

US EPA ARCHIVE DOCUMENT



California's Bioenergy Programs



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Presentation Outline

- Overview of California's RPS Program
- RPS Procurement Status and Programs
- RPS procurement options for bioenergy technologies





RPS Program Background

A market-based program that requires all retail sellers of electricity to procure increasing amounts of renewable energy through 2020

- California's RPS program was established in statute in 2002
 - Senate Bill (SB) 1078 (Sher, 2002) **20% by 2017**;
 - SB 107 (Simitian, 2006) **20% by 2010**;
 - SB 2 (1X) (Simitian, 2011) **33% by 2020**
- RPS-obligated entities
 - CPUC regulates: Investor Owned Utilities (IOUs), Electric Service Providers (ESPs), Community Choice Aggregators (CCAs); and
 - CEC and CARB oversight and enforcement, respectively: Publicly Owned Utilities (POUs)

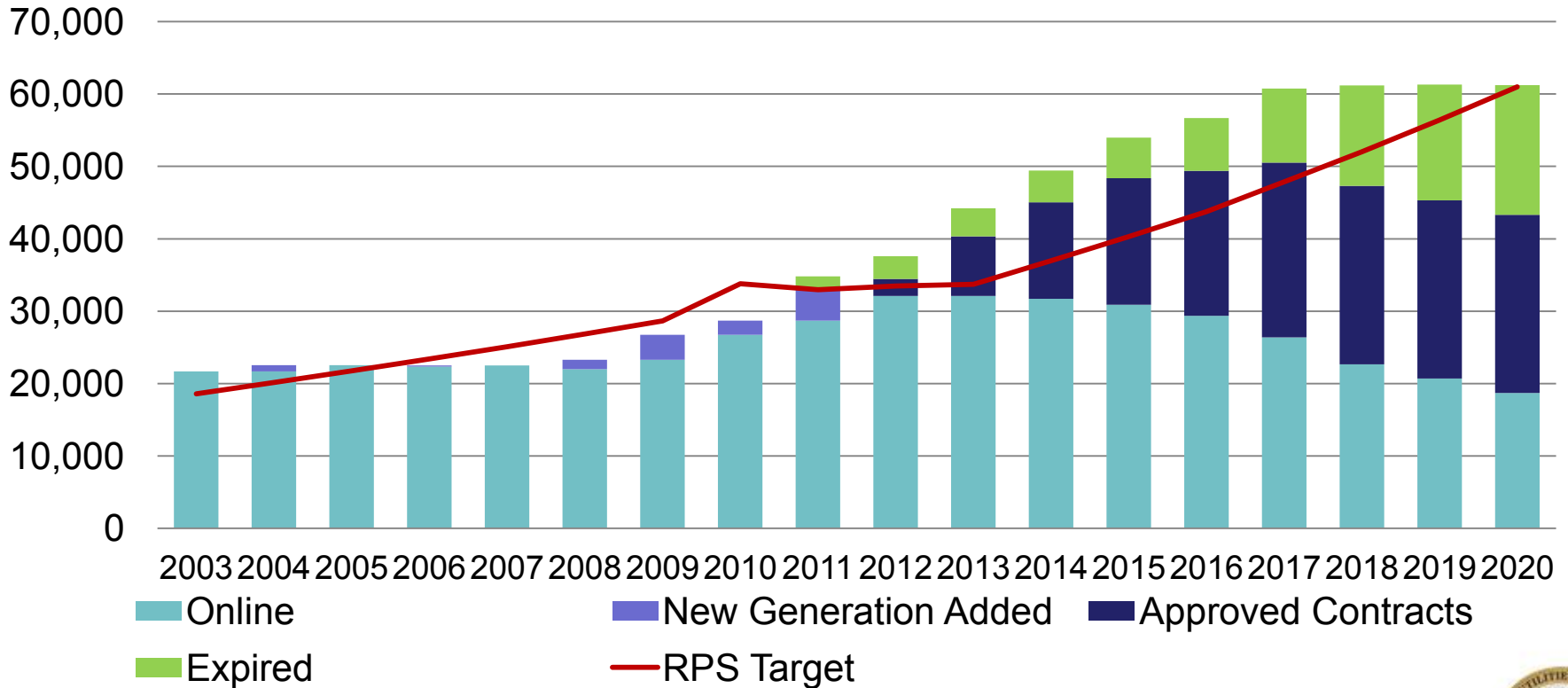




Forecast Compliance Position, Risk Adjusted

Contracted for RPS Projects Online and In Development

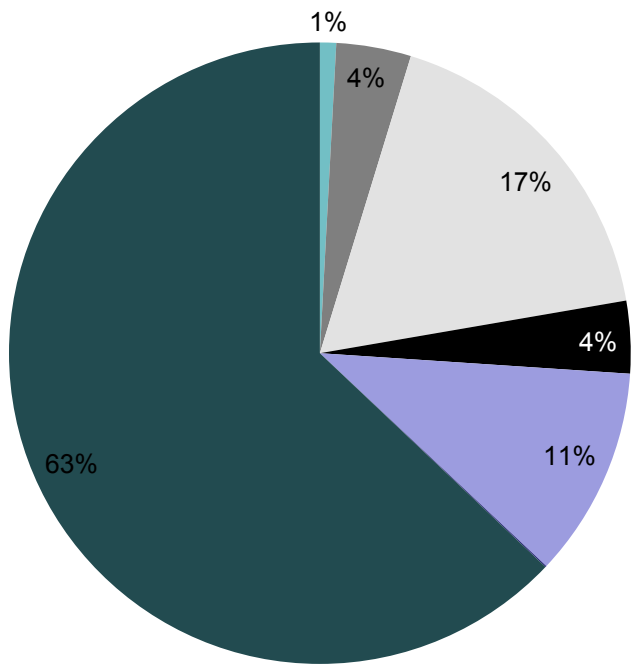
RPS Procurement 2003-2020 (GWh)





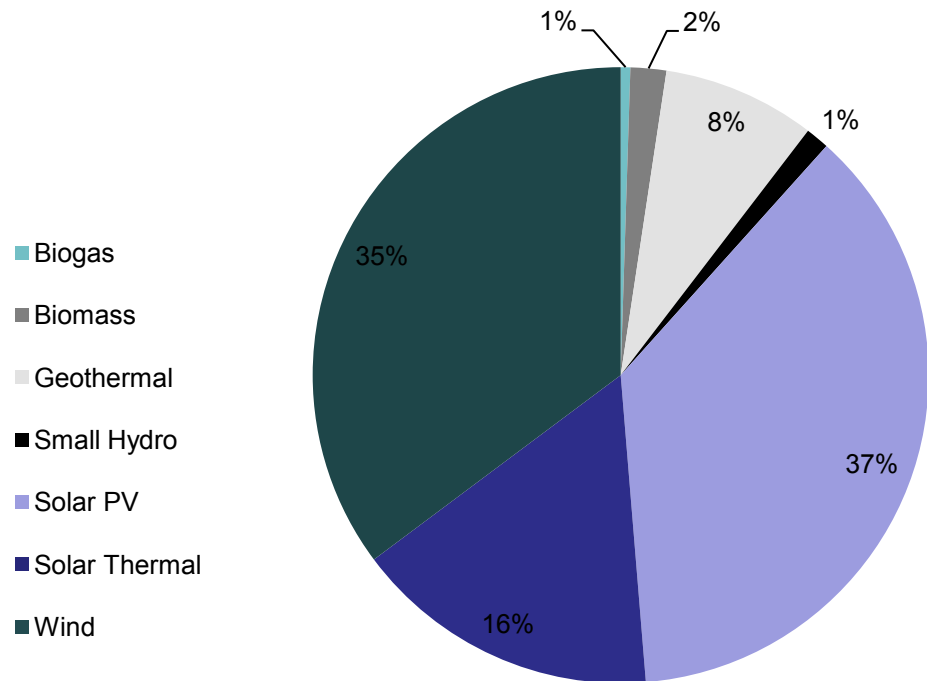
Current and Projected RPS Resource Mix (GWh)

