Progress of The California Renewable Portfolio Standard

As Required by the Supplemental Report of the 2006 Budget Act

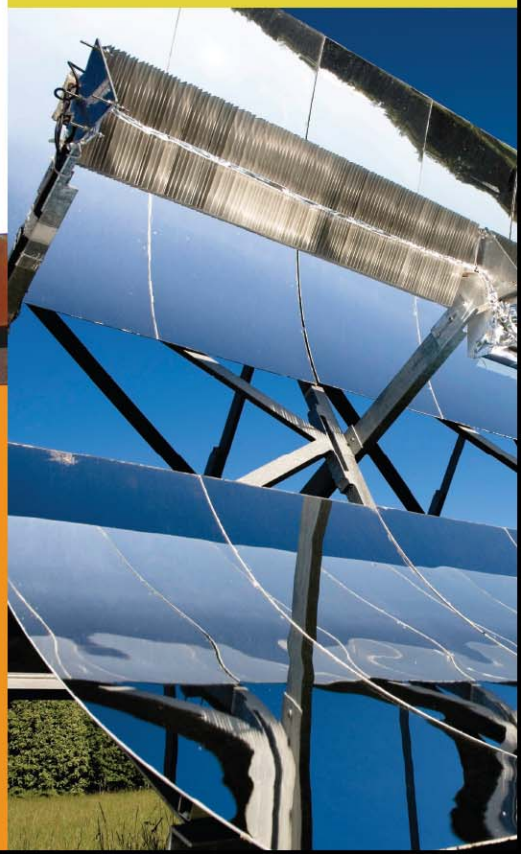
california public

C P U C

utilities commission

Report to the Legislature

JULY 2007



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

Established in 2002 under Senate Bill 1078 and accelerated in 2006 under Senate Bill 107, California's RPS obligates investor-owned utilities (IOUs), energy service providers (ESPs) and community choice aggregators (CCAs) to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010. The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are jointly responsible for implementing the program.

2007 RPS Solicitation receives robust response

California's three large IOUs – Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E) – issued their individual 2007 Requests for Offers (RFOs) of renewable power on March 12, 2007. Through these RFOs, the IOUs solicit offers from developers of renewable energy who wish to either sell the electricity generated by an existing renewable facility or develop a new renewable resource and sell the resulting generation to an IOU.

PG&E, SCE and SDG&E requested developers to submit their final bids in late May, and the results were impressive. Early analysis suggests that the number of bids received and the total number of GWh offered to the three IOUs in the 2007 RFO far outstrip every previous RPS solicitation.

Next quarter's Report to the Legislature will include a more detailed discussion of the 2007 solicitation results;[1] however, one trend that merits mention is the changing technology makeup of the RPS solicitation since 2004. 2007's solicitation saw a huge response from solar and wind developers, with the number and size of proposed solar projects – both photovoltaic and thermal – showing a particularly large increase relative to past solicitations.

New developments in bioenergy

The 2007 solicitation received a weak response from developers of bioenergy, whether biomass, landfill gas, municipal solid waste, or other technologies. Outside of the RPS solicitation process, however, PG&E has bilaterally negotiated two contracts for a promising new technology – the injection of biogas from dairies into the natural gas pipeline system.

Under a contract with BioEnergy, LLC approved by the CPUC on May 24, 2007, PG&E will buy pipeline quality biogas produced from cow manure, inject it into their gas pipeline system, and burn it in a conventional gas-fired power plant certified by the CEC as RPS-eligible for these purposes. The contract starts small; the first dairy to participate has approximately 3,000 cows, which will produce about 200 MMBtu/day. Contract volumes could grow to 8,000 MMBtu as additional dairies sign on, producing up to 389 GWh of electricity annually or approximately the output of a 59 MW plant operating at a 75% capacity factor.

This technology shows great promise for bioenergy, given its scalability. PG&E's second contract of this kind, with Microgy, is currently pending approval at the CPUC. The projects financed by such contracts provide environmental benefits, particularly in terms of captured methane (an extremely potent greenhouse gas), while also providing a new income stream for dairies.

