

California Energy Commission – PIER



Climate Change Response: Mitigation and Adaptation in California

Martha Krebs, Ph.D.
Public Interest Energy Research Program
California Energy Commission

at the

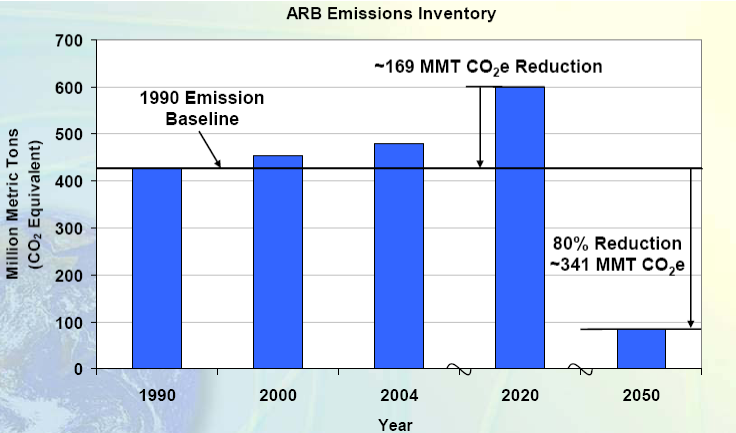
WESTCARB Annual Meeting
Anchorage, AK
October 2, 2008

1

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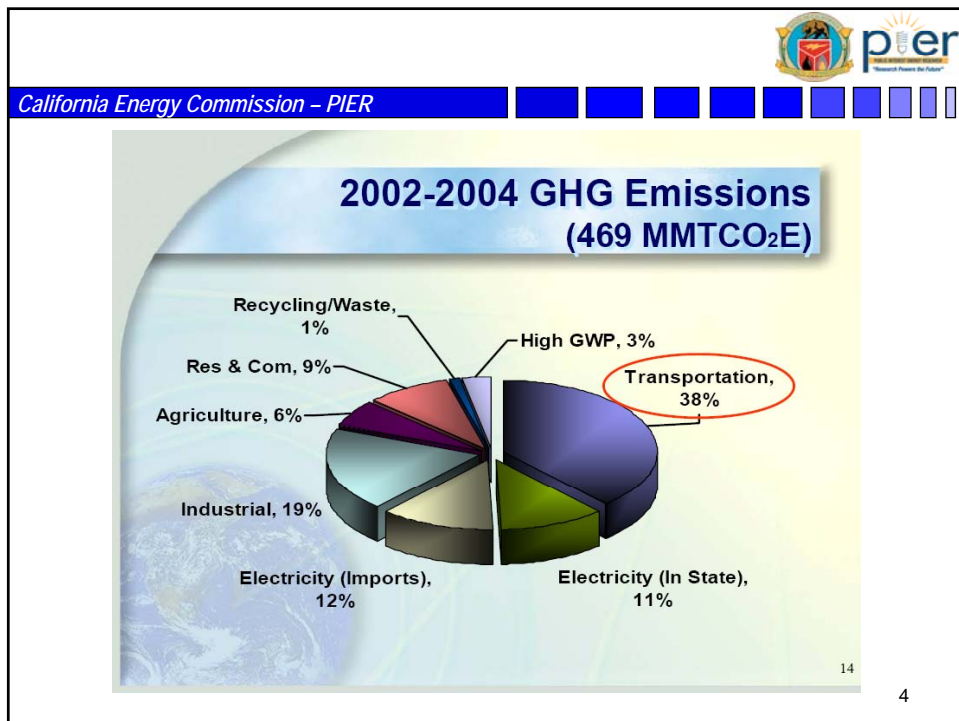
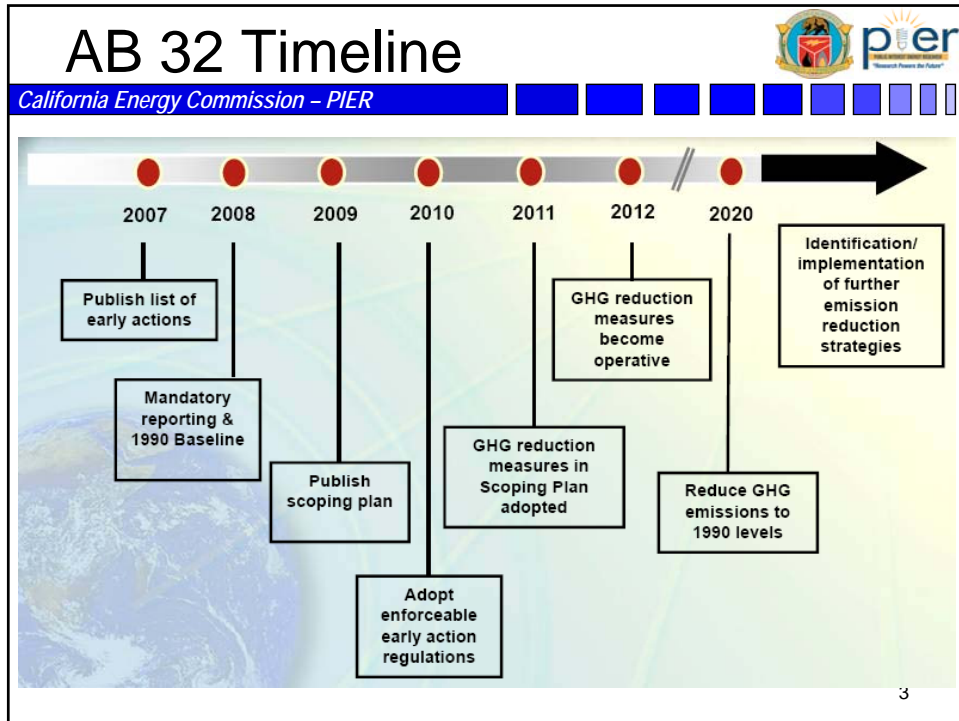
California Has Aggressive Goals for Greenhouse Gas Reduction

