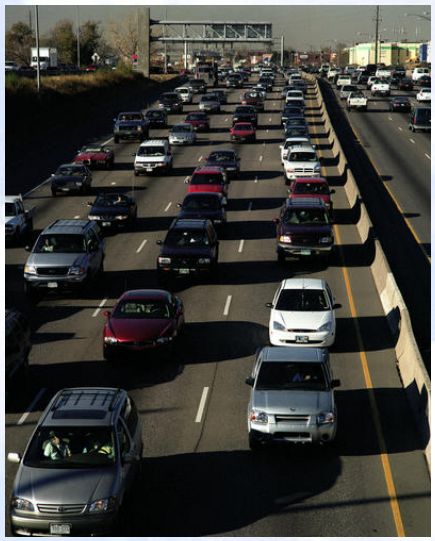

POWER TO PROTECT

The Critical Role States Play in Cleaning Up Pollution from Mobile Sources

May 2005 • U.S. PIRG Education Fund

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EXECUTIVE SUMMARY

Despite the progress made over the last 35 years in reducing air pollution, the air in many U.S. metropolitan areas remains unsafe to breathe. States continue to search for innovative ways to protect the environment and public health from air pollution, which often requires greater pollution reductions than federal programs afford. California has unique authority under federal law to adopt emission standards for cars, trucks, and most other mobile sources of air pollution that are more protective than federal standards; subsequently, other states have the right to choose between implementing federal standards or the more stringent California ones. In this report, we examine the critical role states and California in particular have played in cleaning up air pollution from mobile sources at the local level and spurring action in Washington, DC to strengthen federal standards to benefit all Americans. We also review which states have adopted different California mobile source standards and highlight how the oil, auto, diesel, and trucking industries are threatening the ability of states to surpass federal requirements.

More than half – 52 percent – of all Americans live in areas with unsafe levels of either ground-level ozone ("smog") or particle pollution ("soot"). Mobile sources – including cars and trucks, as well as non-road engines (such as those in recreational vehicles, farm and construction machinery, lawn and garden equipment, marine vessels, and locomotives) – are the largest source nationwide of smog-forming pollutants and major contributors to soot pollution. These pollutants exacerbate or even cause asthma, heart and lung disease, and premature death. In addition, mobile sources such as cars and SUVs release one-third of the nation's emissions of carbon dioxide, the leading global warming pollutant, and are the largest source of cancer-causing toxic emissions such as benzene.

The Clean Air Act sets federal standards for air quality but requires the states do much of the work to implement them. For many states, federal programs to reduce pollution from power plants, cars and trucks, and other sources are not enough to meet these standards. As a result, states are often at the forefront of developing and testing novel policies to address local air quality problems.

Only California, however, has the authority under the Clean Air Act to enact emission standards for mobile sources that are more stringent than federal standards, given the state's pioneering work to clean up tailpipe emissions and its severe air pollution problems. Fortunately, the Clean Air Act also allows other states with polluted areas to adopt California's emission standards in lieu of federal standards, giving states a powerful tool to protect public health.

This statutory authority to adopt California's standards for mobile sources is a critical tool for several reasons.

First, states with entrenched or unique air pollution problems not solved by federal standards have the option of adopting policies proven to reduce pollution in California. For example, eight states already have adopted California's stronger "low emission vehicle" (LEV) standards to realize even deeper emissions reductions from cars, SUVs and other light trucks than federal law requires. New York also has followed California's lead and adopted more stringent emission standards for jet skis and personal watercraft.

Second, as more states adopt California's clean air protections, the federal government becomes more likely to strengthen its standards to benefit all Americans. In addition to giving states with entrenched air pollution problems a more

protective alternative to federal standards, California's LEV program gave rise to national standards for tailpipe emissions, which have helped improve air quality across the board. Similarly, California became the first to cut smog-forming emissions from the small spark-ignition engines used in lawn and garden equipment such as lawnmowers and chain saws; EPA used these standards as the basis for federal regulations a few years later.

State vehicle emission policies also can serve as a backstop to discourage federal policymakers from rolling back national standards and fill any gaps left in federal protections. For example, the federal government's standards for heavy-duty diesel trucks and buses, set to go into effect in 2007, left a two-year gap during which time manufacturers could make more polluting engines. California acted quickly to fill this gap, and 12 states and the District of Columbia followed California's lead. California also adopted emission standards for diesel engines that are nearly identical to the federal regulations. Since the oil and trucking industries may try to delay the federal standards, states not willing to risk delay can opt in to California's standards immediately; at least 11 states and the District of Columbia have done so.

Unfortunately, automobile and engine manufacturers and other industry groups have long challenged the right of California to adopt stronger standards than federal law as well as other states' authority to opt in to those standards. In September 2003, industry was successful in weakening the states' right to protect their residents from mobile sources of air pollution for the first time in the Clean Air Act's 35-year history. As California took action to strengthen its emission standards for small spark-ignition engines used in lawn and garden equipment, Senator Christopher Bond of Missouri inserted a rider on the FY04 appropriations bill that prevents states from adopting California's new standards for lawn and garden equipment. This rider also could preempt states from adopting California's forthcoming standards for some forklifts and other larger spark-ignition engines. Senator Bond introduced this rider at the request of a single company, Briggs & Stratton, which manufactures the engines in question and owns a facility in Senator Bond's home state.

This is a dangerous precedent, and other industries are eager for similar victories. Recognizing California and other states as powerful players in the regulation of emissions from mobile sources, automobile and engine manufacturers and other industries continue to fight state emission standards that are stronger than federal law. Most recently, automobile manufacturers filed suit against a new California program to cut global warming emissions from cars and SUVs.

These efforts to limit states' rights threaten to weaken the federal-state partnership that has helped reduce air pollution from mobile sources for the last three decades. The federal Clean Air Act sets a minimum standard for air quality that all Americans have the right to enjoy. But not all states' air pollution problems are the same; therefore, not all solutions are going to be the same. Giving states the right to go above and beyond federal requirements—without hitting an artificial ceiling—is essential for many areas to attain the goals set out by the Clean Air Act.

BACKGROUND: AIR POLLUTION FROM MOBILE SOURCES

The Clean Air Act, one of the nation's preeminent public health laws, has substantially improved air quality in the U.S. Despite this progress, the air in many metropolitan areas remains unsafe to breathe. According to the American Lung Association, 52 percent of all Americans live in places with unsafe levels of ground-level ozone ("smog") or particle pollution ("soot").[1] Mobile sources of pollution are a significant part of this problem. Mobile sources include on-road vehicles, such as cars and light trucks, heavy trucks, buses, and motorcycles, as well as non-road vehicles and equipment, such as trains, ships, lawn and garden equipment, agricultural and construction equipment, personal watercraft (e.g., jet skis), and recreational vehicles (e.g., snowmobiles).

On-road and non-road engines release harmful pollutants, including:

Volatile Organic Compounds

Emissions of volatile organic compounds (VOCs) result from fuel evaporation and incomplete fuel combustion. VOCs are a precursor to ground-level ozone, a serious air pollutant in cities across the U.S. Ozone triggers an estimated six million asthma attacks each year in the eastern U.S. alone.[2] While it is well documented that air pollution triggers asthma attacks, preliminary research suggests that ozone may increase children's risk of developing asthma in the first place.[3] Almost 16 million adults (7.5 percent of the adult population) reported having asthma in 2002 (see Appendix A).[4] In addition, new evidence links short-term exposure to ozone with increases in premature deaths from heart and lung disease.[5] Many VOCs also are considered toxic, meaning they can cause cancer or other health problems. Mobile sources were responsible for 44 percent of all VOC emissions in 2001 (see Table 1).[6]

Particulate Matter

Particulate matter (PM) or "soot" is the term for solid or liquid particles in the air. The very tiny particles in soot can reach the deepest regions of the lungs and even pass through the lung into the blood. Fine particulate pollution is the deadliest air pollutant, contributing to tens of thousands of premature deaths each year, as well as asthma attacks and other respiratory problems, heart attacks, and lung cancer.[7] Fine particles can travel long distances on air currents and also are a major cause of the brownish haze that degrades visibility, destroying the spectacular scenic vistas of our national parks. Mobile sources were responsible for seven percent of all fine PM ($PM_{2.5}$) emissions in 2001.[8] This number was much higher in states with heavily urban areas, such as Connecticut (17 percent), District of Columbia (15 percent), Massachusetts (13 percent), and New Jersey (16 percent), as shown in Table 2.

Nitrogen Oxides

Nitrogen oxides (NOx) form when fuel burns at high temperatures, as in motor vehicle engines. Nitrogen oxides react with VOCs in the presence of sunlight to form ground-level ozone. Children, people with lung diseases such as asthma, and people who work or exercise outside are particularly susceptible to adverse effects such as damage to lung tissue and reduction in lung function. Nitrogen oxides and sulfur dioxide also react with other substances in the air to form acid rain, which damages forests, lakes, rivers, and streams. In addition, nitrogen oxides contribute to fine particle pollution, as

described above. Mobile sources accounted for 55 percent of all nitrogen oxide emissions in 2001.[9] In some states, such as California, Connecticut, New Jersey, New York, Oregon, and Washington State, mobile sources were responsible for about three-fourths of the nitrogen oxide emissions in 2001 (see Table 3).

Air Toxics

Toxic or hazardous air pollutants, such as benzene, diesel exhaust, and formaldehyde, are known or suspected to cause cancer, birth defects, neurological damage, and other serious health effects.[10] On-road mobile sources were responsible for 30 percent of the 4.6 million tons of air toxics released in 1996; non-road mobile sources accounted for 20 percent.[11] The California Air Resources Board estimates that 90 percent of the cancer risk from air pollution in the state results from mobile source air toxics.[12]

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks. Transportation sources account for 77 percent of the nation's CO emissions, with the largest contribution coming from highway motor vehicles.[13]

Carbon Dioxide

Human activities over the last century – particularly the burning of fossil fuels, which releases large amounts of carbon dioxide (CO2) and other greenhouse gases into the atmosphere – have changed the composition of the atmosphere in ways that threaten to dramatically alter the global climate in the years to come. According to the United Nations' Intergovernmental Panel on Climate Change, the most authoritative source on global warming, the changes that could occur include sea level rise of up to three feet by 2100; heat waves; drought; increasingly intense tropical storms; loss of plant and animal species; decreased crop yields; decreased water availability; and the spread of infectious diseases.[14] Transportation sources accounted for 33 percent of carbon dioxide emissions in 2000 (see Table 4).[15]

Table 1. Volatile Organic Compound (VOC) Emissions from Mobile Sources, by State (2001)		
State	VOC Emissions from Mobile Sources, 2001 (tons)	% VOCs from Mobile Sources, 2001
Alabama	158,211	44%
Alaska	25,887	74%
Arizona	134,291	53%
Arkansas	85,893	38%
California	608,531	50%
Colorado	117,696	52%
Connecticut	74,444	54%
Delaware	23,482	55%
District of Columbia	7,482	42%
Florida	528,497	53%
Georgia	268,199	51%
Hawaii	27,446	86%
Idaho	47,141	17%
Illinois	277,282	40%
Indiana	185,579	35%
Iowa	92,913	38%
Kansas	77,769	38%
Kentucky	116,092	37%
Louisiana	136,194	40%
Maine	51,914	46%
Maryland	125,505	59%
Massachusetts	134,767	49%
Michigan	334,721	48%
Minnesota	204,977	50%
Mississippi	102,031	34%
Missouri	177,222	46%
Montana	32,010	34%
Nebraska	53,709	39%
Nevada	55,307	53%
New Hampshire	39,342	51%
New Jersey	186,731	49%
New Mexico	59,939	44%
New York	355,812	45%
North Carolina	247,945	39%
North Dakota	27,723	30%
Ohio	300,081	46%
Oklahoma	117,160	42%
Oregon	97,966	30%
Pennsylvania	269,419	44%
Rhode Island	19,660	36%
South Carolina	133,648	42%
South Dakota	27,291	36%
Tennessee	178,669	36%
Texas	553,337	42%
Utah	70,859	46%
Vermont	26,954	52%
Virginia	185,336	46%
Washington	152,955	52%
West Virginia	52,146	39%
Wisconsin	180,602	46%
Wyoming	25,403	39%
National	7,574,170	44%

