BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue Implementation and Administration of California Renewables Portfolio Standard Program	**R. 11-05-005** (Filed May 5, 2011)

REPLY COMMENTS OF SIERRA CLUB CALIFORNIA ON THE ADMINISTRATIVE LAW JUDGE'S RULING SETTING FORTH IMPLEMENTATION PROPOSAL FOR SB 32 AND SB 2 1X AMENDMENTS TO SECTION 399.20

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1. INTRODUCTION

Sierra Club California respectfully submits the following Reply Comments in accordance with the June 27, 2011 Administrative Law Judge's Ruling Setting Forth Implementation Proposal for SB 32 and SB 2 1X Amendments to Section 399.20 (―Ruling‖), and the subsequent extension to August 26, 2011 authorized by a ruling by the ALJ DeAngelis.

Sierra Club California is comprised of more than 150,000 members and ratepayers throughout California. Sierra Club California supports successful implementation of effective feed-in tariffs that can help meet California's targets for renewable energy.

2. THE PRIORITY IMPLEMENTATION GOAL IS TIMELY ESTABLISHMENT OF THE FEED-IN TARIFF PROGRAM, FOLLOWED BY CONTINUED STRENGTHENING OF THE PRICE, PROJECT SIZE, AND PROGRAM CAPACITY ELEMENTS IN A PHASE 2 PROCESS.

The objective of a feed-in tariff is to provide timely integration of renewable energy, reduced project transaction costs, and increased opportunity for developing small renewable energy projects. The simplicity to the customer-generator, with standard prices and must-take terms, reduces delay and economic uncertainty for renewable energy projects that are not feasible through traditional RPS procurement. However, the price must be sufficient to incent customer-generators to invest in a renewable electric generation system. In Sierra Club California's opening comments, we stated that the most important implementation principle is to get this program established by setting prices and developing pro forma contracts in 2011, and that the expansion and further development of this program should be considered in 2012.[1] Several parties recommend a phased approach including CALSEIA and Clean Coalition that may include an interim Decision, followed by a more comprehensive Decision.

Sierra Club California proposed a legal framework for defining market price as avoided cost, and defining avoided cost as the generation cost of renewables, based on Commission-adopted procurement targets, or alternatively the cost of the electricity portfolio in compliance with the 33 percent renewable portfolio standard (RPS).[2] Other parties supporting an avoided cost framework include Agricultural Energy Consumers Association, and CEERT supports moving to an avoided cost based on renewable generation rather than natural gas. Vote Solar also acknowledges this as a ―long term‖ goal.

Sierra Club California opposed the continued reliance on the Market Price Referent (MPR), but urged that if the MPR is used as a price component in the short term, that the values of time of delivery, and avoided transmission and distribution costs be factored into the price offered. Even if the approach of MPR and value adders is used, Sierra Club California recommends that the Commission adopt the legal definition of market price as avoided cost, which provides maximum flexibility under the direction of FERC when interpreting PURPA, and consider the components of MPR, time of delivery, avoided transmission and distribution costs, and other values as an interim definition of avoided cost.[3]

The Commission should continue this track within the RPS implementation proceeding, seek the comments of parties on the performance of the program, and consider increasing or decreasing the price as necessary to achieve a balanced and successful program, and modifying

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[1] Sierra Club California Opening Comments at 4.
[2] Id at 5-13.
[3] 133 FERC 61,059; 134 FERC 61,044; 16 U.S.C. Section 824a-3(b)(2).

differentiation to ensure that costs are contained to the reasonable price needed to incent renewable development for a particular project type. In ongoing review of the feed-in tariff program, the Commission should additionally expand the capacity of the program to meet California renewable energy goals.

3. THE MARKET PRICE REFERENT WAS REPEALED FROM STATUTE AND THE COMMISSION SHOULD DEFINE MARPET PRICE AS AVOIDED COST.

The plain language and legislative history of SB 2 1X indicates that the legislature intended to repeal the MPR from statute, and replace it with a new—market price‖ term. Pacific Gas and Electric (PG&E), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) each offer the MPR as the sole basis for the price, arguing that the term—market price‖ in law should be read identically as the term was before the MPR was removed from law. This interpretation ignores the plain language and legislative history of SB 2 1X.

The Legislature, in enacting SB 2 1X, expressly deleted the market price referent from the RPS statute, and established new provisions in Section 399.20 for the commission to establish a methodology for—market price.‖ The Legislative Digest of SB 2 1X stated that the legislation—would delete the existing market price referent provisions.‖ The Legislature simultaneously established a new cost containment mechanism that is independent of the MPR. The Senate Energy, Utilities, and Communications committee analysis noted that SB 2 1X market price language—changed the basis of the calculation of the contract payment‖ away from the MPR.[4] The Assembly Natural Resources committee analysis stated that SB 2 1X amended Section 399.20—to account for this bill's *repeal of the MPR*, by requiring the PUC to set a

[4] California State Senate Energy, Utilities, and Communications Committee Bill Analysis, February 14, 2011 at 10.

similar market price specifically for purposes of the feed-in tariff statute.‖[5] By explicitly identifying the repeal of the MPR, and describing the term as similar, but not identical, the legislature intended to adopt a broader definition of market price. Calculations contained within the MPR are a portion of market price, but market price is more expansive than the MPR, and by definition is inclusive of a broader range of avoided costs.

SDG&E points to the Senate Energy, Utilities, and Communications Committee Analysis which refers to the amendment as―technical.‖ However, the analysis is clear that this amendment effected a substantive change when speculating that the―author has inadvertently changed the basis of the calculation of the contract payment,‖ and the analysis proposed an amendment to―ensure that the payment basis adopted by the Legislature in SB 32 is maintained.‖ In fact, the author did not amend the bill after this analysis was published, and the author and the legislature intended to modify the payment basis and allow the Commission the discretion to adopt a new market price.

