

Climate Change Draft Scoping Plan: A Framework for Change

Public Workshops

Diamond Bar
July 8

Fresno
July 14

Sacramento
July 17

California Air Resources Board

The Time for Action Is Now

- Climate change is one of the most serious environmental issues facing the world
- Governor and Legislature have set bold goals for California
- Draft Scoping Plan provides a comprehensive recommendation addressing all significant sources of greenhouse gas emissions

Today's Presentation

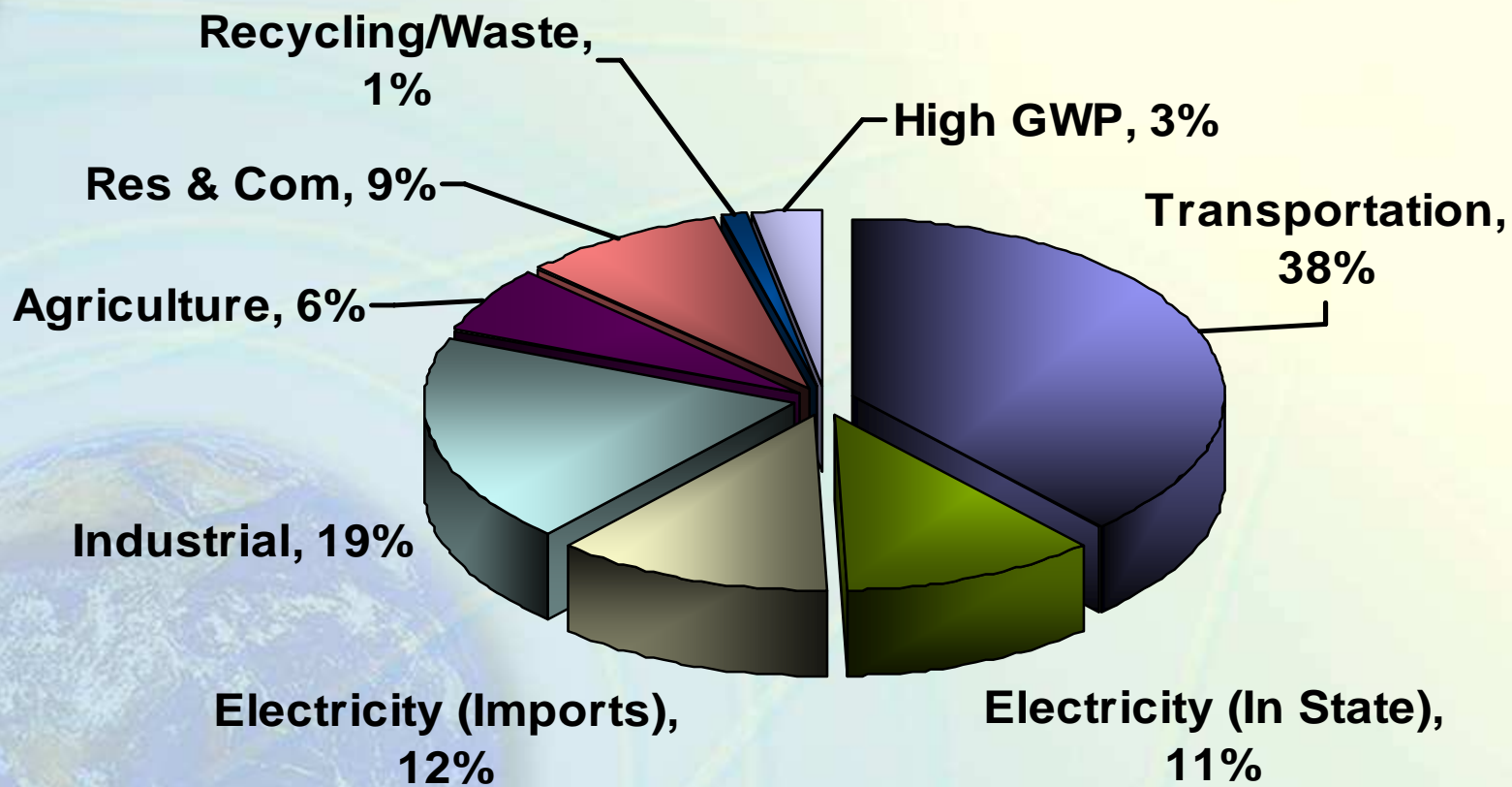
- Draft Scoping Plan Overview
- Preliminary Recommendation
- Additional Measures Under Consideration
- Scoping Plan Evaluations

