



Research Breakthroughs: What's Needed to Accelerate Path to Market and Achieve California's 2020 Renewable Energy Goals?

California Energy Commission
Public Interest Energy Research
Staff Workshop

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Public Interest Energy Research Program



California Energy Commission – PIER

- **Purpose:**

Funds public interest energy research not provided by the competitive or regulated markets; advances science and technology to the benefit of CA ratepayers, and provides environmentally sound, safe, reliable and affordable energy services and products.

- **Research Areas:**

Energy Efficiency & Demand Response
Renewable Energy
Transmission & Distribution
Energy Related Climate and Environment
Transportation

- **Approximate \$95 Million Annual Budget:**

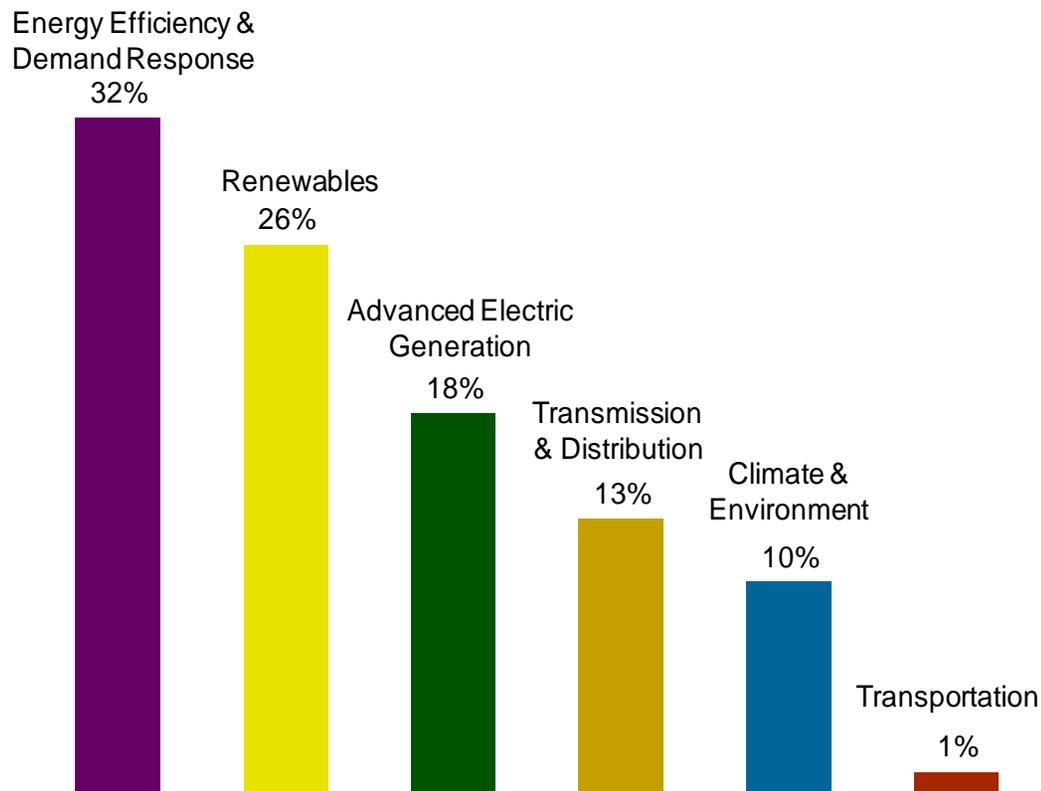
\$71 million electric
\$24 million natural gas
Utility ratepayer funded program; launched in 1997

