

Procurement & GHG Uncertainty

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2007 IEPR

The 2007 IEPR recommended that Energy Commission staff collaborate with their counterparts develop a common portfolio analytic methodology as a core focus of the 2008 IEPR Update with the objective of influencing the long-term procurement plans filed by investor-owned utilities with the CPUC. The 2007 IEPR also recommended that long-term procurement plans should use common assumptions across utilities to the maximum extent practicable; extend over a 20- to 30-year period of analysis...

**IEPR Scoping Order, p.3
May 15, 2008**



Directions in 2008 IEPR

The Committee directs the staff to report in the 2008 IEPR Update on the status of those collaborative efforts, and to examine the following issues:

- How environmental impacts could be incorporated into long-term procurement.**
- Whether utilities should be using a 20-year or longer analysis period.**
- Identifying consequences of using a social discount rate**
- Additional investigation and analysis needed in the 2009 IEPR on this topic.**



Long Term Procurement Proceeding



Purpose of 2008 LTPP Proceeding

Phase I of 2008 LTPP to develop

- Standardized resource planning practices, assumptions and analytic techniques applied in long-term procurement plans, based on an integrated resource planning framework;
- Interim standards and practices to evaluate the uncertain cost of future GHG regulations during AB 32 implementation and in anticipation of possible federal legislation;



Purpose of 2008 LTPP Proceeding

Phase II of 2008 LTPP to:

- “Consider whether and to what extent refinements to policies distinguishing system versus bundled resource needs, including a methodology that allocates the cost of new generation to system and bundled customers; and
- [Evaluate] whether and how refinements can be made to the bid evaluation process to ensure fair competition between power purchase agreements and utility-owned generation bids, and alternatives to the competitive market approach where competition cannot be used to reach equitable and efficient outcomes.”



2010 LTPP Proceeding

- 10-year plans to be submitted in 2010 LTPP; Directions regarding 10-year plans to be issued in April 2009, plans submitted in October 2009
- Plans are the basis for authorizing the procurement of resources by individual utilities after target levels of preferred resources are met.
- Utilities also provide assessments of the need for new generation capacity on behalf of all customers (bundled and direct access).



Standardization

- Input Assumptions
- Sensitivities (of input assumptions)
- Output reporting
 - format
 - performance metrics
- Scenarios
- Analytic methodology



Standardization of Input Assumptions

- Load forecast
- Energy efficiency
- Gas price forecast
- Electricity price forecast
- Carbon costs
- Conventional resource costs
- Renewable resource build out and costs



Sensitivities

- Sensitivities to be performed for major risk drivers, including natural gas prices and carbon costs
- Likely to be “high – low,” not likely to be based on empirical estimation of probability distributions, but accurately reflect risks
- Standardized

