

Sempra Energy and Climate Change Regulations

**AB 32 and REC Seminar
San Diego Gas & Electric**

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Existing CA GHG-Related Electricity Procurement Rules

Applicable to state Investor-owned utilities

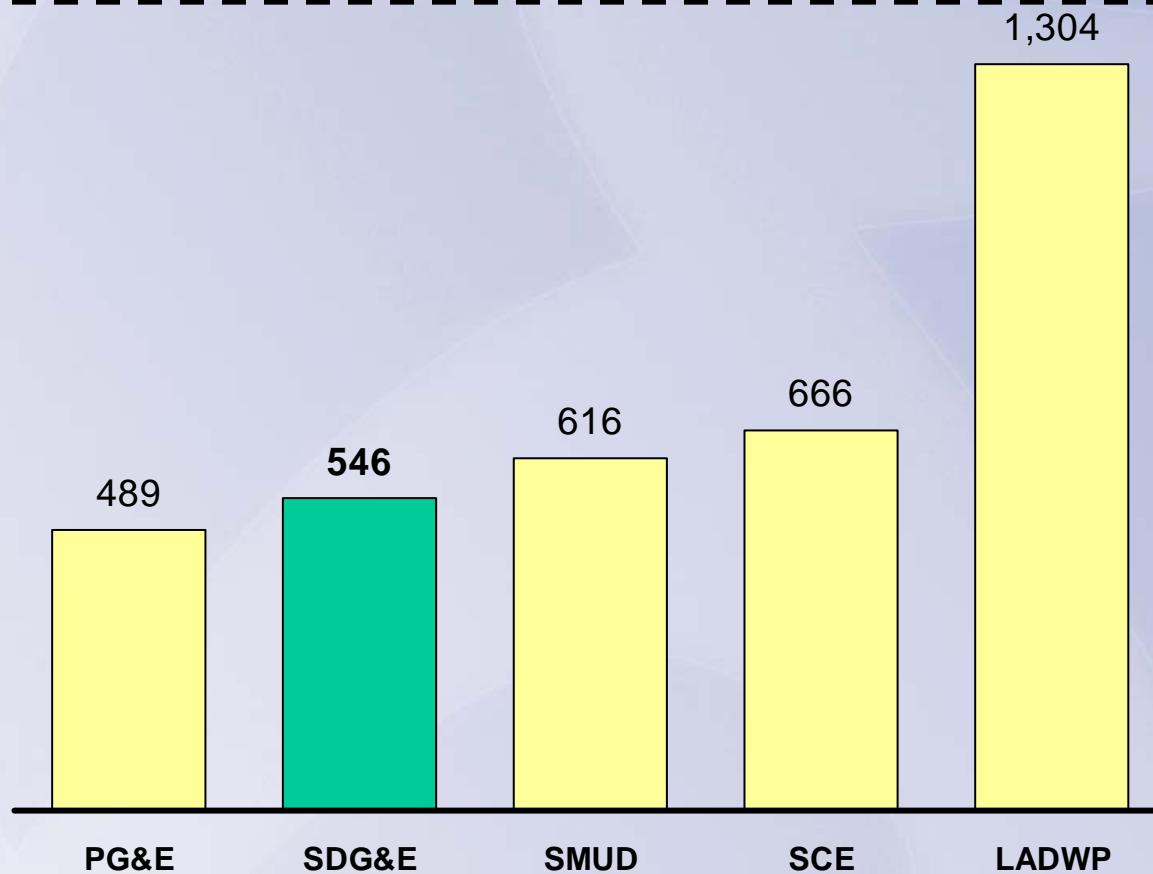
- Loading Order: EE, DR, Renewables, Other
- RPS Target: 20% by 2010
- GHG Adder
 - Cost adder used in procurement selection process
 - Started at \$8/ton CO₂, escalated 5%/year

Applicable to state Investor-owned and Municipal utilities

- SB 1368: Limits Power Resources
 - No new ownership investment in high emitting resources
 - No long-term contracts with high emitting or unspecified resources
- AB 32: 1990 GHG levels by 2020
 - Combination of mandates and markets

