ET Summit 2023

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Virtual Power Plant Project

SDG&E®'s Virtual Power Plant (VPP) project is evaluating the control, dispatch, and real-time signaling of behind-the-meter resources installed throughout a vulnerable community in its service territory.

This project is unique because of its use of multiple end-use devices and different technology providers, including thermostats, well water controllers, water heater controllers, and battery storage.

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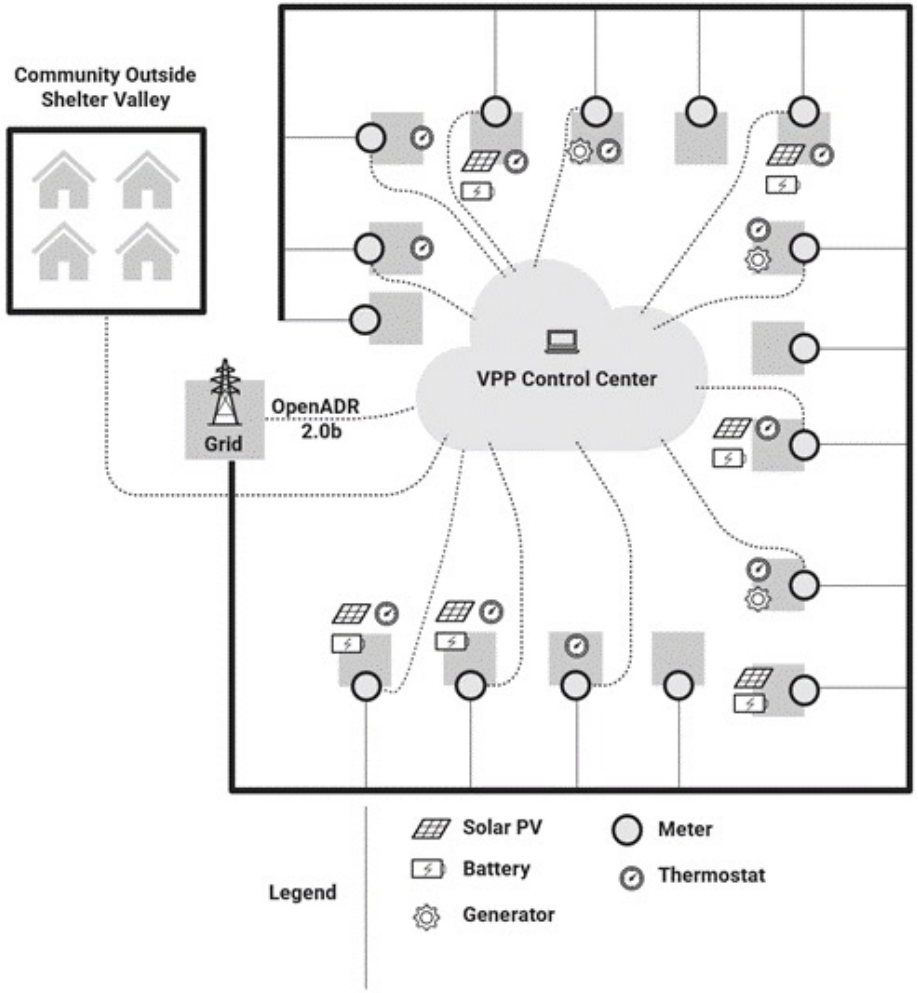
SDGE™