While some elements of market price have been quantified within the market price referent, the market price referent is inappropriate as the sole basis of market price, because the legislature expressly deleted the market price referent from § 399.20, and use of the MPR would be inadequate to measure market price and avoided cost.

4. THE MARKET PRICE REFERENT IS AN INADEQUATE MEASURE OF THE REAL LONG-TERM AVOIDED COST OF NATURAL GAS POWER

Sierra Club California believes that the original unmodified MPR model should not be the basis for deriving feed-in tariff prices, for a variety of reasons. The primary reasons are 1) the

[5] California State Assembly Natural Resources Committee Bill Analysis, March 4, 2011 at 6. Emphasis added.

MPR has been eliminated from California law and thus has no legal foundation, 2) the MPR is a poor method for determining avoided cost for renewable energy, and 3) Sierra Club's preferred methodology is to adopt a cost plus reasonable profit pricing differentiated by project size and technology, which is the global standard for pricing that has been proven by far the most successful around the world.

The old MPR is specifically incapable of correctly valuing distributed generation, since it fails to account for line losses and other locational benefits provided by generation located at or near the point of consumption. These benefits are not merely hypothetical— for instance, line losses are directly charged to customers: both for the power loss *and* for the increased capacity of generation, transmission and distribution infrastructure that is needed to compensate for system losses.

While we agree with CALSEIA, CEERT, Clean Coalition, and other parties' proposals for various legitimate and important ―value adders‖ that are components of the value of renewable energy, Sierra Club disagrees relying on the 2009 MPR as a basis for the feed-in tariff. Specifically, we believe that the MPR is a fundamentally flawed method to determine avoided cost. In fact, the fictitious assumptions in the MPR model tend to grossly understate the actual ―avoided cost‖ of renewable energy, and even of natural gas power. The MPR is built upon certain assumptions that do not make it suitable for evaluating the value of renewable energy:

> ―In D.04-06-015, the Commission clarified ―what the MPR is not: it does not represent the cost, capacity or output profile of a specific type of renewable generation technology. . . [T]he MPR is to represent the presumptive cost of electricity from a non-

renewable energy source, which this Commission, in D.03-06-071, held to be a natural gas-fired baseload or peaker plant.‖ (D.04-06-015, mimeo., p. 6, n.10.) [6]

Thus, there is an inherent mismatch in trying to evaluate renewable energy by the MPR. It simply was not designed to evaluate correctly and accurately any specific renewable technology, or to determine correctly the value of specific operating characteristics. At best it is a crude approximation tool regarding the value of renewable energy.

Furthermore, the MPR presumes to represent ―the cost of electricity‖ of natural gas baseload or peaker plants. It represents this cost by making certain assumptions about numerous specific facets of a fictitious model power plant. While many of the assumptions might be reasonable, one key data input— the estimated future price of natural gas for the next 20 years— is speculative at best.

An even more serious flaw is the assumption about capacity factor, which is set at 92% in the 2009 MPR.[7] This assumption is very much at odds with the study performed by the California Energy Commission on cost of generation from various sources, including natural gas plants. The CEC report states quite bluntly:

> Combined cycle units are all too commonly modeled as having capacity factors in the vicinity of 90 percent, but the historical information on California power plants, as summarized in **Table A-1**, shows that the average is closer to 60 percent or less. [8]

[6] CPUC RESOLUTION E-4298, December 17, 2009, Adopting 2009 Market Price Referent, p. 5.
[7] Id, Appendix E: 2009 MPR Gas Forecast Inputs, Row # 10.
[8] Comparative Costs of California Central Station Electricity Generation, Final Report, January 2010, CEC-200-2009-07SF,p. A-11

Table A-1: Actual Historical Capacity Factors

Power Plant	QFER 2004	QFER 2005
Moss Landing Power Plant	55.5%	52.6%
Los Medanos	74.3%	74.7%
Sunrise Power	62.1%	65.7%
Elk Hills Power, LLC	79.9%	72.4%
High Desert Power Project	51.9%	50.3%
Sutter	72.0%	51.3%
Delta Energy Center	72.6%	69.5%
Blythe Energy LLC	26.8%	19.6%
La Paloma Generating	57.2%	46.4%
Von Raesfeld	nd	31.6%
Woodland	nd	51.5%
Average	61.3%	53.2%

Source: Energy Commission

Using an excessively high capacity factor in the MPR means that the presumptive cost of the fictitious MPR baseload plant is artificially low compared to the cost of actual baseload plants in California. The CEC model uses a 20 year life for a natural gas power plant, [9] which would correspond to a 20 year 2009 MPR cost of $0.09674 per kWh.

Adopted 2009 Market Price Referents - Long-Term Contracts (Nominal - dollars/kWh)				
Contract Start Date	10-Year	15-Year	20-Year	25-Year
2010	0.08448	0.09066	0.09674	0.10020

The CEC model average cost for natural gas power from a new combined cycle merchant generator is significantly higher than the MPR, at over 12 cents per kilowatt-hour: [10]

[9] Id CEC, Table 19: Life Term Assumptions, p. 64
[10] Id CEC, p. 18.

Table 4: Summary of Average Levelized Costs—In-Service in 2009

In-Service Year = 2009 (Nominal 2009 $)	Size	Merchant			IOU			POU		
	MW	$/kW-Yr	$/MWh	¢/kWh	$/kW-Yr	$/MWh	¢/kWh	$/kW-Yr	$/MWh	¢/kWh
Small Simple Cycle	49.9	346.91	844.31	84.43	269.31	655.69	65.57	252.90	308.01	30.80
Conventional Simple Cycle	100	326.51	794.67	79.47	252.53	614.84	61.48	239.02	291.10	29.11
Advanced Simple Cycle	200	280.91	341.84	34.18	230.86	281.03	28.10	234.37	190.29	19.03
Conventional Combined Cycle (CC)	500	758.01	123.84	12.38	701.17	114.76	11.48	657.95	107.91	10.79
Conventional CC - Duct Fired	550	727.66	127.38	12.74	670.88	117.64	11.76	627.39	110.25	11.03
Advanced Combined Cycle	800	699.97	114.36	11.44	649.05	106.23	10.62	610.57	100.14	10.01

The conventional combined cycle plant is shown by the CEC to have cost of energy that is almost 28% higher than the MPR. This is equal to the largest time of delivery adjustment for solar PV. Plugging the CEC cost for baseload generation into the CALSEIA time of delivery adjustments shows that no other―adders‖ are needed to justify the tariffs that they propose for PV plants from 1 to 3 MW.

