



ENVIRONMENTAL DEFENSE

finding the ways that work

TEN STEPS TO SUCCESS: HOW CALIFORNIA CAN CUT GLOBAL WARMING POLLUTION BY 25% BY 2020

California can reduce global warming pollution to 1990 levels by 2020, or 25% below forecasted emissions, with a concerted statewide effort to deploy advanced energy technologies and other emission reduction strategies. Some of these strategies are already underway, providing about half of the emission reductions needed to meet the 2020 goal.

An enforceable limit on pollution will spur investment in currently available clean technologies, as well as innovation in new technologies that will enable California to lead the emerging worldwide clean energy market.

Three-quarters of California's global warming pollution comes from burning fossil fuels – oil used in our cars and trucks, coal and natural gas burned to produce electricity, and natural gas used in our homes and businesses. So curbing our global warming pollution goes hand-in-hand with breaking our dependence on fossil fuels. By relying on cleaner local resources, California can cut emissions while providing job, economic, and air quality benefits to the state.

Ten Key Strategies to Cut Global Warming Pollution

1. Energy Efficiency
2. Renewable Energy
3. Cleaner Power Plants
4. Clean Cars
5. Renewable Fuels
6. Smart Growth
7. Water Efficiency
8. Forestry
9. Other Strategies
10. Innovation

1. Energy Efficiency

California has long been a leader in energy efficiency – getting more work out of less energy. For example, thanks to California's leadership with efficiency programs and standards, refrigerators today use about 75% less energy than thirty years ago, cost half the price, are 20% larger and have more features. Investments in more efficient buildings and appliances have avoided the need for the equivalent of two dozen giant power plants over the past thirty years, and today reduce emissions equivalent to taking 2 million cars off the road. Efficiency provides twice as many jobs as natural gas-fired power plants, and has provided more than \$4 billion in net benefits over just the last decade – a yield of \$2 in benefits for every \$1 invested. Even with the state's leadership, enormous untapped cost-effective energy savings remain in California. The state has identified currently-available, cost-effective measures that can save another 6,000 MW over just a decade, providing an additional \$12 billion in net benefits. By accelerating all utilities' electricity and natural gas efficiency programs, and continuing to upgrade the state's building and appliance efficiency standards, California can meet at least 15% of the 2020 emissions limit and achieve enormous economic and job benefits. And by adopting these policies, California will spur innovation that will lead to even larger efficiency opportunities.

2. Renewable Energy

California is rich in renewable resources, such as wind and solar, that offer abundant opportunities to generate clean electricity. California was an early leader in developing renewables, which now provide about 11% of the state's electricity. By increasing renewable energy to 33% of our power mix, California can protect consumers from increasingly volatile natural gas prices and cut pollution emissions. The state's recent commitment to roof-top solar power will provide near-term emission reductions, and offers significantly larger savings in the longer-term as solar power reaches the mainstream market. These investments in renewables

will meet about 10% of the 2020 emissions limit, while keeping our energy dollars here at home, and providing more than twice as many jobs as investments in fossil fuel-fired power plants.

3. Cleaner Power Plants

California can achieve significant global warming pollution reductions by ensuring that our fossil fuel-fired power plants are as efficient as possible. Nearly half of California's power plants are more than 30 years old. Repowering aging plants with state-of-the-art technology will make them at least 15% more efficient and provide significant pollution savings. Further savings can be achieved by increasing the use of on-site power plants that use fuel for two purposes simultaneously – providing heat and generating electricity in commercial and industrial facilities. California already has 9,000 MW of such facilities, and has the potential to increase the use of combined heat and power by about 80%. More advanced technologies also offer the ability to capture and store global warming pollution emitted from new plants. The pollution can be pumped deep underground, a process that has been used for decades in the oil industry, and stored there for hundreds of years. BP and Edison Mission Group recently announced plans to build the first power plant in California that will capture and store its global warming pollution.

4. Clean Cars

Cars and trucks are the largest source of global warming pollution in California, and also offer the greatest opportunities to cut the state's pollution, providing about one-quarter of the savings needed to meet the 2020 target. California pioneered the effort to provide consumers with less polluting vehicles; in 2002, the Legislature adopted AB 1493, requiring the Air Resources Board to establish global warming standards for passenger vehicles. These standards will reduce emissions from new vehicles by approximately 30% by 2016, saving consumers more than \$4 billion by 2020. Additional savings can be achieved by extending these standards beyond 2016 and expanding them to include larger trucks. For example, hybrid technologies could cut global warming pollution from larger trucks by more than 50 percent.

