BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.	Rulemaking 13-12-010 (Filed December 30, 2013) Rulemaking 12-03-014 (Filed March 22, 2012)

COMMENTS OF ENVIRONMENTAL DEFENSE FUND ON THE LONG-TERM PROCUREMENT PLANNING DOCKET WORKSHOP HELD ON DECEMBER 18, 2013

SUBMITTED BY:
James Fine
Senior Economist
Environmental Defense Fund
123 Mission Street, 28th Floor
San Francisco, CA 94105
Phone: (415)-293-6060
Email: jfine@edf.org

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I. INTRODUCTION

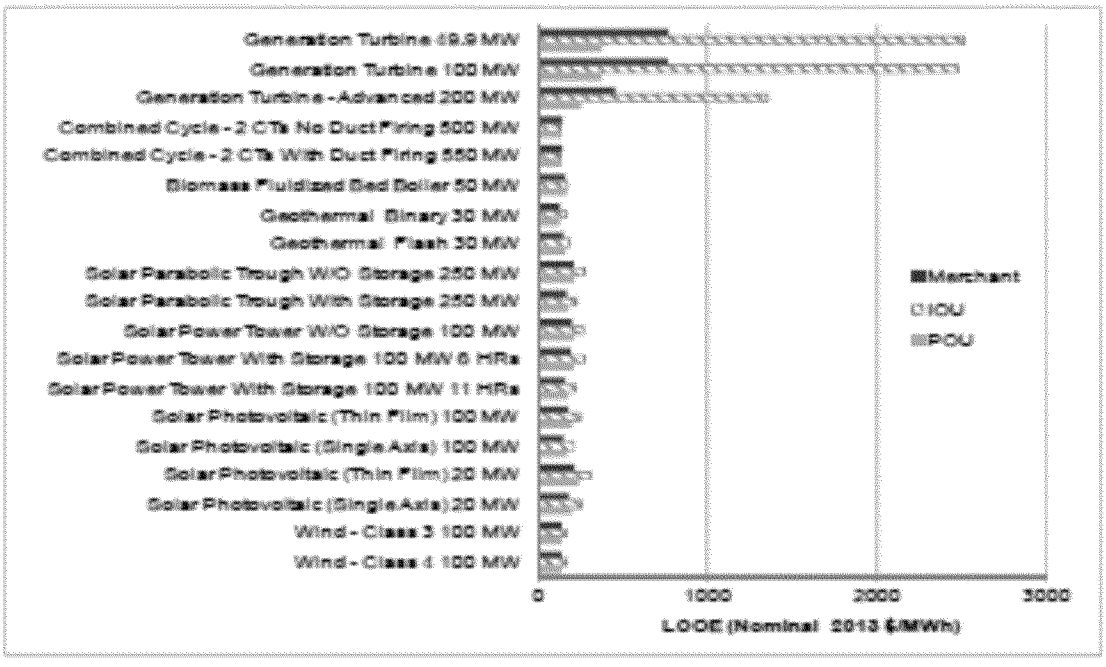
The Environmental Defense Fund ("EDF") respectfully submits Comments[1] regarding the Workshop held by the California Public Utilities Commission ("Commission") on December 18, 2013. EDF thanks the Commission for the opportunity to comment on LTPP modeling assumptions and scenarios. EDF shares the concern with other stakeholders that the planned modeling, as described at the workshop and in supporting documentation, does not sufficiently represent the state's trajectory toward clean energy as needed to meet state goals for greenhouse gas pollution cap in 2050. Like other stakeholders, EDF that modeling assumptions with respect to representing distributed energy resources are being described as "conservative" when, in fact, they are incomplete. The modeling proposed is intended to inform decisions pertaining to ensuring adequate reliability, balancing "against costs, while also creating opportunities for achieving economically efficient outcomes." Ideally, the Commission would look at multiple

[1] Administrative Law Judge Gamson directed via email Ruling on December 19, 2013 the submission of Comments on January 8, 2013 and Reply Comments on January 15, 2014.

preferred resource scenarios, evaluating the impact of different synergies of preferred resources on procurement decisions, as different combinations of preferred resources will create different resource needs.

