



ENVIRONMENTAL DEFENSE FUND

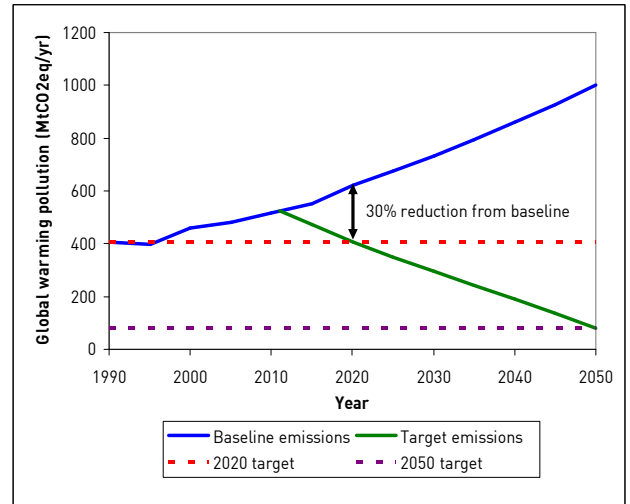
finding the ways that work

California's Global Warming Solution Plan

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

California's Greenhouse Gas Reduction Law

When Assembly Bill 32, California's Global Warming Solutions Act, was signed into law in September 2006, the state started a path to dramatically cut gases that cause climate change. The law requires California to cut emissions by 169 million metric tons by 2020, a near 30% reduction from 2020 emissions without the law. This reduction is equal to taking 28 million cars off the road by 2020. According to climate scientists however, emissions must be dropped even further (80% below 1990 levels) to prevent the worst effects of global warming. To meet the requirements of the law, the California Air Resources Board (CARB) must adopt a plan before 2009 that charts a course for making the reductions. This Scoping Plan, the first of its kind, will be the blueprint for California to make its contribution to end global warming.



California GHG emissions

Recommendations of the CARB Draft Scoping Plan

The draft Scoping Plan released in June 2008 recommends a series of strategies to make substantial global warming pollution reductions in every sector of the economy. Transportation, electricity generation, industry, commerce, residential buildings, government, agriculture, and individuals will all need to contribute toward returning California to 1990 emissions levels. Examples of the major strategies recommended are:

1. Multi-Sector Market-Based Cap-and-Trade Program Strategy			
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 Specific Strategies	3. Electricity Generation Strategies	4. Industrial, Commercial and Residential Strategies	5. Agriculture and Forestry Strategies
Implementing the 2004 vehicle GHG standards	Generating 1/3 of electricity from renewable sources	Using and transporting water more efficiently	Using and pumping water more efficiently
Improving planning and transportation system efficiency	Generating electricity with fuels that have a lower carbon footprint	Increasing efficiency of buildings and appliances to decrease overall energy use	Changing farming practices to use less resources, increase soil storage, and emit less
Improving heavy, medium and light duty vehicle fuel efficiency	Increasing use of combined heat and power sources	Switching to lower carbon fuels for making heat and steam	Managing animal waste to generate energy and control emissions
Using fuels with a lower carbon footprint	Increasing efficiency of electric power plants	Using fewer raw materials and reducing waste	Managing forests and range lands sustainably to increase carbon retained in soil and trees
Creating a north-south high speed rail system		Reducing use of materials with high global warming potential	

Draft Scoping Plan Strategies to Make Economy-Wide Reductions

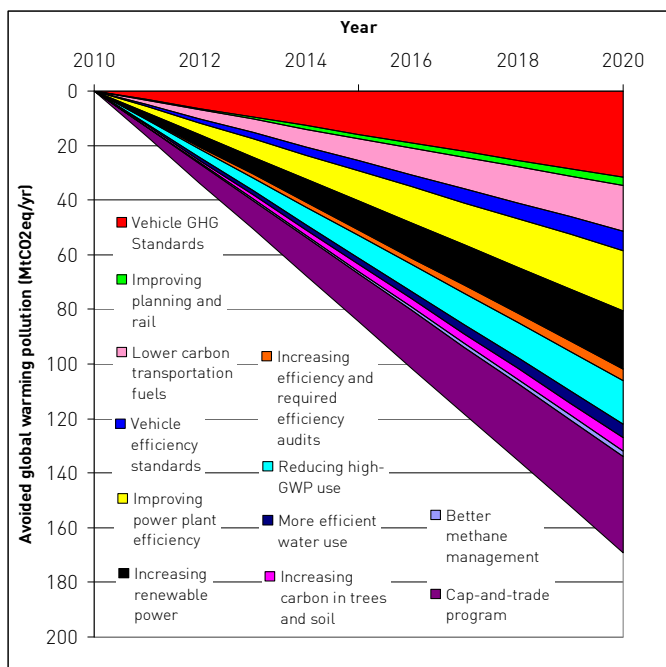
Emissions Reductions Associated With the Major Scoping Plan Recommendations

As recommended in the draft Scoping Plan released by CARB, a series of emissions reduction strategies will need to be implemented to meet the 2020 target and ultimately the 2050 goals. Using the stated projected emissions reduction quantities from the draft plan, strategies are stacked and compared in the table to the right.

