December 2022

Putting people at the center of the energy system

A look at Sunrun's resilience and virtual power plant programs

sunrun

Agenda

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2 Intro to VPPs
3 Sunrun Systems in Action
4 Deep Dive into CCA VPPs

Intro to Sunrun

Founded in 2007 and headquartered in San Francisco, Sunrun pioneered the solar-as-a-service model, making residential solar affordable and accessible to millions of Americans

- Largest home energy services company in the U.S.
- More than **760,000 customers**
- Second largest owner of solar assets in the nation
- Over **5.4 GW** of installed solar capacity
- Operational in 23 states, plus Washington, DC, and Puerto Rico

In 2017, Sunrun added battery storage to its product offering

- **>47,000** solar-plus-battery systems installed
- Leading residential grid services provider
- Thousands of solar and battery systems enrolled in grid services
- **>12 virtual power plant programs** contracted across the country

Intro to Virtual Power Plants (VPP)

Increasingly, utilities and their regulators are seeing the value in VPPs to solve peak energy needs, renewables smoothing, directly replace retiring fossil fuel power plants, and compete with traditional generation assets

- Sunrun has more than a dozen virtual power plant programs
- Our VPP pipeline continues to grow
- Beachhead VPPs in 10% of geographies we serve today
- We expect to expand to over 50% in coming years
- These are bilaterals with utilities, wholesale market direct participation, and retail utility programs like Bring Your Own Device (BYOD)
- V2X leadership through partnership with Ford Motor Company

Sunrun Systems Providing Resiliency

California

Summer heat wave

During a heat wave in September 2022, Sunrun's 18,000+ batteries in California discharged to the grid during times of peak demand, which helped prevent blackouts. This made up part of tens of thousands of batteries across the state, which collectively discharged 340 MW of power. To put this into perspective, a mid-sized natural gas power plant is 250 MW. This DER performance helped keep the state from forcing rolling blackouts.

1+ gigawatt-hours
of total energy dispatched over 8 days

650+ megawatt-hours
of energy dispatched during critical times

18,000+ batteries
providing backup and grid services in CA

Florida

Hurricane Ian

More than 60,000 Floridians power their homes with local solar. When paired with batteries, these systems can continue to provide critical backup energy in the evening hours and then recharge during the day when the sun is out. Even during inclement weather, solar systems continued to generate energy and recharge batteries. In fact, the Babcock Ranch community, which is fully powered by solar, did not lose power during Hurricane Ian.

3,300+ hours
of aggregate backup power used over 6 days

28+ hours
average backup duration per home

800+ batteries
providing backup power to FL customers

Puerto Rico

Hurricane Fiona

More than 50,000 homes across Puerto Rico had power during and after Hurricane Fiona thanks to solar and battery systems—this was not the case after Hurricane Maria. Families were able to keep their refrigerators running, food fresh, lights on and power other essential devices. These homes—representing roughly 200,000 people—also served as critical resiliency hubs as neighbors came over to power their phones and cool down in the AC.

350,000+ hours
of aggregate backup power used over 11 days

100+ hours
average backup duration per home

5,000+ batteries
providing backup power to PR customers

Deep Dive: Sunrun & Bay Area CCA VPPs

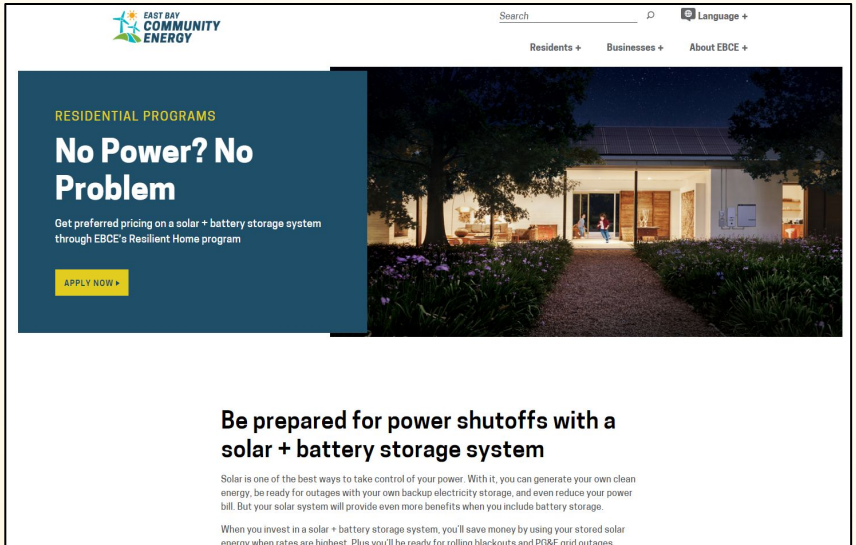
“Load Modification” rather than Demand Response

- **Scheduled 4 hour dispatches** during evening peak on weekdays
- Batteries are **allowed to export** and are submetered using the revenue-grade local inverter or gateway device
    - Full use of battery capacity - not restricted by customer load
- **Reduces CCA Peak** Demand
    - Therefore reduces RA requirement
- **Joint customer outreach** and co-marketing drives larger engagement
    - Customer incentive adds to resilience benefits
    - **>1,000 customer systems** enrolled in EBCE territory
- Low Income & Multi-family Goals
    - SOMAH solar installations on **low income apartment buildings** to be supplemented with batteries to participate in this program - coming 2023/2024

EAST BAY COMMUNITY ENERGY

PENINSULA CLEAN ENERGY

SILICON VALLEY CLEAN ENERGY



VPP Portfolio Preparation

1	2	3	4	5	6	7
PRE CUSTOMER CAMPAIGN: *Customer Eligibility Identified*	CUSTOMER CAMPAIGN: *Offer Presentation*	CUSTOMER CAMPAIGN: *Customer Approval*	POST CAMPAIGN: *Utility Approval*	PORTFOLIO PREPARATION: *System Health Check*	PORTFOLIO PREPARATION: *System Onboarding*	PORTFOLIO PREPARATION: *System Enrolled*
Customer eligibility is determined based on details of program	Present offer to customer [at point of sale or after system activation]	Collect necessary customer authorizations; ongoing maintenance	If applicable, receive confirmation from utility (or other counterparty) that system is eligible and authorized for a program	Ensure system is operational, functioning, healthy and responsive	Onboard system into requisite technology platform	Enroll system in program; system is Ready to Respond (“R2R”)

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