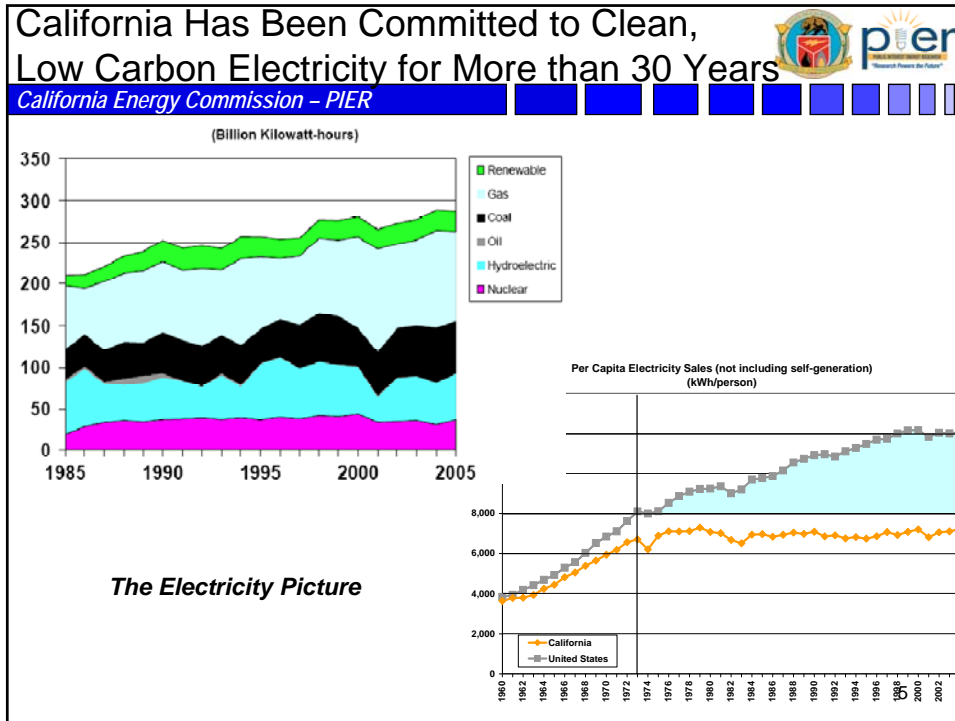


Year	Million Metric Tons (CO ₂ Equivalent)
1990	430
2000	450
2004	480
2020	600
2050	80

- 2020 Goal Established by Global Warming Solutions Act of 2006, AB 32
- 2050 Goal Established by Governor in Executive Order S-3-05 to meet 450 ppm concentration target

