part, covering areas like Modoc National Forest, Black Rock Desert, and parts of Nevada and California. Major cities like Reno, Carson City, and Sacramento are visible.
- Table: A table with 5 columns: Region, Incidents, Aff Served, %, and Estimated Restoration Times. The table shows 0 incidents for all regions and a total of 45,339 affected served customers.
- Taskbar: Shows various application icons including Internet Explorer, Firefox, PowerPoint, and Word. The system clock shows 1:45 PM on 9/14/2016.



Customer Notifications



Website
libertyutilites.com



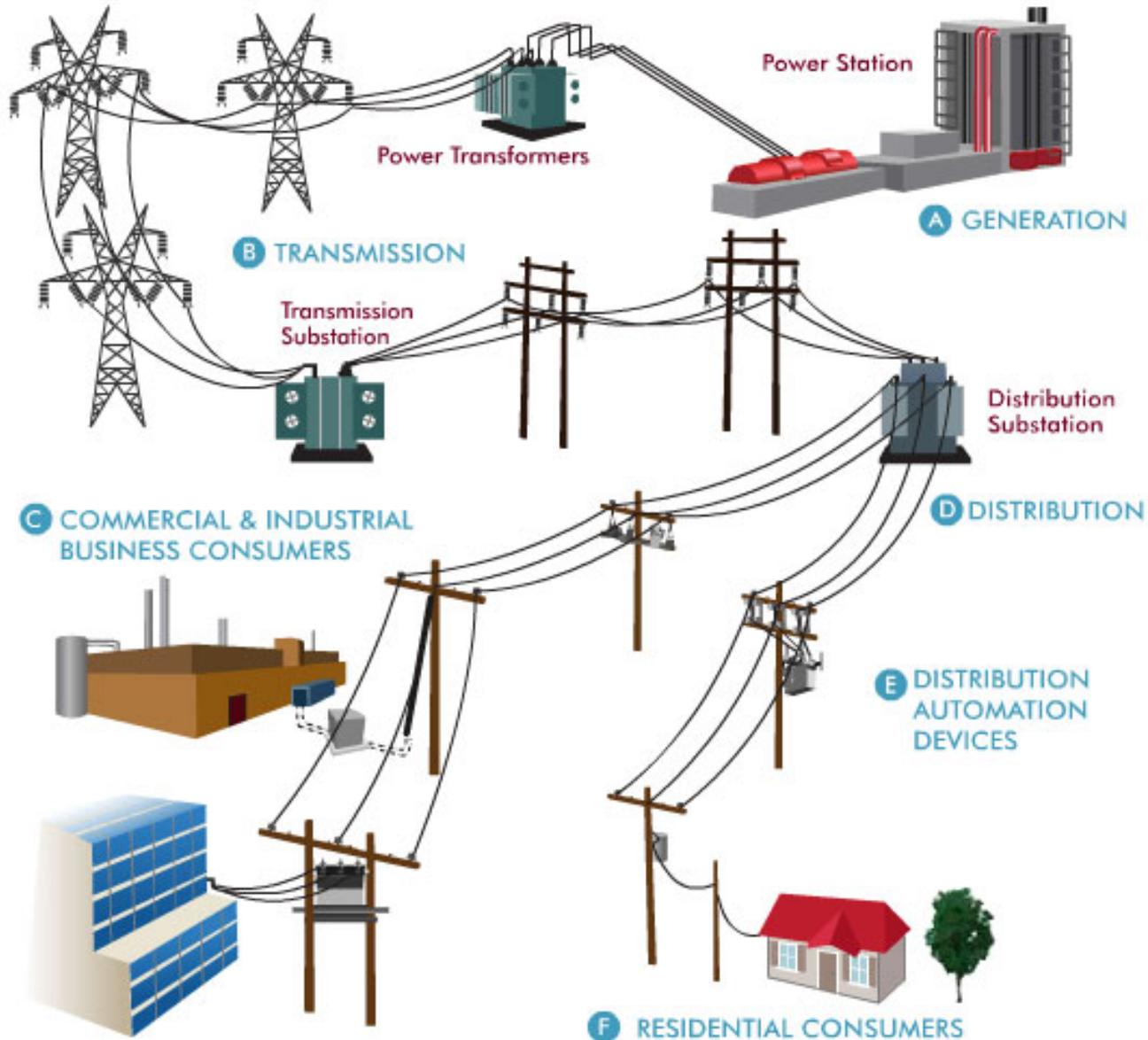
Twitter
[@LibertyUtil_CA](https://twitter.com/LibertyUtil_CA)



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Liberty Utilities - Tahoe



Power System Overview





Power Outage Causes

- ❖ Weather (wind, snow, ice build up, lightning)
- ❖ Animals (birds, squirrels, snakes)
- ❖ Third Party Damage (motor vehicle accident)
- ❖ Equipment Failure (cable faults, transformer)
- ❖ Vegetation (trees, wild fire)
- ❖ Loss of Source Power from NV Energy





Momentary vs. Sustained



Momentary

Outages that are less than or equal to 5 minutes in duration

Ex: Tree branches contact a power line, burns the branch clear, and the circuit recloses automatically

