In the Matter of:	)	Docket No. 09-IEP-1
	)	
Preparation of the	)	COMMENT ON CALIFORNIA ENERGY DEMAND 2010-2020 STAFF DRAFT FORECAST
2009 Integrated Energy Policy Report (2009 IEPR)	)	
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DOCKET
09-IEP-1C
DATE Jul 13 2009
RECD. Jul 13 2009

Comments of the California Public Utilities Commission's Energy Division on the *California Energy Demand 2010-2020 Staff Draft Forecast*

The California Public Utilities Commission's (CPUC or Commission) Energy Division respectfully submits these comments to the California State Energy Resource Conservation and Development Commission (CEC or Energy Commission) in regards to the *California Energy Demand 2010-2020 Staff Draft Forecast* (Draft Forecast). The CPUC is pleased to be collaborating with our sister agency, the Energy Commission, in the 2009 Integrated Energy Policy Report (IEPR) proceeding (proceeding). The CPUC has previously expressed its commitment to a collaborative approach with the Energy Commission in IEPR proceedings. We trust these comments will be meaningfully reflected in the Revised Forecast, because the CPUC has indicated that "[t]he CEC's IEPR process is the proper forum to litigate and contest issues related to each IOUs' demand forecast."[1]

Our comments on the Draft Forecast are principally focused in four main areas:

- Treatment of EE, including CPUC EE goals embedded in the forecast, definition and methodology for committed EE, and production of an uncommitted EE forecast
- Treatment of self-generation, including assumed installation rates and on-peak capacity of programmatic customer-side distributed generation (DG)
- Need for a base-case forecast in the 2009 IEPR
- Support for further investigation of enhanced modeling tools and expansion of the collaborative model, begun in the DFEEQP working group, in future IEPR cycles.

Energy efficiency and self-generation are addressed in separate sections below; while the latter two issues are addressed here.

[1] D.07-12-052, at p. 28.

It is important that the 2009 IEPR contain an approved "base case" (or mid-range case) forecast, with regard to economic and demographic conditions, because the CPUC's procurement process continues to rely on this forecast as an input for need determination. In the Commission's 2006 Long-Term Procurement Plan (LTPP) Decision (D.) 07-12-052, the Commission "based findings...of need on the CEC's base case 1-in-2 summer temperature demand forecast."[2] These findings point to the continuing need for the IEPR process to provide a base case forecast in the context of the CPUC's procurement process.

Finally, Energy Division generally agrees with the statements of certain utility staff and CEC staff, at the June 26, 2009 workshop, suggesting refinements to the Energy Commission's demand forecasting models, database administration, and information exchange with interested parties that would improve transparency, generate common understanding of input assumptions and model outputs, and leverage forecasting expertise amongst interested parties, through a collaborative approach. A possible model for these activities in future IEPR cycles could be to expand the role of the Demand Forecast and Energy Efficiency Quantification Project (DFEEQP) working group. The statements made at the workshop are also supported by the conclusions of the preliminary assessment of the staff demand forecasting methodology (Appendix A of the Draft Forecast) calling for a consideration of more flexible models to address policy questions as a complement to the data-intensive but useful, end-use modeling approach. [3]

Energy Efficiency

The Commission's 2008 LTPP Rulemaking (R.) 08-02-007 has placed in scope improved quantification of energy efficiency (EE) in the Energy Commission's load forecast in the 2009 IEPR proceeding. To contribute to that effort, the Energy Division has made its consultant on EE goals – Itron, Inc. (Itron) – available to provide technical assistance to Energy Commission staff on the DFEEQP.

Energy Division staff and Itron have actively participated in the DFEEQP Working Group and made oral and/or written comments in several workshops throughout this proceeding and the predecessor 2008 IEPR Update proceeding (Docket No. 08-IEP-1), including:

(1) Oral comments at the June 26, 2009 workshop on 2010-2020 Peak Demand and Energy Forecasts,

[2] D.07-12-052, FOF #13, at p. 272.
[3] Draft Forecast, at p. A-10 – A-11.

