

# California's

# Renewables Portfolio Standard



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

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**California Public Utilities Commission**



# Presentation Overview

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- California's electric regulatory structure
- Renewables Portfolio Standard (RPS) program
- RPS challenges and need for regulatory coordination
- Solar power in California



# Role of CPUC

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- CPUC regulates privately owned electric, natural gas, communications, transit and water companies
- CPUC is responsible for ensuring that utility customers have safe, reliable utility service at reasonable rates, with a strong commitment to environmental protection and a strong economy
- In exchange for being regulated, the CPUC ensures that utilities' shareholders are guaranteed a reasonable rate of return and cost recovery for all procurement costs



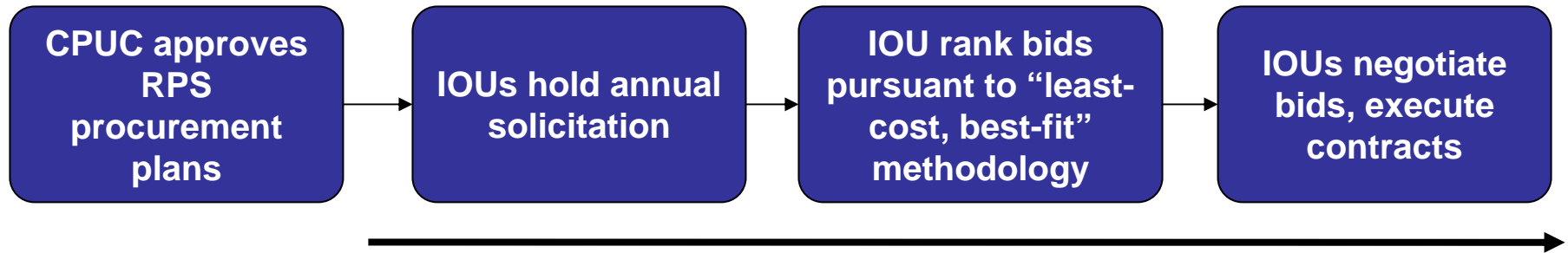
# RPS Policy

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- The RPS Program requires all retail energy sellers to procure 20% renewable energy by 2010
  - All RPS-obligated retail sellers must procure an incremental 1% of retail sales per year until 2010
  - 20% obligation continues post-2010
  - California has set a further goal of 33% renewable energy by 2020
- Benefits of an RPS
  - Environmental protection
  - Economic development
  - Electric price stability
- RPS is now primary program to meet the state's global warming goals



# California RPS Procurement Process



- Independent evaluator oversees solicitation, bid evaluation, and negotiations
- Utilities can also sign bilateral contracts



**Once the IOU executes contract, must submit to the CPUC for approval**



# RPS Status

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- CPUC has approved 112 contracts for almost 7,000 MW of new and existing RPS capacity
  - Of these, 73 are projects with new capacity, totaling 5,245 MW
  - Were all this capacity to come online by 2010, we would more than achieve our RPS target
- Recent RPS solicitations have been robust:
  - Increased participation from larger and more experienced developers
  - IOUs negotiating with 10x their incremental procurement targets
  - California renewable market is maturing
- **Procurement process is working**



# RPS Trends

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- Construction costs increasing for both renewable and conventional generation
- Resource mix is shifting
  - Little geothermal and biomass bids in past year
  - Increase in share of solar thermal and PV – relatively high installation costs and significant permitting challenges
  - Many prime wind resource sites have already been developed
- Concern that costs are increasing due to constrained supply and policy-driven demand

