

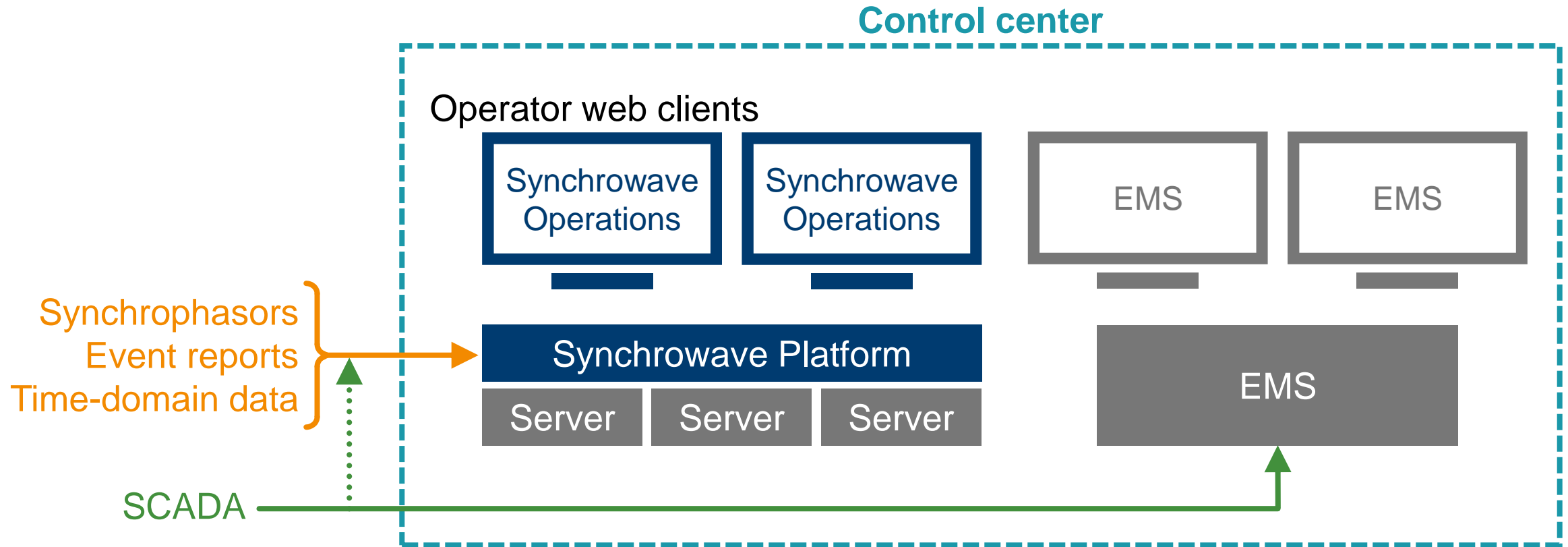
# SEL Update

Spring NASPI 2024

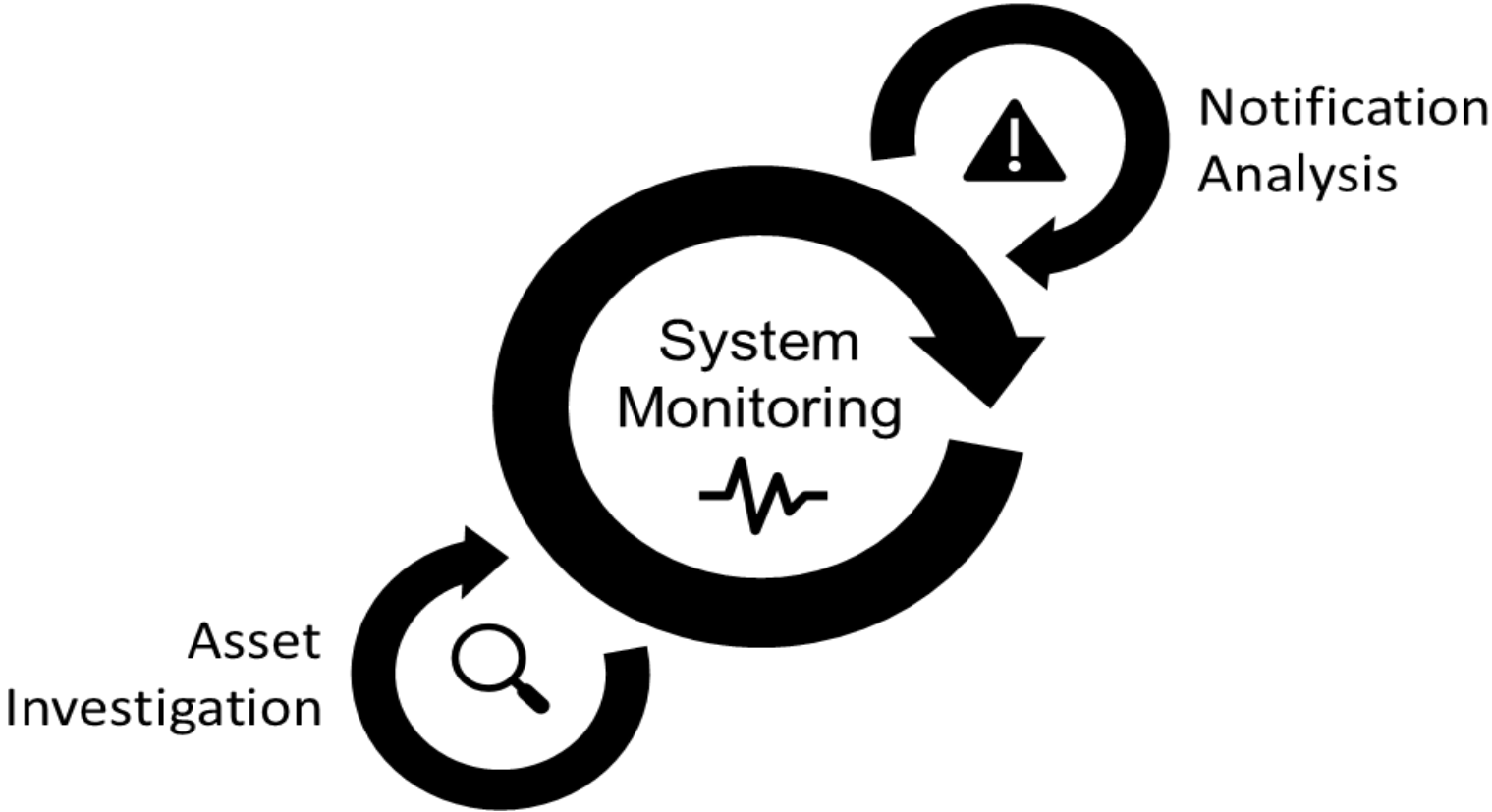
Jared Bestebreur, Product Line Owner  
April 16, 2024



