

# **2013 Update to AB 32 Scoping Plan**

**California Air Resources Board  
June/July 2013**

# Scoping Plan Overview

2013 Update to AB 32 Scoping Plan

Mike Tollstrup  
California Air Resources Board

# Overview

- Assembly Bill 32 Objectives and Provisions
- Elements of the 2013 Scoping Plan Update
- 2013 Scoping Plan Update Schedule
- Progress toward 2020 Goal
- Inventory Update
- Post 2020 Activities
- Critical Focus Area Discussions

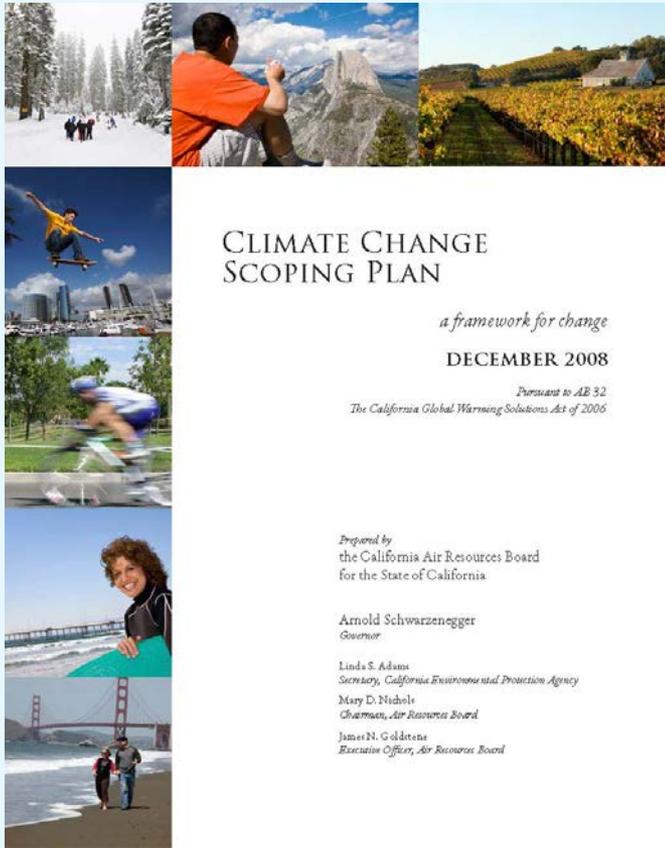
# AB 32 Objectives

- Develop a balanced approach to address climate change
- Improve air quality and public health
- Provide a consistent policy approach to drive investment in clean technology
- Provide a model for future national and international climate change efforts

# AB 32 Provisions

- Achieve 1990 emissions level by 2020
- Adopt greenhouse gas (GHG) emission reporting regulation
- Adopt discrete early action measures
- AB 32 Cost of Implementation Fee Regulation
- Collaborate with local, state and federal agencies, Western Climate Initiative, various advisory committees, and stakeholders
- Develop Scoping Plan and update it every five years
- Maintain and continue reductions in emissions of GHG beyond 2020

# 2008 Climate Change Scoping Plan



- Established new paradigm for climate mitigation
- First economy wide climate change plan
- Pioneered the concept of a market-based program supplemented with complementary measures
- Sector by sector approach
- Public outreach and education

# Elements of 2013 Scoping Plan Update

- Climate science update
- Progress toward 2020 goal
  - 2008 Scoping Plan achievements
  - Inventory update
  - Economic update
  - Co-benefits
- Potential targeted near term measures

## Elements of 2013 Scoping Plan Update (cont.)

- Post-2020 goals
  - 2050 Goal
  - Interim Progress Milestone
  - Coordination with Other Plans and Policies
  - Critical Focus Areas
  - Regional Overlay

# 2013 Scoping Plan Update Schedule

## Kickoff Workshop

- June 13

## Regional Workshops

- Diamond Bar (Los Angeles area) – June 26<sup>th</sup>
- Fresno – July 18<sup>th</sup>
- Bay Area – July 30<sup>th</sup>