PIER Investments Follow Energy Policy



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“Loading Order” by Program



Meeting Energy Needs with Efficiency and Demand Response

Using Efficiency to Reduce GHG Emission Levels

Potential Savings from Demand Response

Using Renewable Resources to Meet Energy Needs

Deliverability and Transmission Upgrades

Dispatchability and Reliability

Barriers to Renewable Energy Market Development

Clean Fossil Energy Generation

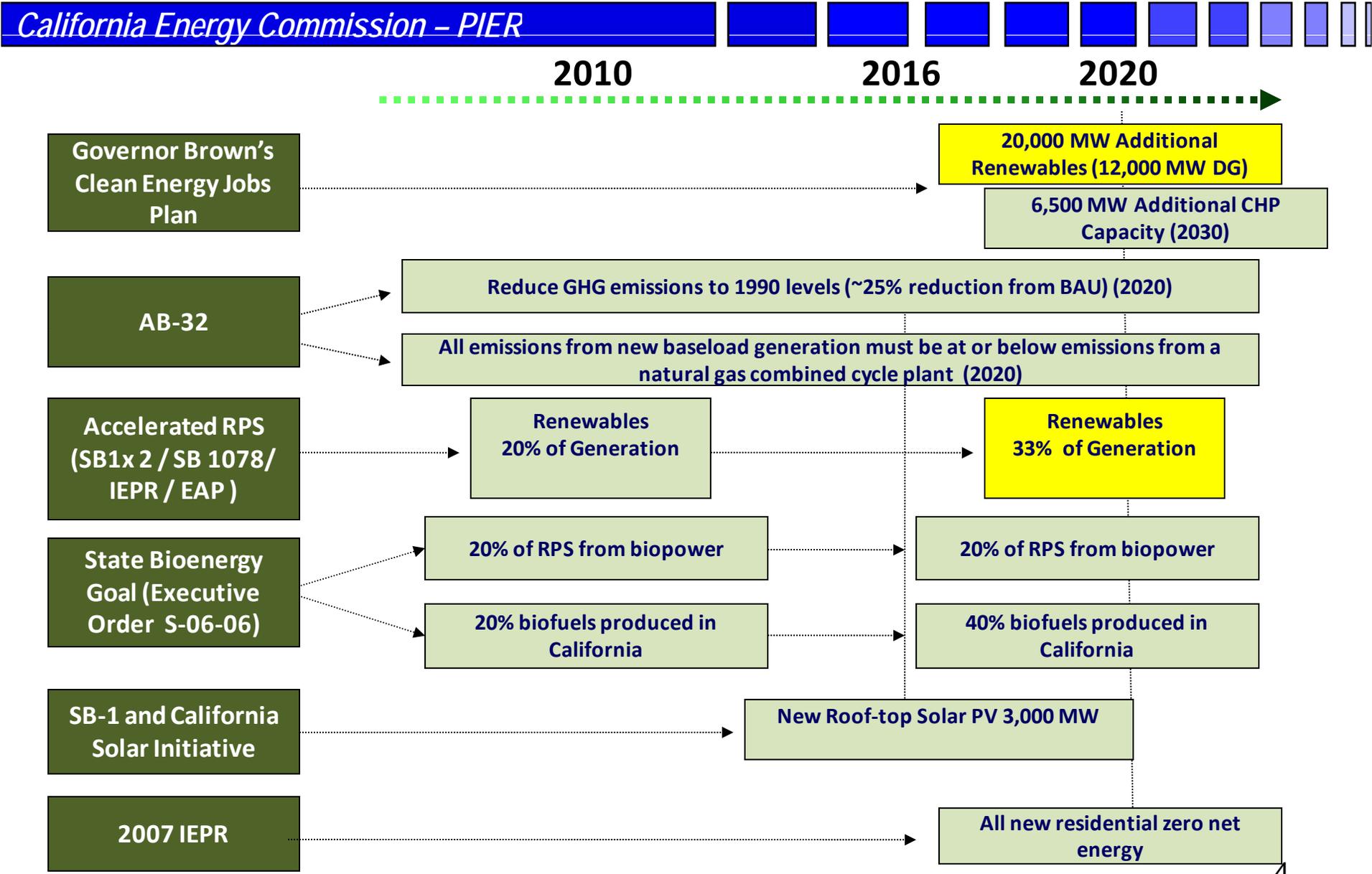
Distributed Resources

Transmission & Distribution

Smart Grid

Demand Response to Meet Electric System Peaks

Policies Drive PIER RE R&D Strategy



Guiding Questions



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- General theme: what is the role of PIER R&D in accelerating the market towards meeting state renewable energy goals
 - Status of renewable energy in CA's system power, what fraction is in-state generated; and how far are we in terms of RPS goals.
 - What research are being conducted to help achieve the renewable energy goal: summary of portfolio of renewable energy R&D with PIER; what issues and barriers are being addressed by R&D
 - What are key remaining challenges that should be addressed by R&D; General workshop questions

Objectives and Format



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Today's Objectives:

- To highlight recent research breakthroughs in the area of renewable energy
- To solicit public feedback to ongoing research activities

Workshop Format:

- 5 technical sessions – roughly one hour each
 - Bioenergy, Solar, Wind, Geothermal and Renewables Integration
- Each technical session will have 3-4 presenters followed by a staff-moderated panel discussion
- Public stakeholders will be able to pose panel-specific questions during each panel discussion
- General public input can be provided during public comment periods before lunch and at the end of the day.

Workshop Agenda



9:00 Welcome	Rizaldo Aldas
9:05 Opening Remarks	Drew Bohan
9:15 Introduction	Linda Spiegel
9:30 Technical Session I – Biomass and Bioenergy Research	Prab Sethi
10:40 Technical Session II – Solar Energy Research	Hassan Mohammed
11:50 Public Input	
12:10 Lunch	
1:30 Technical Session III – Wind Energy Research	John Hingtgen
2:30 Technical Session IV – Geothermal Energy Research	Cheryl Closson
3:30 Technical Session V – RE Integration Research	Michael Sokol
4:30 Public Input	
5:00 Adjourn	