Source: U.S. EPA Office of Air Quality Planning and Standards

Table 2. Fine Particulate Matter (PM_{25}) Emissions from Mobile Sources, by State (2001)		
State	PM2.5 Emissions from Mobile Sources, 2001 (tons)	% PM2.5 from Mobile Sources, 2001
Alabama	7,930	5%
Alaska	1,670	7%
Arizona	6,719	9%
Arkansas	6,177	5%
California	32,479	9%
Colorado	6,510	7%
Connecticut	3,758	17%
Delaware	1,457	13%
District of Columbia	384	15%
Florida	22,403	7%
Georgia	12,739	5%
Hawaii	1,510	11%
Idaho	2,986	2%
Illinois	18,646	8%
Indiana	11,848	5%
Iowa	9,439	8%
Kansas	8,128	5%
Kentucky	8,100	7%
Louisiana	14,094	8%
Maine	2,246	7%
Maryland	6,505	10%
Massachusetts	8,394	13%
Michigan	15,429	10%
Minnesota	13,040	6%
Mississippi	6,789	5%
Missouri	11,699	6%
Montana	4,031	4%
Nebraska	6,823	6%
Nevada	2,935	6%
New Hampshire	1,756	9%
New Jersey	8,621	16%
New Mexico	3,281	2%
New York	19,014	11%
North Carolina	11,984	8%
North Dakota	5,542	6%
Ohio	17,618	8%
Oklahoma	6,808	4%
Oregon	6,305	4%
Pennsylvania	14,359	7%
Rhode Island	923	21%
South Carolina	6,482	7%
South Dakota	4,060	6%
Tennessee	9,796	7%
Texas	34,749	6%
Utah	4,322	5%
Vermont	1,170	7%
Virginia	10,246	10%
Washington	9,299	11%
West Virginia	4,006	5%
Wisconsin	9,893	9%
Wyoming	1,963	2%
National	447,064	7%

Source: U.S. EPA Office of Air Quality Planning and Standards

Table 3. Nitrogen Oxide (NO_x) Emissions from Mobile Sources, by State (2001)		
State	NO_x Emissions from Mobile Sources, 2001 (tons)	% NO_x Emissions from Mobile Sources, 2001
Alabama	235,106	45%
Alaska	37,595	66%
Arizona	196,961	52%
Arkansas	157,283	53%
California	969,177	76%
Colorado	176,181	58%
Connecticut	104,417	77%
Delaware	35,066	58%
District of Columbia	11,514	78%
Florida	562,826	56%
Georgia	401,782	57%
Hawaii	39,861	54%
Idaho	70,605	57%
Illinois	474,838	56%
Indiana	325,205	41%
Iowa	182,814	57%
Kansas	170,911	47%
Kentucky	232,081	39%
Louisiana	355,680	45%
Maine	56,677	64%
Maryland	185,752	61%
Massachusetts	200,259	71%
Michigan	401,089	56%
Minnesota	276,710	61%
Mississippi	184,134	50%
Missouri	316,723	59%
Montana	100,350	58%
Nebraska	152,692	67%
Nevada	77,172	56%
New Hampshire	46,932	74%
New Jersey	236,127	71%
New Mexico	113,503	37%
New York	509,193	71%
North Carolina	345,161	59%
North Dakota	81,970	44%
Ohio	470,334	49%
Oklahoma	182,976	46%
Oregon	161,166	71%
Pennsylvania	428,935	53%
Rhode Island	27,609	78%
South Carolina	189,019	55%
South Dakota	60,928	68%
Tennessee	291,168	52%
Texas	982,086	54%
Utah	104,748	46%
Vermont	35,205	86%
Virginia	307,201	60%
Washington	238,261	77%
West Virginia	120,059	30%
Wisconsin	241,300	58%
Wyoming	60,704	25%
National	11,926,048	55%

Source: U.S. EPA Office of Air Quality Planning and Standards

Table 4. Carbon Dioxide Emissions from Transportation Sources, by State, 2000 (Million Metric Tons of CO_2)		
State	CO_2 Emissions from Transportation Sources	% CO_2 Emissions from Transportation Sources
Alabama	33.9	25%
Alaska	14.8	40%
Arizona	32.2	38%
Arkansas	20.9	33%
California	216.8	59%
Colorado	25.6	31%
Connecticut	16.1	46%
Delaware	5.2	32%
District of Columbia	1.8	43%
Florida	100.9	43%
Georgia	61.3	37%
Hawaii	9.0	52%
Idaho	8.9	56%
Illinois	66.6	29%
Indiana	46.4	20%
Iowa	18.7	24%
Kansas	19.2	26%
Kentucky	31.4	21%
Louisiana	64.2	31%
Maine	8.6	49%
Maryland	28.6	37%
Massachusetts	31.9	43%
Michigan	56.9	30%
Minnesota	34.8	36%
Mississippi	25.3	42%
Missouri	39.4	32%
Montana	7.5	24%
Nebraska	12.1	30%
Nevada	14.3	33%
New Hampshire	7.2	42%
New Jersey	65.8	53%
New Mexico	15.3	27%
New York	67.8	32%
North Carolina	49.7	34%
North Dakota	5.5	12%
Ohio	68.5	26%
Oklahoma	30.1	31%
Oregon	22.3	55%
Pennsylvania	70.7	26%
Rhode Island	4.6	42%
South Carolina	27.1	34%
South Dakota	5.8	41%
Tennessee	41.4	33%
Texas	184.2	28%
Utah	15.7	25%
Vermont	3.7	56%
Virginia	48.9	40%
Washington	44.3	52%
West Virginia	12.6	11%
Wisconsin	29.7	28%
Wyoming	7.9	13%
National	1,882.1	33%

Source: U.S. EPA Office of Air & Radiation

STATE RESPONSIBILITIES UNDER THE CLEAN AIR ACT

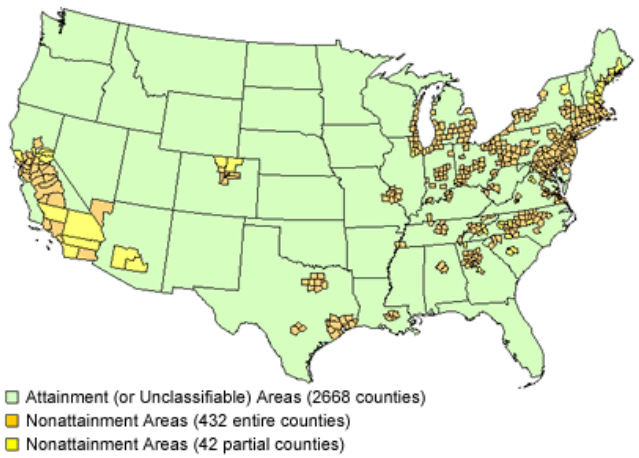
When it passed the Clean Air Act in 1970, Congress determined that air pollution prevention and control "is the primary responsibility of States and local governments."[16] The U.S. Environmental Protection Agency (EPA) sets federal standards for air quality to ensure that all Americans have the same basic health and environmental protections. The law allows individual states to set stronger, but not weaker, pollution controls than those set for the whole country.

The Clean Air Act is built upon the premise that states must ensure that every area across the country reduces air pollution to levels that are protective of public health – as measured against the National Ambient Air Quality Standards (NAAQS). EPA has set NAAQS for six "criteria" pollutants, including ozone, particulate matter, carbon monoxide, sulfur dioxide, nitrogen oxides, and lead. Those geographic areas in which levels of a criteria air pollutant meet the health-based national ambient air quality standard for the pollutant are said to be in "attainment." Those in which levels of a criteria air pollutant are higher than the level allowed by the federal standards are in "non-attainment." A single geographic area may have acceptable levels of one criteria air pollutant but unacceptable levels of one or more other criteria air pollutants; thus, an area can be both in attainment and non-attainment for different pollutants.

In April 2004, EPA named 432 entire counties and 42 partial counties as non-attainment areas that exceed the 8-hour health-based standard for ozone (Figure A).[17] EPA also has determined that 177 entire counties and 31 partial counties fail to meet the national health-based air quality standards for fine particle soot (Figure B).[18] Some states in the west and southwest also have areas in non-attainment for carbon monoxide, including California, Montana, Nevada, Oregon, Texas, Utah, and Washington (Figure C).[19] Refer to Appendix B for a state-by-state breakdown of the counties in non-attainment for each of these pollutants.

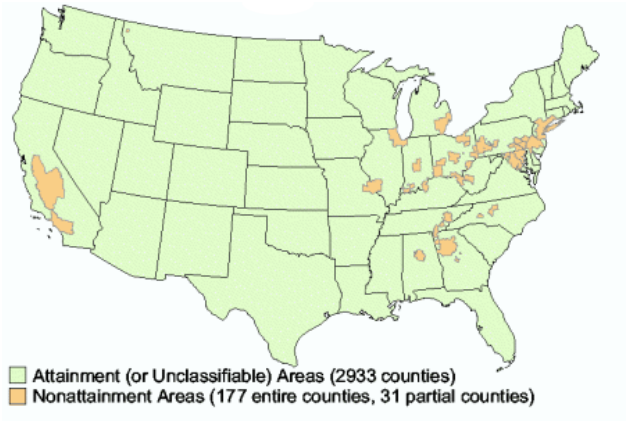
The Clean Air Act requires states with non-attainment areas to submit state implementation plans (SIPs) to EPA, which provide for enforceable emission limitations and other control measures, schedules and timetables for compliance. Essentially, states must develop a plan for reducing pollution in these areas, such as cleaning up a dirty power plant or curbing automobile emissions, as quickly as practicable but no later than 2007-2010 for ozone and particle pollution, depending on the severity of the area's air quality problem (with the exception of certain areas in California that have later deadlines for ozone).

Figure A. Non-Attainment Areas for 8-Hour Ozone



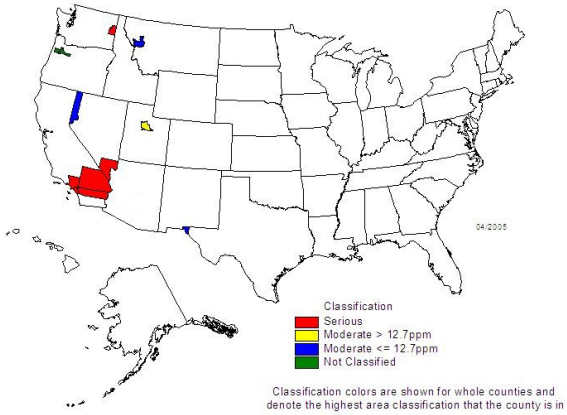
Source: U.S. EPA

Figure B. Non-Attainment Areas for Fine Particles (PM2.5)



Source: U.S. EPA

Figure C. Non-Attainment Areas for Carbon Monoxide



Source: U.S. EPA

STATE AUTHORITY TO GO BEYOND FEDERAL STANDARDS

In order for states to clean up non-attainment areas, they need access to all of the regulatory tools possible—including the ability to enact standards that are stronger than federal law for mobile sources of pollution.

California has been on the cutting edge of air pollution control for decades. In 1947, Southern California's poor air quality led to the creation of the Los Angeles County Air Pollution Control District, the first local air pollution control agency in the country. In 1963, California adopted the nation's first motor vehicle emission standards. In 1970, California required auto manufacturers to meet new standards to control emissions of smog-forming hydrocarbons and nitrogen oxides.[20] When the federal government followed suit in 1970 with the Clean Air Act, Congress permitted California to continue to issue its own automotive emission standards, based both on the state's regulatory history and its pressing air pollution problems.

The Clean Air Act also allows other states to follow California's lead. Section 177 of the Clean Air Act allows states that have ever had a State Implementation Plan approved by EPA for any non-attainment area to adopt California's stronger motor vehicle standards; section 209 (e)(2)(B) allows such states to adopt California's non-road vehicle and engine standards.[a] In other words, states with air pollution problems have two choices when deciding how to regulate emissions from mobile sources: they can follow the federal standards or the California standards. See Table 5 for a list of states with non-attainment areas that are eligible to adopt California's more stringent mobile source emissions standards.