Using A Graphical Approach to Understanding the Draft 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. This graph treats each emission reduction strategy as a wedge that increases over time. Wedges analysis such as that performed below is a commonly used tool to show how combinations of approaches work over time, building off one another. A simplified wedges graph is shown below.

Emission reduction strategy	Projected 2020 Reductions (MMTCO ₂ eq)
Transportation	
Vehicle GHG standards	31
Improved planning and rail	3
Lower carbon fuels	16.5
Vehicle efficiency standards	7
Electricity	
Efficiency improvements	22
Renewable energy increase	23
Industrial, commercial and residential	
Increased efficiency and required efficiency audits	Minimum 4
Lower carbon fuels	0.1
Less waste / more recycling	Not specified
Reducing high-GWP use	16
More efficient water use	5
Agriculture and Waste	
Better farming practices	Undetermined
Increasing carbon in trees & soil	5
Better methane management	2
Multi-sector Provisions	
Cap-and-trade program	35
Total	
32 Strategies	169



Benefits of Strategies Increase Over Time

The graph shows how the draft 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 Draft to Generate Additional Reductions

In addition to the 32 strategies referenced above, CARB has identified at least 29 other innovative strategies in multiple sectors to achieve reductions both within and outside California. In the final Scoping Plan, these strategies may be recommended for immediate action or retained as back-up provisions in the event that other strategies fail to achieve the reductions desired.

Tools to Implement California's Global Warming Reduction Strategies

CARB Must Follow Special Requirements in AB 32 When Meeting Its Reduction Mandate

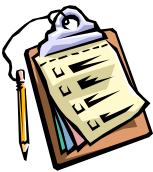
When the state legislature passed AB32, CARB was given broad authority to identify potential areas to make emissions reductions and then adopt new regulations to make those reductions a reality. However, to protect against the type negative economic, social and environmental effects that can come from making major changes to the California economy, the law also required the state board to take into account several factors when adopting new regulations. These requirements are listed to the right:

AB 32 Requirements

- * 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

The Plan shows how state agencies have already begun adopting regulations for a mix of reductions strategies. The law also requires CARB to consider a range of tools to implement the strategies necessary to meet our 2020 goals and beyond. Three types of tools are explored and recommended in the draft Plan. Common to each tool identified, 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 draft Scoping Plan is a recommendation that utilities produce 33% of their electricity from renewable sources such as solar and wind power.



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



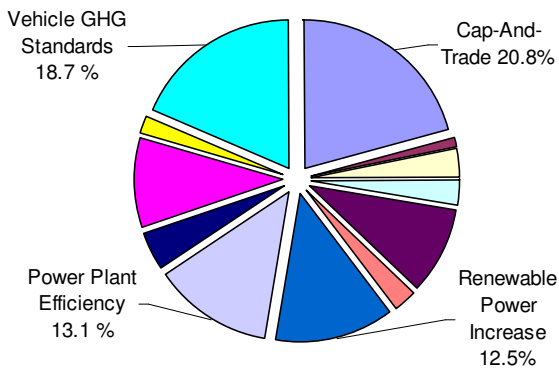
Market-Based Cap-and-Trade Regulations: A proven tool that is a simple and cost-effective way to achieve emissions reductions, and represents much less of an informational burden on regulators. Cap-and-trade provides businesses the economic incentives and flexibility to act quickly and efficiently, while 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 serve the purpose of directing investment for technology development and deployment in a specific economic sector and in known quantities. However, understanding the environmental effectiveness and reducing the economic impact of direct measures requires that rule-makers have a functional understanding of multiple factors of the industry being regulated, such as industry dynamics, emissions reduction potential, and data completeness. Without this up-front knowledge, a regulatory agency will have difficulty ensuring reductions can be achieved across the economy in a cost-effective manner.

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



Cap-and-trade programs inspire regulated parties and entrepreneurial innovators to seek out and initiate reductions strategies because it combines a clear goal—the overall emissions cap – with economic incentives to achieve reductions. Therefore, in addition to the direct regulations proposed, the draft 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, squeezing an additional 35 million metric tons of reductions from these sectors above and beyond reductions anticipated from direct controls. In addition to achieving reductions beyond those mandated in direct regulations, a cap-and-trade would have additional environmental and economic benefits, such as job creation and, potentially, development of new reduction projects in agriculture and forestry.

How a Multi-Sector Market Based Regulation Benefits California

A cap-and trade program requires large emitters 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 develop many individual regulations while still guaranteeing large scale reductions of specified quantities. No other approach suggested can achieve the same level of environmental integrity, cost-effectiveness and economic opportunity.

Examples of Emissions Reduction Strategies of a Multi-sector Market-based Approach to GHG Reductions

- * 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