

Demand response and energy efficiency roadmap: Maximizing the use of preferred resources

Greater reliance on demand response and energy efficiency will help transition California's power sector into a cleaner, greener, and more environmentally sustainable industry. The ISO believes that properly configured demand response (DR) and energy efficiency (EE) can simultaneously contribute to the reliable and efficient management of a greener electricity grid and reduce or defer the need for conventional fossil-fueled generating resources and new transmission assets. The ISO Roadmap conveys a plan for how DR and EE can help achieve this vision and reduce California's reliance on environmentally impactful and greenhouse gas (GHG) producing resources.

ISO VISION

The ISO envisions demand response and energy efficiency becoming integral, dependable and predictable resources that support a reliable, environmentally sustainable electric power system.

The resource changes occurring in the electric power industry today include a clearly visible trend toward increasing numbers of distribution-connected resources. From the ISO perspective, this trend brings certain operational uncertainties, which include the magnitude, type, timing, forecasting, and geographic distribution of distributed energy resources. Saying this, the ISO believes that these challenges can be overcome without compromising reliability through setting clear goals and enabling collaboration, coordination and cooperation among key policy makers, state agencies, and market participants.

Goals

The roadmap activities support five primary goals:

1. The ISO, California Energy Commission (CEC), and California Public Utilities Commission (CPUC) use consistent assumptions for their respective planning and procurement processes;
2. Load modifying programs result in a more favorable load shape, reducing resource procurement requirements, mitigating over-generation, and moderating ramps;
3. The ISO articulates the grid's operating requirements to optimally configure DR and EE so as to be the most effective at satisfying planning and operational needs;
4. Procured DR & EE resources satisfy the grid's capability, timing, and locational needs; and
5. DR program participation in the ISO market provides operational experience and invaluable feedback for program and policy refinement.

Four Paths Forward

To achieve the stated goals, the roadmap establishes four paths with assigned activities that run between 2013 and 2020. These four paths represent the nature of the activities to be accomplished under each path through collaboration with the other state agencies and market participants. Each path has its own set of activities and milestones to achieve the stated goals. The four paths are as follows:

Load reshaping: This path focuses on the demand side of the supply-demand equation. Load shaping is about maximizing the potential of DR and EE to reconfigure the load shape in favorable ways. The intent is to create a flatter load shape for the ISO system as a whole as well as in specific geographic areas, which will smooth peaks and valleys.

Resource sufficiency: This path focuses on the supply side of the supply-demand equation. The intent is to ensure that sufficient supply-side resources with the needed operational characteristics are available in the right places and at the right times. This path specifies the needed resource characteristic, as well as policy developments, that will guide the procurement of demand response as a supply-side resource.

Operations: This path focuses on how the ISO can maximize the use of supply-side DR resources. The perspective is from the grid operator who is responsible for planning and balancing the system. This path requires potential modification of certain ISO policies, changing or developing new market products, and addressing relevant technical and process concerns to reduce barriers to the participation of demand response in the wholesale market.

Monitoring: This path provides the feedback loop for the other three paths. Gaining and recording experience with each stage of activity will foster a deeper understanding of the operational capabilities of DR resources, the effectiveness of DR and EE procurement programs in aligning with system-wide and locational needs, and the impacts of energy efficiency and other load-modifying programs to reshape load profiles locally and at a system level.

Roadmap activities and responsible parties

Load reshaping	Resource sufficiency	Operations	Monitoring
<p>Align EE programs and incentives to serve grid needs</p> <p>CPUC</p> <ul style="list-style-type: none"> Review and align EE programs and incentives to grid needs by location 	<p>Define resource attributes helpful to the grid</p> <p>ISO</p> <ul style="list-style-type: none"> Catalog typical operational attributes for DR Include DR/EE to address specific local area needs 	<p>Implement enabling policies</p> <p>ISO</p> <ul style="list-style-type: none"> Implement reliability DR resources Implement flex MOO Refine and implement non-generating resources-PDR model Implement MOO for use-limited resources <p>CPUC</p> <ul style="list-style-type: none"> Complete Rule 24 	<p>Track DR & EE program development</p> <p>CPUC/CEC/ISO</p> <ul style="list-style-type: none"> Determine best approaches for DR & EE program monitoring; implement best practices
<p>Evolve demand forecasting techniques</p> <p>CPUC</p> <ul style="list-style-type: none"> Develop criteria for classifying DR programs—supply-side or load modifying resources <p>CEC</p> <ul style="list-style-type: none"> Develop more granular EE forecasts Incorporate “load modifying” programs in demand forecast 	<p>Coordinate procurement and planning processes</p> <p>CPUC/CEC/ISO</p> <ul style="list-style-type: none"> Coordinate procurement and planning assumptions and align processes <p>ISO</p> <ul style="list-style-type: none"> Perform loss of SONGS local area impact study Develop DR must-offer obligation (MOO) for flex resource adequacy (RA) capacity Develop DR MOO for local and system capacity <p>CPUC</p> <ul style="list-style-type: none"> Develop criteria for classifying DR programs—supply or load modifying 	<p>Gain operational experience with DR</p> <p>CPUC/ISO</p> <ul style="list-style-type: none"> Review existing DR programs for participation in ISO market <p>CPUC/CEC</p> <ul style="list-style-type: none"> Back DR pilots with R&D funding <p>CPUC/IOUs</p> <ul style="list-style-type: none"> Develop DR pilots to address flexible and local operational needs Bid DR pilots in ISO market IOUs/Aggregators Bid eligible DR programs in ISO market 	<p>Verify DR & EE program performance</p> <p>CPUC</p> <ul style="list-style-type: none"> Measure, verify and report on DR program performance; assess best practices through process evaluation <p>CEC/CPUC</p> <ul style="list-style-type: none"> Measure, verify and report on EE program performance; assess best practices through process evaluation
<p>Align retail signals with grid conditions</p> <p>CPUC/ISO/IOUs</p> <ul style="list-style-type: none"> Develop means to reflect grid conditions to consumers and conduct pilots <p>CPUC</p> <ul style="list-style-type: none"> Create retail tariff options that align with grid conditions Assess value and effectiveness of Flex Alert Program; determine future owner 	<p>Develop capability procurement mechanisms</p> <p>CPUC</p> <ul style="list-style-type: none"> Develop multiyear RA procurement mechanism <p>ISO</p> <ul style="list-style-type: none"> Develop reliability services auction Develop DR auction pilot <p>CPUC/SCE</p> <ul style="list-style-type: none"> SCE preferred resources living pilot 	<p>Review and refine DR participation process</p> <p>ISO</p> <ul style="list-style-type: none"> Refine demand response registration process Create DR participation guide <p>Leverage new enabling technology</p> <p>ISO</p> <ul style="list-style-type: none"> Create metering & telemetry options Implement central model management system Implement DR registration API Define and implement electrical locational mapping tool <p>CPUC/CEC</p> <ul style="list-style-type: none"> Facilitate consumer adoption of DR-enabling technology 	