

PQDashboard

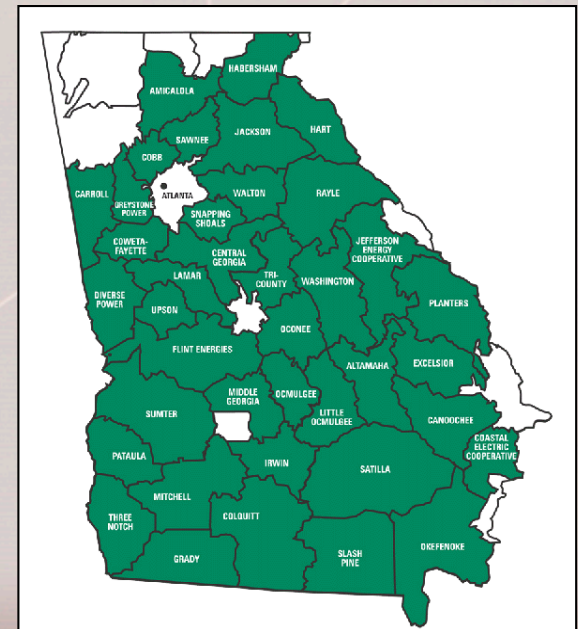
User's Group Meeting

May 9, 2019

Presented by: Lori Hartzog

About Georgia Transmission Corporation (GTC)

- Transmission-only, not-for-profit cooperative
- Formed in March 1997 from the restructuring of Oglethorpe Power Corporation (OPC)
 - GTC provides network transmission services to 38 Member EMCs in Georgia
 - GTC provides point-to-point service to other customers



GTC Timeline for the PQ Dashboard Project

2014 - Georgia Tech
Conference

2015 - DFR Events,
Single/Double Ended
Fault Analysis, Breaker
Trip, Line ID/ Breaker #

