

What's New with Eaton AMI? - Product Roadmap

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Powering Business Worldwide

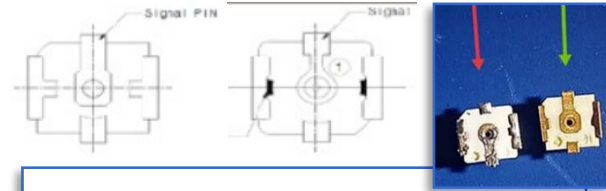
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Agenda

- Product Advisory
- Product Releases/Reminders
- Projects Under Consideration
- Wrap Up
 - The Team
 - All the Places You Should Go...

Product Advisory – Diminished RF Signal

- RFN-410cL, RFN-420cL/D, RFN-510fL, and RLY-856 users
 - Situation: A potential nonconformance may cause low RF output power
 - Affected devices exhibit a limited communications range
 - Root cause: 2nd version of an antenna connector was introduced to the line which reversed the orientation of signal and ground connections
 - Affected Shipment Dates
 - September 27, 2022 - November 16, 2022 – Some units affected
 - November 17, 2022 - January 31, 2023 – Highly likely units affected
 - Corrective Action: **Affected customers have been notified**
 - Updated Notice went out April 28 with specific shipment IDs
 - Units can be verified in a meter shop or the field
 - Requires Network Runner 1.4.0.0 Upgrade software for the Trimble Ranger 7 or Yuma 7 field tools
 - Units received will go through screening process
 - Unaffected units will be immediately returned
 - Affected units will be reworked on a dedicated RMA rework line
 - Final Test for all units now measures RSSI radio output to ensure operation
 - Recovery Plan
 - Deployment Managers and Support Team are coordinating with customers and managing the schedule
 - Need to understand your short-term needs to support you as best we can
- **We sincerely appreciate your patience and understanding**



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Eaton Corporation

Update April 2023
Stop Shipment Notification
Action Required

Eaton Electric Meters RFN-410cL, RFN-420cL/D, and RFN-510fL
Eaton Relay RLY-856

This is an update to the Diminished RF Signal Notice that was sent February, 2023.

Eaton records indicate [Utility Name] received one or more Eaton RF Meters RFN-410cL, RFN-420cL/D, and RFN-510fL and/or Eaton Relay RLY-856 that were shipped between September 27, 2022 and January 31, 2023. We have identified a potential nonconformance in these products which may cause them to exhibit low RF output power, resulting in a limited communications range.

For uninstalled meters in inventory, we strongly recommend you refrain from installation due to the potential for nonperformance.

Devices shipped between November 17, 2022 and January 31, 2023 are highly likely to exhibit this issue and [Utility Name] received the following shipments that fall into this timeframe:

[Shipment Number 1], Quantity: [Qty 1], [Part Description 1]
[Shipment Number 2], Quantity: [Qty 2], [Part Description 2]
[Shipment Number 3], Quantity: [Qty 3], [Part Description 3]
[Shipment Number 4], Quantity: [Qty 4], [Part Description 4]
[Shipment Number 5], Quantity: [Qty 5], [Part Description 5]
[Shipment Number 6], Quantity: [Qty 6], [Part Description 6]
[Shipment Number 7], Quantity: [Qty 7], [Part Description 7]

Eaton has also been made aware that some shipments between September 27, 2022 and November 16, 2022 are also impacted. [Utility Name 2] received the following shipments that fall into this timeframe:

[Early Shipment Number 1], Quantity: [Early Qty 1], [Early Part Description 1]
[Early Shipment Number 2], Quantity: [Early Qty 2], [Early Part Description 2]
[Early Shipment Number 3], Quantity: [Early Qty 3], [Early Part Description 3]
[Early Shipment Number 4], Quantity: [Early Qty 4], [Early Part Description 4]
[Early Shipment Number 5], Quantity: [Early Qty 5], [Early Part Description 5]

Product Releases

Product Release

- Yukon 9.4
 - Finishing up QA and regression testing
 - Features
 - Security Enhancements
 - Infrastructure Warning Notification filtering
 - Mapping shapefile integration
 - MultiSpeak 4.1 (in addition to 3.0 and 5.0)
 - Water and Gas Support
 - Release: Now Available



