BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

FILED
06-21-10
04:59 PM

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.	Rulemaking 10-05-006 (Filed May 6, 2010)

COMMENTS OF PACIFIC ENVIRONMENT
ON DRAFT PLANNING ASSUMPTIONS

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Dated: June 21, 2010

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Pacific Environment respectfully submits these comments on the Resource Planning Assumptions and the Procurement Planning Assumptions as set forth in the attachments to the May 28, 2010 Administrative Law Judge's Initial Ruling on Procurement Planning Standards and Setting Schedule for Comments and Workshops ("ALJ's Initial Ruling"). These comments are timely as set forth in the ALJ's Initial Ruling and served pursuant to the Commission's Rules of Practice and Procedure.

INTRODUCTION AND SUMMARY

California's energy outlook is much different now than it was at the end of the 2006 long term procurement proceeding (LTPP). California is currently operating at an extraordinarily high reserve margin, which CAISO forecasted as 34.5% during this summer's peak.[1] This extraordinarily high margin is in part due to the Commission's and the utilities' success at increasing energy efficiency and the demand decrease from the recession. These factors, along with delayed facility retirements and inflated population and energy export assumptions have lead California to have more capacity than it needs. At the same time, California likely will not meet its renewable energy requirements, which require 20% of its energy to be generated from renewables in 2010.

[1] *See* California ISO, http://www.caiso.com/2793/2793ae4d395f2.pdf.

With thoughtful consideration of the challenging energy policy issues presented in this proceeding, the Commission can take steps to get California back on track. To start down this path, the Commission should take a close look at assumptions which have proved inaccurate since the 2006 LTPP decision. The Commission should also consider innovative ways to meet energy needs by integrating technologies such as energy storage and distributed solar generation that will move California ahead as a leader of the world in energy policy. The only way to meet California's energy policy and leadership goals is to depart from the business as usual approach to procurement, where the utilities' primary focus is on procuring on fossil fuel resources, and only relying on central station generation. Otherwise, California runs the risk of crowding out preferred resources at the cost to ratepayers, the environment, and thus the public at large.

DISCUSSION

1. The California Energy Demand Forecast Is Too High; Adjustments Need to Be Made to Ensure That Fossil Fuel Plants Are Not Over Procured.

The demand forecast value is one of the most crucial inputs for determining energy needs. The Commission should closely evaluate this input using the "most current public information available" to ensure that the forecast gives the best snapshot of the current needs of the system.[2] This requires an analysis that goes beyond simply inputting the California Energy Commission's 2009 Adopted California Energy Demand (CED) forecast directly into this LTPP.

A. It Is Unclear Why the Energy Commission's Draft, Revised, and Adopted Reports Were Changed.

The California Energy Commission published three drafts of the California 2010-2020 Energy Demand Forecast (CED 2009): a Staff Draft in June 2009, a Revised Draft

[2] *See* D.07-12-052 at pp. 29-30.

in September 2009, and an Adopted Forecast in December 2009.[3] These drafts forecast different peak loads. For example, for PG&E's territory, the respective peak loads are reflected in the table below.

Table 1: Comparison of Forecast Peak Demand for PG&E Planning Area

Year	CED 2009 Draft	CED 2009 Revised	CED 2009 Adopted
2010	23,240	23,321	23,479
2018	25,488	25,742	26,125

The Energy Commission attributes these changes to "[s]lightly more optimistic economic projections."[4] But, a close look at the Energy Commission's "Planning Area Economic and Demographic Assumptions" shows that the assumptions actually did not change. Specifically, the assumptions in Form 2.2 – PG&E Planning Area for the Revised and the Adopted Forecast are the same for every input.[5] The relevant inputs of the Revised and Adopted Forecast are shown in Table 2.

Table 2: PG&E Planning Area 2020 Economic and Demographic Assumptions

	Household Population	Households	Real Personal Income (Millions 2007$)	Industrial Output(Millions 2000$)	Commercial Floorspace (MM Sqft)
Revised CED 2009	15,796,769	5,623,962	809,045	140,442	2,792
Adopted CED 2009	15,796,769	5,623,962	809,045	140,442	2,792

[3] *See* California Energy Commission, Document Pages for 2009 IEPR Proceeding, *available at* http://www.energy.ca.gov/2009_energypolicy/documents/index.html#092109

[4] *See, e.g.,* CEC, California Energy Demand 2010-2020 Revised Forecast, September 2009, at p. 2.

