



# RENEWABLES PORTFOLIO STANDARD Quarterly Report



3rd Quarter 2011



# I. ABOUT THE RPS AND THIS REPORT

**California's Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country**

Public Utilities Code §§ 399.11 – 399.20, established in 2002 under Senate Bill 1078 (Sher) and modified in 2006 under Senate Bill 107 (Simitian), requires retail sellers (investor-owned utilities (IOUs), electric service providers (ESPs) and community choice aggregators (CCAs)) regulated by the California Public Utilities Commission (CPUC) to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010.

In 2011, Senate Bill SB 2 of the First Extraordinary Session (Simitian) (Stats. 2011, ch.1) makes significant changes to §§ 399.11-399.20; it increases the renewable target to 33% by 2020 and requires both retail sellers and publicly-owned utilities to achieve a 33% RPS. The CPUC and the California Energy Commission (CEC) are jointly responsible for implementing the program.

While the RPS program is the primary vehicle for new utility-scale renewable energy development in California, there are other programs that stimulate development of customer-sited renewable generation. The California Solar Initiative (CSI) and Self-Generation Incentive Program (SGIP) provide incentives for customers to install renewable distributed generation technologies that directly serve their on-site load.<sup>1</sup> The electricity generated from power systems installed through CSI and SGIP may contribute to the RPS provided that RPS eligibility requirements established by the CEC are met.<sup>2</sup> Also, generation from these facilities indirectly contributes to the RPS by reducing electricity demand when serving customer load. Furthermore, it provides the customer clean, renewable, carbon-free electricity.

The Commission issues this report on the RPS program every quarter pursuant to the 2006 Budget Act Supplemental Report Item 8660-001-0462. This report focuses on California's three large IOUs: Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E). These IOUs currently provide approximately 68% of the state's electric retail sales and analyzing this data provides significant insight into the state's RPS progress.

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<sup>1</sup> More information on the CSI and SGIP can be found on the CPUC's website: <http://www.cpuc.ca.gov/PUC/energy/DistGen/>.

<sup>2</sup> In the case of renewable customer generation, the system-owner owns the renewable energy credits (RECs), but could sell the RECs to retail sellers to contribute to the RPS targets.

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## II. EXECUTIVE SUMMARY

### Status of RPS Procurement

- Collectively, the large IOUs reported in their August 2011 RPS Compliance Filings that they served 17.0% of their electricity with RPS-eligible generation in 2010. PG&E served 15.9% of its 2010 load<sup>3</sup> with RPS-eligible renewable energy, SCE with 19.3%, and SDG&E with 11.9%.
- To date, 2,541 MW of new renewable capacity has achieved commercial operation under the RPS program. Over 830 MW of new renewable capacity has come online in 2011, with an additional 166 MW forecasted to come online by the end of the year.
- The IOUs have submitted 49 contracts representing 3,133 MW of renewable generation in 2011. In the same time period, the CPUC approved seven contracts representing 951 MW of renewable generation.

### Highlights of Recent and Upcoming Events

- Two proposed decisions were mailed for party comment in Rulemaking 11-05-005. Both proposed decisions implement parts of SB 2 (1x). The first proposed decision implements the new portfolio content categories and the second proposed decision seeks to establish the new RPS procurement targets.
- A Ruling was mailed in Rulemaking 11-05-005 for party comment on a staff proposal to implement statutory changes to the renewable feed-in tariff program. The staff proposal addresses all program elements, including price, standard contract terms and conditions, and other program implementation issues.
- The Commission approved the Renewable Auction Mechanism (RAM) resolution on August 18, 2011. On September 19, 2011 the IOUs filed compliance advice letters to modify their bidding protocols and tariffs based on the RAM resolution. The IOUs' first auctions closed on November 15, 2011 and the second auctions will close by May 31, 2012.
- On August 19, 2011, the CPUC launched the Distribution Interconnection Settlement process to evaluate and reform the rules of interconnection to the IOUs' electrical distribution systems. Staff's goal is to create interconnection rules and associated forms of agreement by December 31, 2011.

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<sup>3</sup> This percentage does not include several PG&E contracts that are under CPUC review.

