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

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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
 - Declining technology prices
 - Insurance for riskier, large-scale renewable projects



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



RAM Snapshot

- **Basics:** a simplified, market-based auction mechanism designed by the CPUC to procure cost-effective, viable renewable projects up to 20 MW
- **Viability:** Projects must pass binary viability screens to participate – site control, developer experience, commercial technology, interconnection study results
- **Timely MWs:** Must be online within 2 years of CPUC approval
- **Program Duration:** 4 auctions over two years (2011-13)
- **Program Size:** 1,299 MW
- **Eligible Project Size:** From 3 MW up to 20 MW
- **Product Types:** Baseload, Peaking, Non-Peaking
- **Procurement Targets:** IOU-specific targets per RAM auction



Project Viability Screens

- Seller must meet minimum criteria to participate in the auction in order to lower risk of contract 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 Study:** Bidder must have received results from its first interconnection study (system impact study or phase I cluster study)
- Projects have 24 months to achieve COD + 6 month option due to regulatory delays



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 plus transmission upgrade costs
 - Staff modified RAM2 to allow the utilities to take into account resource adequacy value
- Products with similar characteristics are compared to each other
- Lowest cost (highest value in RAM2) projects 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

- CPUC adopted a standard, non-negotiable contract for each IOU
 - Each IOU drafted their own contract, which the CPUC modified based on stakeholder comments
- Decision requires certain terms to ensure there is “skin in the game”:
 - 24 month online date
 - Project development deposit
 - Performance deposit



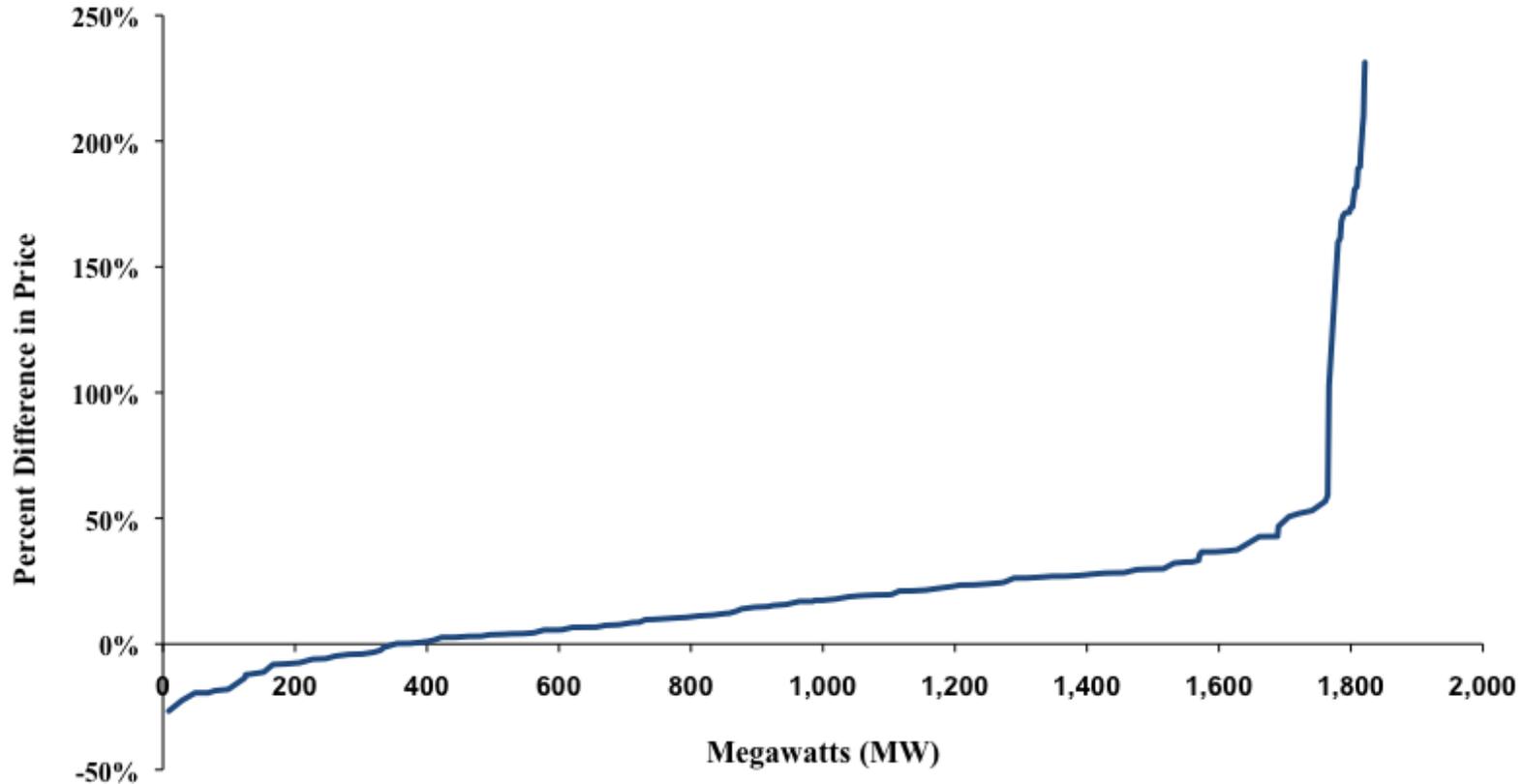
Overview of RAM1 and RAM2 Results

- **Robust Competition:** California's utilities set procurement targets totaling 568 MW for RAM1 and RAM2 – bids representing 10x more capacity than the utilities targeted bid into these auctions.
- **High Value:** The most competitive bids from both RAM1 and RAM2 came in below \$90/MWh (post-TOD). The average bid price and the average price of executed PPAs fell ~5% from RAM1 to RAM2.
- **Technology Diversity:** Over 90% of bids into both RAM1 and RAM2 were for Solar PV projects, but participation of non-solar projects in RAM2 increased 3x over RAM1.
- **Viable Projects?:** Too early to tell. Projects from RAM1 are scheduled to come online by Q4 2013, and projects from RAM2 by Q4 2014.



