
Renewable Auction Mechanism (RAM): New Procurement Tool for Distributed Renewable Generation

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Presentation Overview

- Overview of the Renewables Portfolio Program (RPS)
- Status of RPS procurement
- RPS procurement strategy
- RAM program overview
- RAM implementation

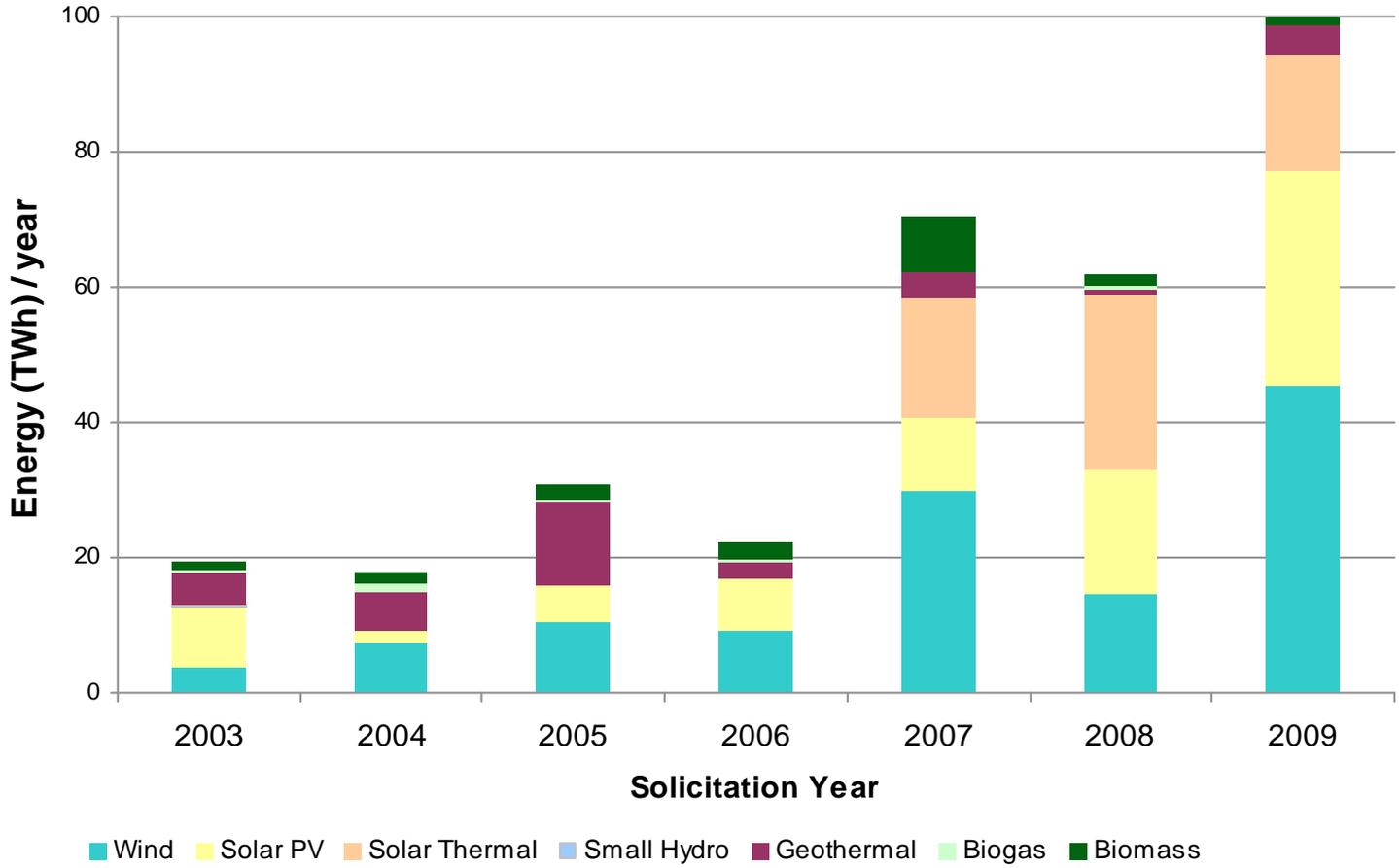


Status of RPS Procurement

- CPUC has approved **184 contracts** for over **16,000 MW** of new and existing eligible renewable energy capacity (5,300 MW out-of-state)
 - More than **4,500 MW** of contracts under review, nearly all for new capacity (2,000 MW out-of-state)
 - **2,000 MW** of new capacity is online
 - Forecasting additional **1,200 MW** of new capacity in 2011
- IOUs are forecasted to achieve 20% RPS in the 2011 – 2012 timeframe
- IOUs are aggressively contracting for the 33% RPS goal
 - IOUs have contracted enough to achieve 33% on a contracted basis
 - CPUC assumes a portion of these projects will fail and IOUs will need to procure replacement power