# Compliment EMS/SCADA Systems

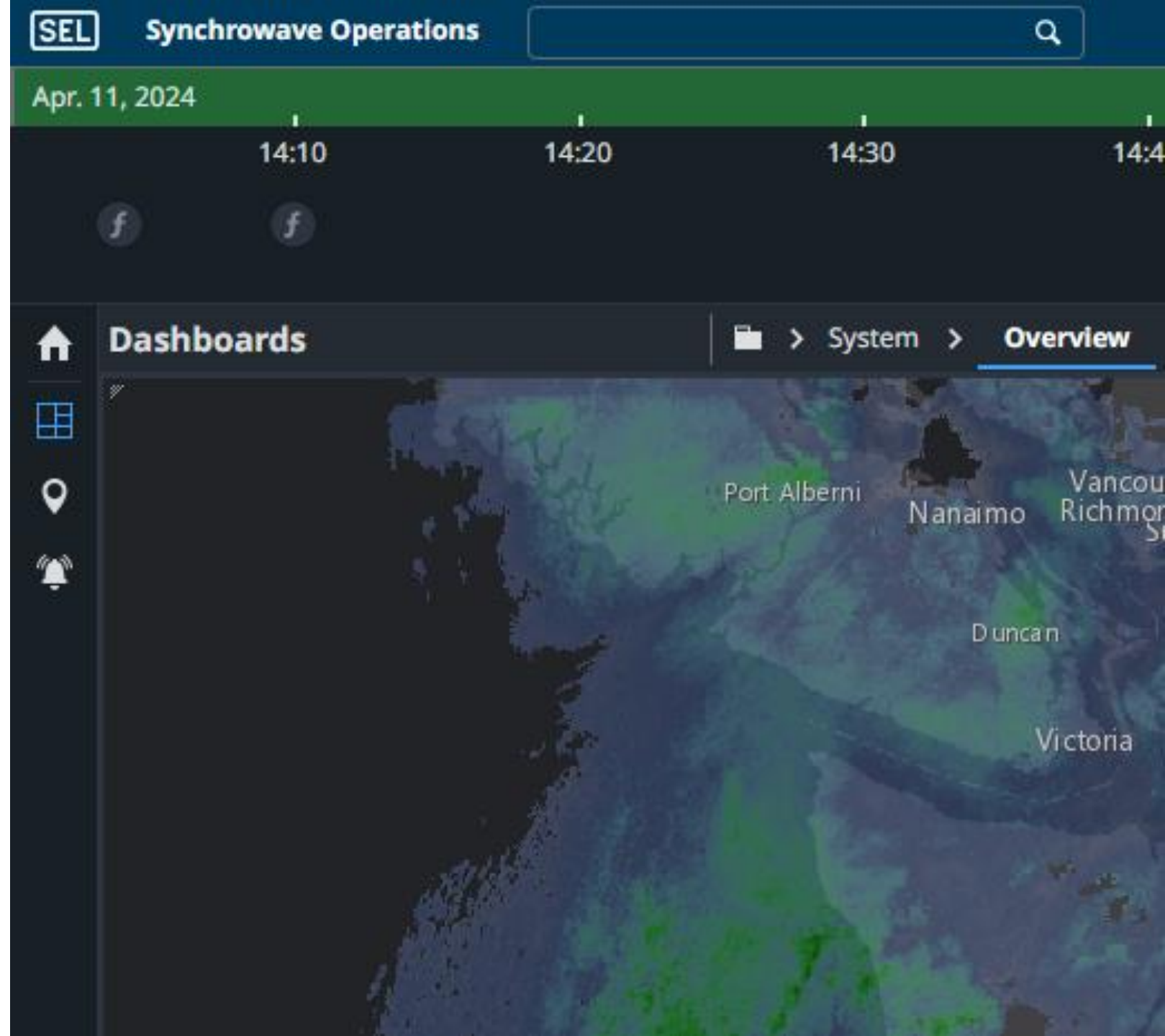


# Integrate Workflows to Improve Adoption





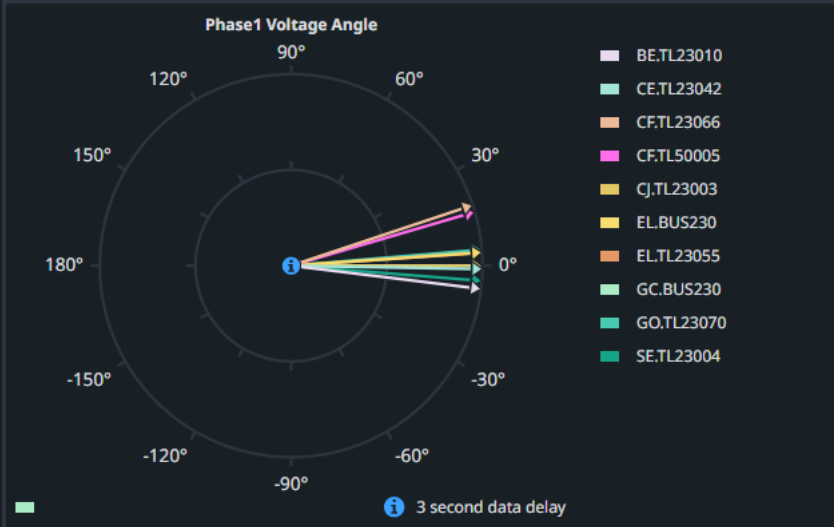
**System Monitoring**  
**Asset Investigation**  
**Notifications/Alarms**



