

CALIFORNIA'S RENEWABLES PORTFOLIO STANDARD



Implementing one of the most ambitious renewable energy standards in the country

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RPS Program

- CPUC's responsibilities
 - Oversees annual renewable energy solicitations
 - Develops and implements procurement rules
 - Determines compliance and assesses penalties
 - Determines price reasonableness of RPS transactions
- CEC responsibilities
 - Establishes eligibility requirements and delivery rules
 - Developed REC tracking system (WREGIS) to verify renewable energy generated in Western U.S.



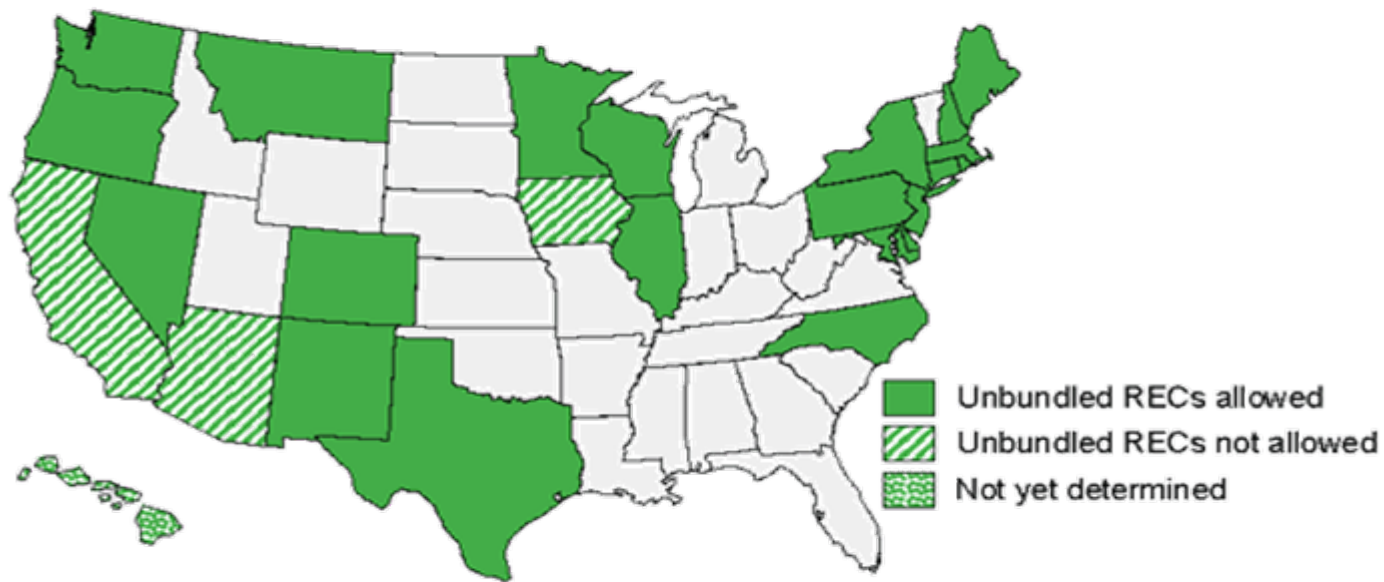
RPS Procurement Options

- Retail sellers currently have many procurement options
 - Long-term or short-term contracts
 - Contracts with delivery at any point in California
 - Contracts from in-state or out-of-state and within WECC
 - Power purchase agreements with independent generator
 - Utility-owned RPS-eligible generation
- Currently all RPS compliant transactions are “bundled”
 - Retail seller must buy both the energy and RECs from a renewable energy generating facility
 - 112 contracts for over 7,000 MW approved by CPUC



RECs in other States

Only 4 States do not allow tradable RECs



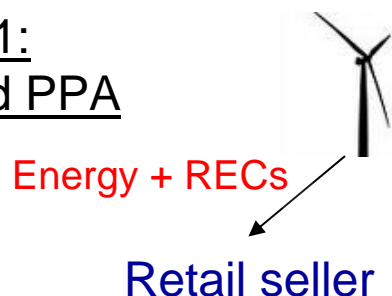
Environmental Energy Technologies Division • Energy Analysis Department



