



California Energy Commission Policy

**California Center for Sustainable Energy 6th
Annual Conference**

San Diego Convention Center

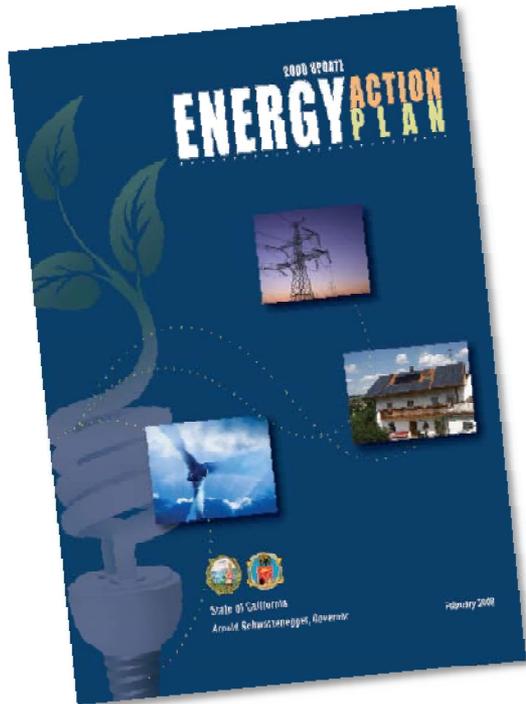
September 16, 2010

Robert B. Weisenmiller
Commissioner

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



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



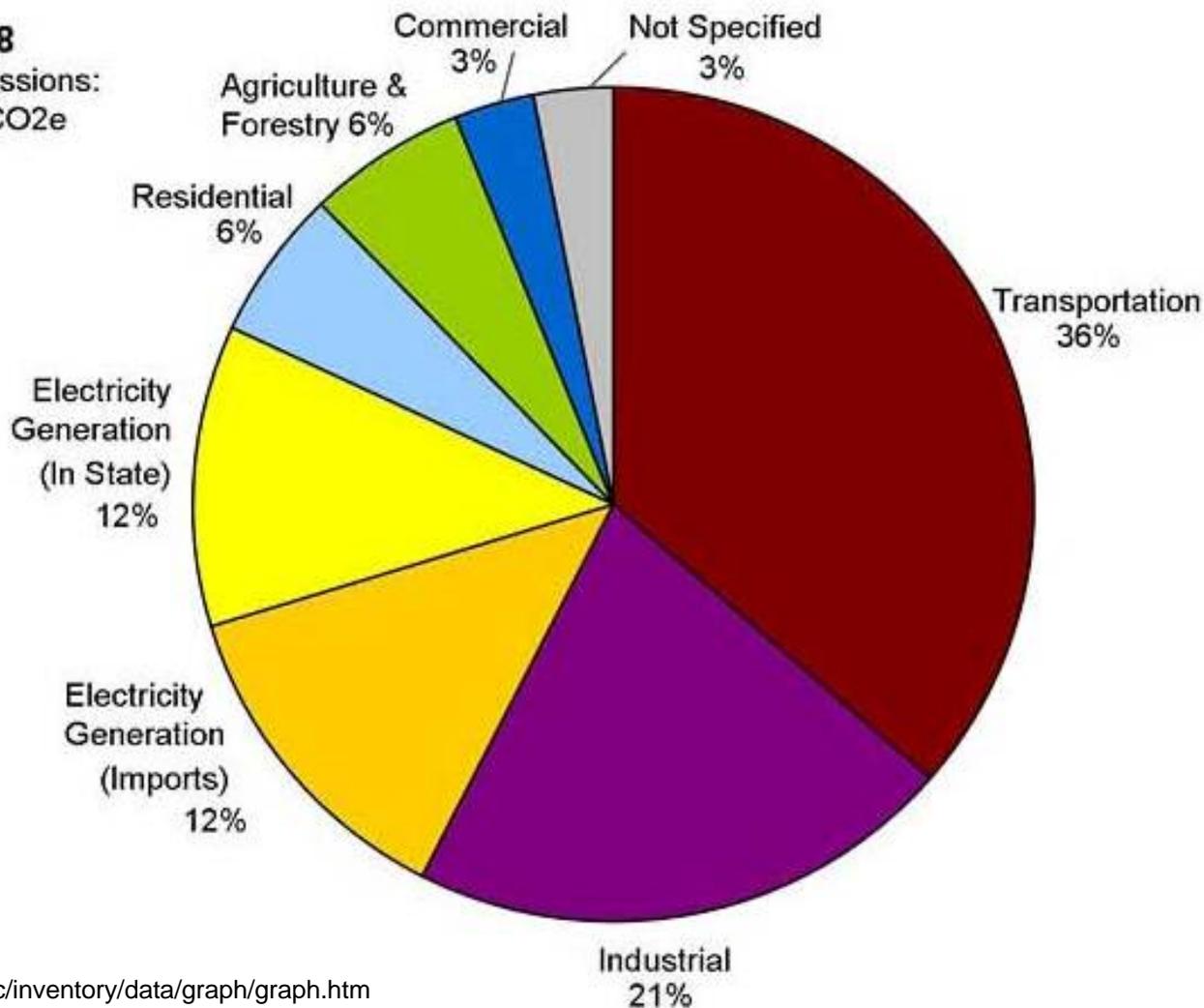
1. Energy efficiency and demand response
2. **Renewable energy and distributed generation**
3. Clean fossil-fueled sources and infrastructure improvements

