

Small-Scale Biopower Challenges and Development Opportunities in California

Status of Bioenergy Development in California
California Energy Commission

June 3, 2013

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Overview

- Benefits and Challenges of Biomass
- Bioenergy Policy Drivers
- Bioenergy Action Plan
- Electric Program Investment Charge
- RPS and CPUC FIT Programs
- SB 1122 Bioenergy Feed-in Tariff

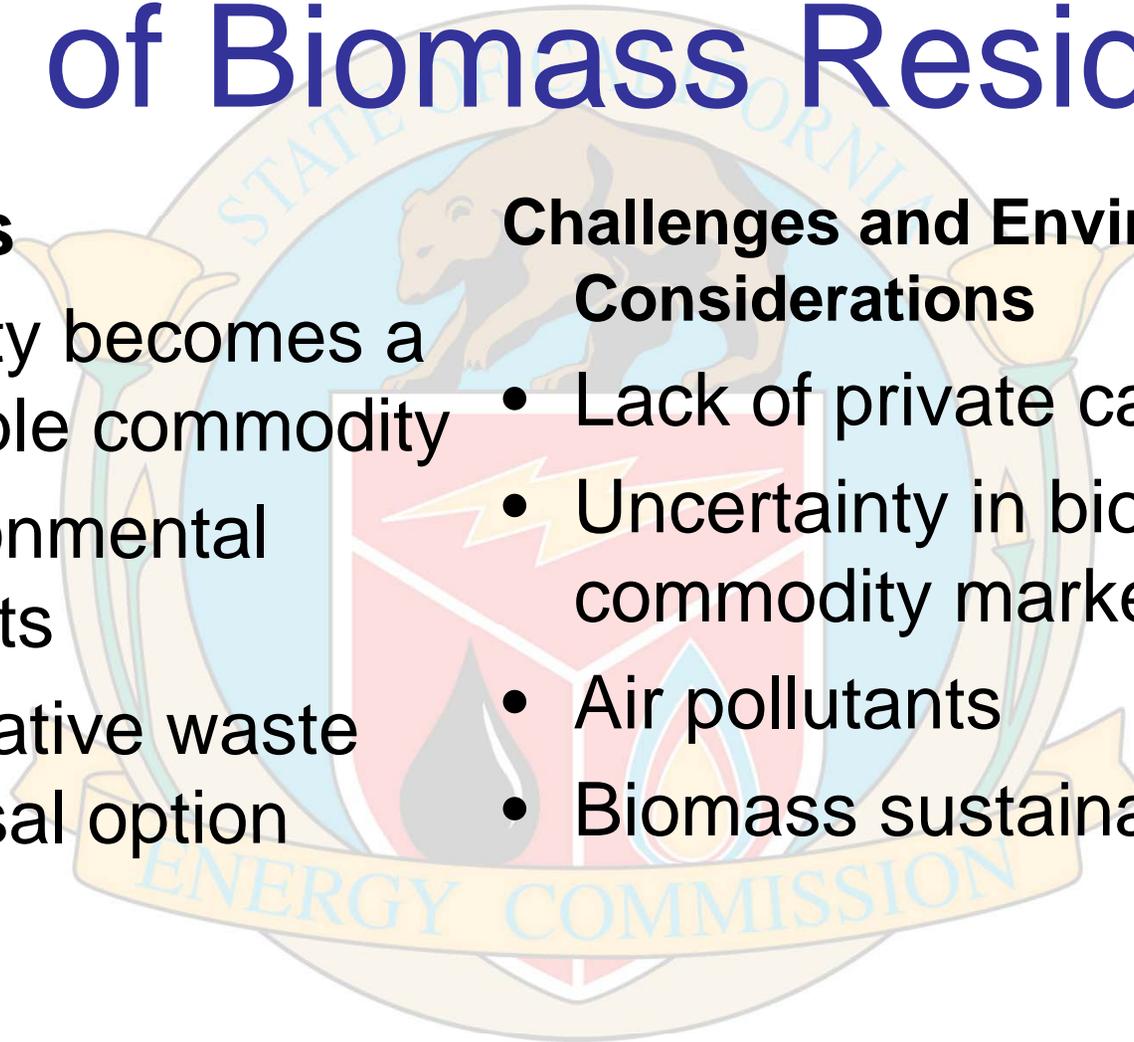
Use of Biomass Residues

Benefits

- Liability becomes a valuable commodity
- Environmental benefits
- Alternative waste disposal option

