Preventing Ignition from Utility Infrastructure

Using Smart Meter data and analytics to detect live wires down

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Reliability Operations Center

The Reliability Operations Center was established to enhance troubleshooting and support real-time operations through the use of situational awareness, remote diagnostics and data-driven decision making.


Analytics/Research & Development

- High tech situational awareness environment leveraging a multi-faceted team of experts developing and deploying artificial intelligence (AI) solutions to improve public safety and grid reliability.
- Provides virtual troubleshooting support for field personnel.
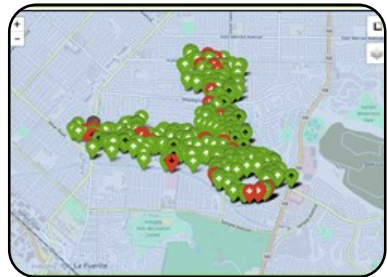
Real Time Situational Awareness

- Analyze ~300 million daily data points from smart meters to identify equipment issues prior to customer or internal system notification.
- Ability to visualize and pinpoint the location of grid events to aid first responders.
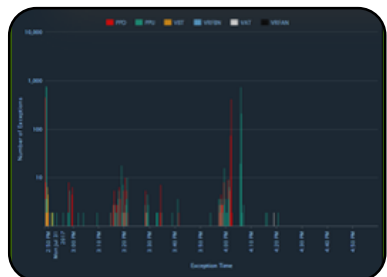

Predictive Analytics

- Detecting potential equipment issues that may result in a public safety hazard.
- Designing algorithms with a statistical approach to locate degrading assets otherwise undetectable by traditional methods

Early Damage Detection using Predictive Analytics

- Lightning and stress can damage transformers.

- This damage can lead to significant outages if left uncorrected.

- With algorithms, we identify, locate, and replace damaged transformers.

