BEFORE THE CALIFORNIA ENERGY COMMISSION

In the Matter of:	)	Docket No. 08-IEP-1
	)	
Preparation of the	)	COMMENTS ON COMMITTEE WORKSHOP
2008 Integrated Energy Policy Report (2008 IEPR)	)	
	)	
	)	

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Post-Workshop Comments of the

California Public Utilities Commission

The California Public Utilities Commission (CPUC) submits these comments to the California Energy Commission (CEC) in regards to the March 11, 2008 IEPR Update workshop on Energy Efficiency (EE) and Demand Forecasting. The CPUC appeared at the workshop and made a presentation, which is being filed as part of these comments. Following is a summary of the main points our agency expressed at the workshop:

- CPUC expressed our agency's intention to collaborate in the 2008 IEPR Update proceeding, citing the R.08-02-007 Long-Term Procurement Plan (LTPP) Order Instituting Rulemaking, in which quantification of EE in the CEC load forecast was placed in scope, but deferred to the CEC IEPR process for it to be resolved.[1]

[1] See *Order Instituting Rulemaking to Integrate and Refine Policies Underlying Long-Term Procurement Plans*, R.08-02-007, issued February 20, 2008, p. 11 and p. A-70 to A-20.

- CPUC restated our agency's long-standing position, pursuant to the March 14, 2005 Assigned Commissioner Ruling ("IEPR Ruling") in R.04-04-003, that the CPUC does not intend to re-examine load forecast issues in the LTPP proceeding, with very narrow exceptions.[2]
- CPUC emphasized the importance of resolving the forecasting and EE issue due to the "ripple effect" in proceedings in which the CEC's load forecast is used as a critical input, including LTPP (R.08-02-007 and its successors), EE (R.06-04-010 and its successors), and GHG (R.06-09-040).
- CPUC expressed our agency's preference for the CEC to produce a mitigated and an unmitigated forecast (as opposed to only a mitigated forecast) in order to distinguish the effects of CPUC's EE programs and demonstrate the tangible benefits of EE to offset new fossil generation.
- CPUC indicated that our agency was committed to providing the necessary resources, in combination with CEC resources, to execute a sufficiently rigorous analysis of the issue.
- CPUC set forth an estimated April 2009 timeframe for when the analysis would need to be complete, driven by the 2010 LTPP cycle.

Since the 3/11 IEPR workshop, the CPUC held a Pre-Hearing Conference (PHC) and Scoping Workshop for R.08-02-007 on April 2, in which our agency made it very clear that quantification of EE in the CEC load forecast is being address in the 2008 IEPR Update process, and that parties should participate fully in that process to have all issues resolved.

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[2] See March 14, 2005 *Assigned Commissioner's Ruling Detailing How the California Energy Commission 2005 Integrated Energy Policy Report Process Will be Used in the California Public Utilities Commission's 2006 Procurement Proceedings and Addressing Related Procedural Details*, R.04-04-003.

CPUC staff and Itron Consulting, the contractor responsible for the 2007 EE Potential Study and the EE Goals Update Project, have discussed possible frameworks for undertaking the analysis of forecasting and EE. In our view, part of the solution may be to identify and cross-reference terminology and methodological assumptions across three different levels of analysis: (1) CEC's load forecasting model; (2) CPUC (Itron's) EE Potential Study; and (3) CPUC's Evaluation Measurement and Verification (E,M&V) Protocols. CPUC and Itron developed a matrix of various forecast types and savings attribution categories, with reference to how the terminology is used at the three levels (See Appendix A). The purpose of this matrix is to initiate a dialogue with CEC staff and provide a framework for further defining the scope of the 2008 IEPR Update analysis on forecasting and EE.

As the CEC and CPUC continue to collaborate to define scope and develop a work plan for the analysis, several questions come to mind which may be constructive to consider. The purpose of these questions is (1) to assist the CEC in "problem definition" by framing the analysis from several perspectives and (2) to suggest possibly important gaps in terms of (a) data needs and (b) analytical approaches. As previously mentioned, the CPUC is prepared to provide sufficient technical support to the CEC, in order to achieve what may appear to be a daunting task – sorting through the complexity of, and producing analytical result that harmonize with, apparently disparate methodological approaches to quantifying EE.