(2) Oral comments at the May 21, 2009 workshop on Energy Efficiency Measurement and Attribution and Preliminary Peak Forecast,

(3) Oral comments at the August 12, 2008 workshop on Electricity and Natural Gas Forecasting Process (Docket No. 08-IEP-1).

(4) Written comments on the *Draft 2008 IEPR Update Report*, related to EE and demand forecasting issues (Docket No. 08-IEP-1), and

(5) Oral and post-workshop written comments at the March 11, 2008 workshop on Energy Efficiency and Demand Forecasting (Docket No. 08-IEP-1).

We commend Energy Commission staff for assembling the Draft Forecast – a comprehensive document on wide-ranging issues – in a relatively compressed timeframe. In many respects, the Draft Forecast makes significant advances in our understanding of how CPUC EE goals correspond to committed EE impacts in the demand forecast. In other respects, we suggest areas for further study and improved coordination among Energy Commission and Energy Division staffs, Itron, and stakeholders to the demand forecast.

As the basis for these comments, Energy Division generally refers back to the July 25, 2008 *Conceptual Project Plan for Demand Forecasting and Energy Efficiency Impact Assessment* (Project Plan)[4] which Energy Commission staff developed, in consultation with Energy Division staff and Itron, and presented at the August 12, 2008 IEPR Committee Workshop on Electricity and Natural Gas Forecasting Process (Docket No. 08-IEP-1). The Project Plan represents commitments made by both agencies to resolve EE and demand forecasting issues. Specifically, the Project Plan refers to a March 17, 2008 IEPR Committee meeting in which the Committee determined that:

> [S]taff resources should be devoted to three topics over the course of the 2008 IEPR Update and 2009 IEPR time period:
>
> 1. improving estimated impacts of energy efficiency within the demand forecast and attribution to motivating forces, such as price response, market effects, program participation, requirements of standards, etc.;
> 2. creating a new capability to project near-term program impacts incremental to the CEC demand forecast; and
> 3. creating new capability to project long-term impacts from portions of potential that are identified as achievable under various program designs.[5]

[4] www.energy.ca.gov/2008_energypolicy/documents/2008-08-12_workshop/2008-08-08_CONCEPTUAL_PROJECT_PLAN.PDF

[5] Id, at p. 1.

Specific activities that were agreed to be conducted by Energy Commission and Energy Division staffs and Itron to achieve these capabilities were set forth in the Project Plan. Accordingly, the scope of work of Itron's contract with the CPUC was established to capture those activities in the Project Plan requiring Itron's services.

Energy Division staff has appreciated the opportunity to work directly with Energy Commission staff to identify how they have incorporated information from CPUC estimates of utility program savings into their forecast. As a result of this experience, interested parties have a better understanding of the uncertainties in estimating savings as a result of differences in modeling methods and assumptions. One key area is how the rate of naturally-occurring efficiency savings versus the impacts of standards and utility programs is forecasted.

As a result of the joint-agency collaboration, the two agencies are much closer to reaching agreement on the priority areas for the Revised Forecast. For the Energy Division, these priorities are: the level of CPUC EE goals embedded in the load forecast, the definition and methodology for committed EE, and the production of an incremental uncommitted EE forecast.

EE Goals Embedded in the Revised Forecast

Joint-agency collaboration has resulted in much progress toward determining the total savings level to be included in the baseline forecast (e.g., Table 8-6 in the Draft Forecast illustrates the progress made in developing specific methods to handle utility program estimates for each end use). Analytical staffs at Energy Commission and Itron are in agreement for approximately 80% of end uses, but resolving the remaining 20% may be the most difficult. As an example, there is disagreement in allocating savings from utility programs in the commercial lighting category, including utility programs promoting T-8 lamps and electronic ballasts. These are currently excluded in the Draft Forecast.

