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

Microgrids and Virtual Power Plants

June 16, 2021

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.

The CA Power Grid Today

- 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

5 KTLA

Rolling blackouts 'likely' with California power grid expected to near record demand due to extreme heat

Though Californians on Saturday avoided rolling blackouts, Sunday's extreme heat threatens to bring record-breaking demand for energy that ...

2 days ago

NBC Bay Area

PG&E Shuts Off Power to Roughly 172,000 Customers

PG&E said about 172000 customers will be impacted by a Public Safety Power Shutoff (PSPS) event expected to start late Monday.

2 days ago

10 ABC10.com KXTV

PG&E shutoffs: Parts of 22 counties could lose power for 1-2 days

PG&E expects blackouts between 9 p.m. and midnight on Monday and power restoration by 7 p.m. on Wednesday.

1 day ago

WSJ Wall Street Journal

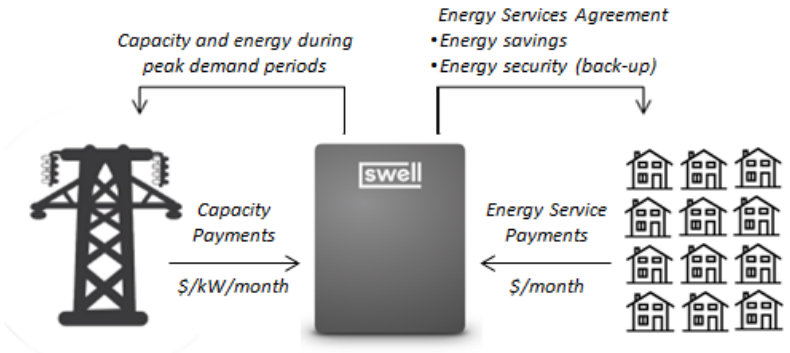
Wind-Driven Blackouts Become New Reality in California

Power shut-offs like the one that darkened parts of California this week are expected to be a regular occurrence as PG&E upgrades its aging ...

9 hours ago

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.



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6 turn-key Utility VPP Programs under development

15,000

Over 15,000 behind-the-meter systems homes across 3 states

155/313

Total planned storage capacity of 155 MW / 313 MWh and growing

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.

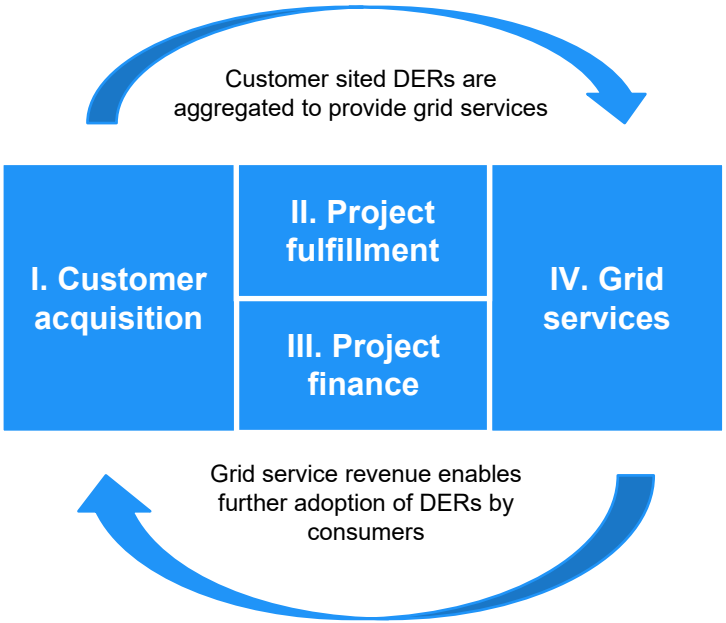
Key Elements of Swell's Virtual Power-Plants

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

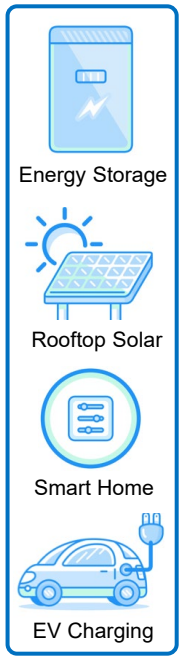
- Customer acquisition
- Project fulfillment
- Project finance
- Grid services

+

Swell technology platform

- Compass module (customer engagement)
- Wave module (sales & fulfillment)
- Fleet mgmt software

+



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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 retail consumer experience

- Enhanced reliability & security (backup)
- Optimized PV self-consumption
- Load management
- Bill management (savings)

Swell VPP Programs

Southern California

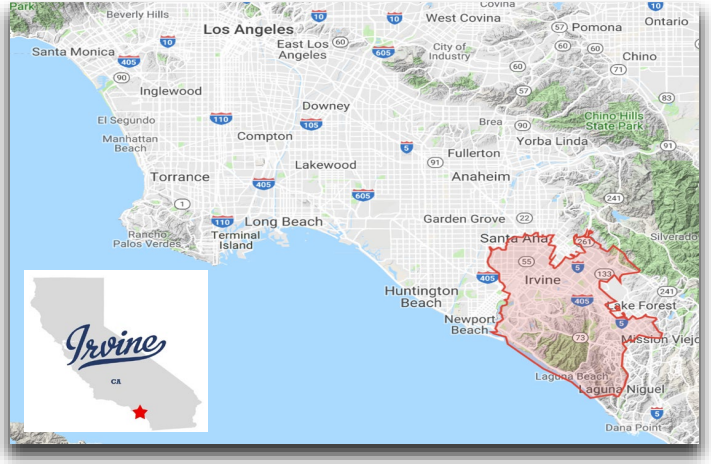
Swell OC VPP

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