

Welcome

Liberty Utilities Reliability Reporting Workshop for 2018 Calendar Year

October 3, 2019

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; 50,000 customers
- Two office locations: South Lake Tahoe and Tahoe Vista
- Pay \$2.8 million in annual property taxes and franchise fees in 7 counties
- 99 employees currently, with 8 open positions
- Regulated by the California Public Utilities Commission (CPUC)
- Winter Peaking Utility

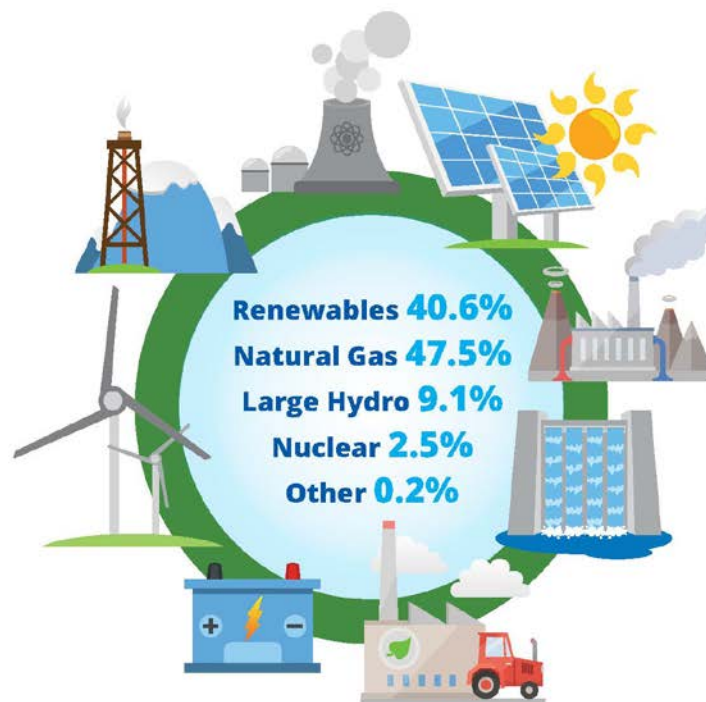


What's it take to run an electric utility?

- 1,880 miles of O/H (1,400) and U/G (480) Distribution lines
- 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?