Draft Scoping Plan

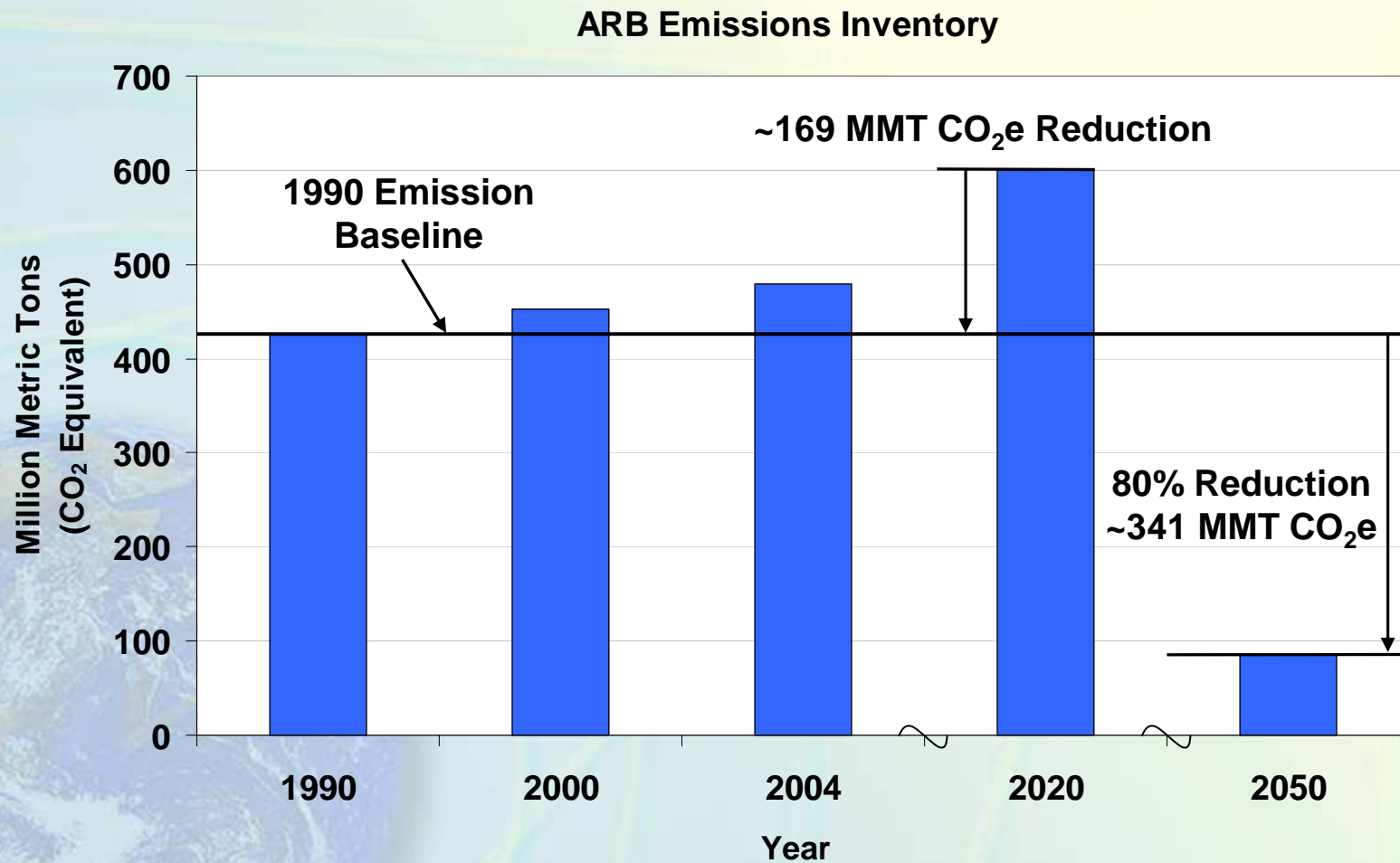
- By 2020, reduce greenhouse gas (GHG) emissions statewide to 1990 levels
- California's GHG strategies will also:
 - Protect and improve public health
 - Promote the development of clean energy
 - Foster opportunities for economic growth
 - Provide a model for regional, federal, and international programs
 - Put State on a path to 2050 goal