## Preliminary draft Scoping Plan Update

- Late Summer

## Board Considers

- November 21-22

# Environmental Justice Committee

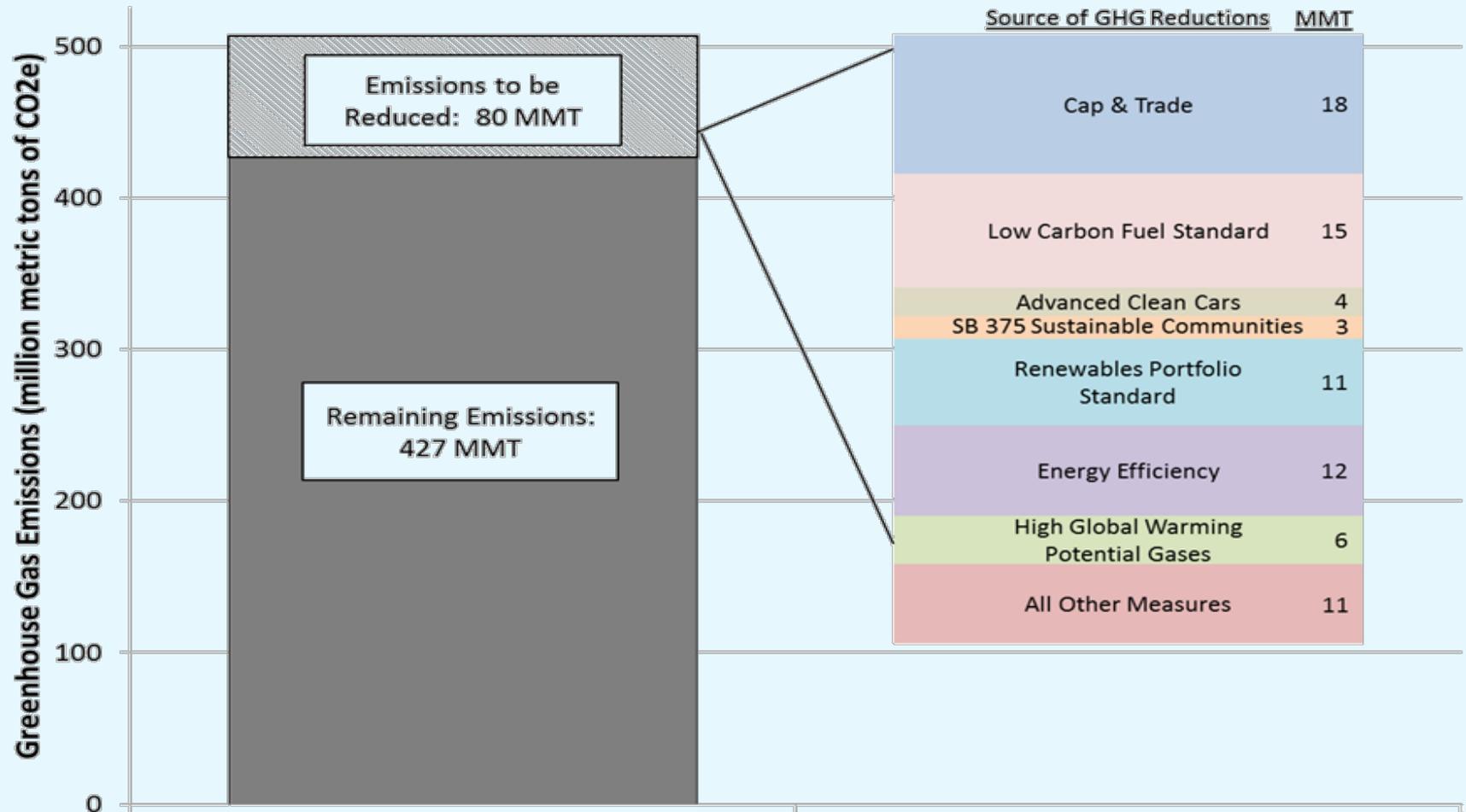
- ARB required to consult with EJAC on Scoping Plan
- Formed by Board in 2007 for 2008 Scoping Plan
- Re-convened by Board for 2013 Scoping Plan Update
- First meeting June 18th in Sacramento

# Progress Toward 2020 Goal



# 2008 Scoping Plan Achievements

## GHG Emissions and Reductions



# 2008 Scoping Plan Achievements

## Key ARB Measures

- Low Carbon Fuel Standard
  - Requires a 10 percent reduction in carbon intensity of transportation fuels by 2020
- Advanced Clean Cars
  - Light-duty vehicles sold in 2025 will emit 75 percent less smog-forming pollution and 34 percent less GHG emissions
- Cap-and-Trade Regulation
  - Market-based regulatory program that reduces GHG emissions through a declining limit
- SB 375 (Sustainable Communities Strategy)
  - Integrated approach to regional transportation and land-use planning