[5] *Compare* PG&E Worksheet 2.2 for Adopted CED *available at* http://www.energy.ca.gov/2009publications/CEC-200-2009-012/index.html *with* PG&E Worksheet 2.2 for Revised CED *available at* http://www.energy.ca.gov/2009_energypolicy/documents/index.html#092109.

Therefore, it appears that economic assumptions do not provide a basis for the change in the forecast.

B. Population Trends Are Lower Than CEC Relied On In The Forecast.

The basecase growth scenario in the CEC's 2010-2020 Adopted Forecast is not consistent with underlying U.S. Census Bureau population growth trends in California.[6] This needs to be analyzed to ensure that any demand forecast value gives the best snapshot of the current system. The *CED 2009 Adopted* states that "[p]opulation growth is a key driver for residential and commercial energy demand" and indicates that CEC staff used the California Department of Finance's (DOF) most recent long-term population forecast.[7] The DOF population forecast used in the *CED 2009 Adopted* has not been updated since the *CED 2007 Adopted* was published in 2007.[8]

The base blue/red curve in Figure 1 below shows the historical (through 2008) and forecasted population growth used in the *CED 2009 Adopted.* California population, according to the DOF data, grew by 4.4 million people from July 1, 2000 to July 1, 2009, from 34,095,000 to 38,488,000. The annual average population growth rate during the 2000-2009 period, based on the DOF population forecast, was approximately 1.4 percent.[9] The DOF forecasts a population growth rate of 1.2 percent annually over the 2010-2020 period, lower than the historic population growth rate estimated by DOF.[10] The reasons given by the CEC for the forecast decline in population growth rate over the

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[6] Bill Powers did this analysis in a report for Pacific Environment submitted in A.09-09-021, *available at* http://docs.cpuc.ca.gov/efile/BRIEF/116523.pdf.
[7] *See* CEC, *California Energy Demand 2010-2020 Adopted Forecast*, at p. 24 (Dec. 2009), *available at* http://www.energy.ca.gov/2009publications/CEC-200-2009-012/CEC-200-2009-012-CMF.PDF.
[8] *See* CEC, *California Energy Demand 2010-2020 Adopted Forecast*, at p. 24.
[9] *Id.*
[10] *Id.*

2010-2020 period are lower rates of fertility and immigration as the population of California and other regions age.[11]

The U.S. Census Bureau provides annual estimates of population for each U.S. state though July 1, 2009.[12] The U.S. Census population growth rate for California is substantially lower than the growth rate estimated by DOF over the 2000-2009 period. U.S. Census estimates a population growth rate averaging about 0.9 percent per year over the 2000-2009 period. This is based on a July 1, 2000 California population of 33,995,000 and a July 1, 2009 population of 36,962,000. As noted, this compares to a 1.4 percent growth rate estimated by DOF for the same period.

The July 1, 2000 population is essentially the same in the DOF and U.S. Census estimates. However, the DOF estimate results in 1.5 million more people in California on July 1, 2009 than the U.S. Census estimate. This is a dramatic difference in estimated statewide population. It also should result in a dramatically different forecast for electricity consumption and peak demand in 2020. (See the green line in Figure 1 for an extrapolation of the U.S. Census 2000-2009 California population growth rate through 2020.) However, according to the *2010-2020 Adopted Forecast*, the DOF forecast and the U.S. Census growth rate result in the same the 2020 electricity consumption and peak demand.[13] This should not happen.