Draft Scoping Plan

2002-2004 GHG Emissions (469 MMTCO₂E)



Magnitude of the Challenge

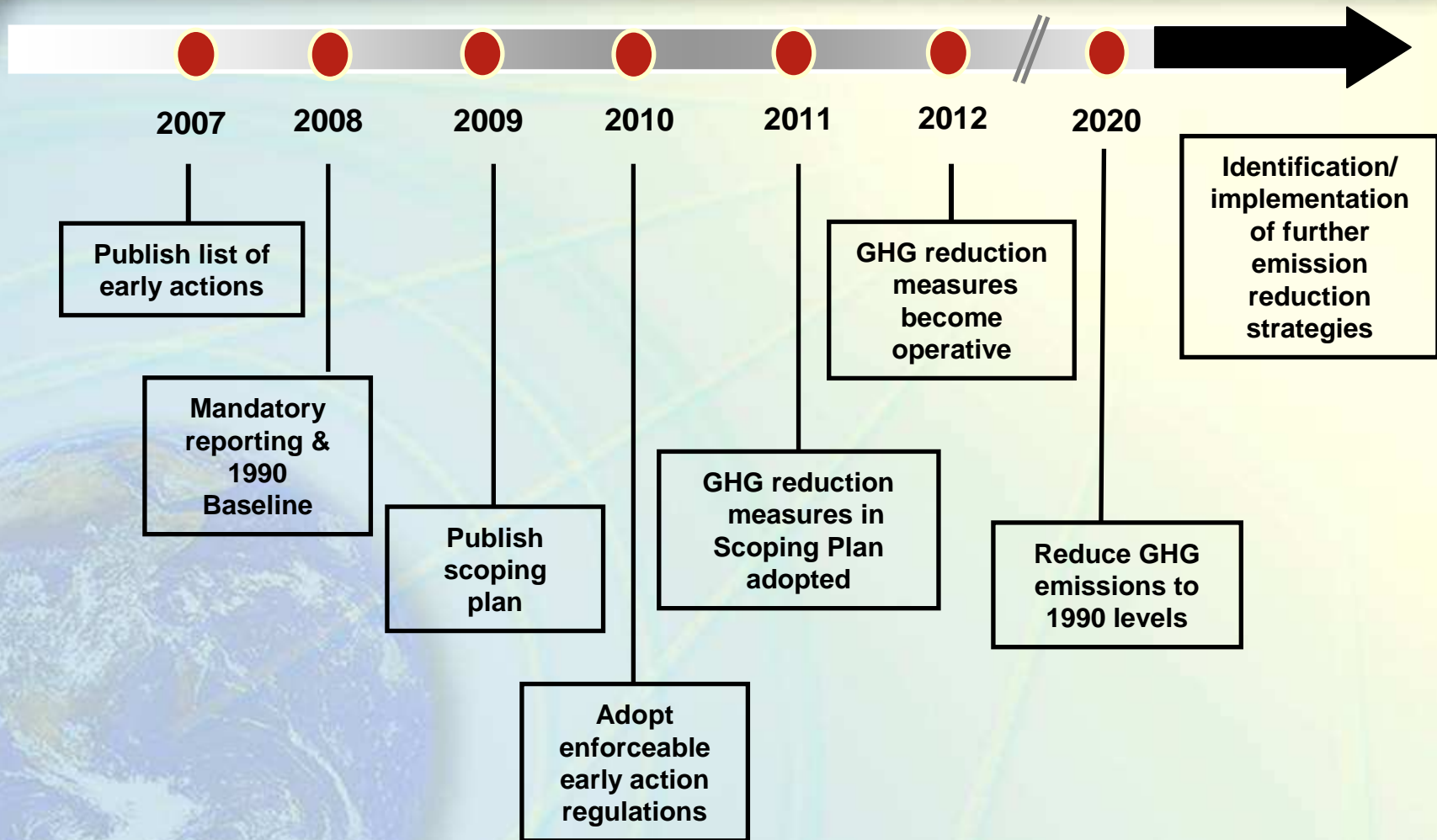


Draft Scoping Plan Development

- 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

- Draft Plan released June 26
- Soliciting stakeholder comments to help shape *Proposed Scoping Plan*
 - Request comments by August 1
- Supplemental evaluation summer 2008
- *Proposed Scoping Plan* release October 3
- Board consideration of *Proposed Scoping Plan* on November 20

