Comments on CEC Draft IEPR Projection

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Work in Progress -- For Discussion Purposes Only

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Presentation overview

- **<u>The Draft Peak Forecast:</u>**
  - The disconnect in the forecast between load growth in the historic period and the forecast period has to be addressed in the final forecast. This difference appears to be driven primarily by the drop in commercial and agricultural sector growth.
  - The drop in commercial sector growth appears to be driven primarily by Staff's new floor space forecasting model. The drop in agricultural growth appears to be simply an "assumption" of zero growth.
  - The level of the forecast for temperature sensitive classes (residential and commercial) is too low due to calculation of temperature statistics based on history rather than based on climate change modeling.
- **<u>The IEPR Demand Forecasting Process:</u>**
  - The IEPR process is not taking full advantage of the expertise available among the stakeholders.
  - The CEC staff's end-use model cannot be verified by stakeholders, therefore, neither the forecast nor the estimated embedded CEE can be verified by stakeholders.

The Draft Forecast

PG&E Planning Area Draft Peak Forecast

Peak (MW)					
	CED 2007	CED 2009 Staff Draft Low Rate	CED 2009 Staff Draft High Rate	Percent Difference Staff Low Rate/CED 2007	Percent Difference Staff High Rate/CED 2007
1990	17,055	17,043	17,043	-0.07%	-0.07%
2000	20,716	20,665	20,665	-0.25%	-0.25%
2007	23,114	22,836	22,836	-1.20%	-1.20%
2010	24,050	23,240	23,240	-3.37%	-3.37%
2015	25,760	24,676	24,550	-4.21%	-4.70%
2018	26,754	25,488	25,233	-4.73%	-5.69%
Average Annual Growth Rates					
1990-2000	1.96%	1.95%	1.95%		
2000-2007	2.21%	2.02%	2.02%		
2007-2010	1.33%	0.59%	0.59%		
2010-2018	1.34%	1.16%	1.03%		
Historic values are shaded					

The Draft Forecast

Form 1.3 - PG&E Planning Area						
California Energy Demand 2010-2020 Staff Draft Forecast: Low Rate Case						
Coincident Peak Demand by Sector (MW)						
	Residential	Commercial	Industrial	Agricultural	Other	Demand
Annual Growth Rates (%)						
1990-2007	2.29%	2.57%	-0.01%	0.72%	1.34%	1.78%
2010-2020	1.91%	0.65%	0.42%	0.04%	1.06%	1.16%
Drop in Forecast Period Relative to History	-17%	-75%	N/A	-94%	-21%	-35%

Drop in commercial and agricultural peaks of this magnitude are not supported by differences in CEE savings or economic/demographic inputs between the historic and forecast periods.

Combined, commercial and agricultural peaks are about 40% if total peak load.

Staff needs to produce more realistic forecasts for both these sectors. A realistic forecast would be more consistent with, for example, the drop in the residential growth rate since, in the long term (as can be seen in the history) these two market segments growth at roughly the same rate. The link between the two is employment growth.

Ag peak may very likely be the fastest growing of all due to flowing water supply cuts, climate change and conversion to electric pumps to reduce GHGs.

The Draft Forecast

Form 2.2 - PG&E Planning Area California Energy Demand 2010-2020 Staff Draft Forecast Planning Area Economic and Demographic Assumptions						
	Household Population	Households	Persons per Household	Real Personal Income (Millions 2007$)	Industrial Output (Millions 2007$)	Commercial Floorspace (MM Sqft.)
Annual Growth Rates (%)						
1990-2007	1.42%	1.24%	0.18%	3.23%	4.39%	1.70%
2010-2020	1.34%	1.27%	0.08%	2.43%	1.89%	1.14%
Drop in Forecast Period Relative to History	-6%	2%	N/A	-25%	-57%	-33%

Growth in Commercial Floor Space is down 33% in the forecast period.

Staff is employing a new forecast model for floor space additions for the first time in this revised forecast.

The unreasonably low growth in the Staff's 2009-2020 forecasts appear to be driven primarily by this new commercial floor space forecasting model and the "assumption" that there will be no growth in the AG peak during the forecast horizon.

