Designing Solar+Storage to Power Critical Loads

An Introduction to New Resilient Power Features in NREL’s REopt Lite Tool

February 21, 2019
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THE RESILIENT POWER PROJECT

• Increase public/private investment in clean, resilient power systems (solar+storage)
• Protect low-income and vulnerable communities, with a focus on affordable housing and critical public facilities
• Engage city, state and federal policy makers to develop supportive policies and programs
• Visit www.resilient-power.org for more information and resources
SUPPORTING 100+ PROJECTS ACROSS THE COUNTRY

Portland: Assessment of 10 LMI properties including affordable housing, foodbanks, medical centers, and shelters.

DC: Largest solar+storage installation at affordable housing in the country.

California: Multiple housing properties representing hundreds of units of affordable housing.

Puerto Rico: Supporting the installation of solar+storage at more than 60 medical clinics.

Boston Medical Center: One of the first hospitals in the country to install storage for resiliency.
WEBINAR SPEAKERS

Kate Anderson
Group Manager- Modeling & Analysis, National Renewable Energy Laboratory

Andrew Jeffery
Software Engineer, National Renewable Energy Laboratory

Seth Mullendore
Vice President & Project Director, Clean Energy Group (moderator)
REopt Lite

Kate Anderson
Andrew Jeffery
The REopt Lite Web Tool offers a no-cost subset of NREL's more comprehensive REopt model.

- **Financial mode** optimizes PV, wind and battery system sizes and battery dispatch strategy to minimize life cycle cost of energy.

- **Resilience mode** sizes PV, wind, and storage systems to sustain critical load during grid outages.
REopt Lite

**Goals**
- Minimize Cost
- Resilience

**Economics**
- Technology Costs
- Incentives
- Financial Parameters

**Utility Costs**
- Energy Charges
- Demand Charges
- Escalation Rate

**Drivers**

**Resources**
- Renewable Generation
  - Solar PV
  - Wind
- Conventional Generation
  - Electric Grid
  - Diesel Generators
- Energy Storage
  - Batteries

**Optimized Minimum Cost Solution**
- Technologies
  - Technology Mix
  - Technology Size
- Operations
  - Optimal Dispatch
- Project Economics
  - CapEx, OpEx
  - Net Present Value

**Electric Loads**

**Integration & Optimization**
REopt Lite Optimizes Size and Dispatch of Integrated Systems

- REopt considers the integrated operation of multiple technologies
- Analyzes hourly data across the project lifecycle
- Evaluates the trade-off between capital costs, operating costs, and savings to find the most cost-effective mix
Who’s Using REopt Lite?

- **Researchers**
  - How will RE deployment change in the future?

- **Developers**
  - Where are the best market opportunities?

- **Home and Building Owners**
  - What technologies are best for my site?

- **Utilities**
  - What value do these systems provide?

- **Industry**
  - How do I optimize system control for maximum value?
Accessible Through Web Interface or API

https://reopt.nrel.gov/tool

https://developer.nrel.gov/docs/energy-optimization/reopt-v1/

Send feedback to: REopt@nrel.gov
Resources

- REopt website: https://reopt.nrel.gov/
- REopt Lite web tool: https://reopt.nrel.gov/tool
THANK YOU FOR ATTENDING OUR WEBINAR

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State of the U.S. Energy Storage Industry: 2018 Year in Review
Thursday, February 28, 1-2:30pm ET

The U.S. energy storage market experienced substantial growth in 2018. In this webinar, Dan Finn-Foley from Wood Mackenzie Power & Renewables will share insights related to recent developments in the U.S. energy storage market, including deployment trends, policy updates, and market outlook.

Read more and register at www.cesa.org/webinars