Important Factors for Customer Satisfaction

- Reliability
- Safe Service
- Outage Notification

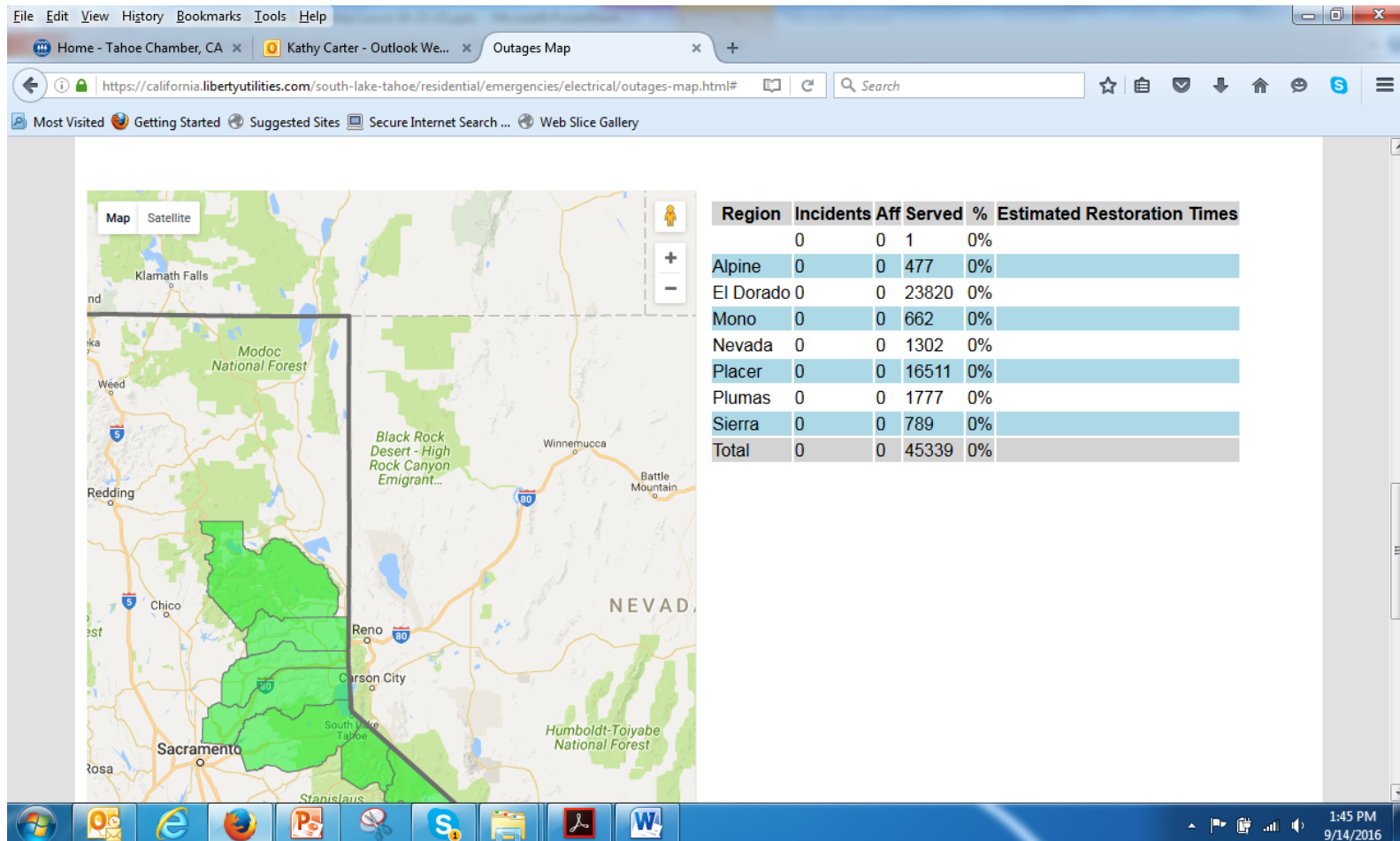


The screenshot shows the Liberty Utilities website's 'Outage Map' page. The page features a navigation bar with links for News & Events, Smart Energy Use, Safety, New Service, Emergencies & Outages, Rates, and My Account. Below the navigation bar, there are contact numbers for Emergency (1-844-245-6868) and Customer Care (1-800-782-2506). The main content area is titled 'Outage Map' and includes a brief introductory paragraph. A table is overlaid on the bottom right of the screenshot, providing a summary of outage statistics by region.

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%

Outage Reporting and Tracking

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%	

Emergency Notifications



www.libertyutilities.com

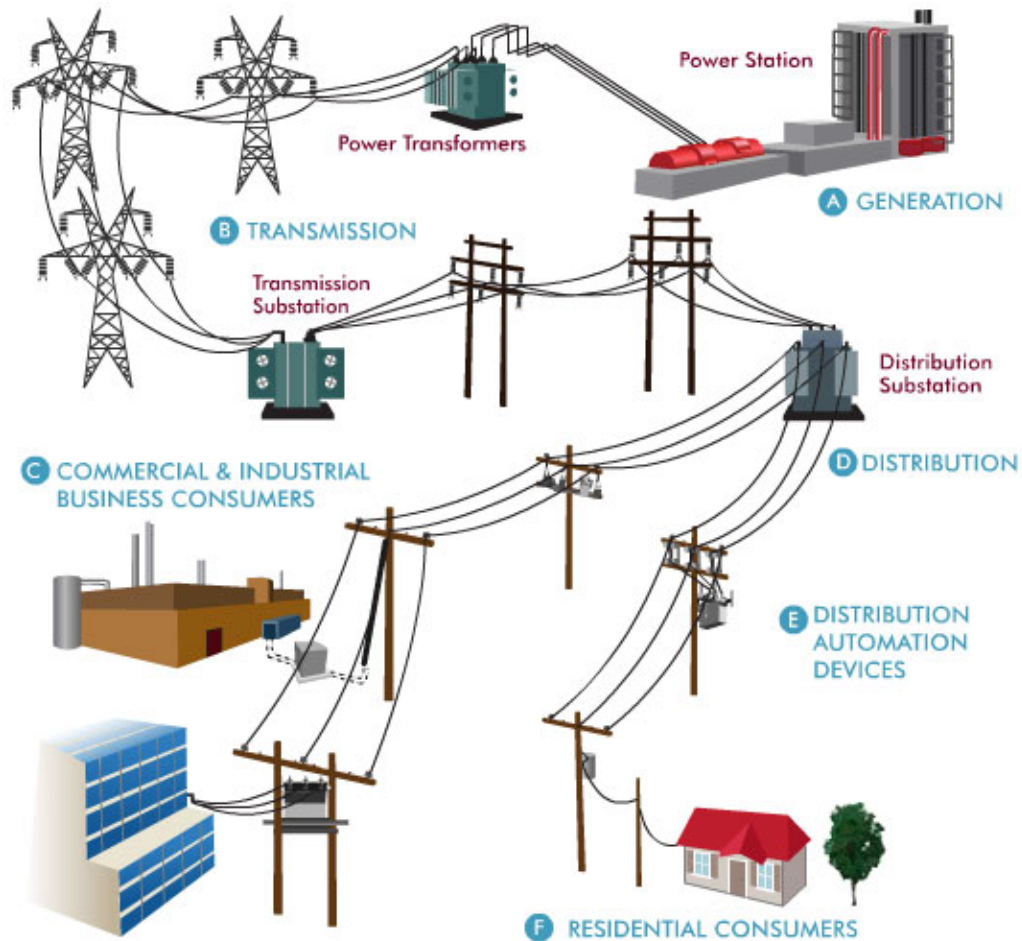
Twitter: @LibertyUtil_CA

Facebook: @LibertyUtilitiesLT



The screenshot shows a web browser window displaying the Liberty Utilities website. The browser's address bar shows the URL <https://california.libertyutilities.com/coleville/residential/index.html>. The website header includes the Liberty Utilities logo and navigation links: About, News & Events, Smart Energy Use, Safety, New Service, Emergencies & Outages, and My Account. A yellow emergency notification banner is visible, containing the following text: "2/24 @ 2:00 pm Good News! Floriston: Line has been rebuilt and power restored. River Road/Silver Creek/Fir Crag/Hwy 89: Progress today; power should return by this evening. Sudan Road (Tahoe Vista/Carnellan Bay): Crews continue to dig out vaults looking for problem, but have determined it is not a transformer issue so power could be restored by this evening. New Outage: Tree fell on primary and secondary lines affecting areas around Martis Valley Road near Truckee. Approx. 300 customers w/out power; expected restoration by early evening. Emergency: 1-844-245-6868". Below the banner, a blue button for "Customer Care: 1-800-782-2506" is visible. A dark overlay with the text "Need to pay a bill? Convenient ways to pay your bill today." and a "Pay My Bill" button is also present. At the bottom of the page, the text "Local and Responsive. We Care." is displayed, followed by the tagline "Liberty Utilities lives in and supports the communities we serve. We deliver safe and reliable service with care and". The Windows taskbar at the bottom shows the date and time as 9:33 AM on 3/3/2017.