The Draft Forecast

Table 2-3: PG&E Planning Area Electricity Peak Savings Estimates

	1990	1998	2003	2008	2011	2015	2020
Residential Energy Savings (MW)							
Building Standards	240	491	602	759	842	996	1205
Appliance Standards	283	691	888	1181	1277	1452	1669
Utility and Public Agency Programs	154	264	255	648	1022	837	340
Naturally Occurring Savings	16	24	27	34	36	148	562
Total Residential Savings	693	1470	1772	2622	3177	3433	3776
Commercial Energy Savings (MW)							
Building Standards	83	158	249	317	341	398	471
Appliance Standards	44	112	159	199	211	240	277
Utility and Public Agency Programs*	29	149	197	337	370	229	141
Naturally Occurring Savings	1087	1236	1757	1228	1309	1382	1526
Total Commercial Savings	1244	1655	2363	2082	2232	2249	2415
Total Energy Savings	1937	3125	4135	4704	5409	5682	6191

Source: California Energy Commission, 2009

*Commercial programs also include agricultural program savings.

- Annual average Commercial and AG CEE savings 1990-2008 = 47 MW
- Annual average Commercial and AG CEE savings 2011-2020 = 20 MW
- Commercial and AG CEE savings are 60% lower in the forecast period.

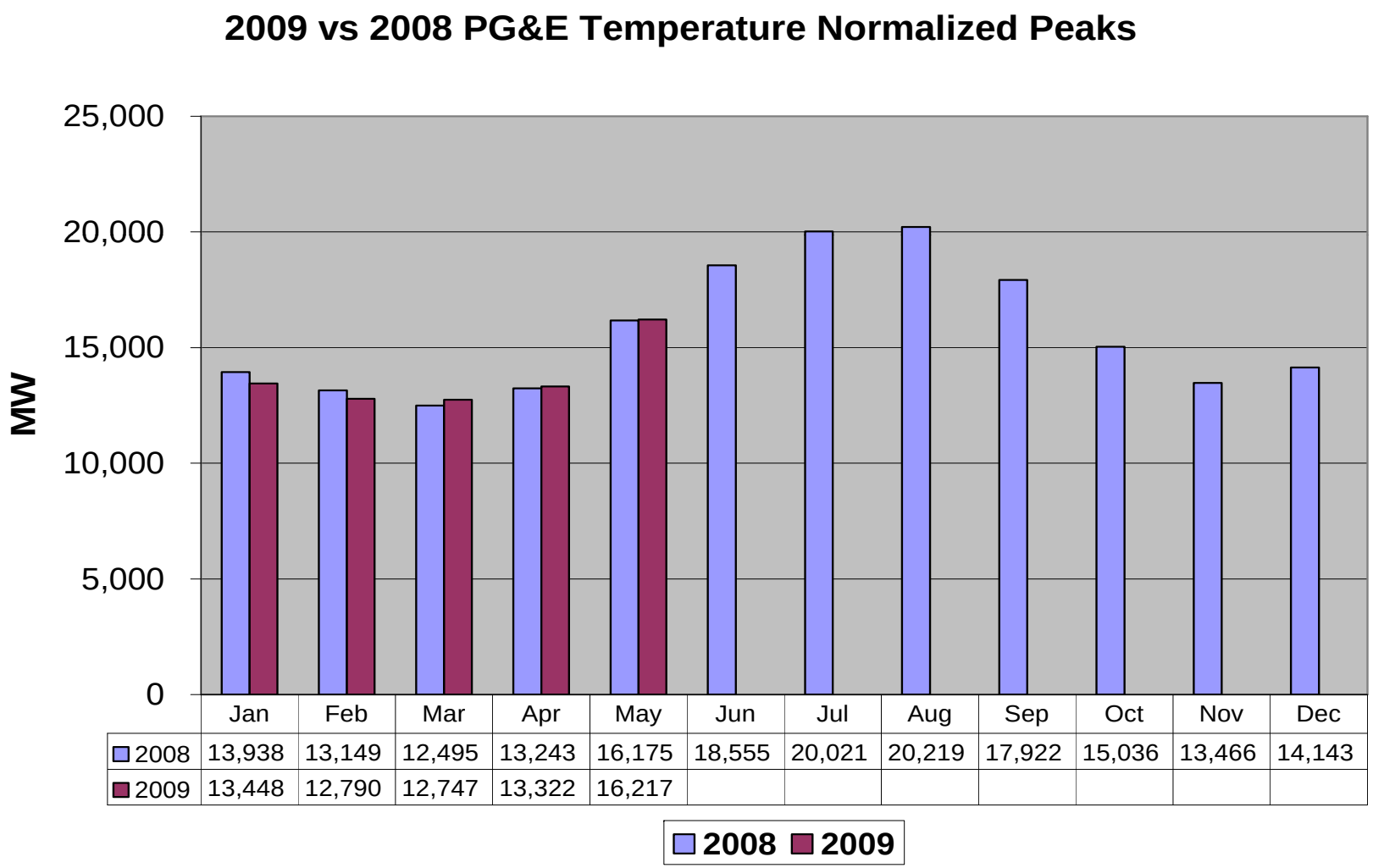
The Draft Forecast

- **Incorporating global warming into the temperature statistic for the "expected" forecast level will most likely have the effect of increasing the level of the PG&E expected planning area load by 200-500 MW over the forecast horizon.**
- **Using only historic temperature to calculate the temperature statistic yields the following approximate recurrence intervals:**
  - 2006 1 in 40 temperature
  - 2007 1 in 5 temperature
  - 2008 1 in 10 temperature

  The probability of those temperatures occurring back to back to back if the Staff's temperature statistic is correct is 1 in 2,000. That is the same probability as drawing "heads" eleven times in a row when you flip a coin. I would want to take a closer look at that coin!

  - There are a number of studies, many of which have been paid for by the CEC and are on the CEC's website, which suggest that changing from a temperature statistic based on historic data to a temperature statistic based on climate change modeling will increase the level of expected peak demand forecasts by 2% to 4%.

Recent data on peak loads for 2009



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	13,938	13,149	12,495	13,243	16,175	18,555	20,021	20,219	17,922	15,036	13,466	14,143
2009	13,448	12,790	12,747	13,322	16,217							

The IEPR process with respect to demand forecasting

- **Stakeholders have invested a large amount of time and effort into the IEPR process but their expertise in forecasting is not being used as effectively as it could be.**
- **It is well accepted that "consensus" produces superior results under conditions of uncertainty than reliance on a single point of view unless that single point of view can be shown to be superior to all others because of some special knowledge, skill or experience.**