# 2008 Scoping Plan Achievements

## Other ARB Measures

- Shore Power\*
- High Global Warming Potential Consumer Products\*
- Heavy-Duty Trucks\*
- Mobile Air Conditioners (“do-it-yourself” cans)\*
- Semiconductor Manufacturing\*
- SF6 Reductions from Non-Electrical sources\*
- Tire Pressure Regulation\*
- Landfill Methane Capture\*
- Energy Efficiency Audits for Industrial Sources
- SF6 Leak Reduction in Electrical Appliances
- Refrigerant Management Program

\* = Discrete Early Action Measure

# 2008 Scoping Plan Achievements

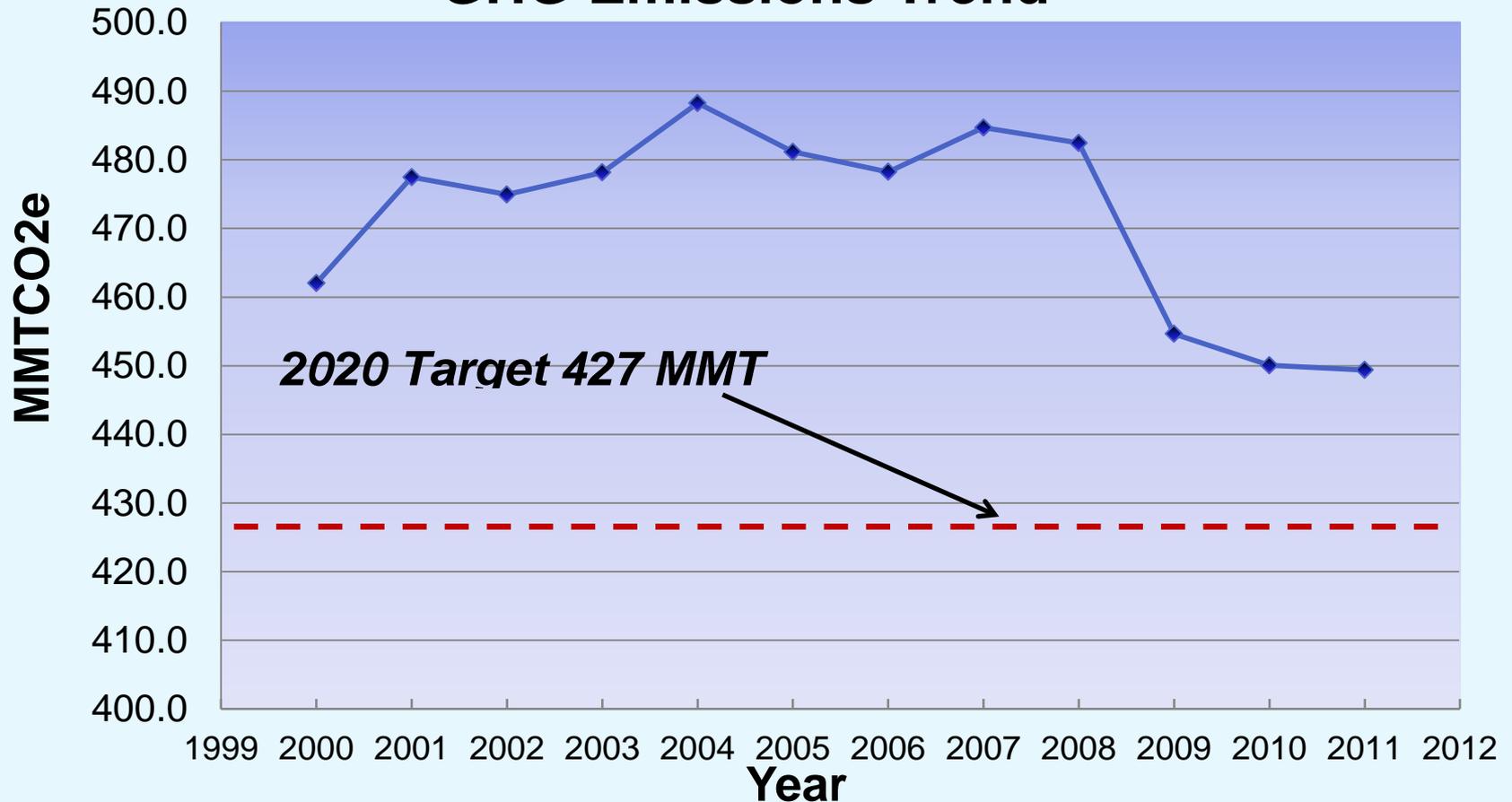
## Other State Agency Measures

- 33% Renewable Portfolio Standard
- Building and appliance energy efficiency standards
- California Solar Initiative
  - Solar hot water heaters
  - Million Solar Roofs
- Water Efficiency
- Mandatory Commercial Recycling
- High Speed Rail

