

**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)

**SIERRA CLUB CALIFORNIA RESPONSE TO THE JOINT MOTION**

**FOR A RULING DIRECTING THE CONSIDERATION OF ADMINISTRATIVELY  
DETERMINED AVOIDED COST PRICING METHODOLOGY FOR THE RENEWABLE  
FIT AT A JANUARY 2012 WORKSHOP THAT WOULD BE PART OF THE RECORD  
FOR THE DECISION ON THE RENEWABLE FIT**

January 6, 2011

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## 1. INTRODUCTION

Sierra Club California (“Sierra Club”) supports the Motion but not the specific proposal from The Center for Energy Efficiency and Renewable Technologies (CEERT); Ag Power Group, LLC (AgPower); Sustainable Conservation (SC); Agricultural Energy Consumers Association (AECA); Green Power Institute (GPI); California Wastewater Climate Change Group (CWCCG); California Farm Bureau Federation (Farm Bureau); Fuel Cell Energy (FCE); and FlexEnergy, Inc. (“Joint Parties”) to “jointly move for a ruling directing the consideration of an administratively determined avoided cost pricing methodology for use in the Renewable Portfolio Standard (“RPS”) Program Feed in Tariff (“FIT”) at a Workshop to be scheduled during January 2012 that would be part of the record for the Commission’s decision on the Renewable FIT.”

Sierra Club California agrees with the Joint Parties that the staff proposal for a pricing structure based on bid prices in the Renewable Auction Mechanism (“RAM”) is “inappropriate, as a matter of fact and law, for the implementation of the Section 399.20 FIT.”<sup>1</sup> The staff proposal, in failing to acknowledge several problems, most notably (1) the differences in project size and technology, particularly the difference between the 20 MW project size limit of the RAM program and the 3 MW project size limit of the Section 399.20 program, (2) the federal tax incentives that will not exist subsequent to the first RAM auction, and (3) the potential high failure rate of RAM projects as observed in RPS competitive solicitations, is unlikely to set a price that will encourage small renewable generation projects, and therefore will not address barriers encountered by proponents of these projects, as intended by the law.<sup>2</sup>

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<sup>1</sup> Joint Parties’ Motion, p.2.

<sup>2</sup> Sierra Club California November 2, 2011 Opening Comments on the Staff Proposal, p.13-15.

While we support the motion for a workshop to consider alternative administratively determined cost based pricing methodologies, we do not support the proposed alternative structure as outlined in the included “Appendix A” and instead hereby put forth our proposal for an alternative administratively determined cost based pricing methodology. Sierra Club California has consistently advocated for cost-based pricing in its Comments in response to rulings by the Administrative Law Judge (“ALJ”).<sup>3</sup>

**2. THE ADMINISTRATIVE RECORD IS INADEQUATE TO SUPPORT A PROPOSED DECISION WITHOUT FAIR CONSIDERATION OF ALTERNATIVES IN RESPONSE TO THE ALJ’S JUNE 27, 2011 RULING.**

Despite the numerous Parties commenting in support of technology and project size - based pricing in response to the ALJ’s June 27, 2011 Ruling, the staff proposal and workshop format did not provide for a process that is adequate to assess the merits of Sierra Club’s proposal. Indeed, the workshop format explicitly limited the scope to consideration of the staff proposal, and excluded from the scope all other proposals.<sup>4</sup> Sierra Club raised a verbal objection to the exclusion of its proposal from the scope of the workshop, as did several Joint Parties, and objected in the content of comments on the Staff Proposal.

**3. THE STAFF PROPOSAL IS PREJUDICED IN PART BECAUSE THE SELECTED OPTION WAS INADEQUATELY BRIEFED WHEN PARTIES COMMENTED IN RESPONSE TO THE ALJ RULING SEEKING COMMENTS PRIOR TO THE STAFF PROPOSAL.**

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<sup>3</sup> See Sierra Club California Comments filed on July 21, 2011, August 26, 2011, November 2, 2011, and November 14, 2011.

<sup>4</sup> Energy Division presentation, p. 5. “In Scope” included “Staff proposal,” while “Out of Scope” excluded “Individual party presentations on FIT price.”