Sustained

Outages that are greater than 5 minutes in duration

EX: Tree falls through the power line and must be removed before re-energizing the line



Planned vs Major Outages

Planned Outage

- Outages where a customer or public official has made a request, or Liberty has provided notification
- These are excluded from reliability metrics

Major Event

- Institute of Electrical and Electronic Engineers (IEEE) standard 1366-2012, a set of outages that exceed the historically expected outage duration (SAIDI) for at least one day





Measuring Reliability

Every outage is analyzed to determine the following metrics:

$$\text{SAIDI} = \frac{\text{Total of Customer Interruption Durations}}{\text{Total number of customers served}}$$

$$\text{SAIFI} = \frac{\text{Total Number of Customers Interrupted}}{\text{Total number of customers served}}$$

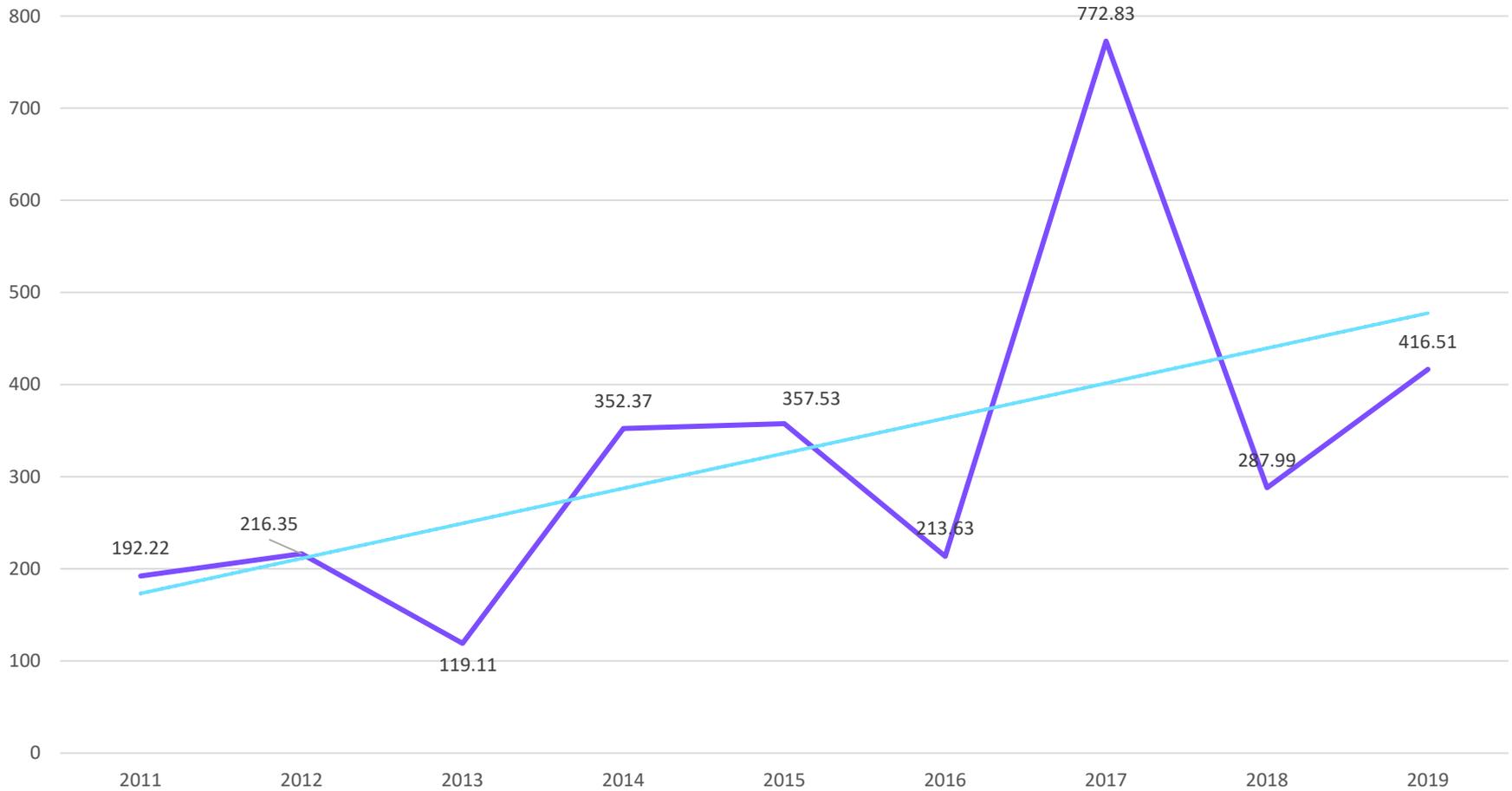
$$\text{CAIDI} = \frac{\text{Total Customer Interruption Durations}}{\text{Total Number of Customer Interruptions}}$$

$$\text{MAIFI} = \frac{\text{Tot.No.of Customer Momentary Interruptions}}{\text{Total number of customers served}}$$