# Inventory Update

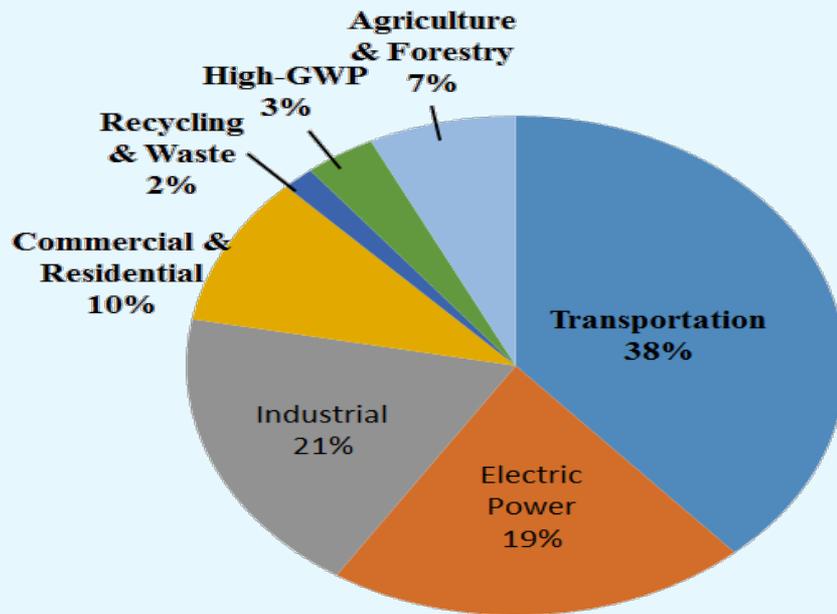
# CA GHG Emissions 2000-2011

## GHG Emissions Trend



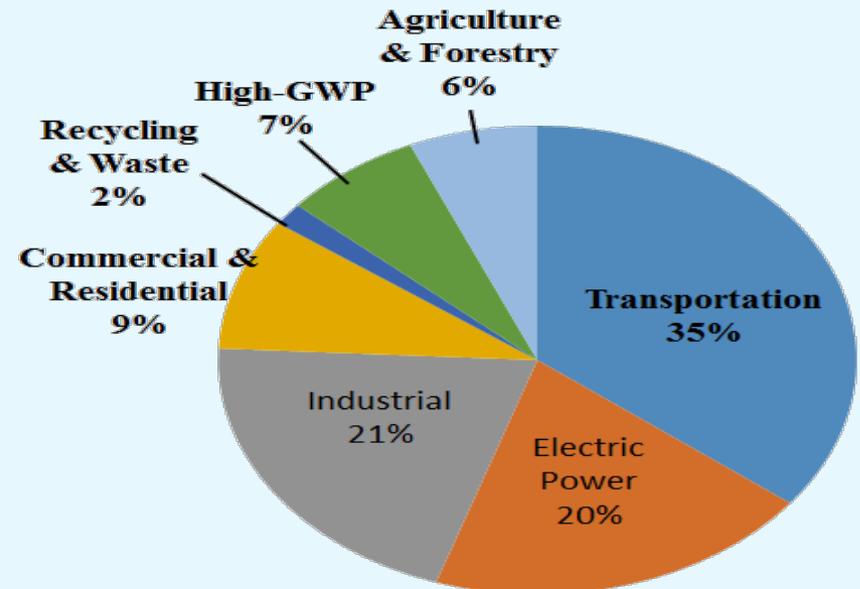
# California Greenhouse Gas Emissions By Sector

Year 2011



449  
MMTCO<sub>2</sub>e

Year 2020



427  
MMTCO<sub>2</sub>e

# Post-2020 Activities

# Coordination with Other Plans and Policies

- Governor's Environmental Goals and Policies
- Climate Adaptation Strategies
- 2013 Zero Emission Vehicle Plan
- State Implementation Plan
- Vision 2050
- Sustainable Communities Strategies
- Sustainable Freight Strategy
- Integrated Energy Policy
- Department of Water Resources Climate Action Plan
- Caltrans Blueprint