Power System Overview



Power Outage Causes

- Weather – wind, snow, ice build up
- Trees
- Animals – birds / squirrels
- Motor Vehicle Accidents
- Equipment Failure
- Loss of Source Power from NV Energy



Momentary or Sustained Outages



- **Momentary** – outages that are less than or equal to 5 minutes in duration
 - 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
 - Tree falls through the power line and must be removed before re-energizing the line

Planned Outages and Major Events

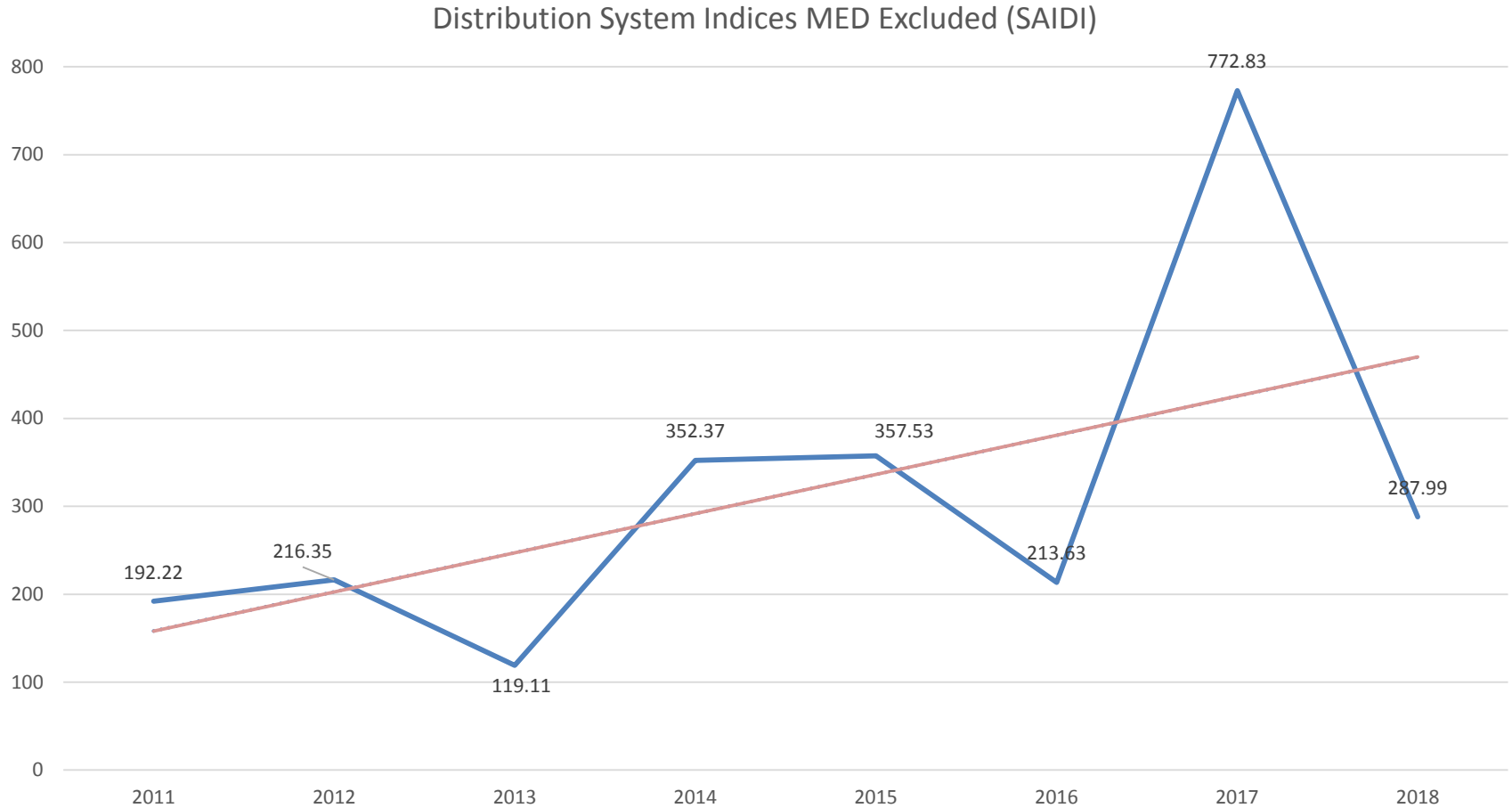
- **Planned Outage – Outages where a customer or public official has made a request, or Liberty Utilities has provided notification**
 - These are excluded from reliability metrics
- **Major Event – Institute of Electrical and Electronic Engineers (IEEE) standard 1366-2012, a set of outages that exceed the historically expected outage duration (SAIDI) for at least one day**