The staff proposal is based on a record that is underrepresented in analysis of its chosen alternative of RAM-based pricing, especially as compared to the discussion of alternative methods of determining the feed-in tariff price. Most Parties devoted full attention to the technology-based pricing and MPR-based pricing alternatives and the discussion of adders, and with few exceptions summarized arguments against the RAM-based option in just one or two paragraph, even in Reply comments.<sup>5</sup>

The staff proposal is supported by conclusory statements supporting RAM-based pricing, and dismissing pricing that is cost-based and differentiated by technology and project size. These statements are not discussed in depth nor are they supported by comparative discussion of evidence in the record. The staff proposal asserts that a “value-based FIT” “protects ratepayers by not paying more than the cost of other procurement options,” but does not weigh this assertion against the acknowledgement that “Since price is not based on the actual project’s cost, the price may be too high or too low for a specific project. This could result in an unsubscribed program or overpayment to generators.”<sup>6</sup> Also, the staff proposal cites that it is “easy to administer,” but does not assess this in comparison to other alternatives, or in consideration of the outstanding problems that the proposal seeks to address related to adjusting the RAM price for a 3 MW program, and

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<sup>5</sup> In Opening Comments, CEERT, Fuel Cell Energy, AECA, Vote Solar, Clean Coalition, CalSEIA, DRA Southern California Edison wrote two paragraphs answering this question, and focused most comments on their own proposals, Sierra Club California and Solar Alliance discussed reasons to reject this proposal in one or two pages of comments, Agpower wrote one sentence opposing, GPI wrote 2 sentences, and Sustainable Conservation quoted a paragraph critical of the RAM Proposed Decision, PG&E and SDG&E. SunEdison, California Association of Small and Multi-Jurisdictional Utilities, Placer County Air Pollution Control District, TURN/CUE, CMUA, Farm Bureau, did not address this question directly in Opening Comments. Only the Interstate Renewable Energy Council and SCE discussed their proposals in significant depth.

In Reply Comments, CEERT, Placer County Air Pollution Control District, Fuel Cell Energy only responded in opposition with one or two paragraphs, DRA, TURN, PG&E, SDG&E, responded to this proposal in one or two pages, but for very different reasons than expressed by most opponents of the proposal. Solar Alliance integrates several points in opposition to the proposal in its Reply Comments, and AECA, Sierra Club, Sustainable Conservation and the Farm Bureau provided two pages of reply comments opposed to the proposal. Clean Coalition, CalSEIA, and AgPower did not comment on the proposal in Reply Comments. SunEdison supported the proposal but did not respond to opposition arguments filed in opening comments, Vote Solar suggested a modified proposal but did not respond to opposition arguments.

<sup>6</sup> October 13, 2011 Staff Proposal at p. 5.

adjusting the price in subsequent terms for under-subscription or over-subscription. Meanwhile, arguments against a cost-based FIT are advanced without analysis or justification.<sup>7</sup>

An adequate process would have released a staff proposal and workshop format with adequate consideration and analysis of cost-based pricing and other alternatives alongside the analysis of RAM-based pricing.

**4. A PROPOSED DECISION BASED ON THE STAFF PROPOSAL WOULD BE PREJUDICED WITHOUT A WORKSHOP AND ANALYSIS OF COST-BASED PRICING, AND OTHER ALTERNATIVES.**

A workshop and analysis of cost-based pricing, and other alternatives, that would be part of the record of this proceeding, is the appropriate remedy to the short-circuited process. This analysis should obtain facts rather than conjecture regarding potential rate impacts of different program designs, world-wide best practices, and administration of the program.

**5. OVERVIEW OF SIERRA CLUB PROPOSAL FOR A COST-BASED FEED-IN TARIFF**

Sierra Club includes its proposal for an administratively determined cost-based FIT as stated in prior comments and summarized below:

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<sup>7</sup> For additional discussion rebutting inaccurate assumptions on page 5 of the staff proposal, see Sierra Club California November 2, 2011 Opening Comments on the October 13, 2011 Staff Proposal at p. 5-11.

