

CALIFORNIA'S BOLD PLAN TO PROTECT THE PLANET

THE YEAR WAS 1966, and the smog-choked state of California, started a revolution in air pollution control--the regulation of tailpipe emission of hydrocarbons and carbon monoxide from cars--that would eventually sweep the world. Forty years later, the state has launched a suite of new proposals to attack global warming that represent the most comprehensive and rigorous attack on air pollution adopted in a generation, one that is certain to be closely examined and possibly adopted throughout the world.

In 1966, other U.S. states quickly followed California's lead, then the U.S. Congress did the same, enacting four years later the landmark U.S. Clean Air Act of 1970. After a decade of delay, other nations began to follow suit, first in Europe, then Asia and finally in the rest of the Americas and Africa. Today, virtually every car sold in the world is loaded with a range of pollution controls devices ranging from catalytic converters to on-board computers because of the revolution that started forty years ago.

In 2004, California, ignoring the studied efforts of Washington, D.C. to ignore global warming, adopted the nation's first mandatory controls of emissions of greenhouse gases from cars and light trucks. At state capitals across the United States, especially in the Northeast, legislators are adopting California's program. With this new collection of proposals--some of which have been signed into law by Governor Arnold Schwarzenegger, and others of which await his decision--the state has squarely and comprehensively confronted the threat of global warming.

California legislators approved nine separate initiatives that attack virtually every facet of the threat and, in the process, providing a model that could be adopted by others. The bills range from an overarching requirement that emissions of greenhouse gases, the pollutants that cause global warming, be cut 20 percent by 2020 to other initiatives that specifically address cars and light trucks, electricity generation and other sectors.

One, for example, requires that electricity production create no more pollution than that associated with one of the most advanced generating technologies. Two others boost the state's "million solar roofs" plan and fuel cells — which, when using hydrogen, produce only pure water and electricity, with zero pollution. Yet another law would impose a \$30 fee for each container at the ports of Long Beach and Los Angeles — possibly the largest aggregate source of global warming pollution west of the Mississippi — to help pay for cleansing the air. Another requires that by 2020, at least 50 percent of new passenger cars and light-duty trucks be clean, alternative-fuel vehicles, such as hydrogen, plug-in hybrids and flex-fuel vehicles.

These collectively not only leapfrog the Kyoto Protocol, the international global warming agreement that has been languishing largely because of opposition from the United States and a

handful of other like-minded nations, but establish a framework for revolutionizing the way the world contends with air pollution and its threats.

With the overarching bill, AB 32, California became the first government to attack greenhouse emissions while self-consciously refusing to mandate a carbon "cap-and-trade" system. "Cap and trade" sets a standard for emissions, but it also allows companies to trade in the right to pollute up to that standard. That means companies that cut emissions can sell "emission rights" to other companies that don't want to invest in cleaner technology. It doesn't eliminate pollution as much as create a market in it. Despite immense pressure from businesses and outspoken support of trading by some environmental groups, the California legislature allowed carbon cap-and-trade, which is currently failing to achieve reductions in Europe, but refused to mandate it.

Equally important, the state refused to narrow the scope of its legislation to the small set of greenhouse gases targeted by the Kyoto Protocol. (Of these six, most attention focuses on carbon dioxide, a pollutant formed when coal, oil and gas are burned.) Instead, AB 32 applies curbs to other pollutants that also cause global warming, such as black carbon, or soot, which is principally from diesels and ozone, or smog.

HEADLINES FOCUSED on the law's requirement that CO₂ emissions come down to 1990 levels by 2020. That's important, because CO₂, will cause most future temperature increases. But the atmospheric lifetime of CO₂ is 3,000 years, so reducing it provides long-term, not near-term, cooling benefits. (Other Kyoto pollutants have lifetimes of up to 50,000 years. Only one the ozone precursor methane, or natural gas, has a short lifetime, roughly 12 years.)

On the other hand, smog, soot and other pollutants that contribute to global warming don't last nearly as long: their atmospheric lifetimes range from a few minutes to 12 years. California has long controlled these substances for reasons of public health, but now it must do more. The result: cooling will start sooner and, because smog and soot are killers — about 8,000 Californians die each year because of them — more lives will be saved.

Refusing to mandate cap-and-trade opens the door to extending new market mechanisms that have worked well in the context of protecting health to the arena of global warming. Sweden's "feebates," for example, tax relatively dirty polluters or their products, then rebate all the money to relatively clean polluters. The feebate used against smog-forming oxides of nitrogen caused emissions to drop 40 percent within 12 months in Sweden.