- What specific data does the CEC staff need to most effectively quantify the level of potential energy efficiency overlap in savings when comparing the forecast of savings from CPUC adopted goals with the current CEC load

- CEC staff has indicated that, with the proper data inputs from the CPUC's EE programs, a significantly improved forecast of uncommitted EE is possible, at least to the point of quantifying the forecasted effects of near-term 2009-2011 EE portfolios. Would it be possible to integrate forecasted levels of savings from utility programs at the end use level in the out-years (2012 and beyond) of the planning period? If so, what additional data and/or analytical capabilities might need to be enhanced? If not, what analytical tools should be used to quantify long-term or lifecycle EE savings?
- In quantitative terms, and to the finest granularity feasible, how does the CEC model attribute conservation savings to building and appliances standards, market effects, price effects and utility programs compare to the CPUC's E,M&V conventions such as free-riders, spill-over (participant and non-participant), market effects, naturally occurring, etc.? (See Appendix A.)
- How do disaggregated conservation savings attributions in the CEC model compare to technical potential, economic potential, and maximum achievable economic potential estimates in the CPUC's various EE potential studies? Are adoption curves in EE potential studies useful to the CEC model?

- What is the effect of "backcasting" historical energy consumption patterns to calibrate load forecasts? Does calibration of the forecast to historical consumption embed certain EE effects in the load forecast, to the extent that trends in historical consumption reflect changes in behavior partly as a result of utility programs? If so, how can these embedded effects be isolated and attributed to utility programs or other motivations?
- Energy savings from current codes and standards are implicit in the CEC model, whereas prospective building or appliance standards are not considered committed, and thus are not included in the demand forecast. Through the Codes and Standards Advocacy Program, CPUC's EE program rules allow the IOUs to count a portion of energy savings from the most recent standards update to the extent that they impacted the adoption of more stringent standards. It is likely that the IOUs 2009-2011 EE portfolios will include projected savings from advocacy in relation to standards updates expected to occur during the same period. Would these savings be considered committed or uncommitted in the CEC forecast? To what extent, if at all, does the Codes and Standards Advocacy Program produce incremental savings over and above the CEC's baseline model assumptions? What code compliance rates are assumed in the CEC model, and how do they compare to empirical data (e.g., CPUC reports)?
- The Commission's EE goals use a 0.259 factor to convert energy savings goals to peak savings.[3] The CEC's model uses a peak demand and hourly load forecast model to assess peak impacts of EE programs. The CEC 2007 Scenario Analyses project used yet a third method that linked Itron

[3] See "California Electricity Energy Savings Goals Report," submitted March 26, 2004, in R.01-08-028. Appendix A discusses the method for converting GWh to peak savings, using a 0.259 conversion factor.

measure-level penetration to end-use load shapes in order to determine an 8760 hour load impact for incremental EE in the high efficiency scenarios. Are these methodologies consistent? If not, which methodology is best suited for long-term planning purposes, and why? What data gaps exist in order to improve peak savings estimates?

- In D.07-10-032, the CPUC clarified that IOUs are responsible for ensuring that cumulative EE savings goals are met in any given year by replacing, if necessary, EE savings that erode from previous program years due to measures expiring at the end of their design life. How is this factored into the CEC model assumption and the EE overlap assessment?
- How might the outputs of Itron's 2008 EE Potential Studies and the IOUs Statewide EE Strategic Plan be utilized in the CEC load forecasting model to produce possible EE scenarios that go beyond the savings expected from the IOUs 2009-2011 EE portfolios?
- How do various analytical models compare and can underlying model assumptions and methodologies be harmonized to produce consistent representations of baseline load and incremental EE scenarios? For example, the Itron EE potential study uses a bottom-up forecasting model at the end-use measure level. The CEC model is designed to operate at that level of granularity for some sectors, but not others. Do the Itron end-uses match up well to the CEC end-uses? If not, are there reasonable modifications that could be made to the CEC model to increase its granularity or the Itron analysis to increase its granularity?
- Can the CEC model produce an "unmanaged forecast" that removes the committed effects utility programs and isolates naturally-occurring EE (EE that would occur absent any utility programs)? Alternatively, can CEC

At the March 11 workshop, CEC staff proposed development of a "workplan" that would address analytic efforts to deal with the topics discussed at the workshop. We believe this is necessary to clearly spell out the scope and schedule for the activities that will be required. The above questions may help inform that workplan. The CPUC looks forward to participating in such activities to reduce the uncertainties about this important topic.