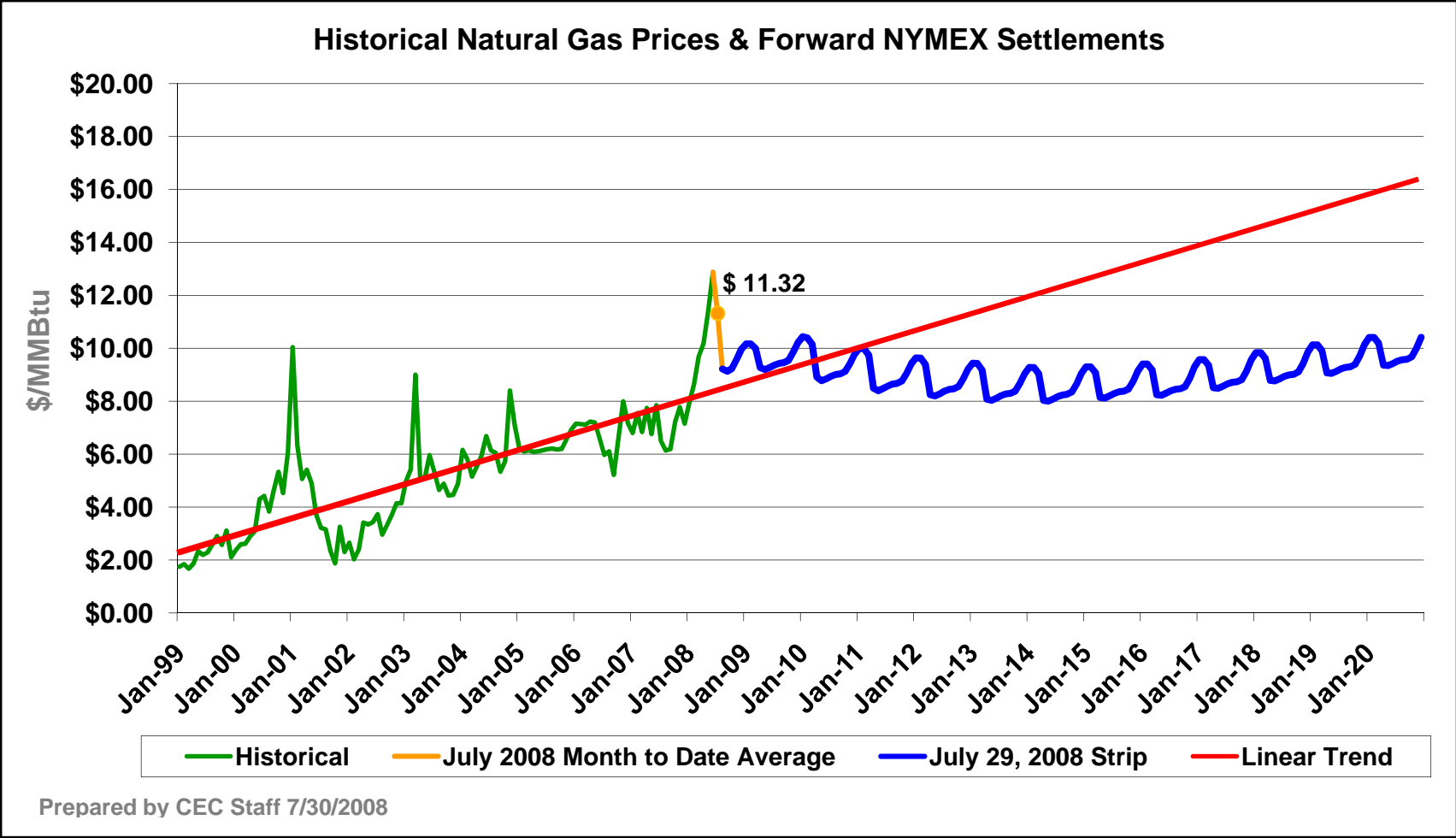


Load Forecast and Sensitivities

- Loads through 2020 depend upon largely upon expenditures on energy efficiency and their efficacy
- IOUs to use same high and low cases, chosen to reflect not only econ/demo uncertainty, but policy uncertainties as well



Gas Price Uncertainty





Renewable Resource Build-out and Costs

- E3 developing renewable development assessment in LTPP proceeding based on RETI work
- Will ensure consistency in utility assumptions with RETI findings with respect to both likely resource availability, expected costs, and potential range of costs



Output Metrics

- Cost
 - NPV Portfolio cost
 - Levelized average retail rate?
 - Levelized average bill?
- Range of Costs given Sensitivities
- Environmental Factors
 - CO₂
 - Criteria pollutants?
- Reliability
 - Planning reserve margin
 - Other?



Scenarios

- Internally consistent sets of input assumptions and policy-induced constraints that reflect different future states of the world
- Given data intensity, time constraints, 4 – 5 scenarios may be limit
- Preferred portfolio developed for each scenario; criteria for establishing preferred plan not set



Analytic Methodology

- Preferred portfolio developed for each scenario; portfolio analysis suggests evaluating each of the preferred portfolios in all of the futures (scenarios) to see how robust they are.
- Perhaps only possible to perform sensitivities (changing values of key drivers) on each of the preferred portfolios



Environmental Considerations and Long- term Procurement



Environmental Considerations in Long-term Procurement

- In (10-year) resource planning
 - CO₂ levels, weighed against portfolio cost (marginal costs of CO₂ reductions)
 - CO₂ costs
 - CO₂ risk (i.e., range of possible CO₂ costs)
- In procurement (RFOs)
 - GHG adder (\$8 in \$2004 escalated at 5%)



Uncertainty and GHG Regulation

- Desired GHG reductions in aggregate under C&T known, but the following details are not:
 - share of allowances to be given away/auctioned
 - basis for free allocation (initial quantity of allowances to be given to each utility)
 - availability of offsets (ability to extract reductions from uncapped sectors)
- 2010 plans likely to assume that a carbon price provides information to guide resource planning decisions



Extending LTPPs Beyond 10 Years



Party Comments in the 2008 Procurement Proceeding

“Should utilities provide assessments of selected portfolios that extend beyond 2020? Through 2030? 2040? If so, what should be the goal(s) of such analysis, *i.e.*, what questions should the analysis attempt to answer? Should these assessments focus on GHG or are there other areas that should be informed by longer term assessments?”

