Energy Innovation Virtual Tour: Low-Carbon Solutions for Increased Reliability

Microgrids and Virtual Power Plants
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Swell Energy
Swell Energy is a smart energy and grid solutions company that connects property owners, industry partners, utilities and finance providers behind the shared goal of achieving reliable, cost-effective, clean and flexible energy.
California has a goal of reaching 100% renewable energy by 2045.
Growth of renewable energy portfolio drives new intermittency challenges.
Public Safety Power Shutoffs exacerbate the need for non-wires solutions, distributed energy resources, and sustainability improvements.
Heat waves and climate change heighten demand for reliable and renewable power.
Swell’s Virtual Power Plant Solution

Swell’s Virtual Power Plants are networks of distributed energy resources that can be centrally controlled by a grid operator in place of a large, central power plant. By aggregating homes into VPPs and responding to grid events when called upon by utilities, Swell unlocks value for both homeowners and utilities.

Over the next twenty years, Swell’s current VPP portfolio is expected to generate over 3,000 GWh of clean solar energy, with customers potentially storing 1,000 GWh for later use and dispatching over 200 GWh of this stored solar energy during events when the utility calls on the VPP for capacity.
Key Elements of Swell’s Virtual Power-Plants

I. Customer acquisition
- Swell direct or third party
- Retail products/offers for energy storage/other DERs
- Customer experience: simplifying and integrating the customer energy experience

II. Project fulfillment
- Project fulfillment/network of Swell certified technicians
- Technology platform manages fulfillment from lead to installation
- Customer service center capabilities

III. Project finance
- Retail customer finance product structuring. Swell designs and operationalizes retail customer financial products
- DER portfolio finance. Swell’s structures wholesale financing to underpin its customer finance product offerings

IV. Grid services & Virtual Power Plants
- Utility value creation from aggregated DERs
- Utility program development
- Market participation
Swell Energy’s Platform & Managed Services

A turnkey DER deployment & management platform that optimizes utility value while enhancing customer experience.

**Swell DER Programs**

- **Swell managed services**
  - Customer acquisition
  - Project fulfillment
  - Project finance
  - Grid services

- **Swell technology platform**
  - Compass module (customer engagement)
  - Wave module (sales & fulfillment)
  - Fleet mgmt software

**Utility/Grid value delivered**

- **Energy procurement cost management**
  - Wholesale energy cost arbitrage
  - Wholesale demand charge mitigation
  - Capacity/RA
  - Ancillary services / market participation

- **Grid/network cost management**
  - Distribution network CapEx deferral
  - Integration of renewable assets/DERs
  - Transmission congestion mgmt.

- **Host/onsite value delivered**
  - Enhanced reliability & security (backup)
  - Optimized PV self-consumption
  - Load management
  - Bill management (savings)

- **Utility value delivered**
  - Enhanced retail consumer experience
Swell VPP Programs
Southern California

Swell OC VPP
Utility Program: SCE PRP2
VPP Homes: 2,500 (25 MWh)
Program Overview:
The Need. The decommissioning of the San Onofre nuclear plant led to a diminished supply of capacity for SCE in the Irvine, CA area. SCE has commissioned Swell to procure Preferred Resources – energy storage and renewables – in order to re-establish this lost capacity.

Swell 805 VPP
Utility Program: SCE ACES2
VPP Homes: 6,000 (60 MWh)
Program Overview:
The Need. The decommissioning of the Aliso Canyon gas storage facility led to a diminished supply of capacity for SCE in Ventura and Santa Barbara Counties, CA. SCE was directed by the California state senate to procure non-gas resources in order to re-establish this lost capacity and has commissioned Swell to establish a 15 MW/60 MWh Virtual Power Plant.
How Virtual Power Plants Work