2016 – DFR Logic
Equations, Improve
Breaker Timing Logic

2017 – DC Offset
Findings, Breaker Status
Chatter, Cause Codes

2018 – Notes, Quick
Search

Automated Data Exchange Background

- Background of the Georgia ITS system

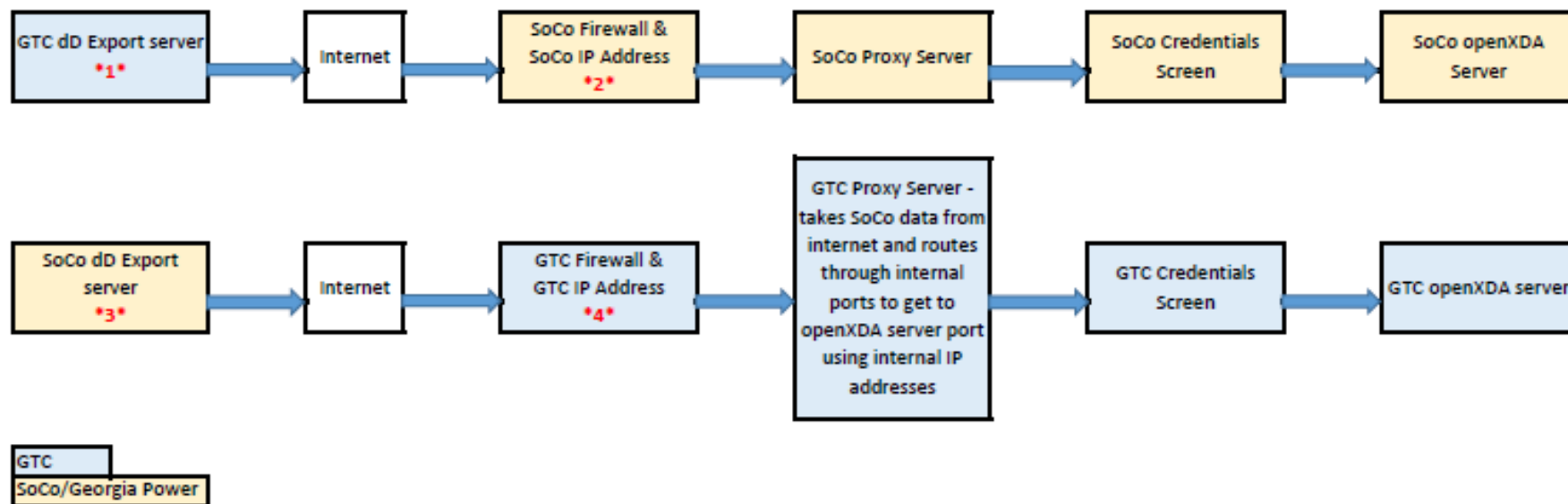


Automated Data Exchange Goals

Why is near real-time data sharing between GTC and Georgia Power Company (GPC) PQ Dashboards so important?

- Double-ended fault location calculations
 - Helps provide information to GCC and GSOC control centers
 - Provides fault distance to GPC and GTC maintenance crews
- See Faults and Events at each other's substations
 - GTC – 80+ DFRs
 - GPC – 120+ DFRs
- GTC has customers off of GPC lines and GPC has customers off of GTC lines.
- Analysis of system events that affect the Integrated Transmission System (ITS)