[1] Review of the 2007 bids is ongoing at each IOU, with sellers due to be notified in late June or early July as to whether their bids have been short-listed. The IOUs will then enter into negotiations with those short-listed bidders who agree to post a deposit and withdraw any conflicting offers they had made to other solicitors. Negotiations will continue through 2007, and any resulting RPS contract should be filed with the CPUC for approval by the end of the year.

First contracts from 2006 solicitation submitted to CPUC for approval; more 2005 and 2006 contracts forthcoming

10 RPS contracts were approved by the CPUC during the second quarter of 2007, and 6 contracts are now pending approval at the CPUC. One contract was canceled during the quarter: SCE's contract with North American Trading and Marketing (NATM) for a 50 MW biomass plant. As with all of the RPS contracts canceled to date, the NATM contract was from an early solicitation (2002). The main reason for the contract termination was the lack of site control. Table 1 provides a summary of the contracts approved since the first interim solicitation was held in 2002, anticipating the program's implementation in 2003:

Table 1.[2]

Year*	PG&E	SCE	SDG&E
2002	4 contracts (119 MW)	5 contracts (268 MW)	15 contracts (239 MW)
2003	3 contracts (44 MW)	8 contracts (687 MW)	1 contract (40 MW)
2004	6 contracts (371 MW)	0 contracts	6 contracts (580 MW)
2005	7 contracts (180 MW)	11 contracts (205 MW)	6 contracts (193 MW)
2006	6 contracts (219 MW)	0 contracts	0 contracts
2007	1 contract (2 MW)[3]	0 contracts	0 contracts
Total	**27 contracts (935 MW)**	**24 contracts (1160 MW)**	**28 contracts (1052 MW)**

* Solicitation year or year that bilateral negotiations concluded

IOUs make progress toward 20% RPS target

Figure 1, on the next page, is a forecast of RPS generation to 2020. The chart includes (1) actual generation, (2) projected generation from signed contracts, (3) projected generation from contracts seeking CPUC approval, and (4) projected generation from bids, still under negotiation, that resulted from RPS solicitations and bilateral offers.

Important points:

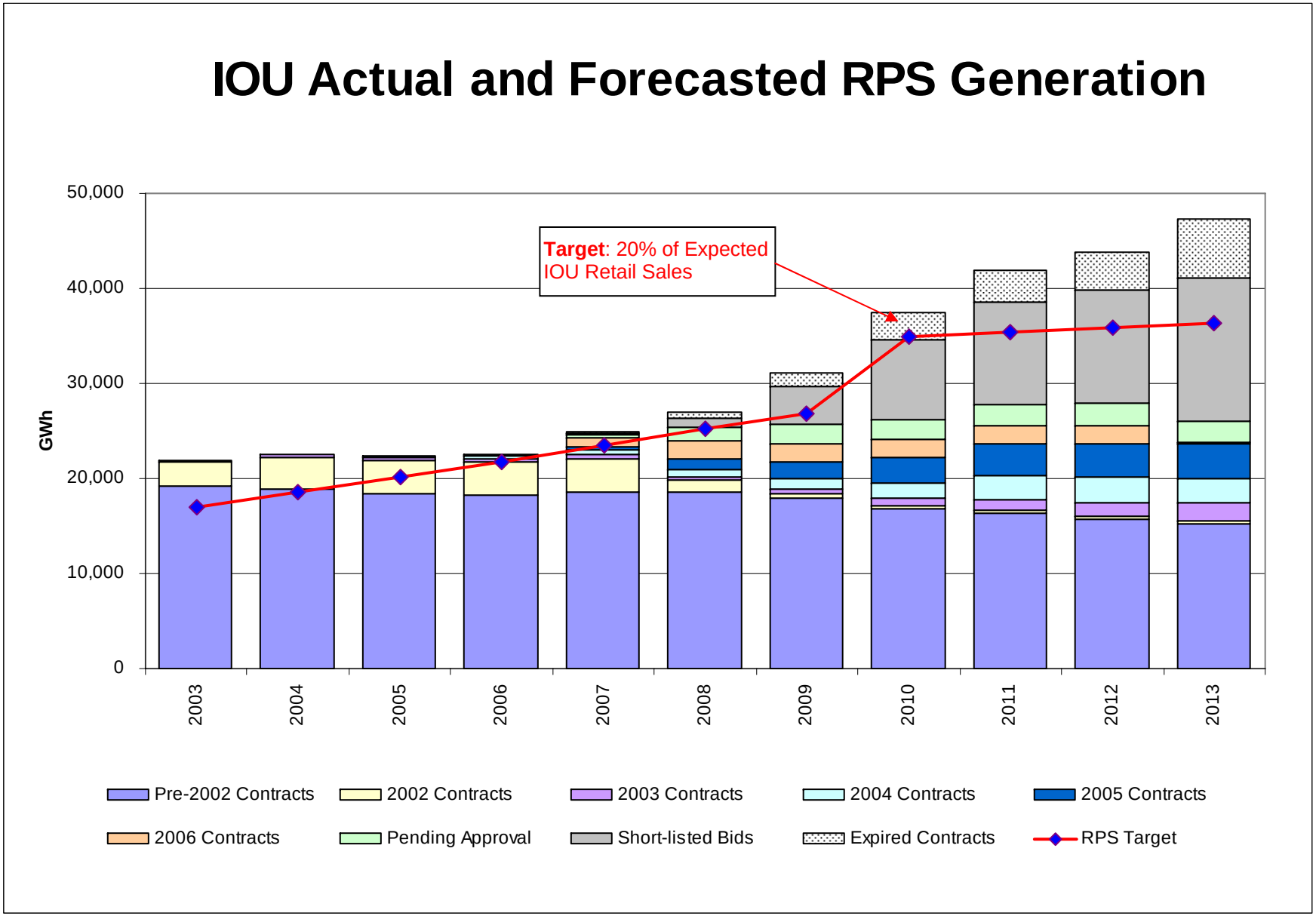
- Compared to the April Report to the Legislature, Figure 2 shows larger potential deliveries in year 2010-2013, due mainly to the addition of projects under negotiation at the IOUs.
- Short-listed projects from the 2007 RPS solicitation are not yet included in the forecast.
- **The grey (short-listed bids) and dotted areas (expired contracts) represent the areas of greatest uncertainty.** Expiring contracts represent built RPS capacity, but some may not be re-signed by an IOU. Some of the short-listed bids may not receive contracts, but many represent viable projects that may receive contracts and contribute to the 2010 goal.
- Forecast reflects only minimum energy deliveries; many contracts and short-listed bids include options for the developer or IOU to increase a project's generation.
- Annual RPS targets are based on the CEC's retail sales forecast; actual targets, determined by the CPUC, may change due to consumer choices affecting IOU bundled retail sales.
- Forecast does not assume a percentage of contract failure - see January 2007 Report to the Legislature for discussion on contract failure.
- Forecast uses most recent scheduled completion dates for required transmission upgrades.
- The forecast is based on data reported by the IOUs and analysis by the CPUC's Energy Division, and is updated as more information becomes available.

---

[2] 8 of these contracts, totaling 204 MW, were later canceled (see January 2007 report for discussion: http://www.cpuc.ca.gov/word_pdf/REPORT/66515.pdf). In cases where contracts were later renegotiated for price and/or capacity, the final minimum capacity is counted here.

[3] This contract, for pipeline quality biogas, has no associated MW capacity. However, the contract's minimum estimated energy delivery, 15 GWh/yr, is the approximate amount of energy produced by a 2.3 MW plant with a 75% capacity factor.

Figure 1.