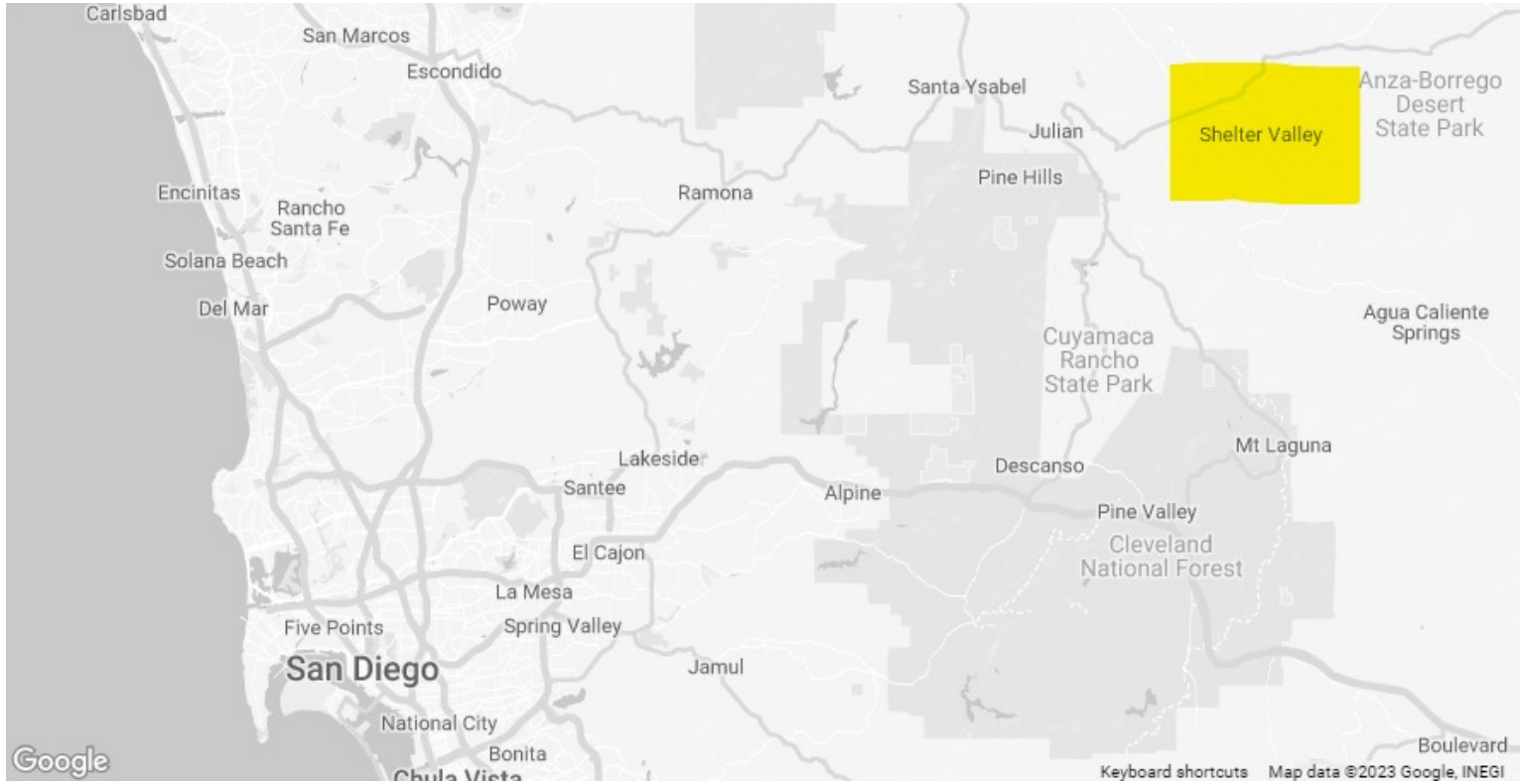
What is VPP?

A VPP is a network of distributed energy resources (DERs) at customer sites all working together as a single “virtual” power plant that can be signaled to provide reliable power during grid needs.



VPP Overview

- Project location: Shelter Valley, a remote community in East San Diego County that is prone to outages and Public Safety Power Shutoffs (PSPS)
- Objective: To strengthen community resilience, electric energy reliability, and emergency preparedness
- Focus: Evaluating control, dispatch and real-time signaling of behind-the-meter resources on a single circuit



VPP Resource Mix

- VPP includes multiple end uses and different technology providers
- Resource mix includes smart thermostats, well water pump controllers, and 18 kWh battery storage systems
- Central control platform manages cloud-based signaling of devices simultaneously or at pre-defined intervals