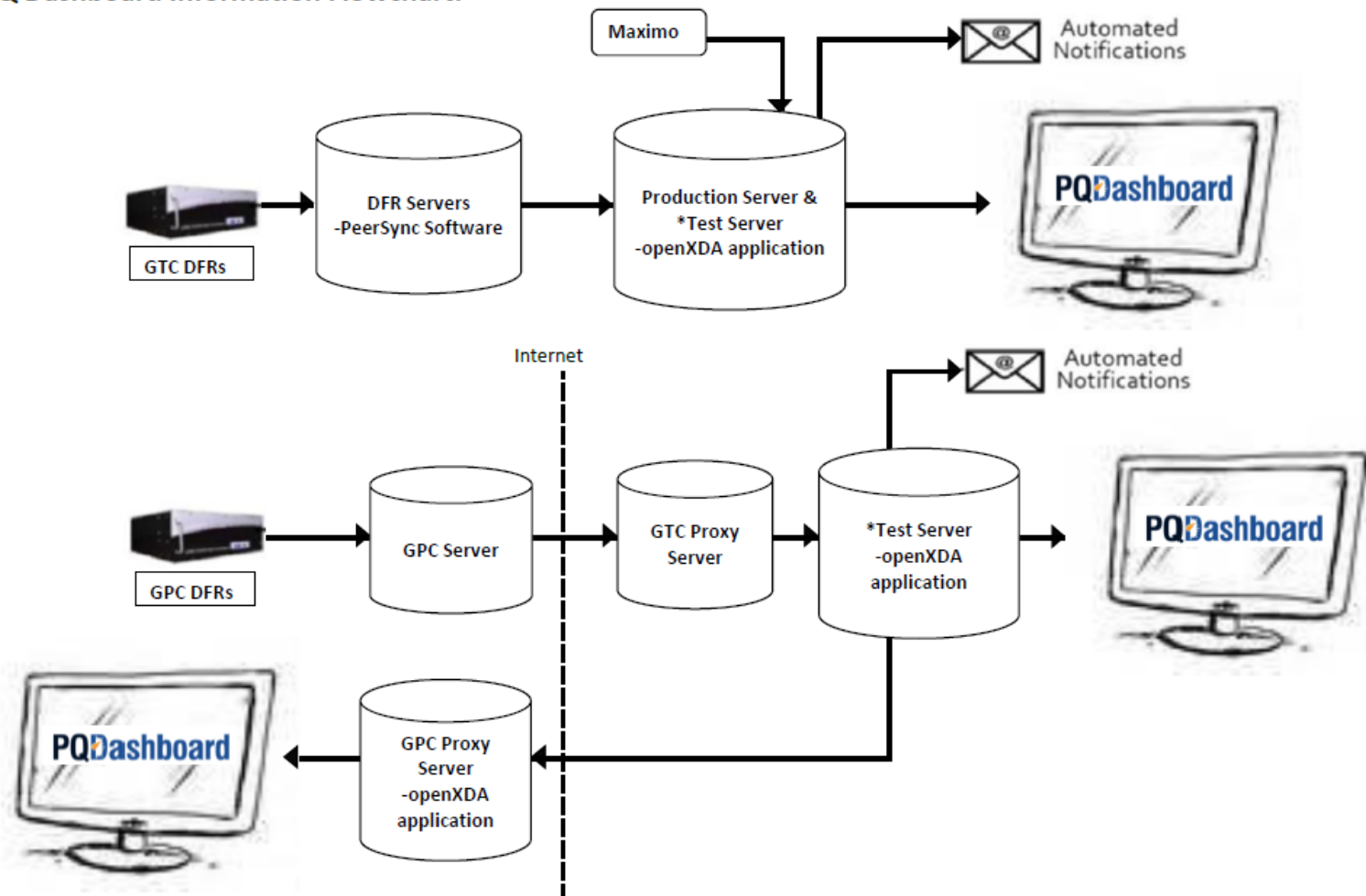
Automated Data Exchange Flowchart



- *1* Southern Company's proxy's public IP address goes here; GTC can plug it into our dD Export instance
- *2* Southern Company's firewall needs to let in data from GTC's public IP address from our server
- *3* GTC's proxy's public IP address goes here; Southern Company can plug this into their dD Export instance
- *4* GTC's firewall needs to let in data from Southern Company's public IP address from their server

Automated Data Exchange Flowchart


PQ Dashboard Information Flowchart:



**This is the same instance of the test server.*

Automated Data Exchange Results

- Email example:



Fri 5/3/2019 3:59 AM

PQDashboard@gasoc.com

Testing - Fault detected on 00000336 (00000336)

To ■ Hartzog, Lori; ■ Browning, Marlin

Fault 1 - 2019-05-03 02:42:53.5799973

DFRs: R222 at 230/115 DF/SE GPC triggered at 02:42:53.4868723 ([click for waveform](#))

Files: 190503_024253587_-6td, 230_115 DF_SE GPC, USI_2002 R222, GPC, R222F2839.dat