***Be sure to join us at 9:00 AM tomorrow for a deeper view of
What's New in Yukon***

Product Release

- RF Network Firmware 9.7
 - Finishing up QA and simulation testing
 - Features
 - Communication Improvements
 - RFG-301 Gas Node support
 - Cellular IPLink Relay support
 - Network Simulator resolutions
 - Release: Summer 2023
 - Update in conjunction with Yukon 9.4
- RF Network Firmware 9.8
 - Features
 - On-demand improvements, especially gateways w/ many direct connections
 - KYZ input capabilities for the S4x
 - TOU seasons for RFN-410/420 residential meters
 - Release: Q4 2023
 - Yukon feature support in Q1 2024



Product Release

- Gas Node (RFG-301)
 - Integrated Gas/Metered Propane nodes
 - Support in RF Network Firmware 9.7
 - RFG-301A – American/Honeywell Gas meters
 - Available for ORDER
 - RFG-301R – Rockwell/Sensus Gas meters
 - Available for ORDER
 - Pulsed-based Gas/Metered Propane node:
 - RFG-201 – Pulse-based interface to support:
 - Rotary/pulse-based commercial meters
 - Volume correctors
 - Itron/Actaris gas meters using RIOTronics pulser module



RFG-301A



RFG-301R



RFG-201

Product Reminders

- Gateway 801 (GWY-801)
 - Improved ease of installation/maintenance and robustness
 - Connectorized connections and prewired cabinet
 - Retrofit instructions available to use w/ GWY-800 cabinet
 - Available for ORDER
 - Requires RF Network Firmware 8.2 or higher
 - Requires Yukon 7.5.1 or higher
 - Gateway 800 will be available into 2024



Product Reminders

- Relay 856 (RLY-856)
 - Implemented changes in October 2022
 - Extensive surge testing & field testing
 - Increased the robustness of the antenna circuit
 - Switched antennas as part of this enhancement
 - Have seen only 1 unit fail after these changes



**Previous
Antenna:
Laird**



**Current
Antenna: WPI**

Product Reminders

- Landis+Gyr FOCUS AXe-SD (RFN-520fAXD)
 - Form 2SE CL320 Disconnect
 - Available for ORDER

- Passive Antenna Kit (RFN-PASS-ANT-KIT1/2)
 - Easy to deploy passively coupled antenna to provide connectivity to challenging meter locations
 - Works with all Eaton RF AMI Nodes
 - RFN-PASS-ANT-KIT1 – Cabinet Mount
 - RFN-PASS-ANT-KIT2 – Pole Mount
 - Successful field implementations
 - Available for ORDER



Product Reminders

- Load Control Receiver (LCR-6600 RFN)
 - 480V Large box switch – up to 2 relays
 - Available for ORDER
- Load Control Receiver (LCR-6700 RFN)
 - Large box switch – up to 4 relays
 - Available for ORDER
- Legacy 3rd Party switch retrofit (LCR-6701 RFN)
 - Comverge/Scientific Atlanta, Hunt/L+G, Entek
 - 120-240V, up to 3 relays
 - Typically avoids expense of licensed electrician/permit
 - Available for ORDER