# Elements of Post 2020 Strategy

- Focus Areas
  - Energy (generation, transmission, and efficiency)
  - Transportation (fuels, infrastructure, and land use)
  - Agriculture
  - Water
  - Waste
  - Natural and Working Lands
- Sectors are unique and overlap one another
- Sectors may have competing objectives
- Role of Cap-and-Trade post-2020

# Cap-and-Trade Post 2020

- ARB envisions Cap-and-Trade continuing beyond 2020
- Cap-and-Trade is an important part of Post-2020 climate change strategy
- Program specifics including the cap level must be defined considering many factors
  - Complementary policies
  - Uncapped sector measures
  - Long term climate change goals

# Questions/Comments

Scoping Plan Overview

# Discussion of Focus Areas

- Identify what the state agencies envision for sector by 2050
- Identify challenges to meeting the long-term vision
- Make recommendations on how to overcome hurdles
- Set priorities for the next five years

# **Energy**

**(generation, transmission, and efficiency)**

**2013 Update to AB 32 Scoping Plan**

**Sekita Grant**  
**California Energy Commission**

# Participating State Agencies

- California Energy Commission
- Air Resources Board
- CalEPA
- California Independent Systems Operator
- California Public Utilities Commission
- California Resources Agency
- Department of General Services
- Department Of Transportation
- Department of Water Resources
- Natural Resources Agency
- State Water Resources Control Board

# Energy Sector Description

- Focus on Electricity and Natural Gas Systems
- Roughly 40 % of Statewide GHG emissions come from electricity and natural gas systems

# Actions for 2020

- Renewable Portfolio Standard, 12% - 20%
- Renewable Portfolio Standard, 20% - 33%
- Energy Efficiency and Conservation - building and appliance efficiency
- Energy Efficiency and Conservation - increased combined heat and power (CHP) generation
- Solar Hot Water (AB 1470)
- Million Solar Roofs
- Energy Efficiency and Co-benefits Audits for Large Industrial Sources
- Cap-and-Trade

# Vision for 2050

- Near zero net energy buildings
- Low carbon generation (e.g. renewables)
- Sustainable bioenergy systems
- Localized, renewable generation
- Solar space and water heating to displace natural gas and electricity
- Highly flexible and robust distribution and transmission infrastructure

# Challenges - Load Reduction

- Energy Efficiency
  - Energy efficiency retrofits of existing buildings
  - Lack of incentives for rented / leased spaces
  - Energy efficiency advancements given federal preemption
- Demand Response
  - Most demand response does not participate in the CA ISO wholesale energy market, is not visible or dispatchable to CA ISO
  - Enabling technologies needed for automatic control, auto demand response
  - Lack of consumer awareness and price information

# Challenges - Renewables

- Renewable Energy
  - Cost
  - Planning, permitting and the environment
  - Transmission
  - Integration
  - Research and development
- Integrating Renewable Resources
  - Shift away from natural gas power plants as the primary mechanism to integrate renewables
  - Technology advancements for storage, auto demand response, smart grid

# Challenges - Bioenergy

- Sustainable feedstock
- Distance of biomass resources to pipeline infrastructure
- Lack of a fully commercialized biogas industry
- Better understanding of co-benefits

# Challenges – Local Generation

- Distributed Generation
  - Modernization of the distribution grid
  - Visibility to CA ISO
  - Interconnection
  - Rate Design
  - Net Metering
- Combined Heat and Power
  - Cost issues, including non-bypassable charges
  - Interconnection
  - Limited room for baseload resources
  - Cap-and-Trade implications

# Challenges – Solar Thermal

- Solar Thermal for Space and Water Heating
  - Existing building retrofits
  - Technology advancements

# Challenges – Traditional

- Natural Gas with Carbon Capture Utilization and Storage (CCUS)
  - Development of CCUS technology, particularly with natural gas generation
- Nuclear
  - Existing Moratorium
  - Safety
  - Waste disposal
  - Seismic concerns

# **Transportation**

## **(Fuels, Infrastructure, and Land Use)**

**2013 Update to AB 32 Scoping Plan**

**Jack Kitowski**  
**California Air Resources Board**

# Participating State Agencies

- Air Resources Board
- Business, Transportation and Housing Agency
- Department of Food and Agriculture
- Department of Public Health
- CalEPA
- California Energy Commission
- California Public Utilities Commission
- Caltrans
- Governor's Office of Planning and Research
- High-Speed Rail Authority
- Housing and Community Development
- Strategic Growth Council

# Transportation Sector Description

- Transportation is largest GHG emission sector includes:
  - Sustainable communities and personal transportation
  - Sustainable freight transportation system
  - Fuels and Energy