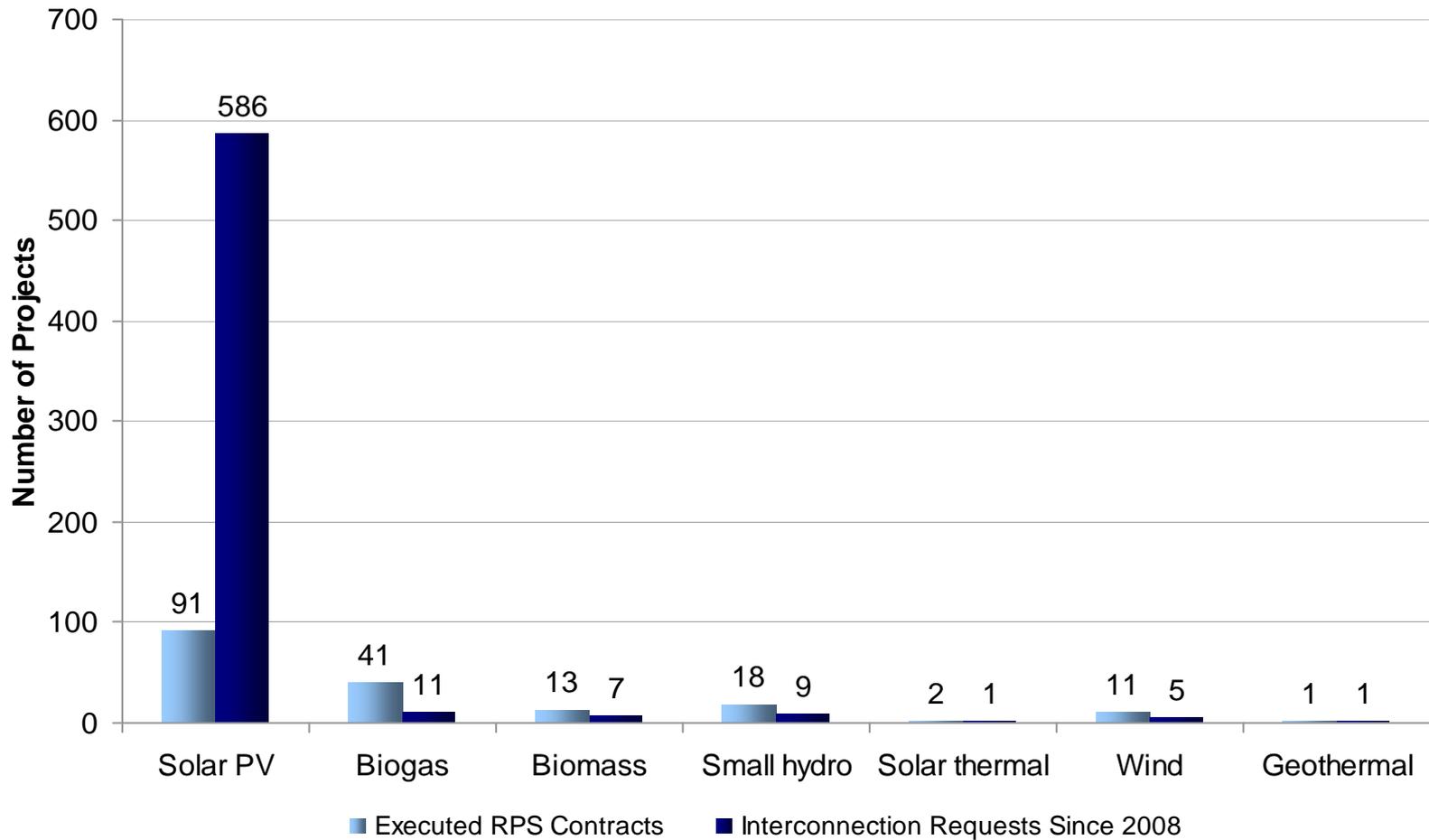
RPS Solicitation Bids by Fuel Type



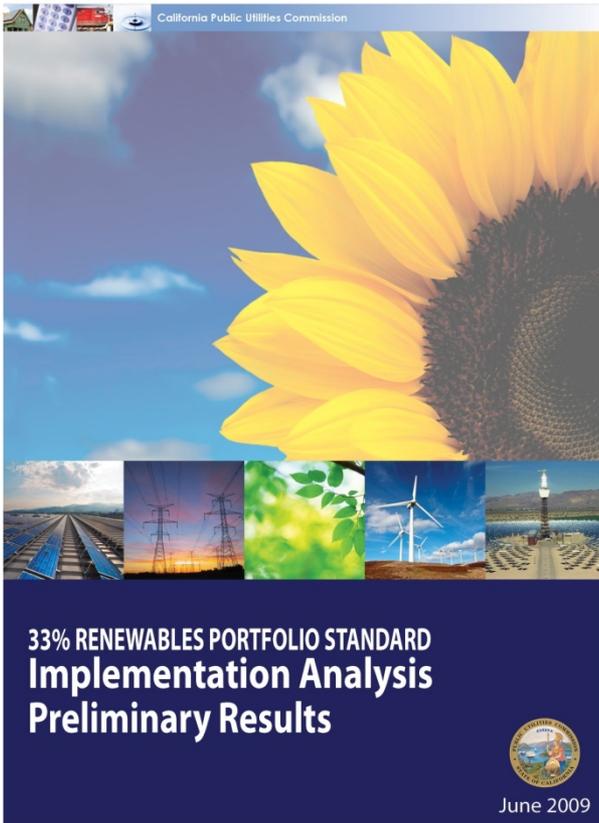
Source: California Public Utilities Commission, 1st Quarter 2011



Interconnection Requests for Projects up to 20 MW (2008 - 2010)



Diversify RPS Procurement Strategy?



- In June 2009, CPUC staff issued an implementation assessment of the 33% by 2020 RPS goal
- Concluded that it will be challenging to permit and construct the generation and transmission needed to achieve 33% by 2020.
- Noted that California might need to diversify its current procurement strategy, which is largely dependent on large utility-scale projects

Link to report - <http://www.cpuc.ca.gov/33percent>



Why Pursue DG Procurement Strategy?

- In between the RPS program and the customer-side DG programs (e.g., California Solar Initiative) is a potentially vast, untapped market segment for system-side renewable DG. Benefits of this market segment include:
 - Quick project development timelines
 - Avoidance of new transmission
 - Lower environmental impact
 - Declining technology prices
 - Insurance for riskier, large-scale renewable projects



RPS WDG Procurement Options

- AB 1969 Feed-in Tariff – started 2008
 - 1.5 MW – up to 3 MW when SB 32 is implemented
 - Standard contract and fixed price
- Utility Solar PV Programs – started 2010
 - Solar PV, 1- 20 or 1 -2 MW in size – program specific
 - Standard contract and pay as bid
- SCE Voluntary Program – started 2007 and cancelled 2010
 - All technologies, 1 – 20 MW in size
 - Standard contract and pay as bid
- Renewable Auction Mechanism (RAM) – start Q3/Q4 2011 timeframe
 - All technologies, 0 - 20 MW in size
 - Standard contract and pay as bid
- RPS Annual Solicitations and Bilateral Contracts - ongoing
 - All technologies, min size 1 MW
 - Negotiate price and contract terms and conditions



RAM Program Overview