In these comments, EDF highlights the need to consider more clean energy resources, such as demand response (DR) achieved with time-of-use (TOU) tariffs, that can provide reliability at the lowest cost, while still achieving economically efficient outcomes. The Integrated Energy Policy Report (IEPR) scheduled for adoption by the California Energy Commission today provides cost information that reveals unnecessary reliance on gas-fired generation turbines will have the effect of increasing costs, as shown in the figure below.[2] Notably, these levelized cost estimates do not include DR and energy efficiency (EE), both of which are well understood to be least-cost solutions.

Figure 9: Summary of Mid-Case Levelized Costs (LCOEs)—Start-Year=2013



[2] California Energy Commission, *Integrated Energy Policy Report Draft* at 102, Figure 9 (Oct. 2013), http://www.energy.ca.gov/2013publications/CEC100-2013-001/CEC-100-2013-001-LCD.pdf..

III. DISCUSSION

EDF agrees with many stakeholders that clean energy resources are not being adequately represented in both the long-term procurement (LTPP) and long-term transmission (LTT) modeling scenarios. The assumptions pertaining to distributed resources, such as demand-side price-responsive DR, are not "conservative" as suggested by Commission staff -- instead, such assumptions fail to apply more rigorous statistical methods for representing the spatially dispersed nature of the resource.

A. Scenario Analysis

The different scenarios in the proposed analysis are too numerous, while lacking preferred resource scenarios and sufficiently rigorous modeling. In addition, they do not always appear to adequately reflect the implications of the Commission decisions. The core question to be informed by scenario analysis is "Could uncertainties change the decision?"[3] In this respect, EDF agrees with the Commission that scenarios "should be limited in number based on the policy objectives that need to be understood in the current Long Term Procurement Plan cycle."[4] The decision in this context is whether to procure additional fossil-fueled generation resources or to enhance transmission infrastructure. However, because the "expanded preferred resources (EPR)" scenario does not represent the energy system needed to meet 2050 greenhouse gas pollution caps, the question of procuring additional generation capacity isn't tested adequately via proposed scenarios. The scenarios, as defined thus far, do not provide "information [for] including tracking greenhouse gas reduction goals."[5]

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[3] M. Granger Morgan and Max Henrion, *Uncertainty: A Guide to Dealing with Uncertainty in Quantitative Risk and Policy Analysis* at 193 (Cambridge University Press 1992).

[4] California Public Utilities Commission, *Attachment: Planning Assumptions and Scenarios for use in the CPUC 2014 Long-Term Procurement Plan Proceeding and CAISO 2014-15 Transmission Planning Process* at 7 (Jan. 8, 2014 Draft), available at http://www.cpuc.ca.gov/PUC/energy/P rocurement/LTPP/ltpp_history.

[5] *Id.*

There are several ways in which the EPR scenario can better represent clean energy resources, including backing away from the overly conservative treatment of resources that cannot be located with high spatial precision, and incomplete representation of demand response (DR), energy efficiency (EE) small-scale self-generation, and utility-scale renewable generation. This is corroborated in the California Air Resources Board Scoping Plan Update, when the agency noted the importance of utilizing these types of resources, so that can California can "reduce emissions by 2030 to levels squarely in line with achieving the 80 percent reduction goal by 2050."[6]

Renewable Portfolio Standard

Without considering a scenario of significantly higher levels of preferred resources, including more small and utility-scale renewables, the Commission is missing an opportunity to ensure that the grid is ready for trends, spurred by policy and economic considerations, that are already underway and likely to continue past 2020. No scenario explored thus far is sufficiently aggressive to be calibrated with California's greenhouse gas pollution targets and the implied Renewable Portfolio Standard (RPS) trajectory (of 40% by 2024, which is a reasonable and logical step toward a 50% RPS in 2030). In addition, none of the scenarios, including the EPR, considers impacts on demand beyond the Integrated Energy Policy Report (IEPR) forecast plus "low" incremental additions of rooftop solar photovoltaic (PV). This is problematic, as the rate of growth of over the past five years indicates that installed rooftop PV capacity is doubling every three years.

