



*FERC Workshop on Price Formation:
Scarcity and Shortage Pricing, Offer Mitigation, and
Offer Caps in RTO and ISO Markets
(Docket. No. AD14-14-000)*

October 28, 2014

About Southern California Edison

- SCE serves more than 14 million people in a 50,000 square-mile area of central, coastal and Southern California. SCE has provided electric service in the region for more than 125 years.
- SCE strongly supports competitive markets - but has also experienced first hand the impact of non-competitive market outcomes (e.g. the Western Energy Crisis of 2000-2001). As such reasonable bid caps and mitigation are essential safeguards for the market.
- SCE has a unique perspective - a net buyer in the electricity market, with approximately 23,300MW of peak load and 3,200MW of utility-owned-generation, an active bidder of generation into the CAISO and very familiar with bid and mitigation rules.



For more information, please visit www.sce.com.

Summary

- Energy prices are only one source of revenue. In California, Resources earn capacity payments through the CPUC (and CAISO) reliability programs.
- SCE views the primary Real-time role of market prices in the ISO/RTO energy market is to reflect economic dispatch based on short-term marginal production cost.
- The \$1000 bid cap allows for full price discovery and flexibility. In California, natural-gas resources are typically the marginal resource. Even the most inefficient gas unit in California has a marginal cost under \$150/MWh most of the time and costs rarely exceeded \$300/MWh within the last 5 years.
- Opportunity costs and mitigation will require additional attention moving forward. Environmental programs complicate market power mitigation.

California has resource adequacy requirements outside the CAISO energy market. Resources can obtain RA revenues outside of the CAISO.

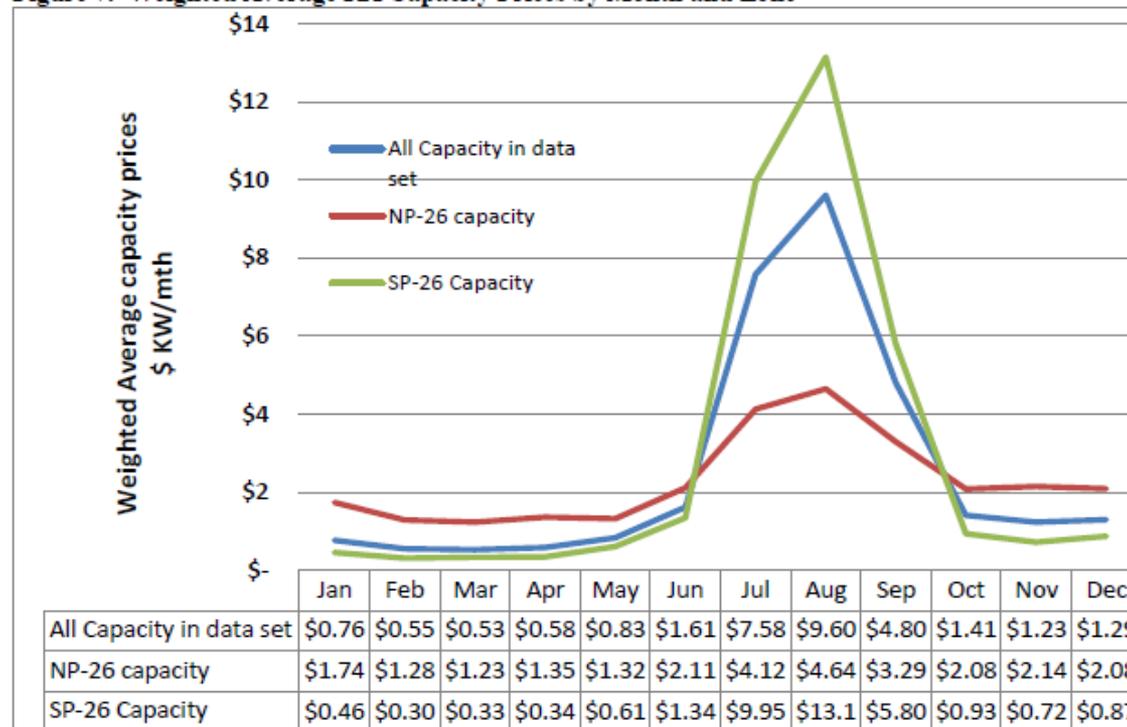
- Recognizing the need for reliability, and concluding that “the market” alone does not guarantee a reliable grid, California has developed and implemented a series of rules and laws to ensure reliability.
- California Law AB380, among other items, created a resource adequacy requirement in California. This was later codified in 380(c) of the Public Utilities Codes.
 - “Each load-serving entity shall maintain physical generating capacity adequate to meet its load requirements, including, but not limited to, peak demand and planning and operating reserves. The generating capacity shall be deliverable to locations and at times as may be necessary to provide reliable electric service.”

California Resource Adequacy Program

- Approximately \$1.5 billion is paid per year under California Resource Adequacy requirements.