- **No individual stakeholder in this process, including the CEC staff, can reasonably claim superior knowledge, skill or experience relative to all other forecasters.**
- **Therefore, given the large degree of uncertainty about the future path of energy demand (and for that matter the California economy) as well as the high degree of remaining uncertainty with respect to embedded EE savings in the Staff's forecast, the Commission should adopt as a final outcome of the IEPR demand forecasting process a "consensus" forecast.**
- **The consensus forecast can be developed by averaging the "aggregate" forecasts of the stakeholders and the CEC staff's final forecast.**

The IEPR process with respect to demand forecasting

- **There is an overemphasis on the "central tendency" in the IEPR process. The degree of uncertainty in the forecast is not being given the attention it deserves.**
- **If the long-term outlook can change by 2,000 MW to 4,000 MW over a 2-year forecast cycle that indicates that forecast uncertainty based on the CEC staff's modeling is enormous (+/- 5% to 10% just 2-years out).**
- **Since the financial implications of forecast error are not symmetrical (being a short is potentially much more costly than being long given the inelastic nature of both supply and demand in this market in the short to medium term) using an expected value forecast for long-term planning seems like a bad choice. A higher confidence interval forecast should be considered.**
- **The scenarios that are based on changing prices seem to indicate only that the future path of prices in not a particularly strong driver of future demand. This is similar to the scenarios in the 2005 IEPR which also indicated very little dispersion.**
- **For the final forecasts can Staff produce the +/- 90% confidence interval forecasts for the base-case 1 in 2 recurrence interval temperature?**

Summary

- **PG&E asks that the Staff review and revise the commercial and agricultural sector peak load forecasts. The drop in growth rates between the historic and forecast periods in these sectors of 75% and 95%, respectively is unreasonable. These two sectors account for 40% of total peak MW in the PG&E Planning Area so they are driving the low overall growth rate in the forecast period.**
- **PG&E asks that the Staff adjust the level of the forecast by ~ +500 MW (2%) to account for the effects of global climate change which is increasing temperatures relative to the historic period.**
- **PG&E asks that Staff produce scenario or confidence interval forecasts that more fully incorporate the high degree of forecast uncertainty.**
- **PG&E asks that the Commissioners advise Staff's to compile a "consensus" forecast which gives equal weight to Staff's final forecast and the forecasts prepared and submitted by the LSE's in this 2009 IEPR.**