California Utility CO₂ Emission Rates (Lb/MWh)

US average = 1,461



- The CO₂ emission rates of California's investor-owned utilities are less than half the national average

Current Environment on Government Action

- Federal GHG regulation is no longer “if”, but “when” and “how”
- Industry currently favors cap-and-trade (with generous allocations); economists advocate a carbon tax; the political discussion is presently focused on cap-and-trade
- Carbon pricing (tax or cap-and-trade) will need to address a number of challenges and shortcomings:
 - Market failures
 - Allocation of costs (and benefits)
 - Industrial competitiveness
 - Regulatory certainty
 - Global integration
 - Coal projects being delayed or canceled due to uncertainty over GHG regulation
 - State RPS’s continue to create “captive markets” for renewables

Actions While Awaiting Policy Development and Implementation

- Energy Efficiency
- Renewables
- Natural Gas Infrastructure

Energy Efficiency

- Benefits of Sempra Energy Utilities' energy efficiency and demand response programs
- Between 1992 and 2006:

SDGE

- \$585 million spent for electric programs with savings of 2.9 million kWh and 625 MW
- \$96 million spent for gas programs with savings of 38 million therms

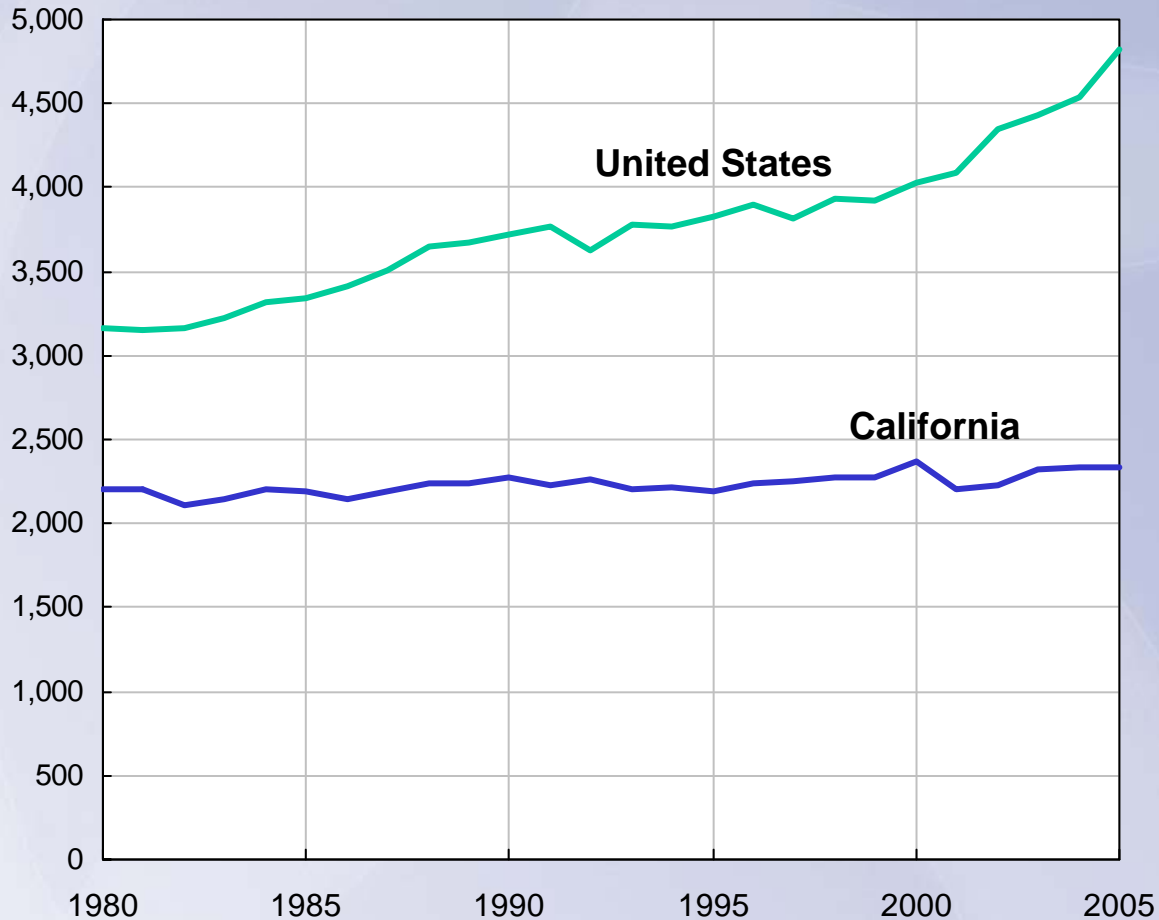
SOCAL GAS

- \$457 million spent with savings of 243 million therms



Per-Capita Residential Electric Energy Consumption

(Kilowatt-hours per person per year)


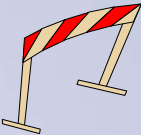
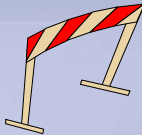
