

Vote Solar Proposal for SCE's "Living Pilot" Program – October 21, 2013

Jim Baak

Introduction and Summary

The Vote Solar Initiative (Vote Solar) appreciates the opportunity to provide input to Southern California Edison's (SCE) "Living Pilot" proposal. Given the State's goal to reduce carbon emissions, ongoing efforts to curb other emissions in the South Coast Air Quality Management District, combined with the potential impact of the closure of the San Onofre Nuclear Generating Station (SONGS) and the Once-Through Cooled (OTC) generators along the southern California coast, this proposed pilot is timely and appropriate.

Vote Solar provided testimony in the Long Term Planning and Procurement (LTPP) Track 4 proceeding stating that the proposed Living Pilot would provide valuable data on the ability of Preferred Resources to meet local capacity requirements (LCR) and could be used to develop best practices for implementing Preferred Resources and energy storage technologies. Vote Solar supports including a variety of preferred resources in the pilot as indicated in the background information provided by SCE. Through coordinated deployment and operation of these resources, we believe SCE can maintain high levels of reliability and meet carbon and air quality goals for the region.

In the background information, SCE states that one of the objectives of the Living Pilot is to "manage load to zero net growth in the Johanna-Santiago vicinity." Distributed PV can meet this objective without carbon or other emissions. The complimentary nature of PV, energy storage and other distributed energy resources (DER), strategically deployed and operated in a coordinated manner, will allow SCE to maintain and improve reliability of the distribution grid, making it less vulnerable to transmission and large-scale generator outages as happened in September 2011.

Recommendations

This proposal offers recommendations to tailor incremental distributed PV to meet the specific needs of the LA Basin in combination with other DER. Vote Solar recommends SCE evaluate the effectiveness of orienting PV to the west instead of south to maximize output in the late afternoon and to evaluate the voltage control capabilities of advanced inverters installed at strategic locations on the grid. These concepts are discussed in more detail later in this proposal.

Vote Solar believes the Living Pilot must include integration of smart grid capabilities with the deployment of preferred resources to maximize the benefits and usefulness of DER and energy storage, as a means of monitoring, data collection, communication with customers and possibly direct control of resources. SCE's smart grid could provide a platform through which the CAISO could have "visibility" to the distribution grid to better manage the system.

Concurrent with the monitoring and evaluation of the DER, SCE should draft tariffs and incentives to hasten full commercial deployment to meet growth-driven needs throughout the rest of its service territory. In previous testimony and comments in the LTPP proceeding, Vote Solar has offered specific examples of flexible procurement mechanisms for distributed PV which would allow SCE to phase in resources as needed rather than committing to larger gas generators which have longer lead times and which emit carbon and other pollutants. While we have discussed these in the context of distributed PV, these mechanisms could also be applied to other DER and storage technologies. Finally, Vote Solar recommends SCE develop a process for transferring the learning from the Living Pilot to the deployment of preferred resources throughout the LA Basin.

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West Orientation of PV Arrays

One of the concerns expressed by the CAISO and utilities is the potential for afternoon ramps that they contend could occur under certain circumstance in the future. SCE should include in the Living Pilot evaluation of west-facing PV arrays. A south-facing PV array maximizes annual energy output, but sacrifices late afternoon production. In contrast, a west-facing system provides maximum output later in the afternoon, but at the expense of maximizing annual energy production. SCE's Living Pilot should include development and evaluation of incentives to compensate system owners for orienting PV arrays to the west when it is potentially most valuable to the utility. This might include rate changes for PV system owners, including possibly time-of-use rate structures.

Advanced Inverters

Voltage support is an issue CAISO, SCE and SDG&E all indicated was a serious concern post-SONGS, and advanced inverters strategically located throughout the distribution grid could provide voltage support at critical areas within the distribution grid. Including advanced inverters in the pilot, coincident with deployment of smart grid capabilities, could help spur deployment of this technology while penetration levels of distributed PV are still relatively low, potentially increasing the value of distributed PV for reliable grid operation.