Challenges and Environmental Considerations

- Lack of private capital
- Uncertainty in biomass commodity market
- Air pollutants
- Biomass sustainability

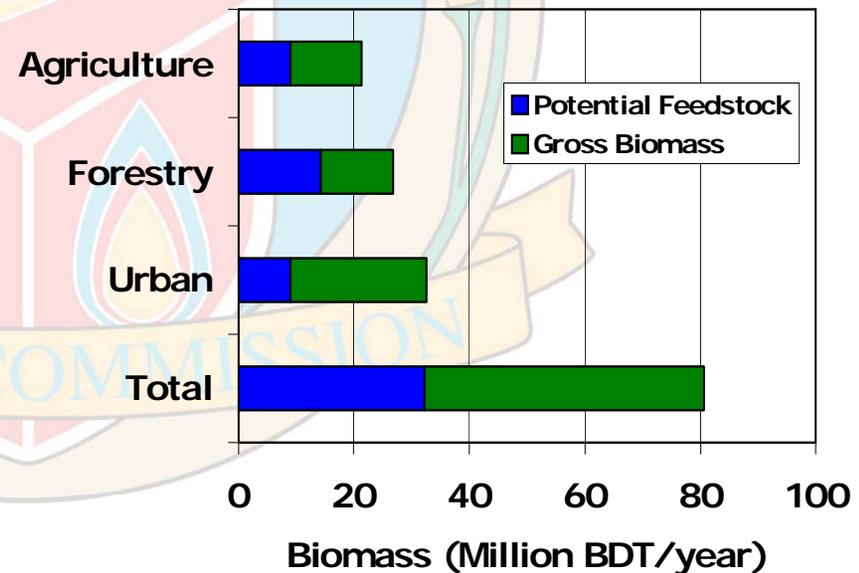


California's Bioenergy Potential

Less than 15% of the biomass resources available for energy production are utilized using available techniques.

Approximately 60% of the material buried in landfills each year is comprised of biomass.

- There are an estimated 36 million bone-dry tons of biomass from the urban, agricultural, and forest sectors.
- Using waste-based biomass resources, California has the annual potential to generate over 32 TWh of renewable generation or produce over 1 billion gallons of biofuels.



Bioenergy Action Plan

A state-level interagency action plan to address ongoing challenges facing the bioenergy industry in California.

Administered by the Bioenergy Interagency Working Group

Chair: Ann Chan, Deputy Secretary Natural Resources Agency

- ❖ Air Resources Board
- ❖ Environmental Protection Agency
- ❖ Department of Forestry & Fire Protection
- ❖ Department of Resources Recycling and Recovery
- ❖ Energy Commission
- ❖ Department of Food & Agriculture
- ❖ Department of General Services
- ❖ Public Utilities Commission
- ❖ Water Resources Control Board

Challenges Identified in the 2011 Bioenergy Action Plan

- **Regulatory, State Policy, and Utility Interconnection Challenges**
 - High regulatory compliance costs, lack of policy and regulatory coordination, lack of uniform biomethane quality standards, utility interconnection.
- **Sustainable Feedstock Sourcing and Transportation Challenges**
 - Lack of uniform sustainability definitions
 - High cost associated with collecting and transporting biomass feedstock.
- **Economics and Financing Challenges**
 - Competition between biofuels and fossil fuels
 - Uncertainty in the biomass feedstock market increasing project financing risk.
- **Statutory and Regulatory Challenges**
 - Restrictions limiting the beneficial use of landfill gas.
- **Research, Development, and Demonstration Needed**
 - Additional research is needed to bring down technology costs.
 - Need to commercialize ultra low-emission generation technologies and low-cost emission control equipment.