SAIDI System Performance

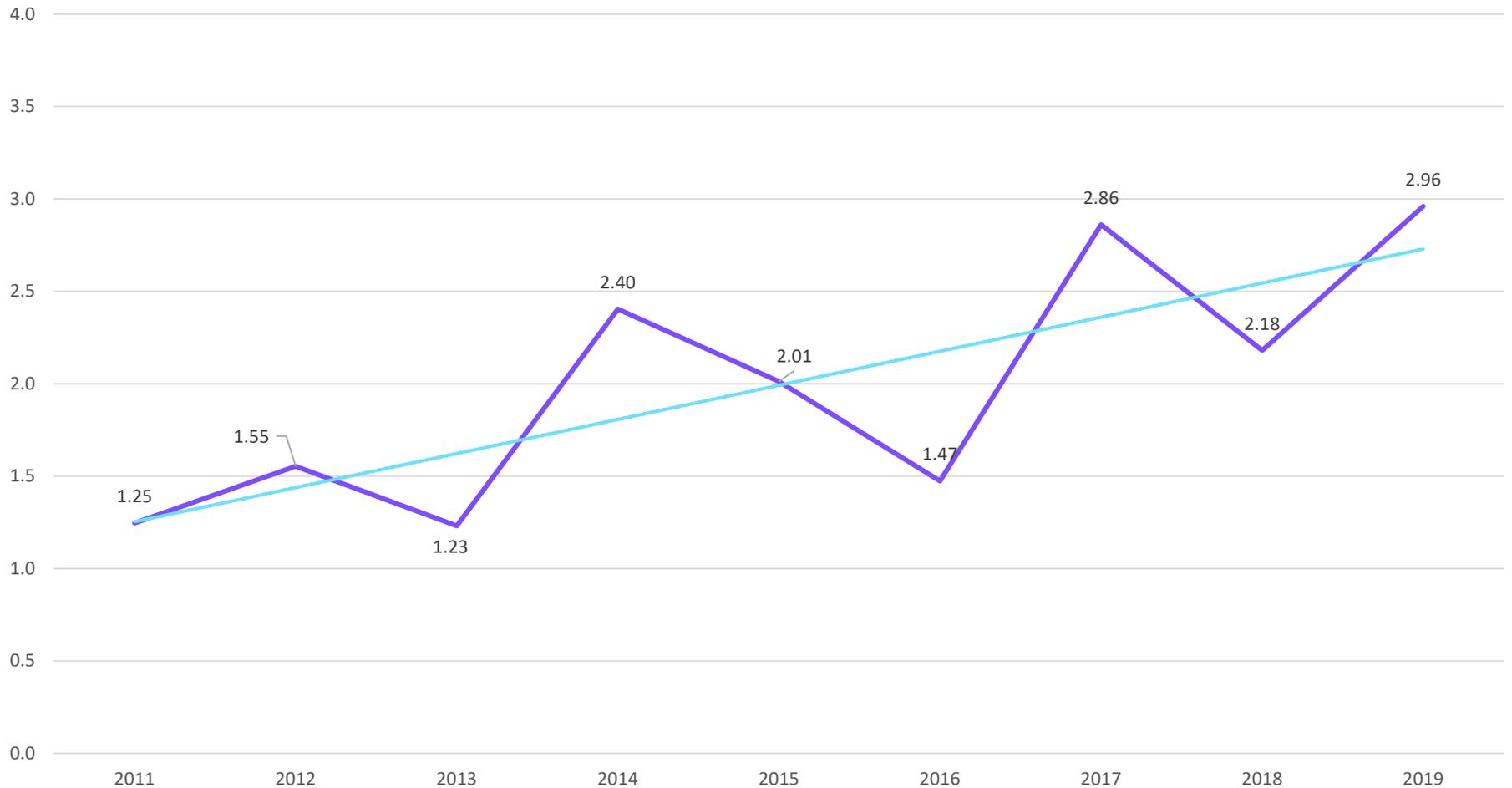
Distribution System Indices MED Excluded (SAIDI)