Table 5. States with Non-Attainment Areas for 8-Hour Ozone, Fine Particles, or Carbon Monoxide[b]

State	Non-Attainment Areas: Ozone	Non-Attainment Areas: PM2.5	Non-Attainment Areas: CO
Alabama	Yes	Yes	No
Arizona	Yes	No	No
Arkansas	Yes	No	No
California	Yes	Yes	Yes
Colorado	Yes	No	No
Connecticut	Yes	Yes	No
Delaware	Yes	Yes	No
Dist. of Columbia	Yes	Yes	No
Georgia	Yes	Yes	No
Illinois	Yes	Yes	No
Indiana	Yes	Yes	No
Kansas	Yes	No	No
Kentucky	Yes	Yes	No
Louisiana	Yes	No	No
Maine	Yes	No	No
Maryland	Yes	Yes	No
Massachusetts	Yes	No	No
Michigan	Yes	Yes	No
Missouri	Yes	Yes	No
Montana	No	Yes	Yes
Nevada	Yes	No	Yes
New Hampshire	Yes	No	No
New Jersey	Yes	Yes	No
New York	Yes	Yes	No
North Carolina	Yes	Yes	No
Ohio	Yes	Yes	No
Oregon	No	No	Yes
Pennsylvania	Yes	Yes	No
Rhode Island	Yes	No	No
South Carolina	Yes	No	No
Tennessee	Yes	Yes	No
Texas	Yes	No	Yes
Utah	No	No	Yes
Virginia	Yes	Yes	No
Washington	No	No	Yes
West Virginia	Yes	Yes	No
Wisconsin	Yes	No	No

[a] One exception: the Clean Air Act prohibits California and other states from adopting emission standards for new engines under 175 horsepower used in construction or farm equipment and new locomotives (Section 209(e)(1)).

[b] The Clean Air Act allows states that have *ever* had State Implementation Plan approved for a non-attainment area to adopt California's stronger standards; this table just looks at states with counties *currently* in non-attainment.

This statutory authority to adopt California's standards for mobile sources is a critical tool for several reasons. First, states with entrenched air pollution problems have the option of adopting policies proven to reduce pollution in California. For many states with the most polluted areas, federal standards may not be enough to achieve attainment status under the Clean Air Act. For some states, mobile sources may be a bigger part of the problem than power plants and other stationary sources. Since all local air pollution problems are different, they often require more than a "one-size-fits-all" solution.

Second, states have long served as laboratories for innovative public policy, particularly in the realm of air pollution. State and local policymakers, smaller and often more nimble than the federal government, can develop and test novel policies to address air quality problems. If a certain policy works, other states can try it. Success at the state level then often gives rise to federal policy. As additional states adopt California's more protective clean air rules, the federal government becomes more likely to adopt strong standards at the national level that benefit all Americans.

In the same vein, action at the state level can serve as a powerful backstop to discourage federal policymakers from rolling back federal protections. If numerous states have already adopted California's stronger standards, it may be more difficult for federal-level decision-makers to justify weakening federal standards. And if the federal government does weaken the national standards, the states that opted in to California's standards can still enjoy the emission reductions of that decision. Similarly, if a federal standard fails to regulate a certain type of engine or pollutant or extends the phase-in process to a later model year, stronger state standards can fill the gaps.

California has taken advantage of its unique authority in the Clean Air Act and has set the standard for mobile source pollution regulation on everything from cars and SUVs to diesel trucks to lawn and garden equipment to personal watercraft. Numerous states fighting to clean up their dirtiest cities and counties also have taken advantage of the right afforded them under federal law—to opt in to California's stronger standards. Eight states already have adopted California's strongest low-emission vehicle standards; 12 states have adopted California's standards for diesel trucks, which are identical to but serve to reinforce the federal standards; and New York has adopted California's standards for personal watercraft, such as jet skis (Table 6). These standards and their benefits for public health are detailed in this report.

Table 6. States Opting in to Stronger California Standards for Mobile Source Emissions

	More Protective California Standard					
State	Low Emission Vehicles (I)	Low Emission Vehicles (II)	Stopgap Diesel Rule	2007 Diesel Rule	Personal Watercraft	Forklifts and Large Spark-Ignition Engines
Connecticut		X	X	X		
Delaware			X	X		
Dist. of Columbia			X	X		
Georgia			X	X		
Maine	X	X	X	X		
Maryland			X	X		
Massachusetts	X	X	X	X		
New Jersey		X	X	X		
New York	X	X	X	X	X	
North Carolina			X	X		
Pennsylvania			X	X		
Rhode Island		X	X	X		
Texas			X			X
Vermont	X	X				
Washington		X				

In the sections that follow, we see how California and other states have used federal regulations as a platform from which they enact tougher standards to address local air pollution problems. We also see how California's strong emission

standards for mobile sources have both given rise to and buttressed federal regulation—pushing federal regulators to do more to clean up mobile source emissions than they otherwise would have and discouraging them from backsliding under pressure from auto and engine manufacturers and other industries. In this way, California and other states have played a pivotal role in creating the regulatory framework for mobile source emissions that has helped improve the nation's air quality as a whole.

NATIONAL ACADEMY OF SCIENCES' REVIEW OF STATE MOBILE SOURCE EMISSION STANDARDS

In March 2004, the National Academy of Sciences (NAS), at the request of Congress, launched a new project to review the scientific and technical practices used by states in setting emission standards for mobile sources.[21] This panel emerged as a result of a rider inserted in the FY04 appropriations bill by Senator Christopher Bond (MO), which preempted states from adopting California's more protective emission standards for any new spark-ignition engines smaller than 50 horsepower and directed EPA to study the impact of state emission standards on industry. In describing the project's scope, the NAS panel said it will consider the "direct and indirect impacts that state emissions standards have had on various factors, including compliance costs, energy consumption, air quality, and human health."[22]

The NAS panel has held four hearings on this issue. During the first three hearings, the NAS panel heard from several organizations supporting strong state authority to adopt more protective emission standards, including the California Air Resources Board, South Coast Air Quality Management District, State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO), American Lung Association, and the Natural Resources Defense Council. The NAS panel, however, did not solicit input from any states that have exercised their Section 177 authority and adopted California's more protective standards until the last hearing in April. In February 2005, the Northeast States for Coordinated Air Use Management (NESCAUM) wrote to the NAS to express its frustration about this fact. Specifically, NESCAUM asked that the panel refrain from drawing any conclusions relative to Section 177 prior to receiving direct testimony from the Northeast states at the April 2005 hearing.[23] At the April hearing, NESCAUM and representatives from Connecticut, Maine, Maryland, Massachusetts, New York, and Vermont testified about their experiences with opting in to California's standards.

Representatives from the automobile industry and engine manufacturers have provided comments to the NAS panel throughout the process. The Alliance of Automobile Manufacturers, American Petroleum Institute, Engine Manufacturers Association, Honda, General Motors, Briggs & Stratton Corporation, and Cummins Engine Company all testified about their perspective on state mobile source emission standards at the hearings.[24]

Proponents of strong state mobile source emission standards have raised some concerns about some of the NAS panelists themselves and their affiliations to the automakers and engine manufacturers that oppose strong state standards. Gary Marchant, one of the panelists, used to be a partner at the law firm of Kirkland & Ellis, where he represented motor vehicle manufacturers on a variety of regulatory and preemption litigation matters relating to federal, California, and Northeast States motor vehicle emission standards. Dr. Allison Geyh previously was a staff scientist for the Health Effects Institute, which is funded jointly by EPA and the automotive industry.[25] Similarly, Dr. Harold Schock's research has been funded by Ford Motor Company and Chrysler.[26]

The NAS report summarizing its findings is due in the fall of 2005.

CARS AND LIGHT TRUCKS

"As a general statement, the California emissions standards are a more effective way of helping to address air pollution from vehicles than the federal standards. While I can't predict whether or not California standards will become the national standard, I do know that the California standards have significantly influenced the national standards (i.e., made them more stringent)."

— Tom Moye, Section Chief, Mobile Sources, Air Pollution Control Division, State of Vermont[27]

Mobile sources are responsible for 55 percent of all smog-forming nitrogen oxide emissions in the United States; in 1999, cars and SUVs were responsible for half of these emissions.[28] Although today's vehicles emit 80 to 99 percent less pollution than their 1960s counterparts,[29] cars and trucks remain a leading source of air pollution because of the dramatic growth in the number of miles traveled in motor vehicles in the U.S. The number of vehicle-miles traveled (VMT) on America's roads increased from 1.1 trillion miles in 1970 to 2.87 trillion miles in 2002 – a jump of 159 percent and almost four times faster than the rate of population growth.[30] Much of that increase in travel has taken place in urban areas. Between 1970 and 2002, the amount of VMT on urban roads tripled – from 570 billion miles to 1.73 trillion miles.[31]

California's pioneering efforts to clean up cars and light trucks at the state level continue to provide impetus for federal level action to do the same. Other states eager to reduce smog-forming and other emissions from vehicles, particularly in urban areas, have a powerful tool at their disposal—the authority to adopt California's more protective standards. Unfortunately, auto manufacturers have been challenging the states' authority to go above and beyond federal standards from the beginning.

California's Standards Encourage Stronger Federal Standards

Building off of decades of work to clean up air pollution from cars, the California Air Resources Board (ARB) adopted the Low Emission Vehicle (LEV) program in 1990, designed to further reduce tailpipe emissions and ameliorate severe smog problems in the state's urban centers. In addition to requiring automakers to manufacture vehicles that meet stringent tailpipe standards and a fleet-wide emissions average, the LEV program included a new Zero Emission Vehicle (ZEV) component requiring that 10 percent of the new car fleet sold in California by 2003 be zero-emission vehicles.[32]

At the same time, Congress was considering new federal emission standards for cars. The Clean Air Act Amendments of 1990 established federal "Tier 1" standards to limit tailpipe emissions from new motor vehicles; on June 5, 1991, EPA published the final rule implementing the Tier 1 standards.[33]

Recognizing that the federal Tier 1 standards did not go far enough to improve air quality, 11 eastern states (Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Virginia) and the District of Columbia signed a Memorandum of Understanding in October 1991, pledging to adopt California's program. Massachusetts enacted the California program in 1990, New

York in 1992, and Maine in 1993. Vermont followed in 1996.

As other northeastern states moved to do the same, the oil and automobile industry campaigned to peel specific states off of the coalition. In the mid-nineties, the carmakers and EPA began floating the idea of a "49 State Car" program, stating that they would be willing to voluntarily make cleaner cars across the nation if New York and Massachusetts rejected the California car program. Public health and environmental advocates strongly opposed this effort as one that would sacrifice the progress made in the states and compromise states' rights to adopt tougher standards than federal standards. Moreover, in the absence of a critical mass of larger states with tougher standards, advocates feared that the "49 State Car" program would become the ceiling, rather than the floor, for the upcoming rulemaking to strengthen the federal Tier 1 standards.

Ultimately, Governors George Pataki (NY) and William Weld (MA) withstood tremendous pressure from the automakers, federal regulators, and other governors, unwilling to cede the right to adopt California's LEV program. The "49 State Car" effort morphed into the 1998 National LEV (NLEV) voluntary program brokered by EPA. The nine northeast jurisdictions that had not already adopted LEV—Connecticut, Delaware, District of Columbia, Maryland, New Hampshire, New Jersey, Pennsylvania, Rhode Island, and Virginia—signed a pledge not to adopt LEV prior to the 2006 model year.[34] The NLEV program went into effect in the northeast states for model year 1999 and nationwide in 2001. Upon finalizing the rule, EPA estimated that vehicles meeting the NLEV standards would be 70 percent cleaner than earlier models, reducing nitrogen oxides by 496 tons per day and non-methane organic gases by 311 tons per day in 2007.[35]

As California's passenger vehicle fleet continued to grow and more SUVs and pickup trucks appeared on the state's highways, California needed even more stringent emission standards for motor vehicles in order to meet federally-mandated clean air goals outlined in its State Implementation Plan. In November 1998, the California ARB tightened the fleet average emission standards and extended them to cover to heavier SUVs and pickups. These new standards, known as LEV II, also strengthened nitrogen oxide emission standards, imposed more stringent controls on evaporative emissions, and created partial ZEV credits for vehicles that achieve near zero emissions.[36] When LEV II is fully implemented, the California ARB estimates that the program will reduce nitrogen oxide emissions by 75 percent and hydrocarbon emissions by 50 percent from the initial LEV standards.[37]

In the years preceding the birth of the NLEV and LEV II programs, EPA debated whether or not it should strengthen the 1990 Tier 1 standards for automobile emissions and establish Tier 2 standards. In a report submitted to Congress in August 1998, EPA concluded that tougher standards were necessary and that essential technologies were available and cost-effective.[38] EPA looked to California for guidance. As a result, EPA proposed Tier 2 standards in May 1999, in part federalizing California's LEV II program. Both the Tier 2 and LEV II programs require that SUVs and light trucks meet emission standards equivalent to those required of passenger cars.