Administrative Law Judge’s Ruling Scheduling
July 10, 2008 Workshop on Greenhouse Gas
Uncertainty and Requesting Comments, June 6,
2008



Party Comments in the 2008 Procurement Proceeding

“Given the uncertainty of scenario inputs, as well as changes in the regulatory landscape, PG&E sees little value in extending the LTPP analysis beyond the current 10-year planning horizon.”

PG&E comments, p. 9



Party Comments in the 2008 Procurement Proceeding

“Longer-term assessments are not desirable as part of the LTPP proceeding, since they are speculative, driven by technology changes, and they require a significantly different set of analysis tools than are currently used for the LTPP.”

SDG&E comments, p. 10



Party Comments in the 2008 Procurement Proceeding

“Second decade analysis should assess the implications of actions taken in the first decade...which will have a significant impact on the mix of generating assets in the next decade and beyond...Beyond 20 years, “diminishing returns” set in and our ability to meaningfully project future conditions and issues and develop effective actions in response to such projections is limited.”

SCE comments, p. 13



Party Comments in the 2008 Procurement Proceeding

“A scenario that follows the staff recommendations in the [CARB] Draft Scoping Plan, increasing levels of preferred resources on a constant trajectory to 2030, and estimates GHG reductions that will be achieved by 2030.”

CEERT comments, p. 6



Party Comments in the 2008 Procurement Proceeding

“It is essential that the LTPPs include quantitative analysis that will provide insight regarding the potential to reduce GHG emissions through 2030 and beyond. As stated above, it is quite possible that the most cost-effective, least-risk resource portfolio to meet longer term GHG emissions targets will require significantly different near-term investment decisions than utilities would otherwise make if they were solely focused on meeting the AB 32 emissions limit in 2020.”

“While scenario analysis may be the more appropriate tool to evaluate resource plans after 2030, NRDC/UCS believe that sufficient data projections for key assumptions exist to focus on least-cost portfolios at least through 2030.”



Greater Uncertainty Beyond 2020

- Load Forecasts
 - Higher growth rate due to electrification of transportation sector, other sectors
 - Changing load shapes due to above
- Relative costs of preferred resources
 - Energy efficiency
 - Developed renewable technologies
- Availability of emerging and other technologies
 - PV, smart grid
 - Storage technologies
 - Carbon sequestration
 - Nuclear



Implications of Longer-run Uncertainty for Procurement- related Analysis

- Difficult to develop least-cost portfolios
- Limited or no information regarding extent to which individual utilities will be required to or able to further reduce GHG emissions
 - Relative costs of abatement measures across economy, capped sectors



Impact of Near-term Decisions on Long-run Portfolios

- Near-term needs for dispatchable conventional resources
 - Maintain planning reserve margins
 - Local reliability
 - Integrate intermittent resources
- Medium-term needs
 - Replace aging power plants in local reliability areas
- Over longer-term, need for these resources a function of technological change and infrastructure development



Impact of Long-run Portfolios on Nearer-term Decisions

- What are minimum achievable levels of CO₂ in utility portfolios given existing technologies and likely renewable resource build-outs? What are the constraints (demand patterns, infrastructure, technology) that require carboniferous generation and how can these be loosened?
- At what levels of GHG reductions are we likely to require major shifts in technology?
- What are relevant facets of actions that we take today in light of where we might be 20, 30, 40 years from now?



Interaction of Procurement and Permitting Processes



Procurement and Permitting

- Procurement process selects projects that are in various stages of development
- Premia placed on viability, permit and certificate possession; weighed against other factors
- Some projects selected have significant siting and environmental issues that threaten project viability
- Result may be delays or terminations that have implications for system reliability and may require circumventing competitive procurement processes / implementing more expensive solutions



Procurement and Permitting

- Staff is seeking comments from all parties regarding actions that should be taken to facilitate the selection of projects that can be developed so as to meet reliability needs in a timely fashion, comply with all applicable environmental standards and provide energy and capacity products at least cost to ratepayers.