AB 32 Timeline





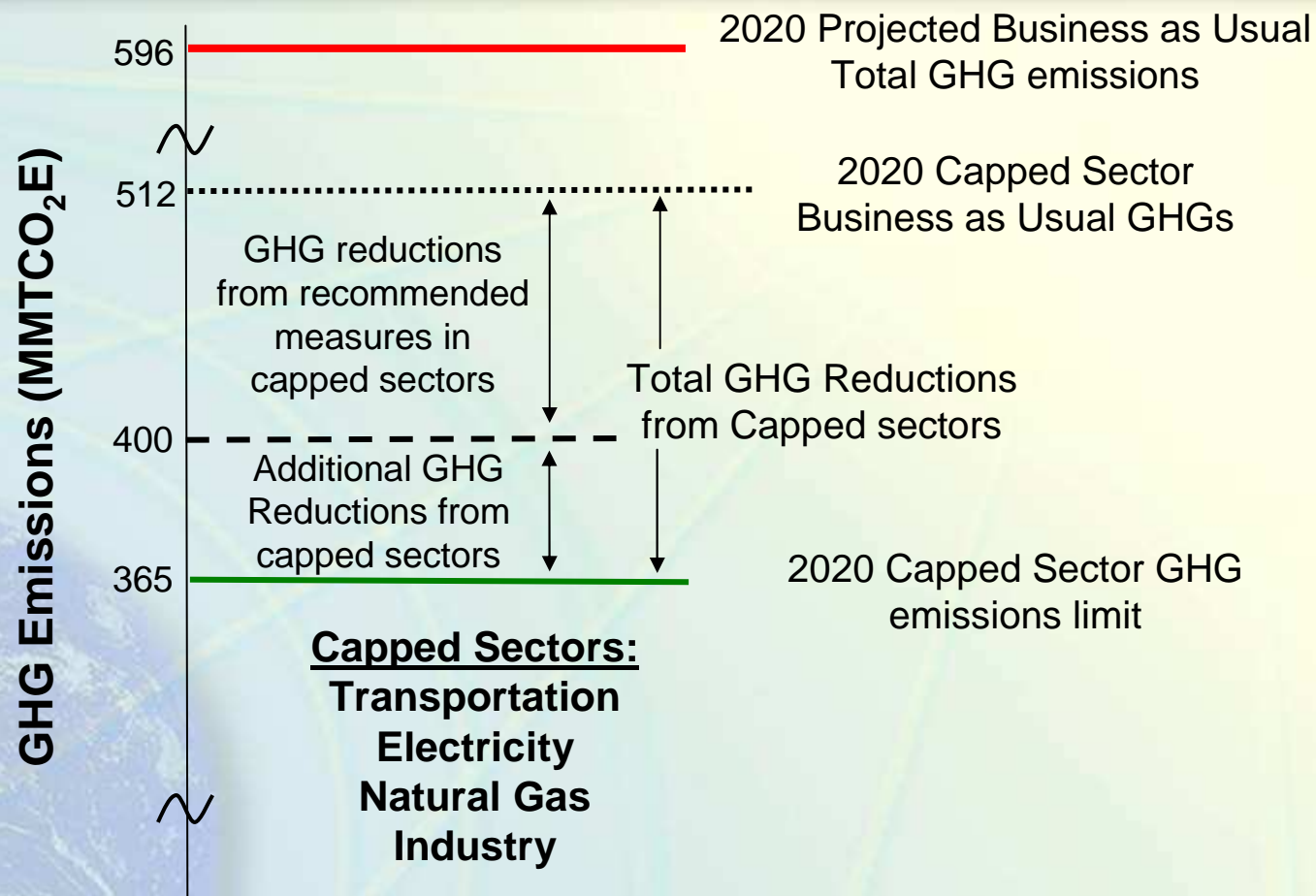
Preliminary Recommendation

Draft Scoping Plan Recommendations

- Mix of strategies that combine market mechanisms, regulations, voluntary measures, fees, and other programs
- Key elements:
 - Energy efficiency programs
 - 33 percent Renewables Portfolio Standard
 - California cap-and-trade program linked to Western Climate Initiative
 - Existing laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
 - Targeted fees to fund implementation

Preliminary Recommendation

Structure of the Draft Plan



Preliminary Recommendation

Recommended Measures

Table 2: Recommended Greenhouse Gas Reduction Measures

Recommended Reduction Strategies	Sector	2020 Reductions (MMTCO ₂ E)
The Role of State Government	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	Transportation	31.7
Energy Efficiency	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	Transportation	3.7
Heavy/Medium Duty Vehicles	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

State Government

- State must set an example
- Reduce “carbon footprint” by 30% from expected 2020 levels
 - State Green Buildings Initiative
 - State motor vehicle fleet clean up
 - Procurement practices
 - Commute alternatives for state employees
- Evaluate “carbon shadow”
 - Climate change impact of government policies and decisions

Preliminary Recommendation

California Cap-and-Trade Linked to Regional Market