IOU	2009 CEC	Solar TOU	Price
PG&E	$0.12400	1.250	$0.155
SCE	$0.12400	1.288	$0.160
SDG&E	$0.12400	1.108	$0.137

Furthermore, the CEC's higher cost of baseload gas generation greatly reduces the value of adders that are required to get to the second tariff rate of 22 cents/kWh for projects 250 kW to 1MW. CALSEIA's range of cumulative value adders goes from a low of 4.7 to a high of 12.7 cents/kWh, while the CEC's pricing reduces the necessary to between 6 and 8 cents/kWh for reaching the mid-price tariff.

The discrepancy regarding the cost of baseload power between the MPR and CEC pales in comparison to the difference in model results regarding peaker plants, a fact that is particularly relevant to solar PV. The MPR time of delivery adjustment already indicates that―the presumptive cost‖ of baseload power can be quite different from peak power, as shown by the following table which reflects the highest peak adjustment for each IOU:

IOU	2009 20-yr MPR	Highest TOU	Price
PG&E	$0.09674	2.2049	$0.213
SCE	$0.09674	3.1300	$0.303
SDG&E	$0.09674	1.6411	$0.159

The TOU adjustment factors reflect the fact that natural gas power can have very different costs at different times of the day, days of the week, and seasons of the year. In this sense, there really is no such thing as ―the cost‖ of peak natural gas power. However, the MPR does imply that customers are already paying from 16 to over 30 cents per kilowatt-hour during certain hours of the year for natural gas power.

By comparison, the CEC report shows the cost of natural gas power from a conventional simple cycle peaker plant entering service in 2009 as providing electricity at the cost of 79 cents per kilowatt-hour over its lifecycle. A small simple cycle plant costs even more at 84 cents per kilowatt-hour.

In-Service Year = 2009 (Nominal 2009 $)	Size	Merchant		
	MW	$/kW-Yr	$/MWh	¢/kWh
Small Simple Cycle	49.9	346.91	844.31	84.43
Conventional Simple Cycle	100	326.51	794.67	79.47
Advanced Simple Cycle	200	280.91	341.84	34.18

The high cost of energy is directly related to the very low capacity factor, which is modeled at 5% in the average case. The capacity factor was derived from a survey of 25 existing plants in California:

> The actual capacity factors (CF) were determined for the existing California conventional LM6000 simple cycle power plants and F-Class combined cycle power plants, based on the monthly QFER data from 2001 to 2008 for 25 simple

cycle facilities and 15 combined cycle facilities, and are provided in **Table C-4** and **Table C-5**. [11]

Table C-4 includes the data for the simple cycle plants, which shows a rather large range in capacity factors that varies widely from plant to plant and from year to year. On the low side, Etiwanda operated at less than 1 percent capacity in 2008, while Anaheim reached almost 30 percent in 2002. Etiwanda is an aging plant, and thus does not have the capital cost basis that a new plant would have. The state's numerous aging plants are one factor that obscures the real cost of peak power from new facilities.

Table C-4: Simple Cycle Facility Capacity Factors

Year	Anaheim	Barre	Center	Creed	Etiwanda	Feather	Gilroy	Goose Haven	King City
2001	21.88%								
2002	29.90%						4.90%		3.90%
2003	25.41%			3.26%		3.66%	5.41%	3.10%	4.04%
2004	13.07%			2.39%		3.92%	5.65%	2.57%	4.99%
2005	12.29%			2.20%		3.03%	4.13%	2.46%	3.75%
2006	12.85%			2.66%		3.73%	4.21%	2.75%	3.80%
2007	11.45%	2.14%	1.90%	3.06%	1.61%	6.06%	7.21%	3.44%	5.43%
2008	12.04%	1.10%	1.10%	3.78%	0.86%	6.48%	7.77%	3.67%	5.77%
Year	**Lambie**	**Riverview**	**Wolfskill**	**Yuba City**	**Glenarm**	**Grayson**	**Hanford**	**Henrietta**	**Indigo**
2001							3.23%		
2002							4.89%	3.38%	0.33%
2003	3.24%	3.66%	3.85%	4.34%			2.24%	2.29%	5.86%
2004	3.69%	4.14%	5.01%	4.22%	5.43%	8.05%	1.20%	1.28%	6.28%
2005	3.62%	4.89%	3.74%	8.22%	2.78%	4.17%	3.95%	1.52%	4.71%
2006	2.80%	4.29%	3.96%	5.21%	4.97%	2.85%	2.62%	2.24%	4.40%
2007	3.47%	6.37%	4.87%	5.94%	4.50%	1.26%	4.43%	2.45%	6.86%
2008	3.51%	7.15%	6.14%	8.32%	4.07%	6.11%	5.69%	5.60%	9.90%
Year	**Malaga**	**Larkspur**	**Los Esteros**	**MID Ripon**	**Mira Loma**	**Niland**	**Riverside**		
2001									
2002		1.18%	9.42%						
2003		4.01%	16.08%						
2004		4.74%	15.92%						
2005		3.85%	4.58%						
2006	7.58%	2.89%	3.87%	2.00%			7.53%		
2007	15.52%	6.00%	4.79%	3.09%	1.72%		4.80%		
2008	17.59%	8.02%	7.91%	3.85%	1.04%	9.21%	9.43%		

Source: Energy Commission

[11] Id, CEC p. C-10.