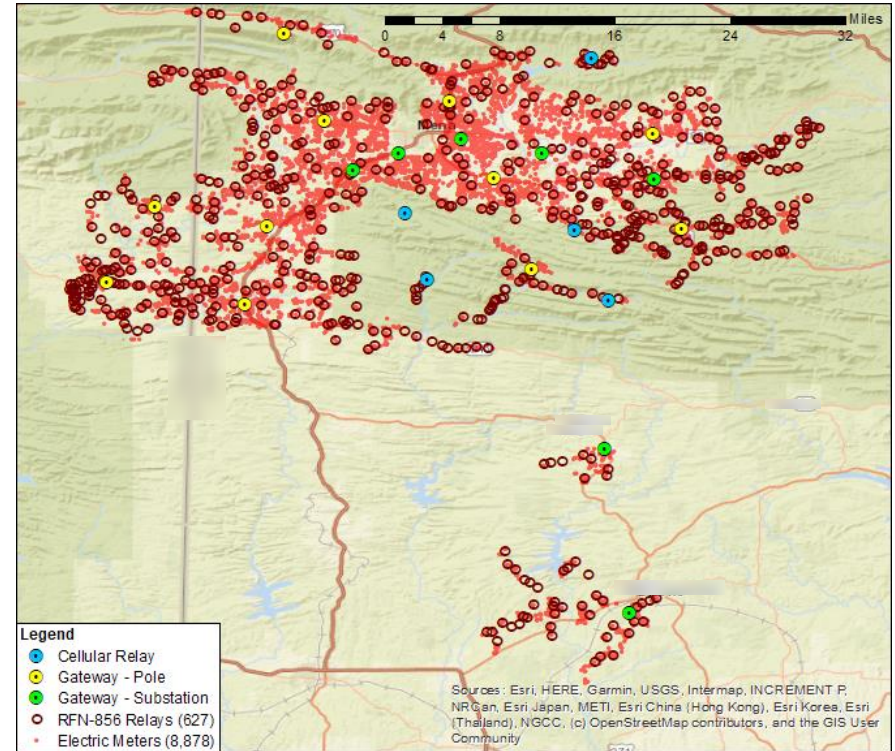
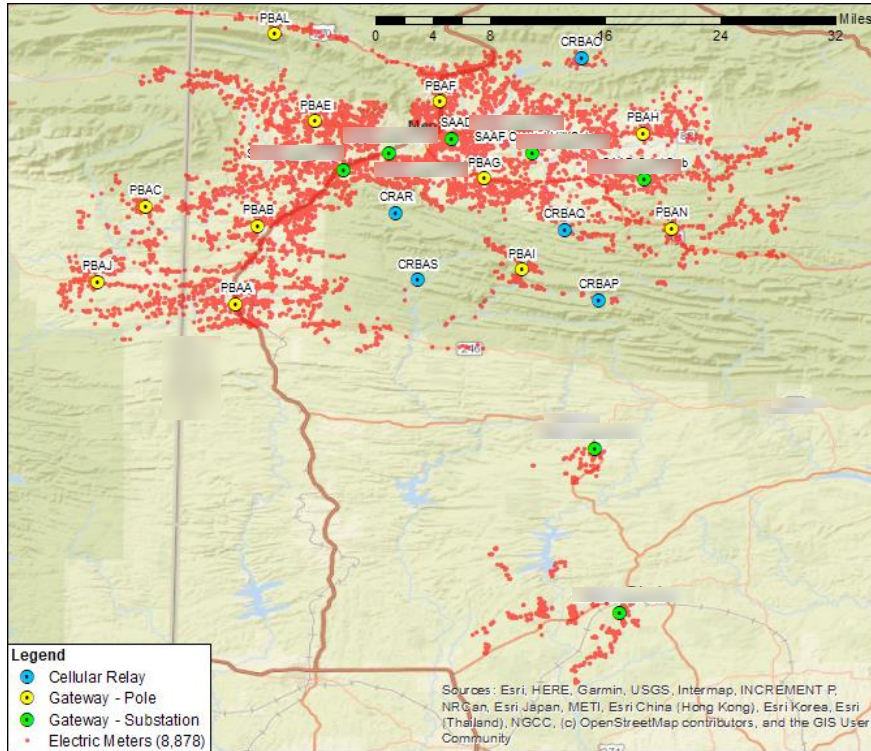


Product Reminders

- Wi-Fi IPLink Meter (WRL-420cD)
 - Leverage you FTTH investment
 - Form 2S CL200 240V meter available for ORDER
- Cellular IPLink Relay (CRLY-856)
 - Cellular device using Virtual Gateway
 - Targeted for pockets of up to 50 nodes
 - AT&T Field Trials this Summer
 - Verizon Field Trials being finalized, scheduled for Q4
 - Production: Q1 2024
 - Available for ORDER
- Cellular IPLink Meter (CRL-530S4x)
 - Production: 2024



