



The California Public Utilities Commission



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Demand Response Comparable Treatment in the Wholesale Market Barriers and Solutions

- Wholesale Market Structure
- Ratepayers as a Demand Response Resource
- Load Impacts of Demand Response
- IOU Demand Response
- CPUC Policy





Barrier

Current Wholesale Market Structure

Demand Response in the California Independent System Operator

- CAISO does not currently have a forward energy market.
 - There is no Day-ahead Market for a Demand Response resources to bid into.
- Current Demand Response resource requirements:
 - 1MW or Greater (Aggregated)
 - Real-time metering and telemetry can be required.
 - Currently California's Department of Water Resources water pumps supply most of CAISO's Demand Response.





Solution

Future Market Structure Market Redesign and Technology Upgrade

Collaborative efforts between CAISO the CEC and CPUC has yielded a Demand Response **Straw Proposal** (Available at <http://www.caiso.com/1c91/1c919e0e11c30.pdf>).

- IOUs will be able to bid Demand Response into the day-ahead, day-of and real time energy markets under CAISO's Market Redesign and Technology Upgrade.
 - CAISO will not administer DR programs.
- Structured to allow Demand Response to compete against generation.
 - Additionally, DR resources will submit supplemental bid information similar to a generator such as ramp times, and other operational constraints.
- CAISO has proposed inclusion of AMI (hourly interval smart meter customers) into the Hour Ahead Scheduling Process.
 - All of California's IOU ratepayers will have Advanced Meters by 2012.
 - Currently all large commercial and industrial customers have 15 minute interval meters.

These are only proposals. Many details need to be worked out, both in terms of the Business Practice Manual and the IOU tariffs. We are awaiting the IOUs' 2009 -2011 DR program proposals and thus have not yet seen what additional barriers might exist.

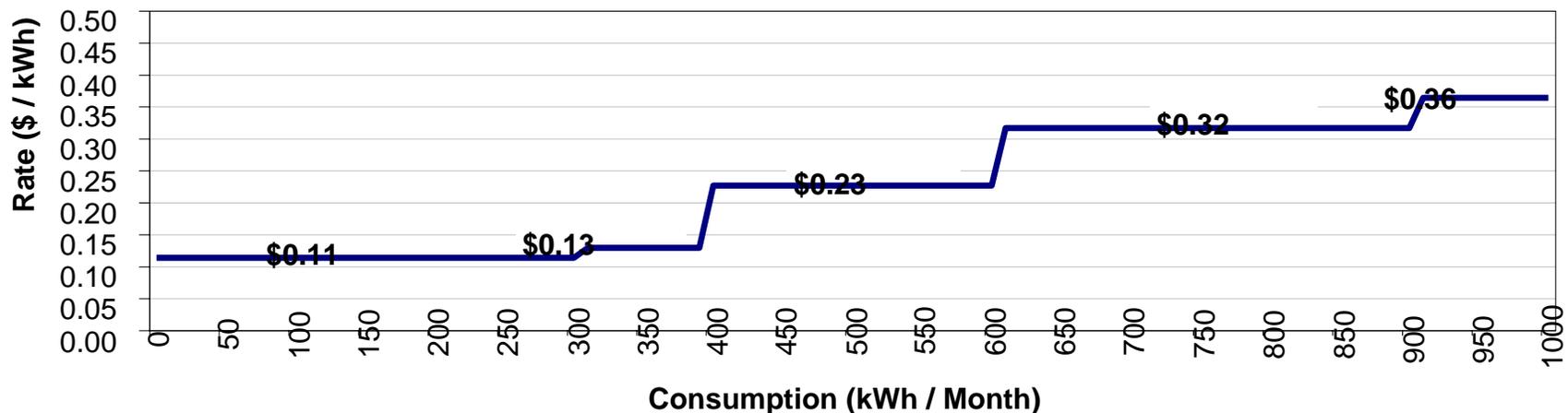




Barrier

Retail Ratepayers as a Demand Response Resource

Assembly Bill 1x - As a result of the Energy Crisis, California's legislature capped residential rates at 2001 levels, applicable to 130% of customers baseline usage. Tiered structure, first two tiers are frozen.



- Dynamic pricing for residential ratepayers is problematic.
 - Currently, residential ratepayers must opt-in to any tariff that could potentially increase their current energy rate.
 - Large Commercial and Industrial customers carry the Demand Response burden.





Solution

Residential Ratepayers

SDG&E will implement a default Peak Time Rebate tariff for all residential customers who receive a smart meter. Customers can receive an incentive if they curtail during an event.

- Both PG&E and SCE are making similar proposals.

Integrated EE-DR outreach and education (R.06-04-010) *see:*

<http://docs.cpuc.ca.gov/efile/RULINGS/81355.pdf>

- Collaborative efforts are underway to integrate our Energy Efficiency marketing and outreach with our Demand Response marketing and outreach.





Barrier

Dynamic Pricing for Large Commercial and Industrial Customers

Large C & I customers are reluctant to opt-in to more dynamic pricing tariffs than their current Time-of-Use tariffs.

- Many argue that a Critical Peak Pricing rate is not reflective of market economics.
- Many argue that dynamic pricing is punitive, that their load is not flexible.
 - PG&E currently has roughly 25 MW of Critical Peak Pricing.
 - SCE has 1 MW of Critical Peak Pricing.

Structural Benefitters – Those with inverted load shapes benefit from an opt-in tariff.