A second facet of this table of highly variable capacity factors is that it shows how the idea of there even being such a thing as―a presumptive cost‖ of electricity from a peaker plant is highly distorted. IOU customers currently pay for peak power over a dramatic range of costs, which will vary based on the age of the power plant, the initial cost of the plant, the capacity factor of a specific plant in a given year, and the ever changing cost of natural gas. The CEC report has several tables that illustrate the highly variable range of natural gas power costs. For a peaker plant, the cost of the plant is far more decisive than the cost of fuel. The report shows a range from a low of $842 to as high as $1495 per kilowatt—with the top figure being 77% higher than the low.

Table C-25: Total Instant/Installed Costs for Simple Cycle Cases

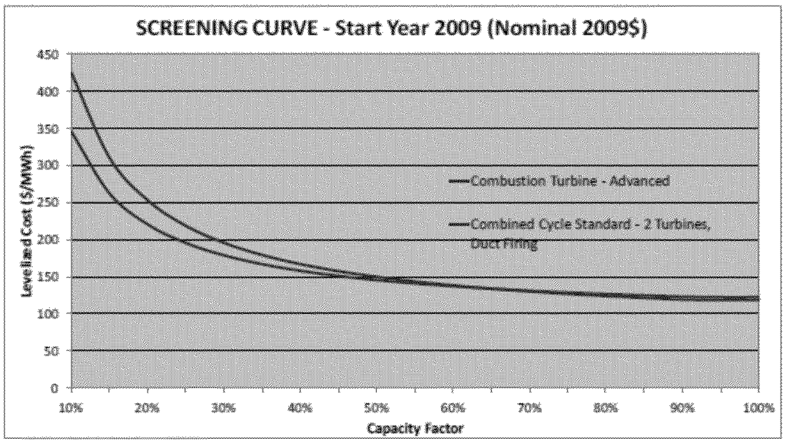
Simple Cycle Case (Nominal 2009$)	Average ($/kW)	High ($/kW)	Low ($/kW)
Conventional 49.9 MW SC	$1,277	$1,567	$914
Conventional 100 MW SC	$1,204	$1,495	$842
Advanced 200 MW SC	$801	$919	$693

Note: The high and low values are based on the 10 percentile and 90 percentile values for the evaluated projects.

Source: Energy Commission

This screening curve shows the effect of changing capacity factor on the cost of electricity, given a fixed set of other assumptions.

Figure A-6: Screening Curve in Terms of Dollars per Megawatt Hour



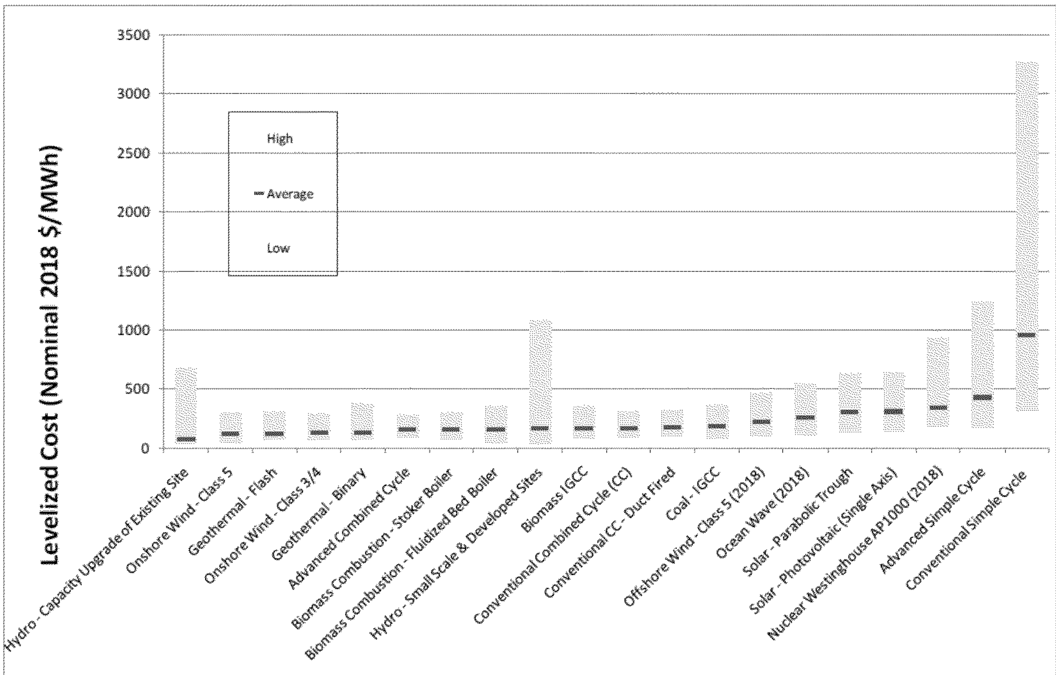
Source: Energy Commission

The variability of several major inputs shows that—the avoided cost‖ of natural gas power falls into a wide range, and the CEC report shows that this range is much larger than is implied by the IOU time of delivery adjustments, and that the range is only expected to increase over time.

Figure 17 from the CEC report shows that an average cost of energy for a simple cycle plant put in service in 2018 is forecast to be nearly $1 per kilowatt-hour, but could range to over $3 per kilowatt-hour. The chart shows that by 2018 there will be no source of renewable energy that could possibly be so expensive as natural gas power.