1. **Setting the Price** - Tariffs would be differentiated by technology (within the three product types) and project size. A program that does not differentiate by technology and project size will likely exclude certain technologies and smaller projects, e.g. under 1 MW.
  - a. The Commission should retain any of a number of experienced and qualified consulting firms to conduct cost studies and calculations, or the Commission could complete this work internally.
  - b. The cost components of this approach are typically market price based – e.g. “What is the current market cost of panels per watt? “What is the current market price of inverters?”
  - c. Tariffs set for these smaller sized projects, would still be compliant with PURPA and FERC regulations, including recent FERC Clarification Rulings<sup>8</sup> if the Commission orders the requisite procurement of the renewable energy resource, and may therefore establish an avoided cost for each differentiated technology and project size based on this procurement approach.<sup>9</sup>
  
2. **Program Duration** - The CPUC would set a reasonable two-year time frame for this program to reach its objective for its regulated load-serving entities.

The 1000 MW RAM program has a duration of 2 years. This proposed program duration would be for a program with an objective of approximately 550 MW over two years for the IOUs to achieve.

The existing FIT program has been slow in bringing up significant volume of new renewables largely because the tariffs have been too low. The staff proposal risks the same problem if the

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<sup>8</sup> 133 FERC 61,059; clarifying that states may “set a utility’s avoided costs...means that where a state requires a utility to procure a certain percentage of energy from generators with certain characteristics, generators with those characteristics constitute the sources that are relevant to the determination of the utility’s avoided cost for that procurement requirement.”; 134 FERC 61,044, clarifying that “should California choose to do so, implementation of a multi-tiered avoided cost rate structure can be consistent with the avoided cost rate requirements set forth in PURPA...”

<sup>9</sup> Sierra Club July 21, 2011 Opening Comments at p.7-13, August 26, 2011 Reply Comments at p.17-19.

tariffs it initially sets are too low and it takes many months and possibly years through some of the proposed methodologies to adjust tariffs incrementally over time until they are sufficient to drive volume. By setting a determinate duration and designing the program to achieve the target, this program can be successful in a timely way.

3. **Semi-Annual Capacity Objectives** - The Commission would require each IOU to achieve its objective amount of capacity over two years with four equal length 6-month capacity objectives.

This is also similar to the structure of this component of the RAM ruling. By setting interim objectives of every 6 months, this will help even the implementation of new renewables over 2 years and allow IOUs to better plan for processing applications, engineering interconnections and planning any needed system changes.

Also importantly, this design feature allows the Commission to lower the price to contain costs with minimal capacity contracted at a higher price, or to correct for an inadequately low price without excessive delay.

**IOU Capacity Objectives by Technology and Project Size** – The Commission would require each IOU to allocate its assigned total capacity target for each of their four 6 month objectives among the technology and project size categories under guidelines created by the CPUC to insure that each technology/product category, and smaller project sizes are at least minimally represented. Sierra Club California recommends that at least 50% of the capacity for solar PV and potentially other categories be allocated to projects less than 1 MW to include a diverse portfolio, encourage market transformation and scale, and recognize the actual cost differential for small projects.

The combination of a balanced portfolio, increased economies of scale and reductions in balance of system costs can lower costs dramatically as has been observed in programs around the world. For example, the installed cost of small rooftop solar PV in Germany is about 50% lower than in California - \$3.70/watt while under California's CSI program, the cost is \$7.16 / watt.<sup>10</sup>

There are also direct and indirect economic and societal benefits to having a diversified mix of small, medium and larger projects rather than a program of only large projects. Some of these benefits include:

- a. By having an increased number of projects due to an increased proportion of small projects, there is greater security and reliability for the grid since the failure of any one project becomes inconsequential.
  - b. Greater geographic diversity of e.g. solar PV projects can smooth out variations in insolation due to cloud cover thus making integration and system balancing easier.
  - c. More, smaller projects can lead to more local jobs and local homeowners, businesses and schools sharing in the economic benefits of their own generation.
4. **Degressed Tariff for PV Solar** - The tariffs initially announced for this program should include a degressed tariff for the second year of the program that is e.g. 4-8% lower than offered in the first year in anticipation of the continuing decline of PV costs. The amount of degression would be based upon market forecasts of pricing declines but could be modified based on the most recent data at a one-year review to ensure that tariffs are set at a price that is neither too high nor too low.