SAIFI System Performance

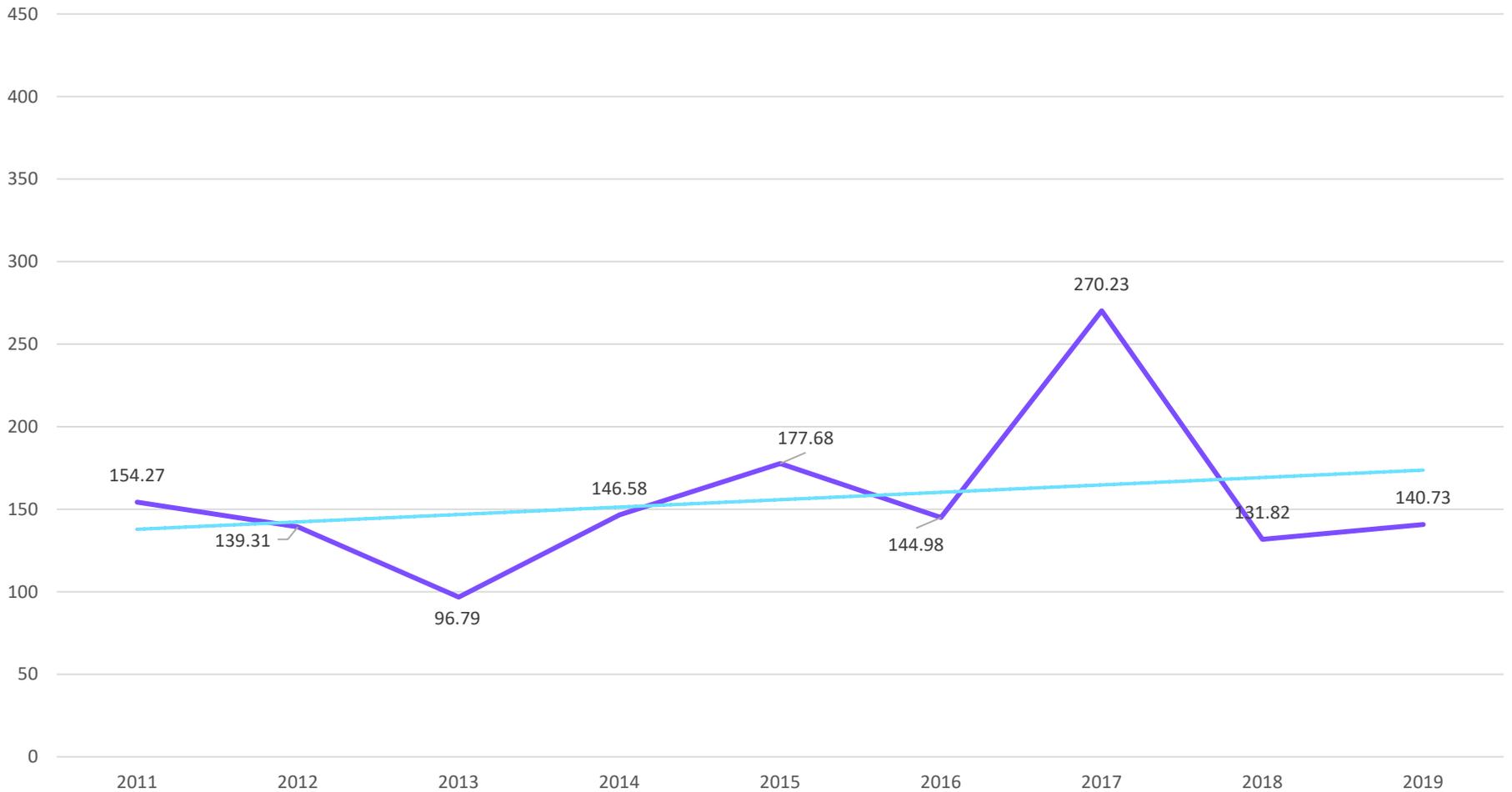
Distribution System Indices MED Excluded (SAIFI)





CAIDI System Performance

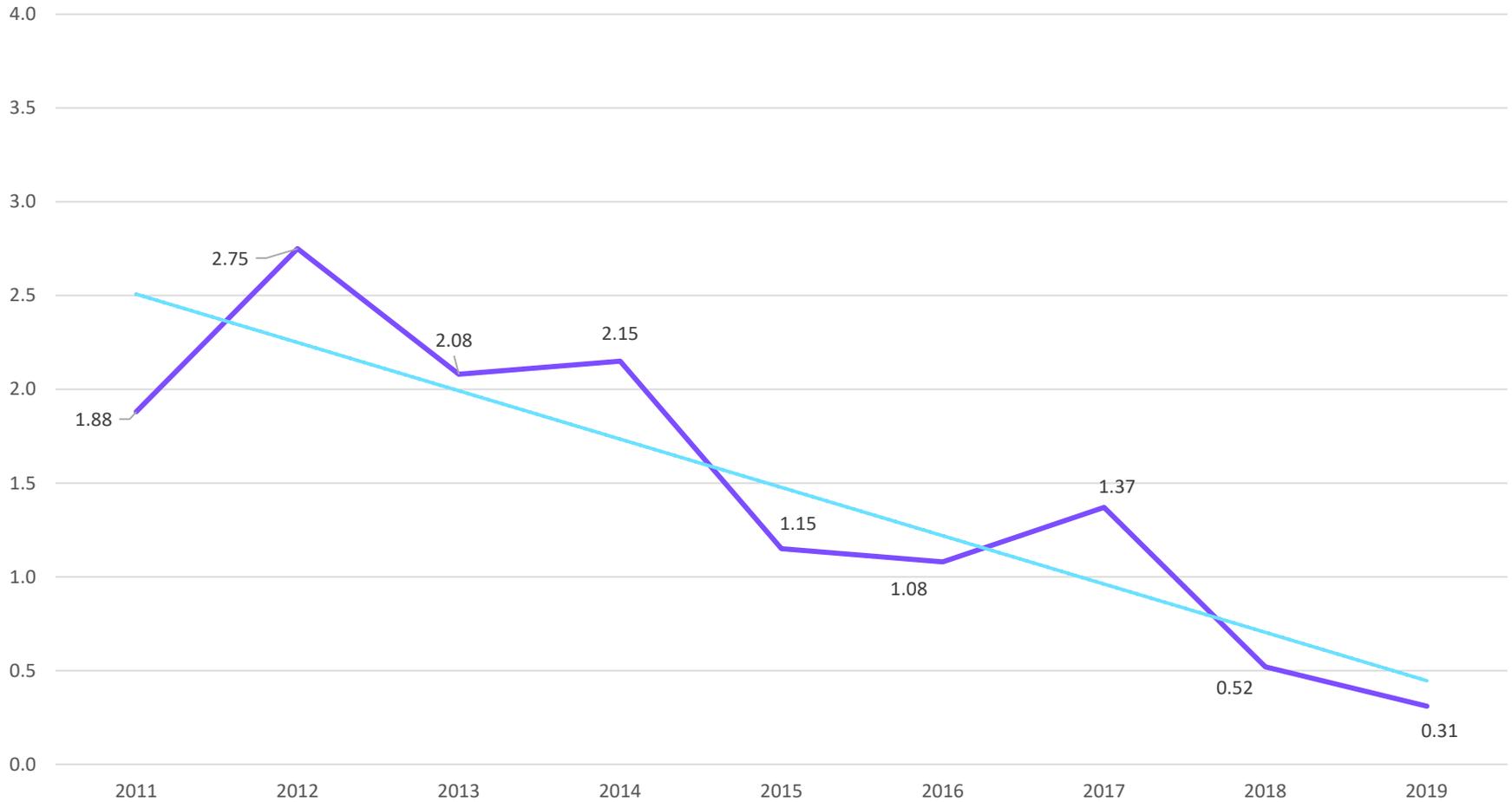
Distribution System Indices MED Excluded (CAIDI)