There is still much work to be done in assessing the degree of overlap that may exist between utility and other program savings estimates in CPUC goals forecasts, and the level of savings embedded in the Draft Forecast. However, Energy Commission staff has successfully created a modeling framework that will make comparisons possible in the next few months, through publishing estimates of total savings by year, and by explicitly stating how different types of programs and end uses from utility programs were treated at the end use level in the Draft Forecast. With these achievements in mind, Energy Division staff and Itron have identified a need for further discussions of resolving potential overlaps in savings

attribution between programs, standards, and naturally-occurring savings has not yet occurred, including the criteria by which Energy Commission staff excluded or discounted some savings from utility programs for specific end-uses, based on their potential overlaps in the efficiency measures promoted by programs, Energy Commission building standards, or price changes.

We look forward to resolving these remaining analytical uncertainties.

Definition and Methodology for Committed EE in the Revised Forecast

Energy Division staff agree with the IEPR Committee's statements at the May 21 and June 26, 2009 workshops that the current definition of committed savings, which results in a drop-off of savings impacts from utility programs beginning in 2012, is awkward. As Energy Commission staff have already done for the Huffman Bill, the effects of which were included as committed in the Draft Forecast, Energy Division staff believes it is reasonable to assume that some portion of the CPUC's EE program funding would persist as committed effects in the beyond-2012 period, as has been directed by the Commission in D.08-07-047, requiring the IOUs to meet cumulative savings goals.[6]

Energy Division staff offer to work with Energy Commission staff to develop a feasible methodology in the limited time that remains for the Revised Forecast to address the IEPR Committee's concerns regarding the definition of committed savings. A more sophisticated methodology could be considered for the 2011 IEPR cycle.

Production of an Incremental Uncommitted EE Forecast

As previously stated in our comments in the 2008 IEPR Updated docket, we support the CEC's commitment to develop an uncommitted EE projection capability.[7] On this subject, it is important to highlight a recent development in the 2008 LTPP proceeding (R.08-02-007), in which the Energy Division submitted a proposal to standardize the IOUs' resource planning process beginning in the 2010 LTPP

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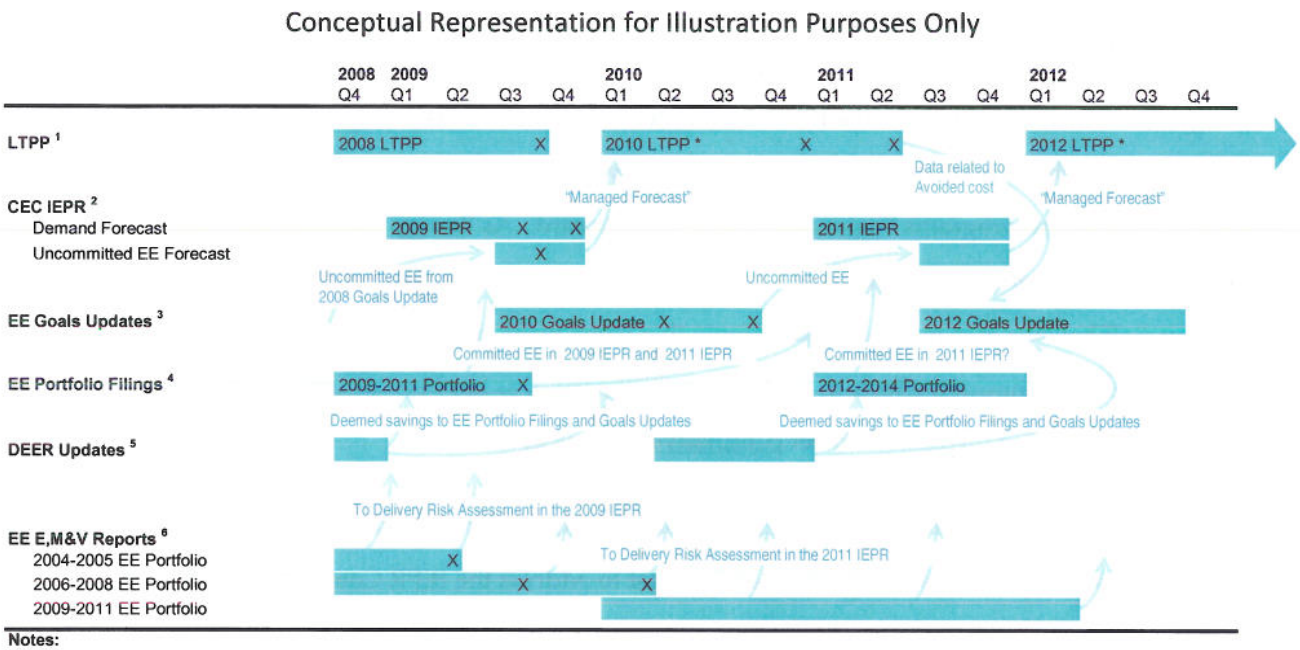
[6] The history of cumulative EE savings goals is well documented. The CPUC first adopted cumulative savings goals from 2004-2013 for the IOUs in D.04-09-060. This period was later revised in D.09-05-037 to be only 2006-2011. In D.08-07-047 the Commission reaffirmed its commitment to EE by requiring that all IOUs in their procurement plans account for 100 % of the interim total market gross (TMG) goals for 2012-2020. The Commission justified this decision by citing D.04-09-060 as saying that "...achievement of energy efficiency goals produces the greatest value when savings offset supply side resources." By requiring IOUs to account for 100% of the TMG goal, the CPUC expresses its confidence that such savings will occur, and that IOUs should plan their programs such that they are confident that redundant procurement of supply-side resources will not be necessary.