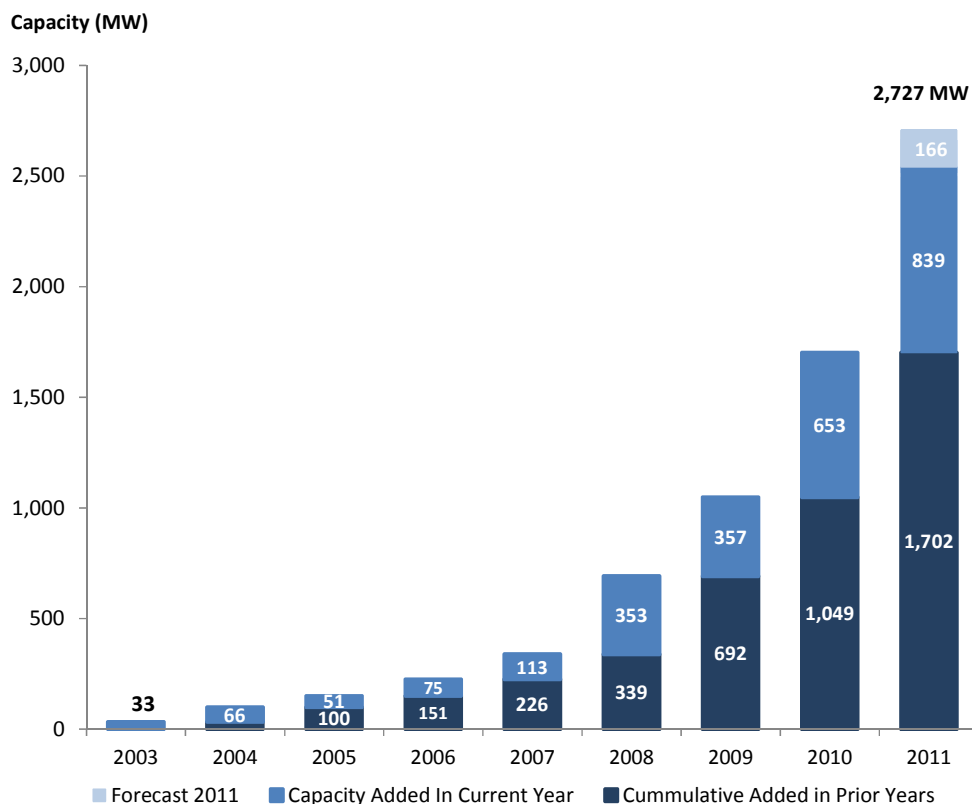
### III. PROGRESS TOWARDS A 33% RPS BY 2020

#### New Renewable Capacity Added in 2011

To date, 2,541 MW of new renewable capacity has achieved commercial operation under the RPS program. Over 830 MW of new renewable capacity has come online in 2011, with an additional 166 MW forecasted to come online by the end of the year. All of the new generation that has come online in 2011 has been wind and solar photovoltaic (PV) projects. Specifically:

- 722 MW of wind capacity came online in 2011; over 60% is in-state
- 117 MW of solar PV capacity came online in 2011
  - Independent power producers (IPP) developed 57 MW of the solar PV capacity<sup>4</sup>
  - PG&E and SCE developed 60 MW of the solar PV capacity through their Solar PV Utility-Owned Generation Programs

Figure 1. RPS Capacity Installed Since 2003, By Year<sup>5</sup>



Source: California Public Utilities Commission, 3rd Quarter 2011

<sup>4</sup> Two of the IPP solar PV projects resulted from SCE’s renewable feed-in tariff program.

<sup>5</sup> Figure 1 only includes new capacity under contract for 10 years or more.

## RPS Contracting Activities in 2011

Since 2002, the CPUC has approved 195 contracts for over 17,000 MW of renewable capacity. As Table 1 below shows, the CPUC approved an additional four contracts in the third quarter of 2011. Lastly, a total of 13 contracts were submitted in the third quarter of 2011, consisting solely of solar and wind projects.

