Pacific Gas and Electric Company

Dan Patry
State Agency Representative
State Agency Relations

77 Beale Street
Mail Code B26K
San Francisco, CA 94105

(415) 973-6146
(415) 973-5003 Fax
DBP0@pge.com

August 19, 2008

DOCKET
08-IEP-1C
DATE AUG 19 2008
RECD. AUG 19 2008

ELECTRONIC DELIVERY

California Energy Commission
Docket Office
Attn: Docket No. 08-IEP-1C
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Re: 2008 Integrated Energy Policy Report Update

PG&E is pleased to provide comments to the 2008 Integrated Energy Policy Report Update workshop. Please feel free to call me at the number above if you have any questions.

Sincerely,

Dan Patry

Attachment

First Draft Written Comments of Pacific Gas and Electric Company Regarding Improvements to the CEC Demand Forecast Following CEC IEPR Workshop of August 12, 2008

PG&E welcomes the opportunity to provide comments regarding the workshop on improving the CEC's demand forecast, which was the subject of the August 12, 2008 CEC IEPR Committee Workshop. PG&E appreciates the Staff and other stakeholders' hard work to date on addressing the issue of how best to attribute and embed energy efficiency into the CEC's load forecast, and continue to pledge our support to the IEPR and the Long-Term Procurement Plan processes.

PG&E's written comments will focus on our responses to the Technical Questions presented to the workshop panel. PG&E has the following responses which elaborate and expand on the responses offered by panel participants.

In summary:

- PG&E is committed to the IEPR process and the goal of continuous improvement of that process.
- PG&E suggests that it may be useful for Staff to consider developing an econometric modeling framework for the purpose of long-term forecasting that could be used in conjunction with the current end-use based modeling framework.
- The advantages of an econometric based approach is its ease of replication and verifiability by third parties as opposed to the end-use model which is, in essence, a "black-box", since none of the stakeholders at the workshop continue to employ that modeling approach for producing long-term demand forecasts.
- PG&E supports the idea, expressed by panel members at the workshop, that "business as usual"/committed/reasonably expected to occurr/basecase energy demand forecasts should include currently established CPUC energy efficiency savings targets for the IOUs.
- PG&E supports the project implementation work plan and looks forward to being an active participant in workgroups and workshops going forward.

Technical Questions for the EE Quantification Panel:

Structural/end-use forecasting models have the benefit of avoiding double-counting of proposed efficiency measures and their impacts, but require lots of data and labor intensive efforts to keep current. Econometric models tied to customer counts and sales records avoid the data issues, but miss the benefits of end-use and measure representation of EE programs. How do you evaluate the pros and cons of each in the current political climate stressing high levels of energy efficiency measure penetration?

- *PG&E does not agree with the underlying premise of the question as stated. Our experience in the previous several rounds of the IEPR is that, in fact, a forecasting process that is built around an end-use model is more prone to result in the double counting of energy efficiency measures than an econometric model. The core issue with using end-use models for forecasting in the current environment, where a consensus forecast is desired, is that no other stakeholder besides the CEC is using this modeling structure. For this reason the model is generally viewed by stakeholders as a "black box".*

- *A key feature of econometric models is that their inputs, interactions and outputs are relatively transparent and that the models can be replicated and verified by stakeholders at low cost. PG&E recommends that the CEC develop an econometric model for the purposes of long-term forecasting in the next round of the IEPR which can be used either as a stand alone forecasting model or be used in conjunction with the existing end-use modeling approach. PG&E is amenable to working with Staff to develop such a model based on available data.*

- *As stated at the workshop, PG&E does not currently use end-use forecasting models. PG&E's understanding is that end-use modeling was originally developed as a means to test the effectiveness of various energy efficiency programs and standards design for policy considerations. For this purpose PG&E believes end-use forecasting models may still be useful. However, for forecasting purposes the complexity, the costs and the lack of verifiability and transparency in end-use forecasting models is cause for concern among stakeholders.*

- *PG&E utilizes an econometric model as its core forecasting tool. Econometric models are "parsimonious" compared to end-use models because they can perform the same function with the same or better accuracy at relatively low cost, with relatively little input data. Another advantage of econometric models is that they are relatively transparent with respect to the interactions between the variables in the model and, therefore, can be replicated and verified by third-parties with relative ease.*

- *Econometric models may also be preferred because they are based on underlying statistical theory. For this reason it is fairly easy to construct confidence intervals around the forecasts and to directly simulate the forecast equations over a wide variety of possible input data sets. For example the current PG&E econometric forecasting model could be coded into simulation software and the model could be simulated over thousands or tens of thousands of different combinations of underlying economic, demographic, price, temperature and CEE combinations to produce a distribution of the range of possible future outcomes with associated uncertainty parameters.*

How does your organization use these two different forms of model to develop a forecast?