MAIFI System Performance

Distribution System Indices MED Excluded (MAIFI)





Worst Performing Circuits

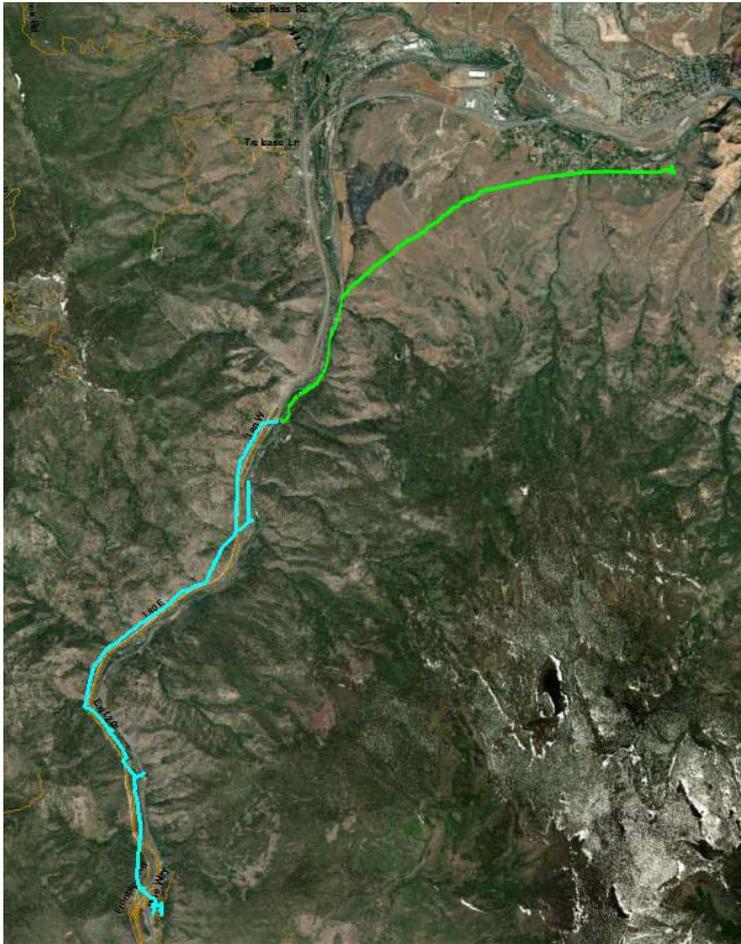
Circuit	Customers	Substation	Circuit Miles	OH	UG	Circuit Outages	Circuit SAIDI	Circuit SAIFI
201	64	Washoe	8.7	99.8%	0.2%	4	2931	7.83
1261	749	Topaz	70.9	76.2%	23.8%	7	3040	7.12

Analysis of worst performing circuits excludes planned and Major Event outages.

The preferred metric for this analysis is the 3 year average circuit level SAIDI in order to account for population discrepancies between urban and rural circuits.