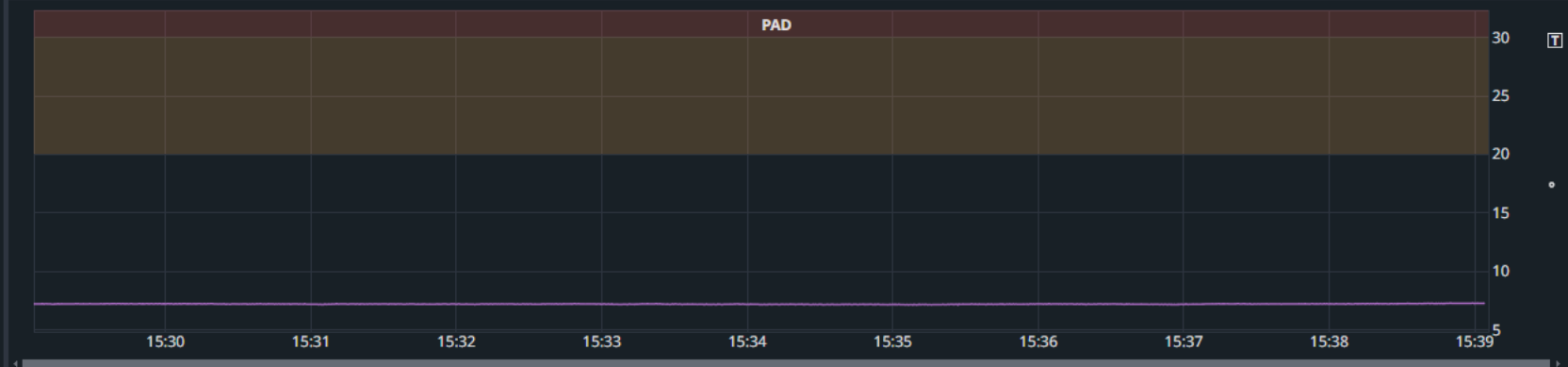
# Phase Angle Monitoring

15:39:04  
 04/11/2024  
 10m  
 Minute Chart Range

User + Frequency Angle Power  
General Oscillation Voltage All

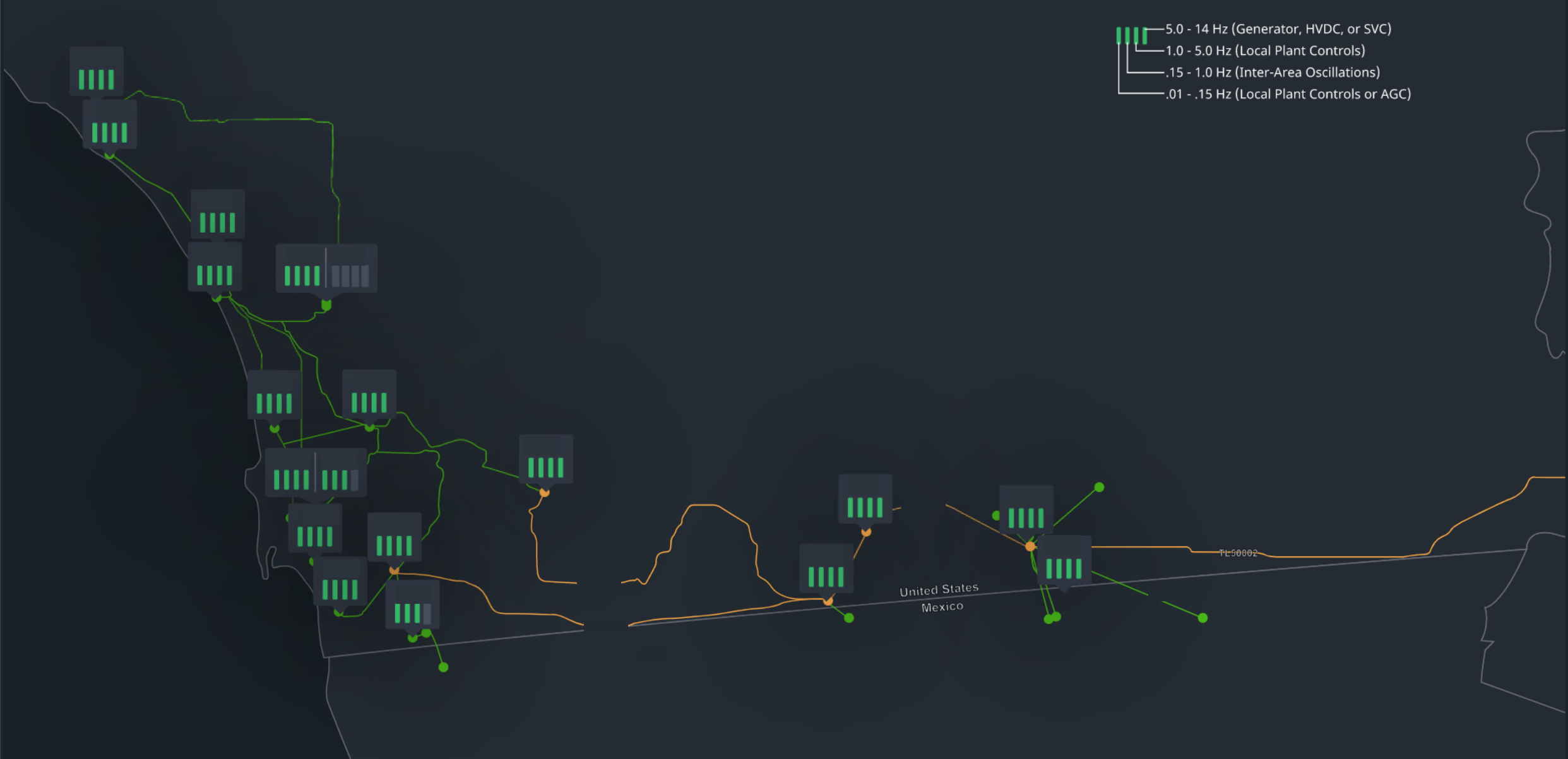


Measurement Points	PAD	PAD Threshold HighAlert
GO_SS.TL23070	7.248 °	30.000 °
CJ_EV.TL23003	6.792 °	30.000 °
EL_SS.TL23055	5.611 °	30.000 °
EL_GC.TL23051	3.995 °	30.000 °
EV_SE.TL23004	2.265 °	30.000 °
CF_LM.TL50005	2.010 °	30.000 °
EL_TA.TL23021	1.205 °	30.000 °
CF_LG.TL23066	1.109 °	30.000 °
CJ_GC.TL23011	0.735 °	30.000 °
BE_EV.TL23010	0.255 °	30.000 °
SE_TA.TL23023	0.140 °	30.000 °
GC_SP.TL23015	0.024 °	30.000 °
CE_TA.TL23042	0.005 °	30.000 °

