



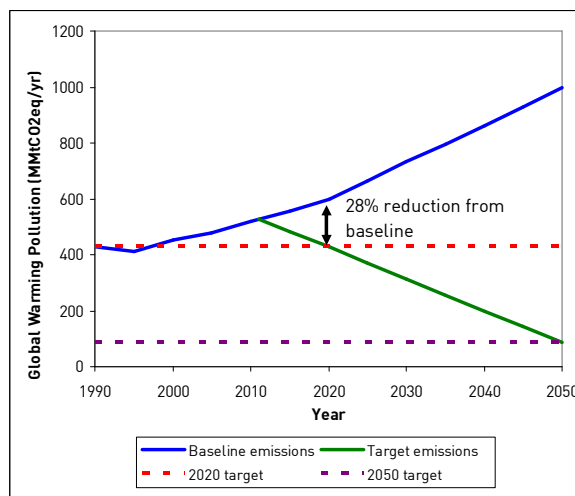
# California's Blueprint to Fight Global Warming

## A Scoping Plan to Reduce Greenhouse Gas Pollution Through 2020 and Beyond

### California's Greenhouse Gas Reduction Law

When Assembly Bill 32 (AB 32), California's Global Warming Solutions Act, was signed into law in September 2006, the state started down a path to dramatically cut pollution that causes global warming. The law requires California to cut emissions by 169 million metric tons by 2020, almost 15% below current levels and nearly 30% below "business as usual" estimates. This reduction is equal to taking 28 million cars off the road by 2020.

The Global Warming Solutions Act charges the California Air Resources Board (CARB) with adopting a plan by the end of 2008 outlining how California will meet the 2020 requirement. This Scoping Plan, the first of its kind, is the blueprint for California to follow as a leader in the fight to stop global warming, and a model to the U.S. and the world of how bold, innovative policies work together to achieve climate solutions.



California GHG emissions

### Recommendations of the CARB Scoping Plan

The Proposed Scoping Plan released in October 2008 recommends a series of strategies that will lower global warming pollution in every sector of the economy. Transportation, electricity generation, industry, residential buildings, government, agriculture, along with every Californian, will play a major role in creating a cleaner, healthier future. Examples of recommendations projected to achieve at least 1/2 million tons, differentiated by sector, along with anticipated reduction levels, are listed in the tables below:

1. Multi-Sector Market-Based Cap-and-Trade Program			
Developing a broad cap-and-trade program capable of linking with a regional program, encompassing 85% of the statewide emissions by 2020, and requiring reductions from the transportation, electricity, industry, commercial, and residential sectors.			
2. Transportation and Planning Strategies	3. Electricity Generation Strategies	4. Industrial, Commercial and Residential Strategies	5. Agriculture, Forestry and Water Strategies
Implementing the "Pavley" vehicle GHG standards	Generating 1/3 of electricity from renewable sources	Improved buildings and appliance efficiency standards	Using and pumping water more efficiently
Implementing SB375 and setting regional targets	Generating electricity with fuels that have a lower carbon footprint	Requiring audits of large emitting industrial facilities	Using water more efficiently and transport with cleaner energy sources
Improved light, medium & heavy duty vehicle efficiency	Increasing use of combined heat and power sources	Reducing gases lost from oil and natural gas wells and pipelines	Managing animal waste and landfill gas to generate energy and control emissions
Using transportation fuels with a lower carbon footprint	Increasing efficiency of electric power plants	Switching to lower carbon fuels for making heat and steam	Managing forests and range lands sustainably to increase carbon in soil and trees
Creating a north-south high speed rail system		Creating commercial recycling and using fewer raw materials	
		Reducing use of materials with high global warming potential	