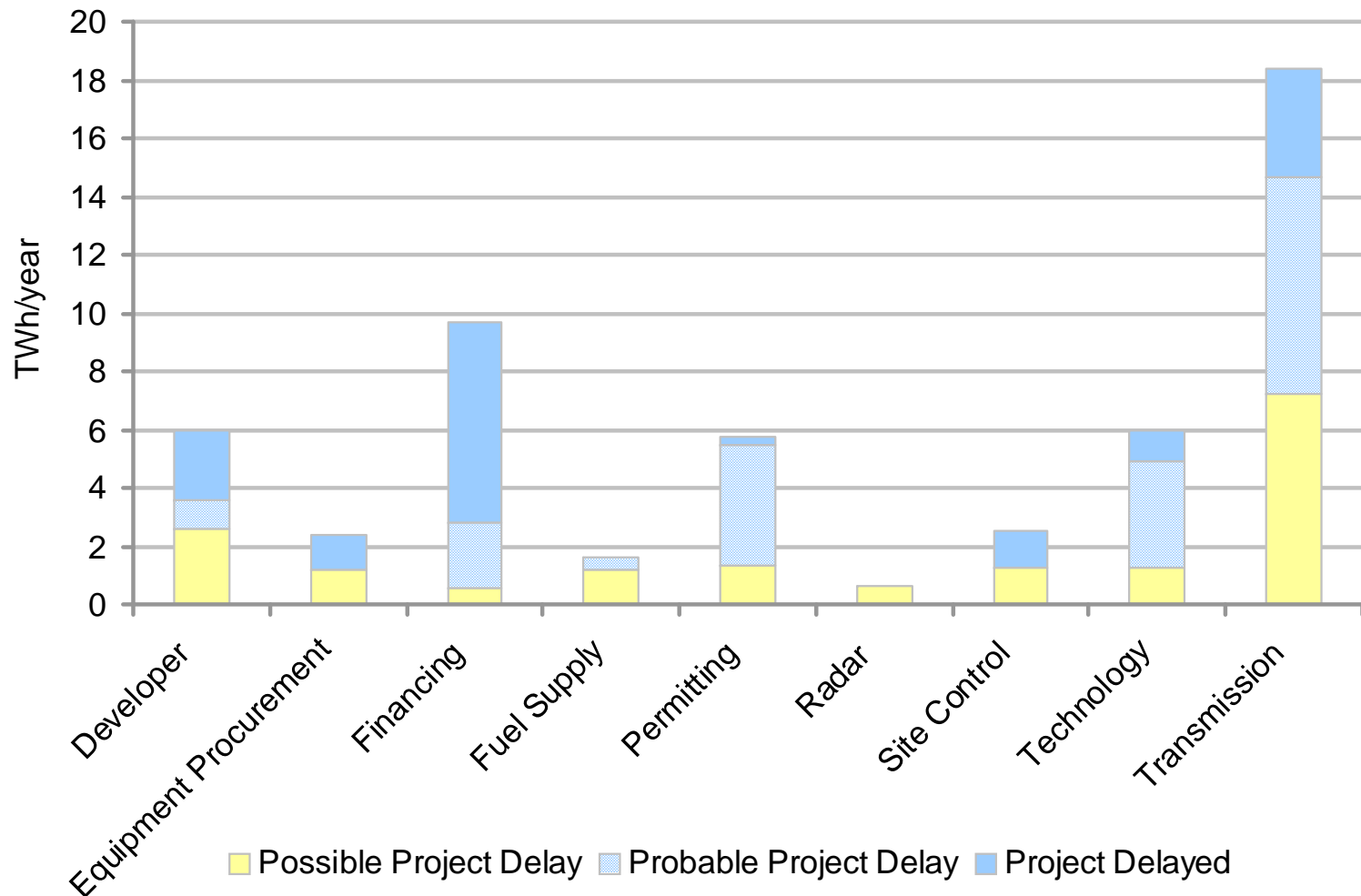


# Project Development is Slow

- 21 contracts for over 800 MW of new capacity have come online
- RPS generation has not kept pace with overall load growth
- Utilities likely to hit 20% by ~2013

		2003	2004	2005	2006	2007	2008
PG&E	RPS Eligible GWh	8,828	8,575	8,543	9,114	9,047	9,774
	RPS GWh as % of bundled sales	12.4 %	11.6 %	11.7 %	11.9 %	11.4 %	11.9 %
SCE	RPS Eligible GWh	12,613	13,248	12,930	12,706	12,465	12,573
	RPS GWh as % of bundled sales	17.9 %	18.2 %	17.2 %	16.1 %	15.7 %	15.5 %
SDG&E	RPS Eligible GWh	550	678	825	900	881	1,047
	RPS GWh as % of bundled sales	3.7 %	4.3 %	5.2 %	5.3 %	5.2 %	6.1 %
TOTAL	RPS Eligible GWh	21,991	22,500	22,298	22,719	22,393	23,394
	RPS GWh as % of bundled sales	14.0 %	13.9 % ↓	13.6 % ↓	13.2 % ↓	12.7 % ↑	13.0 % ↑

# Barriers to RPS Projects



Source: California Public Utilities Commission

# Challenges expected to increase

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- Current challenges for 20% are significant
  - Transmission
  - Site control
  - Permitting
  - Developer inexperience, etc.
- New issues anticipated for 33%
  - Transmission grid reliability and integration
  - Increasing renewable generation costs
  - Need to coordinate transmission planning, resource planning and policy