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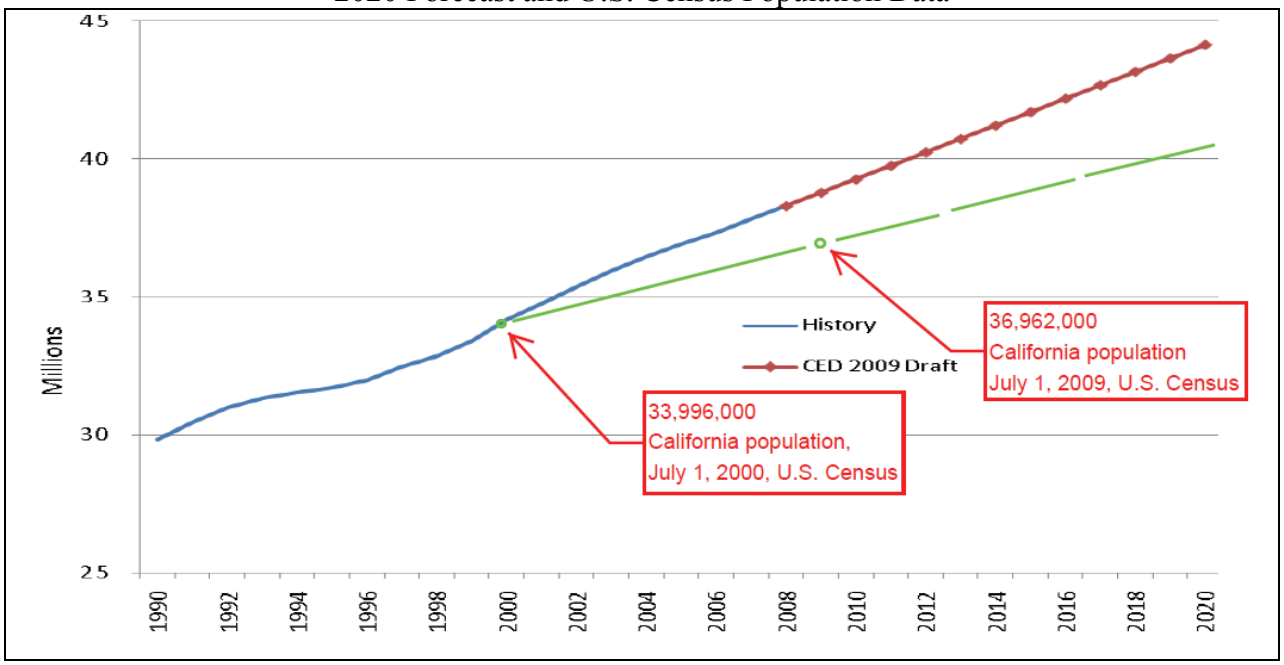
[11] *Id*. ("Older age cohorts have a lower tendency to migrate.").

[12] *See* U.S. Census Bureau webpage: Table 1, Annual Estimates of the Population for the United States, Regions, States, and Puerto Rico: April 1, 2000 to July 1, 2009, *available at* http://www.census.gov/popest/states/NST-ann-est.html.

[13] CEC, *California Energy Demand 2010-2020 Adopted Forecast*, December 2009, at p. 24, footnote 15 (the information from economy.com relies on U.S. Census data).

Figure 1. Comparison of California Population Growth Assumed in CEC 2009 Adopted 2010-2020 Forecast and U.S. Census Population Data



Source of data for base blue/red population curve: CEC, *California Energy Demand 2010-2020 Adopted Forecast*, December 2009, p. 25. Green line and tags with U.S. Census population data added by B. Powers.

The *CED 2009 Adopted* relies on economic inputs from a *base case* economic scenario provided by Moody's Economy.com.[14] The *CED 2009 Adopted* acknowledges that the U.S. Census "recent historical" (2000-2009) population estimates for California are used in Economy.com and that the U.S. Census estimate is lower than the DOF estimate.[15] However, there is no discussion of why the two estimates are different and which is more credible.

Staff also examined two alternative economic scenarios for California electricity demand. An "optimistic" case provided by IHS Global Insight and an Economy.com

[14] *Id.* at p. 6.

[15] *Id.* at p. 24, footnote 15. ("Economy.com also provides a population forecast, based on projections from the U.S. Department of Census. Population estimates are lower for recent historical years in the Economy.com forecast, but projected rates of growth (more relevant to Energy Commission energy demand forecasts) for 2010-2020 are almost identical: 1.16 percent per year for Economy.com and 1.18 percent per year in the DOF forecast.")