2





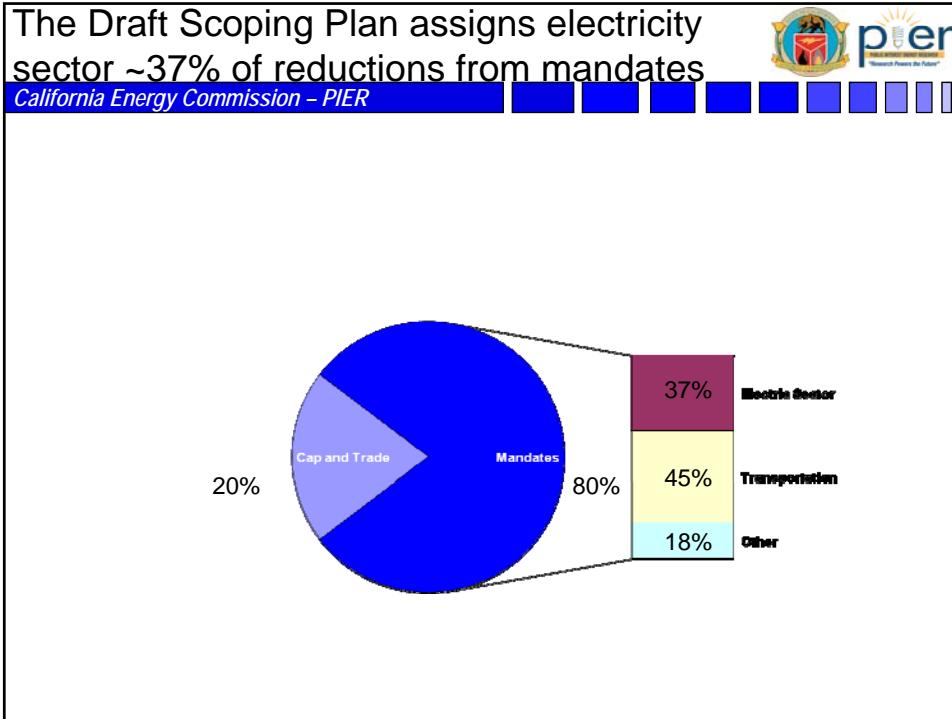
Scoping Plan Draft Identifies Reductions Expect Changes in Final Draft

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	2020 Reductions (MMTCO ₂ E)
• Transportation	60.2
• Commercial and Residential (Electricity & Natural Gas)	26.4
• Electricity – RPS and CSI	23.3
• High Warming Potential Gases	16.2
• State Government	2.0
• Local and Regional Entities	2.0
• Water Sector	4.8
• Sustainable Forests	5.0
• Methane Control	2.0
• Additional	35.2

Utility Sectors Are Strongly Impacted

6





- ### CEC and PUC Joint Decision for Utility Targets for GHG Reduction
- California Energy Commission – PIER
- Energy Commission and PUC developing recommendations to ARB for reducing GHG emissions in the electricity and natural gas sectors
 - Joint regulatory proceeding
 - March 2008 Interim Opinion
 - October 2008 Final Opinion
 - ARB is final decision-maker
 - Proposed Opinion will primarily inform ARB's rulemaking process to follow the Final Scoping Plan to be adopted by end of 2008

Proposed Final Opinion  

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Overview and Context



- Energy efficiency: Cornerstone of approach
- Renewable energy: Stepping stone to 2050 goals
- Market-based regulations: Complement and backstop to regulatory measures
- Combination of approaches captures best aspects of both
- Builds on March 2008 Interim Opinion, ARB's *Draft Scoping Plan*, and extensive stakeholder input


Proposed Final Opinion  

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Recommendations



- Set requirements for achieving all cost-effective energy efficiency
- Expand electricity from renewable energy beyond 20% goal
- Designate *deliverers* of electricity as responsible for compliance in a multi-sector cap-and-trade system where the electricity sector participates


Proposed Final Opinion  

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Electricity sector contributions to AB 32 goal

- Electricity sector accounts for 25% of California's GHG emissions
- ARB's draft *Scoping Plan* envisions electricity sector contributing about 40% of GHG reductions from programmatic measures alone
- Additional reductions are expected from cap-and-trade, up to more than 50% reductions from business-as usual projections

California Climate Action Plan:  

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- Interagency Team addresses mitigation and adaptation actions
- Twelve Subgroups focus on critical areas where coordinated action is required
 - Agriculture
 - Cement
 - Economics
 - Energy
 - Forestry
 - Green Building
 - Land Use
 - Recycling
 - Scenarios
 - State Fleet
 - Water Energy
 - Research & Development
- Climate Action Team Subgroups provided recommendations for Draft Scoping Plan