Resource Mix of Capacity Online 2012



2011 Generation: Approximately 34,000 GWh

Resource Mix of Capacity Forecasted Online 2020



2020 Generation (forecast): Approximately 55,000 GWh





CPUC Programs Available to Bioenergy Facilities

- Renewable Portfolio Standard (RPS) Solicitations
- Renewable Auction Mechanism (RAM) Standard Contracts
- Feed-In Tariff (FIT) – 2 options
 - Re-MAT
 - CHP
- Qualifying Facilities (QF)
- Bilateral Power Purchase Agreements (PPA)
- Additional distributed generation programs:
 - Net Energy Metering (NEM) Tariff
 - Self Generation Incentive Program (SGIP)





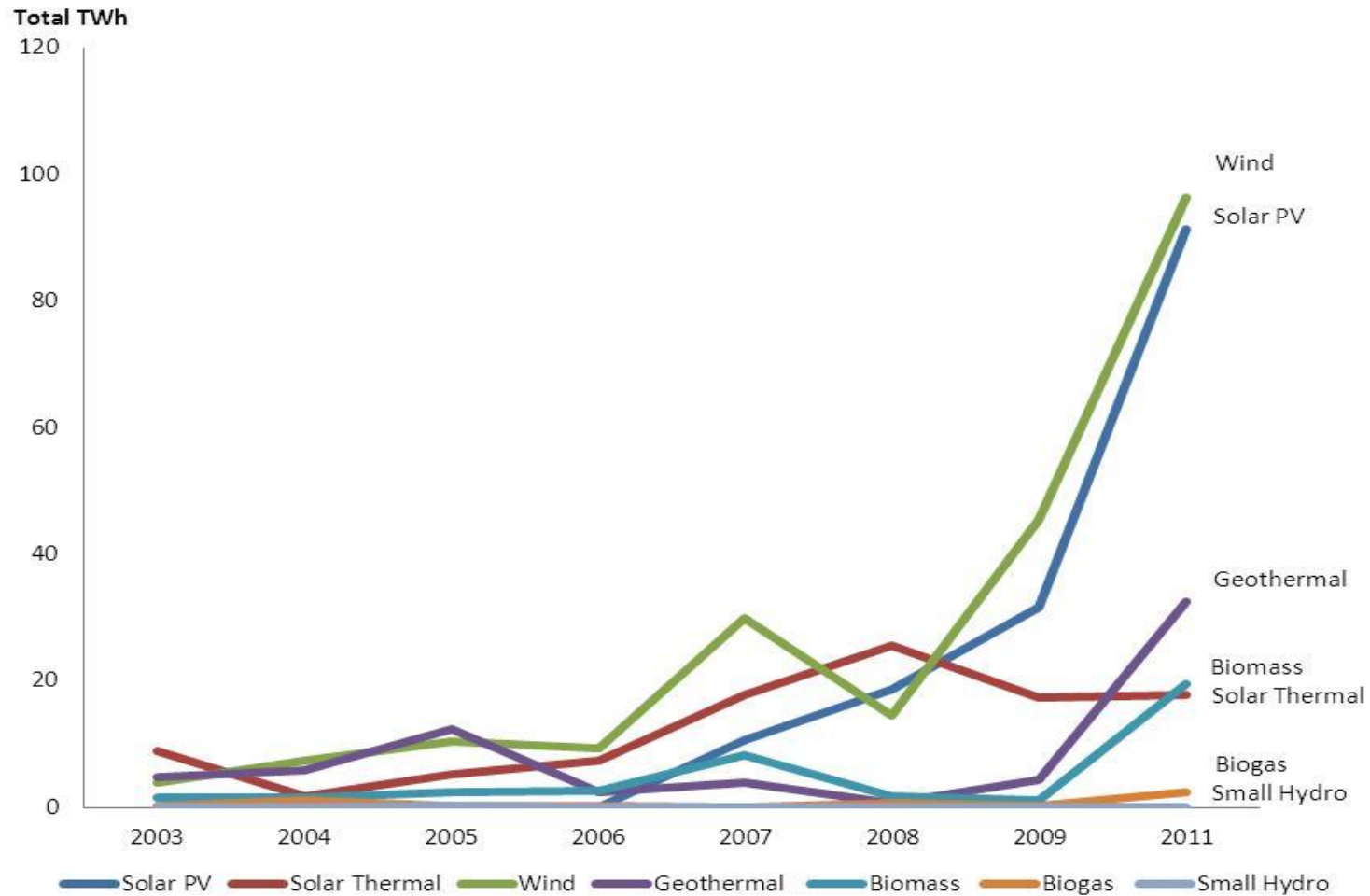
Program Eligibility by Facility Capacity