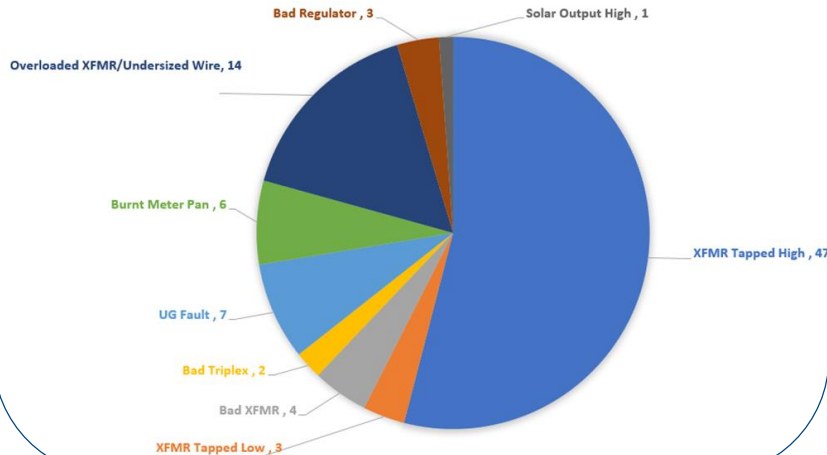
Network Design incorporating Cellular IPLink Relays



Operational Analytics suite – from Data to Insights



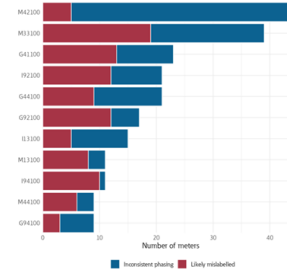
Summary of Issues Identified



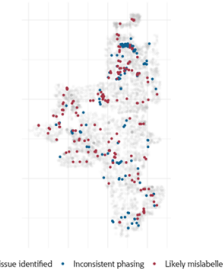
Summary of results

- The data analysed covers January 01 2021 to July 30 2021.
- The phase-detection algorithm was run on **11,149** single-phase meters, across **43** feeders, and **18** substations
- The predicted phase label agreed with the original phase label in **97.8%** of the meters
 - 99** meters have been identified as being likely to be mislabelled
 - An additional **196** meters were identified as having inconsistent phasing
 - Feeder **M33100** had the greatest number of meters (**17**) identified as likely mislabelled
 - Feeder **M42100** had the greatest number of meters (**31**) identified as having inconsistent phasing.
 - 957** meters had no/sufficient data available to analyse
- On **0** feeders only a single phase was represented, encompassing **0** meters. As phase-detection works on the principle of distinguishing the phases from one another, meters on these feeders are not suitable for analysis.

Top ten feeders by number of potentially mislabelled meters



Location of potentially mislabelled meters



Operational Analytics suite – from Data to Insights

Engineering Model Verification: Phase Detection



Case Study – Grand Valley Power



Problem

Inaccurate model causes many problems:

- phase imbalance
- overloading of LV network devices
- miscalculated extent of an outage
- incorrect hosting capacity analysis



Solution

Engineering Model Verification

- Uses standard AMI voltage data
- Determines which meters are on each phase



Results

~5% meters had incorrect phase labels

- Customer validated 1K meters
- Field Validated
- 96% accuracy**

EV Identification



Case Study – Delaware Electrical Coop



Problem

Identifying location and load profile of EV ownership will enable Delaware EC to design future rates and plan for additional loads



Solution

Eaton's **EV Detection** service

Standard hourly power consumption data from AMI to determine EV charging locations and load profile



Results

~600 homes identified to be EV owners

Email to 500 customers => 47 customers responded, all confirming registered EV's



Next steps

Customer marketing campaign is in progress

Results will be fed back into Eaton's machine learning solution to further improve accuracy

Lead Times on Current Products

Lead Times

	Typical	Current
Gateways & Relays	4-10 weeks	8-10 weeks ↓
Water Nodes	10-12 weeks	30-45 weeks
Gas Nodes	N/A	8-12 weeks
Itron meters	12-14 weeks	16-26 weeks ↓
Honeywell meters	12-14 weeks	20-26 weeks ↓
Landis+Gyr meters	16-20 weeks	52+ weeks ↑
DA Interface device	4-10 weeks	8-16 weeks
Load Control Devices	6-10 weeks	16-18 weeks ↑