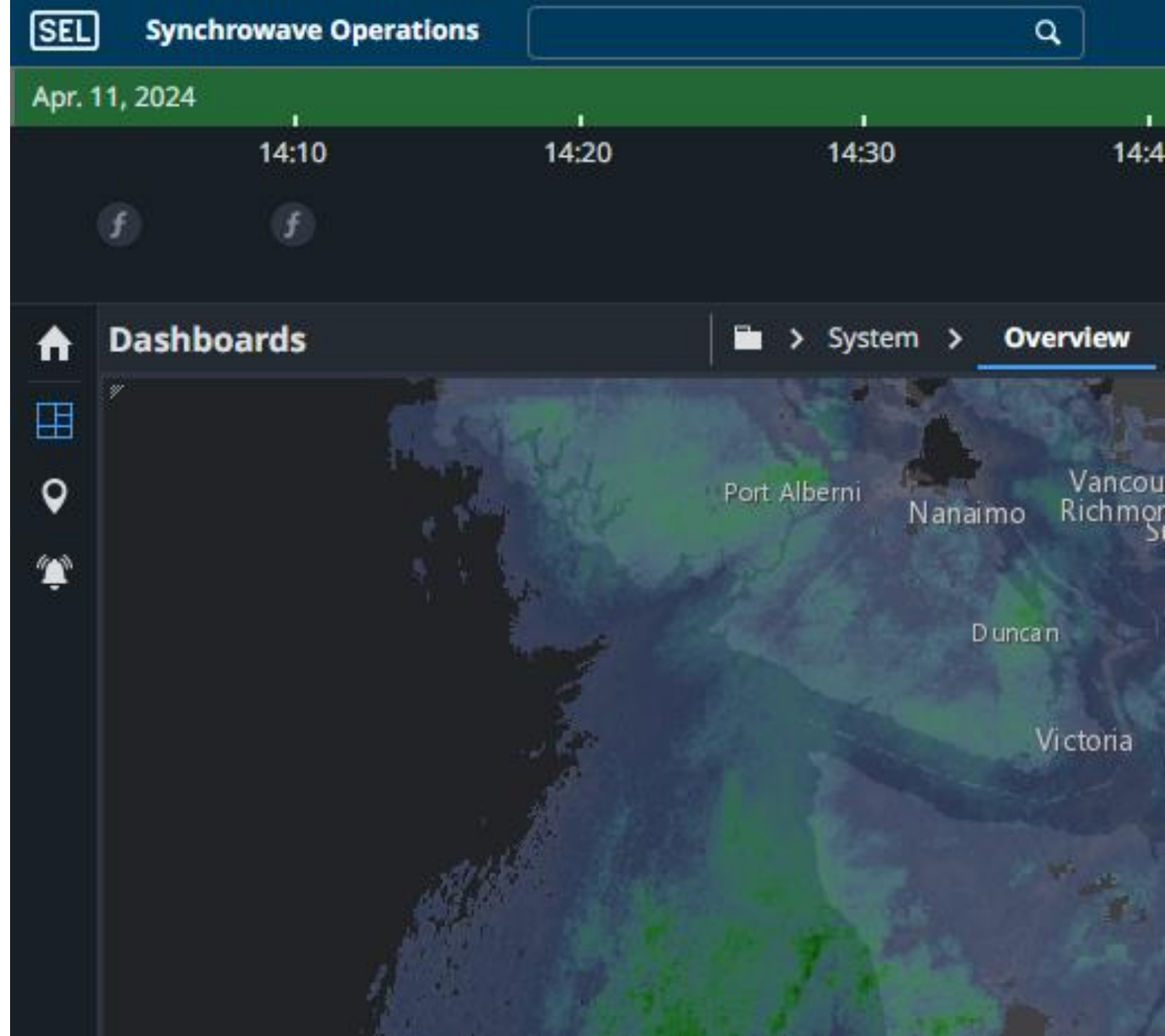


# Oscillation Monitoring

- 5.0 - 14 Hz (Generator, HVDC, or SVC)
- 1.0 - 5.0 Hz (Local Plant Controls)
- .15 - 1.0 Hz (Inter-Area Oscillations)
- .01 - .15 Hz (Local Plant Controls or AGC)