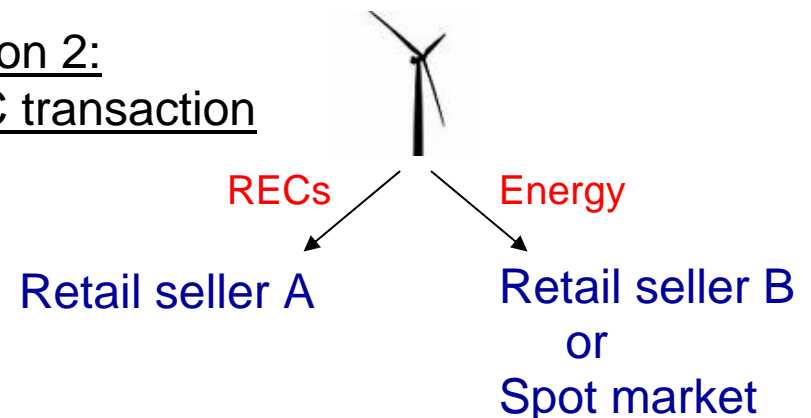
RECs as a new procurement option

- A REC represents all of the renewable attributes associated with one megawatt-hour of eligible renewable energy generation
 - Retail sellers can sign power purchase agreements for renewable energy + RECs or can separately buy RECs without the underlying energy
 - The REC is an accounting instrument used to verify RPS compliance
 - RECs can be traded between utilities, traders, generators, voluntary purchases

Option 1: Bundled PPA



Option 2: REC transaction



RECs can promote renewables

- Encourages renewable development
 - REC revenue stream enticing to developers
 - RECs reduce geographic restrictions, so may help overcome transmission issues and enable development of most cost-effective resources
 - RECs increase options for buyers and sellers: more players, more competition, more liquidity, more contracting flexibility
- Facilitates compliance
 - Smaller retail sellers who can't underwrite an entire RPS project or are otherwise challenged to make long-term energy commitments
 - May enable retail sellers to buy from facilities that can come online faster
- Lowers compliance costs
 - Increased contracting options and additional renewable development will increase supply and lower compliance costs



California REC Market in Short/Long-term

- In the short-term
 - REC supply will be limited in-state and out-of-state
 - RECs will be a viable procurement option if they are cheaper than a bundled product or if they will help meet RPS targets more quickly
 - Small utilities and ESPs need RECs to comply with 20% RPS because of their small and uncertain load
 - Large utilities will use limited RECs, since market and regulatory conditions may prevent near-term online dates for bundled contracts
 - REC prices likely to be high because of high demand and limited supply
 - **Bundled contracts will remain primary way to finance new renewable energy facilities**
- In the long-term
 - REC market will mature: supply will increase and investors will become more confident in REC market
 - Market confidence will mean RECs may help finance new renewable facilities
 - RECs can facilitate regional renewable energy goals



Procurement options provide different benefits for State

- Bundled contracts
 - Promote price stability
 - Increase renewable energy generation
- REC contracts
 - Increase compliance flexibility
 - Increase chances of meeting RPS targets in a timely manner
 - May reduce compliance costs
- In-state vs. Out-of-state projects
 - In-state promotes public health and economic development (REC or bundled contract) but requires maximum transmission buildout
 - In and out-of-state reduce our use of fossil fuels and helps reduce GHG emissions
- Each procurement option has different benefits and choosing one depends on legislative goals and priorities



SB 107 Authorized Tradable RECs

- Senate Bill 107 (effective 1/1/07) gave CPUC the authority to allow tradable RECs for RPS compliance
- CPUC has solicited significant public participation on RECs
 - Staff Whitepaper (Spring 2006)
 - CPUC held REC workshops (Fall 2007)
 - CPUC defined the attributes of a REC (Summer 2008)
 - CPUC issued a proposed decision approving REC trading on (Oct 2008)
 - About 7 rounds of public comments on RECs with another round to come



SB 107 Authorized Tradable RECs

- Authorization is subject to the following conditions (§399.16(a)):
 - CPUC and CEC conclude that the REC tracking system is operational
 - Joint Commission Report adopted December 2008
 - No RECs are created from contracts executed before 1/1/05, unless the contract contains explicit terms specifying the ownership of those credits, or after 1/1/05 if they are executed pursuant to PURPA
 - CPUC may limit the quantity of RECs used for RPS
 - No IOU can be obligated to procure RECs if cost limitation has been exhausted
- RECs must be associated with same eligibility requirements
 - Out-of-state facilities must be new (built on or after January 1, 2005)
 - Energy underlying REC must be consumed by California end-user



Delivery Rules and RECs

- Eligible renewable energy is considered “delivered” for (Public Resource Code 25741, CEC RPS Eligibility Guidebook):
 - In-state renewable energy generation
 - Out-of-state renewable energy generation connected to the WECC transmission system when the energy is scheduled for consumption by California end-use retail customers
 - Electricity generated by an eligible renewable energy resource may be considered "delivered" regardless of whether the electricity is generated at a different time from consumption by a California end-use customer
 - Retail seller can remarket energy within state, as long as Californians consume the energy
- Statutory delivery rules apply to both bundled contracts and REC contracts
 - If delivery rules were relaxed for RECs, transaction costs would decrease
 - CPUC staff thinks there should be a contracting path between renewable energy generator and the energy delivered to California, but CEC’s delivery rules allow “matching”