Forecasting is crucial in planning the material supply chain

Future Considerations

Products Under Consideration

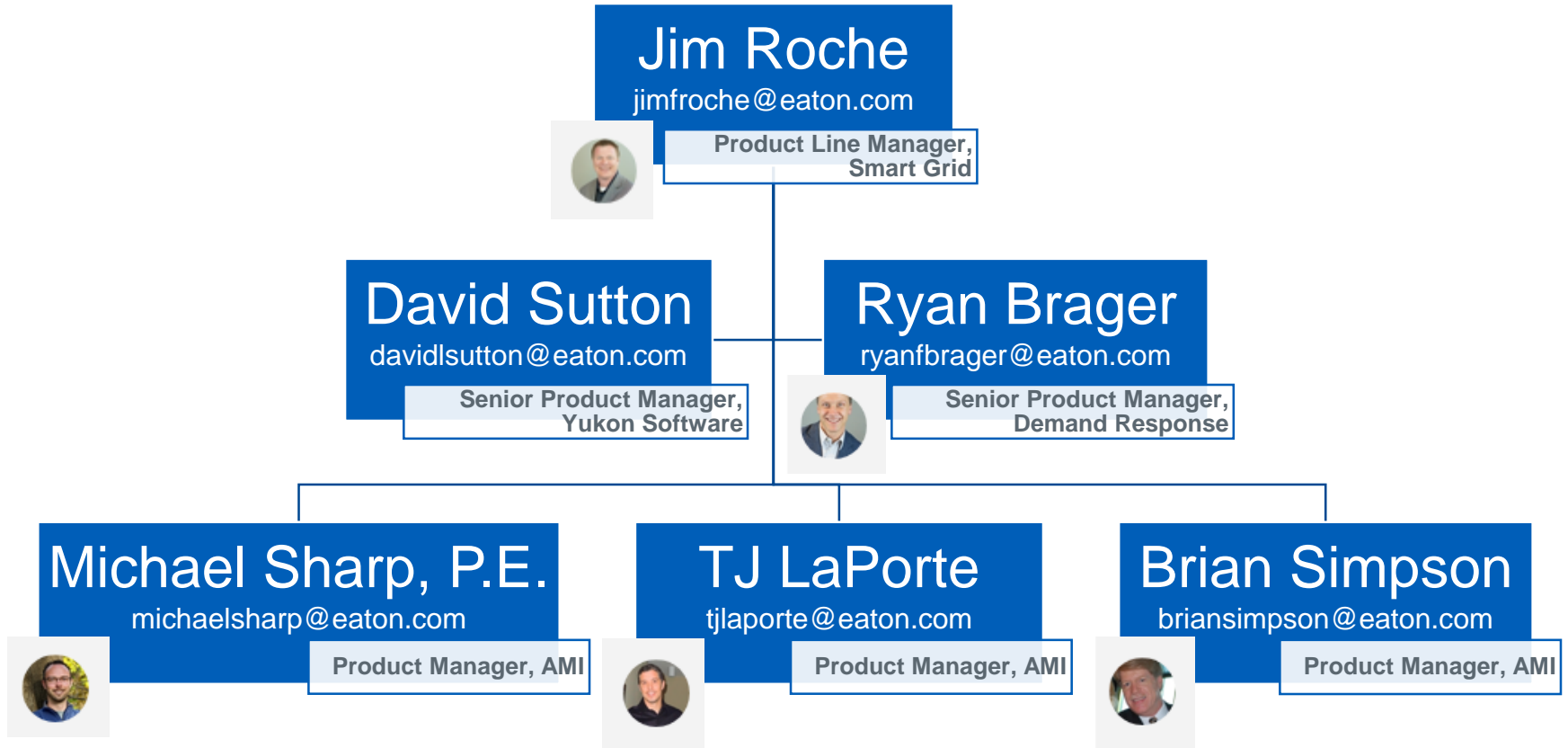
**UNDER
CONSIDERATION**

- IPLink Platform Expansion
 - Fiber IPLink Relay
 - Fiber IPLink Meter
- Solar Relay
 - Smaller form factor at a lower total cost of ownership
- Additional Polyphase Meter support
 - Itron CENTRON Polyphase 3 (CP3)
 - Honeywell A4 ALPHA
- Hardware Platform Refresh
 - Radio, Memory, and IPLink enhancements



Wrap Up

Smart Grid Product Management Team





Supporting Renewables
with DR

8:00 AM Thursday



What's New in Yukon

9:00 AM Thursday



SCADA Solution for
Cooperatives and
Municipalities

2:15 PM Thursday



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Brightlayer Utilities
Analytics

Happy Hour

Up Next in Fountain View



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