California Public Utilities Commission

RENEWABLES PORTFOLIO STANDARD

Quarterly Report

4th Quarter 2010

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 Section 399.11 – 399.19, established in 2002 under Senate Bill 1078 (Sher) and modified in 2006 under Senate Bill 107 (Simitian), requires 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. The CPUC and the California Energy Commission (CEC) are jointly responsible for implementing the program. Governor Schwarzenegger's Executive Orders S-14-08, issued on November 17, 2008, and S-21-09, issued on September 15, 2009, established a further goal of 33% renewable energy by 2020.

While the RPS program is the primarily vehicle for new utility-scale renewable energy development in California, it is not the only means by which new renewable generation is installed to serve customers. The California Solar Initiative (CSI) and Self-Generation Incentive Program (SGIP) also provide incentives to customers to install distributed generation consisting of solar photovoltaic, small wind, or fuel-cells.[1] While the electricity generated from the CSI and SGIP does not currently contribute towards the RPS requirements, it 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 provide approximately 68% of the state's electric retail sales[2] and analyzing this data provides significant insight into the state's RPS progress.

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

[2] According to the CEC's California Energy Demand 2010-2020 Adopted Forecast.

II. EXECUTIVE SUMMARY

Status of RPS Procurement

- 653 MW of new renewable capacity came online in 2010, almost double the amount that came online in 2009. This is the most renewable capacity to come online since the beginning of the RPS program. 300 MW of Alta, a 1,550 MW wind farm in Tehachapi, achieved commercial operation in 2010. This project is using the newly constructed segments of the Tehachapi transmission line.
- According to their compliance reports, the IOUs collectively served 15.4% of their 2009 electric load with renewable energy, up from 13% in 2008. PG&E served 14.4% of its 2009 load with RPS-eligible renewable energy, SCE with 17.4%, and SDG&E with 10.5%. The utilities will report their 2010 RPS percentages in their March 1st, 2011 RPS Compliance Filings, which will be posted on the CPUC website (www.cpuc.ca.gov/renewables) at that time.
- In the third and fourth quarters of 2010, the IOUs submitted six renewable contracts for CPUC approval and the Commission approved 34 previously submitted contracts.

Highlights of Recent and Upcoming Events

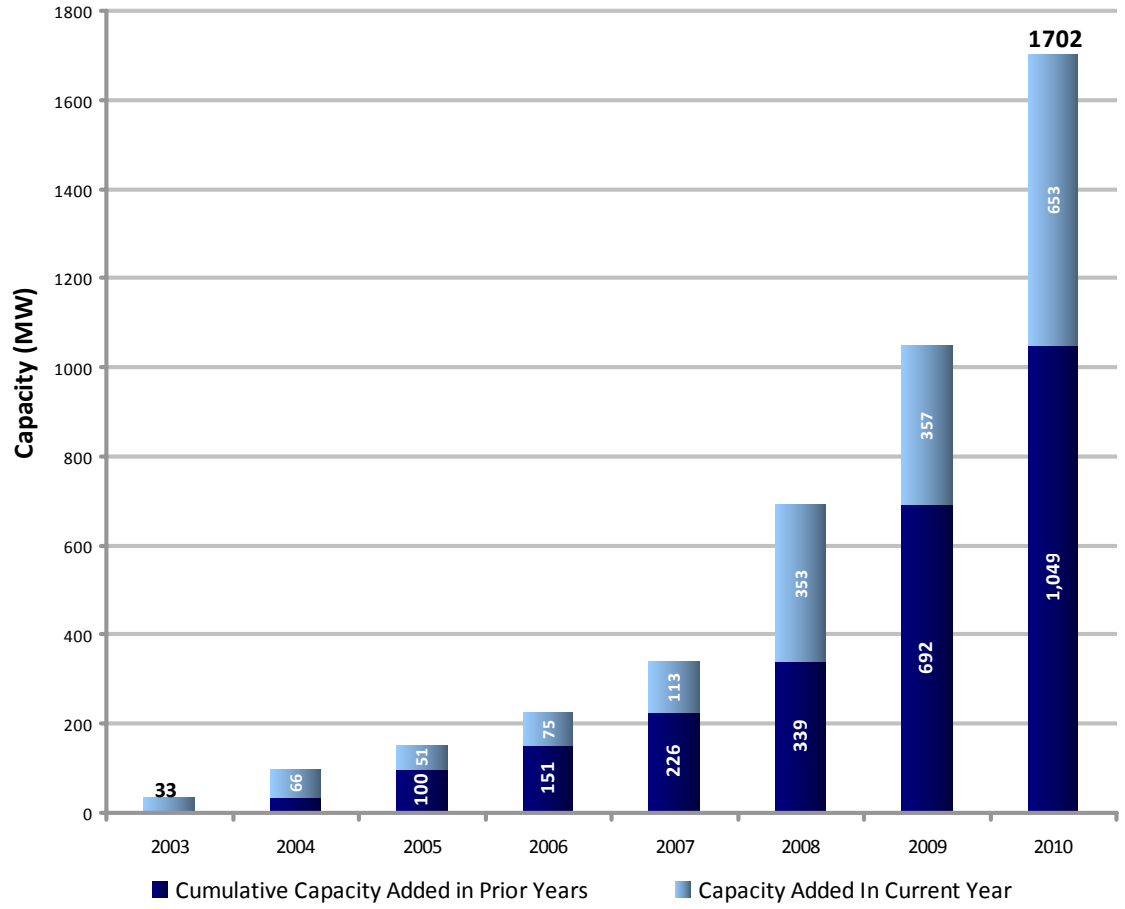
- The CPUC released the Long-Term Procurement Plans (LTPP) proceeding scoping memo, which adopts standardized planning assumptions for long-term RPS planning and directs the IOUs to file plans containing the system resources needed to accommodate the required set of six scenarios for 33% by 2020 RPS and one scenario for 20% by 2020 RPS.
- Energy Division held the second and third of three workshops reviewing the methodologies of the California Independent System Operator (CAISO) and PG&E's renewable integration models. Parties will continue comment on whether and how the models should be used to estimate renewable integration need and cost in LTPP.
- The Commission approved the Renewable Auction Mechanism (RAM), which creates a standardized and simplified procurement opportunity for renewable projects under 20 MW in size. It sets an initial program size of 1000 MW over two years. The IOUs will submit the required implementing advice letters on February 15, 2011.
- The Commission approved the Resolution to implement PG&E's Solar Photovoltaic (PV) Program. The Resolution adopts administration and implementation details of the 250 MW Independent Power Producer (IPP) portion of the Solar PV program approved by D.10-04-052. PG&E's first auction is scheduled to begin in February 2011.
- SDG&E filed two advice letters to implement its utility-owned generation (UOG) and IPP Solar PV Program. SDG&E can launch the program once the advice letters are approved by Commission.
- The CPUC will issue a ruling to define the scope of issues to implement Senate Bill 32 (Negrete McLeod, 2009).