Washoe 201 Circuit

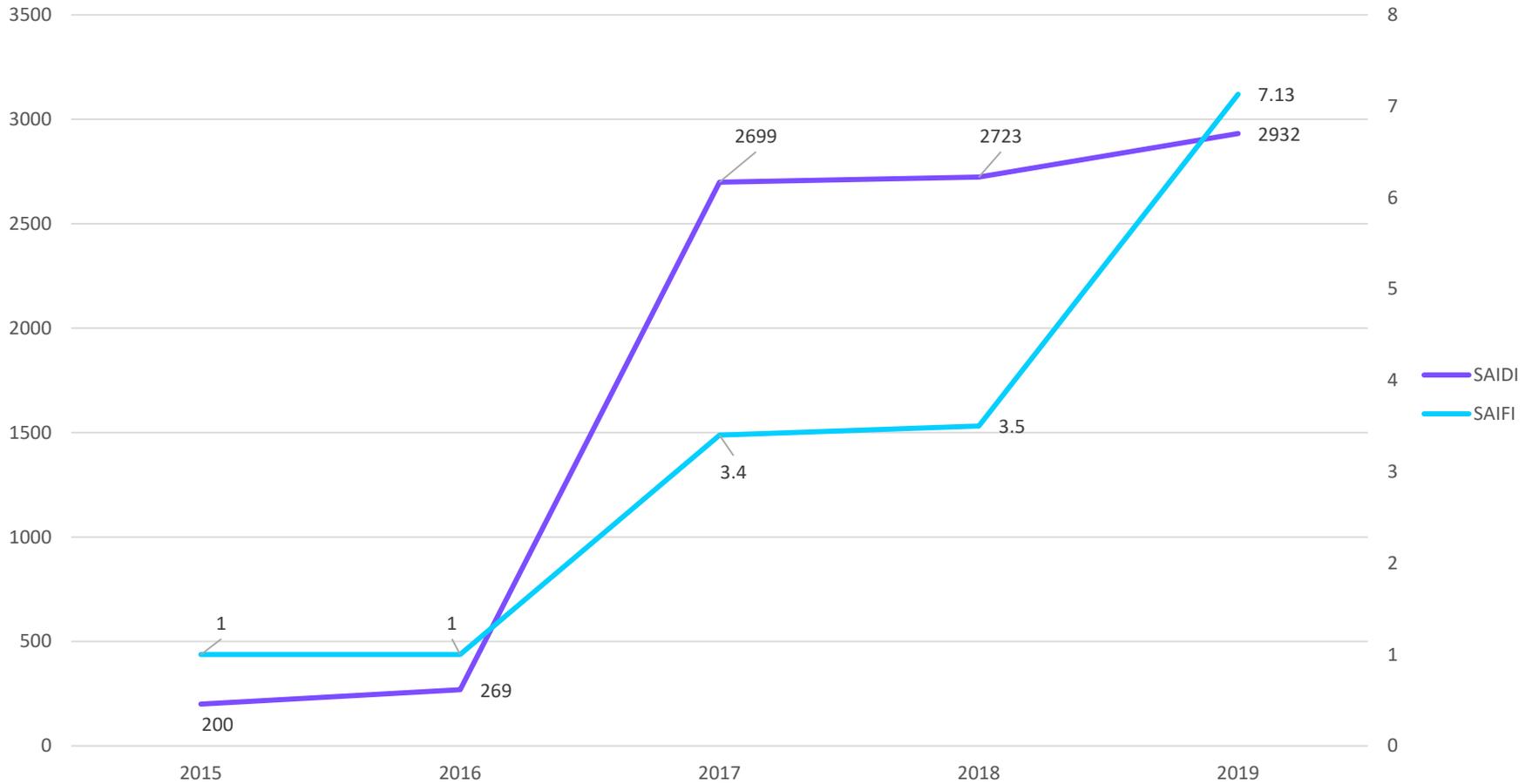


- Services Floriston
- Approximately 70 customers
- 247 poles
- 8.7 miles O/H
- Radial source from NV Energy's substation located near Mogul (additional 5 miles)