Transformer sustained damage, and deteriorated
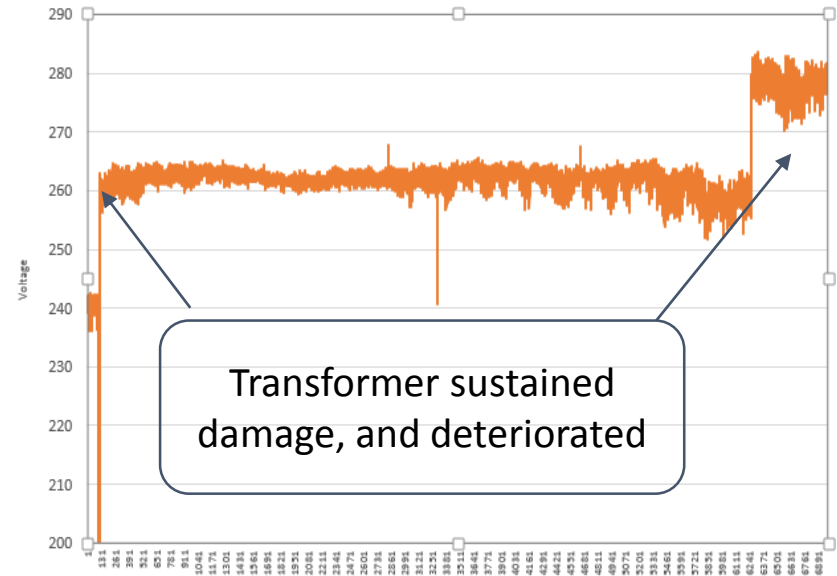
Detecting Live Wires Down with Smart Meters
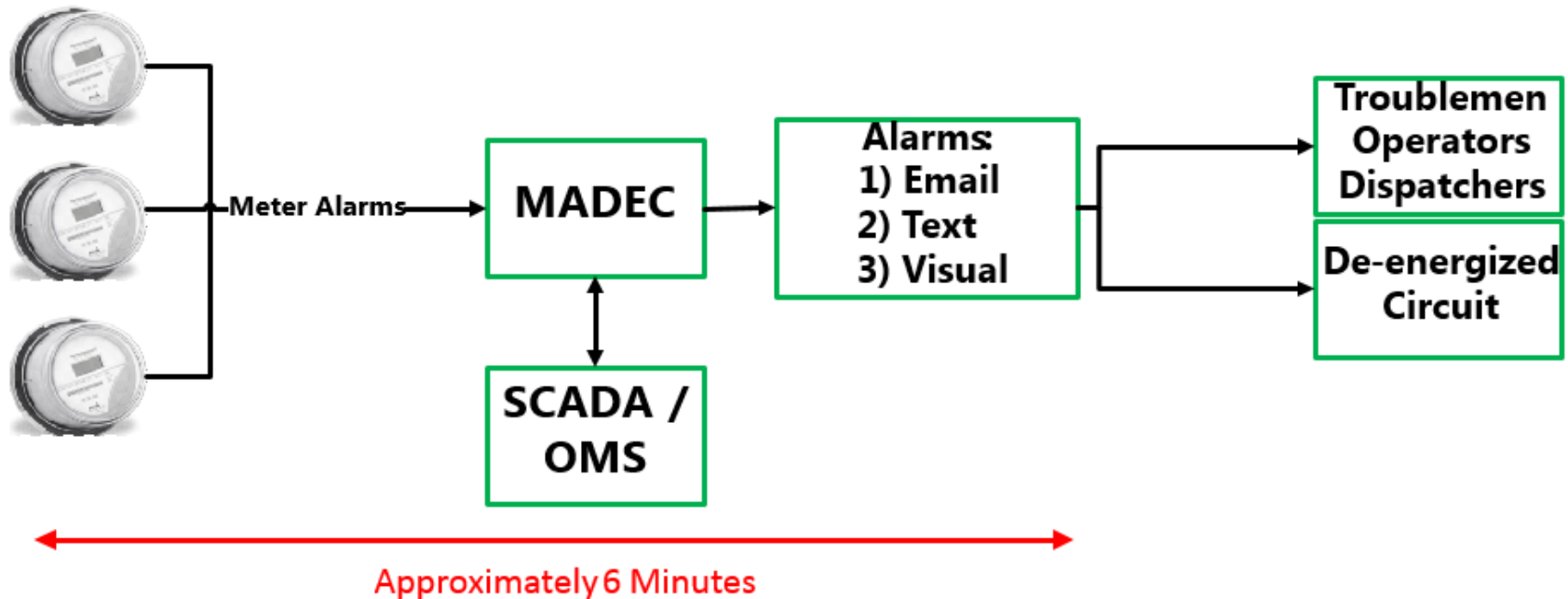
- The MADEC (Meter Alarming of Down Energized Conductors) application autonomously monitors SCE's distribution circuits through it's network of more than 5 million smart meters to identify live wire events.

- The algorithm used for MADEC continues to improve in accuracy by learning from new data.

Live Wire Down detected by MADEC

- Various factors can impact our ability to detect and isolate live wire down conditions.