III. PROGRESS TOWARDS A 20% RPS BY 2010

New Renewable Capacity Added in 2010

To date, 1,702 MW of new renewable capacity achieved commercial operation under the RPS program. Over 650 MW of new renewable capacity came online in 2010, almost double the amount that came online in 2009. Three-hundred megawatts of Alta, a 1,550 MW wind farm in Tehachapi, achieved commercial operation in 2010 and is using the newly constructed segments of the Tehachapi transmission line. The new renewable capacity consisted of solar PV, biomass, small hydro, biogas, and wind. Seventy percent of the new projects (435 MW) that achieved commercial operation in 2010 are in-state, whereas 30 percent are out-of-state.

Figure 1. RPS Capacity Installed Since 2003, By Year[3]



Source: California Public Utilities Commission, 4th Quarter 2010

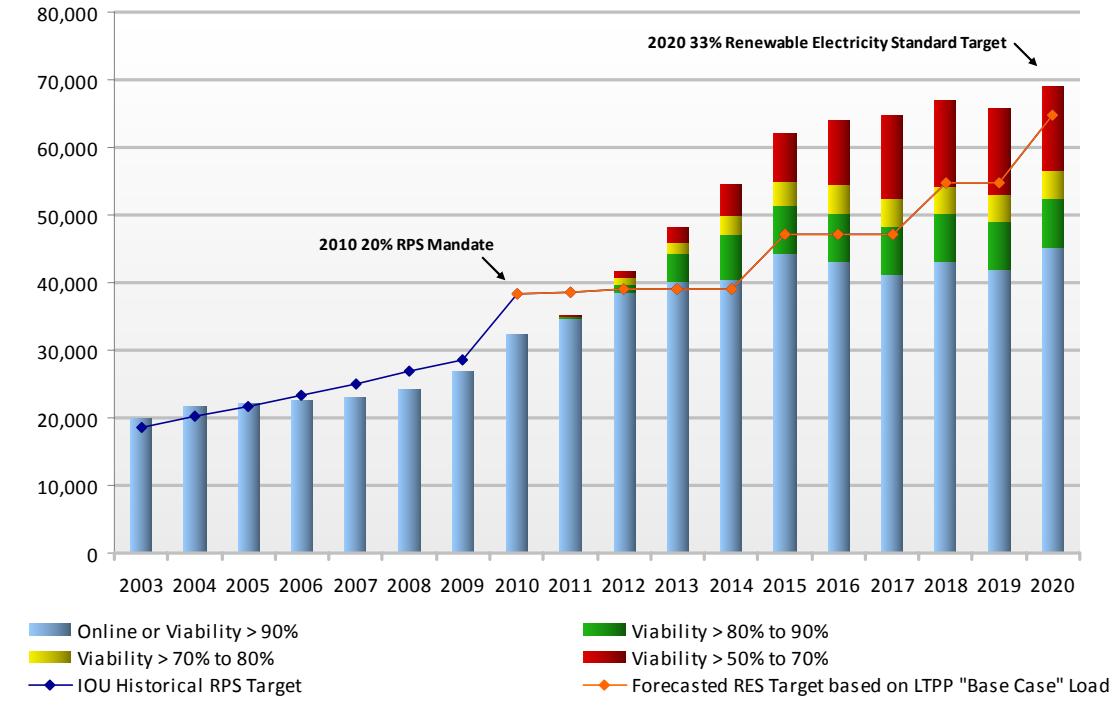
[3] Figure 1 only includes projects under contract for 10 years or more.

