



ACEEE Intelligent Efficiency Conference

Session: Utility Grid Load Integration and
Balancing

Topic 4: Networking and Automation
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Networking & Automation Electric Distribution



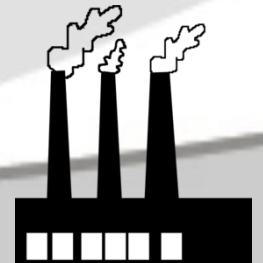
- Collect and transform real time data
- Facilitate informed real time decisions about electric demand options.



- Integrating critical data from multiple sources, data collection devices, and sensor solutions -into- customized web-based applications with industry-specific analytical, reporting, and management tools.

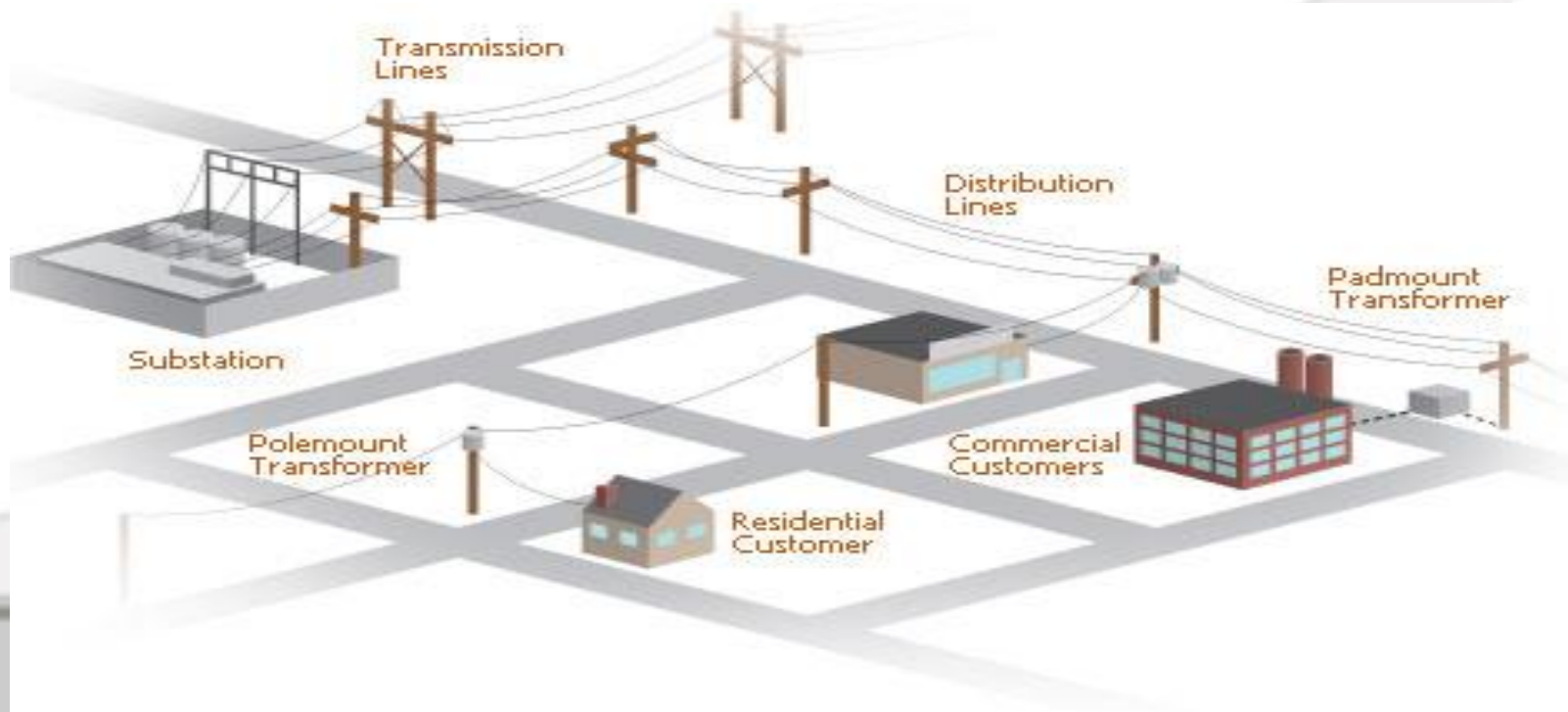
Frequency/Voltage Regulation

1. Monitor of frequency/voltage deviations and controllable loads used to restore to target operating range
2. Automate dispatch and direct load controls for real time frequency/voltage regulation
3. Facilitate information and control signals for continuous balancing of supply and demand at the substation feeder level



Substation/Feeder Line N&A

- ✓ Frequency/voltage in balance - no load control needed
- ✓ Frequency exceeds desired threshold range - load control triggered
- ✓ Dispatch of automated load controls to quickly bring frequency to acceptable range (ex. HVAC controls, storage, etc)



Networking

Cellular / LTE

- Long established standards
- Great for:
 - Range
 - High-data Rate
- Good For:
 - Coverage
 - Provider Options
 - Conditional Security
- Poor:
 - \$\$\$\$
 - Power - Consumption

LPWAN

- Emerging outside of DoD implementations
- Great for:
 - Range
 - Low Power
 - Low Cost
 - Positioning
 - Security
- Poor:
 - Data Rate

LAN

- Long established standards
- Great for:
 - Short Range
 - High-data Rate
 - Security
- Good For:
 - Reliability
- Poor:
 - \$\$\$\$
 - Power-Consumption
 - Coverage