- *PG&E does not use end-use models for forecasting purposes.*

Are there alternative ways to quantify EE program impacts and combine these with a simpler forecasting model? If so, how is this done?

- *In terms of PG&E's forecasting process incorporation of the current energy efficiency targets into the forecast is accomplished through making an explicit adjustment to the results of the econometric forecast model. The amount of adjustment needed is determined based on reviewing the available data on energy efficiency program savings in the historic period and comparing those to the target amount of savings in the forecast period. For example over the period 1998-2007, the historic period over which the current PG&E models are estimated, PG&E estimates that CEE programs have reduced peak consumption by ~ 150 MW per year (1,500 MW over the 10-year period) relative to what peak consumption would have been in the absence of those programs. Current target program savings over the period 2008-2013 average ~ 250 MW per year. Therefore, PG&E has adjusted the forecast produced by the econometric models by ~ 100 MW per year over the forecast period to account for this difference between historic and projected levels of CEE program savings.*

What flaws do you see and what improvements would you recommend in terms of avoiding program duplication, attribution to programs and measurement of overall energy efficiency in your methods for preparing energy demand forecast?

- *In terms of load forecasting the primary flaw would be inconsistencies and potential double counting of energy savings both historically and in the future. As Dr. Ansar from PG&E noted at the workshop there needs to be consistency in the measurement and evaluation protocol throughout the data analysis process. The historically reported savings from programs and the future targets based on projected incentives and funding must employ consistent measurement protocols to ensure comparability.*

- *For econometric models the historical level of energy savings is embedded in the historical data and so in this instance the issue is to determine how future trends in EE compare to the historical performance and adapt future projections accordingly.*

- *For end use models there needs to be consistency in the parameters defining the end uses and the behavioral assumptions for the historic and forecast periods. Itron has developed potential EE studies and these have been used to define the EE 2012-2020 goals for the IOUs, see D.08-07-047. There needs to be a consistent set of assumptions for both the CEC end use models and the Itron models which define the EE savings targets.*

Quantification of the impacts resulting from those forces motivating end-users to adopt EE measures (state and federal standards, utility programs, direct weatherization programs, loan or grant programs, unaided response to market prices, market effects, etc.) may become more difficult if rates begin to increase as costs of generation increase and if new programs are established through state and federal GHG mitigation efforts. Is there an established construct to guide attribution among these many forces?

- *In an econometric model, indicator variables can be constructed for almost any exogenous variable that impacts energy demand. This could include indices for energy prices, energy efficiency standards for appliances and buildings as well as energy efficiency programs.*

- *PG&E currently has indicator variables for prices as well as for housing vintage in its residential forecast equation. The current short-term elasticity in PG&E's residential model is ~ -0.1 on "real" prices, which means that a 10% increase in the "real" price (the price adjusted for inflation) would lead to an approximately 1% decrease in residential electric energy use in the short-term (less that one-year time horizon). Long-term elasticity is expected to be somewhat higher at ~ -0.4 for a price increase that remained in effect for a five-year time horizon, meaning that a 10% increase in real prices that is sustained for a five-year period would likely lead to a decline in energy use of approximately 4%.*

- *It is critically important to evaluate the effectiveness of EE programs to determine the optimal design and execution of these programs. However it is not clear that the uncertainty and cost of assessing detailed attribution is a necessary or cost effective requirement for determining the overall efficiency of EE programs.*

If customer prices were projected to rise, how should price response and market forces be addressed? What complications exist due to the AB1X rate freeze affecting IOU rate designs for the residential sector?

- *Price variables can be developed for both average rates and marginal rates or for "energy bills" in order to estimate customer's response to increasing energy costs. Again, this may argue for an econometric approach or a "mixed model" approach.*

How do various models address requirements of building or appliance efficiency standards and utility incentive programs impacting the same end-use or measure?

- *Econometric models will project forward trends in the historic data unless those trends are explicitly altered in the forecast period. Therefore, in the context of an econometric modeling framework the important thing is to understand how the trends in the historic period compare to those anticipated in forecast period. Once that is understood, an adjustment can be calculated and applied to the forecast produced by the econometric model.*

There is uncertainty in various independent dimensions for EE program – the scale of programs, their design, duplication among multiple programs, market and price response by customers separate from programs, etc. How should we treat the uncertainty of whether programs will be funded to achieve the energy efficiency goals established by the CPUC or as GHG emission reduction strategies by ARB in any demand forecasts adopted by the Energy Commission?

