

DR13.02: Demand Response and Permanent Load Shift: A Look at Standards and Activities that Impact California

OPPORTUNITY

What has research demonstrated are next steps for expanding demand response (DR) and permanent load shift (PLS) in California?

- ▶ Adoption and mandated use of nationally (and internationally) recognized DR messaging protocol standards.
- ▶ Adoption and evolution of the EPA ENERGY STAR® connected designation to include grid interactive concepts and DR messaging protocol standards.
- ▶ Adjustment of DR and PLS focus from mid-day peak use mitigation to broader demand management that leverages the more dynamic timing of peak period(s) available to DER output.

TECHNOLOGY

What is demand response and permanent load shift?

DR and PLS programs adjust load to align with supply, expanding the primary practice of adjusting supply (generation) to meet demand.

- ▶ DR is an agreement between an electricity end user and utility or third party which encourages the end user to reduce, or even sometimes increase, their energy use during specific time periods.
- ▶ PLS is a subcategory of DR and is the movement of energy usage from one period of time (peak hours) to another (off-peak hours). This adjustment to the time of energy usage is intended to be permanent.

RESEARCH

What were the main tasks and activities performed?

Numerous organizations were researched in order to present a widespread inventory of current policies, plans, initiatives, programs, and mandates related to implementation of DR and PLS programs.

Initiatives, projects, mandates, and programs were reviewed and compiled for federal agencies, California agencies, organizations in other states, industry organization, and lastly international organizations.

ROADMAP/RESULTS

What were the overall findings and outcomes of the research efforts?

DR Activity

Below is the timeframe associated with CEC Title 24 building and Title 20 appliance code standards development, as well as the ongoing refinement of EPA ENERGY STAR specifications.

Lifecycle Process – Initial Steps

- Customer Need
- Requirement Analysis
- Project Plan

Lifecycle Themes

System Design, DR Messaging Protocols, M&V, Piloting & Testing, Deployment, and Implementation

ID	DR Activity	2014				2015				2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Title 20 Inputs and Collaboration																												
2	Title 24 2016 Collaboration																												
3	Title 24 2020 Collaboration																												
4	Energy Star DR Collaboration																												

RECOMMENDATIONS

What are some of the next steps recommended based on the research?

- ▶ CEC Title 24 2016 Recommendations: DR messaging protocols; occupant controlled smart thermostat; automated pre-chilling; flexible automated EV charging program; Title 24 and LEED certification coordination
- ▶ CEC Title 24 2020 Recommendations: Energy management control systems
- ▶ Title 20 & ENERGY STAR Recommendations: Appliances with networking interfaces allowed to consume 5% more energy in exchange for DR capabilities.