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<sup>10</sup> Farrell, John, "German Rooftop Solar Averages Under \$4 per Watt," June 16, 2011; Renewable Energy World.com; California Solar Initiative, All projects greater than 10 kW as of January 4, 2012, [www.californiasolarstatistics.com](http://www.californiasolarstatistics.com), accessed on January 10, 2011.



5. **Value Adder for Strategically Located Projects** - The CPUC could add a small value adder e.g. \$.005 / KWh to the otherwise determined tariffs for projects located in IOU “hot spots” to incent development in those locations that are most strategic. We recommend that “hot spots” be defined as 10% of the distribution circuits within each IOUs system where new DG Generation would both minimize costs and time required for interconnection and would provide the most benefits to the IOUs system as determined by each IOU. Each IOU would have the responsibility to disclosing these locations to developers.

Section 399.20 does not require the commission to establish a value for this benefit but the evidence presented from the E3 report attached to the staff proposal indicates that there are more desirable and less desirable locations for new RDG to be installed.

Providing a modest financial incentive to drive applicants to seek these locations could produce benefits to utilities, ratepayers and generators. Sierra Club California proposes this adder to encourage development in locations that are strategic, in furtherance of this objective of the law.

6. **Setting Wind Tariffs:** The tariff necessary for profitable operation of wind turbines in California is a function of several factors. However, the single most important determinant of the tariff required is the wind resource. This is because the power generated by a wind turbine varies by the cube of the wind speed. Small differences in average wind speed over a year in a given location can impact total generated electricity greatly.

Germany, France, and Switzerland all use differentiated wind tariffs where the tariff varies with the productivity of the wind resource. The intent of such tariffs is to provide both equal

opportunities for wind development to all residents of a jurisdiction and to distribute or disperse development geographically.

These countries derive tariffs based on the cost of generation plus a reasonable profit. The cost of generation from wind increases as the wind resource decreases. The cost of generation decreases as the wind resource intensity increases. In these programs, the tariff is highest where the resource intensity is the lowest, and the tariff is the lowest where the resource intensity is the highest.

International best practice is to provide a continuum of tariffs for different resource intensities. However, in the interest of simplification for this modest sized program, it is possible to approximate such sophisticated programs by creating a limited series of tranches based on resource intensity, the surrogate of which is the average annual wind speed.

By using the same techniques as used in more sophisticated programs, and using typical values for wind development in California, we recommend that the CPUC consider a series of three tranches based on wind speed: <6 meters/second (13.422 MPH), 6-7 m/s, and >7 m/s (15.66 MPH).

The chart below is illustrative of how a tariff could be set based upon wind speed. The base tariff, T1, for example, could be \$0.11/kWh and would be paid to all wind turbines during the first five years. At the end of the fifth year, the average wind speed during that period would be determined. The average would be derived by discarding the windiest year, the least windy year, and averaging the three remaining years.

The resulting average wind speed would then be used to determine the tariff, T2, that would be paid from year 6 through year 20 as in the table below.

<b>Proposed California Wind Tranches for SB 32</b>			
	T1	\$ 0.111	
Yield	Approximate Average Annual Wind Speed at Hub Height	Teq	T2
kWh/m2/yr	~meters/second	\$/kWh	\$/kWh
<800	<6	\$ 0.111	\$ 0.111
800-1,100	6-7	\$ 0.093	\$ 0.084
>1,100	>7	\$ 0.080	\$ 0.065
Teq is the equivalent annual tariff in years 1-20			
T1 is the tariff in years 1 through 5.			
T2 is the tariff in years 6 through 20.			

The equivalent annual tariff for the first tranche is \$0.11/kWh, for the second tranche is \$0.093/kWh, and for the third tranche is \$0.08/kWh. Turbines at the windiest sites would be paid \$0.03/kWh or 25% less than those at the lower wind sites.

