Forensic, Open Source Cost Benefit Analysis Practices

Aram Shumavon, Kevala, Inc.
Benchmarking Grid Integration Costs in High PV Penetration Scenarios Workshop
September 19, 2017
National Renewable Energy Lab, Golden, CO
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Kevala company overview and relevant projects

Forensic cost modeling

Possible Demo
About Kevala

San Francisco Based data and analytics company that maps energy infrastructure and the built environment, load, generation, and pricing data.

DOE SunShot Awardee – Grid Assessor

Hawaii – Pathways to an Open Grid

Customers include: Solar and storage developers, utilities, regulators, EV OEMs, NGOs
Grid Assessor

Integration Capacity Analysis (ICA) Report

- 34 PV Systems
- 850.57 kW PV Nameplate Total
- 40.831.41 MWh Annual Load

- 2,256.13 kW Available Capacity
- 3,106.7 kW Minimum Load
- 6,696.51 kW Maximum Load
Pathways to an Open Grid - O‘ahu
Operate on the assumption that PV is what matters

1) When you hear hooves, think horses, not zebras
2) Easily observable

Caveats:
- The allocation of value for BTM load reduction gets harder to model as wholesale prices go negative during some periods, but it exists
- Other DER will continue to provide grid benefits through export and BTM services separate from PV production periods
Evidence of integration costs are everywhere:

- Visual inspection
- FERC filings
- Rate cases/applications for cost recovery
- Interconnection requests/PAR reports
Data Requirements - Overview

Load
- Shape
- Magnitude

Distributed Generation
- Location
- Size
- Performance

Distribution infrastructure:
- Topography (mesh/radial, length, service area)
- Voltage
- Protection equipment
Cost Triggers

- Amount of existing/queued DG
- Removal/installation of circuit protection equipment
- Thermal overload on transformer
- Conductor limitations
- Special protection schemes
Obtaining Data About Probable Upgrade Triggers

DG surveys

Feeder topography acquisition

Interconnection data
DG Surveys - Kevala’s Trace Assist
DG surveys – Kevala’s Solar Spotter
Data Requirements - Overview

- Available = exists *somewhere*
- Accessible = can be used by external processes
- Machine Readable = can be used by computers
Data gaps

Load
  SCADA-based 8760 load curves

DG
  Storage/non-PV DER

Distribution infrastructure
  Secondary

Operations
  Special Protection Schemes
  NB – NOT tap changes!
Calculating costs – Kevala’s DERwin model
Thank you
aram@KevalaAnalytics.com