Table 1: Comparison of In-State versus Out-of-State Renewable Development in 2010

	Number of Projects	MW	GWh/y
In-State	7	435	1274
Out-of-State	3	218	551
Total	10	653	1825
Percentage In-State	70%	67%	70%

Figure 2 provides a forecast of IOU renewable energy deliveries from projects that are online and all executed RPS contracts as reported in the August 1st, 2010 RPS Compliance Filings. It also provides the risk-profile of this contracted generation by computing a project viability score for each executed contract. The calculator used to determine the viability score is available for download on the CPUC website.[4] The IOUs will report their actual 2010 RPS percentages in their March 1st, 2011 RPS Compliance Filings, which will be reported on the CPUC RPS website at that time.[5] Collectively, the IOUs have more renewable electricity under contract than needed to meet a 33% RPS target in 2020. However, not all of this electricity is anticipated to come online due to contract failure.

Figure 2: Risk Profile of Executed RPS Contracts



Source: California Public Utilities Commission, 4th Quarter 2010

[4] See http://www.cpuc.ca.gov/NR/rdonlyres/43C6BB0B-D475-49B9-BEF6-24F1F4C427AD/0/RPS_Project_Viability_Calculator_2009.xls

[5] See http://www.cpuc.ca.gov/renewables

About Figure 2:

- From 2003 to 2010, the IOU Historical RPS Target line represents 20% of IOU electrical generation.
- From 2010 to 2020, the Forecasted RES Target line represents the Air Resource's Board (ARB) required renewable percentage pursuant to the 33% Renewable Electricity Standard (RES).[6]
- The Forecasted RES Target line is the RES target multiplied by the LTPP "Base Case" Load Forecast, which is defined as the California Energy Commission's Integrated Energy Policy Report's 2009 Load Forecast plus incremental energy efficiency savings from IOU and non-utility programs implemented in the 2013-2020 period to achieve the Commission's energy efficiency savings goals.[7]
- Actual targets will be different than the forecasted targets due to differences in actual electrical load and consumer choice programs such as direct access that may lower IOU bundled retail sales.
- Figure 2 includes executed contracts (approved projects or projects pending Commission approval) and does not include any short-listed projects, future solicitations, RAM, or PV program projects. Thus, there is additional market interest not reflected in this chart.
- Figure 2 shows all existing executed contracts. It does not assume contract failure or re-contracting of expiring contracts.

[6] On Sept 23, 2010, the ARB approved the RES pursuant to Resolution 10-23 (http://www.arb.ca.gov/regact/2010/res2010/res1071.pdf). The RES must be adopted by the Office of Administrative Law before it goes into effect. The RES has four compliance intervals: 20% in 2012 through 2014; 24% in 2015 through 2017; 28% in 2018 through 2019; and 33% in 2020 and annually thereafter, which are depicted in Figure 2.

[7] See the LTPP Scoping Memo Attachment 1 for more information on the LTPP Base Case Load assumptions: http://docs.cpuc.ca.gov/efile/RULC/127543.pdf.

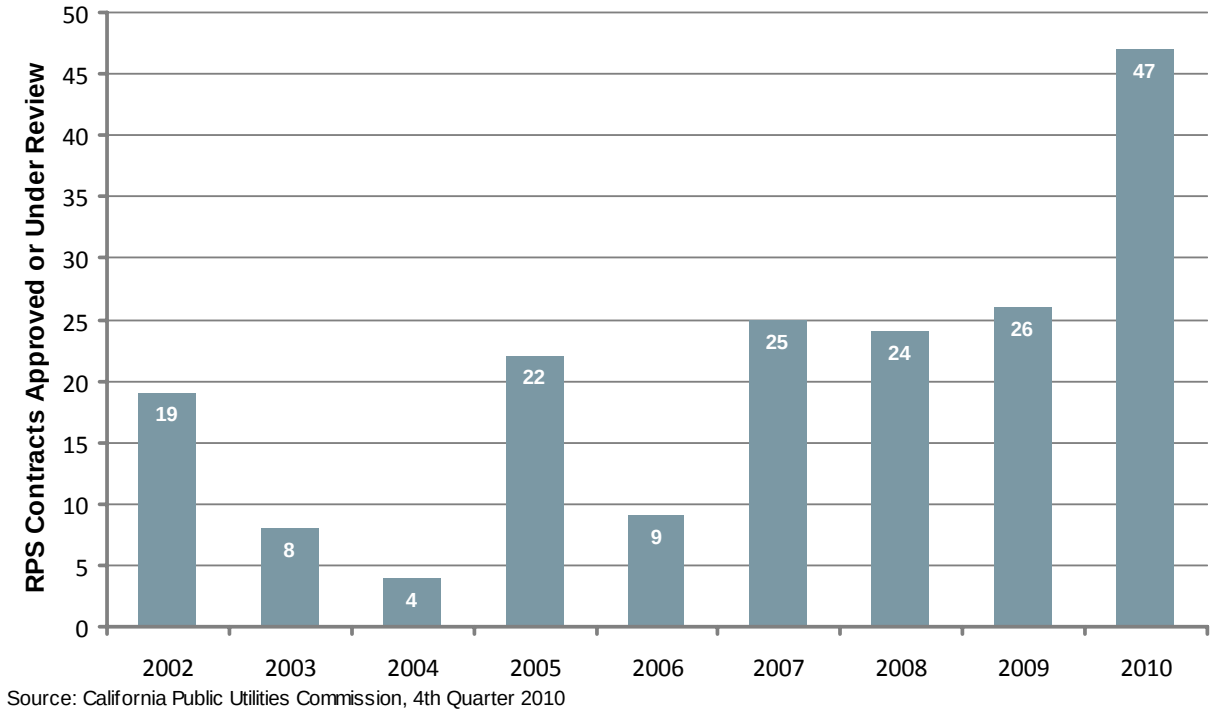
Contracting Activities in the Third and Fourth Quarters of 2010

