



California Global Warming Solutions Act of 2006 Cutting pollution while strengthening the economy

The California Global Warming Solutions Act of 2006ⁱ (AB 32) calls for greenhouse gas reductions back to 1990 levels by the year 2020. E2 believes that this goal is achievable with available technology, and that the reductions will also spur a greater diversity of energy supplies and in some cases, lower costs for energy.

Target Reductions

California's emissions in 1990 totaled 426 million metric tons of CO2 equivalent (MMT). Emissions rose to 475 by 2000 and, without the standards AB 32 calls for, are expected to reach 600 MMT by 2020. AB 32 requires a reduction of 174 MMT per year by 2020. This is the equivalent of the emissions from 43 coal-fired power plants.ⁱⁱ

The final report by the Schwarzenegger Administration's Climate Action Teamⁱⁱⁱ identifies a collection of existing and future programs that collectively reduce 191 MMT per year. E2 has reviewed those and put them into 10 categories. In addition, three additional actions are identified that would produce an additional 22 MMT in reductions for a total of 213 MMT, or 124 percent, of the amount of reductions needed.

Strategy	CAT Reductions in 2020	With Additional Opportunities	Percentage of 174 tons needed
1. Energy Efficiency	30	34	20%
2. Renewable Energy	17	17	10%
3. Cleaner Power Plants	16	16	9%
4. Clean Cars	48	48	28%
5. Renewable Fuels	4	18	10%
6. Smart Growth	27	27	16%
7. Water Efficiency	1	5	3%
8. Forestry	35	35	20%
9. Other	13	13	7%
10. Innovation	0	0	0%
TOTAL	191	213	124%

With an excess of 39 MMT, there is room for individual programs to fail to achieve their reductions without preventing California from meeting its overall target.

Three Additional Opportunities

Updates from the Title 24 building standards and Title 20 appliance standards will save 4 MMT/year assuming the standards are proportional to the last updates and that they displace energy from efficient combined-cycle natural gas-fired power plants. An aggressive water use efficiency program would enable California to save approximately 5 million acre-feet by 2020, which is enough to meet the water supply needs of all the households in Los Angeles County.^{iv} This in turn would cut global warming pollution by more than 5 MMT/year.^v

Displacing 1.5 billion gallons of gasoline with 2.5 billion gallons of ethanol made from California sugar crops (cane, beets, sorghum) would save 17 MMT. Sugar-based ethanol is common in Brazil and emits one-tenth the greenhouse gas emissions of gasoline. 1 MMT can be saved through the use of bio-diesel.

Impacts on Businesses and Consumers

E2 considers four main factors when looking at the business impacts of AB 32: energy pricing, energy availability, redirecting expenditures from outside California back into the state, and the growth of Cleantech businesses in California.

Of the 10 categories of reductions, energy efficiency, cleaner power plants, clean cars, smart growth and water efficiency all reduce demand for energy and, thus, help keep prices down. Renewable energy can compete on price with natural gas, but is only competitive with old, coal-based generation if the U.S. requires carbon capture on coal. (Twenty percent of California's electricity comes from coal.) In the timeframe of 2020, this seems likely. Biofuels can compete today with gasoline made from oil at \$40/barrel^{vi} and can compete with diesel at \$60/barrel. In the 2020 timeframe, biofuels and electric vehicles will continue to put price pressure on fossil fuels.

By diversifying our energy sources we ensure better availability of energy and less dependency on the security risks associated with foreign oil. California currently spends \$30 billion/year purchasing fossil fuels from outside of California. Money diverted back to California for fuels derived from California companies will improve our economic well-being.

In 2005, 42 California Cleantech startup companies received \$484 million in venture capital.^{vii} For every \$100 million in venture capital, 2,700 direct jobs are created during the life of the company.^{viii} As with businesses in most other sectors, it is to the advantage of Cleantech companies to be located close to their markets. AB 32 will help ensure that California remains the largest market for clean energy and energy efficiency in the U.S.

Innovation

Technical innovation is commonplace in California's business culture. While it is not possible to predict what innovations will occur in the next 15 years (examples in the last 15 years include digital cameras, DVDs, cell phones, GPS, Google, Amazon, eBay, etc), innovations may make it possible to produce energy from algae farms, advanced batteries for electric vehicles, solar at \$.05/kilowatt hour without subsidies, and bio-refineries to replace petro-refineries. Although new innovations are not accounted for in the analysis of reduction strategies, they could bring about substantial greenhouse gas reductions in addition to those listed above.

Summary

To keep downward pressure on energy prices and keep energy dollars spent inside the state, California must encourage efficiency, renewables and innovation. AB 32, with its targeted reductions of global warming pollution, is the best legislative vehicle by which to put these changes in motion. Strategies that can produce 124 percent of the needed reductions to meet AB 32's targets have already been identified. With the addition of federal carbon constraints on coal-powered electricity, and innovations in Cleantech, renewables will bring a very strong challenge to traditional coal-based energy.

ⁱ "[California Solutions for Global Warming](http://www.solutionsforglobalwarming.org/index.html)" - www.solutionsforglobalwarming.org/index.html

ⁱⁱ 500 MW plant operating at 85% capacity emitting 4 MMT/yr

ⁱⁱⁱ http://www.climatechange.ca.gov/climate_action_team/reports/index.html

^{iv} Glieck, P. et al., *California Water 2030: An Efficient Future*, Pacific Institute for Studies in Development, Environment and Security, 2005.

^v Assumes 1 million tons per 1 MAF, from page 50 of the CAT Report.

^{vi} "[Replacing Gasoline with Biofuels](http://www.e2.org/ext/jsp/controller?docId=10022)" - www.e2.org/ext/jsp/controller?docId=10022

^{vii} "[California's Cleantech Industry](http://www.e2.org/ext/jsp/controller?docId=10020)" - www.e2.org/ext/jsp/controller?docId=10020

^{viii} "[Creating Cleantech Clusters](http://www.e2.org/ext/jsp/controller?docId=10462)" - www.e2.org/ext/jsp/controller?docId=10462