Edge Zero

SOLUTIONBRIEF

Looking Beyond AMI

Smart meters continue to improve with advances in controllable relays, edge computing, AI and smart analytics. The reporting intervals can now report in near real time, but with these increases come added operational complexity.

Traditionally, smart metering business cases have been based on savings from meter readings for billing purposes. Consumption (kWh) was the default data set, with no other power/power quality (PQ) data captured. Modern metering, however, leverages a wider range of PQ measurements, and reporting intervals are moving to data capture and transmission every 5 minutes. These advances come with significant cost increases and data management challenges.

REAL TIME AMI COST AND COMPLEXITY

Cost of communications for "real-time" AMI is very high: AMI data costs have historically been fairly low as the data has been captured at 15 to 30-minute intervals and transmitted between 2 and 3 AM when data costs are the lowest. Moving to a 5-minute reporting interval will increase the data output from the meters and likely 20x the annualized cost per meter on data.

AMI is not necessarily controlling behind-the-meter devices: Behind the meter, customer-controlled DER have the ability to communicate directly with virtual power plant (VPP) managers through API. This removes the need for the AMI meter to communicate at a 5-minute interval, as it is required only for kWh billing, connections or disconnections. The exception may be if the meter included a hot water control relay requiring fast communication.

Accuracy: Using all AMI to accurately determine real time PQ and capacity performance in the network requires consistently reliable delivery of data from all devices. If some devices report late and cannot be timestamp-captured, then the data will be incomplete and only an estimate, which is further challenged by calculating network impedance.

Network Infrastructure: Aggregate metering algorithms designed to calculate network performance require the network design (GIS grid model) to be provided by the grid operator. The completeness and accuracy of the grid model determine how well the algorithm performs. Many grid operators have an inaccurate or no grid model of the lower end of their network. Developing a minimally viable network design can be time-intensive and expensive.

IT/ OT complexity: The internal IT infrastructures of most networks have not been designed to handle the throughput of real time data flows from a fleet of AMI reporting every 5 minutes. The upgrades required in server design, hosting, bandwidth and communications upgrades, either through 4G or RF mesh architecture, are extensive and are a major undertaking for any organization in time, expense and expertise.

Edge Zero LV Monitors are one device per 50 homes with one real time reporting device for active power quality and capacity data, resulting in a far lower data cost and system complexity.

LV monitoring is captured directly at the asset and is accurate and reliable regardless of the status or quality of the grid model.

Edge's real-time LV monitoring solution has been designed to operate and scale as a cloud service with no burden on the grid operators existing infrastructure.

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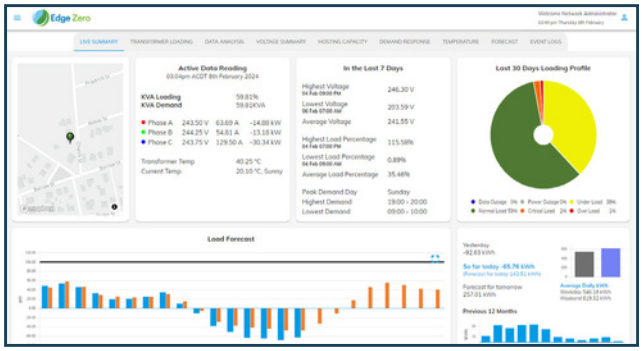
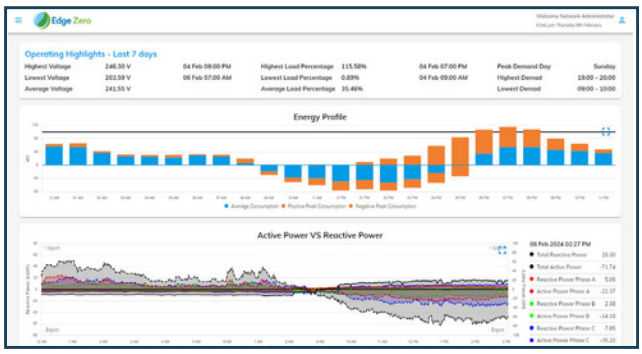
EDGECONNECTED LOW VOLTAGE MONITORING PLATFORM

Edge Zero gives grid operators, distribution utilities and embedded network operators the tools to maintain reliability and power quality as customers adopt new DER technologies and electric vehicles at scale. Edge Zero's cloud-based monitoring platform means no on-premise infrastructure is required. The platform utilizes live data from low-cost, simple installation transformer monitoring instrumentation to provide a smart digital twin of network power flows and asset performance.



OPTIMIZE Real time analytics

MONITOR Real time awareness



INFORM Real time response

OUT OF THE BOX-READY SCALABLE SOLUTION

No minimum deployment size is required.

LV Monitoring Hardware Features

- Fast, easy, live installation with no customer outages
- IP67 rated for pole top and pad mounting installation
- 15+ year asset life
- 100 - 520V rated voltage supply / Monitors 4000A RMS
- 1-minute power quality reporting interval
- Real time outage alerts with last gasp function
- 4G internal modem and LoRaWan mesh

Data Integrations

- Operates as stand alone environment or integration with ADMS & GIS grid models
- RESTful API data to existing systems, including, but not limited to:
  - Meter data management system (MDMS)
  - Demand response management system (DRMS)
  - Distributed energy resource management system (DERMS)
- DNP3 Virtual RTU environment for SCADA integration

Edge Zero provides highly accurate asset-level data at a significantly lower cost than smart metering. Our solution can work as standalone asset monitoring or in tandem with smart metering to deliver a layered data strategy for increased forecasting accuracy.