This strategy benefits CA by reducing CO₂ emissions and diversifying energy sources.

California Greenhouse Gas (GHG) Emissions



Year 2008
Total gross emissions:
477.7 MMT CO₂e

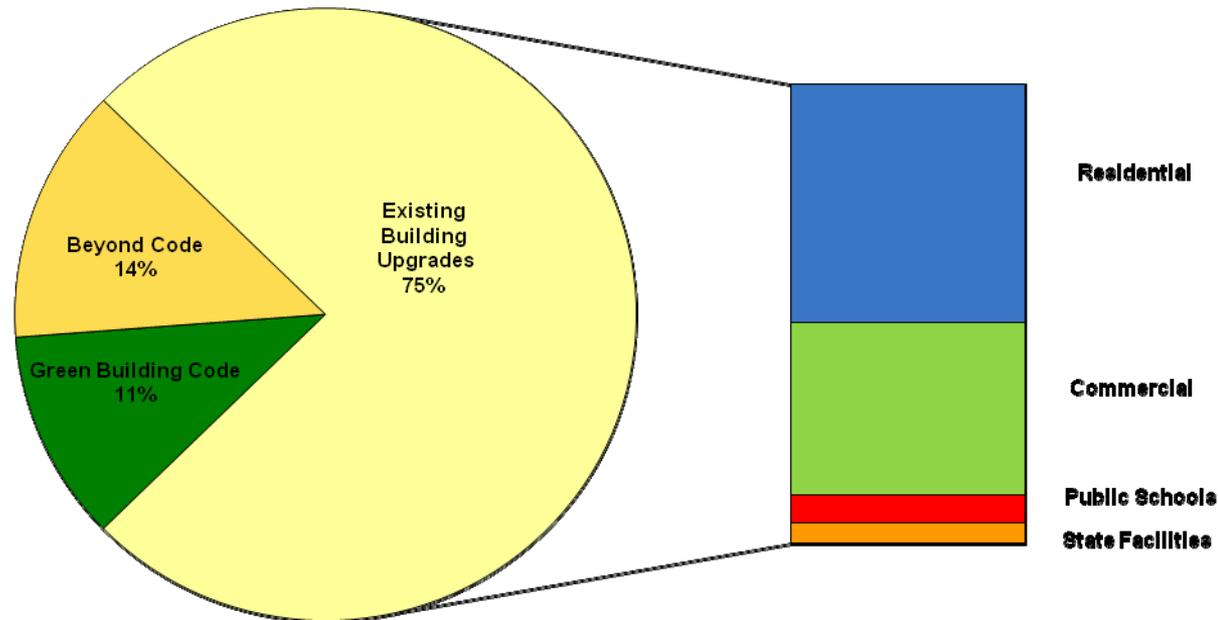


Source: <http://www.arb.ca.gov/cc/inventory/data/graph/graph.htm>

Greenhouse Gas Emission Reduction Potential



- Over 13 Million Existing Homes in California
- 70% of Housing Predates Energy Standards
- Existing Homes Offer # 1 GHG Reduction Potential