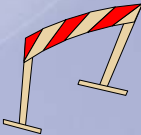

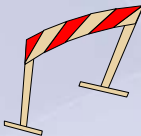
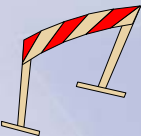
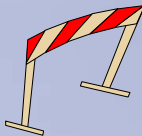
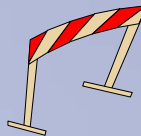
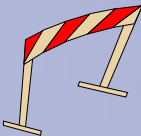

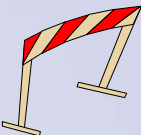
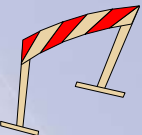
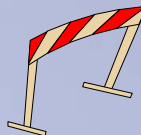

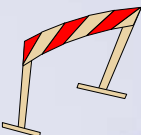
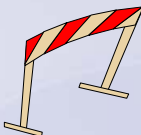
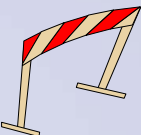
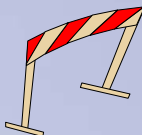
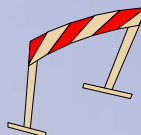

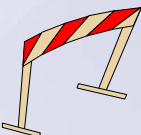
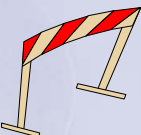


- California is a world leader in energy efficiency
- Average residential electricity consumption has been virtually flat for the last 25 years, despite the increase in average dwelling size and the proliferation of electronic devices

Utility Technology – Smart Meters

- SDG&E will install two-way communicating Smart Meters throughout its service territory to provide: greater customer awareness and control of energy use, enhanced customer service and faster outage detection and response.
 - Replace 1.4 million electric meters, upgrade 900,000 gas meters
 - Part of statewide effort
 - First 5,000 meters installation – April 2008 in Tierrasanta
 - Broad rollout beginning in 1Q 2009
 - Usage data will be available via Internet, phone
 - Cost: \$500 million
 - *In the future:* Home Area Network functionality allows for customer choice with enabling technology – automated control of appliances, electronics.