When fully implemented with stricter standards for sulfur in gasoline, this program will be the equivalent of taking 164 million cars off the road. As newer, cleaner cars enter the fleet, the new tailpipe standards will reduce emissions of nitrogen oxides from vehicles by about 74 percent by 2030. EPA calculates that the final rule will prevent as many as 4,300 deaths, more than 10,000 cases of chronic and acute bronchitis, and tens of thousands respiratory

problems a year.[39] The Tier 2 program, however, does not include the ZEV program, and the LEV II program will result in lower overall emissions by imposing more stringent standards for evaporative and diesel emissions. States remain free to adopt the more stringent California standards, which achieve an additional 15 percent reduction in smog-forming hydrocarbons and a 25 percent reduction in toxic emissions.[40]

As such, the LEV II program continues to stand as the environmental benchmark against which all other proposed policies are measured, despite changes to the ZEV program approved by the California ARB in January 2001 and April 2003. California's LEV II standards remain the most aggressive model for states interested in promoting advanced technology vehicles.

To date, eight states—Massachusetts, New York, Vermont, Maine,[c] Rhode Island, Connecticut, New Jersey, and Washington—have gone above and beyond what is required under EPA's Tier 2 program by exercising their right under the Clean Air Act to adopt the California LEV II program. Oregon's Governor Kulongoski also has committed to adopt the program.[41] Together, these nine states and California account for 29 percent of the nation's auto market, according to R. L. Polk, which tracks car registration data.[42] Other states across the country are actively considering adopting California's more protective standards.

STATES OPTING IN TO CALIFORNIA'S CLEAN CAR STANDARDS

Connecticut: LEVII (part of NLEV program)

Maine: LEV I, LEV II

Massachusetts: LEV I, LEV II

New Jersey: LEVII (part of NLEV program)

New York: LEV I, LEV II

Rhode Island: LEVII (part of NLEV program)

Vermont: LEV I, LEV II

Washington: LEV II

CASE STUDY

Clean Cars in Washington State

Cars are the leading source of air pollution in Washington, emitting about 55 percent of the total air pollution in the state that causes smog, haze and global warming.[43] In King County, about one in 10 children now has asthma.[44]

Unfortunately, this problem is going to get worse; projections show that more than a million people will move into the Puget Sound region in the next 10 years, which will put more cars on the road and pollution into the air.

In March 2005, the Washington state House passed legislation to adopt California's LEV II program.[45] The new standards will reduce global warming emissions by 30 percent and emissions of air toxics such as benzene and formaldehyde by 26 percent. In addition to cleaning up the state's air, the clean car standards will save Washington drivers $2 billion at the pump by 2020.[46]

One month later, the Washington legislature passed an amended version of the bill, sending it to Governor Christine Gregoire. The measure takes effect beginning with the 2009 model year and hinges on Oregon also adopting the new standards.[47] Oregon Governor Ted Kulongoski has said that he is planning to adopt California's standards administratively this year.[48]

California Establishes Emission Standards for Greenhouse Gases

California developed its LEV and LEV II programs with the goal of reducing smog-forming emissions; the state had never directly addressed emissions of carbon dioxide (CO2), the primary global warming gas, for which there is no federal standard. The transportation sector accounted for 59 percent of the total carbon dioxide emissions from fossil fuel combustion in California between 1990 and 1999.[49]

On July 22, 2002, California's then-Governor Gray Davis signed Assembly Bill 1493, authored by Assemblymember Fran Pavley of Agoura Hills, requiring the California Air Resources Board to develop greenhouse gas standards for vehicles in model year 2009 and beyond. The standards will apply to automakers' fleet averages, rather than each individual vehicle.[50] In September 2004, the California ARB finalized its proposal to implement the Pavley law, estimating that the plan will reduce global warming emissions by an estimated 87,400 CO2 equivalent tons per day statewide in 2020 and by 154,500 CO2 equivalent tons per day in 2030. This translates into an 18 percent overall reduction in global warming emissions from the light duty fleet in 2020 and a 27 percent overall reduction in 2030.[51] In its Statement of Reasons, the California ARB described the state's motivation for instituting these emission standards for greenhouse gas emissions, noting that "global warming would impose compelling and extraordinary impacts on California."[52]

The California ARB also emphasized California's "longstanding technology-forcing role" as a reason why the state decided to promulgate these new emission standards for global warming gases. The agency noted the "many instances where other jurisdictions have adopted motor vehicle controls that were pioneered in California. Thus there is potential for the proposed regulation to spread to other jurisdictions and thereby add momentum to the already existing set of measures that are underway around the globe."[53]

Challenges to California's Clean Cars Program

Unfortunately, the auto industry has challenged all or portions of California's clean cars program several times by arguing that tougher emission standards amount to tighter fuel economy standards, which are within the strict purview of the federal government. As noted above, the ARB modified California's ZEV program in 2001 to allow large manufacturers to meet their ZEV requirement with a broader mix of vehicles, including hybrid cars like the Toyota Prius.[54] In January 2002, DaimlerChrylser, General Motors, and several local California dealerships filed a lawsuit against the California ARB, alleging that the ZEV rules as amended violate the U.S. Constitution's Supremacy Clause by attempting to regulate fuel economy. The plaintiffs alleged that the California ZEV program forces manufacturers to produce and sell in California vehicles with higher fuel efficiency than required by federal standards. In June 2002, the judge granted the plaintiffs' request for a preliminary injunction, preventing the California ARB from enforcing the 2001 ZEV regulations for model years 2003 and 2004.[55]

In its appeal to the Ninth Circuit, the California ARB argued that the fuel efficiency portions of the ZEV regulations only incidentally affect fuel economy; for federal law to preempt the ZEV program, the ZEV requirements would have to have "direct" or "acute" effects on the ability of the federal government to regulate fuel economy. The California ARB also argued in its appeal that Congress was unaware of any relationship between fuel economy and vehicle emissions when drafting the Energy Policy and Conservation Act.[56] In October 2002, in an unprecedented move, the Bush administration filed a "friend of the court" brief with the United States Court of Appeals for the Ninth Circuit,

supporting the auto industry's argument that the ZEV program would, in effect, regulate fuel economy standards, over which the federal government holds exclusive jurisdiction.[57]

In 2003, the California ARB adopted new amendments to the ZEV regulations, giving manufacturers a choice of two options for meeting their ZEV requirements.[58] As a result, the parties to the lawsuits agreed to end the litigation in August 2003.[59]

When the new global warming component of the California program passed the state legislature in 2002, automobile manufacturers immediately promised to challenge it. In December 2004, the Alliance of Automobile Manufacturers and all of the major automakers except Honda and Nissan sued to block the standards, arguing that only the National Highway Traffic Safety Administration has the authority to set fuel economy standards. Although the California vehicle global warming program regulates greenhouse gas emissions, not fuel economy, the alliance argues that "carbon dioxide and fuel economy are synonymous." The suit claims that the California ARB, by setting stringent standards for carbon dioxide and other global warming gases, violated a federal law forbidding states from regulating fuel economy standards.[60] The Bush administration could intervene on behalf of the automakers again, as it did with the 2002 legal challenge to the California standards.

In a recent opinion piece in the *San Francisco Chronicle*, California's attorney general, Bill Lockyer, stated that the automakers' lawsuit "directly attacks California's right to protect the health and welfare of its citizens." Lockyer also reiterated California's role in pioneering public policy to clean up air pollution, noting that "California is, and always will be, the standard-bearer in this country on laws that protect the environment. For more than 30 years, our state's leadership on air-pollution regulations has led to the invention of cleaner technologies employed nationwide. And nearly every step of the way, the auto industry has resisted, only to realize greater profits in the long run."[61]

In addition to the automakers' lawsuit, in August 2003, EPA announced that it lacks the authority to regulate carbon dioxide as a pollutant under the Clean Air Act, arguing that Congress must provide it with explicit legal authority.[62] The ruling came in response to a petition by the International Center for Technology Assessment, Greenpeace and other environmental organizations arguing that the Clean Air Act requires EPA to protect Americans against all harmful pollutants. In October 2003, 12 states, several cities, and more than a dozen environmental groups joined forces to challenge EPA's policy, filing a lawsuit in the Court of Appeals for the D.C. Circuit.[d] A U.S. court of appeals heard arguments on April 8, 2005 to determine whether existing laws require federal environmental regulators to limit carbon dioxide emissions from automobiles; a decision could take months.

Conclusion

California's 34 million residents collectively operate more than 30 million vehicles[63] and drive more on average than most other Americans; as a result, motor vehicles are still responsible for more than 50 percent of the state's smog-forming emissions.[64] Moreover, vehicle emissions of global warming pollutants continue to increase. California and other states facing similar challenges need the authority to go above and beyond federal standards and do what it takes to clean up polluted areas.

[d] States challenging EPA's decision are California, Connecticut, Illinois, Maine, Massachusetts, New Jersey, New Mexico, New York, Oregon, Rhode Island, Vermont, and Washington.

CASE STUDIES:
FEDERAL PREEMPTION OF STATE AND LOCAL EFFORTS

Maryland's 'Feebate' Program: Preempted by the National Highway Transportation Safety Administration

The National Highway Transportation Safety Administration (NHTSA) has preempted state law in the past by claiming that the federal government has sole authority to regulate fuel economy standards. In 1992, Maryland became the first state in the U.S. to enact a "feebate" program. Under the policy, vehicles with a high fuel economy rating would receive a motor vehicle titling tax credit. Those with low ratings would pay a surcharge. Maryland's law also required that car dealers label each car with a notice of the fuel efficiency surcharge or credit to which it would be subject. NHTSA, however, ruled that the 1975 Federal Energy and Conservation Act preempted Maryland's law, arguing that states cannot enact laws that conflict with federal regulations on fuel economy disclosures or tax vehicles based on fuel economy.

Maryland's Attorney General reviewed the law and concluded that federal law does not preempt the state from using the federal fuel mileage ratings to compute taxes owed in Maryland. The Attorney General suggested that the state could implement the feebate program by amending the sticker requirement to not conflict with federal disclosure requirements. NHTSA's ruling, however, has had a chilling effect on the feebate proposal in Maryland and similar proposals in other states.[65]

Supreme Court Rejects the South Coast Air Quality Management District's Clean Fleet Standards

In 2000 and 2001, California's South Coast Air Quality Management District (AQMD), which sets standards for the metropolitan Los Angeles area, enacted "clean fleet rules," a set of seven measures aimed at reducing both toxic and smog-forming air pollutants in Southern California. These rules require public agencies and certain private entities with 15 or more vehicles to shift vehicle fleets to readily-available, lower-emission vehicles when purchasing or leasing new vehicles. AQMD estimates that by 2010, the fleet rules will eliminate 75 tons of hydrocarbons, 2,699 tons of carbon monoxide, 1,931 tons of nitrogen oxides, and 165 tons of particulates each year.[66] As of April 2004, the rules had added more than 5,500 clean-fueled heavy-duty vehicles and 3,400 low-emission passenger vehicles to the region's fleets on the road.[67]

Unfortunately for Southern California's air quality, the Engine Manufacturers Association, a trade group representing diesel engine makers, sued AQMD in U.S. District Court in Los Angeles in August 2000 after AQMD adopted its first fleet rules. The Western States Petroleum Association, an association representing major oil refineries, later joined the lawsuit. The U.S. Department of Justice filed a "friend-of-the-court" brief supporting the industry plaintiffs, arguing that AQMD's fleet rules violated the federal Clean Air Act provision barring states and local governments from adopting "any standard relating to the control of emissions from new motor vehicles."[68]

Continued on next page

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A federal judge and an appeals court agreed with AQMD; the plaintiffs then sought review in the Supreme Court.[69] In oral arguments before the Supreme Court, counsel representing AQMD told the court that the fleet rules do not require manufacturers to produce or sell new types of vehicles, but only mandate that regulated fleet owners purchase from among the cleanest vehicles already commercially available.[70] Ultimately, in April 2004, the court sided with the manufacturers in an 8-1 ruling. In the decision authored by Justice Antonin Scalia, the Supreme Court ruled that the federal Clean Air Act prohibits local jurisdictions such as the AQMD from adopting regulations that require private fleet owners to purchase clean-fueled vehicles.[71] The high court threw out the lower-court rulings and sent the case back to the lower courts.