Measuring Reliability

Every outages is analyzed to determine the following metrics:

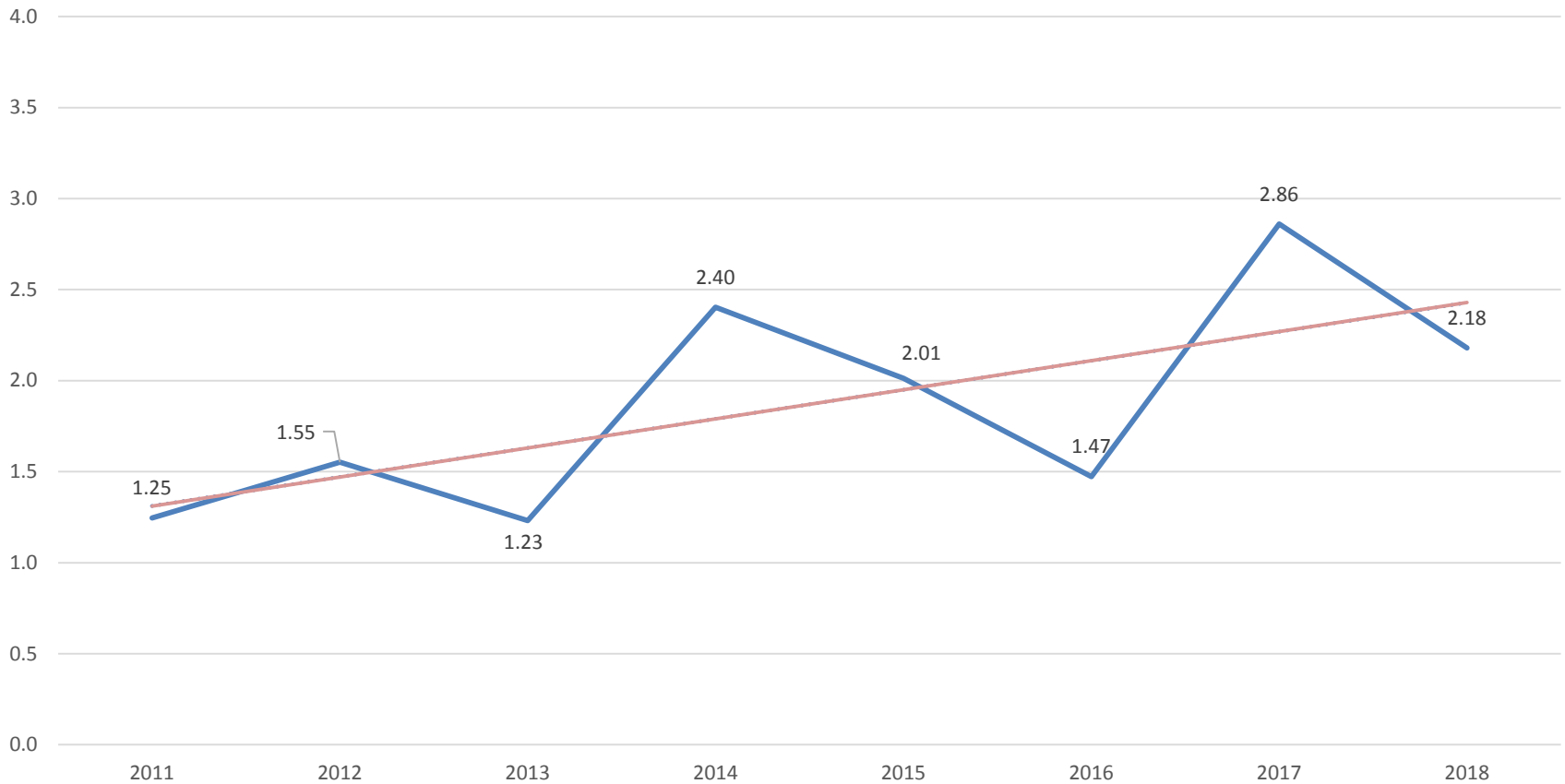
- **SAIDI** =
$$\frac{\textit{Total of Customer Interruption Durations}}{\textit{Total number of customers served}}$$
- **SAIFI** =
$$\frac{\textit{Total Number of Customers Interrupted}}{\textit{Total number of customers served}}$$
- **CAIDI** =
$$\frac{\textit{Total Customer Interruption Durations}}{\textit{Total Number of Customer Interruptions}}$$
- **MAIFI** =
$$\frac{\textit{Tot.No.of Customer Momentary Interruptions}}{\textit{Total number of customers served}}$$