# Actions for 2020

- Low Carbon Fuel Standard
- 1st GHG Standards for cars (Pavley 1)
- 2nd GHG Standards for cars (Advanced Clean Cars)
- Sustainable Communities Strategy (SB 375)
- Tire Pressure Program
- Shore Power for Ships
- Heavy Duty Aerodynamic Trucks
- Medium/Heavy Duty Hybridization (Hybrid Trucks)
- Freight Strategy
- Fuels under cap (Cap-and-Trade)

# Vision for 2050

- Executive Order B-16-2012 targets 80 percent reduction of transportation-related GHG emissions by 2050
- Federal health-based air quality standard attainment deadlines will drive this level of reductions by 2032
- Fundamental transformation of transportation system needed to meet goals

# Vision for 2050

## Sustainable Communities and Personal Transportation

- Sustainable communities with range of mobility choices
- Easy and equitable access to public transit
- Development/infrastructure supporting active transportation
- Improved public transit and rail utilizing zero-emission technologies
- Operational efficiencies and VMT reduction strategies
- Widespread use of zero-emission passenger cars

# Vision for 2050

## Sustainable Freight Transportation System

- Goods move more efficiently and with zero- or near-zero emissions
  - Supporting infrastructure in place
- System provides acceptable velocity and expanded capacity
- System integrates with the national and international freight transportation system

# Vision for 2050

## Fuels and Energy

- Widespread use of electricity and hydrogen as transportation fuels
- Low-carbon, renewable natural gas and other fuels where internal combustion engines remain
- Potential vehicle to grid approaches
- Close relationship between evolution of transportation sector and future energy needs

# Challenges

- Transformation reliant on technology advancement
- Time and cost to build supporting infrastructure
  - Challenge to match infrastructure development with anticipated technology roll out
- Electrification of transportation sector increases demand for electricity, impacting energy sector
- Must maintain California competitiveness

# Next Steps

- Scoping Plan will identify steps to start transformation of transportation sector
- Focus on policy priorities and actions for State agencies over next five years
  - Near-term decisions to put California on right path for 2030-2050
- Close coordination and partnerships at local, regional, State, and national level needed

# **Agriculture**

**2013 Update to AB 32 Scoping Plan**

**Amrith Gunasekara**  
**California Department of Food and Agriculture**

# Participating State Agencies

- California Department of Food and Agriculture
- Air Resources Board
- CalEPA
- California Energy Commission
- CalRecycle
- Department of Conservation
- Department of Fish and Wildlife
- Department of Health Care Services
- Department of Pesticide Regulation
- Department of Water Resources
- Natural Resources Agency
- State Water Resources Control Board

# Sector Description

Divided into three main categories:

- Crop production
- Animal agriculture
- Other considerations

# Sector Vision

- Climate Change will profoundly impact agriculture operations in California
- Agriculture can contribute to improving the climate by reducing and storing GHG
- California Agriculture must retain:
  - Crop diversity
  - Animal production diversity
  - Social benefits
  - Farm diversity
  - High degree of operational efficiency as compared to other countries
  - Ability to feed a growing population with limited lands and water resources

# Opportunity Areas for GHG Reductions for 2050

- Crop Production Category
  - Soil Quality and Health
    - Agricultural Land Conservation (CO<sub>2</sub>)
    - Conservation Tillage (CO<sub>2</sub>)
    - Carbon Sequestration (CO<sub>2</sub>)
    - Biofuels (CO<sub>2</sub>)
  - Irrigation and Water Conservation
    - Irrigation Methodologies (N<sub>2</sub>O)
    - Water Supply
  - Nitrogen Management
    - Fertilizer technologies (N<sub>2</sub>O)
    - Nitrification Inhibitors (N<sub>2</sub>O)

# Opportunity Areas for GHG Reductions for 2050

- Animal Production Category
  - Manure Management
  - Dairy digesters (CH<sub>4</sub>)
  - Organic soil amendments (N<sub>2</sub>O)
  - Animal feed (CH<sub>4</sub>)
- Rangelands
  - Carbon sequestration (CO<sub>2</sub>)

# Addressing Informational/ Feasibility Gaps

- Research
- Technological Aspects
- Modeling
- Agricultural Support Services
- Incentives and Ecosystem Services

# Water

2013 Update to AB 32 Scoping Plan

Frances Spivy-Weber  
State Water Resources Control Board

# Participating State Agencies

- State Water Resources Control Board
- Air Resources Board
- California Energy Commission
- California Public Utilities Commission
- Department of Water Resources