In the wake of the ruling, Barry Wallerstein, executive officer of the South Coast AQMD, stated that the agency is "determined to continue implementing the rules for publicly owned fleets."[72] The South Coast AQMD has asked the state to address the court's technical concerns and allow it to continue to regulate privately owned fleets.

DIESEL TRUCKS

In 2001, EPA estimated that heavy-duty vehicles could account for 28 percent of nitrogen oxide emissions and 20 percent of particulate matter emissions from mobile sources by 2007, with higher percentages in some urban areas. In Sacramento, Atlanta, and Washington, DC, heavy-duty vehicles may contribute more than 34 percent of the mobile source nitrogen oxide emissions; in Santa Fe, Los Angeles, and Hartford, heavy-duty vehicle particulate matter emissions could account for 38, 25 and 30 percent of the mobile source particulate matter emissions, respectively.[73]

Diesel exhaust contributes to an increased risk of lung cancer, respiratory disease, and premature deaths. Fine particle pollution from diesels shortens the lives of nearly 21,000 people each year, including almost 3,000 early deaths from lung cancer. In addition, tens of thousands of Americans suffer each year from asthma attacks (410,000), heart attacks (27,000), and respiratory problems associated with fine particles from diesel vehicles. These illnesses cause thousands of emergency room visits, hospitalizations, and lost work days each year. Overall, the health damages from diesel fine particles will total $139 billion in 2010.[74] See Appendix C for a breakdown of these health effects by state.

California has served as a backstop for federal regulations of diesel engines. When federal regulations of heavy-duty diesel engines opened a two-year gap that would have allowed new engines to continue to pollute, California stepped in and passed state-level standards to close it. As engine manufacturers threaten to delay implementation of federal standards to clean up heavy-duty diesel engines, California has stepped in and passed standards nearly identical to the federal ones. Now, other states have the opportunity to protect their residents from dangerous diesel pollution by opting in to California's standards, rather than risk losing federal protections.

State Standards Provide Backstop to Federal Standards

In late 1998, the federal government settled a lawsuit against seven heavy duty diesel engine manufacturers, comprising 95 percent of the market, for violating federal and California engine regulations by installing devices that disabled emission control devices during highway driving but not during certification tests. The final consent decree required that manufacturers apply supplemental test procedures, including the "Not-to-Exceed" test and Euro III European Stationary Cycle test, for model years 2003 and 2004. The "Not-to-Exceed" test procedure measures in-use emissions of heavy-duty diesel engines while operating at various speeds and under conditions that may be encountered in normal vehicle operation and use. At the time the consent decrees were finalized, EPA anticipated that its forthcoming rule governing heavy-duty diesel engines would require these tests starting with the model year 2004.[75]

EPA strengthened standards for heavy-diesel diesel trucks and buses in 2001, but delayed implementation of the standards until 2007-2010 ("the federal 2007 rule").[76] This left a two-year gap between the requirements laid out in the consent decree for the 2003 and 2004 model years and the start-date of the new EPA rule in the 2007 model year. During this two-year period, heavy-duty diesel engine manufacturers could produce engines that would emit higher levels of pollution for as long as those engines remain on the road—well after just two years.

Utilizing its authority under the Clean Air Act, California decided to fill the gap. In December 2000, California issued standards for new heavy-duty diesel trucks and buses starting in model year 2005, requiring manufacturers to perform supplemental test procedures, including the "Not-to-Exceed" test. The California ARB estimated that these standards would reduce nitrogen oxide emissions from California-registered heavy-duty vehicles by at least 17 tons per day in 2006 and 13 tons per day in 2010.[77]

Given the pollution reduction benefits of closing the two-year gap, the State and Territorial Air Pollution Program Administrators (STAPPA) and Association of Local Air Pollution Control Officials (ALAPCO) developed a model rule for states wishing to opt in to California's program.[78] Twelve states and Washington, DC have adopted model rules based on California's "Not-to-Exceed" testing procedures for model years 2005-2006, including Connecticut, Delaware, Georgia, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, Texas, and the District of Columbia. These state actions affect more than one-third of national truck sales and achieve emissions benefits equivalent to removing 30 million cars from the road.[79]

STATES ADOPTING CALIFORNIA'S STOPGAP STANDARDS FOR DIESEL ENGINES (DECEMBER 2004)

Connecticut
Delaware
Georgia
Maine
Maryland
Massachusetts
New Jersey
New York
North Carolina
Pennsylvania
Rhode Island
Texas
District of Columbia

Once implemented, EPA's standards for the 2007 model year and beyond will dramatically reduce emissions from heavy-duty diesel engines. The federal 2007 rule requires heavy-duty trucks to use state-of-the-art pollution controls, similar to catalytic converters, coupled with ultra-low sulfur diesel fuel, reducing smog-forming nitrogen oxide emissions by 95 percent beyond current levels and soot-forming particular matter by 90 percent. By 2030, this program will reduce annual emissions of nitrogen oxides, non-methane hydrocarbons, and particulate matter by a projected 2.6 million, 115,000 and 109,000 tons, respectively.[80] These emission reductions will prevent an estimated 8,300 premature deaths, 360,000 asthma attacks, 5,500 cases of chronic bronchitis, 17,600 cases of acute bronchitis in children, and 386,000 cases of respiratory symptoms in children each year. EPA also estimates that the rule, when fully implemented, will prevent 1.5 million lost work days, 7,100 hospital visits and 2,400 emergency room visits for asthma.[81]

The American Trucking Association (ATA) and other industry opponents lost a court challenge to the rule in 2002, but ATA has continued to try to derail implementation of the federal 2007 rule. The standards for nitrogen oxides and hydrocarbons are to be phased in between 2007 and 2010 for diesel engines. The phase-in will be on a percent-of-sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010.[82] Engine makers also can comply with the standards from 2007-2009 if 100 percent of the company's engines meet a less-stringent interim standard – an option that all companies plan to take.[83] ATA has stated that it will not challenge the 2007-2009 standards but left open the possibility of challenging the 2010 standard. Moreover, ATA may ask Congress for tax breaks to meet the pollution standards and potentially use the effort as a delay tactic.[84]

Fortunately, states have the choice of opting in to California's standards for heavy-duty diesel engines, rather than risking additional actions that delay or weaken the federal standards. In October 2001, building on its standards for the 2005-2006 model year, California adopted emissions standards, test procedures, and other requirements that are nearly identical to the federal 2007 rule. The California ARB expects that the emission standards will reduce nitrogen oxide emissions by 49 tons per day and particulate matter emissions by three tons per day in 2010, statewide.[85]

STAPPA/ALAPCO is encouraging states to opt in to California's standards and has developed a model rule to help states do so.[86] By opting in to California's standards, the states will ensure that their residents enjoy the public health benefits of cleaner diesel engines. Moreover, action at the state level could help compel federal policymakers to dismiss ATA or other industries' requests for a delay and implement the federal 2007 rule in a timely manner—so that all Americans can reap the benefits of cleaner air. As of December 2004, states with a collective population of more than 100 million people have either adopted or indicated their intent to adopt the California 2007 standards; the 12 states that already have acted include Connecticut, Delaware, Georgia, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island and the District of Columbia. Based on the actions of these 12 states plus California, nearly one-third of big diesel truck engines sold beginning in 2007 will have to meet the stringent emission control requirements, even if the federal rule is compromised.[87]

STATES ADOPTING CALIFORNIA'S 2007 STANDARDS FOR DIESEL ENGINES (DECEMBER 2004)

Connecticut
Delaware
Georgia
Maine
Maryland
Massachusetts
New Jersey
New York
North Carolina
Pennsylvania
Rhode Island
District of Columbia

Conclusion

California's initiative in setting stopgap emission standards and enacting standards that mirror the federal 2007 rule has afforded other states a choice in absence of federal action and security in the face of potential rollbacks. More than that, it could prevent federal regulators from delaying the 2007 standards. In this way, states' authority to enact standards that are stronger than the federal minimum is particularly critical when that federal floor promises to drop—with profound implications for public health.

PERSONAL WATERCRAFT

In 2003, Americans owned 1.4 million jet skis, small recreational boats, and other personal watercraft.[88] Personal watercraft often use two-stroke engines, which discharge up to one-third of their fuel into the air and water, threatening marine ecosystems and impairing air quality.[89] Marine spark-ignition engines contribute about 10 percent of hydrocarbon emissions from mobile sources nationwide. In and around marinas and harbors, this percentage is significantly higher.[90]

EPA has found that gasoline marine engines contribute significantly to total emissions of smog-forming VOCs in several ozone non-attainment areas in the northeastern portion of the U.S., several non-attainment areas in California, and several areas in the eastern portion of the U.S. (see Table 7).[91] Similarly, the Northeast States for Coordinated Air Use Management (NESCAUM) has reported that marine engines represent between three and 10 percent of the smog-forming VOC emission inventories for their member states.[92]

Table 7. Smog-forming VOC Emissions from Recreational Marine Engines (percent of total tons/summer day)

Nonattainment Area	% of Total Tons/Summer Day
Hartford, MA	4.56-5.24
Springfield, MA	3.41-3.97
New York, NY	3.11-3.59
Philadelphia, PA	3.75-4.37
San Diego, CA	4.02-4.57
South Coast Basin, CA	3.49-3.97
Miami, FL	5.89-6.78
Milwaukee, WI	4.87-5.59
Atlanta, GA	4.18-4.83

Source: U.S. EPA

Because this particular air pollution problem is worse in some states than others, a one-size-fits-all solution may not make sense. For states with average recreational boating and jet ski activity, federal emission standards for gasoline-powered two-stroke engines may be sufficient. But where this type of recreation is more popular – coastal states such as California and in the Great Lakes states[93] – state regulators may need to go above and beyond federal regulations to address local air quality concerns.

