

**Demand Response in California:
An Update on Successes, Challenges and
Barriers**

Bruce Kaneshiro
Energy Division
California Public Utilities Commission

Demand Response in the Energy Action Plan

- The Energy Action Plan¹ is an implementation “road map” for energy policies articulated by the Governor, the CPUC and the CEC.
- The EAP places Demand Response among its highest priorities in the “loading order”, a priority sequence of action items to address the state’s increasing energy needs.

[1] The state energy agencies adopted EAP I in 2003, and adopted EAP II in August 2005.

FERC Demand Response Technical Conference

Demand Response in the Energy Action Plan (Continued)

- The Energy Action Plan identifies several key action items with regard to Demand Response:
 - Process the IOUs' proposed Advanced Metering Infrastructure (AMI) installation plans.
 - Educate Californians about the time-sensitivity of energy use and how they can participate in demand response programs.
 - Create standardized measurement and evaluation mechanisms to ensure demand response savings are verifiable.
 - Incorporate demand response appropriately and consistently into the planning protocols of the CPUC, the CEC, and the CAISO.

FERC Demand Response Technical Conference

Demand Response Actions Taken To Date

- Roll-out of interval meters for large customers (>200 kW) and placement of those customers on time-of-use tariffs. (2001)
- Directed the IOUs to develop new demand response programs and tariffs for customers as well as expand existing emergency triggered programs. (2003 - present)
- Adopted an aggressive long-term dynamic pricing MW goal for the utilities: 5% of system peak demand by 2007. (2003)

FERC Demand Response Technical Conference

Demand Response Actions Taken To Date (Continued)

- Completed a two-year pilot program, the Statewide Pricing Pilot, which examined the demand response capability of residential and small commercial customers. (2003)
- Directed the utilities to propose Advanced Metering Infrastructure (AMI) full roll-out implementation plans along with cost-benefit analyses. (2004 - present)
 - Authorized \$70 million in pre-deployment activities in 2005.
- Directed the utilities (and other Load Serving Entities) to incorporate demand response into their Resource Adequacy Requirements (RAR). (2004 – present)

FERC Demand Response Technical Conference

Types of Demand Response Programs in California

- Day-Ahead Programs:
 - Critical Peak Pricing: Participants receive reduced on-peak energy rates for most summer hours in exchange for paying high on-peak rates during 12 “critical peak” periods.
 - Triggered by the IOU under the following conditions: high wholesale electricity prices, temperature, high system peak demand and/or low generation reserves.
 - Demand Bidding Program: Participants ‘bid’ load reductions they can provide the following day and are paid for the actual amount of load they reduce.
 - Triggered by the IOU upon issuance of a day-ahead Alert by the CAISO for the affected territory or a CAISO day-ahead forecast of 43,000 MWs.

FERC Demand Response Technical Conference

Types of Demand Response Programs in California (Continued)

- Day-Ahead Programs (Continued):
 - Demand Reserves Partnership: aggregators nominate load (via contracts with end-use customers) and are compensated with capacity/energy payments.
 - The program is reserved the day-ahead and then triggered during critical demand situations or when wholesale power prices are high. Participants are required to reduce their demand within 3.5 hrs. of being notified.
 - Peak Day 20/20 Program: customers receive a 20% discount for a 20% reduction in their average demand.
 - Triggered by temperature, utility system load, high spot market prices, or a special alert by the CAISO.

FERC Demand Response Technical Conference

Types of Demand Response Programs in California (Continued)

- **Emergency or Day-Of Programs:**
 - Interruptible tariffs and programs: Participants receive rate discounts or bill credits based on the amount of load they are willing to reduce in emergency situations. Penalties are assessed for failure to reduce to their contracted firm service level.
 - Air Conditioner Cycling: Participants receive bill credits based on number and length of interruption to their air conditioner unit.

- Day-of Programs are triggered by the IOUs upon notification by the ISO of statewide or local emergencies (Stage 2 alert or transmission-related)

FERC Demand Response Technical Conference

Types of Demand Response Programs in California (Continued)

- Other
 - Marketing/Customer education programs to either promote demand response programs or educate customers about demand response concepts: includes mass media campaigns (*Flex Your Power Now!*) as well as programs that target specific groups such as water agencies, medium-size businesses, government agencies.
 - Technical Assistance and Technology Incentives: customers receive free 'audits' to identify demand response potential, and rebates for technologies that can enable automated demand response.

FERC Demand Response Technical Conference

Potential MWs^{2/} of Demand Response Programs In California^{3/}

	July 2003	July 2004	November 2005	2007 Goal
Emergency-triggered, Day-of Programs	1,485 MWs	1,508 MWs	1,650 MWs	None
Day-Ahead Programs	0 MWs	531 MWs	930 MWs	2,000 – 2,200 MWs ^{4/}

[2] “Upper-bound” estimates; programs are currently undergoing evaluation/verification to determine actual load impacts

[3] The territories of PG&E, SCE and SDG&E

[4] 5% of an assumed 40,000- 44,000 MWs of system peak demand – **illustration purposes only**

FERC Demand Response Technical Conference

Challenges and Barriers

- How to **expand customer acceptance/participation**?
 - **Misconceptions** or **lack of understanding** demand response programs/concepts persist amongst customers
 - **Increasing incentives is constrained** by other considerations – cost-effectiveness, revenue neutrality.

- How to **measure/verify demand response savings** and will the CAISO accept that accounting?
 - Currently there is **no adopted protocol** for measuring and accounting for demand response
 - What does the CAISO need to be assured that DR MWs forecasted by the IOU in the Day-Ahead market will indeed materialize in real-time?

- Need to develop a **cost-benefit framework** for demand response programs

- Developing **appropriate time-varying rates** has particular challenges:
 - AB1-X: rate freeze for residential customers?
 - MRTU creation of day-ahead hourly price market will help

FERC Demand Response Technical Conference

What's Coming Up

- CPUC decision on **Pacific Gas & Electric's full deployment AMI application** – expected by **summer 2006**.
- CPUC decision on **San Diego Gas & Electric's full deployment AMI application** – expected by **end of 2006**.
- CPUC decisions on IOUs' **Demand Response programs for 2006-2008 and Critical Peak Pricing tariff** proposals - expected next month.
- Development of a Demand Response **measurement protocol** and **cost-effectiveness methodology**– starting in 2006
- **Hourly pricing tariffs** - to be developed via IOUs' next General Rate Case applications following CAISO implementation of an hourly day-ahead market price.

Contact: Bruce Kaneshiro, California Public Utilities Commission
(415) 703-1187, bsk@cpuc.ca.gov