Since 2002, the CPUC has approved 184 contracts for over 16,000 MW of renewable capacity. The CPUC approved one quarter of these contracts in 2010. As Table 2 below shows, the CPUC approved 22 contracts in the third quarter of 2010, the highest number of contracts approved in a quarter since the conception of the program. This spike in contract processing resulted from projects seeking the federal grant in lieu of the tax credit, which was set to expire December 31, 2010.[8] As a result, the CPUC prioritized review and approval of those contracts so that they could qualify for the federal grant. A total of six contracts were submitted in the third and fourth quarters of 2010, consisting of solar PV, geothermal, wind, and biomass.

Table 2. Utility Contracts Approved and Submitted in Q3 & Q4 of 2010

		PG&E		SCE		SDG&E		Large IOU Total	
		Number of Contracts	MW	Number of Contracts	MW	Number of Contracts	MW	Number of Contracts	MW
Q3	Approved	8	848	16	1,337	1	25	25	2,210
	Submitted	2	113	0	0	1	300	3	413
Q4	Approved	8	293	0	0	1	7.5	9	300.5
	Submitted	4	217	0	0	0	0	4	217

Figure 3: RPS Contracts Approved to date



Source: California Public Utilities Commission, 4th Quarter 2010

[8] The federal Tax Act of 2010 extends the federal grant in lieu of tax credit to December 31, 2011.

IV. PROGRAM UPDATE

Interconnection for System-Side Renewable Distributed Generation

The RPS solicitation process is the primary policy framework for the development of utility-scale renewable energy in California. The RPS program is designed to capture the least-cost, best-fit renewable projects for meeting California's energy needs. So far, successful projects that have been short-listed or have an executed contract tend to be large, since economies of scale make the projects more economically competitive. These projects take several years to develop, and are often located in remote areas that require new transmission. To spur more diverse market development, the Commission has created various programs to encourage renewable procurement in the small to medium-scale market segment. These programs include the IOU Solar PV programs, for a total procurement of 1,100 MW over a five year period; the feed-in tariff, for a total statewide cap of 750 MW; and the Renewable Auction Mechanism (RAM), with an initial procurement cap of 1,000 MW over a two-year period. This initial procurement cap is not limiting and will be expanded if the program is successful. See the second and third quarter 2010 RPS Reports to the Legislature for more information about each program.[9]

The potential benefits of the small to medium-scale distributed generation market segment are:

- Quick project development timelines
- Avoidance of new transmission
- Lower environmental impact
- Declining technology prices
- Hedge against riskier, large-scale renewable projects

Interconnection Requests have Increased Significantly over the Past Several Years

While this market segment can achieve quicker project development timelines compared to large-scale renewable energy projects, the increase in market interest over the past two years has overwhelmed the existing interconnection processes, leading to an interconnection application and study bottleneck. From 2008 to the present, there has been a dramatic increase in interconnection requests to the distribution system, which is defined as the low-voltage lines that transport electricity from the high-voltage transmission system to the end-user.

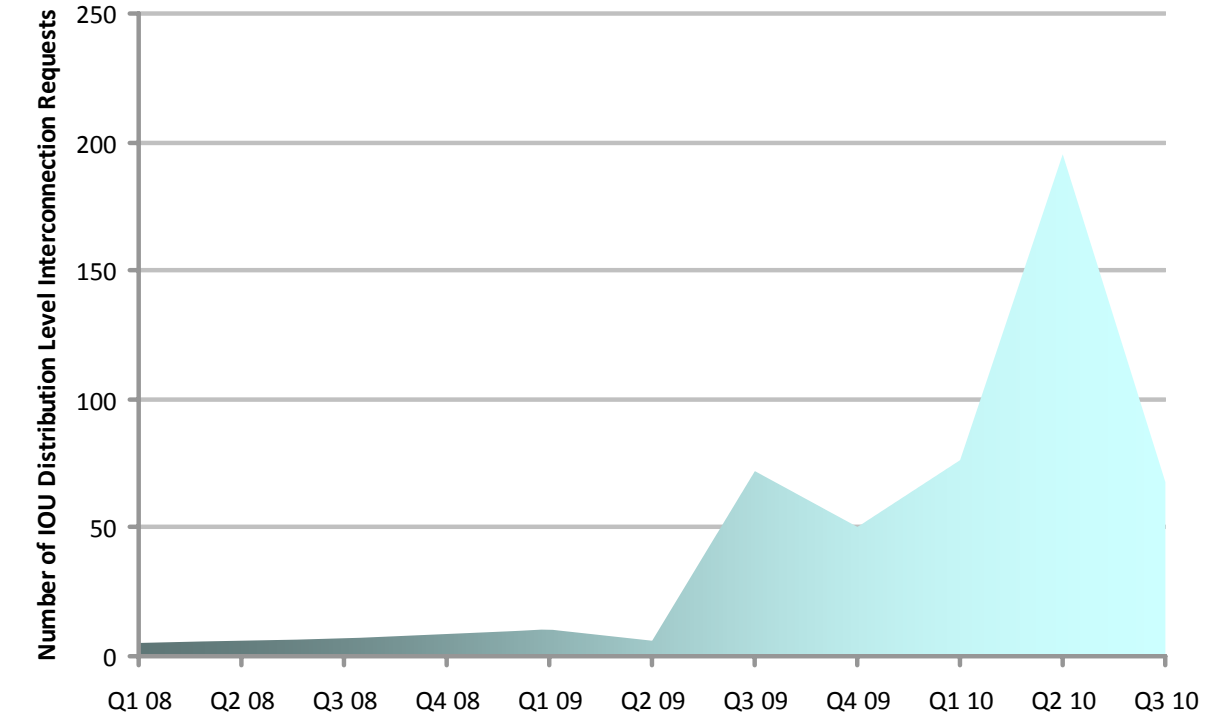
Each IOU defines distribution voltage differently. The distribution voltages for each IOU are:

- PG&E: less than 60 kilovolts (kV)
- SCE: less than 200 kV
- SDG&E: less than 69 kV

[9] http://www.cpuc.ca.gov/PUC/energy/Renewables/documents

As seen in Figure 4 below, distribution system interconnection requests for projects less than 20 MW have dramatically increased since the second quarter of 2009, and hit a peak in the second quarter of 2010. There are four main factors contributing to this exponential growth. First, renewable project developers are seeking sites on the distribution system instead of the transmission system in order to avoid the need for new transmission, which, if required, can significantly delay project development. Second, the price of solar PV, which is typically deployed in project sizes 20 MW or less, has decreased dramatically over the past two years, making projects of this size competitive with other renewable procurement opportunities. Third, it is generally less costly for a generator to interconnect to the distribution system. Lastly, the CPUC has approved and implemented numerous programs, including the feed-in tariff for projects up to 1.5 MW, the IOU Solar PV programs, and the Renewable Auction Mechanism, all of which simplify and streamline procurement for small to medium-scale renewable generators.

Figure 4. Interconnection Requests to IOU Distribution Systems (2008-2010)[10]



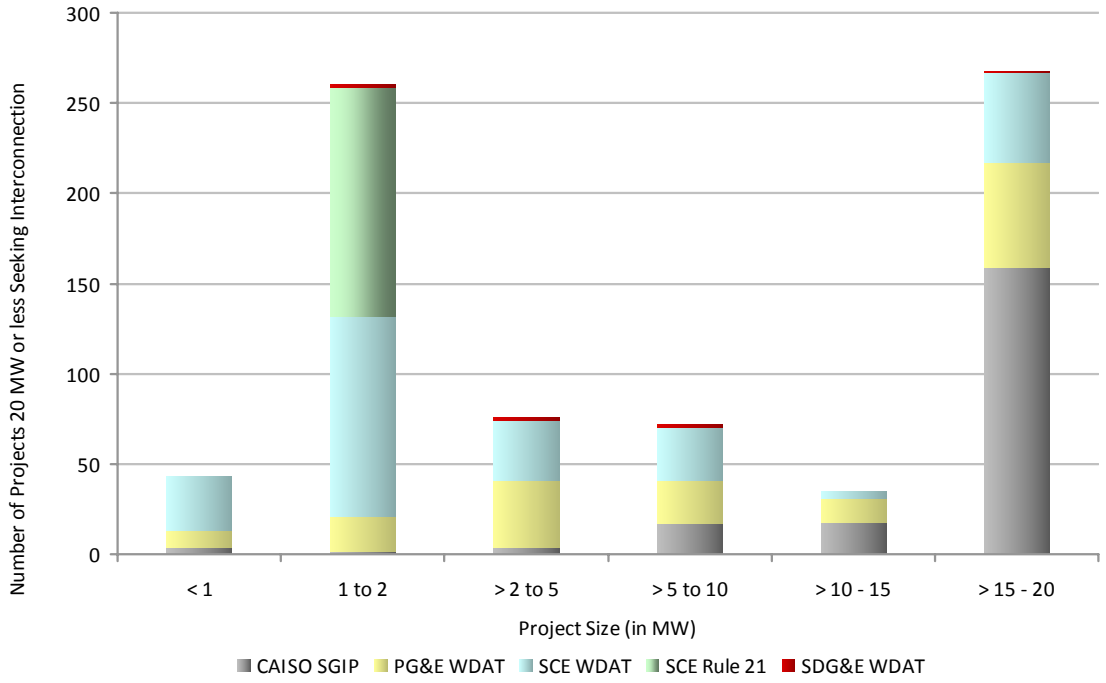
Source: California Public Utilities Commission, 4th Quarter 2010

[10] Includes all interconnection requests for PG&E, SCE, and SDGE, including active, withdrawn, and complete. Also includes both renewable and non-renewable technologies seeking interconnection to the distribution system.

Figure 5 below shows the allocation of projects up to 20 MW, by project size, seeking interconnection at the distribution and transmission level. The gray column represents projects seeking interconnection to the transmission system through the California Independent System Operator's (CAISO) small generator interconnection protocols (SGIP). All other columns represent projects seeking interconnection to the distribution system. There are two different processes that can be used to interconnect generators to the distribution system. Rule 21 is a state process and the Wholesale Distribution Access Tariff (WDAT) is a federal process. See Table 3 for a comparison of these different processes and Figure 7 for an explanation of which renewable program uses which interconnection process.

