California's Climate and Energy Policy Under Governor Brown

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California Environmental Protection Agency
Air Resources Board

AB 32

* Overarching climate policy directive for California
* Implementation status
* Energy policy an essential part
  * Energy efficiency
  * Renewables and distributed generation
  * Transportation

California AB 32 GHG Reduction Plan Sees Key Role for 33% Renewable Portfolio Standard (RPS) and Energy Efficiency

ARB 32 Scoping Plan

Recommended Actions for Electricity Sector

MEASURE	GHG REDUCTIONS (MMTCO2E)
Energy Efficiency	**15.2**
(32,000 GWh of Reduced Demand) • Increased Utility Energy Efficiency Programs • More Stringent Building & Appliance Standards • Additional Efficiency and Conservation Programs	
Combined Heat and Power	**6.7**
Increase Combined Heat and Power Use by 30,000 GWh	
Renewables Portfolio Standard	**21.3**
Achieve a 33% renewables mix by 2020	
Million Solar Roofs	**2.1**
(Including California Solar Initiative, New Solar Homes Partnership, and solar programs of publicly owned utilities) • Target of 3,000 MW Total Installation by 2020	
TOTAL	**45.3**

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Renewables - Senate Bill X 1 2 (Simitian): Codified 33% RPS by 2020 in April 2011

Retail sellers and POUs to adopt RPS goals of

- 20% by December 31, 2013*
- 25% by December 31, 2016**
- 33% by December 31, 2020***

Energy Commission must provide a report to the legislature by June 30, 2011****, analyzing run-of-river hydroelectric generating facilities in British Columbia, including whether these facilities are, or should be, included as eligible renewable energy resources.

* Maximum TRECs allowed is 25%
** Maximum TRECs allowed is 15%
*** Maximum TRECs allowed is 10%
**** Simitian has authored clean up language, SB 32 that, would extend the report deadline to June 30, 2012.

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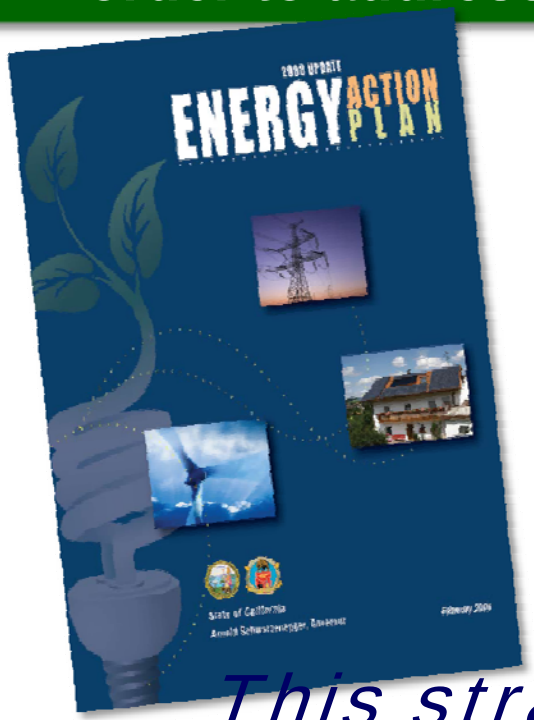
CA's Energy Policy Relies on a *Loading Order*

In 2003, California's *Energy Action Plan* defined a loading order to address the state's increasing energy needs



1. Energy efficiency and demand response
2. ***Renewable energy and distributed generation***
3. Clean fossil-fueled sources and infrastructure improvements

This strategy benefits CA by reducing CO_2 emissions and diversifying energy sources.