- *For the purpose of forecasting the CEC should assume that programs will be funded at levels consistent with current target levels established by the CPUC. If the forecast horizon exceeds the time horizon of the established targets the CEC should assume that funding consistent with the last 3-5 years of the targets will be maintained throughout the forecast horizon with associated savings.*

- *The key elements of the forecasts for long-term analysis are to establish the "business as usual" case and to be explicit about what the definition of "business as usual" is. At this point in time "business as usual" clearly includes a high level of CEE program funding and associated energy and capacity reductions.*

- *The most crucial element in developing a "consensus" forecast that multiple stakeholders can buy into for planning purposes is transparency. Forecast users must be able to duplicate and verify the modeling results with relative ease. Without transparency with respect to how the CEE targets are treated in the forecasting process, no intelligent discussion regarding the reasonableness of the resulting forecast can be undertaken.*

Is the current paradigm of including only "committed" program savings in the baseline demand forecast still the correct approach?

- *No as stated above, the expectation of users of the forecast at this point is that the forecast will represent the "business as usual" case. Business as usual in California expects and includes a high level of investment and delivery from energy efficiency programs throughout the forecast horizon. The CPUC and PG&E are committed to meeting the savings as shown in the current targets (D.08-07-047) even though the programs and funding to meet those targets are currently in the process of being designed and the funding levels are in the application stage or have yet to be filed.*

Does exclusion of "uncommitted" program impacts truly focus attention on developing program designs, conducting cost-effectiveness tests, and securing commitments from policy makers?

- *No. All of the items mentioned above are driven by ongoing California energy policy. The committed vs. uncommitted distinction at this point is only causing confusion among forecast users. PG&E agrees with Dr. Jaske's observation at the workshop that CEE savings beyond those specified in the CPUC targets should not be considered as "committed" and therefore should not be decremented from the CEC's demand projections but should instead be treated as resources and allowed to compete with other means of meeting customers demand for electric service.*

There can be alternative perspectives of energy efficiency program specialists versus forecasters in measuring efficiency program impacts. Forecasters may be focused on net effects incremental to all previous and contemporaneous programs, while program measurement specialists may be interested in gross program impacts.

Is this notion of alternative perspectives accurate?

- *Yes, clearly the purpose of the analysis will dictate the level of granularity that is needed. For forecasting purposes only the "top line" numbers are really of interest, however for program design, measurement and evaluation a higher level of granularity is needed.*

Can both (or additional) perspectives be pursued simultaneously and yet used appropriately in forums that understand the differences?

- *Yes, PG&E suggest that a process that uses the end-use or other engineering based model structure to inform the setting of the CEE goals such as that used by the majority of IOU's is appropriate and that, once those goals are set, they can be translated into a long-term forecasting model structure that relies on an econometric approach. This will serve the purposes of both groups as the granularity will be available for "drill down" into what the targets consist of but the incorporation of the targets into the forecast will be certainly more transparent than it is using the current modeling structure.*

- *In addition, this methodology may better support a consistent end-to-end process from the development of the CEE savings goals through the measurement and evaluation step because the historic data developed through measurement and evaluation programs will be explicitly used in the framework of the econometric model to develop the forecast "adjustment" factor.*

Project Implementation Questions:

Staff's conceptual program plan and the Itron contractual efforts focus on Energy Commission and Itron models.

What improvements in utility forecasting and quantification already under way? What additional or expand efforts are appropriate?

Are some activities, such as creating a measure saturation database tracking penetration through time, of joint interest to Energy Commission, Itron, utilities and others?

In earlier comments filed with the CPUC for the June 2, 2008 EE goals workshop, DRA suggested that a working group be formed to tackle coordination and consistency between Itron potential studies and Energy Commission forecasting efforts.

What recommendations would you make for designing a working group to discuss program attributions and future efficiency impacts on energy consumption?

- *PG&E is willing to participate in workshops and review materials as needed to get resolution of this issue in a timely fashion*

What goals can such a working group attempt to achieve.

- *The state needs an accurate assessment of resource needs and the uncertainties associated with different resource capabilities. This group can help accomplish this necessary task.*

What timeframe is reasonable for it to operate?

- *This issue needs to be resolved in time for the IOU's 2010 LTPP filings. The demand forecast will be an upfront input that is on the critical path for the IOUs to successfully file their LTPPs with an appropriate lead-time to develop, implement, and complete all necessary analyses. PG&E is concerned that the May/June 2009 timeline to issue a draft demand forecast as discussed by Dr. Jaske may impede that process. Currently, the CPUC has indicated an April 2009 date to issue a 2010 LTPP scoping memo, which will direct the IOUs to use the CEC demand forecast. If the demand forecast is not synchronized with the CPUC timeline, it is unclear how the IOUs will be able to implement all aspects of the scoping memo when key input data are not yet ready for consumption. In Appendix A of R.08-02-007, the CPUC acknowledges the time needed to produce robust analyses and has indicated that it will schedule "at least six months in the 2010 LTPP cycle for IOUs to develop plans following the issuance of the 2010 LTPP scoping memo" (p. A-4). A delay in the demand forecast process could, 1) put pressure on that schedule resulting in the IOUs having less time to produce their LTPPs, or 2) push the filing date out further than is comfortable to receive a 2010 LTPP final decision in time for the timely procurement of needed resources.*