2012 Bioenergy Action Plan

California's long-term objective is to create a competitive bioenergy market in California, which include biopower, biofuels, and biogas.

The goals of *2012 Bioenergy Action Plan* are to:

- Increase environmentally and economically sustainable bioenergy production from biomass waste.
- Encourage development and deployment of bioenergy technologies that provide local electricity generation, combined heat and power, renewable natural gas, and renewable transportation fuels.
- Create jobs and stimulate economic development, especially in rural regions of the state.
- Reduce fire danger, improve air and water quality, and reduce waste.

2012 Bioenergy Action Plan

Summary of actions in the plan:

- Research, develop, and demonstrate diverse bioenergy technologies and applications, and assess technology costs, benefits, and impacts.
- Develop and make accessible information about the availability of biomass wastes and opportunities for bioenergy development.
- Streamline and consolidate the permitting of bioenergy facilities and reconcile conflicting regulatory requirements.
- Assess and monetize the economic, energy, safety, environmental, and other benefits of biomass.
- Facilitate access to transmission, pipelines, and other distribution networks.

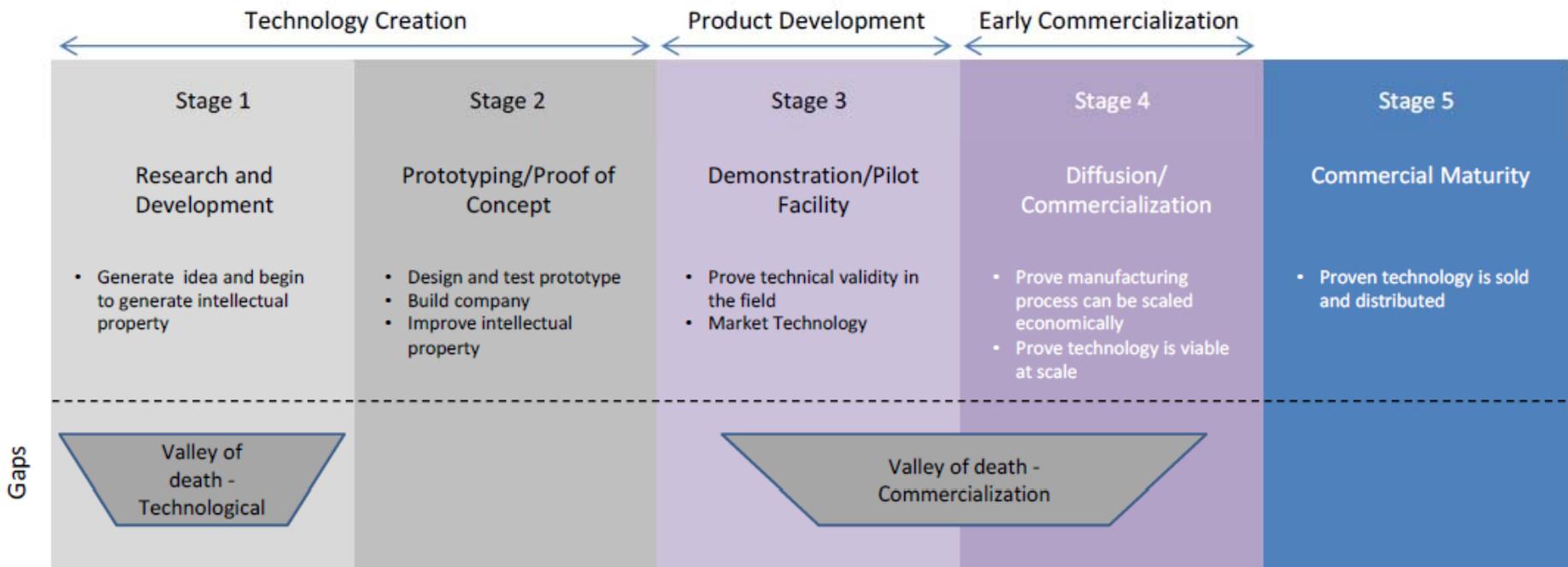
Interagency Coordination

- **Bioenergy Interagency Working Group**
 - The Working Group regularly meets to identify agency resources and industry needs and update the Bioenergy Action Plan to reflect changes in the marketplace.
 - The Energy Commission measures bioenergy development and reports to Governor's office on challenges facing the industry.
 - The Working Group will continue to work with stakeholders to implement the *2012 Plan*.
- **Bioenergy Policy Coordination**
 - Energy Commission staff work with state and federal agencies and stakeholder groups to coordinate bioenergy policy development.
 - Energy Commission staff will recommend policy changes, if needed, through the Energy Commission's Integrated Energy Policy Report.

Electric Program Investment Charge

- The program was established by the California Public Utilities Commission.
- The CPUC will oversee administration of the program.
- CPUC designated the Energy Commission as one of four administrators of the program.
- Energy Commission submitted a proposed Investment Plan to the CPUC on November 1, 2012.