[7] *2008 IEPR Report Update*, CEC-100-2008-008-CTF, at p. 47.

proceeding. The Energy Division proposal, which has yet to be adopted by the Commission, suggests several areas for enhanced coordination on quantitative assessments related to procurement, demand forecasting, and energy efficiency program planning and administration. Figure 1 below provides a conceptual illustration (from the Energy Division proposal) of the timing of these various elements and how they might be coordinated in the current and future IEPR and LTPP cycles.



Notes:
"X" depicts a milestone, such as a filing deadline, proposed decision, final decision, draft report, or final report, etc.
* Chart assumes the consecutive model for sequencing system and bundled analyses. For discussion, see Section 3.3.2.

[1] Represented timeframes for the current and future LTPP proceedings are staff approximations, subject to change by the Commission.

[2] Represented timeframes for 2009 IEPR milestones are approximate based on CEC Staff presentations at May 21, 2009 IEPR Staff Workshop on Energy Efficiency Measurement and Attribution and Preliminary Peak Forecast. Staff assumes the same process and schedule for the 2011 IEPR.

[3] Like the 2008 process which relied on the Itron Goals Update Study, the 2010 Goals Update process would likely utilize a similar scenario analysis of resource potential to consider new goals. Staff assumes the same schedule for the 2010 and 2012 Goals Updates, as occurred in the 2008 process, subject to change by the Commission.

[4] Represented timeframes for the 2009-2011 EE portfolio filing are based on the schedule set forth in the November 25, 2008 ACR/Scoping Memo in A.08-07-021 and related matters. Staff assumes the same schedule for the 2012-2014 portfolio filing, subject to change by the Commission.

[5] The Database on Energy Efficiency Resources (DEER), jointly sponsored by CEC and CPUC, provides estimates of energy and peak demand savings values, measure costs, and effective useful life. It is periodically updated, as a source for deemed savings and measure cost data for CPUC's EE program planning.

[6] Represented timeframes for E,M&V reports on the 2006-2008 EE portfolio are based on D.07-09-043, Attachment 6; January 11, 2006 ALJ Ruling in R.01-08-028, at p. 3; and actual experience.