**System Monitoring**  
**Asset Investigation**  
**Notifications/Alarms**



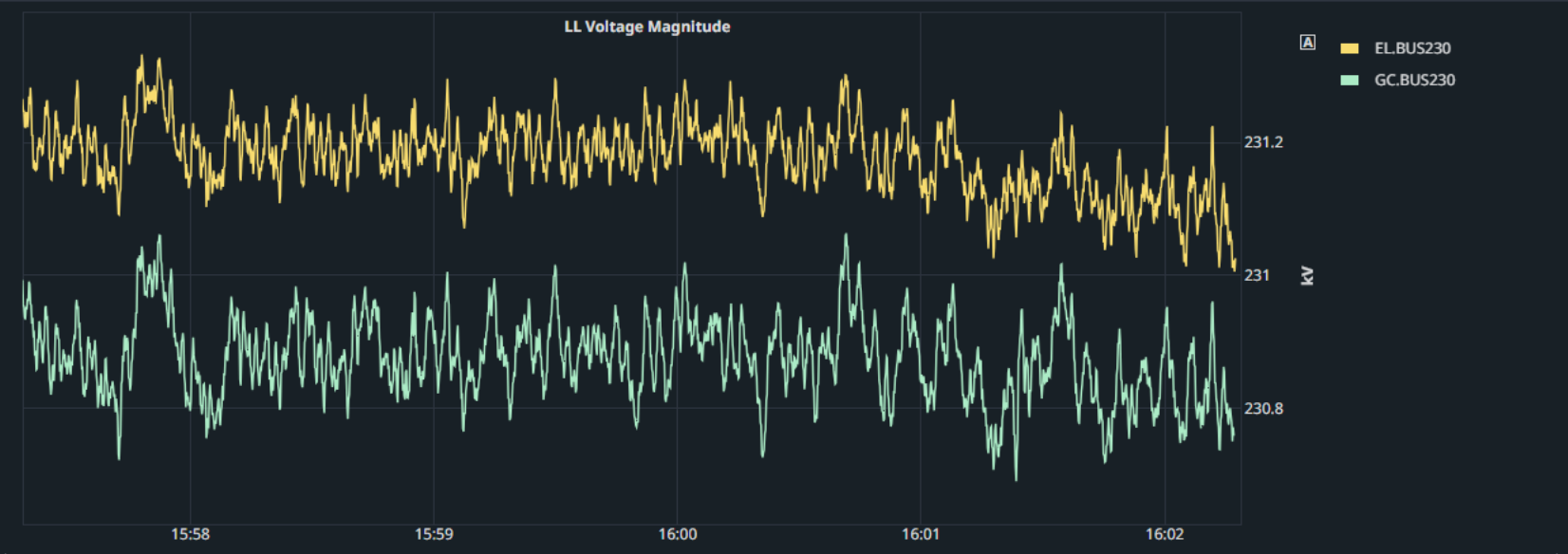
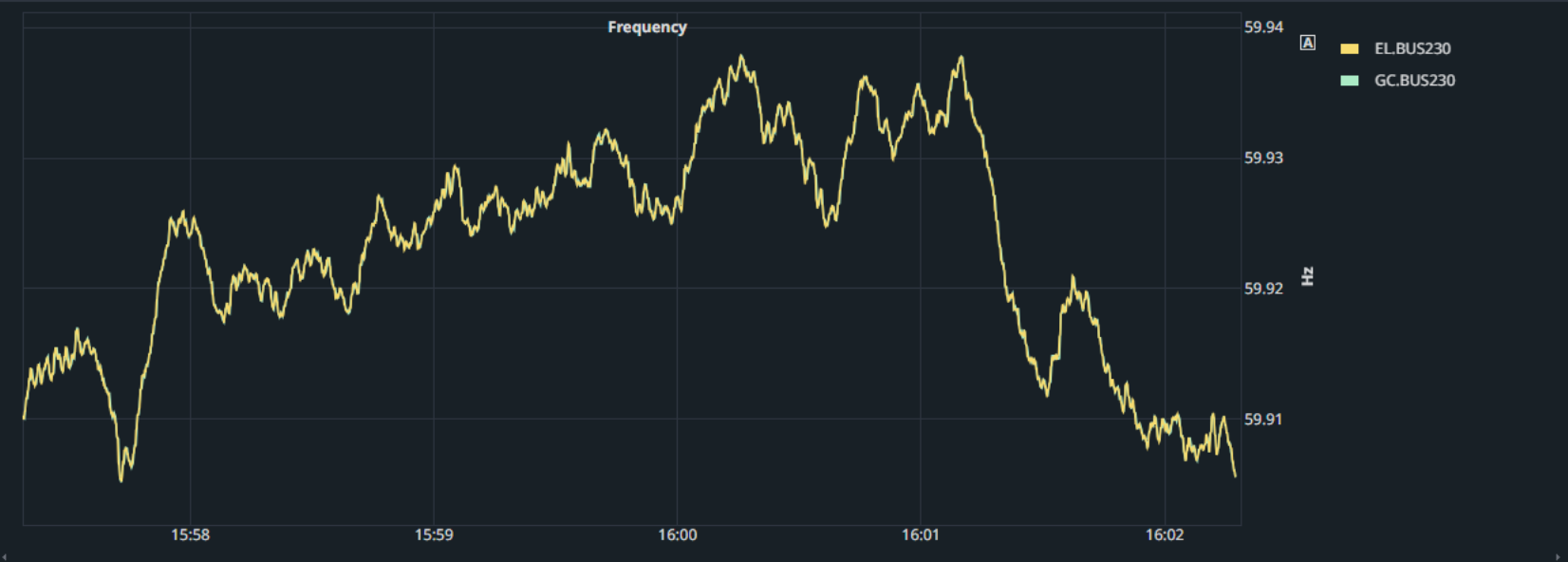
# Asset Overview

Real-Time Data

16:02:18  
04/11/2024  
5m  
Minute Chart Range

User + f Frequency ↶ Angle P Power  
General Oscillation V Voltage All

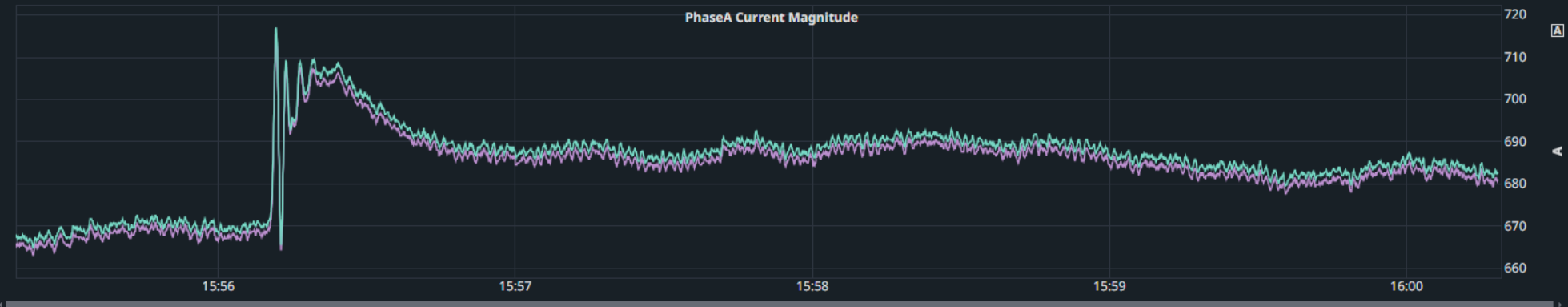
Assets > 230KV Lines > TL23051 Overview Phase Angle Difference Phase Currents Phase Voltages PV Chart Relay Event Reports Three Phase Power + Panel + Dashboard





# Additional Asset Details

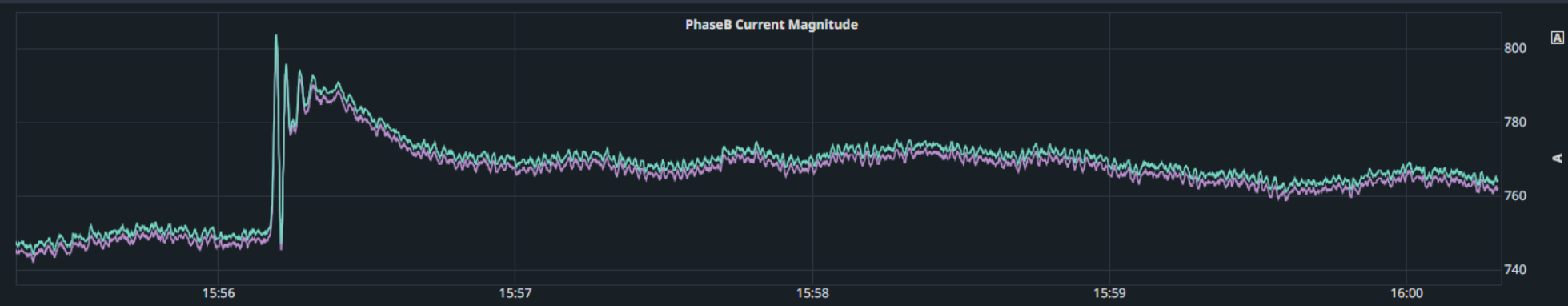
User + f Frequency ↺ Angle P Power  
 General Oscillation V Voltage All