"pessimistic" case. Annual growth rates from 2010-2020 for electricity consumption and peak demand increase from 1.2 percent and 1.3 percent in the basecase to 1.3 percent and 1.4 percent in the optimistic case, and fall to 1.1 percent each in the pessimistic case. The 1.2 percent per year basecase electricity consumption increase matches the forecast population increase of 1.2 percent per year for the 2010-2020 period.

The rationale stated in the *CED 2009 Adopted* for a lower population growth rate in the 2010-2020 period relative to the 2000-2009 period, an aging population, makes common sense. The DOF population growth rate is reduced from 1.4 percent per year in 2000-2009 to 1.2 percent per year in 2010-2020 to reflect this effect.

The Economy.com dataset utilizes the U.S. Census population estimates for California. The U.S. Census data shows a 2000-2009 population growth rate of 0.9 percent per year for California. The aging effect referenced in the *CED 2009 Adopted* as the reason for a slower 2010-2020 population growth rate is equally applicable to the DOF and U.S. Census population estimates. The aging effect should reduce the U.S. Census population growth rate from 0.9 percent per year in 2000-2009 to approximately 0.8 percent per year in 2010-2020. Yet Economy.com forecasts a basecase growth rate of 1.2 percent per year and a pessimistic growth rate of 1.1 percent per year, significantly higher than the 2000-2009 growth rate of 0.9 percent per year without taking into account the aging effect.

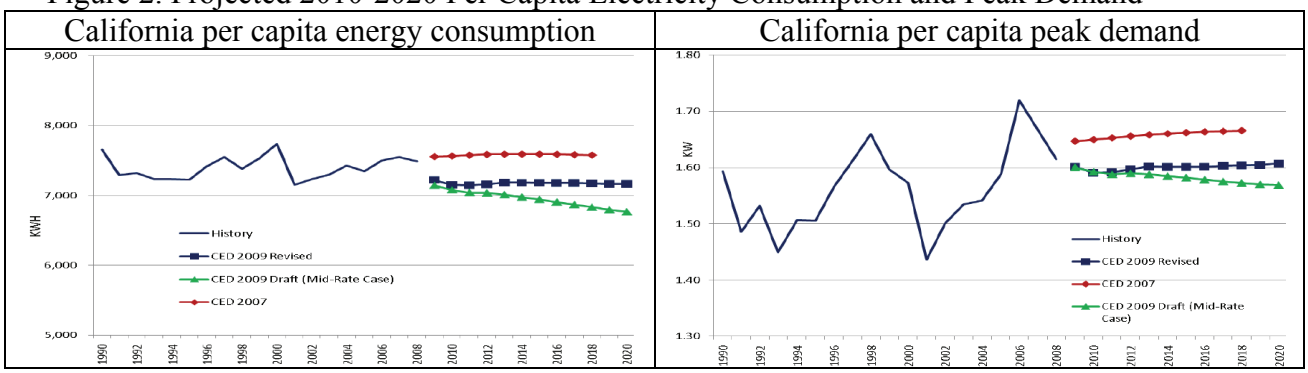
In summary, the basecase and pessimistic scenarios for electricity consumption and peak demand growth in the 2010-2020 period appear high to the degree they are based on a reasonable extrapolation of the 2000-2009 population growth rate for California. The Economy.com dataset is not included as an appendix to the *CED 2009 Adopted*. As a result there is no straightforward way to corroborate the reasonableness of

the Economy.com forecast of considerably higher population growth in California in the 2010-2020 period compared to the 2000-2009 period.

No increase in per capita electricity consumption or peak demand is anticipated in the *CED 2009 Adopted* over the 2010-2020 period, as demonstrated in Figure 2. Load growth due to population growth will be the exclusive driver behind electricity consumption and peak demand growth in PG&E territory, to the extent that it occurs, in the 2010-2020 period.

For this reason it is essential to clarify the discrepancy between the recent historic U.S. Census population growth rate (0.9 percent per year) and the substantially higher growth rate projected by Economy.com for the 2010-2020 period (1.2 percent per year) based on the same historic U.S. Census data.

Figure 2. Projected 2010-2020 Per Capita Electricity Consumption and Peak Demand



Source of figures: CEC, *California Energy Demand 2010-2020 Adopted Forecast*, December 2009, p. 15 and p. 19.