EPA Sets Federal Standards for Personal Watercraft

In 1994, EPA released a study determining that emissions of VOCs, nitrogen oxides, and carbon monoxide from non-road engines and vehicles contribute significantly to ambient ozone and carbon monoxide levels. EPA found that non-road engines and vehicles contributed an average of 10 percent of summer VOCs in the 19 areas included in the study, all of which were ozone non-attainment areas. Gasoline spark-ignition marine engines make up nearly 30 percent of these summertime non-road VOC emissions, three-quarters of which are two-stroke outboard engines. As a result, EPA determined that it was required to regulate new gasoline spark-ignition marine engines under Section 213(a) of the Clean Air Act.[94]

In late 1996, EPA finalized regulations for new spark-ignition gasoline marine engines, including outboard engines, personal watercraft engines, and jet boat engines. EPA estimated that the new emission standards would cut hydrocarbon emissions from such engines by approximately 75 percent from projected baseline emission levels by the year 2025. EPA began phasing in the emission standards beginning in the 1998 model year; the standards

are scheduled to be fully implemented in the 2006 model year.[95]

In its comments to EPA about this rulemaking, the Regional Air Quality Planning Committee of the Houston-Galveston Area Council noted that all marine engines account for more than six percent of all smog-forming VOC emissions in the Houston-Galveston area, which is in non-attainment for ozone. The Council estimated that the new standards for personal watercraft could reduce VOC emissions by 50 tons per day in the non-attainment area.[96]

States Act to Supplement the Federal Standards

To address its air quality problems, California determined that it needed stronger, faster rules to reduce pollution from marine engines. At the time EPA's emission standards began phasing in nationally, more than 50,000 engines and personal watercraft were sold in California each year, forming a growing source of air pollution in the state.[97] In December 1998, the California Air Resources Board adopted new emission regulations for gasoline-powered marine engines, including outboard, personal watercraft and some jet boat engines. Under ARB's regulations, a typical new marine engine would be 75 percent cleaner than existing engines by 2001 and 90 percent cleaner by 2008. Marine engines meeting ARB's new regulations in 2008 would emit only one-third as much pollution as engines meeting federal standards.[98]

In its *Final Statement of Reasons* for the new emission regulations, the ARB noted its responsibility to "achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to attain state standards at the earliest practicable date." Because a reduction beyond the federal program was both "technically feasible and cost-effective," the agency implemented standards that are "progressively more stringent than the federal program, a reflection of California's need to meet compelling and extraordinary conditions." ARB estimated that the new regulations would reduce emissions of hydrocarbons and nitrogen oxides by 110 tons per day in 2010 and 161 tons in 2020 above and beyond the reductions achieved by the federal program.[99]

In September 2000, New York Governor George Pataki followed California's lead, signing into law legislation requiring all personal watercraft engines manufactured or sold in New York to meet California air emissions and labeling regulations.[100] The New York State Environmental Board adopted the new standards in May 2003. New York's standards will be phased in over several years, beginning with the 2006 model year.[101]

Conclusion

Jet skis and personal watercraft pose different problems in different states. In some states, federal standards may be enough to address pollution from these engines. But in states with warm climates, coastlines, or waterbodies that attract jet ski enthusiasts, regulators may need more to ensure that personal watercraft do not add to already difficult air pollution problems. In this way, states' flexibility to adopt stronger emission standards to mitigate unique, local air pollution problems is a critical tool to attain the goals of the Clean Air Act.

LAWN AND GARDEN EQUIPMENT

Non-road spark-ignition engines below 25 horsepower (19 kilowatts), which usually run on gasoline, are used primarily in lawn and garden equipment such as lawnmowers, string trimmers, leaf blowers, and chain saws. These traditional two-stroke engines allow unspent fuel and the associated hydrocarbons to leak out through the exhaust port. As a result, these small engines contribute about 16 percent of hydrocarbon emissions and 21 percent of carbon monoxide emissions from mobile sources nationwide.[102] Using a commercial chain saw—powered by a two-stroke engine—for two hours produces the same amount of smog-forming hydrocarbon emissions as driving ten 1995 cars about 250 miles each.[103]

California became the first state to regulate these small engines, acting before the federal government, given the extent of the air pollution problem in the state. Using the California standards as a model, EPA crafted federal regulations, extending the health benefits of air pollution reductions to the whole country. California has since adopted stronger standards for these small engines; unfortunately, Congress has preempted the right of other states to opt in to California's new standards, depriving them of an opportunity to protect public health.

California's Standards Provide Foundation for Federal Action

In December 1990, the California ARB approved emission control regulations for new small off-road engines, including handheld equipment (such as string trimmers and chain saws) and non-handheld equipment (such as lawn mowers and generators). The small off-road engine regulations were the first enforceable California off-road emission control regulations, setting implementation dates of January 1995 for Tier I standards and January 1999 for Tier II standards. On March 26, 1998, ARB amended these regulations, delaying Tier II until January 2000 to provide additional time for manufacturers and distributors to comply.[104]

The Tier I standards alone cut emissions from this equipment by 30-70 percent, but some of these engines still emitted as much as 25 percent raw, unburned gasoline in their exhaust. The California ARB estimates that the Tier II regulations will cut total emissions of hydrocarbons and nitrogen oxides from handheld equipment by another 74 percent in 2010. For non-handheld equipment (mainly lawn mowers), the regulation calls for an additional 67 percent reduction in combined hydrocarbon and nitrogen oxide emissions by 2010. None of these engines were subject to emission controls prior to 1995.[105] By 2010, California's small engine regulations will reduce air pollutants by 20.5 tons a day more than required by federal standards, described below. This reduction is equivalent to taking 275,000 automobiles off the road.[106]

California's Tier I standards became the basis for negotiations between U.S. EPA and engine manufacturers for federal standards. The participants in these negotiations agreed that a program virtually identical to the ARB program's Tier I was appropriate for the first phase of the federal program as well.

In July 1995, EPA finalized the first federal regulations affecting small non-road spark-ignition engines at or below 25 horsepower, such as lawnmowers, leaf blowers, and chainsaws. The regulations, commonly known as "Phase 1," took effect for most new handheld and non-handheld engines beginning in model year 1997 and are expected to reduce hydrocarbon emissions from these engines by 32 percent. In March 1999, EPA finalized "Phase 2" regulations for non-handheld engines, such as lawnmowers, to further reduce emissions from these engines. In

March 2000, EPA finalized "Phase 2" regulations for handheld engines, including new programmatic requirements to ensure that engines meet the tighter standards throughout the useful life of the equipment. EPA estimated that the Phase 2 handheld engine standards will reduce combined hydrocarbon and nitrogen oxide emissions from these engines by 70 percent beyond the Phase 1 reductions by the year 2027.[107]

California Strengthens Standards to Secure Additional Emissions Reductions

Since the federal rules were implemented, California has acted to go even farther to reduce pollution from mowers, weed trimmers and other small spark-ignition equipment in an attempt to improve the state's air quality. Even with California's standards, the California ARB projected that small off-road engines would release 111 tons of hydrocarbons and nitrogen oxides per day in 2010 and 121 tons per day in 2020.[108] As a result, in September 2003, the California ARB adopted new regulations requiring that by 2007 all small equipment sold in the state with gas- or diesel-powered engines under 25 horsepower come equipped with catalysts, improved carburetors, and leak-proof fuel tanks and lines. The regulations went into effect in October 2004.[109] The state estimates that the changes will reduce pollution from affected small engines by one-third by 2020.[110] By 2010, the cumulative pollution benefit of the new regulations would be equivalent to taking one million cars off the road.[111]

Federal Government Preempts States' Right to Adopt California's Standards

Unfortunately, the federal government has ensured that no other states will be able to enjoy the pollution reduction benefits of California's standards for small spark-ignition engines.

In September 2003, as California was finalizing its new standards for small off-road engines, Senator Christopher Bond of Missouri inserted a rider into the fiscal year 2004 "omnibus" appropriations bill that prevents states from adopting California's standards for "any new spark-ignition engines smaller than 50 horsepower."[112] This provision affects 120 million engines with the emissions equivalent of tens of millions of cars.[113] The amendment requires EPA to set federal standards, but these standards may not be sufficient for all states. Senator Bond introduced this rider at the request of a single company, Briggs & Stratton, which manufactures the type of engines in question and owns a facility in Senator Bond's home state.

In its letter urging members of Congress to oppose Senator Bond's amendment, the National Conference of State Legislators wrote that the rider would compromise "state and local government capacity to determine the most effective means to address specific air pollution problems." The letter also noted that the Clean Air Act "appropriately recognizes that states are best suited to determine which sources, including off-road equipment and engines, contribute most significantly to air pollution and which strategies are most effective in addressing pollution-related problems."[114]

The House-Senate conference committee charged with working out differences in the bill voted to delete Senator Bond's provision from the bill, but Senator Dianne Feinstein of California negotiated a deal with the House Republican leadership at the eleventh hour that weakened state authority under the Clean Air Act for all states but California. Federal law now prohibits states from adopting California's standards for spark-ignition engines under 50 horsepower.

Conclusion

This sets a bad precedent. For three decades, the Clean Air Act has allowed states to set more protective standards when necessary to safeguard their citizens from air pollution. This is

one step towards eliminating that right at the expense of public health.

Meanwhile, U.S. EPA is more than four months late in releasing its proposal to control air pollution from the wide range of spark-ignition equipment under 50 horsepower, as prescribed in Senator Bond's amendment. The proposed rule was due by law at the end of 2004. EPA has said only that the small engine rule will be released at some point this year.[115]

Bill Becker, executive director of STAPPA/ALAPCO, noted that EPA's delay demonstrates "exactly why states need this tool in their toolbox," referring to the ability to opt in to California's more stringent standards for mobile sources of pollution.[116]

FORKLIFTS AND OTHER INDUSTRIAL EQUIPMENT

Large non-road spark-ignition engines greater than 25 horsepower are most commonly used in forklifts, airport service vehicles, large turf care equipment, portable generators, and a wide array of other agricultural, construction, and general industrial equipment. In 2000, large spark-ignition engines contributed two to three percent of the hydrocarbon, nitrogen oxide, and carbon monoxide emissions from mobile sources in the United States. By 2020, EPA projects these engines could contribute almost eight percent of the nitrogen oxide emissions and six percent of the hydrocarbon emissions.[117] In addition, many of these engines operate in warehouses, ice-skating rinks, or other enclosed areas, where personnel working with the equipment may face more concentrated exposure.

As with cars and small spark-ignition engines used in lawn and garden equipment, California was the first to regulate emissions from large spark-ignition engines, providing a platform for federal regulations shortly thereafter. Since these standards went into effect, however, technological advances have created new opportunities for additional reductions in smog-forming emissions. As such, California has initiated a new rulemaking to tighten its emission standards for large spark-ignition equipment in order to further reduce ozone levels across the state.

California's Sets First Standards for Large Spark-Ignition Engines; Texas Follows Suit

As part of its effort to meet the requirements of the state's 1996 State Implementation Plan for ozone, the California Air Resources Board adopted the first regulations to reduce smog-forming emissions from large spark-ignition engines in 1998. The agency set an emission standard of 3.0 grams per break horsepower-hour (g/bhp-hr)[e] of combined hydrocarbons and nitrogen oxide emissions, to be phased in between 2001 and 2004.[118] California ARB estimated that its new standards would reduce combined hydrocarbon and nitrogen oxide emissions by 55 tons per day in 2010, or 67 percent of uncontrolled levels, and carbon monoxide emissions by 67 tons per day, or 25 percent of uncontrolled levels.[119]

On December 22, 2000, the Governor of Texas submitted to EPA revisions to its State Implementation Plan for ozone; one of these revisions called for opting in to California's standards for non-road large spark-ignition engines over 25 horsepower, starting in model year 2004.[120] The Texas Natural Resource Conservation Commission (TNRCC) noted that Texas will be home to approximately 371,000 large spark-ignition engines by 2007; the Houston-Galveston non-attainment area alone will contain 23 percent (88,000) of these engines. TNRCC estimated that adopting the California standards would reduce hydrocarbon and nitrogen oxide emissions from these sources by 2.8 tons per day.[121]

California's Standards Form Basis for Federal Regulations

Soon after California enacted its standards for non-road spark-ignition engines over 25 horsepower, EPA initiated a federal-level rulemaking, noting that these engines emit

[e] Brake horsepower-hour (bhp-hr) is a unit of work; it is the work done when the engine's shaft exerts one horsepower for one hour. Expressing engine emissions as weight per unit of work (grams/brake horsepower-hour) allows the use of a single standard for engines of all sizes. A larger engine generates more exhaust and more emissions than a smaller engine, but it also can do more work.

almost 500,000 tons of smog-forming hydrocarbons and nitrogen oxides each year across the United States.[122] In November 2002, EPA adopted federal regulations incorporating the test information obtained from the development of the 1998 ARB rulemaking. Specifically, the first tier of the federal standards established an emissions standard of 3.0 g/bhp-hr, the same as that adopted in 1998 by the California ARB for engines used in California. These standards went into effect in 2004. The second tier, starting in 2007, tightens the emissions standards to 2.0 g/bhp-hr.[123]

EPA included an option for manufacturers to certify their engines to different emission levels (ranging from 0.6 to 2.0 g/bhp-hr) to reflect the fact that lowering nitrogen oxide emissions tends to increase carbon monoxide emissions (and vice versa). This adds an incentive for manufacturers to reduce smog-forming emissions below the standard, without taking away the option of producing engines with low carbon monoxide levels for customers concerned about individuals' exposure to carbon monoxide emissions, particularly in the workplace.[124]

California Moves to Strengthen its Standards

In its 2003 State Implementation Plan for ozone, the California ARB outlined a new strategy for continuing to reduce emissions of nitrogen oxides and other ozone-forming pollutants, including a proposal to strengthen its existing standards for large spark-ignition engines.