As Figure 5 shows, the majority of projects 20 MW and smaller are seeking interconnection to the distribution system. In addition, the majority of projects seeking interconnection to the transmission system are greater than 15 MW in size. Projects seeking interconnection to the distribution system range in size, but there is a high concentration of projects from one to two megawatts in SCE's service territory. This concentration is the result of the state's renewable programs, including the feed-in tariff up to 1.5 MW and SCE's 500 MW Solar PV Program (SPVP), which targets projects between one and two megawatts.

Figure 5. Allocation of Projects 20 MW and Less Seeking Interconnection (2008-2010)[11]



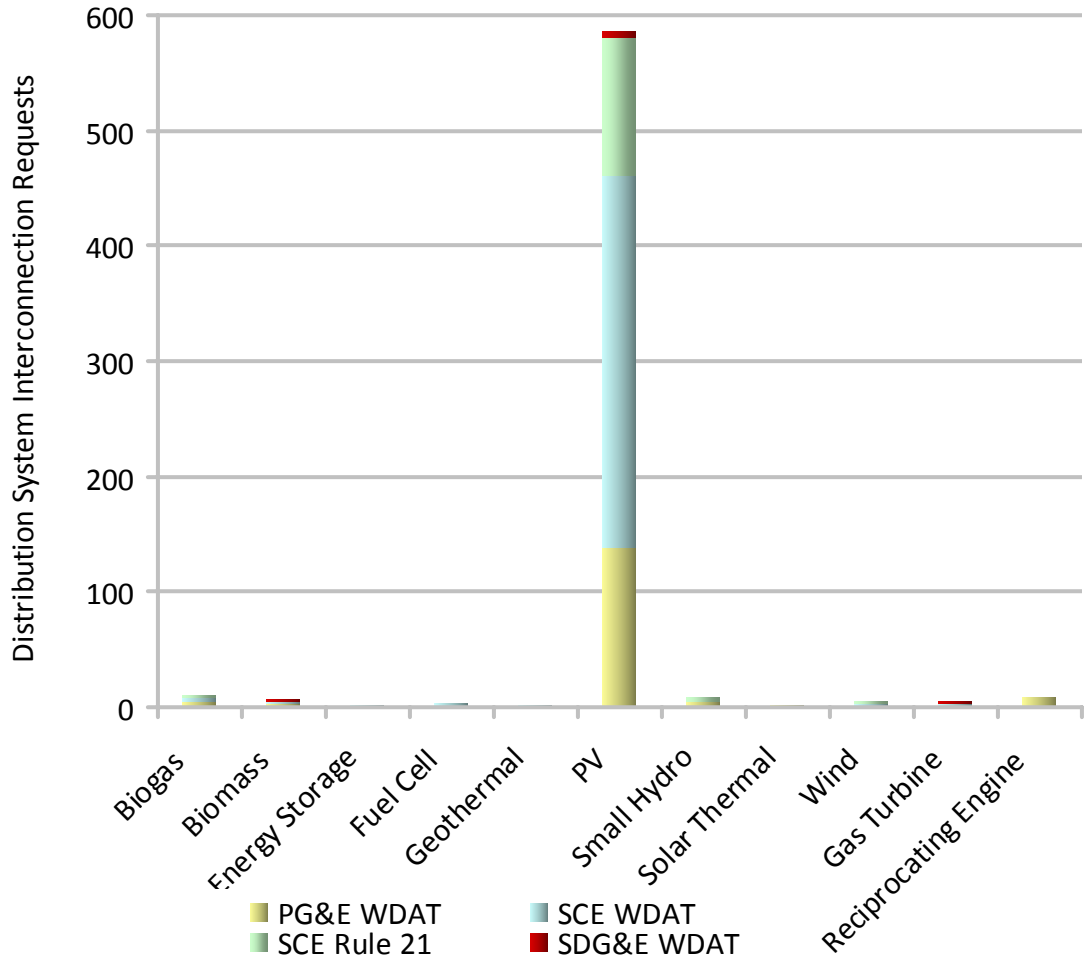
Source: California Public Utilities Commission, 4th Quarter 2010

[11] Includes all system-side interconnection requests, including active, withdrawn, and complete. Also includes both renewable and non-renewable technologies seeking interconnection.

In addition to interconnection of system-side generation, Rule 21 is used to interconnect customer generation (on the customer side of the meter). For this analysis, only system-side interconnection requests are included. Thus, all customer-side interconnection requests are excluded from the analysis.

Figure 6 below shows the types of technologies seeking interconnection to the distribution system. Over 90 percent of the projects are solar PV. Unlike most other technologies, solar PV can be installed on existing structures such as rooftops and parking lot structures, and throughout urban and suburban areas. Due to the dramatic decrease in material cost, solar PV's flexible siting options, and the belief that there is existing capacity on the distribution grid to interconnect new projects, interest in developing solar PV projects on the distribution system has increased significantly over the past two years.

Figure 6. Types of Technologies Seeking Interconnection to the Distribution System (2008-2010)[12]



Source: California Public Utilities Commission, 4th Quarter 2010

[12] Includes all system-side interconnection requests, including active, withdrawn, and complete. Also includes both renewable and non-renewable technologies seeking interconnection to the distribution system. Excludes all customer-side interconnection requests under Rule 21.