ARRA Energy Efficiency Community Block Grant - \$3 million to San Diego County

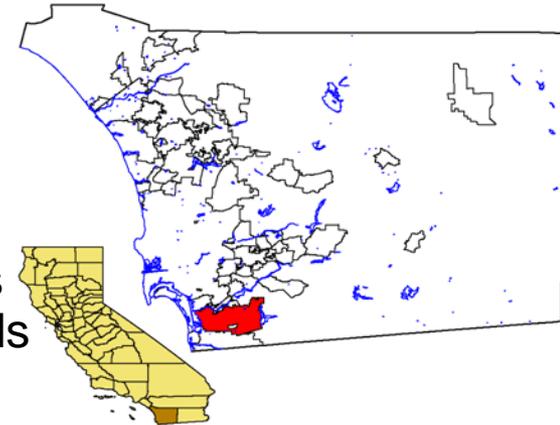


- California Comprehensive Residential Building Retrofit Program
- Consortium of local governments, workforce development organizations, community colleges, utilities, others will:
 - Expand Home Energy Rating System (HERS) into second program phase (HERS II)
 - Develop multi-family residential energy audit & building simulation tools
 - Train home energy auditors & retrofit contractors
 - Launch pilot local financing programs

Local Ordinances Exceeding 2008 Building Energy Efficiency Savings



- City must complete: Feasibility/cost studies & ordinance presentation/vetting to the public
- Apply to Energy Commission → Approval at Business Meeting → Send to CA Buildings Standards Commission
- Example: City of Chula Vista
 - New Residential
 - Climate 7: 15% above 2008 Building Standards
 - Climate 10: 20% above 2008 Building Standards
 - New Commercial
 - Climate 7 and 10: 20% above 2008 Building Standards



Source of Climate zone information can be found at: http://www.energy.ca.gov/maps/building_climate_zones.html

AB 758 (Skinner, Statutes of 2009)



- Requires Energy Commission to develop/ implement comprehensive program to achieve greater energy savings in California's existing residential and nonresidential buildings.
- Energy Commission will open Rulemaking process to develop program regulations
- Will build off ARRA State Energy Program, HERS II and AB 1103
 - AB 1103 - Will establish operational energy rating disclosure process between parties in a financial transaction (lease, lend or sale)



Senate Bill 1

One Million Solar Roofs in California by 2016!



SB 1 enacts Governor Schwarzenegger's *Million Solar Roofs Initiative*

- SB 1 (2006) includes the CPUC's California Solar Initiative program, CEC's New Solar Homes Partnership (NSHP), and the Publicly owned utilities portion.
- SB 1 includes municipal utilities that the CPUC does not oversee.
- Requires production homebuilders of 50+ homes to offer solar as an option for new homes starting in 2011.
- Adds energy efficiency improvements as a condition to receiving incentive for roof-top solar energy.





New Solar Homes Partnership

The NSHP intends to create a sustainable market for solar homes and gain builder commitment to install solar energy systems.

- High-performing solar systems on highly efficient residential construction
- Target: 400 MW installed capacity by the end of 2016
- Solar energy systems on 50% of new homes by end of program
- Self-sufficient solar industry
- One-time, up-front incentive
- Incentives decline as megawatt targets are reached.
- Incentives decline to zero over 10 years.