Facility Capacity (MW)	Utility Contract under RPS Solicitation	Renewable Auction Mechanism (RAM)	Utility Contract as a QF	Utility Contract under Bilateral Negotiation	Utility Feed-In Tariff	NEM Tariff	SGIP
0– 3.0	No	No	Yes	No	Yes	Yes (up to 1MW)	Yes
3.0–20	Yes	Yes	Yes	Yes	Yes (under AB 1613 only)	No	No
≥ 20	Yes	No	No	Yes	No	No	No





RPS Solicitation Resource Bids



Source: California Public Utilities Commission, 4th Quarter 2011





Renewable Auction Mechanism (Units over 3 MW)

- Program size: 1,000 MW procurement target over two years and requires the IOUs to hold two auctions per year
 - Each auction has 3 categories: **baseload**, peaking as available, and non-peaking as available
- Standard Contract - simple, non-negotiable contract
- Contract term length: 10, 15, or 20-years
- Market-Based Pricing - bids are selected on price, starting with the lowest price bid until the auction capacity cap is reached
- Project Viability - seller must meet minimum criteria to participate in the auction
- Project must reach commercial operation within 24 months of CPUC approval





Feed-in Tariffs (Re-MAT) (Units Under 3 MW)

- Replaces old pricing mechanism for FiTs
- In Contract Term Length: Long-term contract (10, 15, or 20-yr)
- Project size limit: 3.0 MW
- Price: Based on renewable market adjusting tariff (Re-MAT) a mechanism that allows the price to adjust in real-time based on market conditions
 - Pricing applies to three different product-types: **Baseload**, peaking as-available, and non-peaking as available
 - Proposed expansion by SB 1122 (Rubio)*
- Tariffs transfer Renewable Energy Credits (RECs) from generator to utility
- Two options under tariff (depending on customer's choice):
 - Full sale of production
 - Excess sales (after onsite usage)





Feed-in Tariffs (Re-MAT)

Example of how prices could increase under Re-MAT :

If in each 2 month period there are no subscriptions or less than 50% of capacity is taken then:

- Months 1-2: Starting Price (\$89.23/MWh)
- Months 3-4: Starting Price + \$4.00 (total \$4.00 increase over prior period)
- Months 5-6: Starting Price+ \$12.00 (total of \$8.00 increase over prior period)
- Months 7-8: Starting Price + \$24.00 (total of \$12.00 increase over prior period)
- Months 9-10: Starting Price + \$40.00 (total of \$16.00 increase over prior period)
- Months 11-12: Starting Price + \$60.00 (total of \$20.00 increase over prior period).

After 1 year price could be as high as \$149.23/MWh

- Can Continue for 2 plus years.