Figure 16 shows cost of energy from plants put in service in 2009, and in this case shows that the range of possible—avoided cost‖ for simple cycle natural gas, is 26.9 cents per kilowatt-hour on the low side, to about $1 per kilowatt-hour on the high side. All of the suggested feed-in tariffs for solar PV presented by CALSEIA, and even the higher non-taxable rates, fall conservatively within the lower half of the possible costs for natural gas power from a simple cycle plant, which is the source of energy that solar PV would ordinarily displace. Being in the lower range should be sufficient to offset the roughly 40% to 60% shortfall in capacity value of distributed solar PV against natural gas capacity. Thus, the proposed CALSEIA tariffs are all within the range of costs that IOUs would have to pay for electricity from new natural gas plants. Similarly, non-peak renewables such as biomass, geothermal, and wind are all well within the range of possible costs for a combined cycle natural gas plant. Thus, tariffs based upon the cost of generation of renewables are justifiable on the basis of—avoided costs‖ when defined by natural gas power costs modeled by the CEC independently of the assumptions used in the MPR.

Figure 17: Range of Levelized Cost for Merchant Plant In-Service in 2018



Source: Energy Commission

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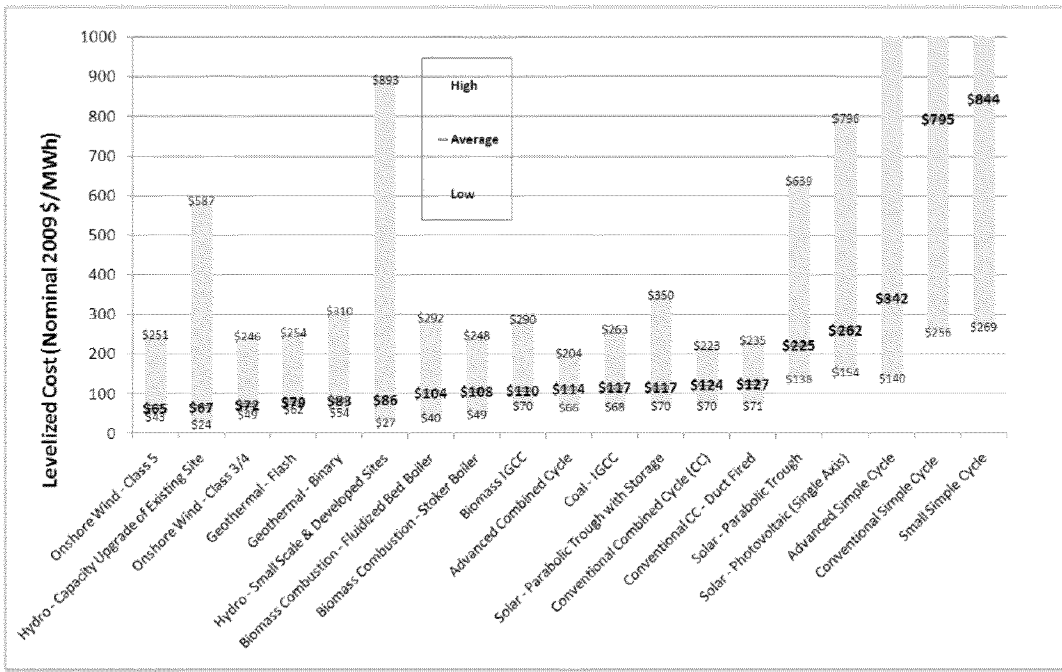
Figure 16: Range of Levelized Cost for a Merchant Plant In-Service in 2009—Enlarged



Source: Energy Commission

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5. PRICE DIFFERENTIATION BY TECHNOLOGY AND PROJECT SIZE, AND INCLUSION OF RESERVED CAPACITY, PROMOTE A BALANCED PORTFOLIO, AND THE COMMISSION MAY ADOPT PROCUREMENT REQUIREMENTS TO IMPLEMENT THIS FEATURE IN COMPLIANCE WITH FERC DECISIONS.

Some parties have discouraged or opposed differentiation of feed-in tariff prices by technology and size. Sierra Club California recommends differentiation based on best practices observed in Germany and other countries because generation from a variety of technologies and project sizes promotes a balanced portfolio and reduces costs as diverse renewable energy applications are brought to scale. Further, it would be unreasonable to grant a windfall profit to a project type by allowing a price that is higher than the cost of generation, including a reasonable return.

Although the legislature did not specifically require differentiation, Section 399.20 does not prohibit it, and the Commission should find that differentiation is a reasonable mechanism to encourage a balance portfolio and avoid excess payments over actual cost of renewable project development. Under Section 399.20, the Commission is directed consider—the value of different electricity products including baseload, peaking, and as-available electricity.‖[12] These terms for electricity products correlate to different renewable energy technologies, and use of the term —including‖ allows the Commission to consider additional factors.

In response to parties raising questions regarding FERC's decisions and establishing differentiated avoided costs by generators with certain characteristics, the Commission retains broad authority to regulate public utilities. FERC outlined in its rulings that a state may determine avoided costs for generators with particular characteristics if a state establishes procurement requirements for generation with particular characteristics. Under the California Constitution,[13] the Commission may establish the procurement requirements contemplated in FERC's decisions and recommended by Sierra Club California and other parties, and determine avoided costs based on these requirements.

Sierra Club California proposed in our Opening Comments a suggested allocation of capacity to various technologies and project sizes as one way to establish an avoided cost basis for differentiated prices. Another advantage of reserving capacity (also referred to by other parties as—set-asides‖) is to promote a diverse and balanced portfolio. Although we have

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[12] Id.
[13] Cal. Const., Article XII, Section 6

recommended differentiation based on technology, because this is the more practical approach to track and assess project costs, the Commission may alternatively consider differentiating based on electricity project, since solar energy is comparable to peaking power electricity products, and wind is comparable to as-available electricity products. However, since these electricity project categories only correlate, but do not most closely relate, to project costs, we recommend differentiation by technology and project size.

