Energy Leadership: Integrating Policies Across Sectors

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California Public Utilities Commission

Caltech
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CPUC History

• Established in 1911 by Constitutional Amendment as the Railroad Commission.
• In 1912, the Legislature passed the Public Utilities Act, expanding the Commission's regulatory authority
• In 1946, the Commission was renamed the California Public Utilities Commission.
• CPUC regulates Investor-Owned Utilities that provide:
  – Electricity
  – Gas
  – Communications
  – Water
  – Charter Party Carriers (e.g. Uber/Lyft, Super Shuttle, moving companies)
38 million people in California

- 26 million live in Southern California
- LA County population nearly 10 million
- Vast geographic climate, linguistic, cultural, economic diversity
- Rural areas the size of the State of Kentucky
- Rural population the size of the State of Vermont
- Low income households ~1/3 of California residential households.
- 2/3 of low income households are renters
- 2/3 of those rent single family homes, 1/3 multi-family
CPUC Mission

• Mission

• California Public Utilities Code Section 451:

• Ensure that utilities provide safe, reliable service at just and reasonable rates.
The Relationship Between Approved Rates and Balancing Accounts

Rate Authorized by the California Public Utilities Commission (commission)

This is the rate that a utility charges its ratepayers. It has three primary components and certain activities are tracked in balancing accounts.

- **Capital Costs**
  These are the investments that the utility makes in the infrastructure it uses to provide utility services to consumers, such as a power plant or pipeline for gas or water. These costs include a profit margin as approved by the commission.

- **Fixed-Budget Costs**
  Fixed-budget costs are those that the utility can reasonably control, such as administration costs. The utility is responsible for any costs it incurs above the commission-approved budget. If actual costs are below the budget, the utility may keep the additional revenue it collects from ratepayers up to the approved budget, but it must refund any revenue collected in excess of the approved budget.

- **Pass-Through Costs**
  These are costs that the utility cannot reasonably control, such as fuel, electricity, or water purchases, which are typically directly associated with providing utility services to ratepayers. For these types of expenditures, the utility is allowed to recover from ratepayers only its actual costs.

Balancing Accounts

To ensure that the utility recovers all authorized costs and the ratepayers do not pay more than the authorized amounts, the commission requires the utility to establish balancing accounts to track the costs it authorized to include in rates and the associated revenues that are generally based on forecasts. This process might result in under- or over-collection from ratepayers. Utilities adjust future rates to reflect the under- or over-collections.
Rate Reform: Rate Setting

• CPUC approves utility rates and rate design
• AB 327 repeals statutory limitations enacted during the 2001 energy crisis on the electric service rates of residential customers
• Allows CPUC consideration or expansion of fixed charges for residential electric customers
• Safeguards for low and moderate-income customers
• Residential rate structure requires only 2 tiers
• Allows consideration of time of use (TOU) pricing.
Priorities for Services to Low-Income Customers

- The CPUC considers impact of rates on different types of customers including low-income customers.
- Goal: Promote energy affordability through rates, rate design, CARE discount for low-income customers.
- Promote energy efficiency for low income households through ESAP.
- Increase the number of households leveraging CPUC and State Consumer Services Department (CSD) resources.
- Consider and document health and safety outcomes, as well as societal benefits.
CPUC Considers and Approves Energy Supply Strategies and Contracts

- Assess Energy Supply needs, resources, and constraints such as transmission bottlenecks, e.g. through Long-term procurement proceeding

- Evaluate Applications for Energy Supply Procurement including Power Purchase Agreements or utility-owned generation

- Power mix:
  - 33% Renewable Goal, floor not a ceiling
  - Increase renewable resources, e.g. solar, wind, geothermal, biogas

- Consider actions to integrate renewables and the electric grid, e.g. Smart Inverters, Storage, Gas pipeline as integration/storage resource

- Encourage energy efficiency and demand response to limit demand growth

- Promote quantifiable, dispatchable demand response as a Supply Resource.

- Consider Location Specific Demand Response strategies and technologies
Environmental Sustainability; Role in Supply, Demand, Safety, Reliability, and Rates

• **CPUC and State of California Goal**: Reduce energy greenhouse gas emissions and address climate change, both of which affect supply, demand, safety, reliability and rates

• Increased temperatures and climate change affect energy demand and resources, transmission, and generation, e.g. transformers designed to cool at night

• Zero emission vehicles can reduce GHGs, forestall climate change, and increase safety and health of people and the economy.
  
  – Living near freeways is a major predictor of childhood asthma.
  
  – Promoting zero emission vehicles is well calculated to reduce childhood asthma, increase school attendance, improve workforce preparedness, and contribute to economic competitiveness.
NRG Settlement

• In 2002, CPUC and the California Electricity Oversight Board sued Dynegy, Inc. (now NRG) regarding terms in certain long-term power contracts. Settlement effective December 2012.