Real-Time Meter Alarms Enable Detection
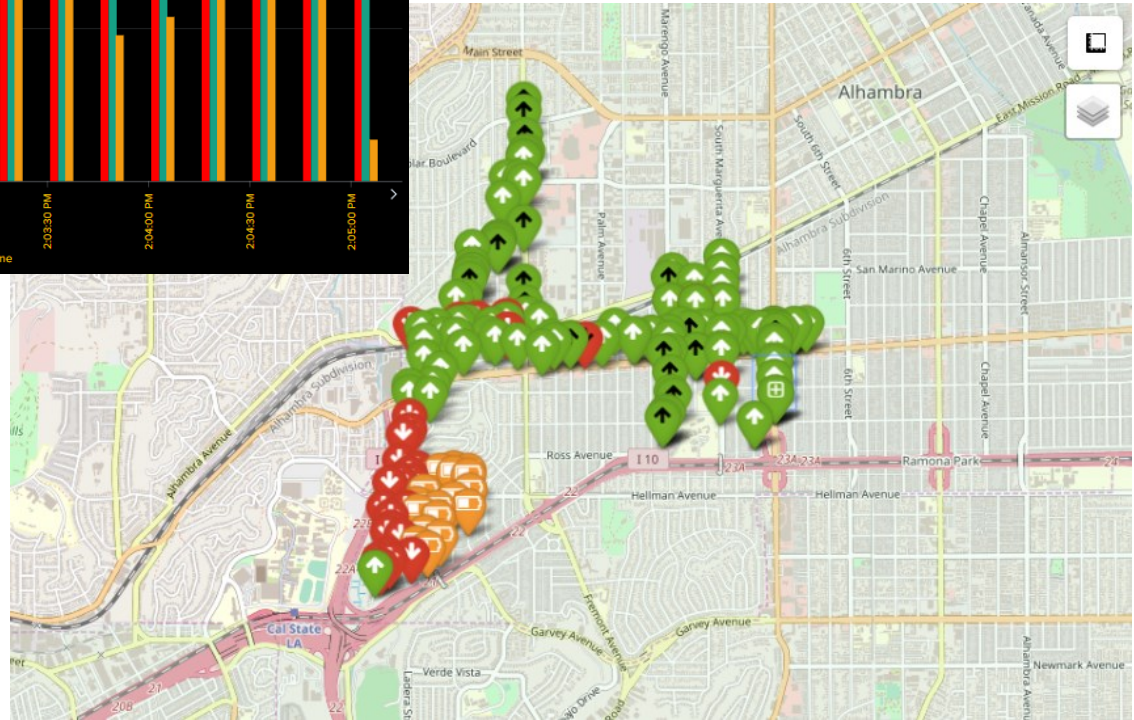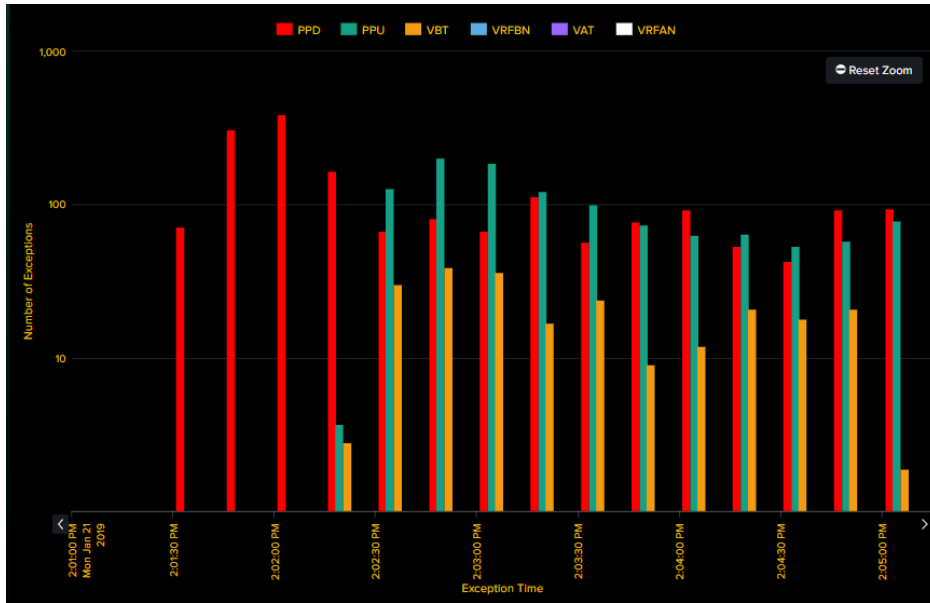
Real-Time Meter Alarms Enable Detection

Technological Solutions in Development

- Incorporating data points from additional intelligent devices including-
  - Distribution Digital Fault Recorders (DFR)
  - Substation Relays and Circuit Reclosers
  - Remote Fault Indicators (Overhead and Underground)

- Value proposition-
  - Increased incident location accuracy
  - Increased detection speed through faster sampling rate
  - Improved sensitivity to detect more hazards

- Overall objective-
  - Continually improve our capabilities to prevent, detect, and respond to any hazardous conditions.