Sierra Club California recognizes that differentiation requires independent review of cost-based prices, and this may require a longer-term timeline. Further, the limited capacity in the current program could limit the practicable number of categories that the Commission can feasibly establish. However, Sierra Club California urges the Commission to recognize the balanced portfolio and cost containment policy benefits of differentiated pricing, and to include this to the extent feasible in this phase, and further differentiate in a future phase.

6. IF THE COMMISSION SETS A PRICE BASED ON THE MARKET PRICE REFERENT AND VALUE ADDERS, THE MARKET PRICE AND AVOIDED COST INCLUDES THE VALUE OF OPERATIONAL AND ENVIRONMENTAL BENEFITS.

Although Sierra Club California disagrees that market price should rely on the MPR, Sierra Club California concurs with CALSEIA, CEERT, Clean Coalition, Solar Alliance, Vote Solar, and other parties presenting evidence supporting the inclusion of value adders for time of delivery, locational benefits of avoided transmission and distribution costs, avoided electricity losses, avoided emissions, incremental health benefits, and additional avoided costs. Including these values is authorized by FERC as long as the Commission shows—an actual determination of the expected costs.‖[14] Inclusion of these values is also supported by the statutory provisions for including avoided costs. The payment rate may be adjusted to reflect the value based on time-of-delivery,[15] must include environmental compliance costs,[16] and the Commission shall consider and may establish a value for the locational benefits of distribution that offsets peak demand capacity costs.[17] SB 32 also states the Legislature's intent to prioritize renewable generation that:—Is strategically located and interconnected to the electrical transmission and distribution grid in a manner that optimizes the deliverability of electricity generated at the facility to load centers.‖[18]

While there might be questions regarding the values of some of the specific adders, the Commission has broad authority under the FERC rulings to set values for the Renewable Energy Credits (REC) that is likely to be in the range of uncertainty regarding various adders that have been proposed by CALSEIA and other parties.[19] For values that parties have submitted into the record for comment, such as the CALSEIA report, or for values that the Commission independently evaluates and introduces into the record, the Commission should include these values into the price and should expedite the comment process to the extent practicable.

7. SIERRA CLUB CALIFORNIA SUPPORTS CALSEIA's SOLAR PV FEED-IN TARIFF PRICE PROPOSAL.

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[14] 134 FERC 61,044 at para 31.
[15] Public Utilities Code Section 399.20(d)(2).
[16] Public Utilities Code Section 399.20(d)(1).
[17] Public Utilities Code Section 399.20(e).
[18] Public Utilities Code Section 399.20(b)(3).
[19] 134 FERC 61,044 at para 31. —We also note that, although a state may not include a bonus or an adder in the avoided cost rate unless it reflects actual costs avoided, a state may separately provide additional compensation for environmental externalities, outside the confines of, an, in addition to the PURPA avoided cost rate, through the creation of renewable energy credits (RECs).‖

While CALSEIA's MPR pricing is not Sierra Club's preferred methodology, Sierra Club supports CALSEIA's recommended pricing to begin implementation of an SB 32 Feed-in Tariff schedule for solar PV:

CALSEIA's Proposed Baseline Pricing for Solar PV Feed-in Tariffs [20]

	Projects less than 250kW	Projects 250kW to 1MW	Greater than 1MW (for second phase)
PG&E (Except San Joaquin Valley, SJV)	$0.22/kWh	$0.17/kWh	$0.12/kWh
PG&E (San Joaquin Valley)	$0.22/kWh	$0.17/kWh	$0.12/kWh
SCE	$0.22/kWh	$0.17/kWh	$0.12/kWh
SDG&E	$0.22/kWh	$0.17/kWh	$0.12/kWh

The prices provided in CALSEIA's brief are differentiated by project size, which the Sierra Club supports. However, as CALSEIA points out, these prices need to be adjusted for time of delivery, which we have calculated using the MPR values for solar PV that are recommended by CALSEIA, as shown in the following tables:

[20] CALSEIA Comments, July 21, 2010, Table on p. 10.

CalSEIA FIT Baseline Prices			
Service Area	less than 250 kW	250 kW to 1MW	greater than 1MW
PG&E (Except San Joaquin Valley, SJV)	$0.220	$0.170	$0.120
PG&E (San Joaquin Valley)	$0.220	$0.170	$0.120
SCE	$0.220	$0.170	$0.120
SDG&E	$0.220	$0.170	$0.120

IOU Time of Day Factors			
Service Area	less than 250 kW	250 kW to 1MW	greater than 1MW
PG&E (Except San Joaquin Valley, SJV)	1.281	1.281	1.281
PG&E (San Joaquin Valley)	1.250	1.250	1.250
SCE	1.288	1.288	1.288
SDG&E	1.108	1.108	1.108

Actual Adjusted Solar FiT Price			
Service Area	less than 250 kW	250 kW to 1MW	greater than 1MW
PG&E (Except San Joaquin Valley, SJV)	$0.282	$0.218	$0.154
PG&E (San Joaquin Valley)	$0.275	$0.213	$0.150
SCE	$0.283	$0.219	$0.155
SDG&E	$0.244	$0.188	$0.133

Sierra Club's main concern with the CALSEIA MPR plus time of delivery adjustment is the inadequate rate that would be paid in SDG&E's territory. Amending CALSEIA's proposal, we recommend applying a single state-wide time of delivery factor rather than the original MPR method that is differentiated by service territory, such that all projects smaller than 250 kW would be paid $0.28 per kWh, projects 250 kW to 1MW would get $0.22 per kWh, and projects larger than 1MW would receive $0.155 per kWh. This would make the program simpler, more equitable, and more likely to be successful in all service territories.

In our ideal feed-in tariff price schedule, the tariffs would be adjusted according to regional solar resources, paying higher than average rates for the north coast, lower than average rates for Southern California, and even lower for the desert. This would maximize the distribution of solar PV, while helping to control overall program costs. However, different IOUs would probably have different average payment rates.