 - The CPUC issued its proposed decision May 2013.
 - Final decision is expected during the summer 2013.

Technology Maturation



Adapted from “Crossing the Valley of Death: Solutions to the Next Generation Clean Energy Project Financing Gap.” Bloomberg *New Energy Finance*. p. 5.

EPIC Funding Areas and Definitions

- Applied Research: Activities supporting pre-commercial technologies and approaches that are designed to solve specific problems in the electricity sector.
- Technology Demonstration and Deployment: The installation and operation of pre-commercial technologies or strategies at a scale sufficiently large and in conditions sufficiently reflective of anticipated actual operating environments to enable appraisal of the operational and performance characteristics and the financial risks.
- Market Facilitation: A range of activities including program tracking, market research, education and outreach, regulatory assistance and streamlining, and workforce development to support clean energy technology and strategy deployment.

Proposed Funding Criteria

	Applied Research and Development	Technology Demonstration and Deployment	Market Facilitation
3-Year Program Area Funding	Up to \$158.7 million	Up to \$129.8 million (\$27 million for bioenergy)	\$43.3 million
Estimated Min./Max. Award per Recipient	\$250,000 to \$3 million	\$1 million to \$5 million (\$100,000 to \$5 million for bioenergy projects)	\$25,000 to \$3 million
Match Funding Requirement*	None	20 percent of the requested EPIC funds	None
Estimated Funding to Match Federal Program Investments	Up to 10% to support federal cost share opportunities	Up to 10% to support federal cost share opportunities	None

* Applicants providing match funds beyond the minimum requirements will receive higher scores during the proposal evaluation.

Renewables Portfolio Standard

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

- The RPS program was established in statute in 2002 and currently requires retail sellers to generate 33% of retail sales from renewable sources by 2020.
- The three large IOUs (PG&E, SCE, SDG&E) procured more than 20% of their energy from renewables in 2011.
- Statutory goals include: displacing fossil fuel use in CA; building new renewable capacity; reducing GHG emissions; reliable operation of the grid; promoting stable retail rates.

