



Network Assessor Overview

HECO Integrated Grid Symposium - November 16, 2017

About Kevala



Delivers data and actionable intelligence for planning and operations, not control.

Provides services to all of the electricity sector except retail consumers:

- Utilities
- Regulators
- IPPs and DER aggregators
- Finance
- Mobility/EOT sectors

Focuses on software-based solutions for the integrated grid

Kevala provides optimized infrastructure

ass^{k+}



Data-driven, constraint-based integrated analysis of utility systems

We answer questions through structured search



Data located in space



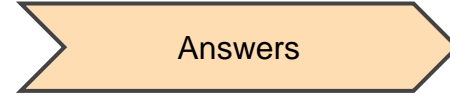
Data



Data located in time



Behavior



Geospatially and temporally relevant intelligence



Intelligence

Network Assessor: A 1:1 view of the network



Kevala believes the best way to model an integrated power system is to build a 1:1 map of the built environment with a focus on the power system.

- Buildings (& occupants)
- Generation (including distributed generation)
- Distribution constraints

A 1:1 view of the network requires a lot of data



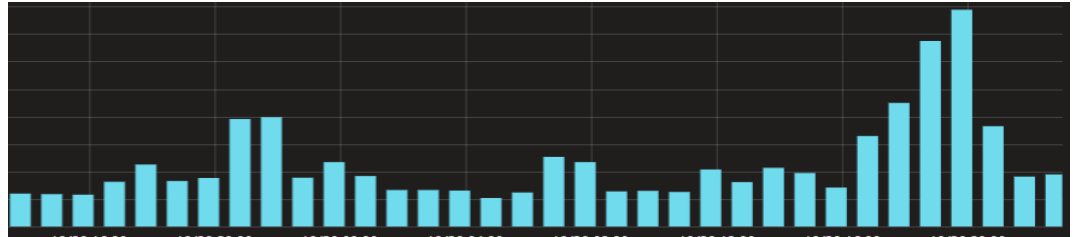
Kevala has ingested:

- The location of every bulk power resource in the country for bulk power avoided cost analysis
- More than 50% of the country's substations with transformer ratings and probable replacement cost assessments
- 800K+ DG PV systems
- Every Locational Marginal Price node and associated prices
- Millions of miles of distribution conductor information
- Millions of building footprints and parcel data
- AMI records for hundreds of thousands of service locations
- Historical PV production for >100K PV systems

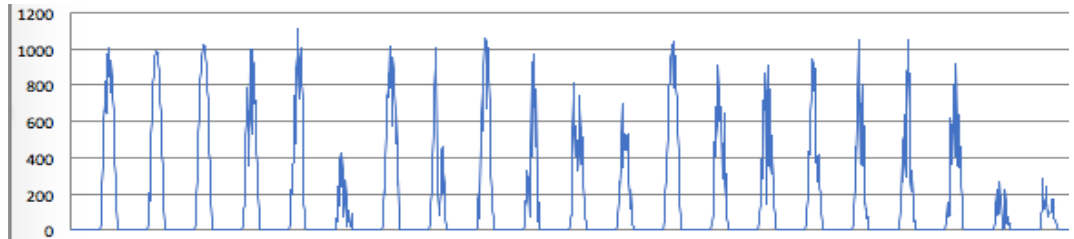
Integrated Bulk Power and Distribution Analysis



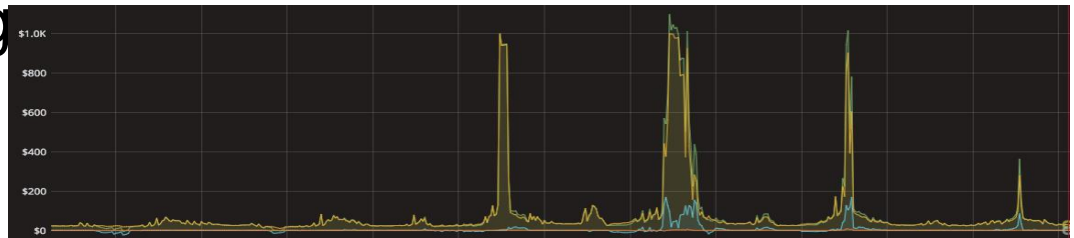
Geography-specific load:



Geography-specific DG:



LMP node-specific pricing



Program and Resource Planning



Integrated geospatial, relational, and time-series analysis of:

Load – Works with AMI, billing data, SCADA, or built environment modeling

Infrastructure – Can use legacy GIS data, paper, or satellite maps

Costs – Energy and capacity pricing modeled on marginal or levelized costs

Technology-Neutral Assessment



Models wire and non-wires solutions:

Distributed Generation and Storage

EV Charging Infrastructure

Energy Efficiency & Demand Response

Rate Design Impacts

Wires Solutions

Application examples



Grid Assessor

Sonoma Clean Power

Pathways to an Open Grid – O'ahu

Grid Assessor – Utility scale interconnection platform

The goal: Instantaneously determine the optimal locations for 1-20MW PV projects with the lowest utility CapEx for interconnection.

The team: Kevala's work is funded by the DOE SunShot program.

The process: Leveraging remote sensing to map utility infrastructure (constraints) and the built environment (load), and netting behind-the-meter and in-front-of-the-meter DG production profiles to determine where utility CapEx associated with DG interconnection can be minimized.

SCP – EV charging optimization



The goal: Determine the locations for large scale EV charging infrastructure with the lowest utility CapEx based on site specific charge profiles.

The team: Kevala is working direct with Sonoma Clean Power.

The process: Aggregating AMI data by feeder, netting behind-the-meter and in-front-of-the-meter DG production profiles, and integrating EV charging load profiles to determine where utility CapEx can be minimized.

Pathways to an Open Grid (“POG”) – O’ahu



The goal: O'ahu is to create actionable information about the market in a publicly accessible, dynamically updated, web interface.

The team: Kevala is joined by University of Hawaii’s Hawaii Natural Energy Institute (“HNEI”) and the More Than Smart (“MTS”) organization.

The process: Stakeholder-driven input guides consensus-based analytics based on accessible, machine-readable data, using publicly available sources and proxy data where publicly available data are not an option.

Thank you



Questions?

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