IOU Actual and Forecasted RPS Generation
GWh
50,000
40,000
30,000
20,000
10,000
0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Target: 20% of Expected IOU Retail Sales
Pre-2002 Contracts
2002 Contracts
2003 Contracts
2004 Contracts
2005 Contracts
2006 Contracts
Pending Approval
Short-listed Bids
Expired Contracts
RPS Target

The price of renewable energy is rising

Senate Bill 1078 (2002), the legislation that established the RPS program, directed the CPUC to calculate a Market Price Referent (MPR) representing the non-renewable power costs that are avoided by buying renewable power. The MPR thus serves as a pricing benchmark for evaluating the price of an RPS contract. The portion of the price of a CPUC-approved RPS contract that falls below the MPR is deemed *per se* reasonable by the CPUC, and may be recovered by the IOU in retail rates.

If a contract results from a competitive solicitation and involves a new generating facility, the above-MPR portion of the contract price may be paid to the generator by the CEC from the Supplemental Energy Payment (SEP) fund, collected from the Public Goods Charge. If a contract involves an existing facility or results from bilateral negotiations, the CPUC must decide whether to allow the IOU to recover the full contract price through retail rates.

The price of renewable energy in both categories – SEP-eligible and SEP-ineligible – is rising, as discussed briefly in our April report. Rising prices for land, wind turbines, steel and EPC (Engineering, Procurement and Construction) contracts and high overall demand for renewables are some of the factors contributing to this rise. As a result, there are concerns that the accumulated funds in the SEP account will be insufficient to cover the above-market costs of renewable projects needed to meet the 20% and proposed 33% renewable targets. The CPUC is also evaluating the extent to which it should allow recovery through rates of the above-market costs of projects that are ineligible for SEPs. To date, the CPUC has been reluctant to allow such recovery. This policy question – how to deal with the above-market costs of renewable energy – will need to be addressed as California considers more aggressive renewable energy goals.[4]

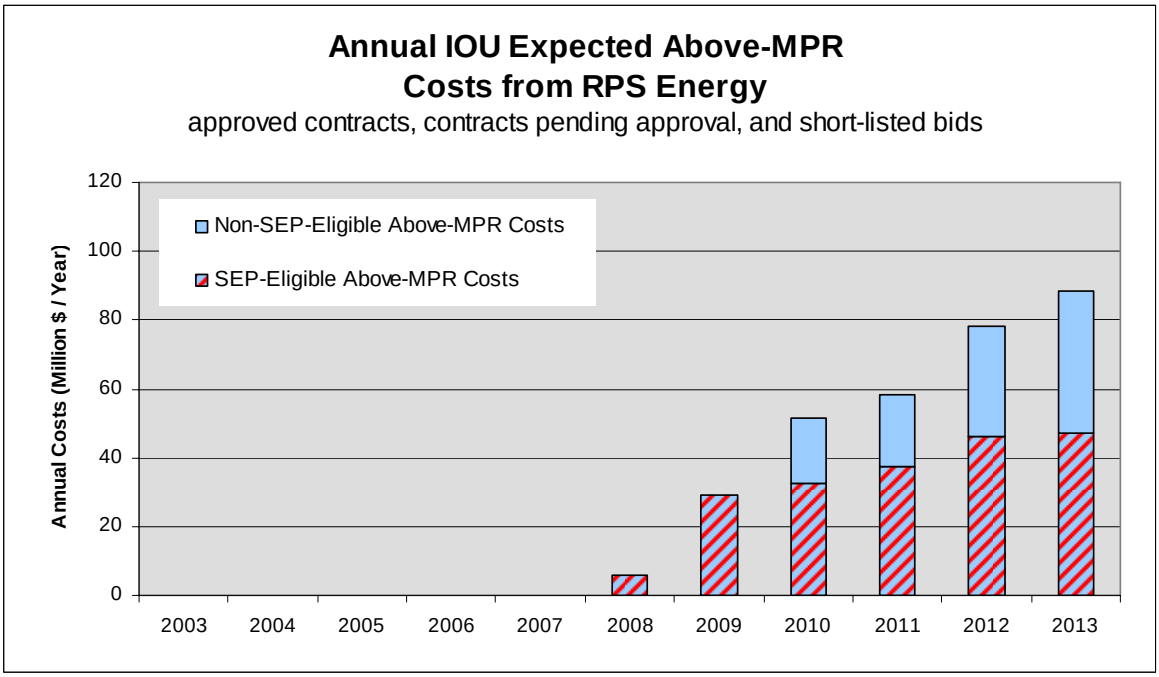
Figure 2, below, shows the annual expected above-MPR costs from CPUC-approved contracts, contracts pending approval at the CPUC, and bids under negotiation at the IOUs.