There are both Federal and State Interconnection Procedures for Small Generators

Table 3 below lists the different interconnection procedures available to generators. These procedures were not originally designed for large quantities of small projects seeking interconnection over the same time period. As a result, the CAISO and the utilities are backlogged in processing interconnection applications, and interconnection studies are significantly delayed.

Table 3: State and Federal Interconnection Processes

Process	Project Size Limit	Jurisdiction	Grid	Status	Notes
Rule 21	None	CPUC	Distribution or Transmission[13]	In use today	Typically used with customer programs or qualifying facilities
WDAT	None	FERC	Distribution	In use today, PG&E and SCE holding stakeholder reform process	Proposed reforms will be very similar to the CAISO's recently approved GIP
SGIP	20 MW	FERC	Transmission	No longer available, existing applications can transition to GIP	CAISO just concluded stakeholder reform process
LGIP[14]	None	FERC	Transmission	No longer available, merged with SGIP into GIP	Reformed from serial to cluster study process in 2009
GIP[15]	None	FERC	Transmission	FERC approved new tariff in December 2010	Combines SGIP and LGIP into one cluster study

In addition, these procedures include an expedited review process for small projects that have simple interconnection requirements. These expedited review processes consist of various screens that help determine if a project can be interconnected without the need for detailed studies.

Table 4: Expedited Interconnection Processes in Rule 21 and WDAT

Interconnection Process	Expedited Review	Project Size Limit	Screens	Timing
Rule 21	Initial Review, Simplified Interconnection	None	Must pass 8 Screens[16]	< 1 month
WDAT	Fast Track	2 MW	Must pass 10 screens;[17] which were derived from Rule 21	≈ 1 month
GIP	Fast Track	5 MW	Must pass 9 screens	≈ 1 month

[13] Rule 21 has not been used for interconnection to the distribution system.

[14] "LGIP" is the Large Generator Interconnection Procedures.

[15] "GIP" is defined as the Generator Interconnection Procedures.

[16] See flow chart for an illustration of the 8 screens: http://www.energy.ca.gov/distgen/interconnection/application.html

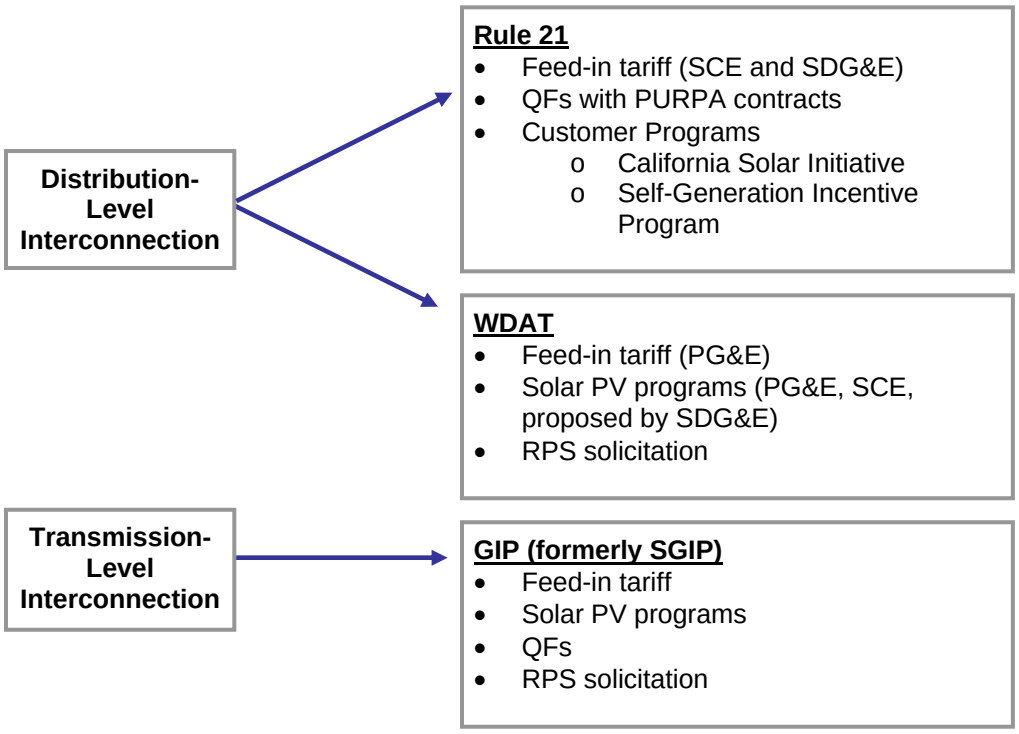
[17] See Section 2 on pages 6-8: http://www.sce.com/NR/sc3/tm2/RPA/Reg_Info_Ctr/OpenAccess/WDAT/attachment_g.pdf.

IOUs are Using both Rule 21 and WDAT for Projects Interconnecting to the Distribution System

Due to the existence of two interconnection procedures for distribution-level interconnection, the IOUs are using both Rule 21 and WDAT for their system-side renewable DG programs and Rule 21 for their DG customer programs. Figure 6 below shows the interconnection process utilized for each DG program. Historically, Rule 21 was created to interconnect qualifying facilities (QFs). QFs were created under the Public Utility Regulatory Policies Act (PURPA) of 1978 and are either renewable or cogeneration facilities. In 1990, at the peak of renewable QF development, approximately 5,000 MW of renewable QFs were interconnected and delivering renewable electricity.