2. Local Resource Adequacy Assessments Should Rely on a 1-in-2 Forecast.

In Attachment 2 from the ALJ's Initial Ruling, the Staff suggests that "[f]or local RA need assessments, use local area forecasts that are consistent with the most recent IEPR base case 1-in-10 load forecast."[16] Pacific Environment strongly urges the Commission to revise this provision to require utilities to rely on a 1-in-2 forecast

[16] See ALJ's Initial Ruling, Attachment 2 at p. 6.

consistent with prior Commission decisions. For example, in the 2004 LTPP decision, the Commission found that:

> Existing resource planning uses average weather (1-in-2) and then adds a reserve margin which, in part, provides the cushion should hotter than average weather occur. This is the approach we adopted to implement our resource adequacy requirements and should also be applied here.[17]

The Commission reached similar conclusions in the 2006 LTPP decision and relied on the 1-in-2 forecast.[18] The Commission should be consistent with these precedents and require that all RA planning rely on 1-in-2 instead of 1-in-10 forecasts. Otherwise, the Commission runs the risk of allowing the utilities to overprocure unneeded energy.

3. Bundled Plans Need to Integrate Loading Order and RPS Considerations.

Pacific Environment is concerned that the bundled loads forecast does not include concrete consideration of renewable requirements. A ruling in the 2008 LTPP stated that RPS requirements should be integrated into bundled plans: "regardless of what the Commission decides on market mechanisms in other proceedings, the IOUs will still need a robust planning process to effectively implement various policy mandates for their bundled customers."[19] Despite this explicit statement, important policies including the GHG and RPS policies do not appear to be considered in the bundled plan.

In addition to requiring bundled plans to consider renewable requirements, the breakdown between bundled and system loads and how the need determination will be integrated across the separate phases should be more clearly defined. The definition of bundled and system was also an issue in the 2006 LTPP. The scoping memo for that proceeding, like this proceeding, separated the need analyses for the bundled and system

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[17] D.04-12-048 at FOF # 11.
[18] D.07-12-052 at pp. 28-29.
[19] Assigned Commissioner's Ruling and Scoping Memo in the 2008 Long-Term Procurement Proceeding, Phase 1, R.08-02-007 at 6.

need.[20] In that proceeding, the failure to provide specific information about the breakdown between bundled and system load created issues.[21] The Commission there noted: "[t]he absence of a standard methodology or consistent practice for identifying system versus bundled resource needs raises several concerns."[22] Here, the absence of a specific definition of system and bundled loads also raises concerns because it is unclear how the OTC and the RPS considerations will be integrated into both phases consistently and how need determinations can be done to ensure integration of renewable and OTC retirements. To help alleviate these types of concerns related to the bundled phase, the Commission should give an explicit explanation that the bundled loads will not include any procurement for new fossil fuel facilities and will not include consideration of the OTC plants or integration of renewables. OTC and RPS integration should be considered in the other phases of this proceeding.

4. Energy Storage Systems Need to be Considered in System and Bundled Planning.

Both the system and the bundled plans should include consideration of energy storage systems. The potential application of energy storage technologies ranges from bulk storage within the transmission system to smaller storage capacity technologies within the distribution system. Energy storage systems have several advantages for system and bundled plans that need to be considered including increasing the availability of energy during peak load and the ability of energy storage devices to replace peaker capacity. Recent developments in energy storage technology indicate that the Commission should require consideration of energy storage in resource planning assumptions in the long term procurement process.

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[20] D.07-12-052 at 116.
[21] *Id.* at 117.
[22] *Id.* at p. 117.

Importantly, the CEC's 2009 *Integrated Energy Policy Report* acknowledges the role of storage technology in planning for the integration of intermittent renewable generation: "looking forward, some of the firming services provided by gas-fired generation will need to come from existing and emerging energy storage technologies that allow generators and transmission operators to fill the gap between the time of generation (off-peak) and the time of need (on-peak) for intermittent renewable energy."[23] That report similarly concluded that storage "technologies can . . . reduce the number of natural gas-fired power plants that would otherwise be needed to provide the characteristics the system needs to operate reliably.[24] The CEC has also found that "[b]attery energy storage technology has improved over time to the point where there are several emerging battery technologies that can provide utility-scale energy storage."[25]