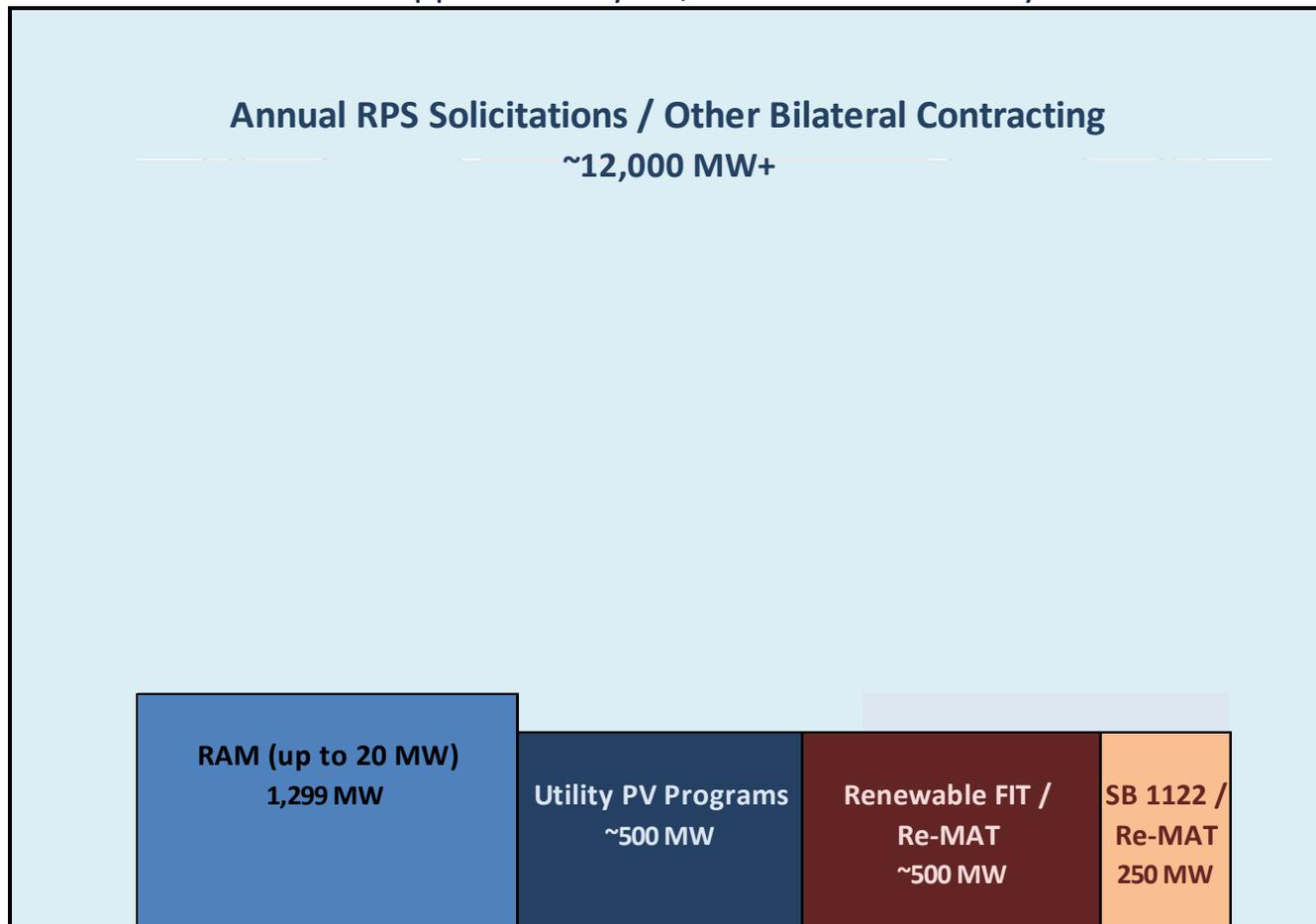
State Agency Roles CPUC and CEC

RPS program is jointly administered by CPUC and CEC

- **The CPUC is responsible for:**
 - Approving utility procurement plans.
 - Approving/rejecting contracts executed to procure RPS-eligible electricity and RECs.
 - Long-term resource planning for renewables.
 - Determining RPS procurement / compliance targets.
 - Determining RPS compliance and imposing penalties for non-compliance.
- **The Energy Commission is responsible for:**
 - Certifying renewable generating facilities as RPS-eligible.
 - Verifying the RPS-eligibility of energy procured to meet RPS targets.
 - Overseeing POU RPS programs.