Figure 1. Hypothetical inputs and outputs related to coordination of LTPP, IEPR load forecast, and EE proceedings (Source: *Energy Division Straw Proposal on LTPP Planning Standards*, July 2009.)[8]

Most significantly, if adopted by the Commission, the Energy Division proposal would place analyses related to incremental impacts of uncommitted EE squarely in the Energy Commission's purview,

[8] *Energy Division Straw Proposal on LTPP Planning Standards*, Attachment 2, July 1, 2009 Assigned Commissioner's Ruling and Amended Scoping Memo, R.08-02-007, http://docs.cpuc.ca.gov/published/Graphics/103215.PDF, at p. 126.

recognizing that such analyses are intrinsically intertwined with the demand forecast itself. The Energy Division proposal would have the Commission use Energy Commission-sanctioned uncommitted EE forecast(s) in the 2010 LTPP proceeding, which when combined with the IEPR forecast, would constitute the "managed forecast" (including the reasonably expected to occur impacts of the CPUC's EE goals) upon which need determination analyses would be based.

The Energy Division proposal states the following regarding the uncommitted EE forecast. The statement refers to a Deliverability Risk Assessment in the LTPP proceeding, which Energy Division staff equates to the Energy Commission's "reasonably expected to occur" standard:

> [T]he Commission has deferred to the CEC's IEPR process to generate load forecasting information necessary to interpret the impacts of [CPUC's Total Market Gross] energy savings goals on procurement. Specifically, CEC and Commission staffs are collaborating in the 2009 IEPR proceeding to develop forecasts of "uncommitted" EE (i.e., TMG energy savings <u>not</u> embedded in the forecast.) Joint Staff, with input from parties, will apply the CEC's "reasonably expected to occur"[9] standard (a form of Deliverability Risk Assessment), as well as other information, to produce these forecasts. The CEC has agreed to produce at least two uncommitted EE forecasts, corresponding to the mid- and high-case EE scenarios in the Itron Goals Update Study filed in R.06-04-010, which will be available for use in the 2010 LTPP.
>
> Should the 2009 IEPR process produce final uncommitted EE forecasts representing TMG energy savings impacts that vary from the Commission-adopted EE goals, staff recommends using the <u>lower of the two</u> quantities for purposes of calculating net short position, in the 2010 LTPP. Staff recommends this in order to ensure, with a high degree of confidence, that sufficient resources are available... At worst, a conservative choice from among two uncertain quantities would result in earlier procurement of resources than would otherwise be the case (even if this insurance comes at a cost). Also, the two-year planning cycle for the LTPP analyses allows for continual correction and/or refinement of estimates in order to correct for any over- or under-estimation based on actual accomplishments or new information.

[9] Pursuant to the Warren-Alquist Act, CEC is statutorily required to incorporate conservation and energy efficiency that is "reasonably expected to occur" in its energy demand forecasts. Since 1985, reasonably expected to occur conservation programs have been split into two types: committed and uncommitted, While conservation reasonably expected to occur includes both committed and uncommitted programs, only the effects of committed programs are included in the load forecast. See CEC. (2009). *California Energy Demand Forecast 2010-2020 Staff Draft Forecast*, CEC-200-2009-012-SD, at p. 23.

Although the Commission has yet to rule on the Energy Division proposal, it is worth emphasizing the potential importance, in the 2010 LTPP, of a Energy Commission-sanctioned uncommitted EE forecast, whether adopted in the 2009 IEPR or some other Energy Commission procedural vehicle.

Self Generation Forecast

The Energy Division appreciates this opportunity to clarify methodologies used by CEC staff to generate forecasts of embedded impacts of self-generation, whether **programmatic** (i.e., effects of specific programs on growth in self-generation) or **non-programmatic** (i.e., effects of naturally occurring growth in self-generation not associated with specific programs). Programmatic self-generation would include impacts from the California Solar Initiative (CSI), the Self-generation Incentive Program (SGIP), the New Homes Solar Partnership (NHSP), and other programs. Non-programmatic self-generation would include load reducing impacts of on-site DG installed outside the context of specific programs. At this time, our comments will be restricted to programmatic self-generation assumptions.