PhaseA Current Magnitude

EL.TL23051  
**683.157 A**

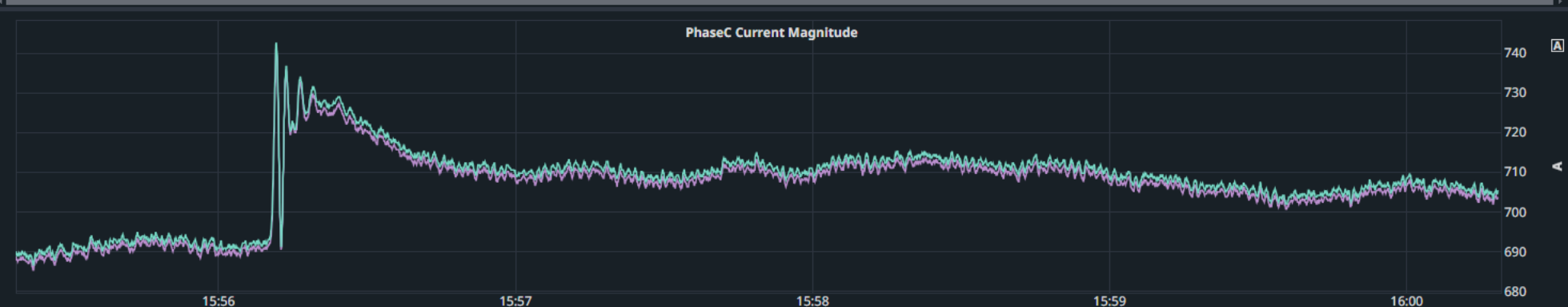
GC.TL23051  
**681.448 A**



PhaseB Current Magnitude

EL.TL23051  
**765.614 A**

GC.TL23051  
**763.051 A**

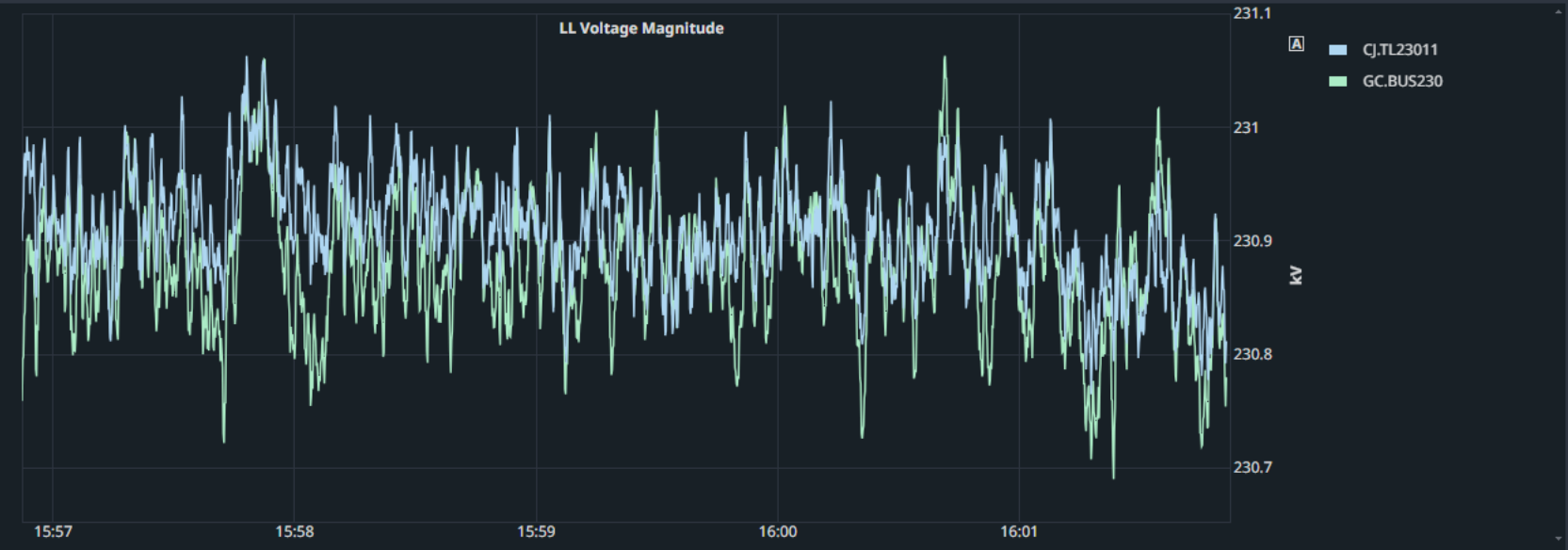


PhaseC Current Magnitude

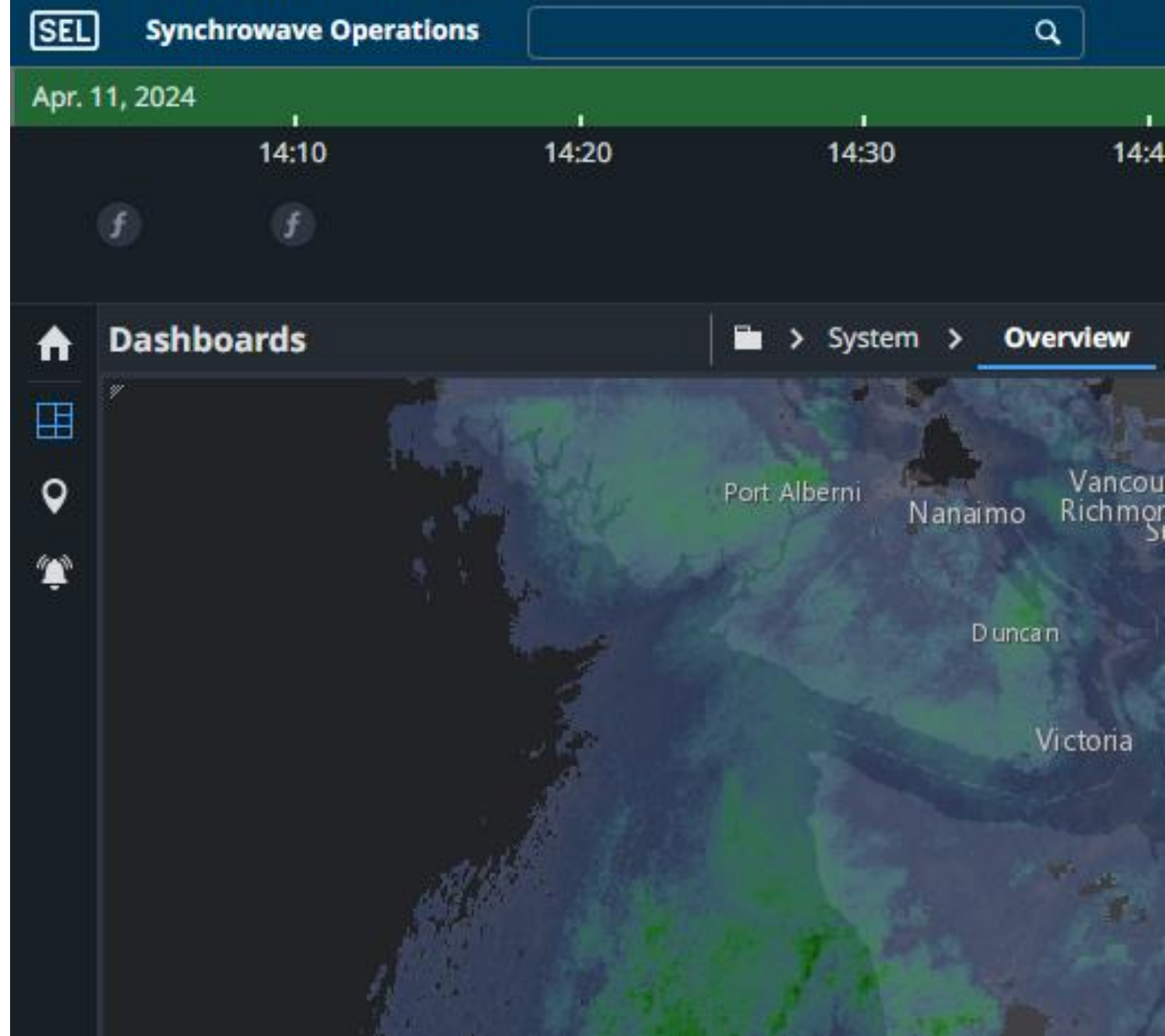
EL.TL23051  
**705.800 A**

GC.TL23051  
**704.519 A**

# Consistency Across Assets



**System Monitoring**  
**Asset Investigation**  
**Notifications/Alarms**



# Traditional Alarms/Events

## Notifications All + Panel + Dashboard

Type	Quantity	Location	Start Time	Duration	Latched Level	Latched Limit	Shelved	Acknowledged	Acknowledged By	Comments
Frequency	Frequency	BE.TL23010, SE.TL23...	12:23:18	20 Seconds	Low Alert	59.900	Unshelved	Unacknowledged		
Frequency	Frequency	SE.TL23004, BE.TL23...	11:33:13	1 Minute	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	BE.TL23010, SE.TL23...	11:27:06	20 Seconds	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	SE.TL23004, BE.TL23...	10:37:02	1 Minute	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	BE.TL23010, SE.TL23...	10:30:55	20 Seconds	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	SE.TL23004, BE.TL23...	09:40:51	1 Minute	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	BE.TL23010, SE.TL23...	09:34:44	20 Seconds	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	SE.TL23004, BE.TL23...	08:44:39	1 Minute	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	BE.TL23010, SE.TL23...	08:38:32	20 Seconds	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	SE.TL23004, BE.TL23...	07:48:28	1 Minute	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	
Frequency	Frequency	BE.TL23010, SE.TL23...	07:42:21	20 Seconds	Low Alert	59.900	Unshelved	Acknowledged	Auto-Acknowledge Timeout	