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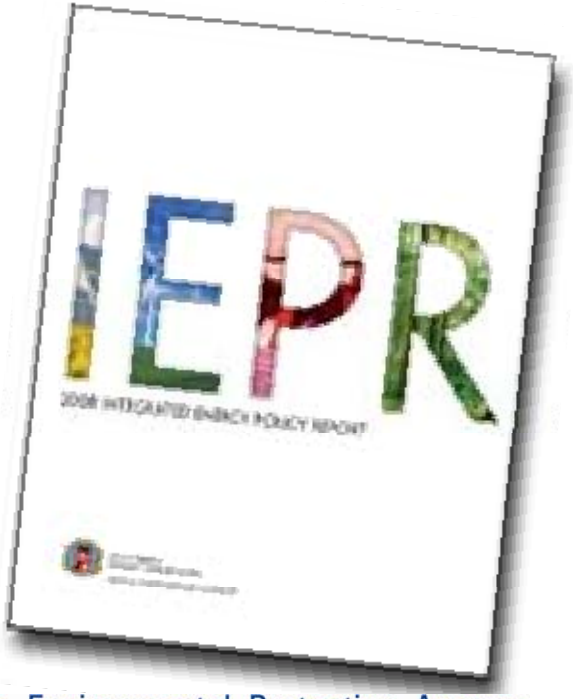
Integrated Energy Policy Report

The Energy Commission's *IEPR* forms the foundation for state policy and decisions on energy issues.

- Begun in 2003, odd-numbered years full report with an update in even-numbered years
- Provides an overview of energy trends and issues facing CA
  - Energy supply, demand, pricing, reliability, and efficiency
  - Impacts on public health and safety, the economy, the state's resources, and the environment



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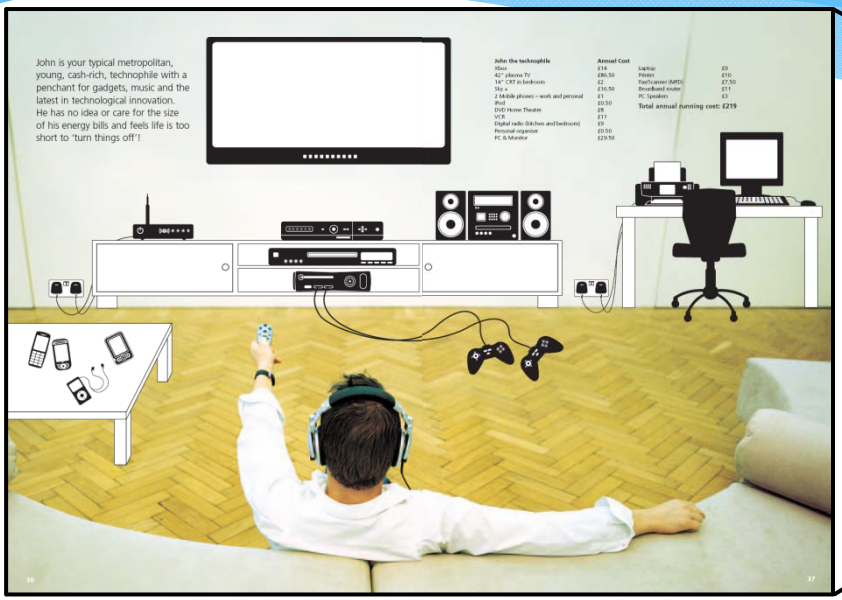
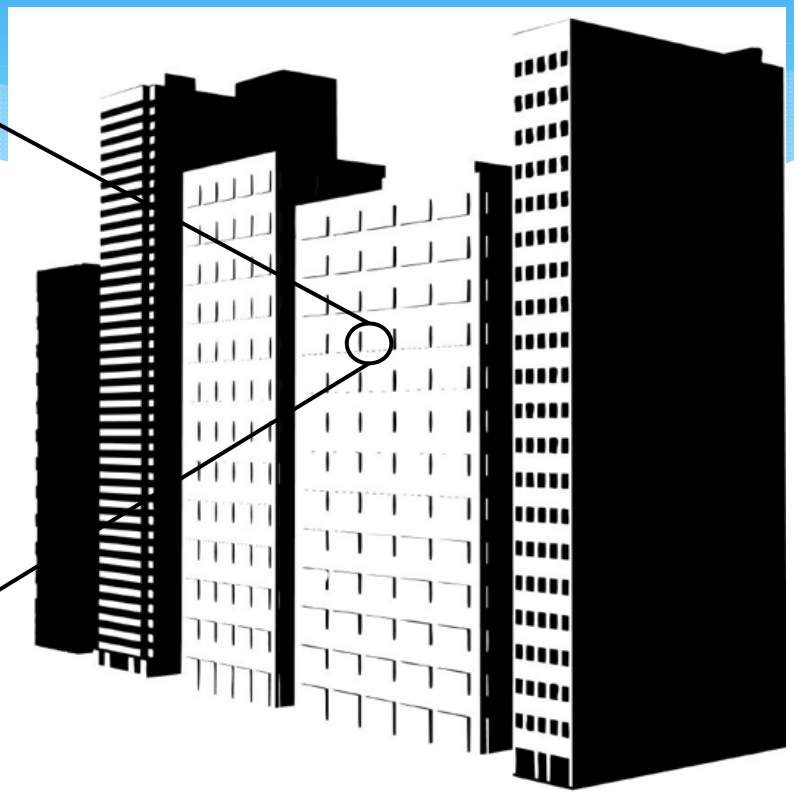
California's Clean Energy Future