- On December 16, 2010, the Commission adopted RAM via Decision 10-12-048
 - Initial 1000 MW procurement cap over 2 years
 - Projects up to 20 MW in size and any RPS renewable technology
 - Projects located in the IOU service territory
 - Projects can interconnect at the distribution or transmission level
 - Projects must achieve commercial operation within 18 months of executed contract
 - Each IOU must hold 2 auctions per year

Link to RAM webpage: <http://www.cpuc.ca.gov/RAM>



Key Program Design Elements of RAM

- Project viability screens
- Procurement categories based on product
- Market-based pricing
- Standard contract
- Cost containment mechanism
- Interconnection Maps
- Process for modifying program



Project Viability Screens

- Seller must meet minimum criteria to participate in the auction in order to lower risk of project failure
 - **Site Control:** 100% site control through (a) direct ownership, (b) lease or (c) an option to lease or purchase that may be exercised upon award of a RAM contract
 - **Development Experience:** One member of the development team has (a) completed at least one project of similar technology and capacity or (b) begun construction of at least one other similar project
 - **Commercialized Technology:** Project is based on commercialized technology
 - **Interconnection Application:** Interconnection application has been filed



Technologies in same product category compared to each other

- IOUs can solicit three products:
 - Baseload (e.g. biomass, geothermal)
 - Peaking intermittent (e.g. solar)
 - Non-peaking intermittent (e.g. wind)
- IOUs choose how much of each product to procure before solicitation
 - **SDG&E** proposed almost all peaking product
 - **PG&E** proposed one third of its procurement to come from each category (about 35 MW per auction)
 - **SCE** proposed up to 130 MW of peaking as-available and up to 65 MW in the other categories