This methodology prevents overpayment to wind generation that benefits from high average wind speeds while also paying a fair price to allow modest development of wind resources in less windy geographic areas that might offer other benefits such as being in an IOUs strategic distribution grid “hotspot”.

- Tariff Review After First Year** - The CPUC should conduct a review of the tariff price one year after the first tariff determination has been completed but before the 2<sup>nd</sup> year of the program’s tariffs are finalized, to evaluate the progress of the program based on the program performance from the first 6-month period. If targets are fully subscribed quickly in certain

technology/project size categories, then the tariffs should be reduced. If program remains undersubscribed, then the tariffs should be increased during this review.

8. **Illustrative Spreadsheet** of technology and project size categories with capacity targets. This table is not intended to be a specific recommendation to the CPUC but is intended to illustrate the concepts behind a well-designed best practices FIT program might look. The table is an example of how tariffs could be set by technology, by project size and by wind intensity for wind power. It illustrates how determinate capacities would be set for each tranche of technology and project size to comply with FERC regulations. It also shows how the CPUC could establish a diversified portfolio of resource types and project sizes to balance baseload with intermittent resources and smaller projects with larger projects to both contain costs while providing other benefits.

Technology & Size Allocations	Size Range	Capacity	Capacity Factor	Annual Generation	Program Share of Generation	Technology Subtotal Share
		kW	%	kWh	% of kWh	% of kWh
<b>Solar PV</b>						54.70%
Residential	1 to 10	100,000	16.60%	145,416,000	12.42%	
Commercial	10 to 100	100,000	17.70%	155,052,000	13.24%	
Industrial	100 to 1000	100,000	18.80%	164,688,000	14.07%	
Subutility	1000 to 3,000	100,000	20.00%	175,200,000	14.97%	
<b>Biogas</b>						21.36%
Small Biogas	1 to 150	10,000	57.10%	50,019,600	4.27%	
Commercial Biogas	150 to 1500	10,000	68.50%	60,006,000	5.13%	
Subutility Biogas	1500 to 3,000	20,000	79.90%	139,984,800	11.96%	
<b>Geothermal</b>						10.48%
Small DG Geothermal	< 3 MW	20,000	70.00%	122,640,000	10.48%	
<b>Wind</b>	<b>Wind Speed at Hub Height</b>					13.47%
Low wind speed	< 6 Meters/sec (13.42 MPH)	30,000	14.74%	38,736,720	3.31%	
Medium wind speed	6-7 meters/sec	30,000	20.00%	52,560,000	4.49%	
High wind speed	> 7 Meters/sec (15.66 MPH)	30,000	25.26%	66,383,280	5.67%	
<b>Total</b>		550,000		1,170,686,400		100.00%

### Benefits of Cost-Based Feed-in Tariff Pricing:

1. The program would have a high level of probability of success within a reasonable and known time frame. A potential risk of the staff proposal is that there is no determined duration of the program, and if the rates are insufficient, it could take years for the program to complete, continuing the poor progress of the existing FIT program.
2. The type, quantity and cost of this renewable generation is known in advance, enabling the IOUs and CAISO to better plan for their integration and to anticipate rate implications.

3.This would result in a diverse portfolio of renewables with benefits to ratepayers and grid operations.

4.By differentiating tariffs by technology the Commission enables certain defined technologies to participate whereas otherwise they will de facto be excluded.

5.By differentiating tariffs by project size, generators of smaller and medium sized projects would also be able to qualify for these projects as opposed to just a few larger projects in the 1 - 3 MW size categories. This would benefit small businesses, non-profits, and low-income communities, and simulate more jobs in these local communities.

Without tariffs differentiated by project size, it is unlikely that many new rooftop solar PV projects would be completed. The staff proposal is likely to limit the “peaking as-available” projects in the program to larger ground-mounted projects. .

6.An increased number of smaller projects will result in a more secure and reliable grid.