Assumed Installation Rates for Programmatic Customer-side Distributed Generation

The Draft Forecast methodology projected installation rates for CSI and other self-generation programs is inconsistent. Currently, New Solar Homes Partnership (NSHP) pending and installed projects information is used, while, for CSI, only a "historic average" of 2007 and 2008 installation rates is used. We urge the Energy Commission to apply the same "reasonably expected to occur" (RETO) standard to all DG resources (whether CSI, SGIP, NSHP, or other). Energy Division staff is prepared to assist Energy Commission staff to reconcile these variations in the RETO standards for DG. In addition, the following are key points to consider when revising programmatic self-generation assumptions:

(1) The Draft Forecast methodology uses average per annum installations for 2007 and 2008, whereas in California, the IOUs have averaged 30-40% growth since 1981, with an approximately 100% growth rate between 2007 and 2008 installations. (See Figure 2 and Table 1 below.) The annual growth rate has been positive every year for over a decade – there has never been a year that installed fewer MWs than the year before.

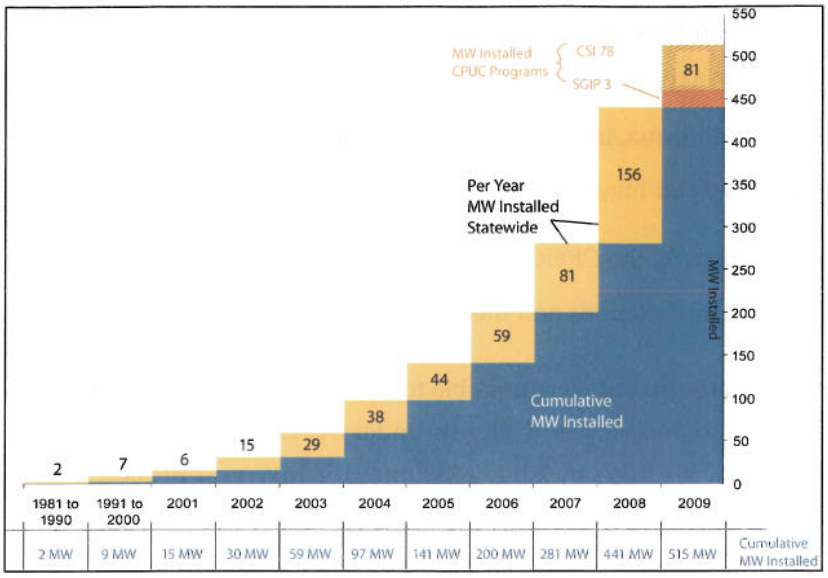


Figure 2. Total solar installed capacity in California: 1981-2009 (Source: *California Solar Initiative Annual Program Assessment*).[10]

Table 1. Grid-installed PV On-site Capacity in California, 1981 through 2009 (Source: *California Solar Initiative Annual Program Assessment*)[11]

Solar Program	1981-2006 (subtotal)	2007	2008	2009 (to date)	Total (1981-2009)
California Solar Initiative (CSI)	0	19	131	76	226
Self-Generation Incentive Program (SGIP)	80	33	21	2.5	137
New Solar Homes Partnership Program (NSHP)	0	0	1.4	n/a	1.4
Emerging Renewables Program (ERP)	91	26	3	n/a	120
Investor-Owned Utility territory subtotal	**171**	**78**	**156**	**79**	**484**
Publicly-Owned Utility (POU) subtotal	**27**	**3**	**1.5**	**n/a**	**32**
Statewide Total	**198**	**81**	**158**	**79**	**515**

Sources: 1981 through 2007 data is from Energy Commission's *Grid Connected PV Capacity Installed in California.* CSI 2008-2009 data is from CSI PowerClerk database June 2009 SGIP 2008-2009 data is from the SGIP database (SGIP 2009 data compiled by Itron). Other 2008 data is from Energy Commission's other partial 2008 data for non-CPUC programs. Data does not include most publicly owned utility (POU) data. NSHP or POU data was not yet available for 2009.