In rebuttal testimony, SCE contended that smart inverters should not be included in the Living Pilot. However, in a letter from the Western Energy Industry Leaders (WEIL) Group, the CEO's of 11 western utilities, including SCE, called for the immediate deployment of smart inverters precisely for this purpose. The letter states "there is an immediate need for the new solar generators that residents are placing on the grid in ever increasing numbers to be fitted with "smart inverters" to provide the necessary voltage support for us to integrate these resources effectively and prevent costly future renovations and reliability impacts."¹ We believe the Living Pilot is the ideal opportunity to demonstrate these capabilities and develop tariffs and rules to support widespread deployment of this vital technology.

The Living Pilot should include the development of incentives for deploying advanced inverters to supply voltage support. Testing of the advanced inverters, along with development of tariffs to compensate system owners for production of VARs, should begin immediately in Orange County after the launch of the Living Pilot. Upon successful completion of the testing, and within 12 – 18 months from the start of the Pilot Program, advanced inverters should begin to be deployed for the remaining Preferred Resources authorized in Track 1. This deployment would logically apply first to large commercial PV facilities, which are easier to monitor, have a larger impact on voltage support and for which the additional cost of an over-sized advanced inverter is an insignificant component of the system costs.

The issue of advanced inverter capabilities and certification is being decided in a separate Rule 21 proceeding. While there is still debate about what capabilities should be required and whether California should wait for national standards to be developed or move forward with state developed standards, these issues should be resolved within the next several months and standards developed

¹ August 7, 2013 open letter from the WEIL Group to Governors, Commissioners and Legislators.

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and implemented within the next 2 – 3 years. Once standards have been developed and more manufacturers begin offering advanced inverters for small commercial and residential applications, these customer classes can then be included in the Living Pilot Program. This can be more easily achieved in targeted areas of the grid with the greatest LCR need using third party aggregators, though we are not opposed to SCE acting as an aggregator for this purpose. SCE could issue an RFO for aggregators to supply a certain amount of NQC from DG as well as voltage support on specific circuits and allow aggregators to bid.

Rather than serving facility load, one option is for the large commercial program be designed so that the PV system supplies energy and reactive power directly to the grid rather than supplying energy for the customers' loads. This would greatly simplify the metering and monitoring requirements for energy consumed to provide reactive power for voltage support as well as actual watts and VARs produced. It would also allow more time for SCE to test and refine the program and for the Commission to review and approve tariffs for ongoing VAR support compensation (i.e., an ongoing payment for provision of ancillary services), paving the way for more widespread deployment and for inclusion of aggregated small commercial and residential installations. As the utility and 3rd party providers gain more experience with using advanced inverters for this purpose, the program could evolve to allow on-site consumption of solar energy along with voltage support for the grid.

Eventually including small commercial and residential customers could be more easily accomplished using a CSI-like mechanism that provides an extra incentive to cover additional costs that might be needed for oversizing the inverter to supply energy to serve customer loads while also providing voltage support to the grid. The implementation of a small commercial and residential advanced inverter program could be delayed until after the commercial program has been more fully refined. Unlike the proposed initial phase of the commercial program, the residential and small commercial program should allow for the PV system to supply the customer's energy requirements while providing additional voltage support for the grid using oversized inverters. This would require developing new metering and interconnection requirements along with tariffs to ensure energy consumed by the inverters for the production of VARs is not charged to the consumer and that the customer is fully compensated for VAR production as well as energy production. It may be possible to use the inverter-integrated metering capabilities to achieve this, though these details could be worked out in a separate proceeding or via the open stakeholder process SCE has proposed for the Living Pilot Program

Transition Process

For the Living Pilot to be truly useful in integrating Preferred Resources, there must be a clear process for transferring the learning from the Living Pilot to the deployment of Preferred Resources authorized or requested in Track 1 and Track 4 throughout the entire LA Basin. There should be ongoing monitoring and reporting to the Commission and stakeholders engaged in the Living Pilot throughout the Pilot Program to maximize the effectiveness of these resources in meeting the LCR needs and expedite deployment in successive phases of Preferred Resources procurement cycles. Since Preferred Resources have shorter development lead times than gas-fired resources, establishing successive phases of Preferred Resources procurement to meet changing load conditions would allow opportunities to transfer this learning into real world deployments.