# Proposed Scoping Plan Strategies to Make Economy-Wide Reductions

## Projected Reductions from Scoping Plan Measures

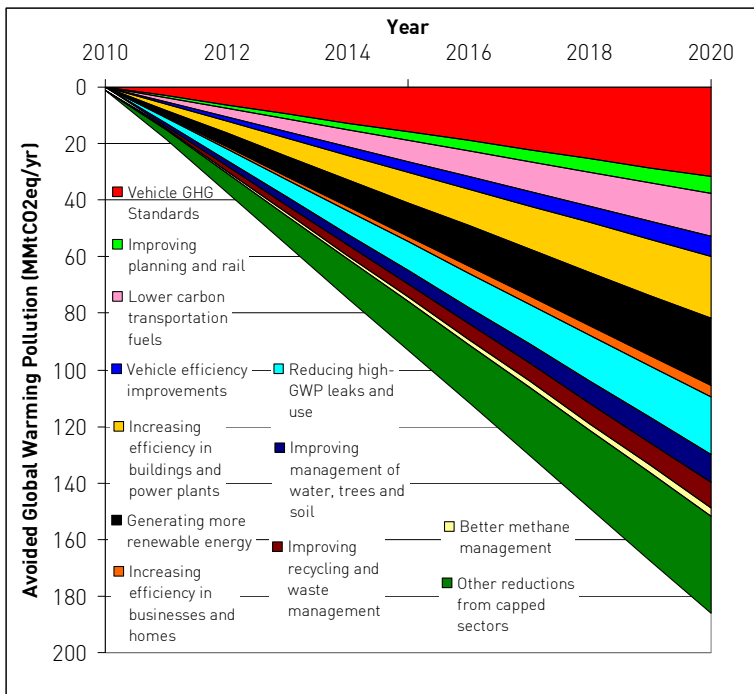
Projections from categories of emissions reduction strategies found in the Scoping plan are listed in the table to the right

## Using a Graphical Approach to Understanding the Scoping Plan Emissions Reduction Measures

To demonstrate how the package of California strategies fits together to enable economy wide reductions, a graphical representation is used below. This graph treats each emission reduction strategy as a wedge that increases over time. Wedges analysis is a commonly used tool to show how combinations of approaches work over time, building off one another.

Emission reduction strategy	Projected 2020 Reductions (MMTCO <sub>2</sub> eq)
<b>Transportation</b>	
Vehicle GHG standards	31.7
Lower carbon fuels	15
Vehicle efficiency standards	7.3
Regional targets and more rail	6
<b>Electricity Efficiency and Utility Programs</b>	
Renewable energy	23.4
Building, appliance and generation efficiency improvements	22
<b>Industrial, commercial and residential</b>	
Reduced high-GWP use	20.2
Increased energy efficiency in businesses and houses	4.3
Improved goods movement	3.7
Reduced methane from oil and gas	1
<b>Agriculture and Waste</b>	
Increased carbon in trees & soil	5
Better methane management	2
<b>Total</b>	
<b>32 Discrete Strategies</b>	<b>174*</b>

\*The CARB plan calls for cuts of 174 MMTCO<sub>2</sub>, this is 5 MMT more than required by AB32.



## Benefits of Strategies Increase Over Time

The graph shows how the Scoping Plan strategies become increasingly beneficial to California over time. Not only will each strategy decrease the emissions from sources that are releasing today, these strategies also prevent the growth of emissions that otherwise would have occurred. Although differences in the implementation schedule of each reduction strategy will prevent a true linear growth rate of each wedge as identified on the chart, the overall trend in the effectiveness of each measure should aggregate as shown.

## Additional Strategies Being Considered in the Plan to Generate Reductions

In addition to the 32 strategies referenced above, CARB has identified at least 20 other innovative strategies for consideration in multiple sectors to achieve reductions both within and outside California. These strategies may take longer to develop and could be implemented in the event that other measures fail to achieve desired reductions. Examples of these strategies include development of commercial recycling and waste minimization programs, water efficiency programs, and government operations improvement programs.

# Tools to Implement California's Global Warming Reduction Strategies

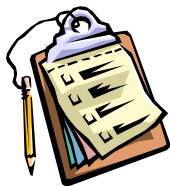
## AB 32 Requires CARB to Adhere to Stringent Guidelines before implementing any measures

When the state legislature passed AB32, CARB was given broad authority to identify potential areas to make emissions reductions and then adopt new regulations to make those reductions a reality. However, to protect against adverse economic, social or environmental effects, the law requires CARB to take into account several factors when adopting new regulations. These factors include:

- \* Seek to achieve the maximum technologically feasible and cost-effective reductions
- \* Seek to minimize costs and maximize benefits
- \* Encourage early action to reduce emissions
- \* Ensure that activities do not disproportionately impact low-income communities
- \* Ensure voluntarily action is given appropriate credit
- \* Ensure that activities undertaken complement, and do not interfere with, air quality improvements from other regulations on emissions
- \* Consider cost-effectiveness
- \* Consider overall societal benefits
- \* Minimize the administrative burden
- \* Minimize leakage (emissions shifting to other states)
- \* Consider the significance of the contribution of each source to statewide total
- \* Make sure reductions are real, permanent, quantifiable, verifiable, and enforceable by the state
- \* Direct investments to disadvantaged communities

## Moving from Planning to Action: Tools to Make Emissions Reductions a Reality

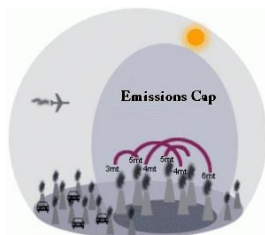
CARB has a range of tools at its disposal in implementing the Global Warming Solutions Act. Three types of tools are explored and recommended in the proposed Plan. Common to direct and market based regulations, failure of a regulated party to reduce their emissions to a particular level is deemed a violation and enforcement action is taken.