- California cap-and-trade program that links with other Western Climate Initiative partner programs to create regional market
- Ensure program meets all applicable AB 32 requirements
- Capped sectors:
 - Electricity
 - Industry
 - Commercial and residential natural gas (by 2020)
 - Transportation fuels (by 2020)

Preliminary Recommendation

California Cap-and-Trade Linked to Regional Market

- Enforceable cap on GHG emissions from sources beginning in 2012
- Cap declines over time to meet 2020 targets; will continue to decline to help meet the 2050 target
- Limited use of offsets
- Strong enforcement and monitoring
- Must include safeguards for regional and local co-pollutants

Transportation

Cars, High Speed Rail

- Light-duty vehicle greenhouse gas reductions
 - Pavley I and Pavley II
- Efficiency measures for cars
 - Tire inflation and tire efficiency
 - Lower engine load through low-friction oil and reduced air conditioner use
- High speed rail
 - Phase 1 anticipated for completion in 2020

Transportation

Trucks

- Aerodynamic design improvements for trucks
 - Expected Board consideration in fall 2008
- Hybridization for urban and short-haul trucks
- Improved efficiency for heavy duty trucks
 - Possible technologies include advanced combustion strategies, friction reduction, electrification of accessories

Transportation Fuel

- Low Carbon Fuel Standard
 - Reduce carbon intensity of transportation fuel by at least 10 percent
 - Considering full fuel cycle impacts
 - Anticipated Board consideration in late 2008 or early 2009