In March 2005, the California ARB presented its most recent draft regulatory proposal for large spark-ignition equipment.[f] In its proposal, California ARB supports its decision to promulgate more protective standards by articulating the state's ongoing air pollution problems and the availability of technology to reduce emissions from large spark-ignition engines. These engines accounted for almost nine percent of off-road emissions in 2000—a number that continues to increase. Moreover, the agency states that a significant number of older, uncontrolled large spark-ignition engines are still operating; a piece of large spark-ignition equipment with an uncontrolled engine can emit as much in three shifts as a new car certified to California's lowest emission level would emit over its entire life.[125]

In explaining its rationale for developing more protective standards, the California ARB also notes that new and in-use large spark-ignition equipment can be retrofitted with advanced emission control technologies. Advanced battery-powered zero-emission forklifts also are available to provide even greater emission benefits.[126]

The California ARB estimates that California is home to approximately 65,500 large spark-ignition engines that would be affected by the new standards. Forklifts represent more than 62 percent of this engine population and more than 85 percent of the combined hydrocarbon and nitrogen oxide emissions.[127]

The new proposed regulations would reduce air pollution by setting fleet-average emission requirements for equipment users, establishing more protective emission standards for new engines, and developing optional low-emission certification guidelines for new engines. First, under the proposal, large fleets would need to meet a fleet-average emission requirement of 2.4 g/bhp-hr by 2009 for combined nitrogen oxide and hydrocarbon emissions and 1.1 g/bhp-hr by 2013. Mid-sized fleets with forklifts would need to meet a fleet-average emission requirement of 2.6 g/bhp-hr by 2009 for combined nitrogen oxide and hydrocarbon emissions and 1.4 g/bhp-hr by 2013. Each fleet

[f] This proposal does not address new equipment under 175 horsepower used primarily in farm equipment or vehicles and in construction equipment or vehicles, as the U.S. EPA has sole authority to control emissions from this equipment. U.S. EPA's authority is based on Clean Air Act section 209(e)(1)(A), which preempts states from adopting or enforcing any standard or other requirement relating to the control of emissions of new engines in these categories.

could meet these requirements by procuring low- or zero-emission equipment or retrofitting in-use equipment with emission control technologies.[128]

Second, the proposal would establish more stringent engine emission standards for new large spark-ignition engines. The first component of the program harmonizes California's standards with the 2007 U.S. EPA emission standard of 2.0 g/bhp-hr for combined nitrogen oxide and hydrocarbon emissions and 3.3 g/bhp-hr for carbon monoxide emissions. As with the EPA program, this standard affords manufacturers some flexibility to certify for combined nitrogen oxide and hydrocarbon emissions at any level between 2.0 and 0.6 g/bhp-hr. Since lowering ozone levels is a high priority for California, the second component of the program lowers the emission standard for model years starting in 2010 to 0.6 g/bhp-hr, but it does not afford manufacturers the flexibility to increase combined nitrogen oxide and hydrocarbon emissions above that level.[129]

California's new standards would reduce combined nitrogen oxide and hydrocarbon emissions by 11.6 tons by 2010 and an additional 7.6 tons by 2020.[130]

Congress Preempts States from Adopting California's Standards for Some Engines

As discussed in the previous section about small spark-ignition engines used in lawn and garden equipment, in September 2003, Senator Christopher Bond of Missouri inserted a rider into the fiscal year 2004 "omnibus" appropriations bill that prevents states from adopting California's standards for "any new spark-ignition engines smaller than 50 horsepower."[131] As a result, federal law now preempts states from adopting California's standards for all small spark-ignition engines (those under 25 horsepower). Senator Bond's rider also will limit states' ability to opt in to California's forthcoming standards for larger spark-ignition engines, if the potentially-regulated engine falls between 25 horsepower and 50 horsepower.

When Senator Bond first introduced this rider, it applied to California as well as the other 49 states. At the time, Allen Lloyd, the Chairman of the California Air Resources Board, stated that the "aggregate impact of the 50 hp [horsepower] preemption will be 70 tons per day of smog by 2010 [in California].... For context, 70 tons per day is equivalent to adding 2.4 million cars to California roadways."[132] Senator Feinstein ultimately negotiated a deal preserving California's authority to regulate these engines but preempting other states' right to opt in to California's standards. As such, these states will be unable to use this tool to cut smog-forming emissions in polluted areas—limiting them in ways that California is not.

Conclusion

As with cars and SUVs, California's work to clean up emissions from forklifts and other large spark-ignition engines built the foundation from which federal regulations emerged and gave Texas a more protective alternative until those federal regulations were promulgated. California continues to use its unique authority to strive for steeper emissions reductions, which could set the stage for future rulemakings at the federal level. Unfortunately, Congress has restricted the right of states to adopt California's stronger emission standards, once enacted, for some categories of large spark-ignition engines—even though federal standards may not be adequate to clean up air pollution in all parts of the country.

CONCLUSION

Competition for public policy ideas fosters accountability. A marketplace of public policy ideas is no different than a marketplace of consumer products—when you have only one seller, you have a monopoly. A monopoly of ideas is a market failure that leads to bad public policy. Federal preemption of states' ability to go above and beyond the federal floor suppresses states' creativity in developing new approaches to solving public policy problems, such as air pollution.

Setting federal law as a floor of protection as the default—without also preempting the states—allows states to continue in their role as problem solvers, experimenting with innovative policy solutions to the most pressing social problems, while providing a basic level of protection for all citizens. Federal preemption of the right of states to complement federal policy impedes the ability of the governmental bodies most able to respond to local needs and values—state and local governments—and arguably undermines citizens' rights to participate more directly in governing.[133]

Regulation of mobile source emissions is one critical area where states need the authority to enact air quality standards that are more stringent than federal standards. As states work to implement their plans to clean up the dirtiest cities and counties, they need all of the tools in the toolbox to achieve the goals of the Clean Air Act and protect public health, including the right to adopt California's standards for cars, trucks, lawn and garden equipment, and other mobile sources of air pollution. This is more than a theoretical debate about states' rights versus federal power—it is about public health.

APPENDIX A. ASTHMA PREVALENCE IN ADULTS, BY STATE, 2002

State	Number of Adult Asthmatics	Percent of Adult Population
Alabama	240,795	7.2
Alaska	32,851	7.4
Arizona	356,712	9
Arkansas	152,569	7.6
California	1,633,769	6.4
Colorado	255,409	7.7
Connecticut	220,216	8.5
Delaware	46,112	7.6
District of Columbia	41,246	9.1
Florida	833,013	6.5
Georgia	459,342	7.4
Hawaii	63,672	6.9
Idaho	73,458	7.7
Illinois	664,163	7.2
Indiana	341,274	7.5
Iowa	141,516	6.4
Kansas	150,713	7.6
Kentucky	291,944	9.5
Louisiana	195,574	6
Maine	99,008	10
Maryland	331,315	8.2
Massachusetts	433,978	8.9
Michigan	646,354	8.8
Minnesota	275,320	7.5
Mississippi	127,915	6.1
Missouri	356,257	8.5
Montana	59,721	8.9
Nebraska	91,754	7.2
Nevada	121,819	7.6
New Hampshire	82,902	8.7
New Jersey	496,395	7.8
New Mexico	104,145	7.8
New York	1,130,548	7.9
North Carolina	402,207	6.5
North Dakota	34,874	7.3
Ohio	621,936	7.3
Oklahoma	182,254	7.1
Oregon	229,049	8.7
Pennsylvania	741,664	7.9
Rhode Island	72,311	8.9
South Carolina	178,930	5.8
South Dakota	32,804	5.9
Tennessee	356,379	8.2
Texas	1,104,526	7.1
Utah	124,327	8
Vermont	40,343	8.6
Virginia	392,023	7.2
Washington	396,172	8.9
West Virginia	126,906	9.1
Wisconsin	345,132	8.5
Wyoming	26,880	7.3
National	**15,960,496**	**7.5**

Source: American Lung Association, *Trends in Asthma Morbidity and Mortality 2004*, April 2004.

APPENDIX B. COUNTIES IN NON-ATTAINMENT FOR 8-HOUR OZONE, FINE PARTICLES, AND CARBON MONOXIDE

State	Counties in 8-Hour Ozone Non-Attainment	Counties in PM2.5 Non-Attainment	Counties in CO Non-Attainment
Alabama	Jefferson, Shelby	Jackson (P), Jefferson, Shelby, Walker (P)	n/a
Alaska	n/a	n/a	n/a
Arizona	Maricopa (P), Pinal (P)	n/a	n/a
Arkansas	Crittenden	n/a	n/a
California	Alameda, Amador, Butte, Calaveras, Contra Costa, El Dorado (P), Fresno, Imperial, Kern (P), Kings, Los Angeles (P), Madera, Marin, Mariposa, Merced, Napa, Nevada, Orange, Placer (P), Riverside (P), Sacramento, San Bernardino (P), San Diego (P), San Francisco, San Joaquin, Santa Clara, San Mateo, Solano (P), Sonoma (P), Stanislaus, Sutter (P), Tulare, Tuolumne, Ventura (P), Yolo	Fresno, Kern (P), Kings, Los Angeles (P), Madera, Merced, Orange, Riverside (P), San Bernardino (P), San Joaquin, Stanislaus, Tulare	Los Angeles (P), Orange, Riverside (P), San Bernardino Co (P)
Colorado	Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer (P), Weld (P)	n/a	n/a
Connecticut	Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham	Fairfield, New Haven	n/a
Delaware	Kent, New Castle, Sussex	New Castle	n/a
Dist. of Columbia	District of Columbia	District of Columbia	n/a
Florida	n/a	n/a	n/a
Georgia	Barrow, Bartow, Bibb, Carroll, Catoosa, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Monroe (P), Murray (P), Newton, Paulding, Rockdale, Spalding, Walton	Barrow, Bartow, Bibb, Carroll, Catoosa, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Floyd, Forsyth, Fulton, Gwinnett, Hall, Heard (P), Henry, Monroe (P), Newton, Paulding, Putnam (P), Rockdale, Spalding, Walker, Walton	n/a
Hawaii	n/a	n/a	n/a
Idaho	n/a	n/a	n/a
Illinois	Cook, DuPage, Grundy (P), Jersey, Kane, Kendall (P), Lake, Madison, McHenry, Monroe, St. Clair, Will	Cook, DuPage, Grundy (P), Kane, Kendall (P), Lake, Madison, McHenry, Monroe, Randolph (P), St. Clair, Will	n/a
Indiana	Allen, Boone, Clark, Dearborn (P), Delaware, Elkhart, Floyd, Greene, Hamilton, Hancock, Hendricks, Jackson, Johnson, Lake, LaPorte, Madison, Marion, Morgan, Porter, Shelby, St. Joseph, Vanderburgh, Vigo, Warrick	Clark, Dearborn (P), Dubois, Floyd, Gibson (P), Hamilton, Hendricks, Jefferson (P), Johnson, Lake, Marion, Morgan, Pike (P), Porter, Spencer (P), Vanderburgh, Warrick	n/a
Iowa	n/a	n/a	n/a