Consideration of energy storage systems is essential in this LTPP because the development of large scale energy storage systems is already a reality in California. For example, the Southern California Public Power Authority signed an agreement with Ice Energy in January 2010 to install 53 MW of load-shifting storage capacity this year.[26] Furthermore, as California ISO found: "hydro generation and pump storage are excellent sources for the required system operating reserves as they can provide this capacity without the use of fossil fuel. They can be synchronized to the system and be ready to

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[23] 2009 IEPR at p. 192; *see also id.* at p. 86 ("Other solutions [aside from natural-gas plants] such as energy storage and hybrid renewable plants, are also possible and could be preferable in the longer term as more aggressive climate mitigation targets are addressed.")

[24] *See* 2009 IEPR at pp. 6, 192; *see also id.* at 86 ("[b]attery energy storage technology has improved over time to the point where there are several emerging battery technologies that can provide utility-scale energy storage.")

[25] *Id.* at p. 86.

[26] SCPPA/Ice Energy Joint Press Release, *Southern California Public Power Authority to Undertake Industry's Largest Utility-Scale Distributed Energy Storage Project*, January 27, 2010.

produce substantial energy on demand."[27] The Helms Pump Storage Facility in PG&E's system provides 600 MW of this type of backup for renewable energy.[28] In addition to these examples, there are several other energy storage projects being planned and implemented throughout the state.[29]

Energy storage systems are also currently being used in other states. For example, American Electric Power has used sodium sulfur batteries, which store renewable energy, since June 2006.[30] Xcel Energy has successfully produced hydrogen, which can be used as a fuel, from wind energy as a way to store the energy created from the wind turbines.[31]

The development of energy storage systems is likely to continue. To support further development of energy storage systems, the Federal Energy Regulatory Commission recently approved incentive rates for Western Grid Development's utility-scale battery storage projects in California.[32] These projects are built to address specific transmission reliability issues identified by CAISO.[33] The California legislature is also currently reviewing a proposed bill, AB 2514, on energy storage.[34] According to the law as currently drafted, the Commission must require LSE's to "adopt an appropriate energy

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[27] *See* California ISO, Integration of Renewable Resources at p. 21.
[28] *Id.* at p. 94.
[29] *See* CESA ESA Presentation at p. 39, *available at* http://storagealliance.org/presentations/StrateGen_CESA_ESA_Presentation_2010-05-06.pdf
[30] *See id.*
[31] *See* National Renewable Energy Laboratory, Hydrogen and Fuel Cells Research, *available at* http://www.nrel.gov/hydrogen/proj_wind_hydrogen.html.
[32] FERC News Release, FERC Approves Transmission Incentives for Battery Storage Devices, January 21, 2010, *available at* http://www.ferc.gov/news/news-releases/2010/2010-1/01-21-10-E-6.asp.
[33] *See id.*
[34] AB2514 (Skinner) was approved by the Assembly in June 2010.

storage system procurement target to be achieved by each electrical corporation by December 31, 2015 and a second target to be achieved by December 31, 2020."[35]

Therefore, the Commission should consider energy storage in both system and bundled planning by including a line for energy storage capacity to be considered and evaluated in this LTPP.

5. Inaccurate Assumptions from the 2006 LTPP Decision Need to Be Revised.

A. Export Assumptions from NP-26 Should Be Reduced.

The export assumptions should be made on the most recent conservative data. The last long term procurement decision relied on numbers that overestimated export values. In particular, the 2006 LTPP decision assumed that PG&E would export 3,000 MW of electricity to Southern California.[36] After that decision, however, the CEC found that the export values were overestimated by "at least 1,900 MW."[37] This overestimation resulted in an export figure nearly 300 percent higher than the actual exported amount and was "clearly not correct."[38]

B. Retirement Assumptions Should Be Carefully Evaluated.

The Commission should carefully consider the retirement assumptions made in this LTPP since the last set of assumptions were inaccurate. For example, in the 2006 LTPP decision, the Commission assumed that 4,200 MW from aging and inefficient facilities would be retired by 2015 in PG&E territory and that new MW would need to be