Important points:

- The above-market costs of RPS-eligible energy are forecast to increase every year.
- Forecast reflects *annual,* not *aggregate,* above-market costs.
- Forecast includes contracts pending approval and bids still under negotiation at the IOUs; actual costs will only come from those projects that receive CPUC-approved contracts and deliver energy per their requirements.
- Short-listed projects from the 2007 RPS solicitation are not yet included.

[4] The CEC is responsible for determining RPS and SEP eligibility. For specifics, see the *Renewables Portfolio Standard Guidebook*: http://www.energy.ca.gov/2007publications/CEC-300-2007-006/CEC-300-2007-006-CMF.PDF.

Figure 2.



CPUC working with IOUs, state agencies, and stakeholders on analysis of 33% by 2020 goal

California has a stated RPS goal of serving 33% of its electric load with renewable energy by 2020; however, transmission is a major barrier to achieving this goal.[5] In an effort to overcome this obstacle, the state has launched a renewable transmission planning initiative based on a proactive assessment of renewable resources and their transmission needs.

Proactive renewable transmission planning requires "big picture" judgment and coordination between transmission and resource/procurement planning. Renewable resources are location constrained. They are often far from the grid and load centers, requiring extensive and expensive transmission upgrades. In order to achieve cost-savings through economies of scale, and to limit environmental impacts and ultimate build-out time, large transmission projects are needed to access large geographic areas of developable, economic renewable resource potential. Integrating procurement and transmission planning will help avoid piecemealed transmission solutions.

The CPUC will be working with the CEC, California Independent System Operator (CAISO), Center for Energy Efficiency and Renewable Technologies (CEERT), IOUs, municipal utilities and other stakeholders on a proposed 3-step process for proactive renewable transmission planning. The specifics of the process are still being worked out, but Phase 1 of the process would likely involve a thorough economic evaluation of the state's developable renewable potential, and an identification of those areas, called Competitive Renewable Energy Zones (CREZs) that are found to hold the greatest potential for cost-effective renewable development.

The CREZs identified in Phase 1 will be ranked according to their value to the state, and Phase 2 would involve the development of a statewide conceptual transmission plan to access the highest-

[5] See our April Report to the Legislature for discussion of specific permitted and proposed transmission projects that may benefit renewables: http://www.cpuc.ca.gov/word_pdf/REPORT/66515.pdf.

ranked CREZs. Stakeholder involvement early in these processes will, among other things, help to refine a thorough cost-effectiveness analysis and identify "show-stoppers" and hurdles with regards to project and transmission siting and permitting. Phase 3 would involve detailed analysis of specific transmission plans, with the ultimate outcome being the filing of one or more Certificates of Public Convenience and Necessity at the CPUC for permission to construct the final transmission project(s).

This transmission planning process is intended to coordinate the schedules and deliverables for a number of California renewable resource-transmission studies: a CEERT study, funded by the CEC's Public Interest Energy Research (PIER) Program to evaluate the state's renewable resources and the transmission needed to develop them; a PG&E study, also funded by PIER, to evaluate Northern California's renewable resources and the transmission needed to develop them; and a SCE study, authorized by the CPUC, to evaluate Southern California's renewable resources and the transmission needed to develop them. Therefore, the process described above becomes a state-wide resource-transmission planning initiative.

On June 1, 2007, a "kickoff" meeting involving the CPUC, CEC, CEERT, CAISO, IOUs and municipal utilities was held to discuss the merits of renewable transmission planning and solicit feedback. Based on the feedback received and subsequent meetings, the proposal, work plan, and next steps for the state-wide transmission initiative are being developed. Through these quarterly reports on the RPS program, the CPUC will update the Legislature on the progress of this exciting effort.