Reliability Trend

Washoe 201 Reliability Metrics





Significant Outages

March 25th 2019

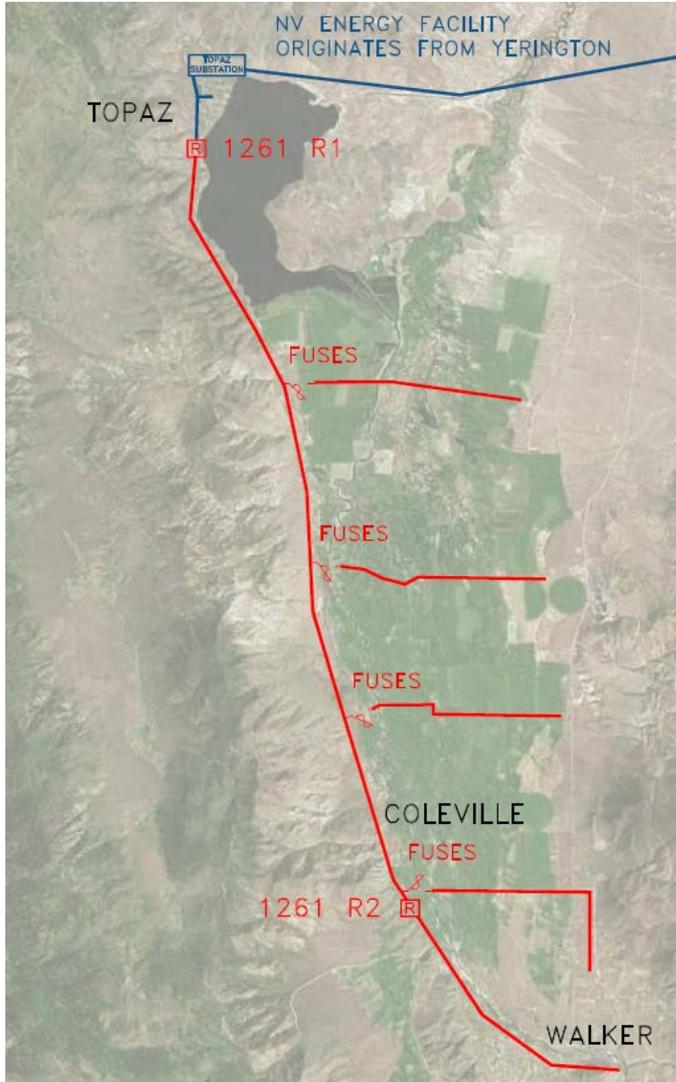
- ❑ Loss of source from NV Energy.
- ❑ Downed wire found across Hwy.
- ❑ Outage Time - 9 hours and 17 minutes

July 10, 2017

- ❑ Wildfire in the area burned several poles
- ❑ After the fire was contained and Liberty was granted access, generators were brought in to restore service to Floriston while the line was rebuilt.
- ❑ Outage Time - 38 hours