# Statewide Regulatory Coordination

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- Cost recovery
  - Guaranteed cost recovery for RPS projects incentivizes utility and private investment - makes RPS projects financeable
- Regulatory certainty
  - Stable policy and targets results in long term price signals needed to attain financing
- Regulatory processes to ensure adequate renewable infrastructure
  - Transmission planning and permitting requires coordination between CPUC, CA Independent System Operator, CA Energy Commission
    - Renewable Energy Transmission Initiative
    - Coordination between utility resource planning and transmission planning
  - Generation permitting
    - Streamlining regulatory processes



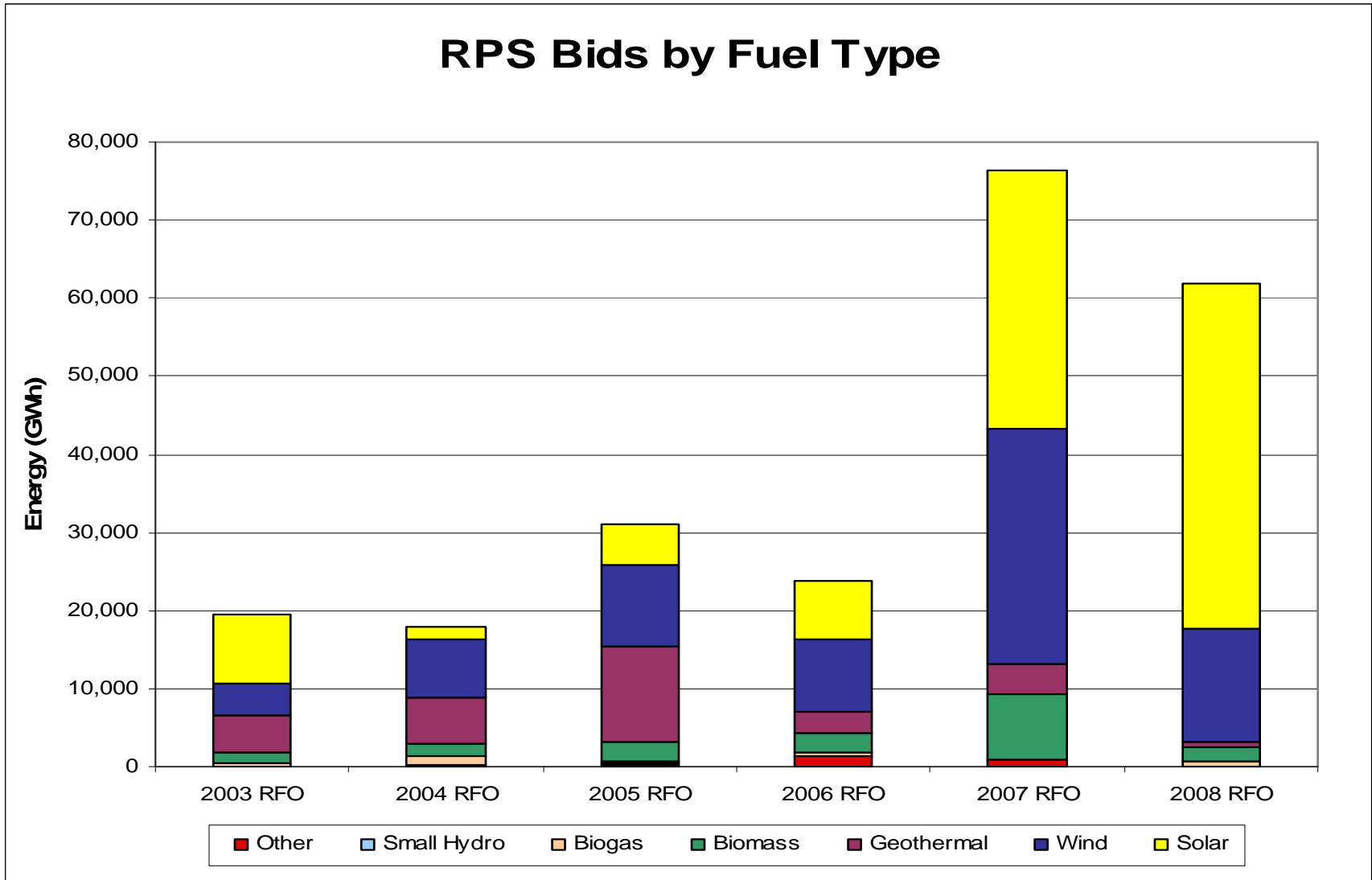
# Solar Power in California

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- Solar photovoltaics (PV) at the distribution level:
  - California has over 500 MW installed
  - California has 69% of all of the grid-tied PV capacity in the U.S. cumulative to date through 2007
  - For more information: [www.gosolarcalifornia.com](http://www.gosolarcalifornia.com)
- Solar at the utility-scale
  - Solar bids have significantly increased in past 2 solicitations
  - 7 solar PV projects approved for ~815 MW
  - 6 solar thermal projects approved for ~2,500 MW
- Solar thermal has potential, but also risks
  - No solar thermal projects built in California since 1980s
  - Solar thermal prices still exceed other RPS generation types
  - Solar thermal faces several risks: technology, financing, environmental permitting due to large land requirements