**Direct Regulations:** A traditional tool where industry and other regulated parties are required to use a specific technology or practice. One example in the Scoping Plan is a recommendation that utilities produce 33% of their electricity from renewable sources such as solar and wind power.



**Economic Incentives:** A common tool that uses economic benefits and costs to inspire a desired action from regulated parties. An example of an economic incentive considered in the proposed Scoping Plan is a program that puts a surcharge on gas-guzzling cars and grants a rebate to very fuel-efficient cars.



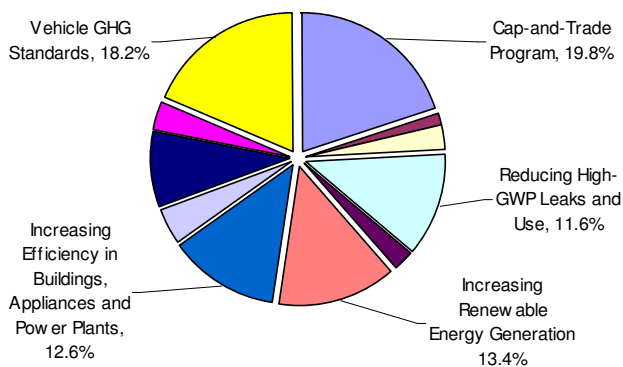
**Market-Based Cap-and-Trade Regulations:** A proven tool for limiting overall emissions (via a declining cap). Cap-and-trade provides businesses the economic incentives and flexibility to act quickly and efficiently, while guaranteeing the overall emissions rate remains below a specified level. Cap-and-trade was successfully used to eliminate acid rain in the US under the 1990 Clean Air Act.

# Tools to Implement California's Global Warming Reduction Strategies

## Cap-and-Trade as a Tool to Complement Direct Reduction Requirements

Developing and implementing direct greenhouse gas regulations ensures reductions are achieved in a specified manner and at known locations. Such regulations can be seen to 'pick winners' in directing investment for technology development and deployment. These regulations often fail to account for multiple factors of the industry being regulated such as industry dynamics, emissions reduction potential, and data completeness, all of which are critical variables in generating the maximum environmental and economic benefit from policymaking. These limitations mean that direct regulations alone cannot ensure reductions can be achieved across the economy in a cost-effective manner.

**Proportion of 174 MMT Statewide Reductions  
(Strategies over 10% of the Total)**



A cap-and-trade system inspires polluters to seek out and initiate innovative reductions strategies by combining a clear goal – the overall emissions cap – with economic incentives to achieve reductions and even to 'over-comply'. Therefore, in addition to the direct regulations proposed, the proposed Scoping Plan recommends using a multi-sector cap-and-trade program to achieve reductions from sectors with high-quality emissions data, notably electricity production, refining, cement manufacturing, and large industrial boilers. The cap-and-trade program would encompass 85% of statewide emissions by 2020, and the declining emissions limit would achieve at least 34 MMT of reductions above those projected from direct regulations. What's more, this multi-sector cap-and-trade approach would make up for any direct regulations within capped sectors that are under-performing.

## How a Multi-Sector Market-Based Regulation Benefits California

A cap-and trade program requires large polluters to reduce global warming pollution and inspires them to do it as quickly and efficiently as possible. By minimizing the costs of reductions and encouraging new investment and innovation in low carbon technologies, we will pursue our 2020 goals in ways that promote new economic opportunities and that minimize negative consequences such as higher prices for electricity. The proposed market program reduces the need for the state to rely on many individual regulations while setting a firm limit on pollution from 85% of the economy. No other approach combines this level of environmental integrity, cost-effectiveness and economic opportunity.

### Examples of Likely Emissions Reduction Strategies Under a Multi-Sector Cap-and-Trade Program

- \* Improved energy efficiency in high emitting industries
- \* Improved process efficiency in heavy industry
- \* Use of lower carbon fuels in large industrial boilers and power plants
- \* Better agricultural and forestry practices
- \* Reduced transportation emissions through driver related programs