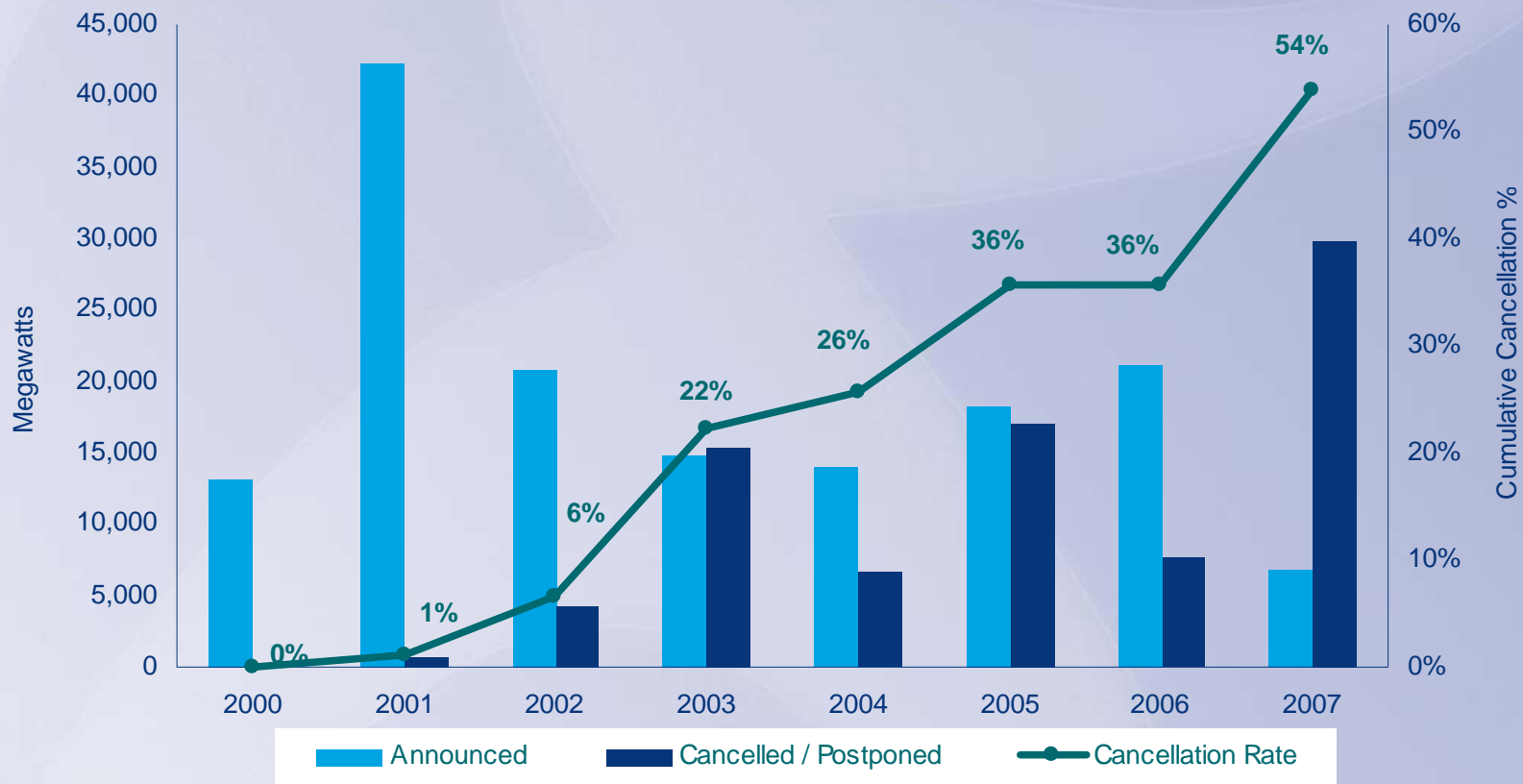
Renewables Technical Hurdles

Technology	Intermittency/storage	Thermodynamic cycle	Fuel quality/composition	Materials	Fuel transport	Distance to load	Water	Quality of remaining resource
 <p>Wind</p>								
 <p>Geo-thermal</p>								
 <p>Biomass</p>								
 <p>Solar thermal</p>								
 <p>Solar photo-voltaic</p>								

Natural Gas Infrastructure

- Natural gas is cleanest burning fossil fuel with lowest greenhouse gas emissions per energy unit
- Baseload coal project cancellations
- Need for new peaking capacity and backup for intermittent renewable load supplies

US Coal Project Announcements and Cancellations



Conclusions

- California only program will have minimal impact on worldwide emissions but can be leader in defining program design options and technology development
- Program must be as broad as geographically possible to maximize reduction opportunities
- Major design elements must recognize potential for wealth transfers and minimize the cost impacts particularly for disadvantaged
- Development of new technologies is critical to success and must be properly incentivized
- Regulating greenhouse gases will be complicated, could be economically disruptive – as a result will be highly politicized