Energy Commission RPS Implementation

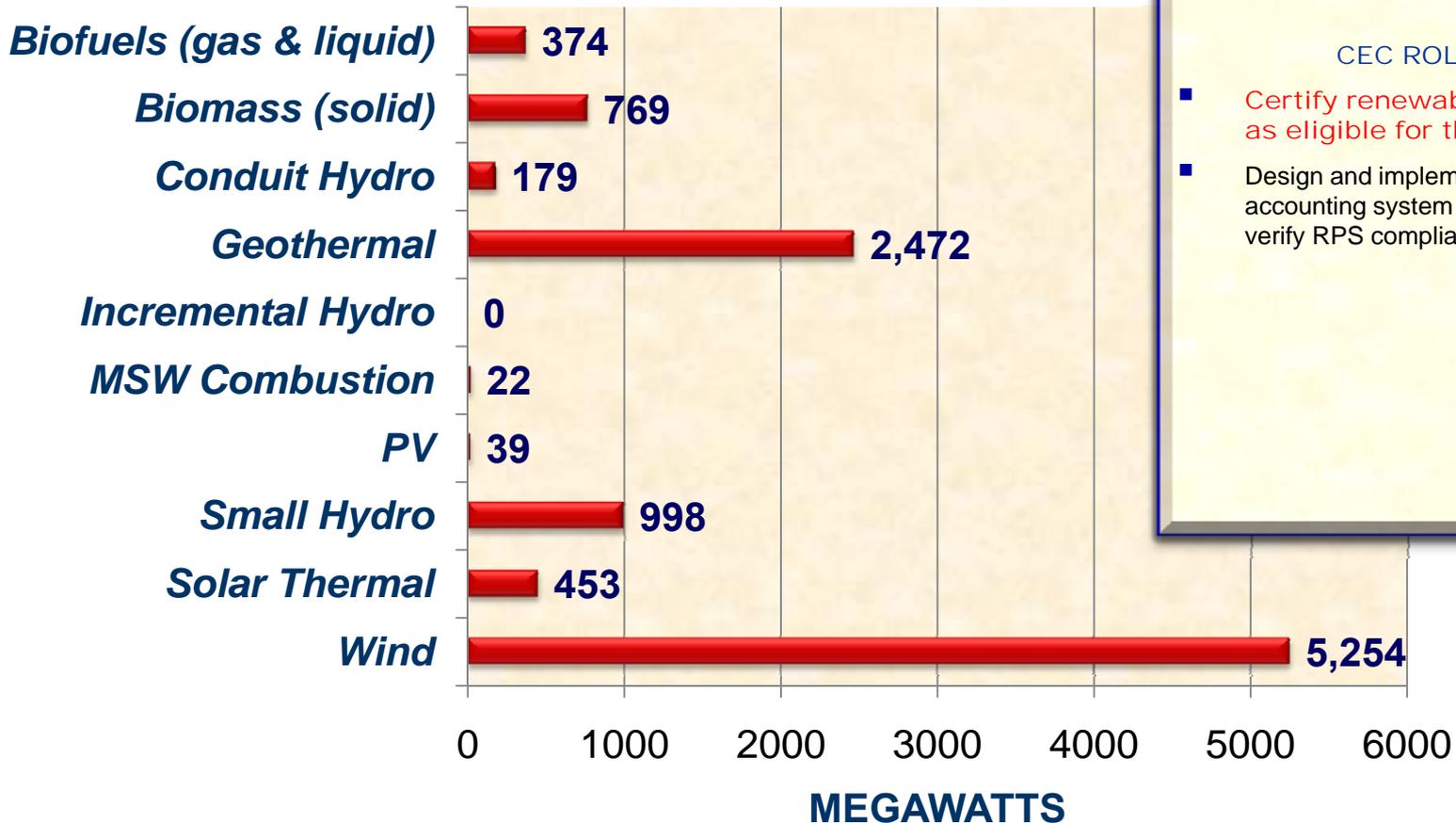


- CA Renewable Portfolio Standard (RPS) enacted in 2002 and amended in 2006
 - 20% of electricity resources to be renewable by year end
 - Executive Order S-14-08 set 33% target by 2020
- Certify renewable facilities as eligible for RPS
- Design and implement an accounting system to track and verify RPS compliance
- The Commission developed a *Renewables Portfolio Standard Eligibility Guidebook* to implement and administer its responsibilities under RPS

CEC RPS Certification



Facilities certified as RPS eligible represent more than 10,560 MW of capacity.*



*Includes only the percent of capacity certified as RPS eligible.
Data as of April 2010.