Instead, the Commission trajectory scenario should reflect an RPS goal of 30% by 2024 as a logical step toward a 50% RPS by 2030. To represent California's environmental goals, at least

[6] California Air Resources Board, *Climate Change Scoping Plan First Update: Discussion Draft* at 77-78 (Oct. 2013), http://www.arb.ca.gov/cc/scopingplan/2013_update/discussion_draft.pdf.

one expanded preferred resources (EPR) scenario ought to consider "high" incremental PV additions on top of the IEPR forecast, additional EE, high distributed generation (DG), and significant increases in demand-side DR. Similar scenarios have already been developed in regional transmission planning studies.[7] The upper bound of the high incremental DG additions scenario should be based on sustained growth rooftop PV at 35%/year through 2025, since that growth trajectory has been sustained for several years and economic trends, industry skill, regulatory conditions, increasing retail electricity prices, and technology innovations continue to converge to push DG investment onward.

Energy Efficiency

In addition to the EPR scenario, the other non-trajectory scenarios should consider higher levels of energy efficiency. Any EE scenario should be closely linked with high self-generation and more DR to accurately represent the cleanest grid at least-cost. Considering higher RPS in the same EPR scenario will reflect that overall RPS costs can be reduced by strong EE, self-generation, and DR. As well, EE penetration is aligned with and reinforced by the growth of rooftop PV, but that relationship is not reflected in the scenarios.

Demand Response

No scenario yet considers a significant increase in voluntary price-responsive load shifting through time-of-use (TOU) rates. Scenarios beyond 2018 do not represent the demand effects of defaulting residential customers to TOU rates, per the recent proposed decision by Commission

[7] State/Provincial Steering Committee, *Demand Side Management,* http://www.westgov.org/sptsc/site/workgroups/dsmwg.htm

President Peevey.[8] Thus, DR is underrepresented in all scenarios under consideration-even though it is second on the state's loading order after EE.

EDF has provided extensive written and oral comments on the potential for high levels of DR in the DR OIR,[9] residential rate OIR,[10] and LTPP proceedings. We summarize our estimates below; more details about the methods behind this estimate are available and on record already with the Commission.

EDF has estimated environmental and economic benefits from TOU rates. EDF estimates are shown in the following table, indicating that if half of all ratepayers adopted TOU rates, thirty three 100-megawatt (MW) fossil fuel power plants would be avoided and total system costs would be reduced by $500 million per year. In addition, almost one-quarter of a million tons of carbon dioxide emissions would be avoided each year.

In Southern California Edison's service territory alone, an estimated almost 1,600 MW would be eschewed, two-thirds of the capacity of the now closed San Onofre Nuclear Generating Station (SONGS). While state regulators debate how best to cover the resource gap left by SONGS, TOU rates provide an infrastructure-ready, extremely cost-effective peak management resource that can be readily implemented.

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[8] *Order Instituting Rulemaking Comprehensive Examination of Investor Owned Utilities' Residential Rate Structures, the Transition to Time Varying and Dynamic Rates, and Other Statutory Obligations*, R. 12-06-013 (issued Jan. 6, 2014) (Scoping Ruling).

[9] *Order Instituting Rulemaking* to *Enhance the Role of Demand Response in Meeting the State's Resource Planning Needs and Operational Requirements*, R. 13-09-011 (issued Sept. 25, 2013) (OIR).

[10] *Order Instituting Rulemaking Comprehensive Examination of Investor Owned Utilities' Residential Rate Structures, the Transition to Time Varying and Dynamic Rates, and Other Statutory Obligations*, R. 12-06-013 (issued Jun. 28, 2012) (OIR).