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[35] Skinner, AB2514, *available at* http://leginfo.ca.gov/pub/09-10/bill/asm/ab_2501-2550/ab_2514_bill_20100528_amended_asm_v95.pdf.
[36] *See* D.07-12-052 at Table PGE-1.
[37] *See* California Energy Commission, Revisiting Path 26 Power Flow Assumptions (Staff Paper, October 2008) at p. 3, *available at* http://www.energy.ca.gov/2008publications/CEC-200-2008-006/CEC-200-2008-006.PDF.
[38] *See id*.

procured to replace them.[39] This assumption has since proven very inaccurate. The majority of MW that were assumed to retire will not be retiring until years later.[40]

In addition, it is not clear that even if OTC plants are retired, that the same amount of MW will need to replace them. Many existing once-through cooling (OTC) facilities are currently running far below capacity, with most units running less than 10 percent of the time in 2007.[41] Furthermore, a recent report found that several OTC facilities could retire by 2015 with no need for additional replacement capacity; the report concluded that a more than adequate reserve margin would still exist "with as little as $135 million in in-state transmission upgrades."[42] In addition, according to a recent study, replacing any peak generation lost from OTC retirements can be done with existing programs for solar power, peak demand programs, and energy efficiency, at a cost less than that of re-powering OTC units. This takes into account the recent drop in price for solar photovoltaics, as well as increasing capital costs for natural gas power plants.[43]

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[39] D.07-12-052 at pp. 104, 116 Table PGE-1.

[40] *Comparing* D.07-12-052 at p. 116 with *Draft Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (November 23, 2009) at p. 10, *available at* http://www.swrcb.ca.gov/water_issues/programs/npdes/docs/cwa316/otcpolicy112309_clean.pdf.

[41] *See* CEC, *Comments to State Water Resources Control Board Concerning Its Coastal Power Plant Preliminary Draft Policy and Related Scoping Document* (May 2008) at p. 18-19, *available at* http://www.energy.ca.gov/siting/documents/2008-05-20_CHAIRMAN_SWRCB.PDF.

[42] *Id*. (quoting California Ocean Protection Council & State Water Resources Control Board, *Electric Grid Reliability Impacts from Regulation of Once-Through Cooling in California* (ICF Jones & Stokes, April 2008) at p. 3, *available at* http://www.swrcb.ca.gov/water_issues/programs/tmdl/docs/power_plant_cooling/reliability_study.pdf).

[43] Freehling, Robert and Cox, Rory, *Renewables Cost Effective Replacement for Aging Natural Gas Plants*, Natural Gas & Electricity (March 2010).

This LTPP needs to assure that retirement assumptions are carefully evaluated so that retirements are not overestimated again. Overestimation can lead to overprocurement of unneeded fossil fuel facilities.

6. Need to Ensure All MW Are Considered.

California's extraordinarily high 34.5% reserve margin for this summer[44] will continue to get higher after all the MW recently procured and under development go on line. In order to prevent ratepayers from paying for huge unneeded capacity in the future, the Commission needs to ensure that all MW are considered. This includes updating information to reflect the most current data. For example, the Energy Commission recently stated that there has been an increase in demand response.[45]

Respectfully submitted,

June 21, 2010

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[44] *See* California ISO, http://www.caiso.com/2793/2793ae4d395f2.pdf.
[45] *See* California Energy Commission, Summer 2010 Energy Supply and Demand Outlook at p. 2 (May 2010), *available at* http://www.energy.ca.gov/2010publications/CEC-200-2010-003/CEC-200-2010-003.PDF.

CERTIFICATE OF SERVICE

I, Deborah Behles, am over the age of 18 years and employed in the City and County of San Francisco. My business address is 536 Mission Street, San Francisco, California 94105.

On June 21, 2010, I served the within document **COMMENTS OF PACIFIC ENVIRONMENT ON DRAFT PLANNING ASSUMPTIONS**, in R.10-05-006, pursuant to the Commission's Rules of Practice and Procedure, with separate and additional delivery of hard-copies by U.S. Mail to Assigned Commissioner Peevey and Assigned ALJ Kolakowski, at San Francisco, California.

Executed on June 21, 2010, at San Francisco, California.

/s/ Deborah Behles
Deborah Behles

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