Automation Options



GPIO



Ethernet



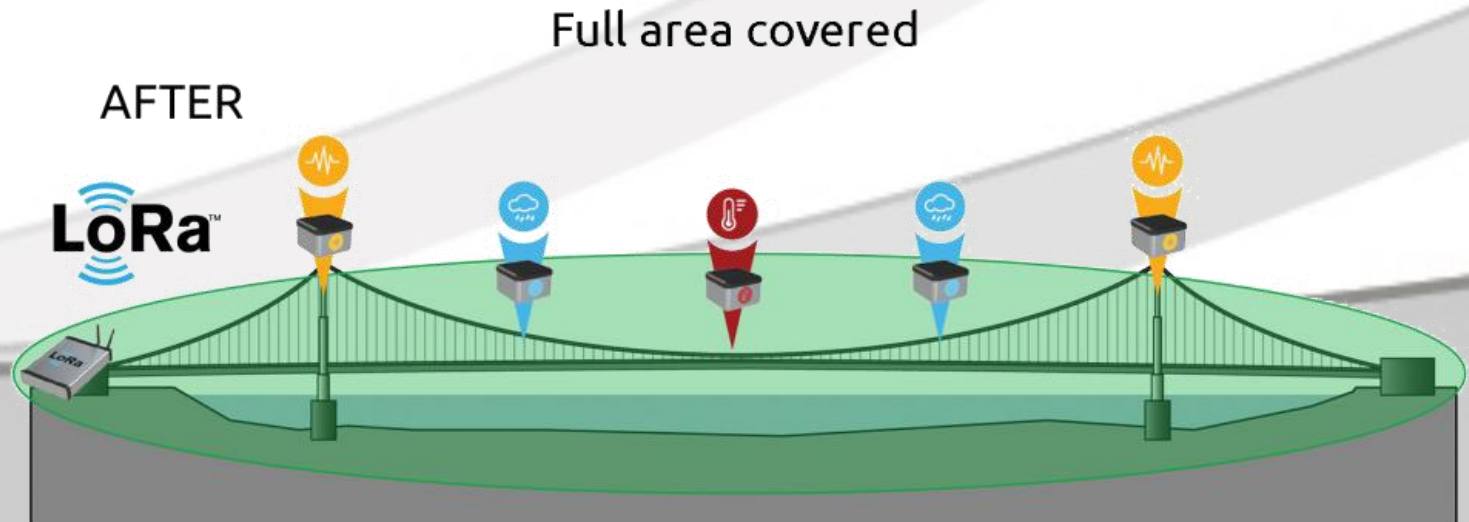
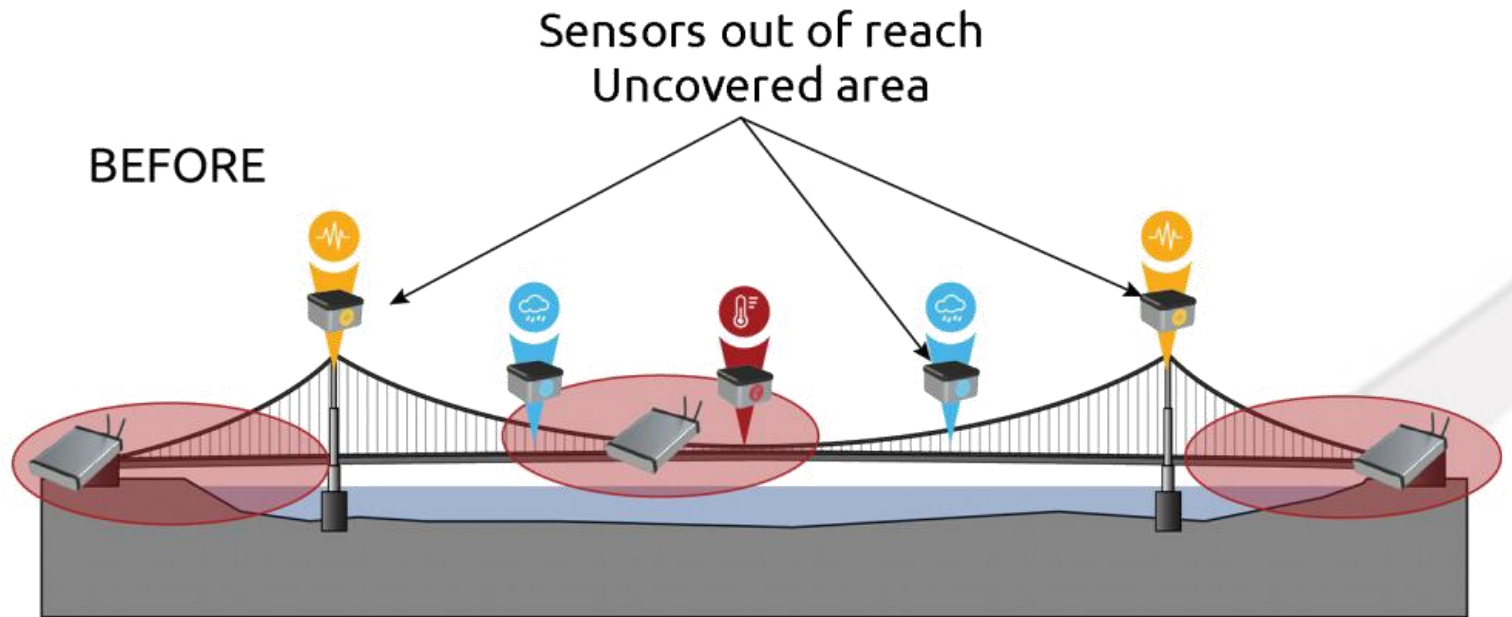
LoRa™



Serial



Combined



Key Success Drivers Networking & Automation

- ✓ Favorable regulatory conditions (grid mod, integration pilots, NY REV, etc.)
- ✓ Customer acceptance
- ✓ Demand Flexibility based rates, other mechanisms
- ✓ Creative application of technology

Questions?

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