[10] *California Solar Initiative Annual Program Assessment*, June 2009, http://docs.cpuc.ca.gov/PUBLISHED/GRAPHICS/103173.PDF, at p. 21.

[11] Id., at p. 22. Note: The January 2009 Progress Report reported 160 MW in 2008. As of May 2009, 4 MW have dropped out of the program and the number has dropped to 156 MW.

(2) The assumptions in the Draft Forecast do not take into account the California Solar Initiative's (CSI) goal of 1,940 MW installed by 2017. Every year since the inception of the solar programs in IOU territories California, installations on the customer side of the meter have increased, with no indication of this trend reversing.

(3) Based on prior growth, the CPUC and CEC can make High, Medium, and Low projections for the timeline of future installations and meeting CSI goals:

a. **High Scenario.** If it were possible for the annual growth rate in new installed capacity to continue to double year over year under the CSI Program, then the program would install ~1,750+ MWs by 2011. (Assumes 158 MW/year in 2008, and ~300 MW/year in 2009, etc.)

b. **Medium Scenario.** If the annual growth rate in new installed solar capacity continued to grow at just 50 percent per year (which is closer to the per annum growth rate over the past decade, as shown in Figure 2 above), then the CSI Program would install ~1,750 MW by the end of 2012. (This assumes 158 MW/year in 2008, and ~230 MW/year in 2009, etc.)

c. **Low Scenario.** If the annual growth rate in new installed solar capacity were flat (i.e. the state continued to install new solar PV capacity at the exact same amount as 2008 (assumes 158 MW/per year), then the CSI Program would reach 1,750 MW of solar PV capacity by 2018.

The key conclusion is that even in the low scenario, the CSI program would meet its goals. In contrast, the Draft Forecast uses a rate below the Low scenario projections, where the CSI program will not meet its objective. It is expected that the CSI program will expand the solar market and increase annual growth rate in new installation rates over time. The annual growth rate over the past decade supports this conclusion:

a. CSI program applications have remained strong, despite the economic downturn, with 1,444 applications submitted for May 2009 alone, and

b. Over 78 MW of PV have already been installed in the first five months of 2009, almost as many MW as in all of 2007, and currently on pace to match or exceed 2008 installations.

Assumed On-peak Impacts of Programmatic Customer-Side Distributed Generation

The Draft Forecast is an excellent opportunity for the Energy Commission to use the most updated information regarding on-peak impacts of programmatic customer-side DG, and we look forward to furthering this effort through data and information sharing with Energy Commission staff. Specifically,

we recommend that the following points be considered in the Revised Forecast's estimates of on-peak impacts of programmatic customer-side DG.

(1) Metered performance data is becoming available through SGIP and CSI Program Evaluations that could be used to update the coincident-peak output assumptions. While CSI and SGIP PV peak output do not directly match the California ISO peak, there is still an increasing availability of PV capacity during peak periods.[12] (See Figure 3 and Tables 2 and 3 below.)

(2) The SGIP has conducted multiple impact evaluations, and in June 2009, the CPUC received Itron's Eighth Year Impact Evaluation. The Draft Forecast cites the fourth year impact evaluation from 2005. We recommend the Revised Forecast be updated with the additional 4 years of more recent data from these reports, such as the 2009 study which includes California ISO peak performance figures for different types of self-generation in 2008 and prior, including different values for solar, CHP, fuel cells, and wind turbines.