Another such mechanism is Japan's requirement that polluters pay lost income, medical bills and burial costs to nearly 100,000 victims of air pollution, which has resulted in the world's cleanest power plants and refineries.

Trading programs, in contrast, have been a succession of unalloyed failures, notwithstanding the commonly held view to the contrary. *The Los Angeles Times*, for example,

editorialized in the closing days of California's legislative session that cap-and-trade "worked well in the context of the Clean Air Act." Not so.

The measure of success is whether health and environmental objectives are met. The purpose of Clean Air Act trading was to restore life to lakes and streams, especially in the Northeast, that had been acidified by pollution from coal-fired power plants. But 16 years later, lakes and soils in the Northeast are still acidic and probably will remain so for another half a century.

Other trading programs have included leaded gasoline, which meant the U.S. required 25 years to finish a job the Chinese did in three, and the Los Angeles RECLAIM program for smog that had to be shut down because it was a failure, rife with fraud. Carbon cap-and-trade in Europe adopted in 2001 is now on the ropes because industries lied about their pollution, leading the Bloomberg Report to observe that "the 25-nation EU is failing to meet the Kyoto Protocol's carbon-dioxide emission standards. Rather than help protect the environment, the trading system has led to increases in electricity prices of more than 50 percent and record profits" for utilities.

But with trading now an option, not a mandate, California officials are free to cast their net wide in a search for approaches that have demonstrated their effectiveness. Properly implemented--and if signed into law by Governor Arnold Schwarzenegger--California's new measures represent the most comprehensive and rigorous attack on air pollution adopted in a generation, one that is certain to be adopted throughout the world — and one that just might save it.

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Proposals adopted by the California legislature to address global warming include the following:

The Overarching Attack on Global Warming

ASSEMBLY BILL 32 THE GLOBAL WARMING SOLUTIONS ACT (GOVERNOR IS COMMITTED TO SIGN INTO LAW)

This generic, overarching legislation establishes the first limit on emissions of greenhouse gases by a state of the United States. It requires the state to return to 1990 levels by the year 2020, which is projected to be roughly 25 percent below what they otherwise would have been.

Primary enforcement of emission reductions is lodged with the state's Air Resources Board (ARB), whose members are appointed by the Governor. The Board is required to adopt regulations mandating maximum technologically feasible and cost-effective reductions through a

open process. The Board "may include...may include the use of market-based compliance mechanisms," but is not required to do so.

The Board is also required to--

- Adopt a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions levels in 1990 to be achieved by 2020.
- Adopt regulations on or before 1 January 2008 to require the reporting and verification of statewide greenhouse gas emissions.
- Adopt a schedule of fees to be paid by the sources of greenhouse gas emissions to cover the actual cost of the monitoring and reporting program regulations.
- Adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions.
- Adopt market-based compliance mechanisms meeting specified requirements. The bill would require the state board to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism adopted by the state board, pursuant to specified provisions of existing law.
- Adopt a schedule of fees to be paid by regulated sources of greenhouse gas emissions, as specified. Because the bill would require the state board to establish emissions limits and other requirements, the violation of which would be a crime, this bill would create a state-mandated local program.

Five Advances in Zero-Polluting Electricity and Clean Fuels

A wide range of zero-polluting and super-clean energy technologies broke through to commercial status in California . These include solar photovoltaic and thermal technologies, fuel cells, and wind turbines, to name but a few. But as the prices of natural gas and petroleum-based liquid fuels like gasoline and diesel declined in real terms during the 1980s and 1990s, California's status as a haven for these technologies eroded. Today, for example, the state with the largest wind power deployment is Texas.

Seeing the current demand for zero-polluting and renewable technologies growing rapidly, California legislators agreed on a set of initiatives designed in the aggregate to move electricity generation away from coal, oil and natural gas and toward solar, wind, renewables and hydrogen. These include the following:

SENATE BILL 1
ONE MILLION SOLAR ROOFS (SIGNED INTO LAW)

As much as 80 percent of United States demand for solar energy is in California, but the state has slipped from the position of dominance in manufacturing and expertise that it enjoyed in the 1970s and 1980s. In an attempt to regain that lost ground and to put in place the rough equivalent of 40 new power plants to provide peak power demand--when it's hot and sunny--the Governor and the legislature collaborated.