**Table 1. IOU RPS-Eligible Contracts Approved and Submitted in the First Three Quarters of 2011**

		PG&E		SCE		SDG&E		Large IOU Total	
		Number of Contracts	MW	Number of Contracts	MW	Number of Contracts	MW	Number of Contracts	MW
Q1	Approved	3	450	0	0	2	140	5	590
	Submitted	1	78	27	1,094	3	388	31	1,560
Q2	Approved	2	210	0	0	0	0	2	210
	Submitted	1	78	2	270	2	196	5	544
Q3	Approved	2	28	0	0	2	123	4	151
	Submitted	3	413	0	0	10	616	13	1,029

## RPS Generation Forecast and Project Risk Profile

Figure 2 below provides a forecast of IOU renewable energy generation from online projects and all executed RPS contracts as reported in the August 2011 RPS Compliance Filings. It also provides the risk profile of the contracted generation by computing a project viability score for each executed contract and sorting the projects based on the most critical project development milestones, including: site control, permitting status, interconnection progress, and transmission system upgrade requirements. See Table 2 for a description of how each project viability category takes into account these milestones. While projects were not sorted by the full project viability score, Table 2 shows the average project viability score in each viability category.

The methodology used to forecast future RPS generation and categorize projects based on viability in this report is different than the methodology used in past reports. The main differences are that Figure 2 uses the utility forecasts instead of staff forecasts and that the project viability is sorted based on the most critical project development milestones. The calculator used to determine the viability score and weighting of these particular milestones is available for download on the CPUC website.<sup>6</sup>

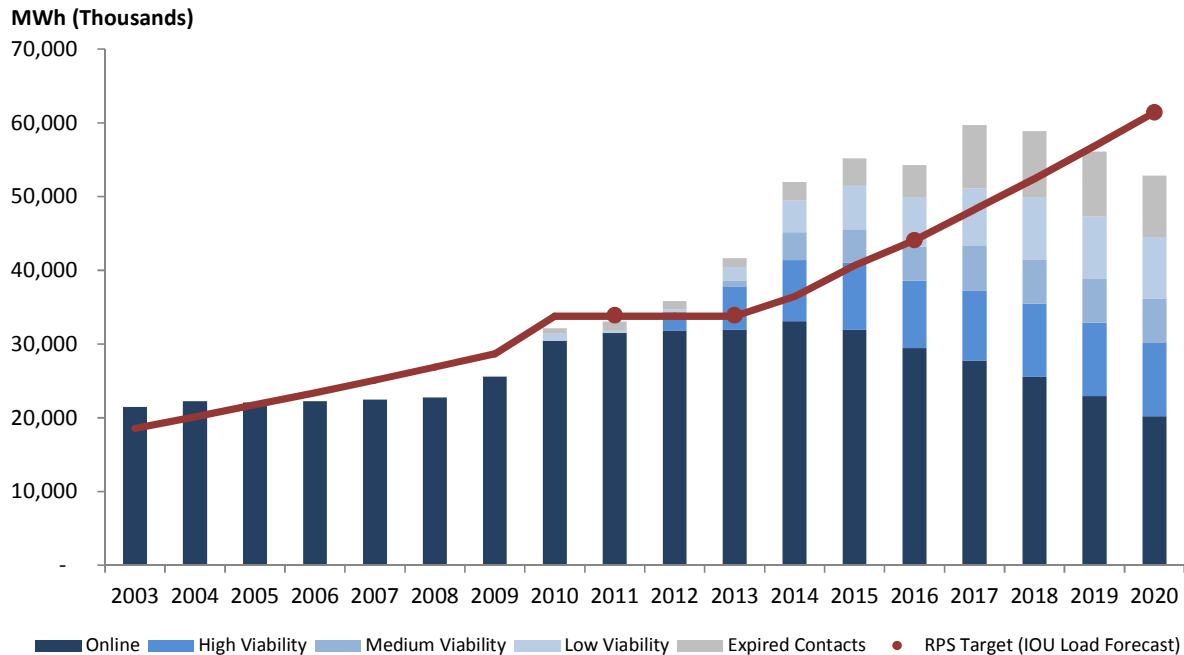
<sup>6</sup> See [http://www.cpuc.ca.gov/NR/rdonlyres/43C6BB0B-D475-49B9-BEF6-24F1F4C427AD/0/RPS\\_Project\\_Viability\\_Calculator\\_2009.xls](http://www.cpuc.ca.gov/NR/rdonlyres/43C6BB0B-D475-49B9-BEF6-24F1F4C427AD/0/RPS_Project_Viability_Calculator_2009.xls)