# All the Details with One-Click

Historical Data 04/15/2024 3m Minute Chart Range

- User +
- Frequency
- Angle
- Power
- General
- Oscillation
- Voltage
- All

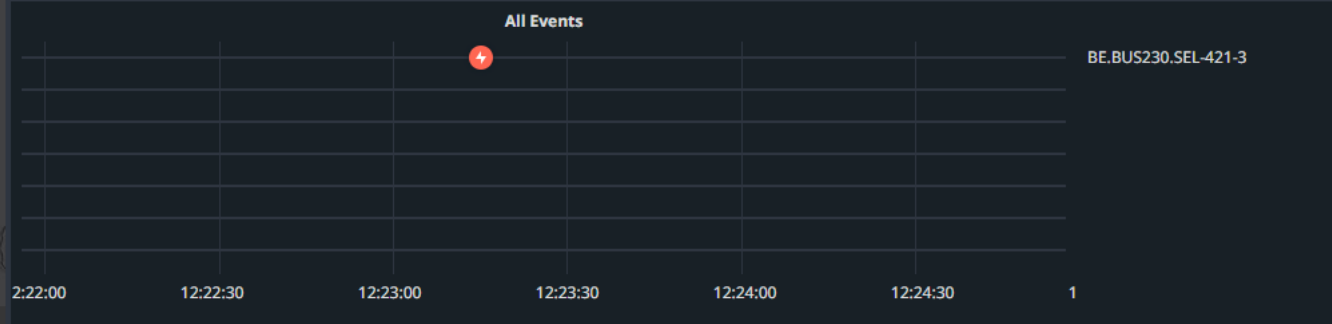
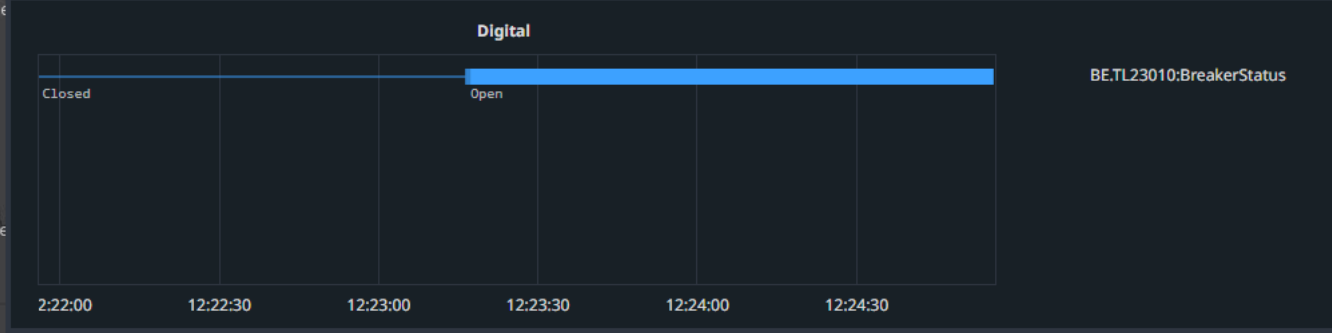
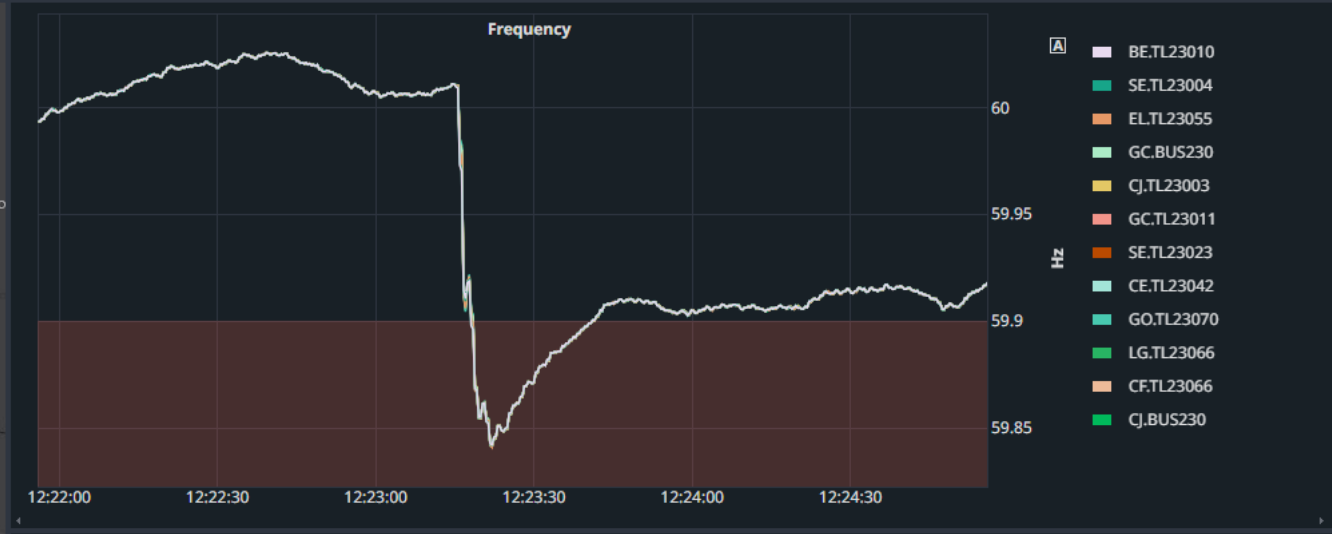
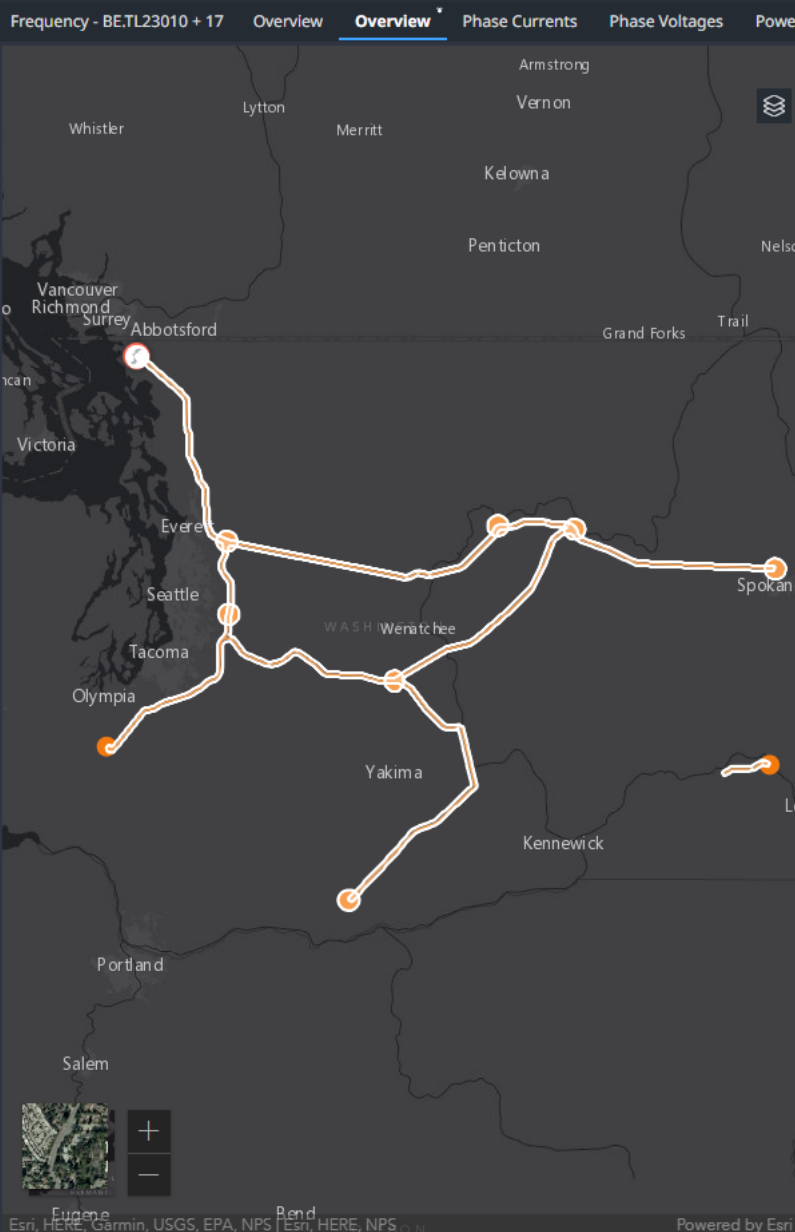
+ Panel + Dashboard

Notifications

Frequency

Focused Shelved

Frequency - BE.TL23010 + 17  
12:23:18 - 20 Seconds  
Low Alert (59.900)





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