On January 12, 2006, the California Public Utilities Commission (CPUC) whose members are appointed by the Governor, approved the California Solar Initiative (CSI). This committed \$3.2 billion in incentive funds to drive consumers toward solar power over the following 11 years. It provides rebates for homeowners, businesses, farmers and government projects investing in rooftop solar, with the aim of installing 3,000 megawatts of solar power on one million roofs. However, to fully implement the new program required changes in law that only the legislature could adopt. Those changes were contained in SB 1.

SB 1 dovetailed with the Solar Initiative program with three major components:

First, it lifted a cap on "net metering" in which electricity produced by a renewable energy system flows into the utility grid, literally spinning the existing electricity meter backwards so consumers can be paid for the power they generate. SB 1 increased the old cap of 0.5 percent of a utility's total five-fold, to 2.5 percent. This provides room for about 500,000 solar roofs.

Second, it required that starting in 2011, all home builders offer solar panels as a standard option for buyers of new homes.

Third, it sets a goal that California's city-owned power companies, such as Los Angeles Department of Water and Power and Sacramento Municipal Utility District, adopt their own solar rebate program totaling \$800 million.

SENATE BILL 1368
STATE OF THE ART ELECTRICITY

Importing a concept familiar in the context of food and drug safety laws--product purity--this bill requires that the air pollution associated with generating a kilowatt of electricity be no more than what would be emitted by a state of the art natural gas fired power plant. The bill is aimed principally at the out-of-state coal-fired power plants that provide roughly 12 percent of California's electricity.

The proposal does not directly prohibit the purchase of electricity generated by out of state coal plants, often referred to in California as "coal-by-wire," but instead bans new long-term contracts for basic power supplies until emissions are lowered to meet the standard. The bill

codifies a policy previously imposed on California's investor-owned electricity companies (Southern California Edison, Pacific Gas & Electric, and San Diego Gas & Electric) by the state's regulatory agency, the Public Utility Regulatory Commission, thus barring any retreat. It also extends the policy to the state's municipal utilities, like Los Angeles Department of Water & Power and the Sacramento Municipal Utility District, which are generally not governed by the state utility commission.

The proposal requires three key regulatory agencies, the Public Utility Commission, the Energy Commission and the Air Resources Board, to establish standards for the maximum allowable emissions of greenhouse gases per megawatt hour of generation based on state-of-the-art natural gas-fired combined cycle power plants. Utilities could still purchase power from dirty coal-fired plants under short-term contracts or in the daily spot market.

SENATE BILL 107 SPEEDING UP RENEWABLE ENERGY

Like many jurisdictions, California had already required the state's investor-owned electricity sellers to get electricity from renewable sources such as wind and sunshine: 20 percent by 2017. This bill accelerates the Renewables Portfolio Standard (RPS) timetable to 2010.

The proposal also establishes a mechanism allowing renewable energy credits to be purchased by retail sellers of electricity unable to meet the RPS, and requires each municipal utility to report annually on the renewable resources used in its portfolio as well as its progress in meeting RPS requirements.

ASSEMBLY BILL 2021 BOOSTING ENERGY EFFICIENCY

Although the California Public Utilities Commission has set aggressive energy efficiency goals for the investor-owned utilities, most municipal utilities lack similar goals.

This bill requires the California Energy Commission (CEC) to extend efficiency mandates to municipally-owned power companies, which account for 27 percent of California's electricity supply. Specifically, the CEC must (i) establish annual statewide energy efficiency targets, (ii) investigate how to reduce the peak demand needs of air conditioners, and (iii) develop energy efficiency goals for municipal utilities to achieve.

ASSEMBLY BILL 2778 SUBSIDIES FOR FUEL CELLS AND WIND POWER

In March, 2001, after being required by the legislature to examine the potential for electricity to be generated by small facilities, the Public Utilities Commission (PUC) created the

statewide Self-Generation Incentive Program. "Self-generation" refers to a wide range of electricity-producing technologies installed on the customer's side of the utility meter, including microturbines, small gas turbines, wind turbines, photovoltaics, fuel cells, and internal combustion engines.

The program pays rebates to systems sized up to 5 megawatts (roughly enough for 1,000 U.S. homes). Although incentives vary by technology and fuel type, the program can, for example, reduce the average cost for a 50 kilowatt photovoltaic system from \$450,000 to \$300,000. While residential customers are not barred from the program, it is designed primarily with business and large institutional customers in mind.

Solar photovoltaic (PVs) and thermal generating technologies were broken out for separate treatment when the PUC adopted the California Solar Initiative (CSI), aimed at placing solar PVs on one million roofs. (See the discussion of SB 1.) This proposal extends the SGIP to Jan. 1, 2012, but limits it to fuel cells, which generate electricity with zero pollution when running on hydrogen, and wind power, which also has zero emissions.