More efficient tires and better refrigerants in vehicle air conditioners can also provide significant emission and cost savings. Under a 2003 law, the state will implement a tire efficiency program that is projected to cut emissions by nearly 5 million tons of carbon dioxide by 2015, without sacrificing safety and providing net savings of approximately \$1 billion for consumers. Preventing the release of potent global warming pollutants used in current vehicle air conditioners and requiring the use of less harmful refrigerants in new vehicles can also provide substantial savings. California has key competitive advantages in clean vehicle technologies, with more than 100 companies throughout the state poised for significant expansion with policies in California that encourage clean cars as well as growing overseas markets.

5. Renewable Fuels

Renewable fuels offer another way to reduce emissions from our vehicles, while providing consumers with more choices at the pump and protection from increasingly frequent gasoline price spikes. Made from home-grown plant materials, renewable fuels such as ethanol and biodiesel can help free California from dependence on foreign oil producers. While ethanol made from corn only offers a modest reduction in global warming pollution relative to gasoline, ethanol made from biomass or agricultural wastes can power our cars while emitting less than 80% of the global warming pollution than gasoline (on a lifecycle basis). And using ethanol in high-blends (E-85) avoids the air quality challenges that exist when ethanol is used in low-blends as an additive. California already has over 250,000 flexible-fuel vehicles that have the ability to run on E-85, so the state can get a running start on reducing emissions with renewable fuels by making ethanol more widely available.

6. Smart Growth

Designing communities to enable Californians to walk, bike, or take public transit to get to most places they want to go can both significantly reduce emissions and improve the state's quality of

life. Improving our public transportation infrastructure and developing housing and jobs near transit hubs will provide Californians with more housing choices, reduce commute burdens on families and ease traffic congestion. Research on smart growth policies has shown that compact neighborhoods with good transit service generate as much as two-thirds less traffic than urban sprawl neighborhoods. So communities that create new smart growth neighborhoods will impose substantially lower infrastructure costs on the state. If all of California's new construction for just the next ten years followed smart growth examples currently built, consumers would save over \$2 billion each year in transportation expenses.

7. Water Efficiency

California's water system is the single largest user of energy in the state, accounting for about 20% of electricity use and over 30% of natural gas use. California has a uniquely energy-intensive water supply, in large part because water is pumped over 2,000-foot mountains to Southern California – the highest lift of any water system in the world. Additional energy is used to extract, distribute, treat, and use that water. Reducing water use is a highly cost-effective way to save energy, since it not only reduces energy used for end-use water heating, it also saves all of the upstream energy associated with delivering the water. And those cost-effective energy savings translate into reduced global warming pollution. 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. This in turn could cut global warming pollution by more than 5 million tons of carbon dioxide. And as global warming puts a strain on California's water supply, these water savings will become even more valuable.

8. Forestry

Forests can help remove global warming pollution from the atmosphere. Planting trees in deforested areas, protecting old growth and other endangered forest habitat, and managing forests using sustainable practices can all store carbon dioxide. While, ultimately, global warming cannot be prevented without significant reductions in pollution from burning fossil fuels, the primary source of our emissions, sustainable forestry practices can help slow the build-up of pollution in the atmosphere and smooth the transition to a clean energy economy. Forestry strategies have the potential to provide up to 15% of the emission savings needed to meet the 2020 limit, while at the same time providing biodiversity and water quality benefits for the state.

9. Other Strategies

There are numerous additional opportunities to reduce California's global warming pollution and to provide important public health benefits as well. For example, accelerating recycling and diverting waste from landfills, and electrifying diesel engines used in various applications such as agricultural pumps, transportation refrigeration units and ships in ports can significantly reduce emissions. And since methane (also known as natural gas) is a potent global warming pollutant, reducing emissions from landfills, leaks from natural gas pipelines and oil wells, and animal wastes all offer substantial emission reduction opportunities as well.

10. Innovation

While California can cut global warming emissions to 1990 levels by 2020 using currently available technologies and processes, experience shows that once a clear pollution limit is set, the marketplace will develop more strategies than we could have imagined today to achieve the goal while providing even larger benefits to California. An enforceable cap will send a clear signal to entrepreneurs that pollution-cutting technologies are profitable, and unleash California's world-famous innovative spirit. The sooner we act, the sooner we can grow California's new energy economy.

For more information visit: www.solutionsforglobalwarming.org

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