Table 2. Description of High, Medium, and Low Viability Categories as used in Figure 2

	<i>Average Project Viability Score (out of 100)</i>	<i>Site Control</i>	<i>Permitting Status</i>	<i>Interconnection Progress<sup>7</sup></i>	<i>Transmission System Upgrade Requirements</i>
<b>High Viability</b>	90	Complete	Complete or filed	Phase II Study or Facilities Study complete	All necessary CAISO and CPUC approvals received
<b>Medium Viability</b>	75	Complete	Filed	Phase II Study or Facilities Study in progress	Project requires either a permit to construct or an approved Notice of Construction from the CPUC, and an advice letter has been or will be filed
<b>Low Viability</b>	50	Not complete	Not filed	Phase I Study or electrical System Impact Study in progress or has only filed Interconnection Application	Project requires transmission upgrades and needs a Certificate of Public Convenience and Necessity from the CPUC for which an application has not been filed

<sup>7</sup> For generators interconnecting through a serial study process, the first study is called the System Impact Study and the second study is called the Facilities Study. For generators interconnecting through the cluster study process, the first study is called Phase I and the second study is called Phase II. See the Q4 2010 RPS Report to the Legislature for an overview of the recent reforms to the interconnection study process.

**Figure 2. Risk Profile of Forecasted RPS Generation Based on Executed Contracts**



Source: California Public Utilities Commission, 3rd Quarter 2011

**About Figure 2:**

- Provides a forecast of IOU RPS generation from online projects and all executed RPS contracts as reported in the August 2011 RPS Compliance Filings.
- The RPS Target line is multiplied by the IOUs’ load forecast as reported in the August 2011 RPS Compliance Filings.
- From 2003 to 2010, the RPS Target line represents 20% of IOU electrical generation.
- From 2010 to 2020, RPS Target line represents the targets in the proposed decision establishing procurement targets pursuant to SB 2 (1x).<sup>8</sup>
- Actual RPS procurement targets will be different than the forecasted procurement targets due to differences in actual electrical load and consumer choice programs such as direct access that may lower IOU bundled retail sales.
- Compared to Figure 2 in the Q4 2010 RPS Report to the Legislature, this figure shows a lower amount of RPS generation in 2020. This is a result of the IOUs terminating and withdrawing contracts and a change in the methodology for determining the forecasted generation curve. The figure in the Q4 2010 RPS Report to the Legislature extrapolates the RPS generation while this figure uses the IOU forecast of RPS generation from the August 2011 RPS Compliance Filings.

<sup>8</sup> The proposed decision was mailed for party comment on October 28, 2011.

## IV. PROGRAM UPDATE

### Interconnection for System-Side Renewable Distributed Generation

On August 19, 2011, the CPUC launched the Distribution Interconnection Settlement process to evaluate and reform the rules of interconnection to the IOUs' electrical distribution systems.<sup>9</sup> Staff's goal is to create a comprehensive, multi-jurisdictional interconnection rules and associated forms of agreement by December 31, 2011. The settlement discussions are confidential, but to the extent the parties do come to agreement, the CPUC will review the settlement in Rulemaking (R.) 11-09-011, which was opened on September 22, 2011 to consider distribution system interconnection issues.

In the second quarter of 2011, CPUC staff requested information from the IOUs on the interconnection study results for all active and withdrawn solar PV generator interconnection requests for projects up to 20 MW in size. The following interconnection tables and figures summarize the results of the CPUC interconnection data request.<sup>10</sup> The section below defines the terms used in the tables and figures.

The purpose of an interconnection study is to determine the impact a new generator will have on the safety and reliability of the electrical grid and the costs that generator will have to incur to interconnect. A generator interconnecting to the distribution system can trigger three types of upgrades: interconnection facilities, distribution system upgrades, and transmission system network upgrades. In general, interconnection facilities are the least costly while transmission system network upgrades are the most costly. See Table 4 for a comparison of these costs.

