California ISO
Shaping a Renewed Future

ISO Demand Response and Energy Efficiency Roadmap

Workshop Handout May 13, 2013

Objectives

The ISO is working to incorporate energy efficiency and demand response into its planning and market operations and has identified the following objectives:

- integrate dispatchable demand response resources into the ISO market to maximize the value of this resource
- connect wholesale and retail signals to respond to grid conditions
- enable demand response and energy efficiency as alternatives for transmission or local capacity
- create opportunities to support demand response and energy efficiency investments

The roadmap also includes activities to evolve and establish technology and regulatory frameworks needed to support all objectives.

During this workshop, the ISO will gather stakeholder input on the objectives as well as activities needed to prepare energy efficiency and demand response as resources that can offset the need for new fossil-fired generation, defer investment in transmission and distribution assets, or can be used to measurably reduce load and favorably modify the system load shape. To achieve this, the ISO recognizes that additional activities outside the ISO efforts are essential to developing demand response and energy efficiency and the ISO is working with the state agencies to expand this effort to a cross-agency roadmap.

Dispatchable demand response resource market integration

To maximize the value of dispatchable utility and third party demand response programs, it is essential for these programs to be part of the ISO market optimization to help balance supply and demand cost-effectively. The market optimizes all resources to find a feasible, least cost dispatch solution while respecting resource and system constraints. In addition, the market systems and operators rely on the resources modeled and available in the ISO's systems to respond in real time when contingencies occur. The following activities have been identified to increase the amount of demand response integrated in the ISO market:

- review existing utility demand response programs and implement as many as possible in the ISO market in the near-term
- implement ISO market products tailored to operational needs
- support third party and utility demand response program development consistent with needed operational characteristics
- support pilots to test resource capabilities and gain operational experience
- support regulatory policy and rules for direct participation in the wholesale electricity market
- seek changes to reliability standards to remove barriers to participation
- support consumer choice to spur innovation and development of direct demand response participation

Connect wholesale and retail signals to respond to grid conditions

Consumers and their automated devices should have the opportunity to receive and respond to prices or signals that reflect real-time grid conditions. The long-term benefit of connecting consumption behaviors to grid conditions is a flatter load shape, which should reduce the need for peaking capacity and, in turn, reduce emissions and costs through the more effective and efficient use of the grid. The following activities have been identified as steps to better align grid conditions with what consumers and automated devices can respond to:

- continue to fund and promote energy conservation campaigns, like Flex Alert
- evolve retail rate structures that align with system conditions and produce beneficial changes in consumption patterns
- study feasibility and benefits of a whole electricity system optimization
- design and conduct price-responsive distributed energy resource pilots in coordination with distribution system operators
- enhance the ISO's demand modeling and forecasting capabilities

Enable demand response and energy efficiency as alternatives for transmission or local capacity

The transmission planning process ensures that a robust and viable transmission system will exist in the future to support grid needs in local areas and system wide. Planning is done 10 years ahead to ensure ample time exists to build transmission infrastructure or put in place alternatives such as local resources to mitigation transmission needs. There must be a high degree of confidence that grid resources produce and deliver the necessary services and operational characteristics required to maintain a safe and reliable grid. The following activities have been identified to include energy efficiency and demand response as transmission alternatives:

- establish performance and operational requirements for alternative resources, like demand response
- ensure measures are in place to monitor and verify the timely development of these resources
- verify the performance of demand response and energy efficiency programs

Create opportunities to support demand response and energy efficiency investments

The ability to effectively use energy efficiency and demand response resources depends upon their existence, which requires investment and the opportunities, at a minimum, for consumers or demand response providers to recover their investment. The current two-part regulatory process used to secure capacity, long-term procurement planning (LTPP) and resource adequacy (RA), did not set out to meet the operational needs of a grid that relies on large amounts of renewable, intermittent resources or procuring various resource types and characteristics required by the grid operator. The following activities have been identified to create conditions that may further incent investments in demand response and energy efficiency resources that align with the evolving needs of the grid:

- determine future system and local operational needs from resource fleet as the grid evolves
- develop ISO market products tailored to future operational needs
- establish a multi-year forward procurement framework to target procurement of needed capabilities

Evolve and establish technology and regulatory framework

A technology and regulatory framework must develop that supports meeting the above objectives and removes barriers to participation. The following activities have been identified to remove process and technology barriers:

- align key agency processes for consistent assumptions
- expand metering and telemetry options to support emerging business models and lower costs
- increase coordination and data sharing with distribution system operators
- streamline demand response market registration process and implement demand response system enhancements to reduce complexity and registration time
- develop electrical location mapping tool in coordination with distribution operator to support registration and verification