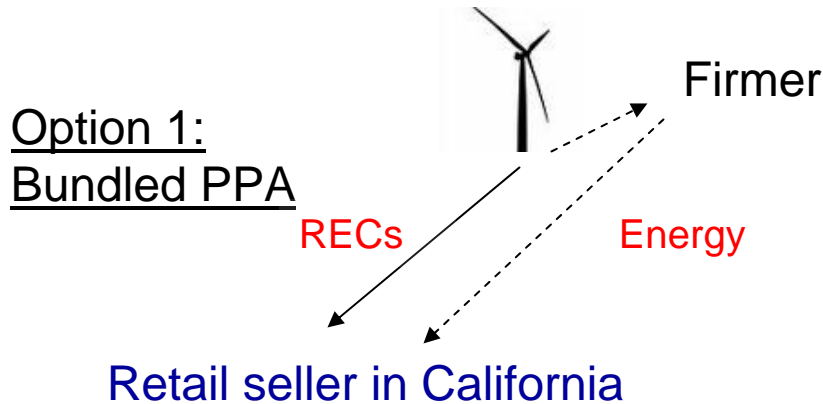


What is firming and shaping?

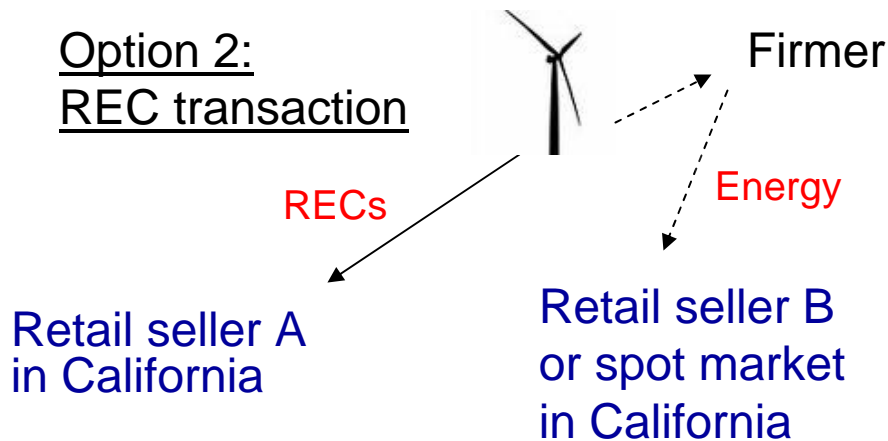
- **Firming:** refers to the process by which a backup resource is used to supplement the output of an intermittent resource to ensure that the total energy provided is sufficient to meet customer load.
- **Shaping:** refers to backing down a supplemental resource when intermittent is generating, storing the power for later and delivering a firm product from supplemental resource
 - Supplementary resources must be dispatchable (e.g. hydro, natural gas, unspecified power), Coal is not dispatchable
- If the CPUC's TREC decision were approved, CPUC could limit the number of REC contracts with firming/shaping
- If the existing delivery rules for RECs were eliminated, no firming and shaping would be required



Out-of-state Bundled vs RECs – current law



- California retail seller buying the RECs has to buy energy also
- To deliver intermittent energy, the generator, retail seller or third party must “firm and shape” energy from renewable facility



- A California entity besides the retail seller buying RECs has to buy the energy
- To deliver intermittent energy, the generator, retail seller or third party must “firm and shape” energy from renewable facility
- Requiring firming and shaping increases transactions costs



CPUC's Revised Proposed Decision

- A TREC expires if it is not used for compliance within three calendar years of generation.
- Use of TRECs for compliance by the three large IOUs is capped at 5% of their annual procurement target (APT).
- TREC's purchased by any IOU are subject to a \$50 price cap. Energy Division will evaluate price reasonableness for each TREC transaction on a case by case basis.
- The decision on whether a TREC transaction satisfies RPS delivery rules remains with the CEC. As with bundled contracts, the Energy Division will request written confirmation from the CEC about whether the contract complies with RPS delivery rules.
 - TREC decision would not need to be changed if new RPS law changes delivery requirements



REC questions

- Are RECs “just a piece of paper”?
 - RECs are associated with actual renewable energy generation that meets the RPS eligibility guidelines
 - RECs have certain benefits (e.g. increase RPS options, decrease RPS costs, increase renewable energy supply, decrease GHG emissions)
- Will authorizing TRECs export green jobs?
 - Distinction must be made between in/out state issue and TRECs/bundled contracts
 - 33% RPS will require significant build-out of California resources
 - Facilitating in-state projects can be accomplished more successfully by working on permitting and transmission issues
- Will TRECs mean importing coal?
 - Statute currently mandates same delivery requirements for all facilities, regardless of selling REC or bundled contract to California
 - Firming and shaping can be implemented so that no “matching” is allowed
 - All contracts must comply with Emissions Performance Standard