12

Adaptation: Beyond Mitigation Managing the Unavoidable

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- CA Resources Agency is leading the effort to identify Adaptation needs and strategies
- Multiple Stressors at Work
 - Summertime Water Scarcity
 - Public Health
 - Risks and Cost for Agriculture
 - Changing Landscape, Moving Species
 - Wildfire
 - Faster Sea Level Rise
 - Growing Energy Demand
- Response
 - Hazard and Vulnerability Assessment
 - Planning
 - Building New Processes that Support Prompt, Cooperative Public/Private Action
 - Co-Benefits
 - Individual and Institutional Behavior




The Future Is Now
An Update on Climate Change Science, Impacts, and Response Options for California
A summary report from the California Climate Change Center
Public Interest Energy Research Program
California Energy Commission
September 2008

13

Carbon Sequestration Co-Benefits for Mitigation & Adaptation

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- Terrestrial Sequestration
 - Early, Inexpensive Option for Mitigation
 - In the Scoping Plan – 5 MMtons by 2020
 - Afforestation in conjunction with Biopower Assists Adaptation of Forests to Warming Climate
 - Resilience and Sustainability
- Geological Sequestration
 - Enables orderly transition from Coal and Natural Gas
 - Combined with Biorefineries for fuels and chemicals may improve sustainability and mitigation in the transportation sector




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Thank You

for more information about
California's energy system
go to

<http://www.energy.ca.gov/>



Proposed Final Opinion

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Recommendations

- Some portion of emission allowances should be auctioned
- Auction revenues returned to the energy sectors for benefit of consumers, to be spent on AB 32 purposes such as energy efficiency, renewable energy, or low-income bill relief
- Additional record development needed on:
 - GHG emissions allowance allocations
 - Flexible compliance mechanisms
 - Treatment of combined heat and power

The California Model for GHG Reduction



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- Stimulate innovation in technology, behavior, institutions
- Target specific GHG reductions with broad array of rules and incentives
 - Energy efficiency standards, Renewables Portfolio Standard, Low Carbon Fuel Standard, etc.
- Overlay cap-and-trade program (and offsets) to create price signal for carbon and to equilibrate costs across sectors (and gain additional reductions)
- Strong partnerships – with governments, industry, and NGOs to motivate action by individuals/org's
- Roughly proportional reductions across all sectors (initially)
 - Leverage co-benefits: reduced oil use, public health, greater travel choices, urban livability, economic development

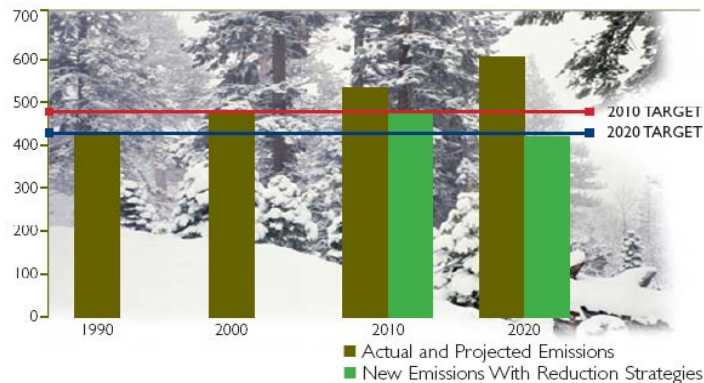
Encourage others to follow and to create rules and policies that are replicable and compatible with what others will do