2012 Resource Adequacy Report

Figure 7. Weighted Average RA Capacity Prices by Month and Zone



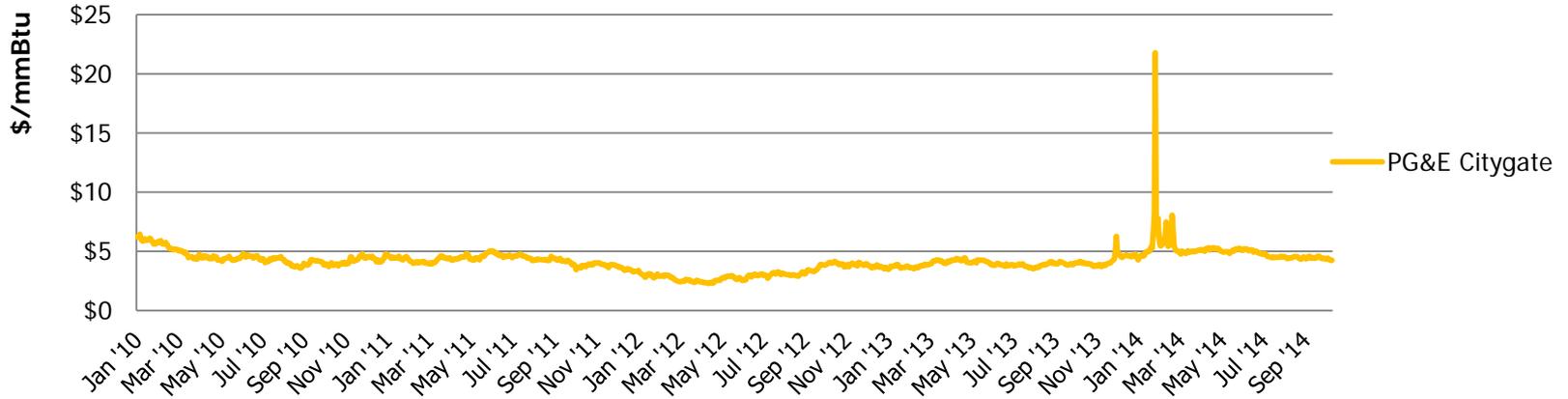
- The revenue estimation is based on the data shown in Table 13 in the 2012 CPUC RA report. The report is available at <http://www.cpuc.ca.gov/NR/rdonlyres/94E0D083-C122-4C43-A2D2-B122D7D48DDD/0/2012RARReportFinal.pdf>

What is the primary role of real-time prices in the ISO/RTO market for?

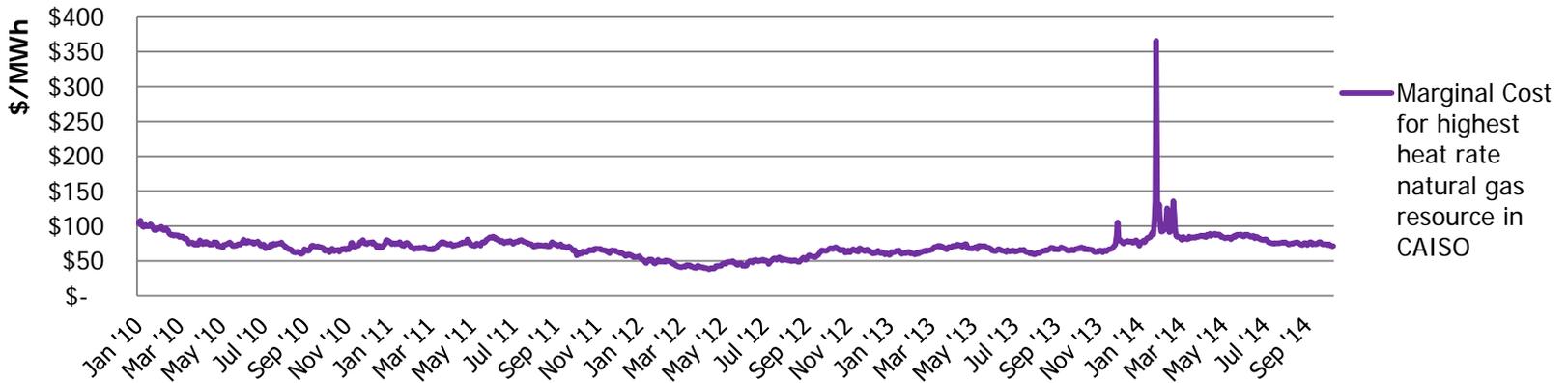
- Real-time prices are primarily for short-term economic dispatch that is based on short-term marginal operation cost.
 - The price formation is based on security constrained economic dispatch. The prices are a by-product of this resource dispatch process.
- Spot market prices in the ISO/RTO market (particularly scarcity pricing for ancillary services) should not be expected to facilitate long-term investment signals.
 - Infrequent number of events, short duration
 - Capacity payments and requirements play a much more significant role in long-term investment/retirement decisions.

The \$1000 cap allows full price discovery with current natural gas price

Natural Gas Price (California)



Marginal Cost for a highest heat rate unit in CAISO



Source: Velocity Suite. The highest heat rate is 16,800 Btu/kWh among California natural gas-fired resources.

Opportunity Costs: Environmental programs and uncertainty of EPA 111(d) complicate market power mitigation

- New challenges to market power mitigation:
 - Certain environmental programs have established a price for permits. Resources can incorporate the compliance cost in bids (e.g., resources inside CA to comply with the CA Cap-and-Trade program).
 - However, the Energy Imbalance Market (EIM) in CAISO goes beyond California. Regional regulatory difference must also be considered to ensure reasonable mitigation.
 - CA has run 8 successful GHG auctions
 - When those programs are not monetized, a direct cost may not exist. Further, more and more units have operational limitations (e.g., # of run hours) due to environmental restrictions.
 - Current market power mitigation is based on production costs (heat rate X gas price).
 - Opportunity costs associated with resources' use limitations make traditional heat rate costs more difficult.
 - The Commission should consider the impact of environmental constraints and opportunity costs in ensuring market competitiveness in the ISO/RTO energy market.
 - Cognizant of pricing developments in environmental markets which impact electricity prices

GHG compliance cost for California resources and imports

The GHG compliance cost is in addition to fuel cost for California resources and imports.

California Carbon Allowance Spot Market Price vs. Auction Price