What is the **W**estern **R**enewable **E**nergy **G**eneration **I**nformation **S**ystem?



WREGIS tracks renewable generation to help ensure the credibility of the "green" value of renewable electricity

- WREGIS is a **voluntary, independent** renewable energy registry and tracking system for the Western states transmission area
 - Uses verifiable renewable energy generation data
 - Creates renewable energy certificates (WREGIS certificates)
 - Accounts for transactions involving certificates
 - Supports voluntary and regulatory markets for certificates
- WREGIS was launched in June 2007
- Retail sellers and renewable facilities participating in California's RPS are required to register with and use WREGIS. Publicly owned utilities (POUs) can opt to use WREGIS to track their RPS energy.

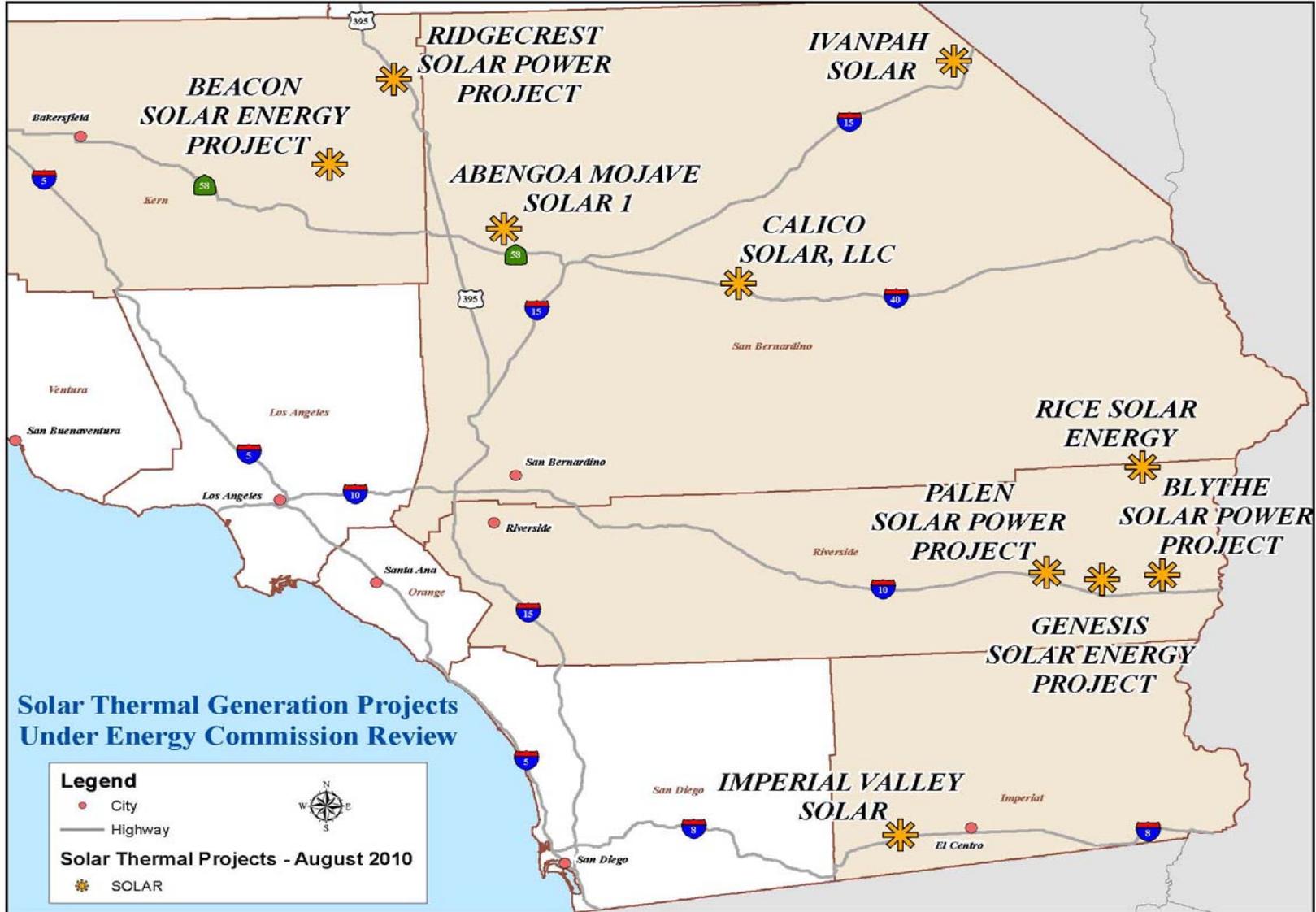
CEC ROLE

- Certify renewable facilities as eligible for the RPS
- Design and implement an accounting system to track and verify RPS compliance

RESULTS as of June 2010:

- ➔ **More than 335** companies and **over 1,400** generators are approved to be WREGIS Account Holders.

Solar Thermal Projects Seeking ARRA Funding Currently in the CEC Siting Process



Seven Active Solar Thermal Projects Seeking ARRA funding currently in the CEC Siting/Permitting Process



- Ivanpah Solar Electric Generating System (370 MW) – 9/22/10
CEC decision
- Imperial Valley Solar Project (709 MW) – 9/29/10
- Genesis Solar Energy Project (250 MW) – 9/29/10
- Calico Solar Project (850 MW) – November/December 2010
- Palen Solar Power Project (484 MW)– December 2010
- Rice Solar Energy Project (150 MW) - December 2010
- Beacon Solar Energy Project (250 MW) – **APPROVED 8/25/10**
- Abengoa Mojave Solar (250 MW) – **APPROVED 9/8/10**
- Blythe Solar Power Project (1000 MW) – **APPROVED 9/15/10**
 - Ridgecrest Solar Power Project (250 MW) – delayed for biological resource studies