State	Counties in 8-Hour Ozone Non-Attainment	Counties in PM2.5 Non-Attainment	Counties in CO Non-Attainment
Kansas	Johnson, Linn, Miami, Wyandotte	n/a	n/a
Kentucky	Boone, Boyd, Bullitt, Campbell, Christian, Jefferson, Kenton, Oldham	Boone, Boyd, Bullitt, Campbell, Jefferson, Kenton, Lawrence (P)	n/a
Louisiana	Ascension, East Baton Rouge, Iberville, Livingston, West Baton Rouge	n/a	n/a
Maine	Androscoggin (P), Cumberland (P), Hancock (P), Knox (P), Lincoln (P), Sagadahoc, Waldo (P), York (P)	n/a	n/a
Maryland	Anne Arundel, Baltimore City, Baltimore, Calvert, Carroll, Cecil, Charles, Frederick, Harford, Howard, Kent, Montgomery, Prince George's, Queen Anne's, Washington	Anne Arundel, Baltimore City, Baltimore, Carroll, Charles, Frederick, Harford, Howard, Montgomery, Prince George's, Washington	n/a
Massachusetts	Barnstable, Berkshire, Bristol, Dukes, Essex, Franklin, Hamden, Hampshire, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, Worcester	n/a	n/a
Michigan	Allegan, Berrien, Benzie, Calhoun, Cass, Clinton, Eaton, Genesee, Huron, Ingham, Kalamazoo, Kent, Lapeer, Lenawee, Livingston, Macomb, Mason, Monroe, Muskegon, Oakland, Ottawa, St. Clair, Van Buren, Washtenaw, Wayne	Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, Wayne	n/a
Minnesota	n/a	n/a	n/a
Mississippi	n/a	n/a	n/a
Missouri	Cass, Clay, Franklin, Jackson, Jefferson, Platte, St. Charles, St. Louis City, St. Louis	Franklin, Jefferson, St. Charles, St. Louis, St. Louis City	n/a
Montana	n/a	Lincoln (P)	Missoula (P)
Nebraska	n/a	n/a	n/a
Nevada	Clark	n/a	Clark (P), Washoe (P)
New Hampshire	Hillsborough (P), Merrimack (P), Rockingham (P), Strafford (P)	n/a	n/a
New Jersey	Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Salem, Somerset, Sussex, Union, Warren	Bergen, Burlington, Camden, Essex, Gloucester, Hudson, Mercer, Middlesex, Monmouth, Morris, Passaic, Somerset, Union	n/a
New Mexico	n/a	n/a	n/a
New York	Albany, Bronx, Cayuga, Chautauqua, Dutchess, Erie, Essex (P), Genesee, Greene, Jefferson, Kings, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Onondaga, Ontario, Orange, Orleans, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Wayne, Westchester	Bronx, Kings, Nassau, New York, Orange, Queens, Richmond, Rockland, Suffolk, Westchester	n/a

State	Counties in 8-Hour Ozone Non-Attainment	Counties in PM2.5 Non-Attainment	Counties in CO Non-Attainment
North Carolina	Alamance, Alexander, Burke (P), Cabarrus, Caldwell (P), Caswell, Catawba, Chatham (P), Cumberland, Davidson, Davie, Durham, Edgecomb, Forsyth, Franklin, Gaston, Granville, Guilford, Haywood (P), Iredell (P), Johnston, Lincoln, Mecklenburg, Nash, Orange, Person, Randolph, Rockingham, Rowan, Swain (P), Union, Wake	Catawba, Davidson, Guilford	n/a
North Dakota	n/a	n/a	n/a
Ohio	Allen, Ashtabula, Belmont, Butler, Clark, Clermont, Clinton, Columbiana, Cuyahoga, Delaware, Fairfield, Franklin, Geauga, Greene, Hamilton, Jefferson, Knox, Lake, Licking, Lorain, Lucas, Madison, Mahoning, Medina, Miami, Montgomery, Portage, Stark, Summit, Trumbull, Warren, Washington, Wood	Adams (P), Ashtabula (P), Belmont, Butler, Clark, Clermont, Coshocton (P), Cuyahoga, Delaware, Fairfield, Franklin, Gallia (P), Greene, Hamilton, Jefferson, Lake, Lawrence, Licking, Lorain, Medina, Montgomery, Portage, Scioto, Stark, Summit, Warren, Washington	n/a
Oklahoma	n/a	n/a	n/a
Oregon	n/a	n/a	Marion (P), Polk (P)
Pennsylvania	Adams, Allegheny, Armstrong, Beaver, Berks, Blair, Bucks, Butler, Cambria, Carbon, Centre, Chester, Clearfield, Cumberland, Dauphin, Delaware, Erie, Fayette, Franklin, Greene, Indiana, Lackawanna, Lancaster, Lebanon, Lehigh, Luzerne, Mercer, Monroe, Montgomery, Northampton, Perry, Philadelphia, Tioga, Washington, Westmoreland, Wyoming, York	Allegheny (P), Armstrong (P), Beaver, Berks, Bucks, Butler, Cambria, Chester, Cumberland, Dauphin, Delaware, Greene (P), Indiana (P), Lancaster, Lawrence (P), Lebanon, Montgomery, Philadelphia, Washington, Westmoreland, York	n/a
Rhode Island	Bristol, Kent, Newport, Providence, Washington	n/a	n/a
South Carolina	Anderson, Greenville, Lexington (P), Richland (P), Spartanburg, York (P)	n/a	n/a
South Dakota	n/a	n/a	n/a
Tennessee	Anderson, Blount, Cocke (P), Davidson, Hamilton, Hawkins, Jefferson, Knox, Loudon, Meigs, Montgomery, Rutherford, Sevier, Shelby, Sullivan, Sumner, Williamson, Wilson	Anderson, Blount, Hamilton, Knox, Loudon, Roane (P)	n/a
Texas	Bexar, Brazoria, Chambers, Collin, Comal, Dallas, Denton, Ellis, Fort Bend, Galveston, Guadalupe, Hardin, Harris, Jefferson, Johnson, Kaufman, Liberty, Montgomery, Orange, Parker, Rockwall, Tarrant, Waller	n/a	El Paso (P)
Utah	n/a	n/a	Utah (P)
Vermont	n/a	n/a	n/a

State	Counties in 8-Hour Ozone Non-Attainment	Counties in PM2.5 Non-Attainment	Counties in CO Non-Attainment
Virginia	Alexandria City, Charles City, City of Chesapeake, City of Colonial Heights, Fairfax City, Falls Church City, City of Fredericksburg, City of Hampton, City of Hopewell, James City, Manassas City, Manassas Park City, City of Newport News, City of Norfolk, City of Petersburg, City of Poquoson, City of Portsmouth, City of Richmond, City of Roanoke, City of Salem, City of Suffolk, City of Virginia Beach, City of Williamsburg, City of Winchester, Isle of Wight; Arlington, Botetourt, Chesterfield, Fairfax, Frederick, Gloucester, Hanover, Henrico, Loudoun, Madison (P), Page (P), Prince George, Prince William, Roanoke, Spotsylvania, Stafford, York	Alexandria, Arlington, Fairfax, Fairfax City, Falls Church, Loudoun, Manassas, Manassas Park, Prince William	n/a
Washington	n/a	n/a	Spokane (P)
West Virginia	Berkeley, Brooke, Cabell, Hancock, Jefferson, Kanawha, Marshall, Ohio, Putnam, Wayne, Wood	Berkeley, Brooke, Cabell, Hancock, Kanawha, Marshall, Mason (P), Ohio, Pleasants (P), Putnam, Wayne, Wood	n/a
Wisconsin	Door, Kenosha, Kewaunee, Manitowoc, Milwaukee, Ozaukee, Racine, Sheboygan, Washington, Waukesha	n/a	n/a
Wyoming	n/a	n/a	n/a

Source: U.S. Environmental Protection Agency

APPENDIX C. HEALTH EFFECTS OF DIESEL POLLUTION, BY STATE (1999)

	Adult Health Impacts							Children's Health Impacts			
State	Deaths	Lung Cancer Deaths	Heart Attacks	Asthma Attacks	Chronic Bronchitis	Lost Work Days	Restricted Activity Days	Asthma ER Visits	Acute Bronchitis	Lower Respiratory Symptoms	Upper Respiratory Symptoms
Alabama	175	16	184	3,200	92	18,646	108,961	162	244	2,796	2,222
Arizona	214	19	268	5,215	144	30,053	173,721	85	401	4,601	3,661
Arkansas	79	8	82	1,386	40	7,943	46,465	71	107	1,223	970
California	1,784	144	2,263	49,499	1,356	292,622	1,683,642	800	3,829	44,081	35,177
Colorado	83	6	105	2,346	66	14,419	83,197	36	173	1,984	1,572
Connecticut	206	18	340	4,091	125	24,097	140,140	124	305	3,507	2,794
Delaware	59	6	67	1,220	35	7,235	41,995	61	90	1,036	828
District Of Columbia	63	5	60	1,069	32	6,898	39,898	46	63	723	576
Florida	805	77	980	13,926	438	81,462	474,601	656	995	11,419	9,088
Georgia	329	29	377	8,514	235	51,808	298,317	437	645	7,414	5,902
Idaho	16	1	21	432	11	2,427	14,156	7	36	408	323
Illinois	878	76	1,193	19,162	539	112,205	649,445	1,183	1,458	16,800	13,423
Indiana	369	36	483	7,372	209	42,730	249,056	453	563	6,471	5,161
Iowa	107	9	151	2,040	59	11,719	68,614	122	154	1,761	1,399
Kansas	78	7	110	1,679	47	9,653	56,186	105	132	1,510	1,199
Kentucky	198	22	213	3,764	110	22,385	130,403	186	276	3,171	2,525
Louisiana	324	32	339	7,131	188	40,740	236,444	398	546	6,391	5,229
Maine	24	2	36	437	14	2,638	15,375	13	32	369	294
Maryland	409	39	454	8,418	246	50,275	291,675	424	635	7,324	5,864
Massachusetts	475	43	727	9,925	289	61,842	355,473	282	639	7,445	6,037
Michigan	484	43	667	10,511	299	61,109	355,260	651	828	9,515	7,574
Minnesota	193	15	291	4,713	134	27,979	161,954	286	361	4,153	3,308
Mississippi	109	10	108	2,059	56	11,626	67,873	112	167	1,910	1,517

	Adult Health Impacts							Children's Health Impacts			
State	Deaths	Lung Cancer Deaths	Heart Attacks	Asthma Attacks	Chronic Bronchitis	Lost Work Days	Restricted Activity Days	Asthma ER Visits	Acute Bronchitis	Lower Respiratory Symptoms	Upper Respiratory Symptoms
Missouri	305	28	377	5,435	157	31,476	183,033	330	417	4,795	3,829
Montana	8	1	10	175	5	1,030	6,059	3	13	154	122
Nebraska	51	4	72	1,101	31	6,353	36,978	68	85	976	775
Nevada	66	7	76	1,524	44	9,181	53,230	23	113	1,291	1,022
New Hampshire	24	2	41	563	17	3,377	19,603	17	45	510	405
New Jersey	880	77	1,382	17,926	535	107,364	620,975	541	1,290	14,938	12,020
New Mexico	22	2	28	545	15	3,142	18,350	9	44	500	396
New York	2,332	169	3,692	51,251	1,499	318,532	1,827,525	1,486	3,255	38,280	31,464
North Carolina	301	29	347	6,518	189	39,589	229,591	318	473	5,423	4,305
North Dakota	13	1	19	270	8	1,577	9,223	16	20	229	182
Ohio	769	72	1,002	14,464	422	83,963	489,355	874	1,100	12,658	10,105
Oklahoma	99	9	106	1,869	53	10,804	63,125	96	143	1,634	1,295
Oregon	164	15	182	3,519	103	21,463	124,508	52	247	2,850	2,279
Pennsylvania	1,170	103	1,660	19,021	575	110,404	643,926	573	1,398	16,161	12,979
Rhode Island	51	5	79	935	28	5,491	31,946	28	68	777	617
South Carolina	142	13	157	2,899	83	17,173	100,238	145	219	2,508	1,992
South Dakota	15	1	22	315	9	1,792	10,445	19	25	282	224
Tennessee	269	26	283	5,169	150	30,870	179,656	257	382	4,386	3,489
Texas	879	83	1,070	25,348	664	148,394	854,045	1,393	2,010	23,182	18,547
Utah	69	3	90	2,475	57	13,543	78,254	46	210	2,421	1,934
Vermont	9	1	15	192	6	1,159	6,791	6	15	166	132
Virginia	248	24	303	5,991	174	36,963	214,083	290	431	4,944	3,928
Washington	248	23	308	6,201	181	37,787	218,889	94	457	5,260	4,194
West Virginia	88	9	91	1,331	41	7,949	46,880	61	90	1,034	825
Wisconsin	226	18	320	4,789	137	27,923	162,404	291	370	4,251	3,386
Wyoming	4	0	5	97	3	567	3,332	2	8	87	69

Source: Clean Air Task Force, *Diesel and Health in America: The Lingering Threat*, February 2005. Available at http://www.catf.us/publications/reports/Diesel_Health_in_America.pdf.

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