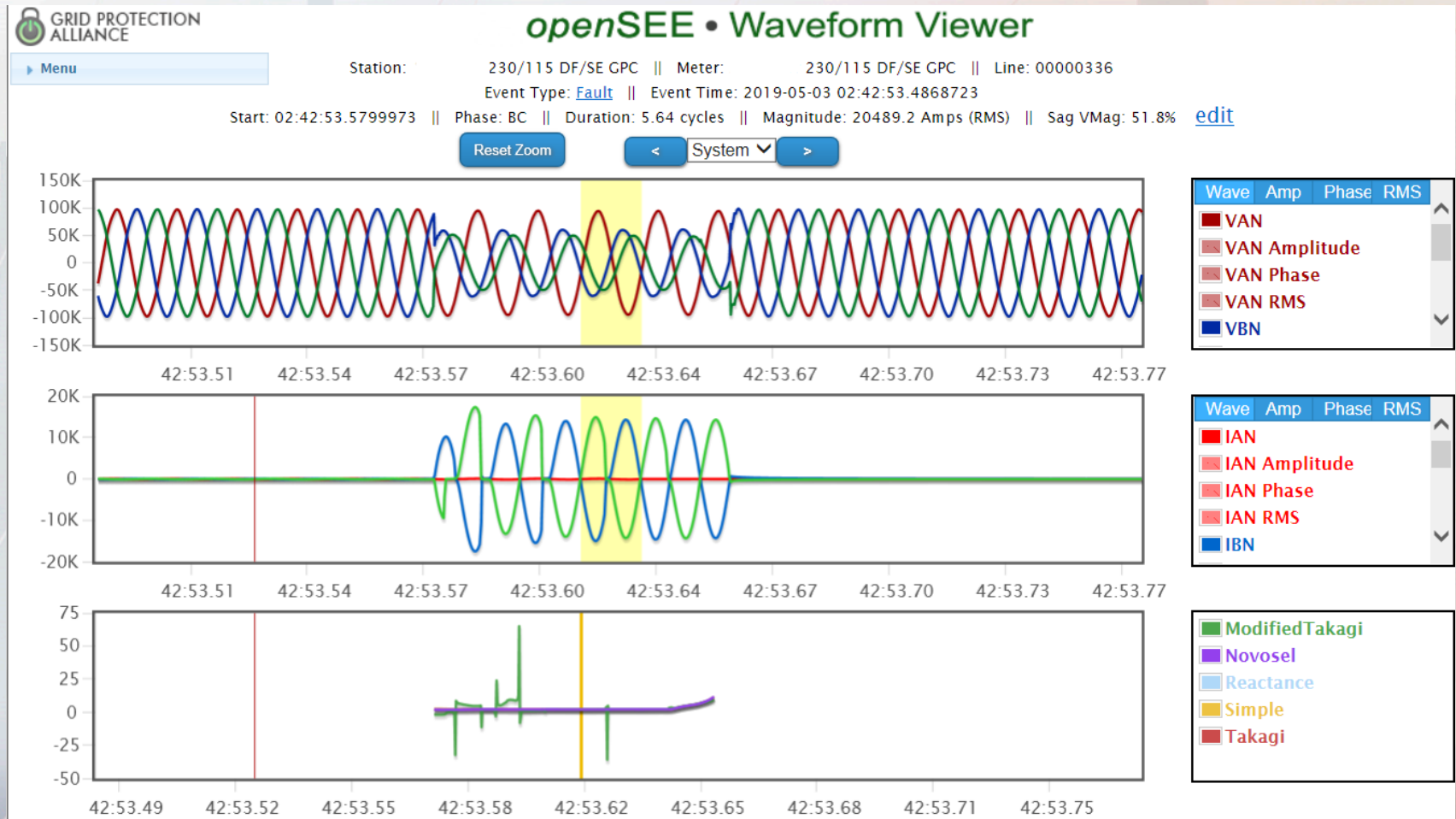
Line: 00000336 (2.84 miles)

	230/115 DF/SE GPC - R222
Fault Type:	BC
Inception Time:	02:42:53.5799973
Fault Duration:	93.958 msec (5.64 cycles)
Fault Current:	20489.2 Amps (RMS)
Prefault Current:	49.1 Amps (RMS)
Postfault Current:	1.5 Amps (RMS)
Distance Method:	Novosel
Single-ended Distance:	2.240 miles
Short file name:	R222F2839.dat
openXDA Event ID:	1707383

Line Parameters:	Value:	Per Mile:
Length (Mi)	2.84	1.0
Pos-Seq Imp Z1 (Ohm) (LLL, LLLG, LL, LLG)	2.322 \angle 70.0042° 0.794+j2.182	0.8176 \angle 70.0042° 0.2796+j0.8176
Zero-Seq Imp Z0 (Ohm)	7.7115 \angle 75.2988° 1.957+j7.459	2.7153 \angle 75.2988° 0.8891+j2.6264
Loop Imp ZS (Ohm) (LG)	4.1143 \angle 73.3092° 1.1817+j3.941	1.4487 \angle 73.3092° 0.4161+j1.3877