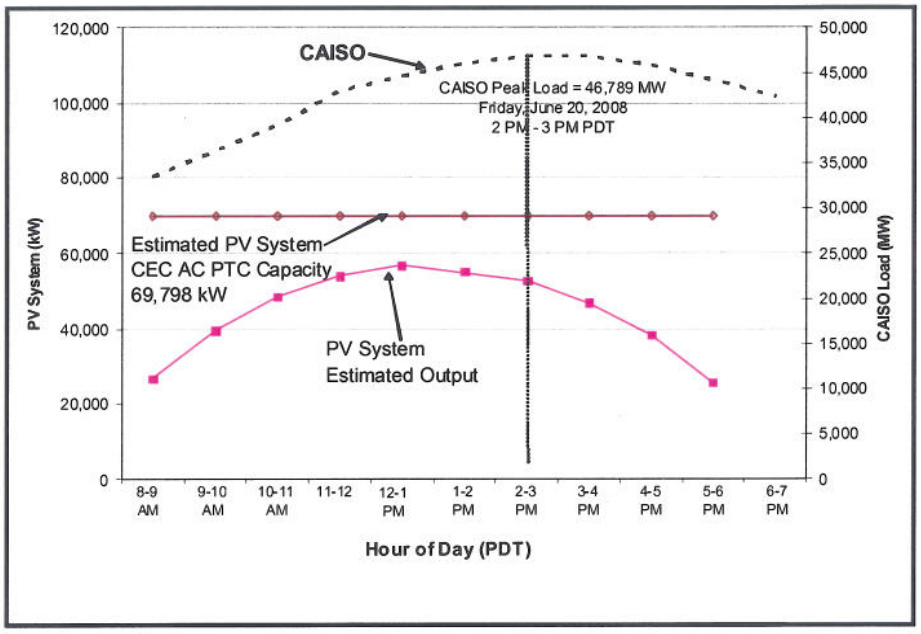


Figure 3. Estimated CSI Impact on CAISO 2008 System Peak (Source: *Preliminary Program Impacts Results Report*, June 2009.)[13]

[12] During the 2007 peak, there were 70 MW of CSI capacity online, and 55 MW during the peak hour (June 20, 2007 at 2 pm). The CSI preliminary impacts evaluation demonstrates this ratio. SGIP Impact Evaluations also support this conclusion.

[13] Itron, Inc. (2009). *Preliminary CSI Impacts Evaluation, Appendix B: Preliminary Program Impacts Results Report*, June 2009, www.cpuc.ca.gov/NR/rdonlyres/CA55FB3C-C653-4885-83AA-9234E35964CF/0/DraftItronPreliminaryCSIImpactEvaluationProgramImpacts.pdf, at p. B-7.

Table 2: Estimated Peak Demand Impact Coincident with CAISO System Peaks by Program Administrator, 2008 (Source: *Preliminary Program Impacts Results Report*, June 2009.)[14]

Year	Program Administrator	PV Systems On-line During Peak (n)*	Estimated Rebated Capacity (MW_r)	On-Line Peak Capacity (MW_p)	Peak-Hour Capacity Factor (MW_r / MW_p)
2008	PG&E	4,370	39.2	29.6	0.75
	SCE	1,411	24.4	18.4	0.75
	CCSE	541	6.2	4.6	0.75

* This differs from the number of systems online as of December 31, 2008, because approximately 5,500 more systems were installed between June 20, 2008 and December 31, 2008.

Table 3. Estimated Demand Impact Coincident with CAISO System Peak, 2007-2008 (Source: *Preliminary Program Impacts Results Report*, June 2009.)[15]

Year	PV Systems On-line During Peak (n)*	Estimated Rebated Capacity (MW_r)	On-Line Peak Capacity (MW_p)	Peak-Hour Capacity Factor (MW_p / MW_r)
2007	1,006	6.4	4.4	0.69
2008	6,322	69.8	52.6	0.75

[14] Id., at p. B-8.
[15] Id., at p. B-7.

Conclusion

We thank the Energy Commission for the opportunity to provide comments on the Draft Forecast. As the state's official forecast, the IEPR demand forecast is vital to the CPUC's procurement process. To further assist Energy Commission staff to refine methodologies and assumptions associated with EE and self-generation in the Draft Forecast, we offer several sources of information and pledge our continuing support. We also request that the 2009 IEPR incorporate a base case (or mid-range) forecast. Finally, we support ongoing efforts in future IEPR cycles to improve the Energy Commission's modeling tools and to expand collaborative efforts amongst Energy Commission staff and stakeholders begun in the DFEEQP working group.

Dated July 13, 2009

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