# Solar Power in California



# More information

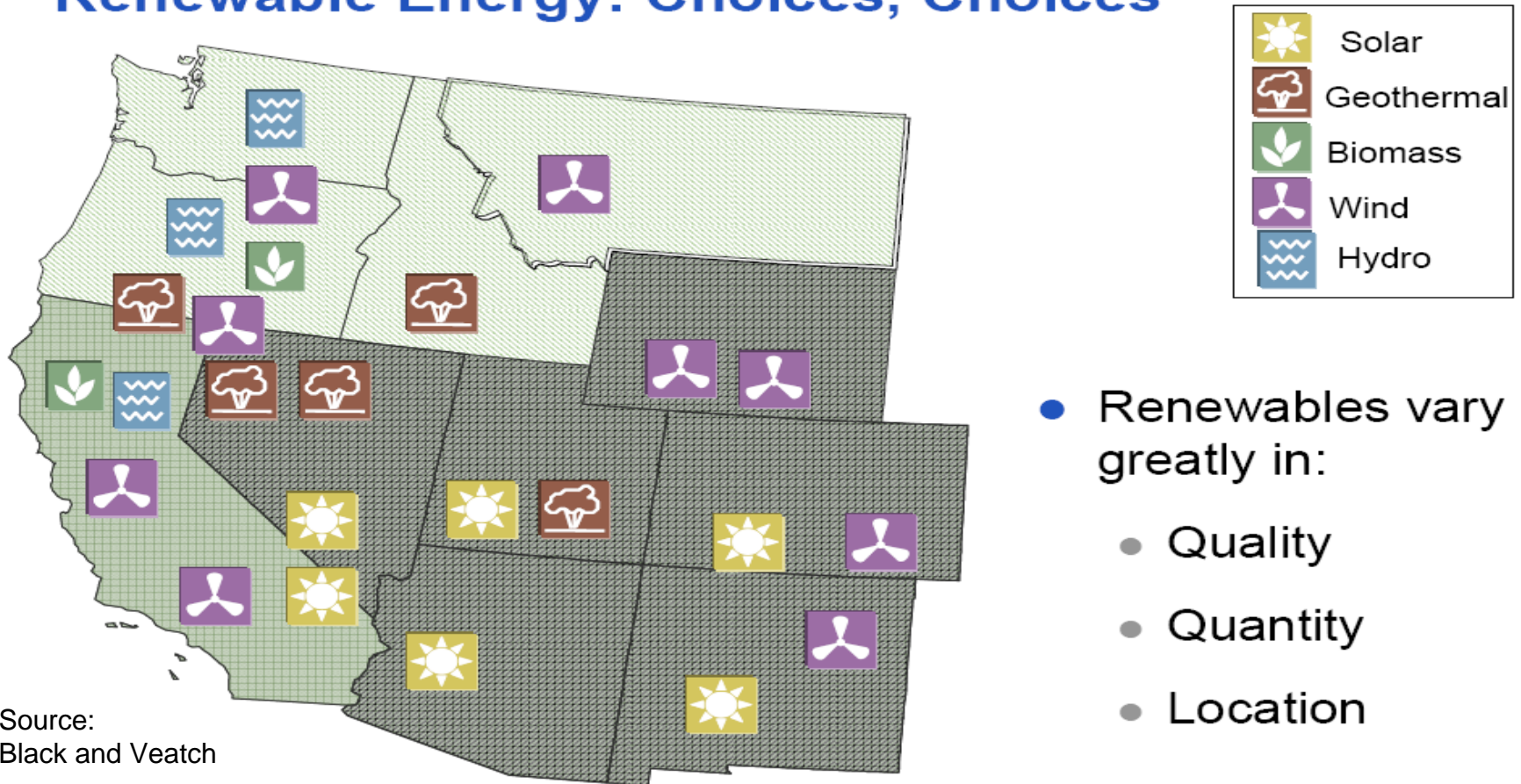
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- **RPS website:**  
[www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/](http://www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/)
- **Renewable Energy Transmission Initiative (RETI):**
  - [www.energy.ca.gov/reti/](http://www.energy.ca.gov/reti/)
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# California has all renewable resources

## Renewable Energy: Choices, Choices



Source:  
Black and Veatch



# RPS Generation by Fuel Type