Sierra Club also recommends that the Commission adopt a separate rate for non-taxable entities, as CALSEIA has proposed:

> The Commission should consider setting a special (that is, slightly higher) rate for building owners who are non-taxable entities, such as non-profit hospitals and government facilities. The special rate would be similar in concept to the higher incentive levels developed for non-taxable entities under the California Solar Initiative. This special rate is needed, because these entities do not benefit from federal tax credits, depreciation deductions, and other business expense deductions. [21]

In addition to non-taxable entities, tax benefits may not be available to customers with low income, and many small businesses that do not have sufficient profit. While these non-tax paying feed-in tariff rates would be significantly higher than the rates for taxable entities, it is likely that the majority of projects would be developed by those who can take advantage of one or more tax benefit. Thus the effect of setting aside a portion of the program for non-taxpaying entities will not have as large an effect on the overall program cost as would initially be suggested by these higher rates. Furthermore, our position all along has been that the commission should not be looking at the isolated prices of individual size tiers so much as the overall weighted cost of the full portfolio of resources combined into the program.

[21] CALSEIA Comments, July 21, 2010, p. 10.

The following table gives an indicative estimate of the amount that would need to be paid to compensate for loss of the tax benefits.

Tax Credit Value					
		less than 30 kW	30 kW to 250 kW	250 kW to 1MW	greater than 1MW
Installed Cost	per watt-dc	$5,250	$4,000	$3,500	$3,000
DC to AC Conversion	%	0.85	0.85	0.85	0.85
Installed Cost	per watt-ac	$6,176	$4,706	$4,118	$3,529
Tax Credit	%	30%	30%	30%	30%
Value of Credit	per kW	$1,853	$1,412	$1,235	$1,059
Capacity Factor (ac)	%	17%	18%	18%	19%
Specific Yield (ac)	kWh/kW-yr	1489	1577	1577	1664
Lifecycle	years	20	20	20	20
Lifecycle Generation	kWh/kW	29,784	31,536	31,536	33,288
Value of Credit	per kWh	$0.062	$0.045	$0.039	$0.032
Depreciation Value					
Tax Rate	%	35%	35%	35%	35%
Depreciable Basis	%	85%	85%	85%	85%
Depreciation Value	%	30%	30%	30%	30%
Depreciation Value	per kW	$1,838	$1,400	$1,225	$1,050
Depreciation Value	per kWh	$0.062	$0.044	$0.039	$0.032
Solar PV FiT Tax Status Calculations					
		less than 30 kW	30 kW to 250 kW	250 kW to 1MW	greater than 1MW
Taxpaying Owners	per kWh	$0.280	$0.280	$0.220	$0.150
Tax Credit Value	per kWh	$0.062	$0.045	$0.039	$0.032
Accelerated Depreciation Value	per kWh	$0.062	$0.044	$0.039	$0.032
Non-Taxpaying Owners	per kWh	$0.404	$0.369	$0.298	$0.213

8. ADJUSTING THE CALSEIA AVOIDED COST PROPOSAL TO ACCOUNT FOR CALIFORNIA ENERGY COMMISSION CAPACITY FACTOR DATA RESULTS IN A HIGHER COST OF BASELOAD NATURAL GAS, AND A HIGHER AVOIDED COST.

Using the 2009 MPR assumption for the cost of baseload power, as several parties have done, is not consistent with the California Energy Commission's research into the actual operational capacity factor for baseload plants in California. The MPR assumes a capacity factor over 90%, while the CEC found that actual combined cycle plants historically operate at 50% to 60% capacity factor. The CEC cost of generation report actually used a value of 70% capacity factor in its levelized cost model, which would make the CEC levelized cost quite conservative for baseload power in California.

If the Commission uses a natural gas avoided cost method to establish feed-in tariff pricing, as several parties have proposed, then Sierra Club urges the Commission to use the more accurate CEC cost of generation for combined cycle plants as the baseline avoided cost for base load power, rather than using the 2009 MPR. The CALSEIA avoided cost study assumed that the 2009 MPR is valid, and thus in Sierra Club's view significantly underestimated the actual avoided cost of solar PV.

The following tables show the original high and low range of adders to the 2009 MPR that CALSEIA used, followed by the revised assumptions using the CEC cost of generation value for combined cycle plants in California. CALSEIA's original assumptions result in a range of avoided cost from a low of $0.171 per kilowatt-hour to a high of $0.241 per kilowatt-hour.

CALSEIA w/Low Value Adder					
IOU	2009 20-yr MPR	Solar TOU	Price	Adder	Avoided Cost
PG&E (Ex. SJV)	$0.09674	1.281	$0.12392	$0.04761	$0.17153
PG&E (Ex. SJV)	$0.09674	1.250	$0.12093	$0.05529	$0.17622
SCE	$0.09674	1.288	$0.12460	$0.05279	$0.17739
SDG&E	$0.09674	1.108	$0.10719	$0.07890	$0.18609

CALSEIA w/High Value Adder					
IOU	2009 20-yr MPR	Solar TOU	Price	Adder	Avoided Cost
PG&E (Ex. SJV)	$0.09674	1.281	$0.12392	$0.11738	$0.24130
PG&E (Ex. SJV)	$0.09674	1.250	$0.12093	$0.11908	$0.24001
SCE	$0.09674	1.288	$0.12460	$0.11460	$0.23920
SDG&E	$0.09674	1.108	$0.10719	$0.12744	$0.23463

Replacing the 2009 MPR base value with the CEC's value for combined cycle generation increases the avoided cost range significantly, to a low of $0.206 per kilowatt-hour to a high of $0.276 per kilowatt-hour. Sierra Club proposes that this is a more reasonable value, since it reflects more closely the actual operating characteristics and 20 year costs of a new combined cycle generation plant in California. And in fact, the actual operating cost is likely even higher, since the CEC model capacity factor of 70% is significantly higher than the average historical capacity factors of 50% to 60% that the CEC found in its data collection.