General Challenges for Permitting ARRA Solar Projects



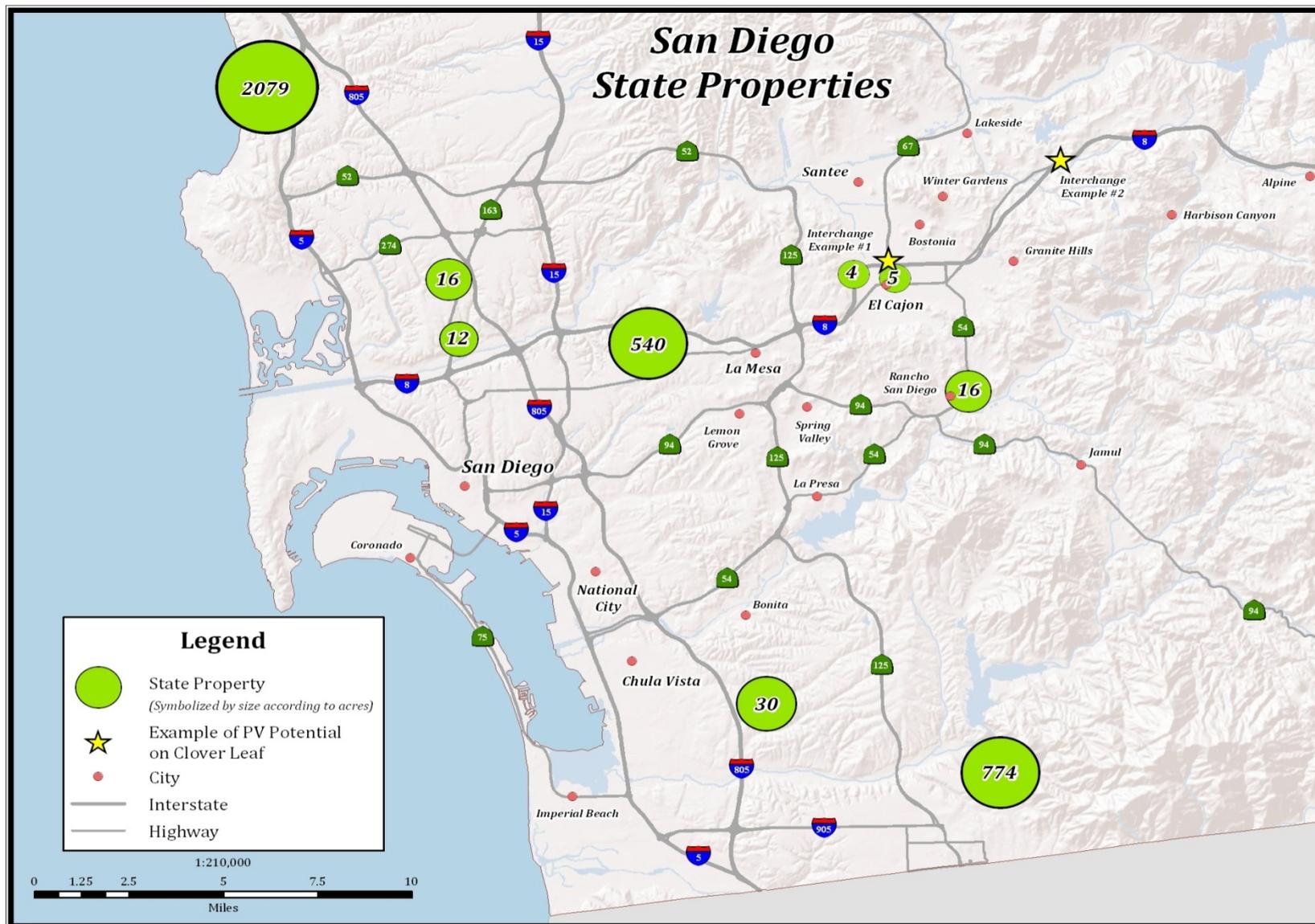
- **Solar projects require about 75 percent more resources than natural gas-fired projects!**
- Most projects located in areas inhabited by rare and endangered animal and plant species; requires extensive analysis to determine impacts and appropriate mitigation
- Projects are typically located in arid regions with limited access to water requiring complex analyses to determine impacts and necessary mitigation, including relocation

General Challenges for Permitting ARRA Solar Projects (Cont.)



- Projects cover such large areas they have a significant impact on surface drainage which necessitates extensive hydrological analyses to ensure erosion potential is minimized
- The large size of the projects and their location on typically undisturbed lands often results in impacts to a wide array of cultural resources, particularly Native American resources of great antiquity, which requires extensive analysis to ensure compliance with federal and state laws

Solar on State-Property Project





Thank you very much!!

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Commissioner

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Hip pocket slide group

- Possible hip pocket group:
 - HERS II detail
 - SB 1 assignments for Energy Commission
 - New Solar Homes Partnership Eligibility & Incentives
 - Chula Vista Research Project
 - Changes to RPS Guidebook
 - RPS procurement verification
 - Power plant siting/permitting jurisdiction
 - Example of Caltrans cloverleaf

California HERS Program – Phase II



- Sets California Energy Audit & Rating Standards
- Adopted by the CEC in December 2008 and took effect on September 1, 2009
- Responds to Legislative Direction:
 - Consistent, accurate, and uniform Whole-House Home Energy Ratings using a single statewide rating scale
 - Estimates of utility bill savings and recommendations for cost-effective energy efficiency improvements
- Standard Whole-House Measure Analysis Hierarchy
 - **Envelope** → **Ducts/Tuning** → **Lights/Appliances** → **Changeouts** → **PVs**
- July 28, 2010 – California Certified Energy Rating & Testing Services (CalCERTS) approved as Provider to train and certify HERS Whole House Raters

