Clean Coalition
Making Clean Local Energy Accessible Now

Fact Sheet

Valencia Gardens Energy Storage
Bringing resilient and reliable clean local energy to a San Francisco community

The issue
Traditionally, renewable energy located on the distribution grid has been deployed "one rooftop at a time", without basing investment decisions on an assessment of a local area's energy system potential as a whole, and without the integration and automation of all the required components that accelerate and scale these deployments. The absence of an integrated distributed energy planning process hinders more widespread use of distributed renewable energy technologies, even though these technologies offer opportunities to create a cleaner, more affordable, and stronger electrical system. The purpose of the Valencia Gardens Energy Storage (VGES) project is to deploy distributed energy storage as a strategic new technology that delivers an optimized local energy system to the grid. This local energy system will increase support for nearby distributed solar PV generation, while also improving the overall quality and cost of grid operations. The project, located in a disadvantaged community of central San Francisco's Mission District, will showcase how energy storage can be effectively deployed in dense, developed urban environments.

Project innovation and advantages
The VGES project is located in an urban area in the heart of San Francisco, not only benefitting a disadvantaged community but also showcasing how energy storage can be configured to work in urban settings in front of the meter. The VGES project will deploy 1,096 kWh of electric energy storage at a public housing complex in San Francisco's Mission District with existing solar PV of 580 kW on a circuit with a peak load of 570 kW. The VGES project will provide and target the following storage services: 1) increase the existing solar PV hosting capacity of the distribution circuit by at least 25%, 2) optimize and balance circuit load and generation — including discharging surplus solar energy during the evening ramp, 3) deliver ancillary services to the California Independent System Operator (CAISO), and 4) provide local grid resilience through voltage regulation. The project will also drive required advancements in policy, market mechanisms, and interconnection that will fully value and support in-front-of-the-meter energy storage. Currently the Clean Coalition and PG&E are exploring best practices for interconnection of commercial-scale solar and energy storage through the CEC-funded VGES project. Valencia Gardens contains 218 family flats and 42 senior apartments among 16 buildings on a five-acre site. The purpose of this project is to utilize distributed energy storage as part of an optimized local energy system that both increases support for distributed solar PV generation and improves overall grid operations and economics. This unique solar+storage project will deliver many benefits to the grid that current projects — deployed either behind a customer meter or on the transmission grid — cannot achieve, including support for higher penetrations of distributed solar PV across multiple sites along a feeder; an optimized feeder load and generation profile; reductions in system-wide peaks and the associated reduced need for costly peaker generation

This project will deploy an optimized energy storage system to support the existing solar PV on top of the Valencia Gardens complex, pictured above. Photo credit: EcoPlexus.

Fact Sheet

and expanded transmission system capacity; ancillary services to the distribution grid and the transmission grid such as capacity and frequency regulation; a market mechanism that advances the regulatory and interconnection frameworks by properly valuing and supporting cost-effective energy storage solutions; and enhanced grid resilience and security through local backup power to critical loads during outages. Furthermore, this project will serve as a model that supports California's emissions reductions goals, increases the state's resilience and security, drives regional economic development, and lowers the cost of operating the power grid. This project will also improve local circuit reliability and optimize balancing of local electric supply and demand.

Anticipated benefits for California

General benefits

The Valencia Gardens Energy Storage project will demonstrate how targeted deployment of energy storage can increase the grid's ability to handle greater amounts of distributed solar PV. This project will set the stage for California to bring more distributed solar PV online; for each additional MW of solar PV that is added, the following benefits are expected to be achieved over 20 years.

Specific benefits

- Lower electricity costs for Californians
  - This project will reduce the need for new investment in both distribution and transmission grid infrastructure to support system peaks, which will serve to lower electricity bills. The project has the potential to bring more than $1.3 million in benefits to California investor-owned utility (IOU) ratepayers through peak capacity savings, transmission and distribution line loss savings, and new transmission capacity savings alone. In addition, it will prove that California utilities and CAISO can optimize targeted local energy resources rapidly across the state using a replicable and cost-effective solution.
- Enhanced grid capabilities, reliability, and security
  - This project will enable higher penetrations of distributed renewable energy, improve circuit reliability, and optimize local balancing of electricity supply and demand. It will provide indefinite, renewables-based backup power to critical loads during grid outages to achieve greater community resilience. *Future resilience benefits are possible if PG&E chooses to add isolation switches to this section of feeder to utilize PV and battery during grid outage*.
- Economic stimulation
  - This project will support regional economic development, including job creation and increased tax revenue, at an estimated $4.6 million.
- Environmental and public health benefits
  - This project will decrease reliance on fossil fuels for electricity generation, and thereby reduce greenhouse gas emissions by more than 225 million pounds, as well as decreasing other hazardous emissions from power plants.

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