# Sector Description

- Surface and Groundwater
  - Drinking Water Systems
  - Irrigation Systems
  - Storage and Distribution Network
- Stormwater systems
- Wastewater Treatment Systems
- Water sector uses large amounts of energy
  - About 20% of State's electricity
  - About 30% of State's natural gas

# Actions for 2020

- Water Use Efficiency
- Increased use of Recycled Water
- Water System Energy Efficiency
- Stormwater Capture and Reuse
- Increase Renewable Energy Production in the Water Sector
- Funding (Public Goods Charge)

These strategies have a collective goal of reducing GHG emissions by 4.8 MMCO<sub>2</sub>E by 2020, which is 6% of the 80 MMCO<sub>2</sub>E remaining to meet the statewide 2020 goal.

# Vision for 2050

- Full utilization of local and low-carbon water supplies
- Maintain and improve water quality
- Increase conservation and reuse through recycling, rainwater and stormwater capture, water-efficient landscaping, highly efficient irrigation systems
- Widespread use of wastewater as a resource for energy production and environmental protection

# Potential Actions for 2050 Goal

- Funding programs that capture multiple benefits, including energy efficiency, water quality, and water supply
- Improved data collection and dissemination, leading to more regionally targeted conservation and efficiency goals and standards
- Sustained increases in water conservation and energy efficiency
- Additional use of wastewater for energy production
- Increasing use of recycled water, stormwater, and greywater
- New business models that allow for robust conservation while keeping rates affordable for low-use and low-income consumers

# Challenges

- Conflicting goals and missions
  - Water supply reliability vs. conservation and low-energy supplies
- Need for data-driven standards and incentives to achieve additional water conservation and energy efficiency gains
  - Artificially low water prices in certain areas that don't incentivize conservation

# **Waste**

**2013 Update to AB 32 Scoping Plan**

**Howard Levenson  
CalRecycle**

# Participating State Agencies

- CalRecycle
- Air Resources Board
- CalFire
- California Energy Commission
- California Public Utilities Commission
- Department of Food and Agriculture
- Department of General Services
- Department of Toxics Substances Control
- State Water Resources Control Board

# Sector Description

- Recycling, Reuse, Remanufacturing
- Composting and Anaerobic Digestion
- Biomass Conversion
- Municipal Solid Waste Thermal Technologies
- Landfilling of Waste
- State Procurement

# Setting Stage for 2020 and Beyond

- AB 341 75% diversion plan = primary foundation for reducing emissions
- To achieve 75% diversion, need to move 22 million tons from landfills
- This will result in 20 – 30 MMTCO<sub>2</sub>e reduction
- Key consideration – don't need to wait for technology development
- Technology deployment is key barrier

# Vision for 2020 and Beyond

- Take ownership of waste generated in California
- Maximize recycling and diversion from landfills
- Build infrastructure for low-carbon system in California
- Improve sustainability of California infrastructure
- Reduce volume of waste generated
- 2035: Net-Zero (direct GHG – avoided GHG = 0)
  - Pre-2020 efforts can achieve significant GHG reductions
  - Will strongly influence post-2020 actions
- 2050: Reduce direct emissions by 25%

# Potential Actions: Plan Focus

- Key activities – reduce waste, maximize recycling, shift materials to non-disposal
- Reducing waste generated – get individuals and manufacturers/ producers to take more responsibility for products and for waste
- Increasing recycling and use of collected materials in manufacturing, composting, digestion
  - To meet 75% goal, need much larger recycling manufacturing and composting/anaerobic digestion infrastructure
- Expanding and creating markets for recycled materials and products
- Determining role of thermal processes and energy recovery

# Potential Actions: Implementation Mechanisms

- Voluntary measures
- Financial incentives for recycling manufacturing & composting / anaerobic digestion infrastructure
- Direct regulation by ARB
- Extended producer responsibility
- State procurement requirements

# Potential Actions:

## Examples of Specific Actions Being Considered

- Move toward phasing organics out of landfills
- Leverage State incentive funding for infrastructure, incl. disadvantaged communities
- Develop new emission reduction factors
- Investigate additional LCFS pathways
- Increase funding for biomethane projects
- Leverage State procurement

# Potential Actions:

## Examples of Specific Actions Being Considered (cont.)

- Develop performance standards for material recovery facilities
- Develop programmatic EIRs
- Consider expanded Renewable Portfolio Standard eligibility
- Establish biogas injection standards
- Evaluate need to place specific sources (landfills, thermal) under direct regulation or Cap-and-Trade
- Enhance and expand Extended Producer Response for packaging