- **Interconnection Facilities:** Interconnection facilities include all facilities and equipment between the generating facility and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the generating facility to the distribution provider's distribution system.
- **Distribution System Upgrades:** The additions, modifications, and upgrades to the distribution provider's distribution system at or beyond the point of interconnection to facilitate interconnection of the generating facility and render the service necessary to affect the interconnection customer's wholesale sale of electricity.
- **Transmission System Network Upgrades:** Additions, modifications, and upgrades to the distribution provider's transmission system required at or beyond the point at which the distribution system connects to the distribution provider's transmission system to accommodate the interconnection of the generating facility.

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<sup>9</sup> Both the CPUC and the Federal Energy Regulatory Commission (FERC) regulate certain interconnections to the distribution system.

<sup>10</sup> PG&E and SCE reported cost information; SDG&E did not because SDG&E has not yet completed an interconnection study for a solar PV generator up to 20 MW.



All of the tables and figures below show interconnection study results for both active and withdrawn generators. Table 3 below shows the percentage of generators with completed studies that trigger upgrades in each cost category for generators seeking interconnection to the distribution system or the transmission system. All generators with study results triggered at least one type of upgrade.

Table 3 below shows that a generator seeking to interconnect to the distribution system can trigger transmission network upgrades. In addition, in almost all instances, a higher percentage of generators interconnecting to PG&E’s distribution or transmission system trigger upgrades than those interconnecting to SCE’s system. The difference is especially pronounced where generators trigger transmission system network upgrades: the percentage for SCE is far lower than for PG&E. There are several reasons for the different results between the two utilities. First, differences may be due in part to procurement program rules since SCE’s Solar PV Program does not allow generators that trigger network upgrades to participate. Second, SCE and PG&E define their distribution and transmission voltages differently. PG&E considers distribution to be circuits less than 60 kilovolts (kV) and SCE considers distribution to be circuits 115 kV and below. For this reason, generator connections to PG&E’s system have a greater likelihood of impacting transmission since it is at a lower voltage. Third, SCE costs are based on many smaller projects, whereas PG&E’s results are based on fewer, substantially larger projects.

**Table 3. Percentage of Generators Triggering Upgrades when Interconnecting to the Distribution or Transmission System<sup>11</sup>**

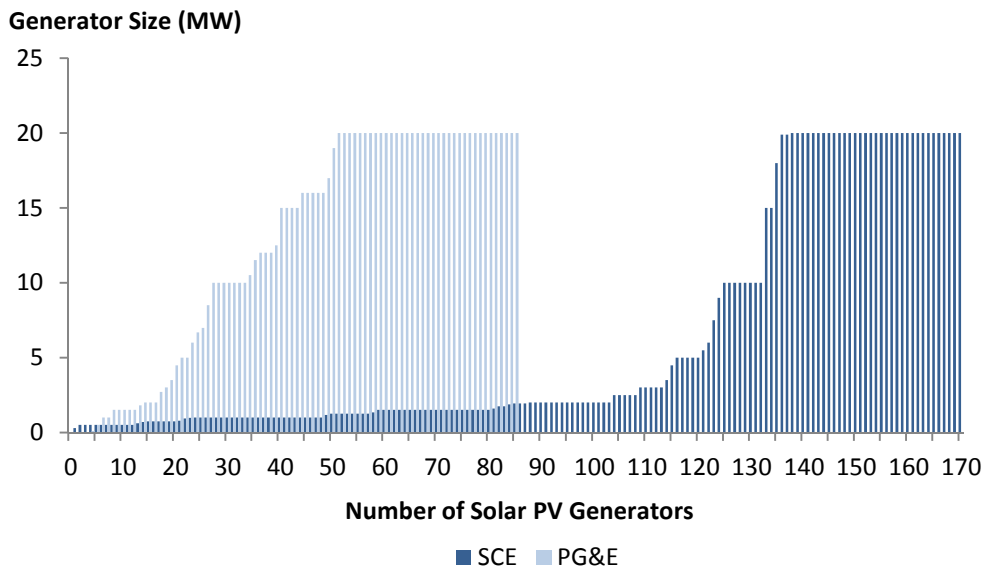
<i>Upgrade Type</i>	<i>SCE</i>	<i>PG&amp;E</i>	<i>SCE</i>	<i>PG&amp;E</i>
	<b>Distribution System</b>		<b>Transmission System</b>	
<b>Interconnection facilities</b>	89%	98%	82%	100%
<b>Distribution system upgrades</b>	56%	78%	18%	0%
<b>Transmission system network upgrades</b>	12%	57%	41%	100%

