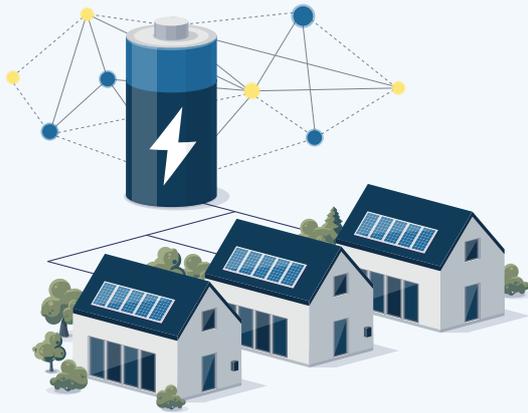


# Virtual Power Plant Best Practices & Principles



## WHAT IS A VIRTUAL POWER PLANT?

A Virtual Power Plant (VPP), also known as a Distributed Power Plant, is a **network of decentralized energy sources** — like solar panels, home batteries, and smart devices — that work together to generate, store, and manage electricity. It is a system of thousands of smaller devices that are aggregated, and they work together and function much like a traditional power plant, supplying electricity when it's needed most and helping ease demand on the grid.

SEIA's Virtual Power Plant best practices and principles are largely modeled off the successful ConnectedSolutions programs that have been operating in the northeast for many years. SEIA has filed testimony on VPPs in multiple states, including: Arizona, Illinois, Nevada and Colorado.

## BEST PRACTICES & PRINCIPLES

### Performance-based program.

Maintaining a direct linkage between customer performance and payments is appropriate. In general, payment should be based on avoidable costs, which typically fall in the \$200-\$300/kW for average performance over the event season.

The specific payment values should be based on the utility's avoided distribution, transmission, and generation capacity costs, in addition to other values like emergency supply, with system savings shared between VPP participants and all customers.

### Performance payment is "stackable."

Participating in the VPP program should not impact eligibility for any other program or policy, including any up-front incentives, participation on the tariff of the customer's choice, or qualification for any tariff, such as net metering riders.

### Lock in the payment level for at least 5 years.

Offering an extended assurance on the payment is valuable for customers and financiers of solar plus storage systems, so locking in the magnitude of the payment for a period of time is very useful.

The state utility commission should establish a stakeholder process in year 3 of the program to determine the payment structure for participants past their 5<sup>th</sup> year.

### Third Parties Administrators should be able to participate and receive payments.

Utilities should work with solar plus storage and storage developers who have experience aggregating many DG resources and responding to utility control signals. There is no reason or justification for the utility to claim it must directly control the distributed assets for the program to be effective.

In fact, the largest and most successful VPPs in the country are fully managed by third party aggregators. If the payments are only in the form of a bill credit, it substantially complicates participation by third-party owned systems, which will severely limit the program.

### Allow batteries to export to grid.

One of the most critical design elements of a robust VPP program is the ability for batteries to discharge in excess of a customer's load. Artificially limiting battery discharge to a customer's load or failing to count all battery discharge regardless of whether it is self-consumed or exported would undervalue the unique benefits of storage.

### Minimize metering costs.

Utilities should be required to utilize the revenue grade inverter readings of a battery or solar plus storage system that meets industry standard accuracy requirements. This will prevent the extra cost and complexity of installing another meter to measure battery discharges.

### Keep events as targeted as possible, but no longer than three hours.

Events should be targeted as narrowly as possible to maximize the potential of solar plus storage systems to reduce demand on the grid. The utility can dynamically dispatch customer groups to optimize daily load reductions targeting longer high-load periods.

### Aim for 30-60 events per year.

The capacity benefit of load reduction is concentrated in higher load days; the incremental benefits of additional calls fall rapidly as daily peaks diverge from annual peaks.

### Focus on summer events but allow winter events when useful.

For summer peaking utilities, VPP programs should focus on summer peak demand reductions. However, conditions do occur during core winter months when dispatching the VPPs could save money for customers.

### No opt-out fee or limit.

Through a pay-for-performance approach, customers are compensated when they participate in each event. There is no reason to introduce artificial performance limits or penalties for nonparticipation.

## SUCCESS STORIES



### VPPs Stabilize Grid Amid New England Heat Wave

On June 24, 2025, a heat wave scorched New England, but VPPs helped avoid an outage and keep ACs humming. Mark Christie, chair of the Federal Energy Regulatory Commission (FERC), noted that PJM was supported by 5 GW of power and load shifting from VPPs and that it was a critical resource in helping meet demand.

This included power delivered by Sunrun, a residential storage and solar energy company and operator of VPPs, which dispatched over 340 MW on just the evening of June 24<sup>th</sup> with VPPs in New York, Massachusetts, Rhode Island, California, and Puerto Rico.



### California's Home-Battery VPP Delivers 539 MW in Statewide Dispatch

The California Energy Commission's Demand Side Grid Support program is a statewide virtual power plant network composed of more than 100,000 home batteries. According to The Brattle Group, Sunrun and Tesla alone delivered an average of 539 MW to support the grid during a July 29 dispatch event that ran from 7 p.m. to 9 p.m.

The program, which operates statewide, is expected to double by 2028 (subject to funding availability) and could provide up to \$206 million in savings to ratepayers and 1 GW of resources over that period, according to a report by Brattle.