17

California Has Aggressive Goals for Greenhouse Gas Reduction





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18



Table 2: Recommended Greenhouse Gas Reduction Measures

Recommended Reduction Strategies	Sector	2020 Reductions (MMTCO ₂ E)
The Role of State Government <ul style="list-style-type: none"> Reduce carbon footprint Set an example 	Various	1-2 ¹⁷
California Cap-and-Trade Program Linked to WCI: Emissions cap of 365 MMTCO ₂ E covering electricity, transportation, residential/commercial and industrial sources by 2020. Shaded reductions contribute to achieving the cap.		
California Light-Duty Vehicle GHG Standards <ul style="list-style-type: none"> Implement Pavley standards Develop Pavley II light-duty vehicle standards 	Transportation	31.7
Energy Efficiency <ul style="list-style-type: none"> Building and appliance energy efficiency and conservation <ul style="list-style-type: none"> 32,000 GWh reduced electricity demand 800 million therms reduced gas use Increase Combined Heat and Power (CHP) electricity production by 30,000 GWh Solar Water Heating (AB 1470 goal) 	Electricity & Commercial and Residential	26.4
Renewables Portfolio Standard (33% by 2020)	Electricity	21.2
Low Carbon Fuel Standard	Transportation	16.5
High Global Warming Potential Gas Measures	High GWP	16.2
Sustainable Forests	Forests	5
Water Sector Measures	Water	4.8 ¹⁸
Vehicle Efficiency Measures	Transportation	4.8
Goods Movement <ul style="list-style-type: none"> Ship Electrification at Ports System-Wide Efficiency Improvements 	Transportation	3.7
Heavy/Medium Duty Vehicles <ul style="list-style-type: none"> Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency) Medium- and Heavy-Duty Vehicle Hybridization Heavy-Duty Engine Efficiency 	Transportation	2.5
Million Solar Roofs (Existing Program Target)	Electricity	2.1
Local Government Actions and Regional GHG Targets	Land Use and Local Government	2
High Speed Rail	Transportation	1
Landfill Methane Control	Recycling & Waste	1
Methane Capture at Large Dairies	Agriculture	1 ¹⁹
Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	Industrial	TBD
Additional Emissions Reduction from Capped Sectors		35.2
Total Reductions		169

19

Scoping Plan Sets the Targets for Mitigation

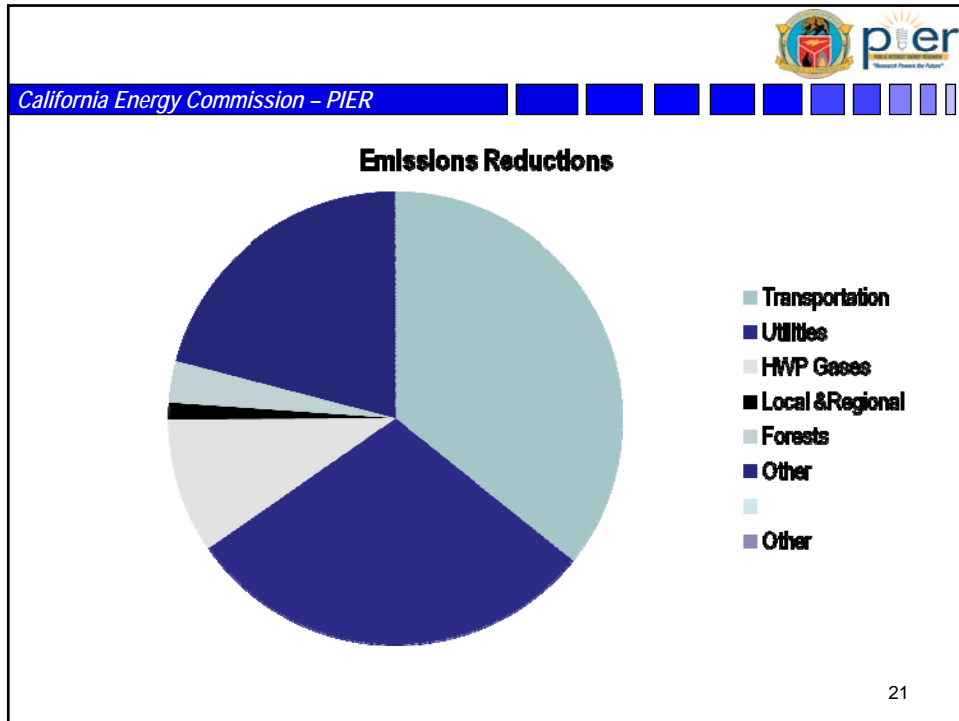
Status of Scoping Plan

- Draft Plan released June 26, 2008
- *Proposed Scoping Plan expected release on Oct. 15 for consideration at Nov. 20, 2008, Board Mtg.*

Scoping Plan Has Been a Participatory Process

- Contributions from Climate Action Team Subgroups
- Input from EJAC, ETAAC, and MAC
- Formal workshops & stakeholder work group meetings
- Public solicitation
- Extensive outreach at meetings, conferences, and other events

20



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- ### California Is Model and Leader, Not an “Island”
- Intent is not to create a unique, stand-alone set of policies and rules
 - Intent is to encourage others to follow and to create rules and policies that are replicable and compatible with what others will do
- 22