PEAK LOAD REDUCTIONS, EMISSIONS REDUCTIONS AND THE NUMBER OF FOSSIL FUEL PLANTS THAT CAN BE DEFERRED UNDER DIFFERENT TOU PENETRATIONS AND FOR THE SELECTED RATE STRUCTURE

		PG&E	SCE	SDG&E
Proportion of Customers Moved to TOU Rates		**50%**		
Peak Load Reduction (MW)	Current Voluntary TOU Rate	617	1,572	18
	SCE Rate Structure	1,567	1,572	313
Potential Change in Peak Load with Current Voluntary TOU Rate	**MW**	**(617)**	**(1,572)**	**(18)**
Change in Total Cost	$	$112,704,512	$357,367,617	$2,592,294
Marginal Benefit	$/MWh	$183	$227	$147
Total CO2 Emissions Reduction (Tons)	Current Voluntary TOU Rate	49,691	97,875	2,086
	SCE Rate Structure	96,644	97,875	26,763
Number of 100 MW Fossil Fuel Plants That Can Be Deferred	Current Voluntary TOU Rate	6	15	0
	SCE Rate Structure	15	15	3

Transmission Scenarios

CAISO's middle-of-the-road transmission study provides inputs to the Commission's scenario analyses. Doing so may underrepresent imports and resources provided through a robust regional Energy Imbalance Market.

Land-Use

Per other stakeholder comments, the modeling scenarios, particularly the EPR and high DG scenarios, should consider reflect DG siting opportunities and constraints indicated by the Desert Renewable Energy Conservation Plan.

Treatment of Uncertainty

EDF cautions the Commission against limiting consideration preferred energy resources – EE, DR, storage and self-generation – as means to treat their locational uncertainty. These resources should be represented at the busbar level, as that is already a utility reporting standard for DR in proxy demand programs. For distributed resources, statistical representations can be developed and be refined over time with ground-truthing and other forms of observation-based updating. The current proposal for "conservative" treatment overly downplays these well-understood least-cost resources rather than distributing them through straightforward analytical means. Lack of full representation of these resources will inevitably lead to resource planning decisions that do not include abundant, low-cost, clean resources and will thus result in unjustifiably higher system costs.

III. CONCLUSION

WHEREFORE, with deep appreciation for the work done thus far by all staff and stakeholders in the effort to develop scenarios that represent the determined turn California is making toward a sustainable energy system, EDF respectfully requests the Commission evaluate several different multiple preferred resource scenarios. It is critical that the Commission adopt a plan that maintains the stability of the grid, while emphasizing preferred resources. EDF believes that a combination of renewable energy, DR, DG, and EE will demonstrate that reliance on traditional fossil fuel resources is unnecessary.

Respectfully signed and submitted on January 8, 2014

ENVIRONMENTAL DEFENSE FUND

/s/ James Fine

James Fine
Senior Economist
Environmental Defense Fund
123 Mission Street, 28th Floor
San Francisco, CA 94105
Phone: (415) 293-6060
Email: jfine@edf.org