Transportation

Goods Movement

- Adopted/On-going strategies
 - Drayage trucks
 - Port electrification
 - Proposition 1B funds
- New strategies
 - Evaluate ways to improve system efficiency
 - Vessel speed reductions
 - Limits on duration/use of transportation refrigeration units

- Expanded utility-based energy efficiency programs
 - Applied to investor-owned and publicly-owned utilities
- More stringent building and appliance standards
- Residential solar water heater program
- Encourage combined heat and power to maximize efficiency

- Ratepayer financed incentive program
 - Install 3,000 MW of new solar-electric systems
 - Help drive down cost of solar systems
- To obtain incentives must also meet efficiency requirements
 - New construction must exceed State requirements
 - Existing buildings must undergo energy audit

**Also referred to as the California Solar Initiative*

- Achieve 33% RPS by 2020 for all utilities (both investor-owned and publicly owned)
 - Investor-owned utilities now required by law to meet 20% renewables by 2010
 - Current retail electric load met with renewables is about 12%
 - Many publicly-owned utilities have similar policies

Preliminary Recommendation

Local Government Actions and Regional GHG Targets

- Develop regional targets in collaborative process
 - Comprehensive process
 - Consider other policy goals
 - Incorporate performance indicators
 - Provide state resources
- Encourage local climate action plans and local targets

Industrial Sources

- Require efficiency and co-benefit audit of largest industrial sources
 - Evaluate potential to reduce GHG, criteria pollutants, and air toxics
- Audit results used to identify cost-effective GHG reductions that also reduce criteria or toxic pollutants
 - Co-benefits to nearby residents

High GWP Gases

- Used in refrigerators, air conditioners, fire suppression and insulating foam
 - More potent greenhouse gases
- Possible approaches:
 - Fees to discourage leakage or disposal
 - Standards to prevent leakage
 - Recovery and proper destruction of high GWP “banks”

Recycling and Waste

- Reduce landfill methane
 - Board consideration expected January 2009
- Broad approach also needed to move toward zero-waste future
 - Waste diversion
 - Composting
 - Commercial recycling
 - Manufacturer responsibility requirements

Sustainable Forests

- Preserve forest sequestration through sustainable management practices
 - Reduce risk of catastrophic wildfire
 - Avoid or mitigate land use changes
- Encourage use of forest biomass for energy generation
- Voluntary protocol adopted by ARB
 - Additional protocols to be considered in fall 2008

Water/Energy

- Efficiency programs to reduce energy use
 - Water use efficiency
 - Water recycling
 - Water system efficiency
 - Reuse of urban run-off
 - Increase renewable energy production
- Public goods charge
 - Fund investments in water efficiency and recycling

Agriculture

- Encourage investment in manure digesters
 - Renewable energy benefits
 - Fall 2008: Consideration of voluntary protocol
 - 2013: Evaluate if appropriate to move to future mandatory program
- Conduct research on nitrogen fertilizers
- Encourage efficiency measures



Other Measures Under Evaluation

Sector-Based Measures

- **Transportation**
 - Market-based strategies
- **Electricity/Energy**
 - More aggressive efficiency programs
 - Reduce coal-fired electricity
- **Industry**
 - Refineries
 - Cement production
 - Glass manufacturing
 - Boilers and stationary engines

Offsets


- Surplus reductions from unregulated or uncapped sources
- Rigorous criteria necessary to maintain environmental integrity
- Voluntary offsets
 - Growing market for offsetting emissions
- Compliance offsets
 - Could be used in cap-and-trade, regulatory measures or carbon fee approach
- ARB must adopt methodologies and enforcement regulations

Carbon Fee

- Use carbon pricing to achieve reductions
 - Applied to CO₂ equivalent emissions upstream
- Price would be determined through economic models
- Provides less certainty of meeting 2020 goal