* Collaboration between ARB, Energy Commission, CPUC, CalEPA, and CAISO
* Outlines how CA's energy agencies will achieve the state's environmental and energy policy goals by 2020
* Calls for an integrated approach to energy issues
* Points the way toward new investments in transmission, energy efficiency, smart grid applications, and increased use of renewable resources.
* Upcoming IEPR public workshop on July 6

Energy Efficiency





Appliance Standards

- Refrigerators
- Light bulbs
- Televisions
- Battery chargers
- Water heaters
- HVAC systems

Next standard: computers and data centers

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LEED Certified Buildings in Silicon Valley

San Jose Airport

Terminal B Concourse was awarded LEED Silver in September 2010

- Energy efficiency measures exceed energy standards by more than 16%
  - occupancy sensors for lighting
  - programmable lighting control system
  - high efficiency programmable 'smart' heating and cooling system
  - energy-conserving windows.
- 13% of total building materials content was manufactured using recycled materials
  - 76% of the structural steel
  - 27% of the carpets
  - 23% of the ceramic tile
- Water conservation measures achieve 75% less water use than in a similar conventional building

Energy Supply

* 33% RPS by 2020
  * Expected to provide about 50% of the electricity sector reductions identified in the AB 32 Scoping Plan
  * 8,000 MW new large-scale renewables by 2020
  * 12,000 MW new Distributed Generation by 2020
* New Renewable Distributed Generation
  * $3.35 billion effort by CPUC (California Solar Initiative), CEC (New Solar Homes Partnership, and publicly owned utilities
* Transmission and distribution issues and needs

Renewable Distributed Generation – Senate Bill 1

Enacted in 2006, SB 1 is the Largest Solar Program of its kind in the Country

- $3.35 billion effort by CPUC (California Solar Initiative), CEC (New Solar Homes Partnership, and publicly owned utilities
- Residential and nonresidential customers
- 3,000 MW combined public/ investor-owned utilities goal
- Solar industry self-sufficiency in 10 years
- Has resulted in about 50,000 PV system installations since its inception

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ARRA Solar Thermal Projects Permitted in California during 2010

Project	Capacity (MW)	Annual RE generation (MWh)	Annual GHG emissions avoided (tons)	Peak Jobs	Permanent Jobs
Abengoa	250	630,000	261,450	1,162	68
Beacon	250	600,000	249,000	836	66
Blythe	1000	2,100,000	871,500	1,066	295
Calico	663	1,435,000	595,525	400	136
Genesis	250	600,000	249,000	1,085	50
Imperial Valley	709	1,525,000	632,875	900	164
Ivanpah	370	880,000	365,200	1,000	86
Palen	500	1,000,000	415,000	566	134
Rice	150	450,000	186,750	280	47
Alta (Oak Creek Mojave)	800	1,787,500	741,813	Unavailable	50
AV Solar Ranch One	245	515,000	140,000	300	20
Total	5,200	11,500,000*	4,700,000**	7,600	1,100

*Equals about 25% of new renewable generation needed to meet the 33% RPS.
** Represents about 22% of the avoided GHG emission reduction accounted for RPS under the ARB's 2008 Climate Change Scoping Plan