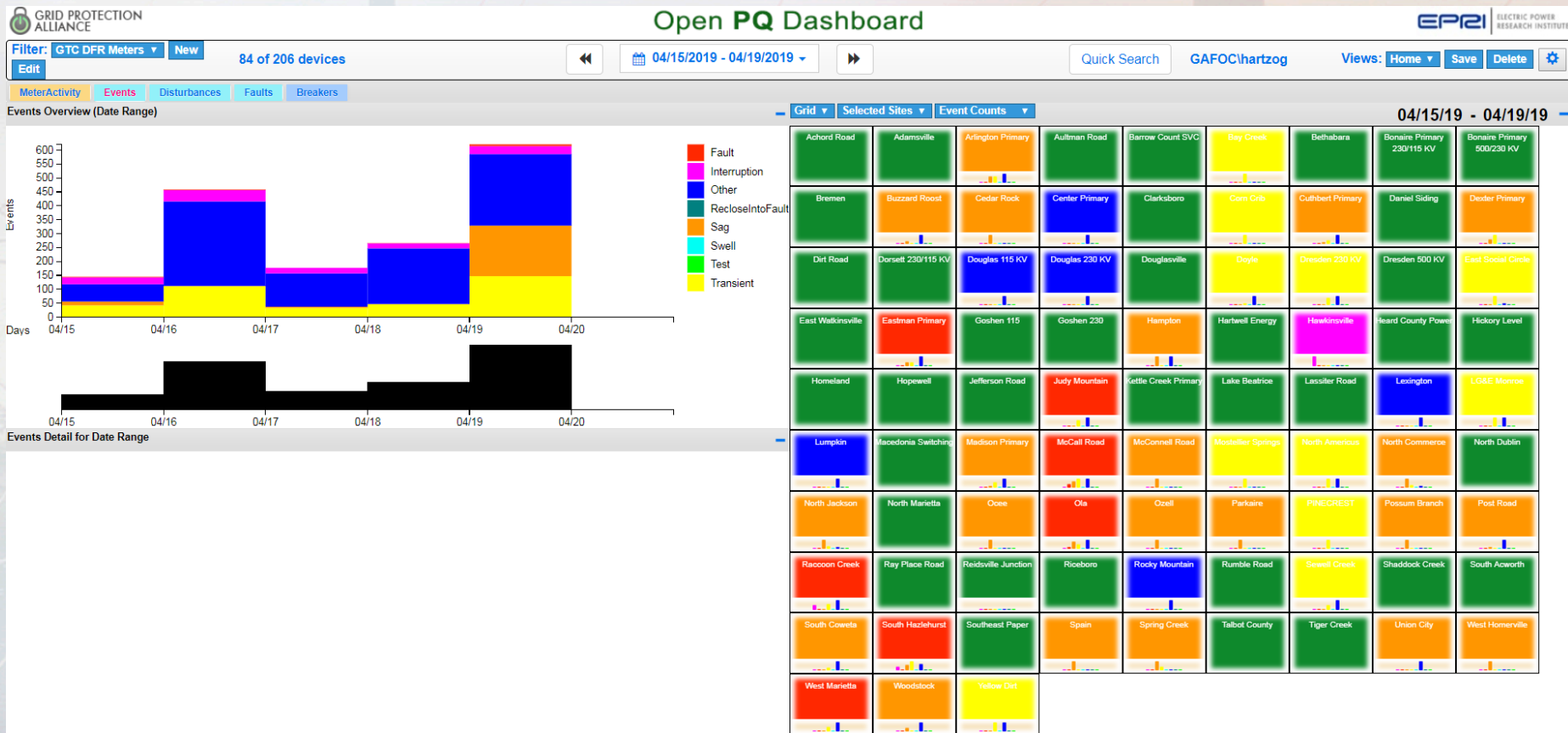
Automated Data Exchange Results

- Waveform example:



Automated Data Exchange Results

- GTC Events:

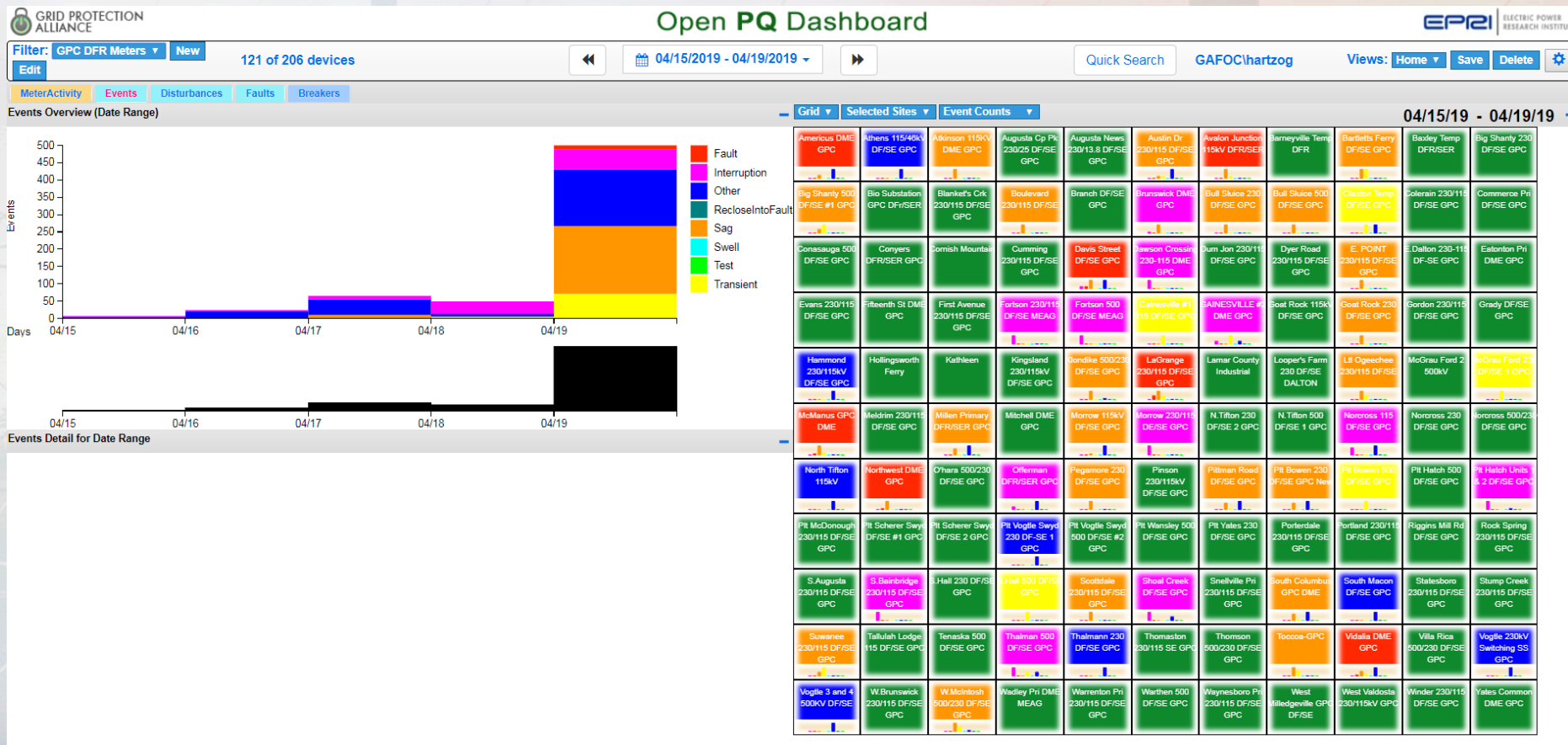


- GTC & GPC Events:



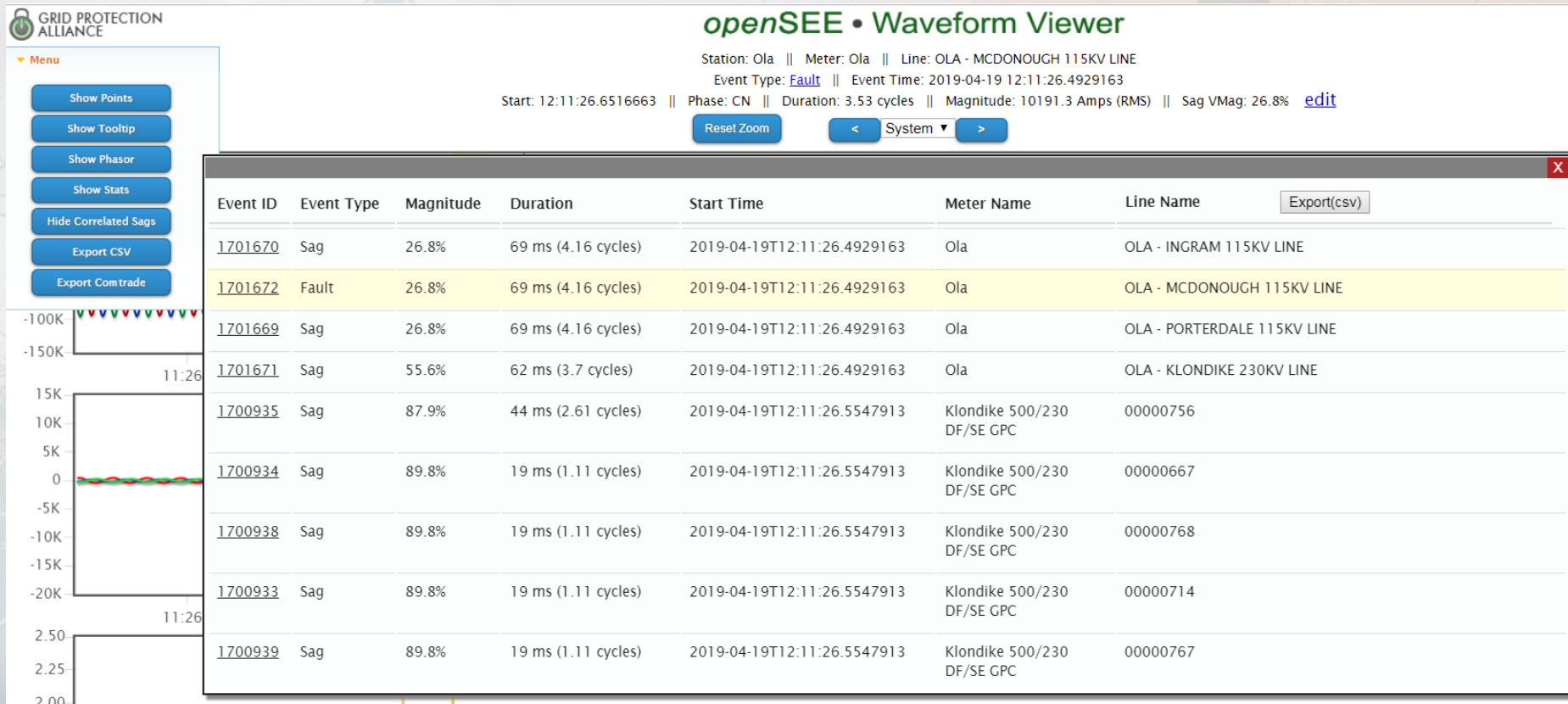
Automated Data Exchange Results

- Only GPC Events:



Automated Data Exchange Results

- Easier way to see impact of system wide sags:



Automated Data Exchange Lessons Learned

- Configuring firewalls and proxy servers takes some time and effort
 - Need help from multiple departments
 - Need to test each portion of the connection
- Need unique R-value numbers

2019 & 2020 GTC Projects

2019 Projects:

- “Test” mode button
- Exporting the lightning correlation data from the DFRs to the OpenXDA/PQ Dashboard
- Exporting Breaker Restrike data from the DFRs to the OpenXDA/PQ Dashboard.
- Breaker timing report
- X marks the Fault location

2020 Projects:

- Export Fault Indicator (FI) Information
- Export NEXUS PQ meter data



Questions?