7.The percentage of project failures especially those due to inability to obtain financing would be expected to be lower than if tariffs had been based upon a bidding pricing model where according to the CEC, project failure rates, including delays, are 40%.<sup>11</sup>

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<sup>11</sup> California Energy Commission, “Renewable Power in California: Status and Issues” p. 6. December 2011. CEC-150-2011-002-LCF

However, this estimate includes a number of short-term contracts that may not be renewed, as well as existing facilities that may retire due to age or contract expiration, which could reduce the contribution from existing facilities. There is also risk of contract failure; data from the Energy Commission’s investor-owned utility contract database indicates that since the start of the RPS program, about 30 percent of long-term RPS contracts (10 years or more) approved by the California Public Utilities Commission have been cancelled. The contract failure rate increases to about 40 percent if contracts that are delayed are considered. The 40 percent contract failure rate is also consistent with public comments by utilities on the draft of this report.<sup>3</sup> This suggests utilities should be contracting for a renewable generation in the range of 55,000 gigawatt hours to 85,000 gigawatt hours.”

8. Tariffs would have been created in a straightforward, objective and transparent way both leveling the playing field and increasing developer and investor confidence, reducing uncertainty.

**A. This approach would solve many problems noted in the current proposed staff plan including:**

- a. Adjustment of a RAM price for a large DG project (e.g. 5-20 MW) to a 3 MW and smaller sized project.
- b. How to set a FIT price for a product type if there is no awarded RAM contract for one or more of the three product types by one or more of the IOUs.
- c. How to calculate the value of distribution grid benefits at the specific circuit level of detail.
- d. Avoiding the tariff being initially set too low and it taking years for the program to complete.
- e. Avoiding risk of significant overpayment due to excess adders.

**B. CPUC Opportunity to create significant best practices FIT methodology for the state and which could serve as a model for the rest of the US.**

- a. California still does not have a true global best practices FIT program where pricing is based upon the cost, including a reasonable profit. By doing so, California would set an example within the U.S. for other states to model. Examples of other but much smaller U.S. programs include:

1. Gainesville, Florida was the first jurisdiction in the US to implement a small but well-structured best practices FIT program for solar PV that based the tariff on costs + a reasonable profit. This program was highly successful.
2. The State of Rhode Island, just chaptered a FIT law in June of 2011 that complies with the new FERC clarifications and in only three months, completed regulations for its implementation. This program has a program cap of 40 MW.

**C. The policy environment has changed dramatically since the law was chaptered first in 2009 and again in 2011.**

- a. Section 399.20 was changed eliminating the MPR as the foundation for the pricing structure, and replacing it with “market price.”
- b. FERC has clarified its regulations regarding avoided cost and how states may structure new pricing methodologies for differentiated renewable energy feed-in tariffs.
- c. Solar costs have come down dramatically.

*“Pacific Gas and Electric and Southern California Edison have filed advice letters with the California Public Utilities Commission stating that all contracts signed under their solar photovoltaic programs, which are for projects 20 MW and smaller, are also below the Market Price Referent.”<sup>12</sup>*

- d. The lead Commissioner draft of the California Energy Commission 2011 Integrated Energy Policy Report recognizes the Governor’s Clean Energy Jobs Plan and the 12,000 MW distributed generation goal.<sup>13</sup>

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<sup>12</sup> “Renewable Power in California: Status and Issues” December 2011 CEC-150-2011-002-LCF; p. 15.

<sup>13</sup> California Energy Commission, 2011. *2011 Integrated Energy Policy Report*. CEC-100-2011-001-LCD.



**D. The Commission should implement the Section 399.20 Feed-in Tariff as a pilot program, and consider expanding a combination of successful distributed generation programs to meet the Governor’s distributed generation goal of 12,000 MW.**

- a. The California Energy Commission has recommended that “The CPUC should immediately implement a feed-in tariff program for all RPS-eligible generating facilities up to 20 MW in size. Such a program should include must-take provisions as well as cost-based technology-specific prices that generally decline over time and are not linked to the CPUC’s market price referent.”<sup>14</sup>

Respectfully Submitted,

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January 6, 2012

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<sup>14</sup> California Energy Commission 2008, *2008 Integrated Energy Policy Report Update*, CEC-100-2008-008-CMF. p.28.