System SAIDI Performance



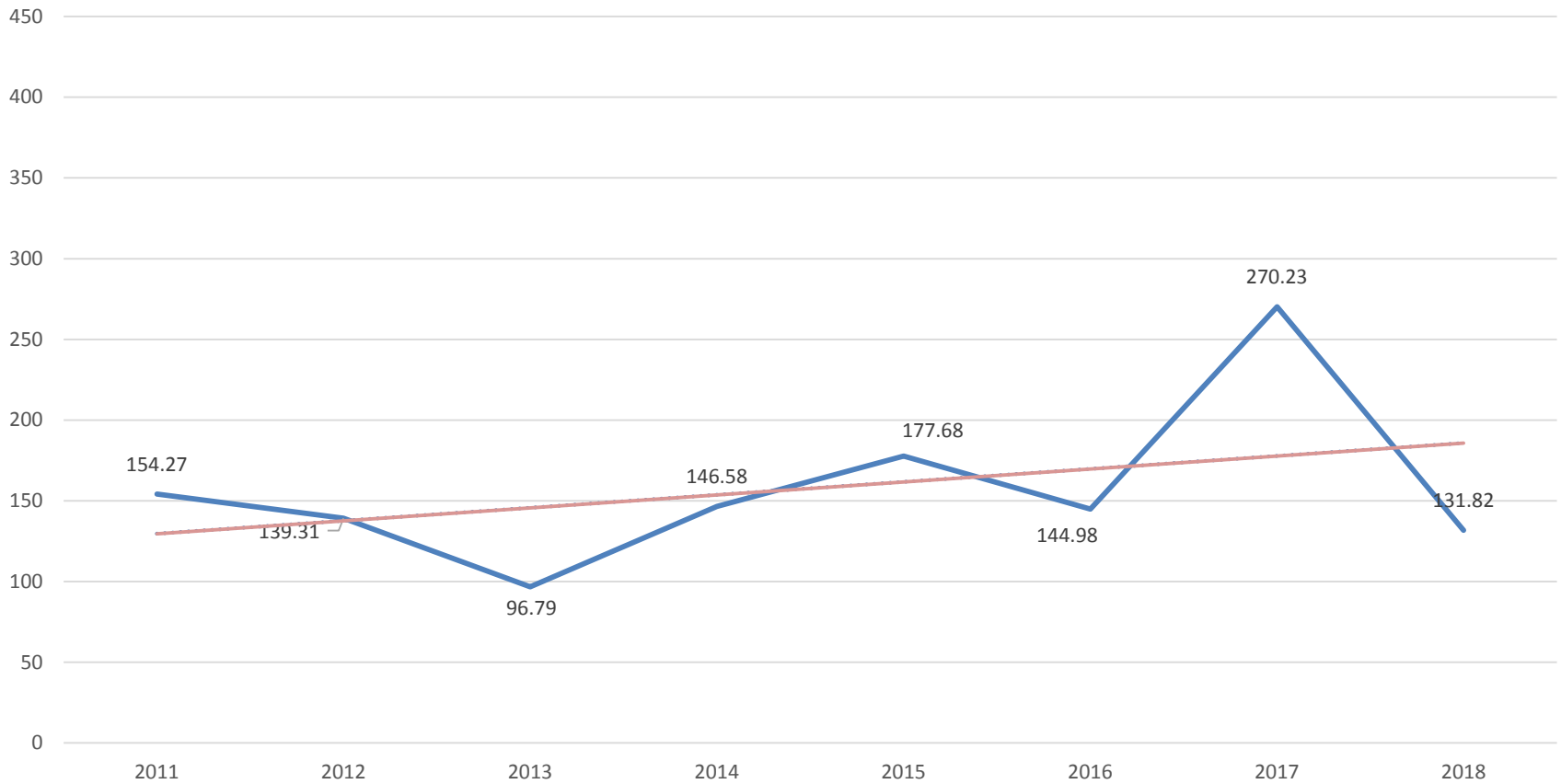
System SAIFI Performance

Distribution System Indices MED Excluded (SAIFI)