The role of the FIT within the 33% RPS

33% RPS = Approximately 17,000 MW Procured by 2020



The Renewable FIT Program

The Renewable FIT Program is codified in Section 399.20 of the Public Utilities Codes and has been amended several times in recent years.

- **AB 1969 (2006) – the existing FIT** *(to be replaced by Re-MAT)*
 - **Program Size:** 500 MW
 - **Eligibility:** projects up to 1.5 MW
 - **Price:** MPR (benchmarked to cost of a natural gas facility)
- **SB 32 (2009) – Re-MAT** *(final implementation pending)*
 - **Program Size:** ~500 MW
 - **Eligibility:** projects up to 3 MW
 - **Price:** Renewable Market Adjusting Tariff (Re-MAT)
- **SB 1122 (2012) – Re-MAT for Bioenergy** *(implementation pending)*
 - **More information on the next slide...**

The Renewable FIT Program Continued

SB 1122 sets aside a 250 MW carve-out for new bioenergy facilities within the Re-MAT program.

- **SB 1122 (2012) – Re-MAT for Bioenergy** *(implementation pending)*
 - **Program Size:** 250 MW
 - Forest Biomass: 50 MW
 - Wastewater / MSW / Food waste: 110 MW
 - Dairy / Ag Bioenergy: 90 MW
 - **Eligibility:** projects up to 3 MW
 - **Price:** Re-MAT (see, Commission Decision 12-05-035)

Note: For the 50 MW of forest biomass, SB 1122 directs the CPUC to determine the allocation of those MWs based on the resource potential from sustainable forest management in fire threat treatment areas, as designated by Cal Fire.