Market-Based Pricing

- Seller develops bid price that reflects cost to build a project and provide a return on investment
- Bids are selected on price-only
- Lowest price bids are selected until the auction capacity cap or revenue requirement cap is reached
- Bid price is not negotiable and is paid as bid



Standard Contract

- Standard contract should be based on the IOUs' existing standard contracts for small renewable generators
 - For example, CPUC has already approved standard contracts for IOU Solar PV Programs
- Terms and conditions are set before the auction, no negotiations are allowed
- Each IOU submitted proposed contracts to the CPUC on February 25, 2011
- Decision requires certain terms to ensure there is “skin in the game”:
 - 18 month online date
 - Project development deposit
 - Performance deposit



Interconnection Maps

- IOUs are required to provide maps to assist developers in identifying good interconnection sites:
 - Interconnection is one of the most expensive and uncertain steps in project development for system-side DG
 - Greater transparency of the distribution system will allow project developers to identify good sites to interconnect and will lower development costs
 - IOUs must provide capacity or available capacity at the substation and circuit level for their distribution systems
 - IOUs already have solar PV maps for solar PV programs; RAM requires IOUs to improve those maps and provide more granular information



RAM Implementation Schedule

- IOUs submitted proposed contracts and program design elements to the CPUC on February 25, 2011
- CPUC must approve contracts and implementation details before IOUs hold first auction
- First RAM auction in Q3 or Q4 2011 timeframe
 - IOUs directed to hold auction at the same time



More Information

CPUC RPS Website:

- www.cpuc.ca.gov/renewables

CPUC RPS RAM Website:

- <http://www.cpuc.ca.gov/RAM>

CPUC Feed-in Tariff Website:

- <http://www.cpuc.ca.gov/feedintariff>

Questions:

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Backup Slides



Guiding Principles for DG Procurement

Operating Assumptions:

- Sufficient number of developers in the DG market segment to ensure competition.
- Projects greater than 20 MW would participate in RPS solicitations

Guiding Principles for DG program:

- Identifies least-cost viable projects that can interconnect quickly
- Creates a sustainable and long-term market for system-side renewable DG projects
- Provides sufficient payment to simulate untapped market segments at the distribution level while preserving competition
- Minimizes the transaction costs for the seller, buyer, and the regulator
- Equitably allocates risk between the buyer and the seller
- Adequately addresses project viability



CPUC AB 1969 Feed-in Tariff Program

- Available for RPS-eligible technologies up to 1.5 MW, price is the market price referent (about \$100 - \$120/MWh)
- CPUC will began implementing changes to PU Code Section 399.20, revised by SB 32, in Q1 2011
- Nearly 40 MW are under contract and 12.6 MW are online and operating

FIT Contracts by Utility

IOU	Contracts	Capacity (MW)
PG&E	36	32.7
SCE	1	1.1
SDG&E	3	4.5
Total	40	38.5

FIT Contracts by Technology

Technology	Contracts	Capacity (MW)
Biogas	15	16.3
Biomass	1	0.8
Solar PV	10	14.4
Small Hydro	14	6.85
Total	40	38.5