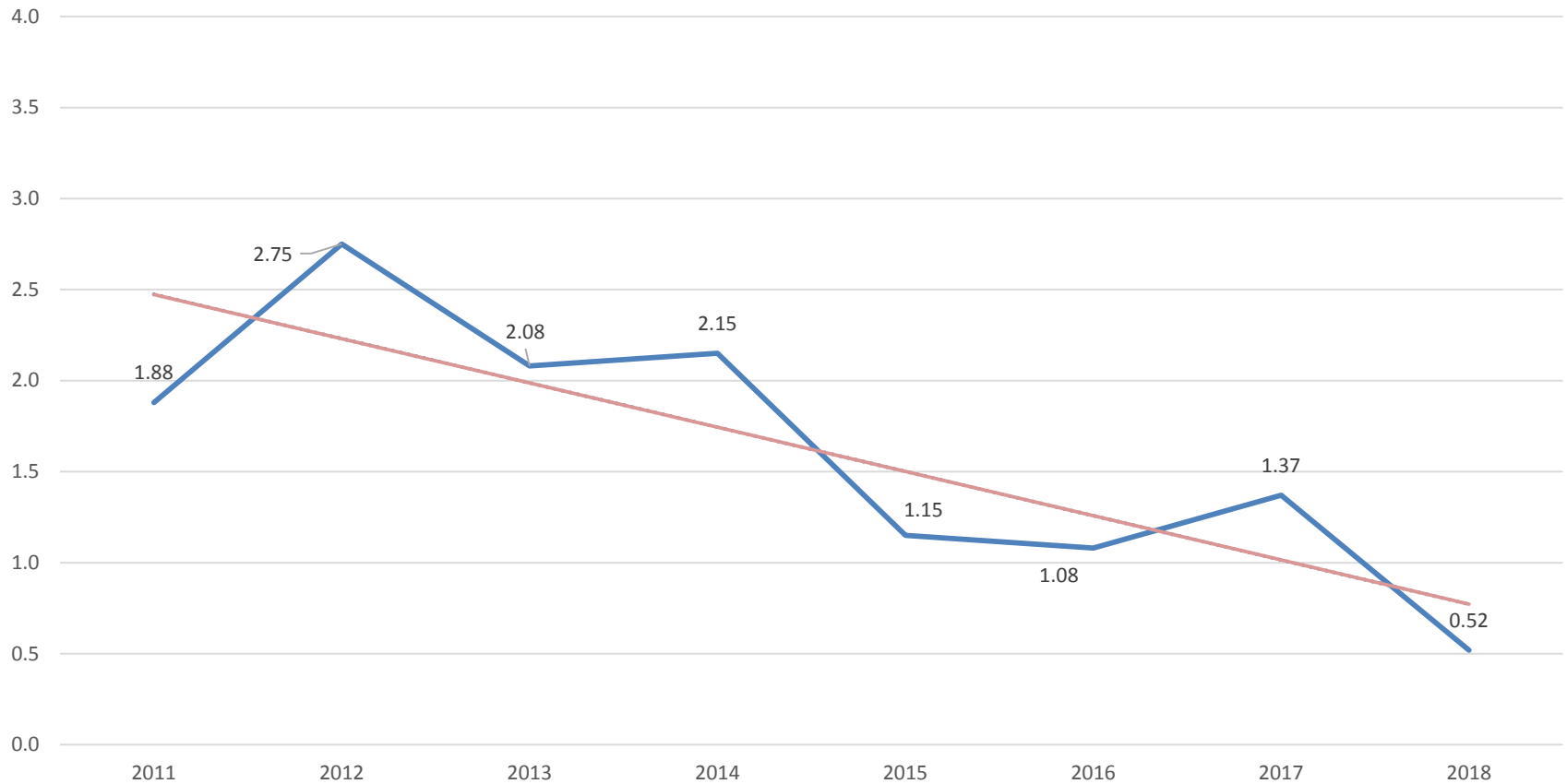
System CAIDI

Distribution System Indices MED Excluded (CAIDI)



System MAIFI

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	2722	3.5
1261	746	Topaz	70.9	76.2%	23.8%	8	2393	8.4

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.