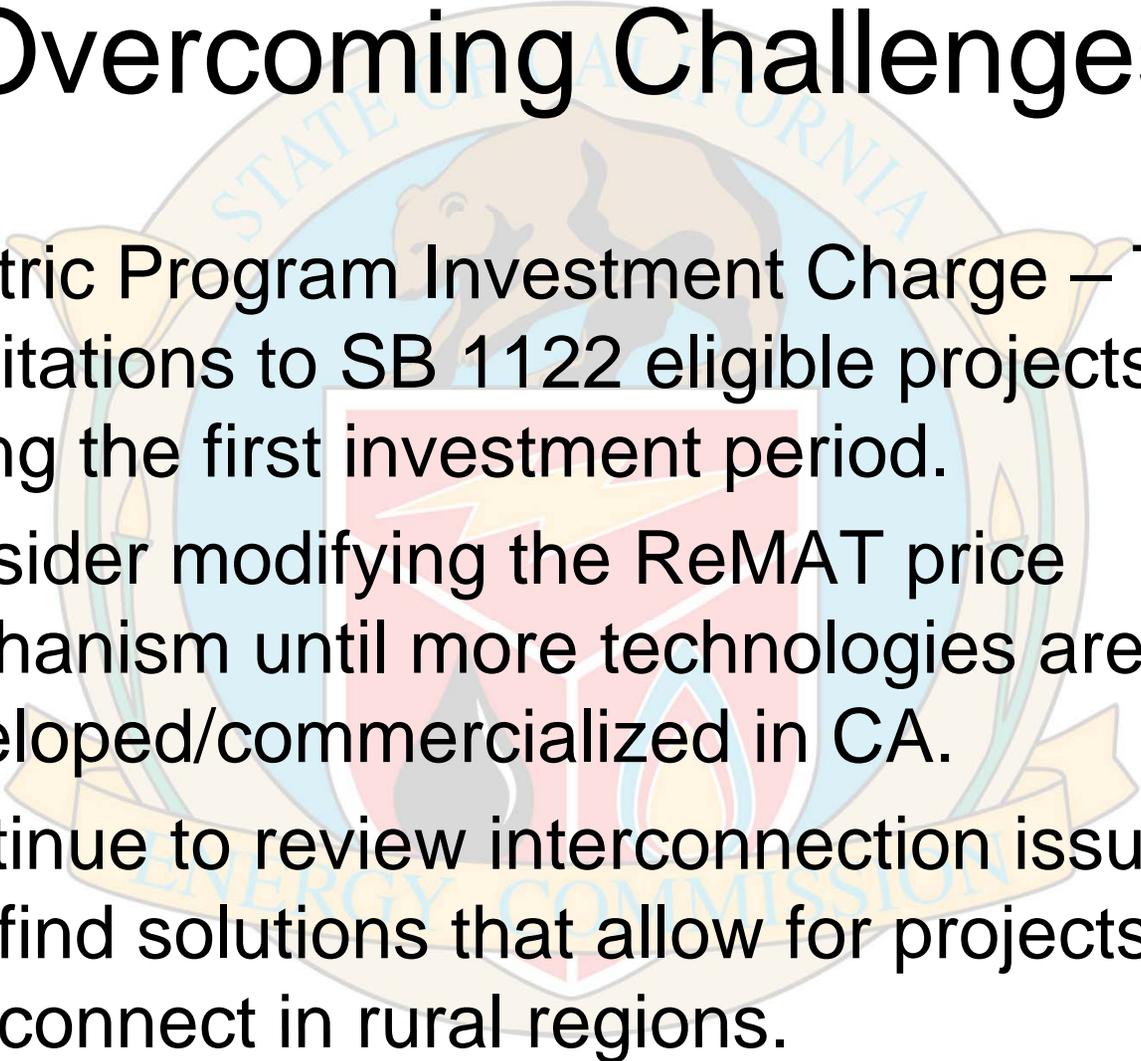
SB 1122: CPUC Implementation

- **April 9, 2013:**
 - CPUC's Energy Division released a draft consultant study titled, "[Small-scale Bioenergy: Resource potential, costs, and feed-in tariff implementation.](#)"
- **May 2, 2013:**
 - CPUC's Energy Division staff held an informal workshop with stakeholders to solicit input on the draft consultant study released on April 9, 2013
- **June 14, 2013:**
 - Post-workshop responses from parties due to Energy Division staff, focused on documenting alternative sources of resource potential and constraints and SB 1122-eligible technology costs
- **Q3 2013:**
 - Energy Division staff plans to release a Staff Proposal on SB 1122 implementation that will draw upon the analysis provided in the draft consultant study
- **Timing TBD:**
 - CPUC's ALJ Division will issue a proposed decision to implement SB 1122
 - CPUC will formally adopt a decision to implement SB 1122

SB 1122: Implementation Challenges

- The projects targeted have not been demonstrated as successful commercial approaches in CA.
- Resources usually not located in high load regions, which can lead to high interconnection costs.
- ReMAT price mechanism, which sets the tariff level.

Overcoming Challenges

The background of the slide features a large, semi-transparent watermark of the California State Energy Commission logo. The logo is circular and contains the text "STATE OF CALIFORNIA" at the top and "ENERGY COMMISSION" at the bottom. In the center, there is a shield with a red and white design, and a bear is depicted behind the shield.

- Electric Program Investment Charge – Target solicitations to SB 1122 eligible projects during the first investment period.
- Consider modifying the ReMAT price mechanism until more technologies are developed/commercialized in CA.
- Continue to review interconnection issues and find solutions that allow for projects to interconnect in rural regions.

For More Information Regarding CPUC-RPS Proceedings:

CPUC RPS Website:

<http://www.cpuc.ca.gov/renewables>

CPUC Feed-in-Tariff:

<http://www.cpuc.ca.gov/PUC/energy/Renewables/hot/feedintariffs.htm>

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Questions / Comments

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Written comments due 5:00 p.m. on June 14, 2013

Submit written comments to:

docket@energy.ca.gov

and CC: garry.oneill@energy.ca.gov

Include the docket number [13-IEP-1M](#) and “[Biomethane Procurement Challenges](#)” in the subject line of your comments.

Workshop documents can be downloaded at:

www.energy.ca.gov/2013_energypolicy/documents/#05312013