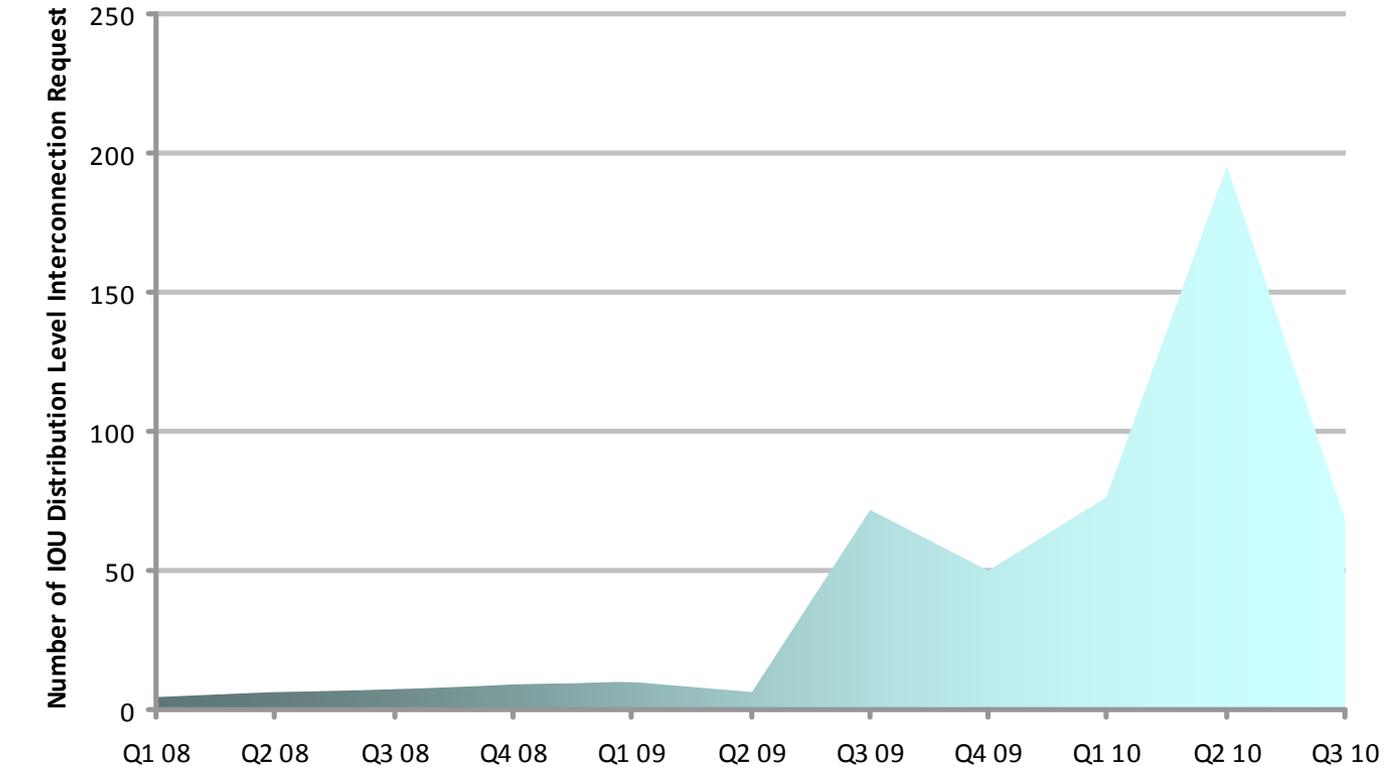
IOU Solar PV Program Overview

- CPUC authorized 3 IOU PV programs for 1100 MW over 5 years
 - SCE: 250 MW IPP, 250 MW utility-owned, primarily rooftop
 - PG&E: 250 MW IPP, 250 MW utility-owned, primarily ground mount
 - SDG&E: 74 MW IPP, 26 MW UOG, primarily ground mount
- SCE has procured nearly 50 MW through IPPs
 - 63% is rooftop, 37% is ground mount
 - SCE has almost exhausted ground mount allowance (25 MW)
- PG&E's first auction began February 1, 2011
- SDG&E program in implementation phase
- 4 utility-owned projects have achieved commercial operation
 - SCE: 3 projects for 6.8 MW, additional 14 projects estimated to come online in 2011 and 2012
 - PG&E: 1 project for 2 MW online, 3 projects estimated to come online in 2011



Increase in Interconnection Requests

Total Interconnection Requests for SGIP and WDAT.* 2008-2010



Source: California Public Utilities Commission, 4th Quarter 2010

* Small Generator Interconnection Process (managed by California Independent System Operator) and Wholesale Distributed Access Tariff (managed by each IOU)



Interconnection Delay DG Development?

- Interconnection procedures were **not designed for large quantities** of small projects seeking interconnection in the same time period
 - CAISO and the IOUs are **backlogged** in processing interconnection applications and interconnection **studies are significantly delayed**
- The CAISO has reformed LGIP and SGIP, **creating one cluster study process called “GIP”**:
 - Combines the large and small generators into **one cluster study**
 - **Revises study fee amount** and payment schedule
 - Creates an **independent study process** for projects that are electrically independent and far along in project development
 - Amends **Fast Track** requirements to allow more projects to qualify and obviate the need for interconnection studies



State & Federal Interconnection Procedures

- Rule 21
 - CPUC jurisdictional
 - State interconnection procedure for the distribution system
 - Available since the late seventies, but CPUC and the Energy Commission reformed it in 2000 to expedite review of self-generation
 - Would require reform if use is expanded
 - Used by self-generation programs, QFs, and SCE and SDG&E's FIT
- Wholesale Distribution Access Tariff (WDAT)
 - FERC jurisdictional, designed by each individual IOU for the distribution system
 - Based on the CAISO's Generator Interconnection Protocols (GIP)
 - IOUs submitted WDAT amendments to FERC the beginning of March to conform WDAT to GIP tariff
 - Required in IOU Solar PV programs, PG&E's FIT

