California Energy Programs
and the electric system

EPA State Climate and Energy Technical Forum

April 28, 2011

Brian Turner
Deputy Director
Washington DC Office of Governor Brown
Assistant Executive Officer for Federal Policy
California Air Resources Board
Agenda

- Decoupling
- California’s electricity resources “Loading Order”
- Energy Efficiency Programs
  - Demand Response
- Distributed Generation
- Renewable Electricity Standard
Decoupling

• Since 1982 (with hiatus in late ‘90s) California has “decoupled” electricity market regulation

• PUC-regulated, investor-owned-utilities receive a return on their investment that is independent of sales
  – Utilities track difference between actual and forecasted base rate revenues
    • Overcollections refunded to ratepayers
    • Undercollections recovered from ratepayer

• “Decoupling-plus” - utilities earn a return on efficiency investments and greater return on greater performance
Since 2003, PUC-regulated utilities must procure resources to serve demand according to this order:

- Energy Efficiency & Conservation
- Demand Response
- Renewable Resources & Distributed Generation
- Clean Conventional Generation
Energy Efficiency
First resource in our energy mix

Per-capita electricity use

Electricity Sales in California

Energy Savings
165 TWh/y
Additional Generation
108 TWh/y
2010-2012 Utility Energy Efficiency Program

All Economic Sectors
- Residential
- Commercial
- Industrial
- Agricultural

Cross-Cutting Areas
- Heating, Ventilation, Air Conditioning
- Codes & Standards
- Demand Side Management Integration
- Workforce Education & Training
- Marketing, Education & Outreach
- Research & Technology
- Local Governments

Benefits
- $3.13 billion for 3 years
- 15-18,000 new jobs
- Three Year Savings Potential:
  - 7,000 GWH
  - 1,500 MW
  - 150 MMTherms
  - 3 million tons of CO2e avoided
  - Equivalent to 3 large power plants
Why Demand Response

System Load Duration Curve

California uses 5% of capacity for less than 50 hours per year!

Capacity used to support peak demand is expensive, inefficient and environmentally unfriendly.

Last 25% of capacity needed less than 10% of the time

Source: California Independent System Operator Corporation
Integrated Demand-Side Resources

Automated management of energy use:
- Automated demand response
- Voluntary load control
- Dynamic pricing

On-site generation and storage

Smart charging for electric vehicles
Renewable Electricity Standard

- 20% RPS in place 2002
- 2011 signed 33% RES
  - 20% by 2013
  - 25% by 2016
  - 33% by 2020
- IOUs, POUs, ESCOs, etc
- By 2020, at least 75% in-state; no more than 10% RECs
- “This bill will bring many important benefits to California, including stimulating investment in green technologies in the state, creating tens of thousands of new jobs, improving air quality, promoting energy independence and reducing greenhouse gas emissions.”
Building A Sustainable Electric System

Power Plants
- Natural Gas Generators
- Nuclear Power Plants
- Hydro Power Plants
- Solar Farms / Power Plants
- Wind Farms

Electric Grid
- Transmission Lines
- Distribution Substations
- Utility-scale Storage
- Rooftop Solar

Customers
- Distributed Storage
- Plug-in Electric Vehicles
- Customers
Discuss!

Brian Turner
Deputy Director
Washington DC Office of Governor Brown
Assistant Executive Officer for Federal Policy
California Air Resources Board

bturner@wdc.ca.gov
202-624-5273