Potential Use of Revenues

- **California Carbon Trust**
 - Use of revenues for the public good
- **Other potential uses:**
 - Support AB 32 reduction goal
 - Achieve environmental co-benefits
 - Local government incentives & consumer rebates
 - Climate change adaptation
 - Community benefits
 - Consumer rebates
 - RD&D funding
 - Worker transition assistance



Draft Scoping Plan Evaluations

Potential Economic Impacts

Preliminary Evaluation

- Overall savings from implementation of Draft Scoping Plan expected to exceed costs
 - Many measures increase energy efficiency
- Efficiency measures likely to mitigate moderate increases in energy prices
 - e.g., Pavley regulation will save car buyer an average of \$30/month
- Additional analyses in progress

Additional Economic Analysis

- Conducting macro-economic modeling using E-DRAM and BEAR
 - California models used to evaluate changes in output, employment, income, prices, and consumer spending
- Working with Energy 2020
 - North American model of economy, energy, and emissions
 - Continuing to work to calibrate Energy 2020 to CA emissions inventory and forecasts

Additional Economic Analysis

- Evaluation supplement will include economic analysis of several scenarios for achieving AB 32 goals:
 - Preliminary recommended measures
 - Use of additional regulation and programs
 - Use of carbon fee
- Effects on small businesses are also being evaluated

Environmental/ Public Health Analysis

- Examine in the context of ARB's traditional public health programs
 - Criteria pollutants (ozone, particulate matter)
 - Toxic Air Contaminants (diesel PM)
- Expect statewide reductions in fossil fuel use and improved combustion efficiency

Evaluations

Public Health Benefits

Preliminary Estimates for 2020

Health Endpoint	Estimated Benefit*
Avoided premature deaths	340
Avoided hospitalizations due to respiratory causes	71
Avoided hospitalizations due to cardiovascular causes	130
Avoided asthma-related & other lower respiratory symptoms	9,400
Avoided acute bronchitis	780
Avoided work loss days	57,000
Avoided minor restricted activity days	330,000
Total Economic valuation: \$1.5 billion to \$2.4 billion	

**Based on preliminary estimates of reduced fuel use from measures*

Additional Environmental/ Public Health Analysis

- Assessment of environmental impact of proposed measures
 - Air, water, land, waste disposal and hazardous waste, biological resources
- Public health impacts based on environmental assessment
- Focused look at specific types of sources
 - Refineries and power plants
- Community-level emission analysis

Societal Impacts

- Evaluation required when regulations are adopted
 - Intend to evaluate preliminary recommendation
- Consider factors such as:
 - Energy diversity, mobility, regressivity and job creation
- Will also consider ways to direct public and private investment toward most disadvantaged communities

Evaluation Supplement

- Evaluation supplement will be available in summer 2008
 - Results of economic modeling
 - Results of environmental/ public health analysis
- Workshop will be held on the supplement after its release
- Written comments will also be welcome

Moving Toward 2050

A Clean Energy Future

- **Governor's Executive Order (S-03-05)**
 - 80% reduction of GHG from 1990 levels by 2050
- **Scoping Plan beyond 2020:**
 - Clean and secure energy sources
 - Sustainable, safe, and clean communities

Scoping Plan Implementation

- ARB initiating a fee regulation rulemaking this summer to fund AB 32 administrative costs
- Two years to adopt AB 32 measures
 - Regulatory development will follow normal public process
 - Extensive stakeholder outreach and involvement
- Implementation and enforcement critical
- ARB must monitor implementation
- Required to re-visit Scoping Plan in 5 years

A Shared Challenge

- Californians responding to challenge of reducing greenhouse gases
- AB 32 implementation will depend on government, businesses, and individuals working together
- We must spark the imagination of the next generation to make California a cleaner and healthier place to live

For Additional Information:

- ARB Climate Change Web Site
(To stay informed – sign up for list serve)
www.arb.ca.gov/cc/cc.htm
- California Climate Change Portal
www.climatechange.ca.gov
- Comments on the Draft Scoping Plan
www.arb.ca.gov/cc/scopingplan/spcomment.htm