

DR18.03 – Connected Pool Pump Market Assessment

OPPORTUNITY

What was the project's purpose?

The purpose of this project was to conduct a Connected Pool Pump (CPP) Market Assessment to better understand the market potential for the flexible control of residential pool pumps. This report is an interim deliverable incorporating a literature review of previous pool pump demand response (DR) programs, an assessment of current pool manufacturer technologies, and a characterization of the pool pump supply chain. Also included is an estimation of the flexible resource potential of residential pools in SCE territory. The Market Assessment is divided into three activities summarized below:

Activity 1: Literature Review. Numerous technology assessments, field demonstrations and other published studies are reviewed and summarized in this activity.

Activity 2: Technology Assessment. In this activity market available pool pump products with connected technology are reviewed and their capabilities compared.

Activity 3: Supply Chain and Market Potential. This activity quantifies pool pump equipment stock and shipments, distribution channels, and other market factors unique to the Southern California pool market.

TECHNOLOGY

What technology was evaluated?

This Market Assessment explores CPPs extensively. According to the U.S. Environmental Protection Agency (EPA) ENERGY STAR® program a **"CPP" must have smart grid functionality involving the capability to receive, interpret, and act upon certain types of control signals**. Additionally, more consumer-oriented features must also be included, such as the ability to report energy consumption data, operational statuses, adjust pump/user settings, and transfer messages.

FINDINGS

What were the major findings?

Activity 1: Literature Review

- Efforts to date have not researched pool pumps to utilize excess supply on the grid, only to shed load.
- Florida and CA have the largest pool market in the country.
- There are numerous known pilots focusing on using pool pumps as a more flexible DSM resource.

Activity 2: Technology Assessment

- As of 2018, at least four major manufacturers offered CPPs: Hayward, Pentair, Jandy, and Century Motors.
- There are two established communication specifications/standards currently being used or considered for use in this market: ENERGY STAR Connected Product Criteria optional standard and EPRI's CTA-2045 standard.
- To-date, the pool pump market has focused on enabling communicating with three communication pathways: 1) Radio Frequency (RF) to Internet; 2) Wired Ethernet; and 3) Wi-Fi.

Activity 3: Supply Chain and Market Potential

- The CPP supply chain includes pool builders, supply stores, online retailers, and maintenance coordinators.
- CPPs have the potential to provide three of the four types of DR: Shape, Shift, and Shed.
- The gross demand potential for CPP is roughly 1,100 MW in SCE territory. In 2021, there will be an estimated 932,000 residential swimming pool pumps operating in SCE territory.