Solution

Large Commercial and Industrial Customers

PG&E General Rate Case A.06-03-005 – Commissioner Chong extended this proceeding to set hearings on the implementation of dynamic rates by the three utilities. Proposed timeline for Dynamic Rates:

- Large C&I will be given a choice of Time-of-Use or Critical Peak Pricing or Real Time Pricing in 2010, with opt-out to TOU.
 - In 2011, default RTP with opt-out to TOU or CPP.
- Small/Medium Agriculture will be on a default TOU in 2010 with opt-out to CPP or flat rate.
- Large Agriculture will be given a choice of CPP or RTP in 2011, with opt-out to TOU.

For more details see Commissioner Chong's January 23, 2008 Ruling at <http://docs.cpuc.ca.gov/efile/RULINGS/77986.pdf>.

SDG&E on May 1, 2008 implemented Default CPP for all customers > 20kW.

- PG&E and SCE have been directed by the CPUC to do the same for customers > 200kW.
 - Includes out-out window and
 - Bill protection.





Barrier

Understanding the Load Impact of Demand Response

Currently neither the CPUC nor the CAISO know fully the load drop brought about by demand response programs.

- Which baseline methodologies are fair and understandable for the customer yet accurate enough for operational and settlement purposes.
- For CAISO and CPUC planning purposes it is difficult to forecast how much Demand Response is available.
 - The CPUC needs to know how much Demand Response is available for Long Term Planning and Resource Adequacy.
 - The CAISO needs to know how much Demand Response will occur and has occurred to inform daily operations.
 - » Currently IOU sponsored DR does not bid into the market. CAISO is informed of an event, but the event location is reported as IOU territory wide. Thus the beneficial impacts are difficult to detail.





Solutions

Creating Load Impact Protocols

R.07-01-041 Demand Response Rulemaking

- Phase 1 Load Impact Protocols *see* <http://docs.cpuc.ca.gov/efile/PD/80528.pdf>.
 - Establishes guidelines on how to estimate the aggregate load drop of a DR program.
 - Relies on ex-post analysis (after-the-fact evaluation of program results).
 - Relies on ex-ante analysis (consideration of future factors that will affect load drop) to forecast DR load impacts.
- Phase 3 CAISO Load Impact Protocols
 - In Phase 3 of the CPUC's Demand Response Rulemaking R.07-01-041, the CPUC, in collaboration with the parties, will begin the process of creating load impact protocols for the CAISO's for day – to – day operations.





Solutions Cont.

Study and Pilot Baseline Methodologies

- The CPUC will study the results of the recent implementation of a morning adjustment factor to two IOU DR programs.

AutoDR

The CPUC has funded the installation and study of technology a known as AutoDR at a number of customer facilities throughout each of the IOU territories. The results have been impressive. (Lawrence Berkeley National Laboratory led this effort).

- AutoDR technology helps to firm the resource by improving performance consistency.
- During an event the technology curtails usage automatically based on preset protocols. Customer convenience is significantly improved.
- AutoDR can be dispatch remotely by the CAISO, the utility or a third party aggregator.





Barrier

IOU DR disconnect with CAISO Wholesale Market Operations

Currently the IOUs are using proxies for price dispatch.

- Currently, the IOUs administered programs are dispatched by proxies for price sensitive triggers such as heat rate triggers, or temperature or system load threshold.

It is difficult to set proper incentives in a market without LMPs.

- Currently, the CPUC administratively sets incentive levels paid for capacity and energy under a DR program.

Currently the CPUC is finding it difficult to assess the cost effectiveness of a Demand Response program.

- Without a cost-effectiveness methodology, it is very difficult for the CPUC understand what should be paid for demand response megawatts.

Without having Demand Response bid into the wholesale market it is difficult to send proper market based signals to Demand Response Resources.





Solutions

Collaboration with the CAISO and direction to the IOUs

Working with CAISO to incorporate Demand Response

- Allowing CAISO to dispatch DR, which bids in on a price sensitive curve.
- Emphasizing price responsive DR in the IOU DR 2009-2011 Program Application.
 - The CPUC has provided guidance to the IOUs emphasizing price responsive DR which is properly aligned with CAISO market operations for their '09-'11 DR programs. *See* <http://docs.cpuc.ca.gov/efile/RULINGS/79323.pdf>.





Solutions Cont.

Cost Effectiveness Protocol

Cost Effectiveness Protocols – Are programs effective?

- Defining the cost and benefits associated with DR.
 - Comparing benefits (avoided costs, environmental and market benefits) with the actual costs (administration, incentives, equipment cost), as seen from the:
 - Participants perspective
 - Utility perspective
 - Ratepayer Incentive Measure (impact on all ratepayers)
 - Social perspective
 - We expect the Cost Effectiveness Protocols will help inform us about the proper price for Demand Response capacity and energy.
 - We are learning that different program characteristics may have different values.
- Does the market price paid incorporate other externalities associated with Demand Response?
 - We expect the results of the Cost Effectiveness Protocols will help us create a value structure that incorporates or subsidizes externalities.





CPUC Policy

Highlights: Moving Demand Response Forward

California's Energy Action Plan

- Places EE and DR at the top of the loading order.

The 5% Goal

- Currently the CPUC requires the IOUs to procure enough DR to meet 5% of peak demand, or roughly 2,500 MW of price responsive DR.

The CPUC allows aggregators to contract with the IOUs for DR.

- Customer protection
- Greater regulatory control over the resource to help insure alignment with other State and CPUC policies and programs such as our GHG policies and our Solar Initiative.

Encouraging new uses for DR

- Permanent load shifting
 - Last year the Commission approved a PLS pilot program.
- The CPUC directed the IOUs implement a number of DR pilots
 - The Commission believes that Demand Response can be used to help firm load from intermittent renewable resources.
 - Following the example of the East Coast markets the CPUC has direct the utilities to propose Demand Response Ancillary Services pilots.
 - The CPUC is also seeking proposals for small load aggregation pilots.





Thank you!

For Additional Information:

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