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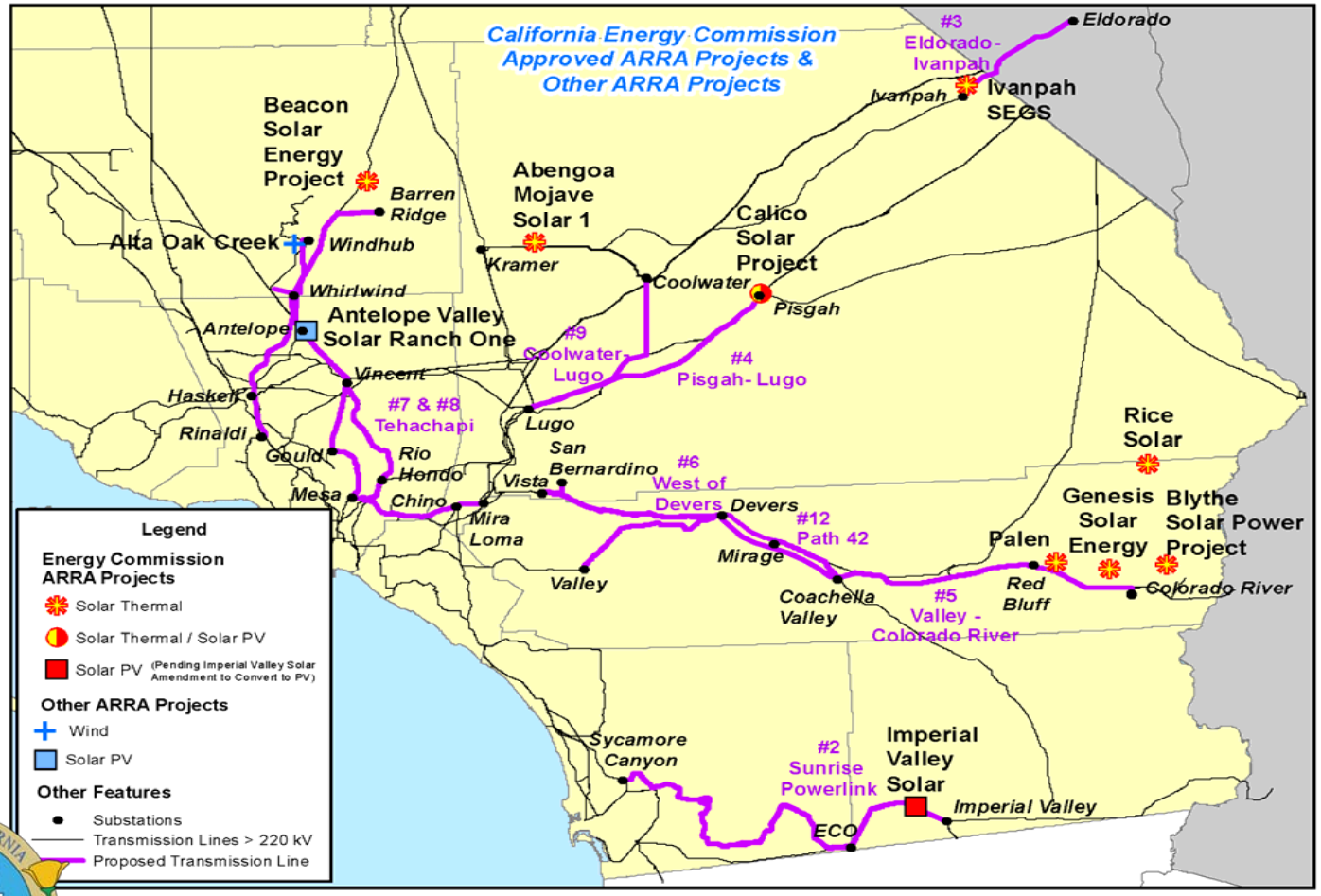
Increasing Large Scale Renewables and Necessary Transmission



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Transportation

* Advanced Clean Cars rulemaking
* Plug-In Electric Vehicle Collaborative
* AB 118
* Low Carbon Fuel Standard
* Sustainable Communities Act (SB 375)
* Goods Movement

