

DR12.25: Irrigation Load Control Pilot Program

OPPORTUNITY

Energy used for pumping water for irrigation presents a good opportunity for demand response and the remoteness of the systems makes it a good fit for Automated DR.

Southern California Edison (SCE) engaged BPL Global (BPLG) to provide SCE with an advanced Demand Management solution that would be used to provide operational control, monitoring and management of irrigation loads. SCE desired to demonstrate a solution that was able to operate through BPLG's Connected Energy (CNRG) Demand Management solution interface as well as respond directly to OpenADR commands. The longer term goal of the pilot is to create a solution that is able to provide both capacity and ancillary services to CAISO through the control of irrigation pumps and wells.

TECHNOLOGY

Third party open software used to communicate with OpenADR.

The CNRG system consists of the load controllers, software, and a communications platform that utilized On-Ramp Wireless to deliver an end to end irrigation load control pilot project for SCE. The system was able to receive OpenADR signals from an open source Virtual Top Node (VTN) using the On-Ramp Wireless Head-end and Access Point which served as a Virtual End Node (VEN).



RESULTS

Successful Demonstration of a third party solution for irrigation load control that is able to respond directly to OpenADR.

Successful demonstration was achieved for the following goals:

- On-Ramp Wireless communications protocol to demonstrate a simultaneous curtailment event on both pumps and separately for each individual pump.
- Curtail load for specific period of time with normal restore at end of event
- Dispatch for specific period of time with normal restore and with unplanned cancellation with restore
- Perform curtailment event defined by kW reduction amount
- Presented a customer facing Farmer Portal that allows farmers/growers to view the operating status of their pumps and control them by turning them on and off remotely using either a smart phone, tablet or computer
- Demonstrated the functionality of OpenADR

NEXT STEPS

The longer term goal of the pilot is to create a solution that is able to provide both capacity and ancillary services to CAISO through the control of irrigation pumps and wells

This third party demonstration project utilizes a variety of communications backhaul methods (On-Ramp Wireless in this case), responds to OpenADR requests, provides metered metrics at the device level and delivers benefit and value to participating farmers. Some next steps to further this pilot:

- Create and schedule a class/workshop at the Tulare Energy Education Center that conveys program benefits to potential customers.
- Broaden the target audience to others within SCE including stakeholders with OpenADR program interests.
- Investigate location for installation of a cellular communications load control device to compare latency with On-Ramp Wireless.
- Refine the concept of an operating model that allows for the adjusting of controlled load in response to non-spinning ancillary service needs.