Although the bill excludes polluting technologies from the subsidy program, it requires the Energy Commission, in consultation with the PUC and the state Air Resources Board to evaluate the costs and benefits of providing ratepayer subsidies for renewable and fossil fuel "ultraclean and low-emission distributed generation" by Nov. 1, 2008.

Three Bills to Clean up Cars

These three separate but related proposals attack emissions from cars and light trucks, which emit the bulk of California's air pollution, and they complement the landmark legislation of 2004, which required the state's Air Resources Board to adopt requirements for achieving "maximum feasible" reductions in greenhouse-gas emissions by passenger cars, light-duty trucks and other noncommercial vehicles.

ASSEMBLY BILL 1229 LABELING FOR CLIMATE IMPACT (SIGNED INTO LAW)

Every new car sold in California carries a sticker called the "Smog Index Label," which identifies that vehicle's emissions of smog-producing gases and compares it to other new vehicles. AB 1229 extends this requirement to include a Global Warming Index to new cars beginning in 2009, to identify every vehicle's emissions of global warming gases compared to other new vehicles. Governor Schwarzenegger signed this bill into law on October 6, 2005.

ASSEMBLY BILL 1012 MANDATING NEW CARS USING RENEWABLE FUELS

Already home to 24 million vehicles, California is confronting a projected increase in gasoline and diesel fuel demand of 25 percent in the next fifteen years. To reduce this growing thirst, and to help wean California of its dependence on gasoline, diesel and other petroleum-based fuels, this proposal requires that half of new cars sold in the state be "alternative-fuel," vehicles by 2020. An alternative fuel cannot contain more than 50 percent petroleum.

The bill also requires the state's Air Resources Board to adopt and implement motor vehicle emission standards, in-use performance standards, and fuel specifications to control air contaminants and sources of air pollution. The state is required to develop and adopt a plan by June 30, 2007, to increase the use of alternative transportation fuels. The plan must set goals for 2012, 2017, and 2022, for increased alternative fuel use.

SENATE BILL 757 PROMOTING EFFICIENCY IN TRANSPORTATION

While also seeking to increase the availability of alternative fuels, this proposal requires state agencies to take "every cost effective and technologically feasible action needed to reduce the growth of petroleum consumption and increase transportation energy conservation and efficiency." In adopting rules and regulations, all government agencies are required to take into account the state's transportation energy goals.

Looking beyond its own borders, the bill requires the California Environmental Protection Agency to act to influence Congress and the U.S. Department of Transportation to double the combined fuel economy of cars and light trucks by 2020.

SENATE BILL 927 CLEANING UP THE LAST UNREGULATED POLLUTERS: PORTS AND SHIPS

The ports of Los Angeles and Long Beach handle an astounding 40 percent of U.S. imports and exports. It's no coincidence that the ports are also the biggest air polluters in the six-county Los Angeles Air Basin. More than 180,000 vehicles clog Interstate 710 everyday, including approximately 35,000 daily truck trips traveling to and from the ports—and the volume of goods moving through the ports is expected to triple over the next 20 years. The ports are also anticipated to quadruple in growth over the next 15 years, making the issue extremely urgent.

Ships at sea also produce an immense amount of air pollution. In the aggregate, their pollution is thought to be roughly equivalent to that of the continents of either North America or Europe. Virtually all of these ships burn the same "bunker" fuel--so called because it is stored in ship-board bunkers--so laden with pollution that it must be heated before it can be pumped from a tank. They also use the same engines: immense diesels. Switching out the engines and fuels of these vessel, which number about 10,000, would probably result in the fastest and largest reduction in air pollution in history. California, however, has started closer to home: namely at the Ports of Long Beach and Los Angeles.

The legislature proposed a \$30 fee on each shipping container entering the ports of Los Angeles and Long Beach—\$10 each for pollution mitigation, rail improvements, and port security.

Cancer risk estimates at the Ports of Los Angeles and Long Beach are about 1 per every 700 people exposed. This rate is far above the 1-in-a-million risk level considered acceptable by the U.S. EPA. Children and the elderly are most at risk. According to a report by the California Air Resources Board, air pollution from the ports caused 2,400 premature deaths, 62,000 asthma and lower respiratory symptoms, 360,000 lost work days, and 1,100,000 school absence days—in 2005 alone. Port air pollution's ill effects cost California's economy a staggering \$19 billion per year.

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