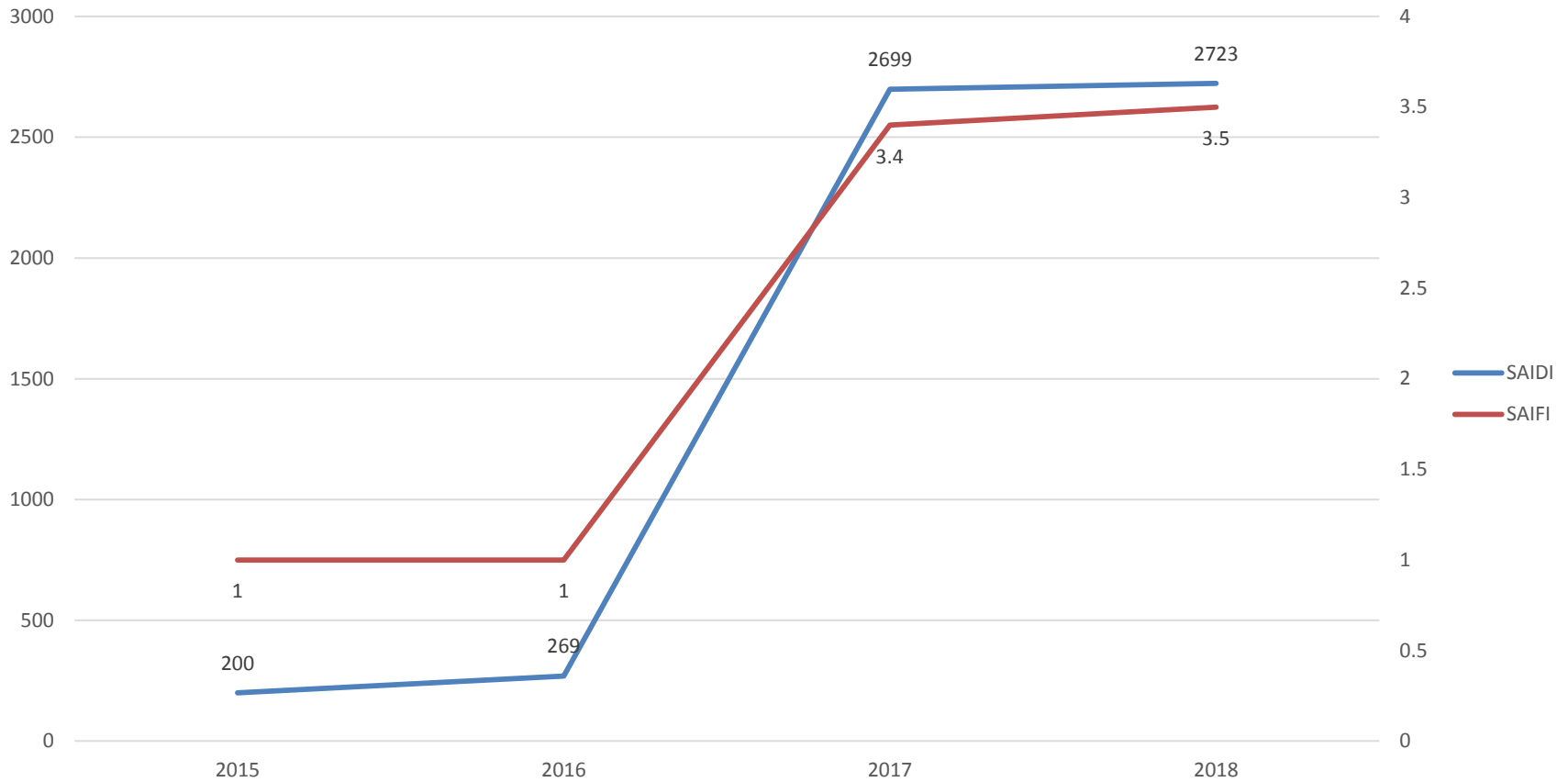
Washoe 201 Circuit



- 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

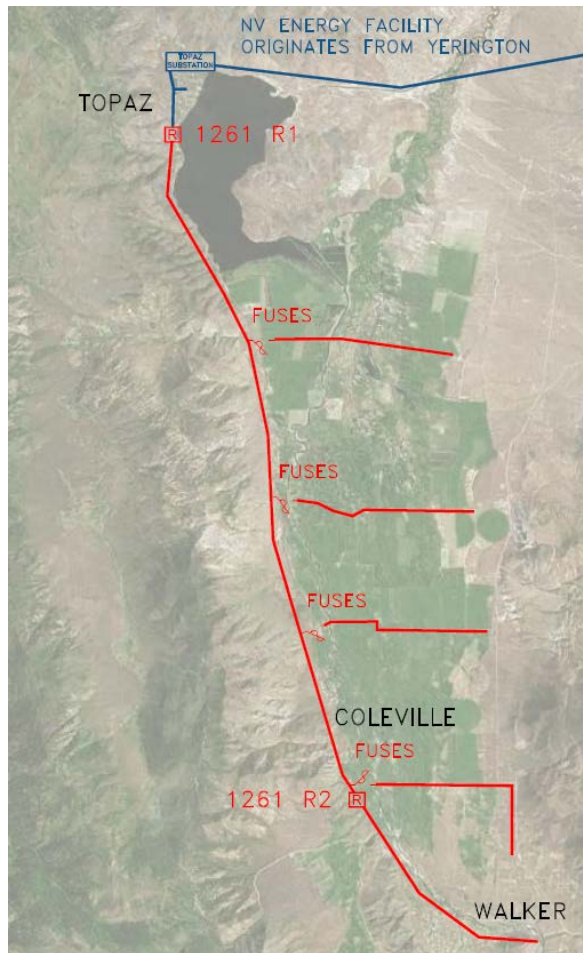
Washoe 201 Reliability Metrics



Significant Outages

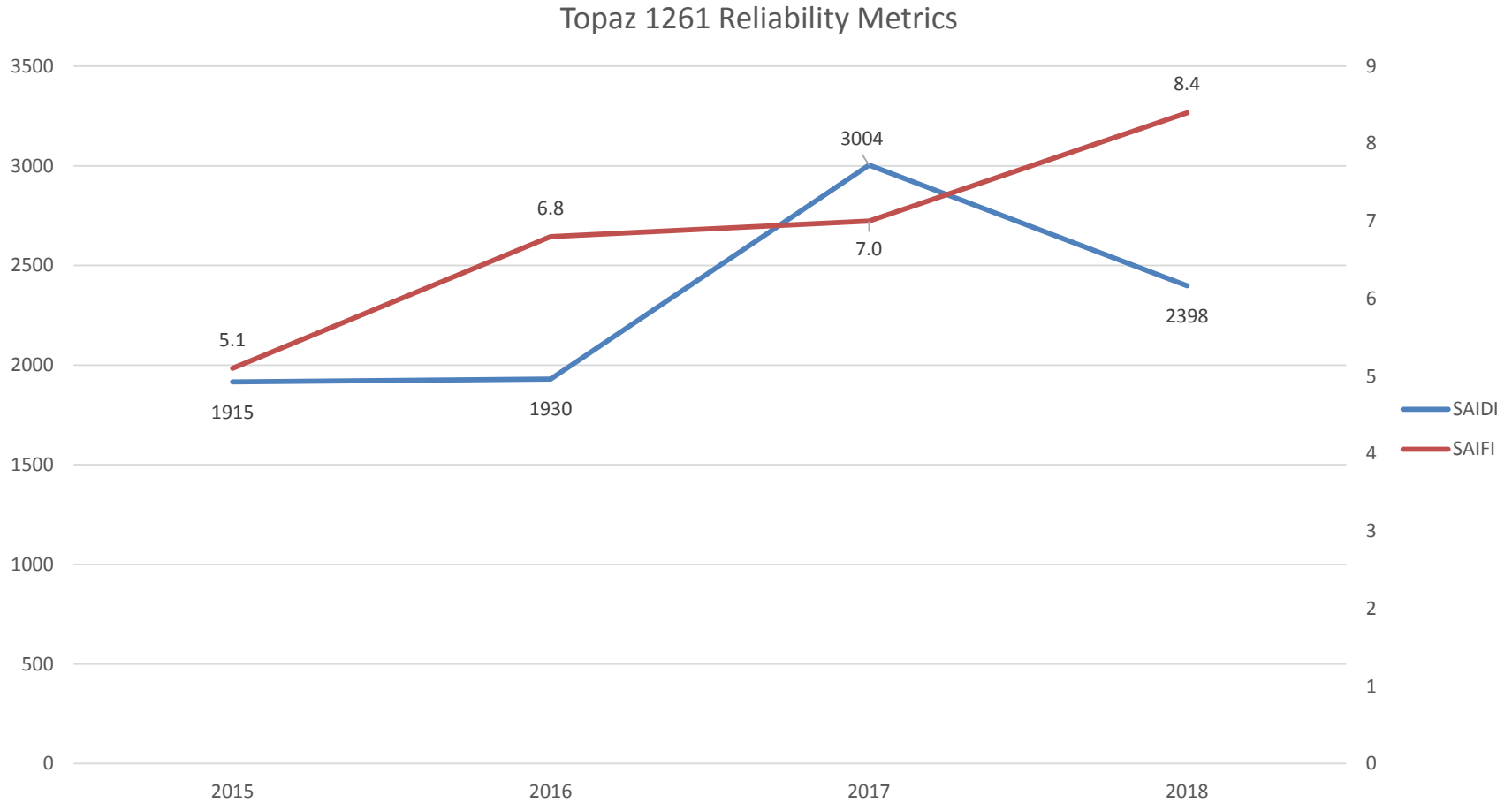
- February 21, 2017
 - Major storms hit the area causing widespread outages
 - Access road along the canyon near I-80 was unavailable.
 - 70 hour outage
- July 10, 2017
 - Wildfire in the area burned several poles
 - After the fire was contained and Liberty was granted access, generators were brought in to restore service to Floriston while the line was rebuilt.
 - 38 hour outage