Table Sources

1. *Charles River Associates, "Impact Evaluation of the California Statewide Pricing Pilot," Mar. 16, 2005, p. 99*
2. *SCE, MCCR workpapers (A.11-06-007).*
3. *PG&E, 2011 GENERAL RATE CASE - PHASE 2 Workpapers*
4. *SDG&E, 2012 GRC PHASE 2 (A.11-10-002) Workpapers.*
5. *http://www.pge.com/tariffs/tm2/pdf/ELEC_SCHEDS_EM-TOU.pdf*
6. *http://www.sdge.com/sites/default/files/regulatory/010113-schedule_dr.pdf*
7. *http://www.sdge.com/sites/default/files/regulatory/010113-schedule-dr-tou.pdf*
8. *https://www.sce.com/wps/portal/home/regulatory/tariff-books/rates-pricing-choices/residential-rates/!ut/p/b1/tVJNc4IwEP0tHjhmsgLycUSnVaziWNspcHFiCBiLCULaqf--gWlnOtNa6qE5Zb_e27e7OMUxTgV55QVRXApStnbqblfeNJiFGwi9xdqCcDwOV86tbcGdqRMSnQAXXgBdvT-Fm9l8BeH0oa231hBtgsACcPATTnFKharUHicNZVsqhWJCbZkw4ONvQM2Kl5loWZ8NUKTmeY52Uj43OklUa1BVc8pFgehecspaN2t4pks5KVGX0tJUpGCZDhSisyjPcMJgR0nmjhCMfBvZvmkizwQH-Z6ZDx2Sget-ivxFRc-QOpE9Y-obVDSTR4YT3Yl7kWpi4c2V0noA7asB53-4GH44ndJA773d75vC8X8uXvOZ9XKyLNoDUHvERS5x_BUMxz-Cafc3sOr4ePQO-cK596IIkZ13tsoiGAzeAWwFAQI!/dl4/d5/L2dBISEvZ0FBIS9nQSEh/*
9. *https://www.sce.com/wps/portal/home/regulatory/tariff-books/rates-pricing-choices/residential-rates/!ut/p/b1/tVJNc4IwEP0tHjhmsgLycUSnVaziWNspcHFiCBiLCULaqf--gWlnOtNa6qE5Zb_e27e7OMUxTgV55QVRXApStnbqblfeNJiFGwi9xdqCcDwOV86tbcGdqRMSnQAXXgBdvT-Fm9l8BeH0oa231hBtgsACcPATTnFKharUHicNZVsqhWJCbZkw4ONvQM2Kl5loWZ8NUKTmeY52Uj43OklUa1BVc8pFgehecspaN2t4pks5KVGX0tJUpGCZDhSisyjPcMJgR0nmjhCMfBvZvmkizwQH-Z6ZDx2Sget-ivxFRc-QOpE9Y-obVDSTR4YT3Yl7kWpi4c2V0noA7asB53-4GH44ndJA773d75vC8X8uXvOZ9XKyLNoDUHvERS5x_BUMxz-Cafc3sOr4ePQO-cK596IIkZ13tsoiGAzeAWwFAQI!/dl4/d5/L2dBISEvZ0FBIS9nQSEh/*
10. *CEC, 2013 Cost of Generation Model.*
11. *CEC, 2012, 2012 Update: Thermal Efficiency of Gas Fired Generation in California, CEC-200-2012-XXX.*

Table Assumptions

**Results apply to Summer 2015 for the PG&E, SCE and SDG&E service territories*

**Assumes peak load changes in the same manner as peak-period energy usage*

**Computes the TOU off-peak rate such that the average TOU rate is equal to the average tiered rate.*

**Assumes plants that can be deferred in 2015 are 100 MW fossil fuel plants.*

ANALYTICAL INPUTS

	Rate Structure	PG&E	SCE	SDG&E
Elasticity of Substitution	All Rate Structures	-0.054	-0.054	-0.054
Weekday Own Price Elasticity	All Rate Structures	-0.129	-0.129	-0.129
CO2 Emissions Rate (lbs/MMBtu)	All Rate Structures	117.8	117.8	117.8
GHG Allowance Price ($/Ton)	All Rate Structures	$14	$14	$14
Gas Plant Heat Rate (Btu/kWh)	All Rate Structures	7,855	7,855	7,855
Current Average Tiered Rate ($/kWh)	All Rate Structures	$0.190	$0.182	$0.192
TOU On-Peak Rate ($/kWh)	Current Rate Structure	$0.345	$0.506	$0.216
	SCE Rate Structure	$0.547	$0.506	$0.583
TOU Off-Peak Rate ($/kWh)	Current Rate Structure	$0.151	$0.093	$0.186
	SCE Rate Structure	$0.100	$0.093	$0.107