Smart Thermostats

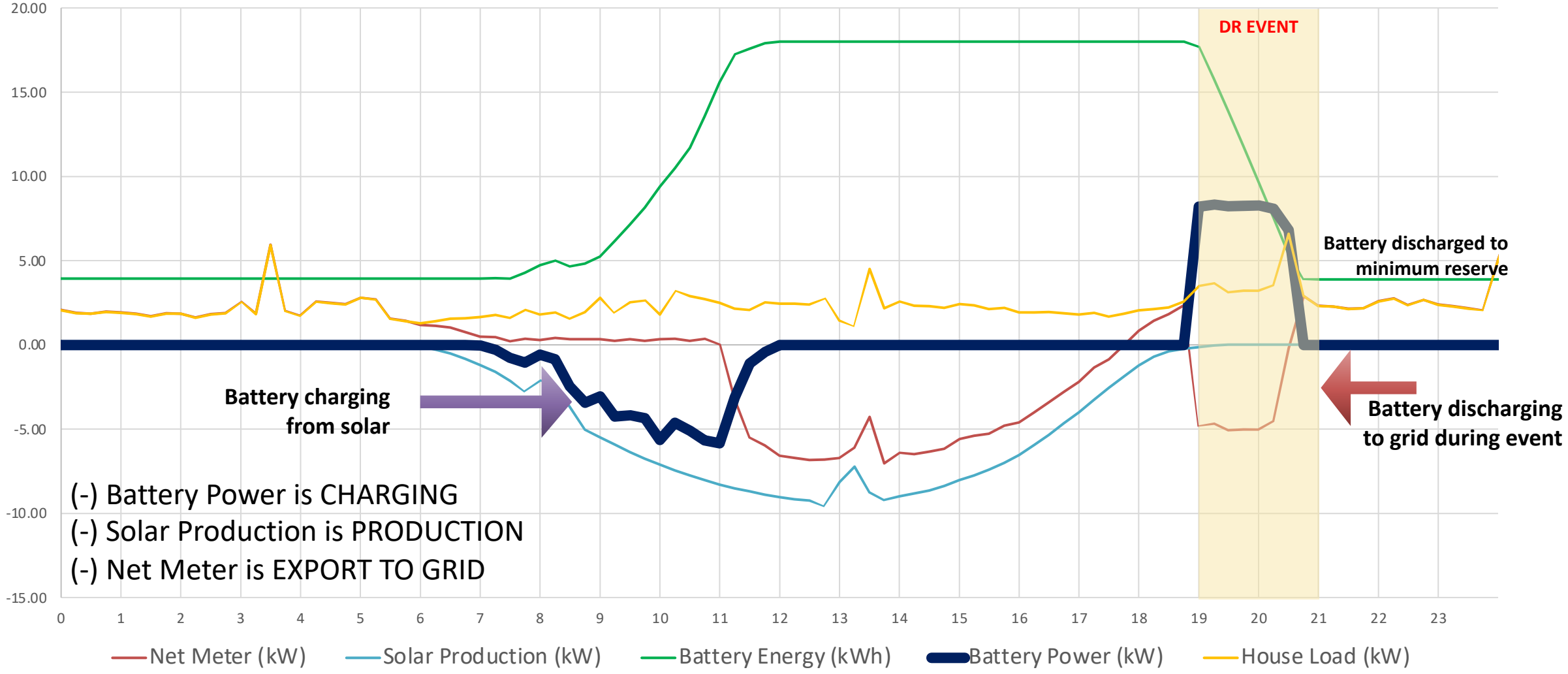
Well Water Controllers

Battery Storage Systems

Preliminary Learnings & Experience

- Central platform is successfully signaling devices
- Average of 43 kW discharged to grid during each event
- Communication with devices and customer engagement are critical to success
- Modified resource mix (ex. water heater controllers) due to connection issues
- Some customer reservations about utility control of devices
- Device communication challenges (Wi-Fi/cellular issues, device resets, geographic limitations)
- Initial opt-outs limited to thermostats
- Events were simulated prior to start of DR season; most recent events align with DR events
- Robust data collection for comprehensive analysis (solar generation, battery charging/discharging, household demand in addition to net meter)

VPP Sample Site Event Performance



Learn More

The project report will be published on Emerging Technologies Coordinating Council (ETCC) web site (etcc-ca.com) upon completion of project.

For more information, contact Jeff Barnes at jbarnes@sdge.com.

Learn More

- https://www.sdgenews.com/article/sdge-pioneers-virtual-power-plant-help-ease-strain-power-grid-during-extreme-heat
- sdge.com/vpp
- sdgenews.com/article/energy-101-virtual-power-plants-explained

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