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



Significant Outages

- February 6, 2015
 - Major storms hit the area causing widespread outages
 - Wind blew trees over into the line toppling 9 poles
 - 12 hours to restore mainline
 - Additional 8 hours to restore the final lateral
- June 6, 2017
 - Wildfire in Nevada burned down 3 poles on the source circuit to Topaz substation
 - 18 hours for NV Energy to gain access and restore service

Reliability Improvements



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

2018 SCADA Project

In 2018, Liberty Utilities became the controlling party over assets within our service territory (previously controlled by NV Energy).



Supervisory Control
And Data Acquisition

Direct communication
and control between
Liberty operators and
substation / circuit
devices.

Improved response
and restoration times.



Modern Technology

Improved awareness and control through cellular communication



Reclosers are now equipped with cellular antennas for remote control and data acquisition.

This improvement was made possible through the SCADA project in 2018.

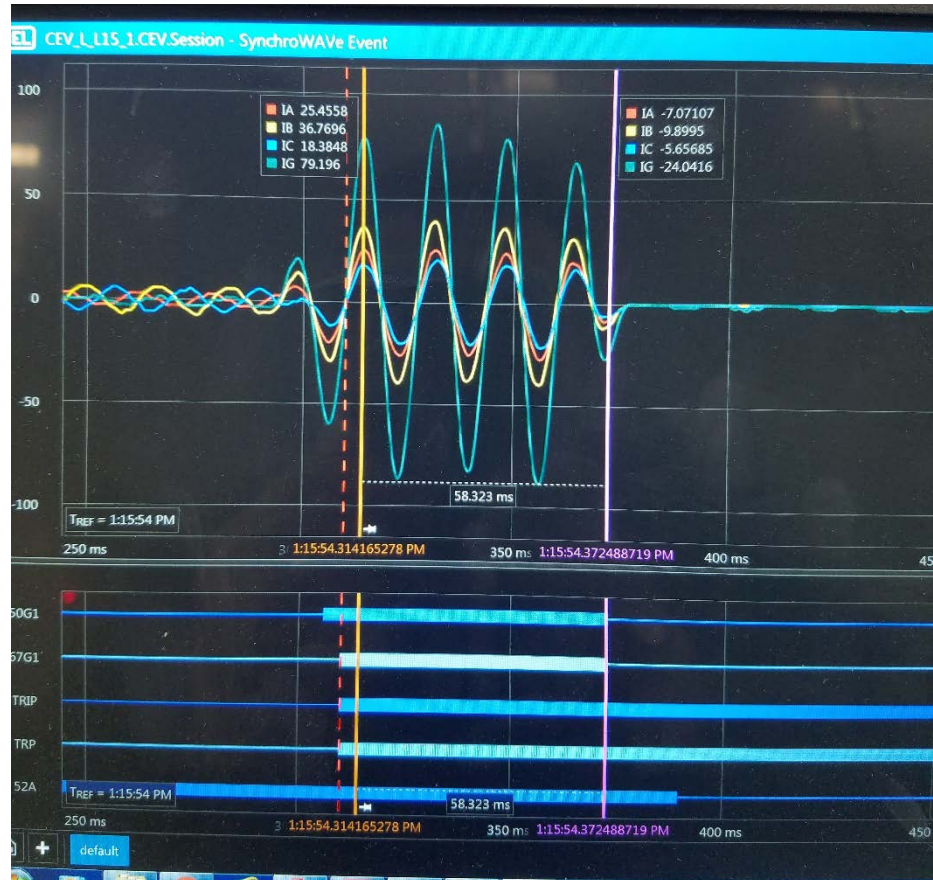


Detection and Early Warning Through SEL Team Software

Liberty is utilizing Schweitzer Engineering Laboratories' TEAM Software.

TEAM software is another tool which in some cases can improve response times and troubleshooting efforts.

- Relays detect a system disturbance and generate an event file
- Event files are immediately emailed to engineering for analysis



Improved Animal Protection



Equipment is protected from wildlife interference with new specially fitted Reliaguard covers.

Thank you.

powerquality@libertyutilities.com

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