<sup>11</sup> Results between utilities may not be comparable due to differences in determination of transmission versus distribution system.

Figure 3 below shows the project size distribution of generators with study results. SCE has study results for 170 generators, with a median project size of 2 MW. In contrast, PG&E has study results for 85 generators, with a median project size of 15 MW. SCE has a far greater number of generators up to 5 MW in comparison to PG&E (120 and 22 respectively).

Differences in program design and resource quality may help explain these results. For example, SCE's Solar PV Program targets generators 1 to 2 MW while PG&E's Solar PV Program targets generators from 1 to 20 MW. In addition, SCE's feed-in tariff for renewable generators up to 1.5 MW has attracted more interest from solar PV developers than PG&E's feed-in tariff, likely resulting from higher solar insolation in SCE's service territory and higher time-of-delivery factors, which increase the value of solar PV.

**Figure 3. Project Size Distribution of Solar PV Generators with Interconnection Study Results**



Source: California Public Utilities Commission, 3rd Quarter 2011

Table 4 below shows the range and median upgrade costs for generators that trigger an upgrade in each upgrade cost category for the distribution and transmission system. It is important to note that when additional interconnection studies are completed, the median numbers and ranges could change significantly. Lastly, the “Total” column represents the range and median total costs when adding together costs triggered in each cost category for a particular project.

**Table 4. Range and Median Values of Interconnection Upgrade Costs for Solar PV Generators up to 20 MW<sup>12</sup>**

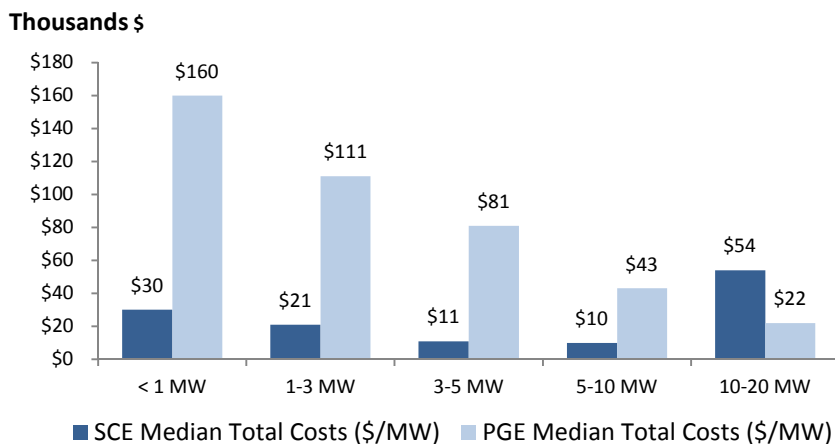
			<i>Interconnection Facilities</i>	<i>Distribution System Upgrades</i>	<i>Transmission System Network Upgrades</i>	<i>Total Upgrades</i>
<b>SCE</b>	Distribution System	Minimum	\$10,000	\$19,000	\$245,700	\$10,000
		Maximum	\$16,000,000	\$17,039,000	\$7,700,000	\$22,643,000
		Median	\$277,000	\$117,100	\$1,400,000	\$315,900
	Transmission System	Minimum	\$450,000	\$5,000	\$570,000	\$450,000
		Maximum	\$8,500,000	\$14,450,000	\$8,300,000	\$16,000,000
		Median	\$5,200,000	\$850,000	\$3,000,000	\$6,000,000
<b>PG&amp;E</b>	Distribution System	Minimum	\$30,400	\$2,000	\$65,000	\$30,400
		Maximum	\$12,002,000	\$16,000,000	\$28,616,850	\$32,118,000
		Median	\$570,000	\$2,000	\$1,040,000	\$2,054,500
	Transmission System	Minimum	\$310,000	\$0	\$570,000	\$1,227,000
		Maximum	\$3,327,400	\$0	\$8,300,000	\$12,703,000
		Median	\$479,167	\$0	\$3,000,000	\$2,483,000

<sup>12</sup> Results between utilities may not be comparable due to cost-related differences in the programs.