• One component of the settlement requires NRG to install 200 Electric vehicle fast charge stations over 4-6 years.
  – Targeted in 4 regions: Bay Area, San Diego, LA Basin, and Central Valley
  – Minimum 40 stations in low-income areas
    • 10 stations completed so far
    • 40 in progress, 9 of which are in low-income areas
Rate Reform: Net Energy Metering (NEM)

• NEM Tariff has:
  – Offered bill credit that offsets usage or is carried forward
  – Incentivized installation
  – CPUC has conducted studies on NEM

• AB 327 Effects on NEM
  – Each large electric utility must offer NEM to customers up to a limit of 5% of aggregate customer peak demand.
  – CPUC will develop a new NEM tariff, to be deployed for new NEM customers by July 2017
Demand Response as Energy Resource

- CPUC authorized expanded budget for 2013 and 2014 Flex Alert campaigns and Demand Response programs in wake of San Onofre’s outage
  - Provides alerts when reductions are needed
  - Informs the public about actions to take to reduce energy use

- Authorized funding for SCE and SDG&E to enter community partnerships to educate customers about Flex Alerts and other conservation programs

- Community partnerships use trusted messengers to connect with and educate customers about energy programs and issues
  - Partnerships in-language, in-culture
  - Enhances CPUC and Utility outreach, increases participation, awareness
Synergy: Energy Savings through Communications Technology

- Email and text alerts spurred demand response in the wake of San Onofre’s outage
- Apps enable action, inform residential and business customers about energy management, rates, and options
- CPUC partnered with DOE, UCLA, utilities, and others to encourage App development, e.g.: American Energy Data Challenge Hackathon @ UCLA March 7-8, 2014
Breaking Down Silos: Water/Energy Nexus

• Water conservation also saves energy; upwards of 19% of the state’s electricity usage goes towards the movement & treatment of water

• Over the past 30 years, hydro has made up an average of 14 percent of California's electricity mix; in 2013, it contributed 9 percent. California's hydro plants generated less power in 2013 than they had in 21 years.

• Less hydro could mean higher natural gas usage and more emissions.
Breaking Down Silos: Water/Energy Nexus

• Commissioner Sandoval is the Assigned Commissioner for the CPUC Water/Energy Nexus Proceeding
  – Examine role of water in producing energy
  – Analyze role of energy for water use, treatment, transportation
  – Recommend drought related actions & water/energy savings programs, e.g. Irrigation Sensors that use communications technologies to sense how much water a plant needs
  – Consider water/energy savings program to forestall need for facilities to provide marginal water supply

• CPUC February resolution authorizes water utilities to track expenses related to the drought.
Breaking Down Silos: Gas/Electricity Nexus

- Gas increasing as a fuel for Electric Generation
- Gas curtailment could cause natural gas plants producing electricity to shut down. Example, San Diego gas-fired power plant curtailment, February 2014.
  - Cold weather caused supplies to move east.
  - Voluntary conservation, 800 MW of Demand Response resources, as well as 700 MW of increased wind output maintained reliability.
- Gas procurement policies and rules adopted in late 1990s should be evaluated in light of current role of gas in electric generation
Safety Leadership

• The CPUC adopted Rulemaking 13-11-006, in November 2013, to modify the General Rate Case Plan to include safety, security, and reliability as a priority in ratemaking.

• The Commission should apply the priorities of safety, reliability, and just and reasonable rates, in evaluating and developing distributed generation programs, and considering rate design including Net Energy Metering.

• All grid users and participants have a shared responsibility for safety, reliability, and just and reasonable rates.
• **Technology Leadership**: Consider using market incentives to factor in and reward energy production, interconnection, use, and demand response mechanisms that contribute to the guiding values of safety, reliability, and just and reasonable rates such as:
  
  – Voltage Support
  – Volt-ampere reactive (VAR) (a unit used to measure reactive power in an AC electric power system) impact and contributions
  – Real and reactive power
  – Grid stability, balancing and managing voltage and frequency changes
  – Transparency and communication to the grid and grid operator including the California Independent System Operator
  – Trip management
  – Resource procurement and management
  – A timely, non-discriminatory, cost-effective, and transparent Distributed Generation (DG) interconnection process (CPUC OIR, DG Interconnection, R-11-09-111)
• **Technology Leadership:** Evaluate and Consider technologies and methods to advance values of safety, reliability, and just and reasonable rates such as:
  – Smart Inverters (under consideration in CPUC DG Interconnection OIR, R-11-09-011)
  – Advanced Metering
  – Renewable Energy Credits
Energy Storage: Decision & Incentives

• AB 2514 enacted in 2010
• CPUC Energy Storage Decision
  – Excludes large-scale pumped water storage
  – Storage includes: transmission-connected, distribution connected, and customer side storage
  – Competitive procurement process meeting program goals
  – Separate targets for CCAs and ESPs

• Energy Storage Incentives
  – Self Generation Incentive Program (SGIP) continues to provide benefits for companies developing storage technology, e.g. Stem
Energy Storage: Incentives & Potential

• Integrate storage into Demand Response. Example: Consider and evaluate proposals to integrate storage into streetlights and in-building lighting to provide demand response for grid management.

• The CPUC in the SDG&E General Rate Case approved use of storage in connection with energy generation, energy distribution and grid management including demand response, and distributed generation management.

• CPUC approved program to integrate and incentivize storage in distributed generation such as through the Self-Generation Incentive Program.
Climate Dividend

• The Climate Dividend will provide an per-household rebate of approximately $35 to residential customers on their electric bills in April and October.

• The funding for this rebate will come from the sale of allowances for greenhouse gas emissions provided to electric utilities for the benefit of ratepayers under the state’s cap-and-trade regulation.

• First residential rebates on bills this month!
Thanks & Questions

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California Public Utilities Commission