Color Legend for Use of Terminology	CEC	
	CPUC/Itron	

Appendix A. Matrix of Forecast Types, Savings Attribution Categories, and Use of Terminology by CEC and CPUC

CEC's Legislative Guidance (§ 1345) [a]	Conservation Reasonably Expected to Occur (RETO)												
CEC Definitions of Committed/Uncommitted	Committed RETO [b]									Uncommitted RETO [c]			
Savings Attribution Categories in Table 42 of *CED 2008-2018*, and Other Relevant Categories	Natural Change [d] (Note: Some models combine naturally-occuring & price effects)		Direct Program Adjustments, [e] Misc. Retrofit Programs, [f] Conservation Programs [g]		Building & Appliance Standards [h]	Dir Prog Adj, [e] Misc. Retrofit Programs [f]	Building & Appliance Standards [h]	Program-Induced Market Effects [i]					
CPUC Categories in the EE Proceeding	Gross Savings (Total EE Savings)									Gross Savings (Total EE Savings)			
CPUC Definitions of Committed/Uncommitted			Net Savings							Net Savings			
			Committed EE							Uncommitted EE			
CPUC's EE Program Cycles			2004-2005	2006-2008		2009-2011				2012-2020			
Universe of Savings Attribution Categories	Naturally Occurring Energy Efficiency Improvements	Price Effects	2004-2005 Utility Programs	2006-2008 Utility Programs	Codes & Standards Utility Programs (CSUP)	2006-2008 Codes & Standards Utility Programs (CSUP)	Codes & Standards Advocacy Program (CSAP)	Codes & Standards	Participant Spillover	Future Utility Programs			
CPUC's Evaluation, Measurement & Verification (E,M&V) Protocols [t]	Measurement and Evaluation (M&V) Protocol												
	Effective Useful Life Protocol												
	Impact Evaluation Protocol, Market Effects Protocol		Impact Evaluation Protocol		Codes & Stds Protocol	Impact Eval. Protocol	Codes & Standards Protocol	Impact Eval. Protocol	Market Effects Protocol	Load Impact Protocols			Emerg Tech Protocol
FORECAST TYPES (Note: "x" indicates that the effect is included in the corresponding forecast type)													
Frozen forecast [u]			x	x	x								
Unmanaged forecast [v]	x	x	x	x	x								
Conservative EE scenario	x	x	Same as IEPR Base, but lower gross savings										
Adjusted IEPR Base Forecast ("Overlap" removed)	x	x	x	x	x	x	x						
IEPR Base Forecast ("Managed" forecast)	x	x	x	x	x	x	x	x	x	x			
Aggressive EE scenario	x	x	Same as IEPR Base, but higher gross savings										
Other scenarios?	TBD												

NOTES/DEFINITIONS:

[a] The Warren-Alquist Act required the CEC to include in its forecasts all such demand reductions which are "reasonably expected to occur" during the forecast period. "While conservation reasonably expected to occur" includes both committed and uncommitted programs, only the effects of committed programs are included in the forecast." (*CEC 2008-2018 Revised Forecast*, p. 25)

[b] "Committed programs are defined as programs that have been implemented or for which funding has been approved." (*CED 2008-2018 Revised Forecast*, p. 25)

[c] "Uncommitted effects are defined as the incremental empacts of the level of future programs (for example, savings associated with new equipment that exceeds current standards or early replacement of existing stock), impacts of new programs, and impacts from expansion of current programs... Long-term stretch goals for a series of programs that are not funded are [also] considered uncommitted." (*CED 2008-2018 Revised Forecast*, p. 25)

[d] "Natural change," as the term is used in E,M&V, is defined as the change in base energy usage over time. Natural change represents the effects of energy-related decisions that would have been made in the absence of the utility programs by both program participant and non-participants. (*Evaluators' Protocols*, p. 233) Note: Includes free riders who would install measures in the absence of programs. Natural change is impossible to estimate without programs to attract free riders.

[e] Direct program adjustments is a category of conservation impacts attributed to residential and commercial sector utility programs that is not already captured in the sector models (*Methods Report*, p. 6-7, B-3)

[f] Miscellaneous retrofit programs is a category of conservation impacts that is captured in the sector model attributed to residential programs that occurred between 1979 and 1984, as set forth in Table 42 of *CED 2008-2018 Revised Forecast*.

[g] Conservation programs is a category of conservation impacts that is captured in the sector model and attributed to the commercial sector, as set forth in Table 42 of CED 2008-2018 Revised Forecast.

[h] Building and appliance standards in the years 1979, 1984, 1992, 1998, 2001 and 2005 are categories of conservation impacts captured in the sector models, as set forth in Table 42 of *CED 2008-2028 Revised Forecast*.

