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Emerging Trends: Customer Sited Resources Providing Grid Services

SEPTEMBER 26, 2019 | NATHAN WYETH RACHEL MCMAHON

Agenda

- Sunrun at a Glance.
- Provision of Grid Services by Customer Sited Systems.
- Use Cases EBCE and ISO-NE.
- Recommendations for Forecasting.





We have **255,000 customers** and sell our solar service in **22 states,** the District of Columbia and Puerto Rico.

Sunrun at a Glance

OUR MISSION

To create a planet run by the sun.

OUR BEGINNINGS

- Founded in 2007
- HQ in San Francisco
- Pioneered Residential Solar Service

OUR BUSINESS MODEL

- Single and multi-family residential
- Solar only from 2007 2016; growing solar + storage since 2016.
- Focused on provision of customer energy historically; since 2018 have begun providing customer services (ie - demand charge and TOU management) and grid services (ie – reliability capacity and distribution loading management.

Sunrun Optimizes Solar + Storage for Grid Services and Customer Value



Sunrun's solar + storage systems manage residential load shift in CA - for TOU bill management, to **minimize midday solar exports**, and to flatten evening load - with flexibility for demand response participation, distribution system capacity and voltage, provision of capacity and energy services or other targeted shift, while maintaining charge for backup.







Sunrun partners with LSEs to solve for priority grid management conditions with aggregations of customer-sited solar+storage systems.

Peak conditions can be targeted with customized dispatch profiles, solving for conditions such as a peak day in August. Economically Rational Battery Response to TOU Rates -Which of these battery discharge profiles will maximize bill savings?



Use Case: East Bay Community Energy

Project:

- Aggregated solar + storage on affordable multifamily housing in Alameda County (including West Oakland Disadvantaged Community) across multiple sites.
- 500 kilowatts; 2,000 kilowatt-hours

Services:

- *Customer services:* energy, back-up power, TOU / demand charge management.
- *Grid services:* local and system reliability capacity



Use Case: ISO-NE Forward Capacity Market

Project:

- 20 MWs of aggregated residential solar+storage cleared forward capacity auction. ~5,000 solar+storage systems.
- Energy market integration not required; resources are dispatched based on market conditions.

Services:

- *Customer services:* back-up power, carbon benefit (e.g. MA Clean Peak)
- *Grid services:* Capacity, transmission charge reduction



Wholesale Load Zones in New England

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<u>Recommendation</u>: Forecast DERs by Local Capacity Area

- Distributed Energy Resource assumptions are currently, as we understand it, forecast by three transmission access charge (TAC) areas.
 - For alignment with RA procurement, CPUC's local resource adequacy program and CAISO's local capacity technical study process, and to better serve growing number of LSEs, recommend forecasting to the Local Capacity Areas (LCAs) and subareas.
 - **Benefit:** Easier for LSEs to verify forecasted DER assumptions in procurement.
- **Benefit:** Better alignment with supply side RA process, for equivalent capacity credit.



Recommendation: Include BTM Projects on LSE Forms

- LSEs include hourly forecast (8760) for BTM dispatchable resources (i.e., solar + storage) on supply forms and verify with ex post data.
- BTM solar and storage systems are predominantly dispatched according to rates. In multiple use application scenario, this will not always be true.
- LSEs should have the ability to submit specific dispatch use cases. The use cases could be set beforehand or could be submitted on an individual basis.
- Update CEC LSE IEPR forms with this functionality.



Recommendation: DER Operations

- CEC develops assumptions for BTM solar + storage adoption and operations.
- CEC would project deployment of a certain number of systems and prediction of how they will be utilized.
- LSEs verify assumptions and provide evidence that assumptions should be adjusted based on contracted BTM resources providing grid services.
- LSEs provide ex post verification (such as hourly meter data) of BTM resource operations.



Thank You.

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