# Challenges

- How to get consumers and producers to take responsibility for waste/products
- How to overcome barriers to building infrastructure in CA
  - Economic – cheap landfilling, lack of financial incentives and offsets
  - Siting and timely permitting – local planning and land use issues, cross-media regulatory issues re: air and water
- How to grow markets for products – whether recycled-content or biofuel, etc.
- Tracking and accounting

# Next Steps

- ARB/CalRecycle – Stakeholder input on 6 technical papers and draft implementation matrix
  - Recycling, Reuse, and Remanufacturing
  - Composting and Anaerobic Digestion
  - Biomass Conversion
  - Municipal Solid Waste Thermal Technologies
  - Landfilling of Waste
  - Procurement

# **Natural and Working Lands**

**2013 Update to AB 32 Scoping Plan**

**David Mallory**

**California Air Resources Board**

# Participating State Agencies

- Natural Resources Agency
- Air Resources Board
- CalFire
- Department of Conservation
- Department of Fish and Wildlife
- Department of Food and Agriculture
- Department of Parks and Recreation
- Department of Water Resources

# Sector Description

- Forests, Woodlands, and Urban Forests
- Grasslands and Shrublands (Including Rangelands)
- Wetlands

# Actions for 2020

- Sustainable Forest Target
  - Maintain current net forest sink
- Opportunities for additional reductions
  - Forest Management
  - Forest Conservation
  - Afforestation/Reforestation
  - Urban Forestry
  - Fuels Management/Biomass

# 2050 Vision

Reduce GHG emissions, and maintain and enhance the capacity of natural and working lands to sequester and store carbon.

# Overlying Principles

- Maintain and enhance net-carbon sequestration
- Reduce GHG emissions
- Policy efforts, strategic investment, and research focused on conservation, restoration, and effective management practices
- Resiliency and adaptation
- Commitment to monitoring trends, tracking progress and evaluating effectiveness of state strategies

# Pathways to 2050 Vision: Considerations

- Current trends
- Research gaps
- Existing policy and future needs or enhancements
- Ownership
- Co-benefits
- Funding needs
- Challenges
- Timing: long-term planning horizon

# Pathways to 2050 Vision: Strategic Prioritization

Establish priorities to achieve climate benefits across state and federal lands:

- Sequestration or GHG reduction potential
- Leveraging cost-effectiveness and outcomes with synergies and integration with other sectors
- Co-benefits
- Adaptation goals and needs
- Risk-reduction
- Disadvantaged communities/communities of opportunity

# Challenges and Questions

- What data are available and what more are needed to assess baseline sequestration and GHG emissions?
- What areas can be leveraged most effectively with the needs and goals of other sectors?
- How do we assess the value (market and nonmarket) of conservation and restoration of natural working lands?
- What funding streams are needed and what are potential sources?
- Monitoring, research, and modeling — what and how much is needed?

# Open Discussion

- Public Comments / Questions
  - To allow consideration in development of draft Scoping plan, please provide comments by August 5<sup>th</sup>
  - Please submit comments to:  
<http://www.arb.ca.gov/cc/scopingplan/2013comments.htm>

# Contact Information

## Energy

- Sekita Grant
- California Energy Commission
- [sekita.grant@energy.ca.gov](mailto:sekita.grant@energy.ca.gov)
- (916) 651-0460

## Transportation

- Jack Kitowski
- California Air Resources Board
- [jkitowsk@arb.ca.gov](mailto:jkitowsk@arb.ca.gov)
- (916) 445-6102

## Agriculture

- Amrith Gunasekara
- California Department of Food and Agriculture
- [Amrith.Gunasekara@cdfa.ca.gov](mailto:Amrith.Gunasekara@cdfa.ca.gov)
- (916) 654-0433

## Water

- Frances Spivy-Weber
- State Water Resources Control Board
- [Frances.Spivy-Weber@waterboards.ca.gov](mailto:Frances.Spivy-Weber@waterboards.ca.gov)
- (916) 341-5607

## Waste

- Howard Levenson
- CalRecycle
- [Howard.Levenson@CalRecycle.ca.gov](mailto:Howard.Levenson@CalRecycle.ca.gov)
- (916) 341-6311

## Natural Resources

- Shelby Livingston
- California Air Resources Board
- [slivings@arb.ca.gov](mailto:slivings@arb.ca.gov)
- (916) 324-0934