Table 4 above shows the wide range of estimated interconnection costs for each upgrade cost category, which shows how important it is to find an interconnection site whose point of interconnection is less likely to trigger upgrades. The large range in costs also demonstrates why it is important for utilities to provide developers with information about the areas of the IOU electrical systems likely to lead to less costly interconnection. In response to several CPUC orders, the IOUs have created interconnection maps to aid developers in selecting sites before they submit their interconnection application. Please go to the CPUC website to access the links to the IOU Interconnection Maps.<sup>13</sup>

On a total cost basis, the median cost for a generator seeking to interconnect to PG&E's distribution system was 6.5 times higher than the median cost for a generator seeking to interconnect to SCE's distribution system. Contributing to this discrepancy is that SCE has many more small generators with study results compared to PG&E, as demonstrated in Figure 3. In addition, because PG&E has lower transmission voltage, generators are more likely to have transmission impacts interconnecting to PG&E's system. On a levelized cost basis, however, PG&E still has higher total upgrade costs when compared to SCE. This is because transmission upgrades generally cost more than interconnection facilities and distribution upgrades and larger generators cost more to interconnect than smaller generators. See Figure 4 below for a comparison of levelized total upgrade costs for different project size ranges.

**Figure 4. Levelized Median Total Upgrade Costs for Different Solar PV Project Size Categories (Thousands \$/MW)<sup>14</sup>**



Source: California Public Utilities Commission, 3rd Quarter 2011

<sup>13</sup> See [www.cpuc.ca.gov/RAM](http://www.cpuc.ca.gov/RAM)

<sup>14</sup> Results between utilities may not be comparable due to cost-related differences in the programs.

## V. RECENT AND UPCOMING EVENTS

Table 5. Recent and Upcoming Events

Timing	Deliverable	Notes
August 18, 2011	Renewable Auction Mechanism (RAM) Resolution	The Commission approved the RAM resolution on August 18, 2011. On September 19, the IOUs filed compliance advice letters to modify their bidding protocols and tariffs based on the resolution. The first auction closed on November 15, 2011 and the second auction will close by May 31, 2012.
August 19, 2011	Distribution Interconnection Settlement	On August 19, 2011, the CPUC launched the Distribution Interconnection Settlement process as the next step in the “Rule 21 Working Group” in order to reach a settlement on issues regarding distributed generation interconnection to the utility distribution system. Staff’s goal is to create comprehensive rules and associated forms of agreement by December 31, 2011 for both CPUC and FERC jurisdictional interconnections.
September 22, 2011	Interconnection Order Instituting Rulemaking 11-09-011	The CPUC approved a new rulemaking to address distribution system interconnection related issues and to consider any settlements that result from the Distribution Interconnection Settlement process.
October 7, 2011	Proposed decision mailed for comment implementing portfolio content categories	The proposed decision implements the new portfolio content categories, set out in new Pub. Util. Code § 399.16 (SB 2 (1X, Simitian 2011)).
October 13, 2011	Renewable Feed-in Tariff (FIT) Staff Proposal	The administrative law judge in Rulemaking 11-05-005 released a Ruling seeking comment on a staff proposal on how to implement the amendments to Pub. Util. Code § 399.20. The proposal addresses all program elements, including price, standard contract terms and conditions, and other program implementation issues.
October 28, 2011	Proposed decision mailed for comment establishing new RPS Procurement Targets	The proposed decision would establish the new RPS procurement targets set out in new Pub. Util. Code § 399.15(b), (SB 2 (1X, Simitian 2011)).
October 31, 2011	2011 Market Price Referent (MPR) mailed for comment	The Energy Division released a draft resolution that would adopt the 2011 MPR values.