SB 1 Assignments for Energy Commission



- Establish guidelines for the roof-top solar programs of the Energy Commission, CPUC, and POUs. The guidelines include:
 - Eligibility criteria for solar energy systems
 - Requirements on ratepayer-funded incentives
 - Rating standards for equipment, components, and systems
- Conduct annual random audits of solar energy systems to evaluate operational performance
- Education and outreach
- Evaluate costs and benefits of solar energy systems
- Conduct a study to determine whether solar should be required on new residential and new nonresidential buildings
- Offset Program would allow a developer or seller of production homes to forgo the solar offer requirement by installing solar energy systems generating specified amounts of electricity on other projects including low income housing, multifamily, commercial, industrial, and institutional developments

New Solar Homes Partnership



ELIGIBILITY REQUIREMENTS

- New residential construction only
 - Single family, multi-family, affordable housing
- Customer of investor-owned electric utility
- Energy Efficiency:
 - Minimum: *Tier 1* - 15% higher than current Title 24
 - Encouraged: *Tier 2* - 30% higher and 30% AC reduction
- Minimum 1 kW AC
- Grid-connected
- New certified components, 10-year warranty
- Offset customer's on-site electrical load

INCENTIVES

- Incentive of ~\$2.50/watt or more based on expected performance

PIER Funded Chula Vista Research Project



- Goal: Determine which actions and technologies in the California loading order can be combined with enabling community design options to increase the energy efficiency and air quality of California communities
- Some of the Aggregate Building Project Results:
Summary
 - PV & EE scenario reduces energy consumption by approx. 45% over a 2005 Title 24 compliant approach
 - DG & EE scenario reduces energy consumption by approx. 41% over a 2005 Title 24 compliant approach
 - EE scenario reduces energy consumption by approx. 21% over a 2005 Title 24 compliant approach
 - Selective deployment of DG with EE measures could achieve a 45% reduction in peak demand

RPS Eligibility Guidebook: *Proposed Changes Schedule*



- Comments on Draft RPS Eligibility Guidebook
→ Due 9/10/10
- Notice for Adoption at a Business Meeting with
proposed changes to be adopted → 11/2/10
- Business Meeting for Adoption → 11/17/10

RPS Procurement Verification Report



- SB 1078 charged the Energy Commission with certifying facilities as RPS eligible and tracking and verifying RPS procurement.
 - Certification is an ongoing process to ensure that applicants conform with RPS eligibility requirements.
 - POUs are encouraged to procure from facilities certified by the Energy Commission, but not required to under current law.
- The statute, however, is silent on how the Energy Commission should report the results of its accounting and verification to the CPUC.
- Consequently, the Energy Commission decided to develop an annual *RPS Verification Report* to meet the statutory verification requirements and transmit the report to the CPUC.
 - The 2004-2007 reports utilize an “interim tracking system.” Staff manually compares self-reported procurement data with self-reported generation data.
 - Long term: Utilities file compliance reports through electronic tracking system, Western Renewable Energy Generation Information System (WREGIS).
- The CPUC determines RPS compliance. The CPUC uses the Energy Commission’s *Verification Report* and applies the flexible compliance rules developed by the CPUC to assess compliance.

Siting and Permitting: Energy Commission Jurisdiction



- Thermal power plants \geq 50 Megawatts (MW) and related facilities such as transmission, water and gas lines
 - When related to a thermal power plant, Energy Commission has transmission line jurisdiction up to first point of interconnection
 - California Environmental Quality Act (CEQA) lead agency for permitting/licensing
 - Energy Commission works with federal lead agencies for National Environmental Policy Act (NEPA)
- Includes: solar thermal, geothermal, and biomass
- Does not include: wind, solar photovoltaic, hydro, wave generation
- Does not include: downstream transmission facilities and transmission lines not connected to a thermal power plant

Example of PV Potential on Caltrans ROW