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SB 1122 Expansion of Feed-in Tariffs (Re-MAT)

- Adds 250 MW to Re-MAT program to include specific fuel sources.
 - 110 Megawatts for biogas from wastewater treatment, municipal organic waste diversion, food processing, and codigestion
 - 90 Megawatts for dairy and other agricultural bioenergy
 - 50 megawatts for bioenergy using byproducts of sustainable forest management.
- CPUC shall allocate Megawatts between PG&E, SCE, and SDG&E.
- CPUC can change allocation among the fuel types. Tariffs transfer Renewable Energy Credits (RECs) from generator to utility.





Feed-in Tariffs (CHP)

- Fixed or variable price to be determined by the CPUC. CPUC can require IOUs to purchase excess electricity.
- Price schedule extends to a maximum of 10 years
- CHP systems must be sized to the customer's thermal load (Sec. 2842).
- There is no requirement that CHP systems be sized to the customer's electric load. Thus, oversized systems (from an electric perspective) are permitted.
- A 20 MW maximum size limit applies.
- Only new CHP systems (installed after January 1, 2008) are eligible. However, per AB 1613, the CPUC is considering whether repowered CHP will be eligible.
- A NO_x standard of 0.07 pounds per MWh applies, with a credit to CHP customer-generators that are 60% efficient or better of 1 MWh per 3.4 MMBtu of waste heat recovered.





Qualifying Facility Program for Bioenergy

- Public Utilities Regulatory Policy Act (PURPA) of 1978 established QFs and outlined their payment according to the avoided cost of power
- Qualifying Facility / Combined Heat and Power ("QF/CHP") Settlement Agreement, which was approved became effective on November 23, 2011
- Project size limit: 20 MW and under
- Price: Energy price based short-run avoided cost, additional payments for capacity
- Contract term length:
 - Existing capacity: 7 years
 - New capacity: 12 years





Bilateral Power Purchase Agreements

- Renewable energy purchased at a negotiated price from facilities of all sizes
- Opportunity for generators who might otherwise not participate in an RPS Solicitation or one of the other available programs
- Generation can fulfill a Load-Serving Entity's RPS requirement
- Requires CPUC Approval





Net Energy Metering (NEM) for Bioenergy

- Net Energy Metering:
 - Onsite generation provides customer with credit for net monthly power production at the generation portion of their rate
 - Helpful to customers whose renewable generating potential is comparable to their annual consumption
- Net Energy Metering Eligible Technologies:
 - Biogas-fired generators, biogas fuel cells, solar, and wind
- Facility capacity cap: 1 MW





Self-Generation Incentive Program (SGIP) for Bioenergy

- Incentive Program to offset the upfront capital costs for facilities
- Eligible Technologies: wind turbines, waste heat to power technologies, pressure reduction turbines, internal combustion engines, microturbines, gas turbines, fuel cells, and advanced energy storage systems
 - Historically biogas fueled Combined Heat and Power (CHP), internal combustion engines, small turbines, and fuel cells
- Project size limitations: No minimum or maximum size restrictions given that project meets onsite load.
- Incentive Limitations
 - Incentive payment capped at 3 MW
 - Incentives up to \$4.25/W





Requirements/Limits for Procurement Programs

- “Must take” programs (Qualifying Facilities and Feed-in Tariff) must be consistent with Public Utility Regulatory Policy Act (PURPA)
- PURPA limits payments to avoided ratepayer or utility costs
 - Generators cannot be be paid more than the **utility’s avoided cost**, or the incremental cost of alternative energy.
 - Avoided cost cannot include societal costs.
 - Avoided cost can include costs of specific technologies if there is a legislatively mandated procurement requirement.





Example: Ratepayer vs. Societal Costs and Benefits (Placer County Example)

Price adjustments	Ratepayer Benefit	Societal Benefit
Time of delivery adjustment	X	
Mitigating fire suppression costs		X
Reduced fire settlement awards costs		X
Reduced health costs from forest fire emissions		X
Protection of the water supply and of personal property		X





Thank you!