CEC CA Combined Cycle Cost of Generation w/Low Value Adder					
IOU	2009 20-yr MPR	Solar TOU	Price	Adder	Avoided Cost
PG&E (Ex. SJV)	$0.12400	1.281	$0.15884	$0.04761	$0.20645
PG&E (Ex. SJV)	$0.12400	1.250	$0.15500	$0.05529	$0.21029
SCE	$0.12400	1.288	$0.15971	$0.05279	$0.21250
SDG&E	$0.12400	1.108	$0.13739	$0.07890	$0.21629

CEC CA Combined Cycle Cost of Generation w/High Value Adder					
IOU	2009 20-yr MPR	Solar TOU	Price	Adder	Avoided Cost
PG&E (Ex. SJV)	$0.12400	1.281	$0.15884	$0.11738	$0.27622
PG&E (Ex. SJV)	$0.12400	1.250	$0.15500	$0.11908	$0.27408
SCE	$0.12400	1.288	$0.15971	$0.11460	$0.27431
SDG&E	$0.12400	1.108	$0.13739	$0.12744	$0.26483

While these values might seem high, they are all much lower than the range of avoided cost for simple cycle plants. California will only protect billpayers from high energy costs if it correctly assesses those costs. Using fictitiously low values for the long-term cost of conventional energy will create the illusion that small scale solar PV and other distributed renewables are—too expensive||, when in fact consumers are already committed to paying that much or even more for conventional sources, and renewables are actually a prudent investment.

9. ADAPTIVE MANAGEMENT OF THE MARKET PRICE TO MARKET RESPONSE IS REASONABLE, BUT THE INITIAL PRICE SHOULD BE REASONABLY EXPECTED TO GENERATE INITIAL MARKET DEMAND.

Clean Coalition and utilities propose increasing and decreasing the initial market price to account for market responses. This concept is reasonable, but the initial price should be reasonably expected to generate initial market demand. The price declines should also apply gradually enough for the program to remain stable, and actual cost data, studies on feasible cost decline, and market response should supplement a decision to reduce prices, particularly for emerging technologies such as solar PV. Utility tariffs propose low prices that are far below the cost of developing renewable energy, and the proposed rate of increase would stall implementation of the program.

10. ADDITIONAL CLARIFICATION ON AVOIDED COST METHODOLOGY FOR RENEWABLE ENERGY.

Some parties, such as CALSEIA, the CLEAN Coalition and Vote Solar, have expressed disagreement with the idea of using PPA prices for renewable energy projects as the basis for avoided cost. CALSEIA is concerned that large project pricing is not transparent, while the CLEAN Coalition's concern is that PPAs may be underbid and thus not reflect a viable project. Sierra Club California agrees with parties mentioned above on these points.

To be clear, the method Sierra Club California recommended was not to use PPAs, but to use cost studies— such as the RETI database of modeled project costs or other studies— to derive a reasonable range of expected cost for renewables. A further benefit of the RETI database is that it includes adders for transmission costs and transmission line losses, which helps put the central plants on a more level playing field with DG. RETI's database also illustrates that, like for natural gas power, there is no single cost of central renewables, even for a given technology. Rather there is a significant *range of cost* that establishes *a range of usable valid avoided costs* for DG projects.

The RETI costs do not suffer from the problem of lack of transparency or of the pressures of bidding, but are a relatively objective public record that involved stakeholder input from the renewable industry in a non-bidding context.

The avoided cost based upon central station renewables, as in the RETI database, is our second choice method. Sierra Club's first choice is to develop the avoided cost specifically upon the expected cost of renewable distributed generation itself, and conforming to FERC requirements. A size and technology differentiated pricing structure could be established by having the CPUC specify allocations of megawatts for each technology and project size range for which a specific feed-in tariff price would be set. These prices and size ranges could simply be to adopt the CALSEIA prices in the case of solar PV, adjusted as presented in our comments.

11. THE ELIGIBLE PROJECT SIZE AND PROGRAM CAPACITY SHOULD BE EXPANDED.

Sierra Club California agrees with Clean Coalition and other parties the size of eligible projects should be increased to 5 MW, and encourages the Commission to expand eligibility to projects up to 20 NW. Sierra Club California described in its opening comments that the statutory reference to an—effective capacity‖ of 3 megawatts could translate to a nameplate capacity of 5 – 15 MW depending on the renewable technology and expected capacity factor.

Sierra Club California recommended in its opening comments that in establishing the increased program cap of 750 MW, for the Commission to establish this SB 32 program and capacity limit independent of completed projects pursuant to AB 1969. The Commission retains the discretion to implement renewable energy policies, and without establishing this capacity limit independently, the queue for preexisting AB 1969 projects may soon fully subscribe the SB 32 program. Sierra Club California agrees with CALSEIA's proposal for the IOU program size to be increased 750 megawatts, and the Clean Coalition proposal to establish this program as an additional 750 megawatts to the existing AB 1969 program.

Ultimately our preference would be to support the governor's proposal for 12,000 MW of Renewable Distributed Generation (RDG) with a much larger feed-in tariff program. This potential for major expansion is an important reason for developing the program design, and pricing, on a strong foundation for success. Sierra Club California hopes that the Commission will consider expansion and further development of the feed-in tariff program on its own authority, to build a successful program implementing California renewable energy goals with the broadest possible level of participation.

Respectfully submitted,

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Dated: August 26, 2011

VERIFICATION

I am the Senior Advocate with Sierra Club California and am authorized to make this verification on its behalf. I am informed and believe that the matters stated in this pleading are true.

I declare under penalty of perjury that the matters stated in this pleading are true and correct.

Executed on the **26th day of August, 2011**, at Sacramento, California.

/s/ Jim Metropulos

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