Back-up slides



Key definitions

- Bundled contracts – A power purchase agreement in which the buyer procures energy and renewable attributes
- REC-only transactions – A contract in which the buyer only buys the renewable attributes associated with renewable energy
- Unbundled RECs – A REC that is bought separately from the underlying energy
- Tradable RECs (TRECs) – An unbundled REC that can be traded to another entity

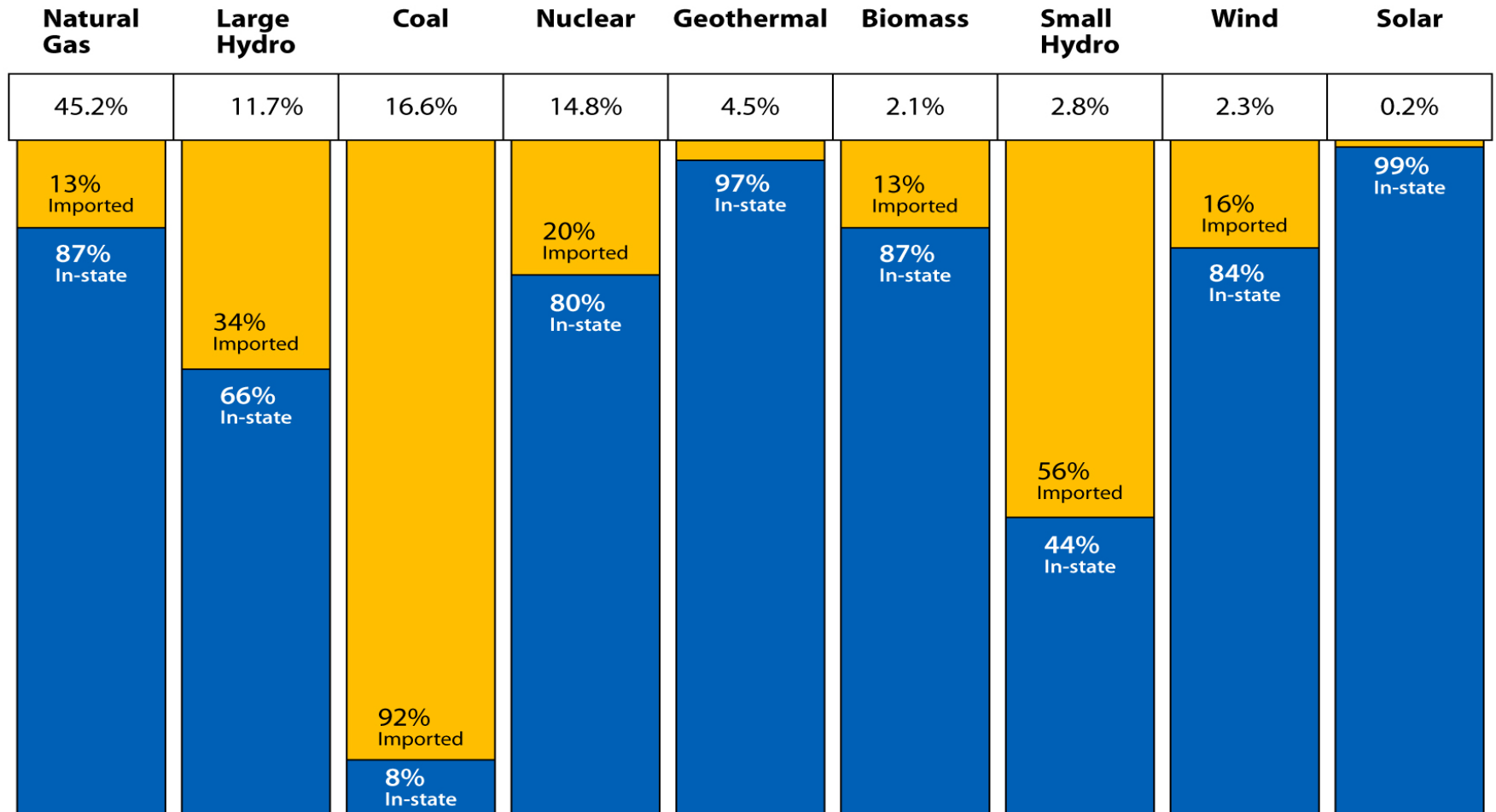


“T-REX”



30% of California power from out-of-state

CA Electricity Mix - 2007



Source: California Energy Commission, *Gross System Power Report 2007*

More information

- **RPS website:**

www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/