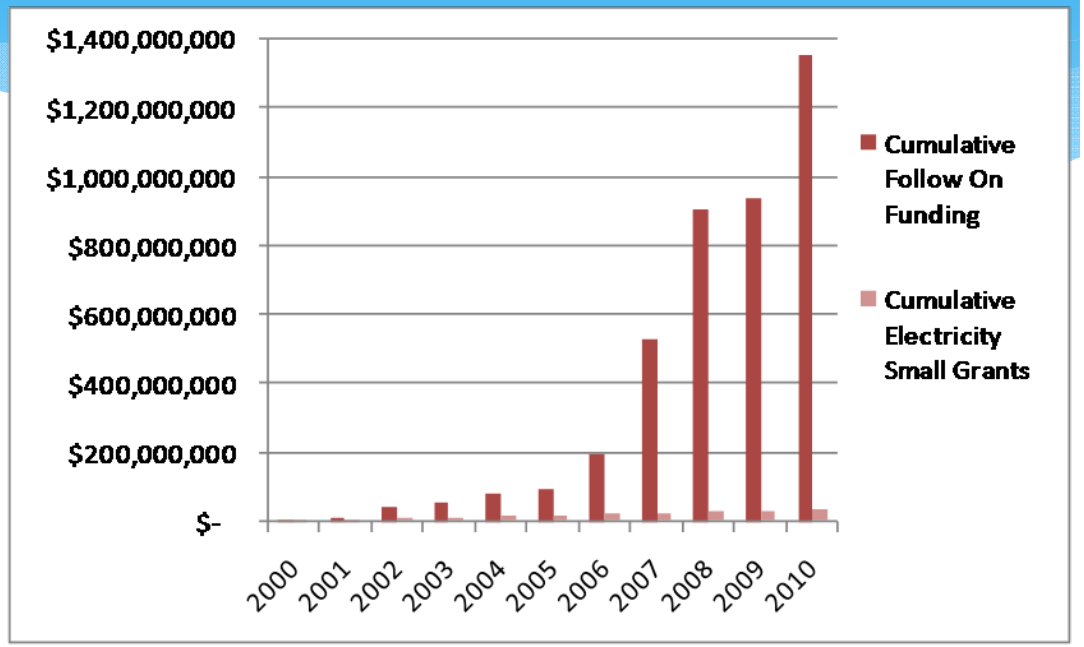
Achieving the Policy Targets

* Need additional research and early stage support for new technologies and companies
  * Public Interest Energy Research (PIER) program

Estimated Job Benefits from Public Interest Energy Research Program (PIER)

Jobs estimate:

10,000 direct jobs and 20,000 induced jobs from private investment pursuant to PIER small grants funding



Examples of types of benefits estimates

- Automated demand response → reduced peak, emissions
- Synchrophasor research → reliability, better renewable integration
- Energy efficiency research → energy savings , reduced emissions

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PIER Work with Silicon Valley Leadership Group

* Participated in Data Center Energy Efficiency Summits with the Silicon Valley Leadership Group
  * Share information on latest energy technologies related to data centers and determine the gaps and needs for future research
* Developed contract with LBNL which includes funding to develop demonstrations with the Silicon Valley Leadership Group
  * Demonstrations of best practices, emerging technologies, and other improvements
  * Approved at the May 31 Business Meeting

Additional Information

California Energy Commission Web sites:

- Renewable Energy Program
  www.energy.ca.gov/renewables/index.html
- GoSolar California
  www.gosolarcalifornia.org
- Renewables Portfolio Standard
  www.energy.ca.gov/portfolio/index.html
- Integrated Energy Policy Reports
  www.energy.ca.gov/2009publications/CEC-100-2009-003/CEC-100-2009-003-CTF.PDF

  www.energy.ca.gov/2010publications/CEC-100-2010-001/CEC-100-2010-001-CMF.PDF
- Siting Division Overview Website
  www.energy.ca.gov/siting/index.html

Air Resources Board Web sites:

- Renewable Energy Program
  www.energy.ca.gov/renewables/index.html
- GoSolar California
  www.gosolarcalifornia.org

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