FERC established federal interconnection standards for small generators in 2005. Today, Rule 21 is used for customer programs that consume the generated electricity onsite and qualifying facilities. The IOUs are using the federal interconnection standards for most projects participating in the RPS. Due to the upsurge in renewable DG interconnection requests, the IOUs are in the process of reforming their WDATs. See the following section for more information.

Figure 7: Interconnection Procedures for Projects 20 MW and Smaller



Summary of Past and Current Interconnection Reforms

The CAISO has reformed LGIP and SGIP, creating one cluster study process called the Generator Interconnection Procedures (GIP)

In 2009, the CAISO reformed the Large Generator Interconnection Procedures (LGIP) for projects seeking interconnection to the transmission system. This reform process changed the serial study process into a cluster study process in order to alleviate the study backlog and to create a more efficient study process. In April 2010, the CAISO initiated a stakeholder process to reform SGIP.[18] The CAISO concluded that one cluster study process that would study the small and large generators together was needed to relieve the backlog and to study the small generators more efficiently. In December 2010, FERC approved the CAISO's revised GIP. See Table 3 above for a comparison of LGIP, SGIP, WDAT, and GIP.

The revised GIP:

- Combines the large and small generators into one cluster study process
- Revises study fee amount and payment schedule
- Creates an independent study process, similar to the former serial process, for projects that are electrically independent and that are far along in the project development process
- Amends the Fast Track process
    - Increases project size limit from 2 MW to 5 MW
    - Eliminates the tenth screen, which prohibited construction of new facilities to accommodate interconnection of the generator

IOU WDAT stakeholder reform process is underway

When SGIP was first created in 2005, the IOUs adopted the FERC-approved SGIP tariff for their WDATs, which is the federal interconnection tariff for the distribution system. SCE and PG&E are currently reforming their WDATs in order to relieve the study backlog by proposing much of the same reforms adopted in GIP, including the change from a serial to a cluster study process and the independent study process. They are both holding stakeholder processes in order to consider the unique attributes of the distribution system and make the appropriate changes to WDAT.

Both SCE and PG&E intend to file their revised WDATs with FERC in February of 2011. While there will be many similarities between the proposed WDATs and the CAISO's GIP tariff, the IOUs have stated through their stakeholder processes that they do not intend to adopt all of the CAISO's changes. At this time, SDG&E does not intend to reform its WDAT since it does not have an interconnection study backlog.

[18] http://www.caiso.com/275e/275ed48c685e0.html

V. RECENT AND UPCOMING EVENTS

Table 5. Recent and Upcoming Events

Timing	Deliverable	Notes
October 22 and November 30, 2010	Renewable Integration Workshops	Energy Division held the second and third of three workshops reviewing the methodologies of CAISO and PG&E's renewable integration models. Parties will continue to provide comment on whether and how the models should be used to estimate renewable integration need and cost in LTPP. The LTPP Scoping Memo (noted below) requested that CAISO and PG&E provide integration modeling results for several updated 2020 renewable scenarios.
December 1, 2010	SDG&E Solar PV Program Advice Letters	SDG&E filed two advice letters to implement its Solar Energy Project. SDG&E filed one advice letter to implement its utility-owned program, and a second to implement its solar PV program for independent power producers. The second advice letter will require the Commission to adopt a Resolution before the program goes into effect.
December 2, 2010	SCE Solar PV Program (SPVP) Forum	SCE held its first SPVP Program Forum to explain the results of its first SPVP solicitation and to elicit feedback from stakeholders. SCE will use the feedback from the Program Forum to inform changes and improvements to SPVP and will file an advice letter with the Commission to implement those changes.
December 3, 2010	Scoping Memo in 2010 Long-Term Procurement Plan proceeding	The scoping memo adopts standardized planning assumptions for long-term RPS planning and directs IOUs to file plans containing the system resources needed to accommodate the required set of six scenarios for 33% by 2020 RPS and one scenario for 20% by 2020 RPS.
December 16, 2010	Decision adopting a Renewable Auction Mechanism (RAM) for renewable projects up to 20 MW	The decision authorized RAM, a streamlined and simplified procurement mechanism for small renewable generators up to 20 MW. The program initially sets a procurement cap of 1000 MW over 2 years. It also requires a simple, non-negotiable standard contract, and project selection based on least-cost projects until the IOU reaches the procurement cap for each auction.

Timing	Deliverable	Notes
December 16, 2010	PG&E Solar PV Resolution	The resolution adopts administration and implementation details of the 250 MW PPA portion of the Solar PV program approved by D.10-04-052. PG&E's first auction is scheduled to begin in February 2011.
February, 2011	PG&E and SCE will submit revised WDAT tariff language with FERC	PG&E and SCE are working with stakeholders to reform their WDAT tariffs. Both IOUs circulated draft tariff language for stakeholder review and intend to file revised tariff language with FERC in February of 2011.
February 15, 2011	RAM Implementation Advice Letters	Pursuant to D.10-12-048, the IOUs are required to file advice letters on February 15, 2011 to implement RAM. The advice letters must include the IOUs' standard contract, procurement protocols, auction dates, and type and amount of each product that the IOU will solicit in each auction.
First Quarter, 2011	Senate Bill 32	The CPUC will issue a ruling to define the scope of issues to implement PU Code Section 399.20.