[i] Program-induced market effects - A reduction in market barriers resulting from a market intervention [i.e., utility EE program(s)], as evidenced by a set of market effects, that lasts after the intervention has been withdrawn, reduced or changed. (*Evaluator's Protocols*, p. 232). In essence, utility programs that drive naturally-occuring conservation, once the programs end.

[j] Free-riders are actions of utility EE program participants that would have implemented the program measure or practice in the absence of the program. (*Evaluators' Protocols*, p. 226)

[k] Price effects (or "market effects") are a direct consumer price response to increasing energy costs by investing in energy efficient technology.

[l] Net savings from 2004-2005 utility programs, excluding savings that would otherwise have occured in the absence of the programs (i.e., free-ridership,). 2004-2005 IOU programs included Standard Performance Contract, Residential Retrofit Home Energy Survey*, Express Efficiency, Multi-family Energy Efficiency Rebates, Nonresidential Energy Audit*, Residential Appliance Recycling, Building Operator Certification and Training*, Upstream Residential HVAC and Motors, Savings by Design, Codes & Standards Advocacy*, Emerging Technologies*, Education & Training*, Single Family Energy Efficiency Rebates, CA Energy Star New Homes. * information, education or training programs that do not contribute to energy or peak savings. (Table B-1, *Methods Report*)

[m] Net savings from 2006-2008 utility programs (see footnote l). 2006-2008 IOU programs include: Residential Retrofit Programs, Small Commercial, Major Commercial, Commercial Facilities, Commercial Retro-commissioning, Specialized Commercial, PG&E Agricultural & Food Processing, PG&E Fabrication Process & Manufacturing, SoCal industrial & Ag Program, Government Partnerships, New Construction, Codes & Standards, Emerging Technologies, and Marketing & Outreach.

[n] Codes & Standards Advocacy Program - 50% of pre-2006 savings from utility Codes & Standards Advocay Program. Utility participation in periodic updates to building codes and appliance standards is considered quantifiable EE that counts towards the utilities EE goals in subsequent EE planning periods. Pursuant to D. 05-09-043, IOUs can count towards EE goals a portion of the savings (50% for 2006-2008 portfolio; 100% for 2009-2011) attributable to the measures for which the IOUs advocated more stringent codes or standards. IOUs cannot count any portion of savings from measures for which the IOUs took no position. For example, during the 2004-2005 program cycle, utilities were involved in the 2005 Title 24 update. A portion of the savings from that effort are being counted towards the 2006-2008 program cycle goals.

[o] Codes & Standards. Savings attributable to *current* building codes and appliance standards are considered committed effects. For example, the forecasts may include some impacts associated with the historic and ongoing levels of of programs to the extent that they represent impacts associated with (1) *replacement* of aging building stock and equipment or (2) installation of *new* stock and equipment at efficiency levels that comply with current building and appliance standards (*CED 2008-2018 Staff Draft Forecast*, p. 1-15). Note: This artificial category represents the remaining savings attributable to codes and standards that are not counted towards utility EE goals.

[p] Participant spill-over is defined as reductions in energy use of participants in a utility EE program, beyond program related gross or net savings of participants, resulting from additional EE actions that participants take outside the program as a result of having participated. (*Evaluators' Protocols*, p. 241)

[q] Non-participant spill-over is defined as reductions in energy use of non-participants in a utility EE program caused by the presence of an EE program, beyond program related gross or net savings of participants. (*Evaluators' Protocols*, p. 241)

[r] *New programs* and *expansions of current programs* are considered uncommitted effects, as defined by CEC (See footnote c)

[s] *Early replacement* of existing building stock and equipment to comply with current codes and standards, or investments in *new* high efficiency products that *exceeds* current codes and standards are uncommitted effects, as defined by CEC (*See footnote c*). Note: These categories have potential overlap with free-ridership. Question: is free-ridership committed or uncommitted?

[t] E,M&V - These are the CPUC's established methodologies for E,M&V of utility EE programs, as set forth in *California Energy Efficiency Evaluation Protocols: Technical, Methodological and Reporting Requirements for Evaluation Professionals* (*"Evaluators' Protocols"*), published April 2006.

[u] Frozen forecast - Assumes all new or replacement measures come in at the marginal (not average) energy efficiency of the current stock (i.e., to current-year standards)

[v] Unmanaged forecast - Forecast is same as frozen forecast, except market-induced (price-induced and naturally-occuring) savings are also embedded.