Topaz 1261 Circuit

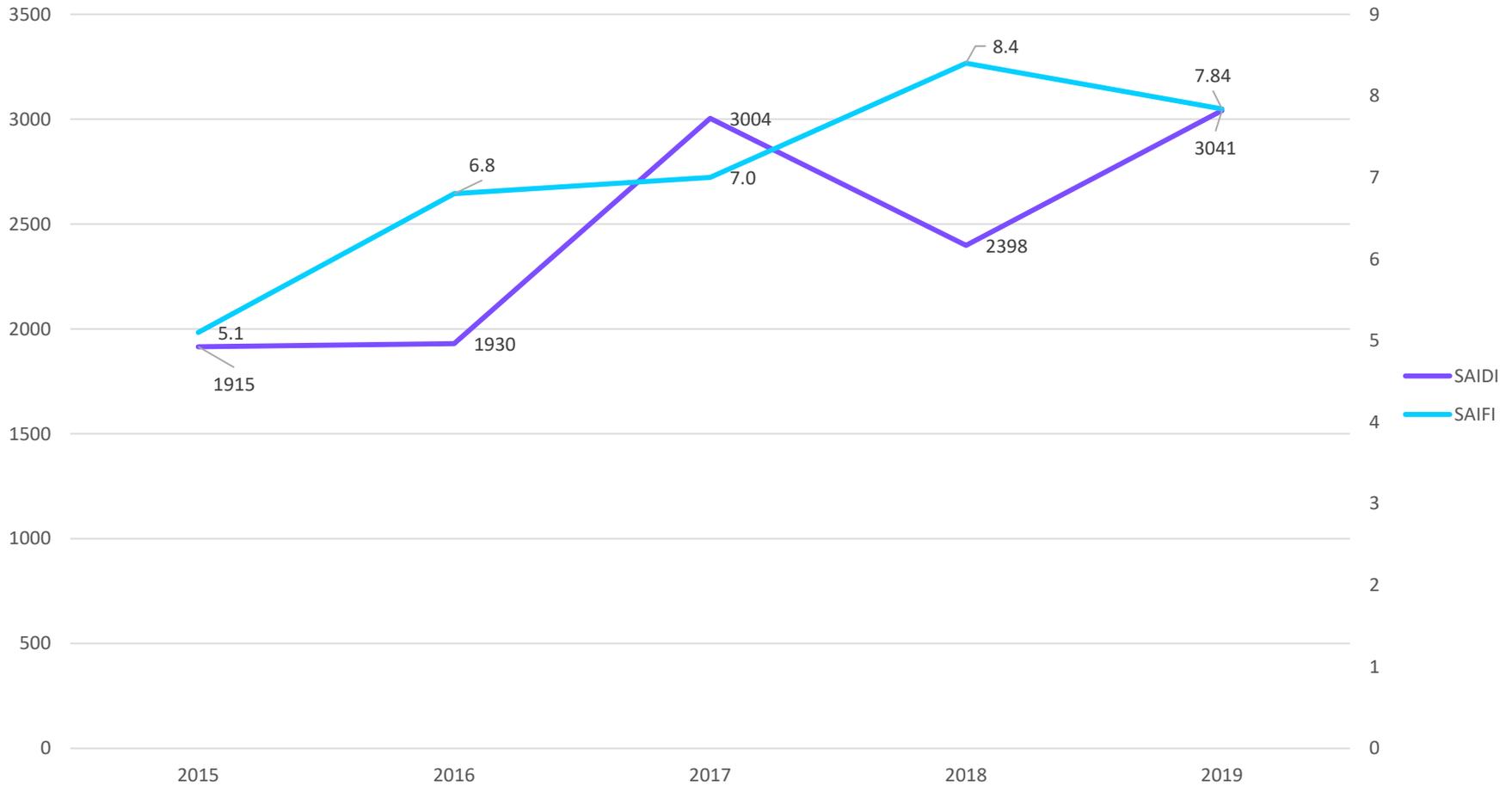


- Services Coleville, Walker
- Approximately 750 customers
- 1,281 poles
- 69.1 miles O/H
- 7.7 miles U/G
- Radial source from Smith Valley, NV



Reliability Trend

Topaz 1261 Reliability Metrics





Significant Outages

March 15, 2019

- ❑ Outage for all customers on Topaz 1261
- ❑ Downed wire
- ❑ Outage Time – Partially Restored 2 hours and 24 minutes; Fully Restored 4 hours 36 minutes

March 22, 2019

- ❑ Incorrect connections on generator to transformer
- ❑ Left entire feeder out of power
- ❑ Outage Time – 32 hours 50% Restored; 48 hours 66% Restored; 56 hours 90% Restored; 58 hours Fully Restored



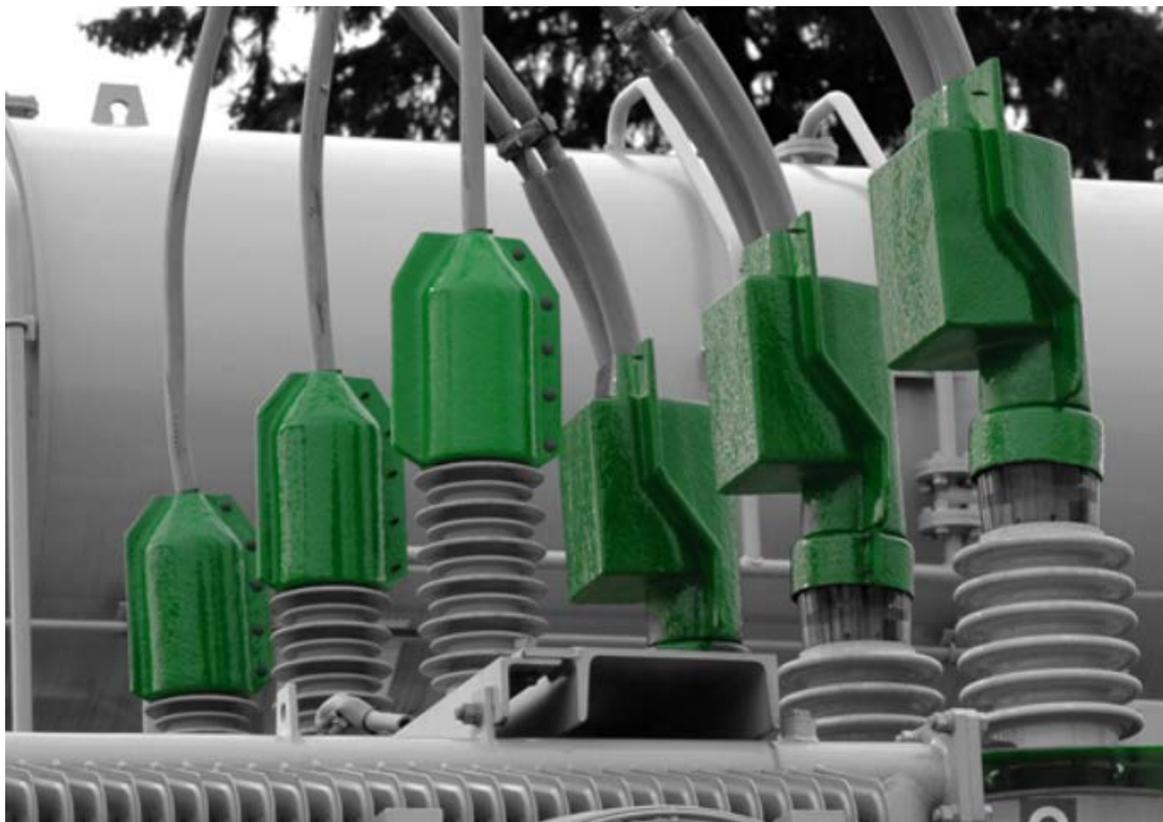
Reliability Improvements



An aggressive Vegetation Management program – about \$4 million per year



Improved Animal Protection



Precision fit animal guards are being implemented into our substations to prevent wildlife outages.



Wildfire Mitigation Plans

Several projects are underway to reduce fire risk



Some Projects include:

- Advanced weather monitoring
- Covered Conductor
- Expulsion fuse replacement
- Additional recloser installations

Thank you

Email: PowerQuality@libertyutilities.com

Or call Customer Service at
1-800-782-2506