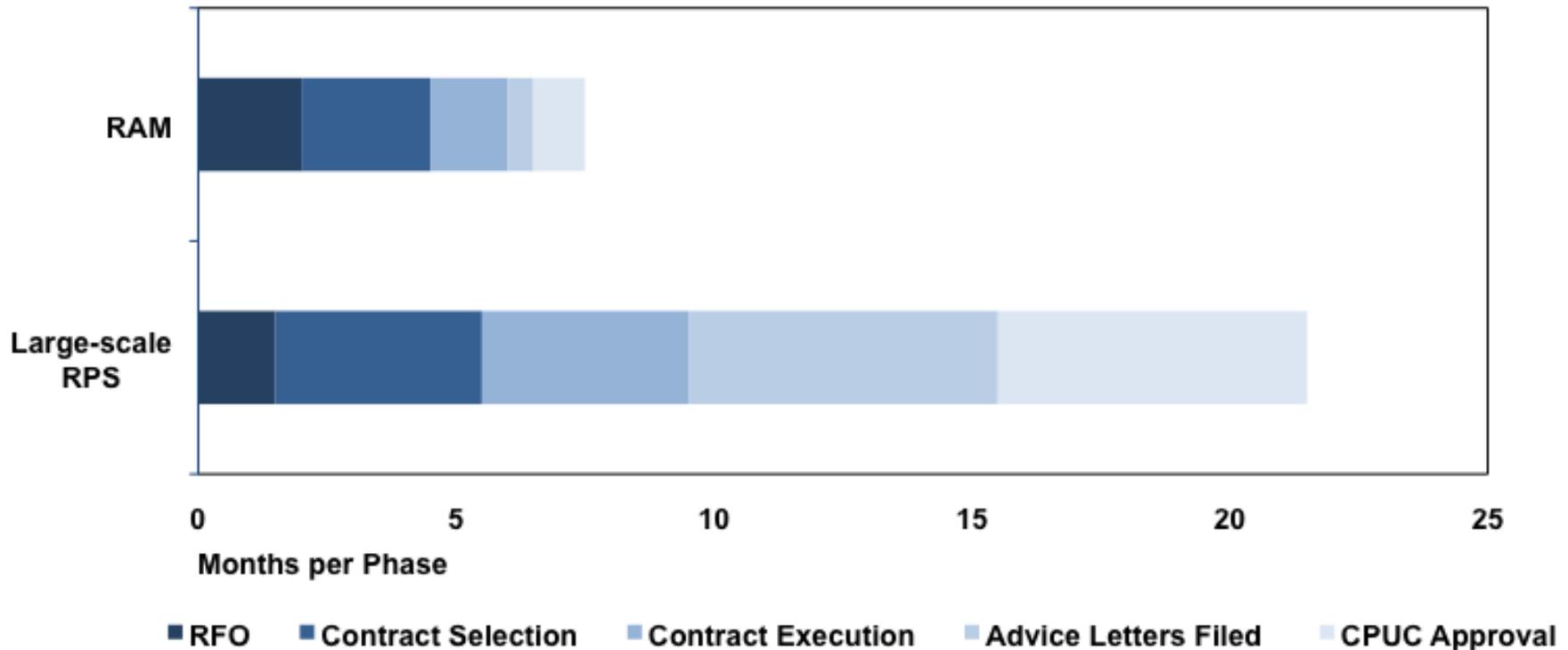
RAM Bid Prices Competitive Compared to 2011 RPS Solicitation

PPA Prices of Bids in First RAM Auction
(0% Baseline = Average PPA Price in 2011 RPS Shortlist)



RAM Procurement is approximately 3 times faster than RPS Solicitation

Estimated Timelines for RAM vs. Large-Scale RPS RFO:
From Bid Solicitation to CPUC Approval



Conclusions

- **Competitive.** RAM continues to attract robust market participation, resulting in PPA prices below \$90/MWh.
 - **RAM1:** \$89/MWh **RAM2:** \$84/MWh
- **Larger Projects.** As a percentage of bids and of executed PPAs, RAM2 skewed in favor of projects in the 15 to 20 MW size range.
- **Solar PV Dominant.** The same as RAM1, Solar PV projects comprised the overwhelming majority of both bids and PPAs.
- **Positive Feedback.** Developers responded positively at RAM program forums to the policy changes implemented for RAM2 (extended COD + created energy-only bidding option), and Utilities continue to express their general support for the simplicity and effectiveness of RAM for renewable procurement.



More Information

CPUC RPS Website:

- www.cpuc.ca.gov/renewables

CPUC RPS RAM Website:

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

IOU RAM Website:

- SCE: <http://www.sce.com/EnergyProcurement/renewables/renewable-auction-mechanism.htm>
- PG&E: <http://www.pge.com/rfo/RAM/>
- SDG&E: <http://sdge.com/procurement/rfp-and-rfo/may-2012-renewable-auction-mechanism>

