

Time for a U-Turn

*Automakers' History of Intransigence
and an Opportunity for Change*



**[Union of
Concerned Scientists**

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and an Opportunity for Change*

Dave Cooke

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Dave Cooke is a senior vehicles analyst
in the Clean Vehicles Program.

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**WRONG
WAY**



Since the 1950s, automobiles have become dramatically safer and cleaner, and they travel much farther on a gallon of gas, all to the benefit of drivers, communities, and the environment.

These improvements have come about thanks to strong, effective public policies. Laws like the Clean Air Act, the National Traffic and Motor Vehicle Safety Act, and the Energy Independence and Security Act have been essential to putting cleaner, safer vehicles on the road and protecting generations of Americans.

Unfortunately, mirroring this record of progress is another pattern: the intransigence of an auto industry that consistently fights to block or undercut rules on safety and the environment, even as automakers have managed to meet every challenge laid out for them in federal policy.

Time for a U-Turn looks at how automakers and their trade groups have fought against the rules and standards that have delivered better cars to the nation. Through exaggerated rhetoric, misinformation, and political influence, automakers have undermined the public interest.

In 2009, automakers seemed to turn over a new leaf as they began working with federal agencies to design new, flexible standards so that cars and trucks would consume less oil and emit less global warming pollution. Those standards, implemented beginning in 2012, have worked well—but old patterns are repeating themselves. The industry's trade groups are again trying to renege on promises they made to the American people.

Automakers have an opportunity to leave behind their history of intransigence. It is time they live up to their public statements, bring clean and efficient vehicles to market, support strong, technology-forcing standards, and ensure that their industry rises to the challenges of the 21st century.

Scare Tactics

In response to proposals to improve passenger vehicles, automakers have deployed a consistent line of attack to scare policymakers.

- **“It cannot be done:”** Automakers overstate technical challenges to meeting new rules.
- **“It will cost too much:”** They claim that complying with new standards will cost far more than federal agencies estimate.
- **“It will destroy the industry and kill jobs:”** They cast every new requirement as a potential apocalypse for automakers, leading to mass layoffs and closed factories.
- **“Consumers do not want this:”** Their industry groups suggest that automakers must choose whether to produce vehicles that customers want or vehicles the new rules would mandate.
- **“The science is not clear:”** On issues like air pollution, climate change, and the effectiveness of seat belts, auto companies and trade groups attack the science, inflate uncertainty, and deny or question the facts.
- **“The market will solve it:”** Whatever the issue, automakers claim that voluntary, self-enforcement is sufficient.

Time after time, all these arguments have been proven wrong. The record shows that automakers have over-performed when faced with new rules. Rising to each challenge, they

have implemented innovative solutions, complying with health, environmental, and safety standards at lower cost than even the agencies had initially estimated.

An Historic Pattern

The auto industry's tactics of denial, delay, and hyperbole have emerged at pivotal points throughout the last seven decades.

As early as 1950, research showed that auto exhaust was a principal factor in the growing problem of smog. For at least the next 10 years, auto manufacturers collaborated to stave off rules and even technologies designed to limit smog-causing emissions. Wielding strategies that would become standard, automakers insisted they could not implement pollution-control technologies and worked behind the scenes to delay the development and adoption of such devices. A cooperative venture begun by industry in 1955, ostensibly to explore answers to smog, instead gave automakers an arena for collaborating to delay solutions. It took action by California, as well as innovations by independent auto-parts suppliers, finally to bring such technologies to market.

For at least the next 10 years, auto manufacturers collaborated to stave off rules and even technologies designed to limit smog-causing emissions.

In the years that followed, similar tactics and arguments appeared again and again. As Congress debated the Clean Air Act of 1970, Ford CEO Lee Iacocca insisted that the legislation “could prevent continued production of automobiles” and “do irreparable harm to the American economy.” General Motors took out national ads insisting that the act was unnecessary because automakers could reduce emissions voluntarily. A Chrysler Corporation ad claimed—falsely—that “there is no scientific evidence showing a threat to health from automotive emissions in the normal, average air you breathe.” As a group, these automakers insisted that it was technologically impossible to build cars that could achieve the act's 1975 targets.

Industry leaders used the same tactics to delay or block regulations requiring catalytic converters, fuel-economy

improvements, and even safety features like seat belts and airbags. As chairman and CEO of Ford, Henry Ford II called 1966 requirements for seat belts and safety glass “arbitrary, unreasonable, and technically infeasible,” suggesting they might cause Ford to “close down.”

Needless to say, the auto industry not only still exists but is thriving, delivering vehicles equipped with a wide range of environmental, health, and safety features targeted by automakers in decades past as impossible.

Recession, Recovery and New Standards

Ten years ago, America's automakers faced a crisis. The recession hit the industry hard, and it faced a potential collapse that would take millions of jobs down with it. Through 2008, 2009, and 2010, the federal government's emergency measures—including loans to all three domestic manufacturers (the “Big Three”) and bankruptcy and restructuring for (General Motors) GM and Chrysler—brought auto companies through the crisis.

While many factors had threatened the industry, one was certainly the fact that they had let improvements in fuel economy stall, instead offering more SUVs and trucks and minimizing investments in more efficient cars. This left them unprepared for the shift in economic conditions and gas prices. “We had data about consumers' preferences about fuel economy, but we chose to ignore it; we thought it was an anomaly,” said former GM economist Walter McManus in 2010. “But it's by having a bias against fuel economy that we've put ourselves in the pickle we're in now.”

As automakers emerged from the crisis, they entered into negotiations with the federal government to build a new program of fuel economy and emissions standards. In 2010, President Barack Obama and industry leaders agreed to implement new standards that would include flexibility based on vehicle size. Responding to consumer choice, the goal was to deliver more efficient models of every vehicle class every year. This was the promise automakers offered the American people: cars and trucks of all sizes that would use less gasoline and emit fewer global warming emissions.

Those standards have worked. Today, automakers are meeting or even exceeding the standards' targets, and drivers have saved nearly \$50 billion at the pump. At the same time, the auto industry has more than recovered: it recorded record sales numbers in 2015 and 2016 and is on track to continue that success in 2017.

In 2016, federal agencies kicked off a required midterm review of the standards and issued a report assessing them: they are succeeding at lower cost than initially anticipated.



Philadelphia was one of a number of cities experiencing smog well into the 1970s, thanks largely to increases in automobile usage. Automakers spent decades fighting smog reduction regulations, even after the passage of the Clean Air Act.

That report, based on a thorough, robust scientific analysis as well as extensive stakeholder input, led the Environmental Protection Agency (EPA) to announce, in January 2017, that the standards can and should proceed as planned.

However, in the months since, automakers have retreated from their commitments, seeing opportunity in a new administration and new leadership at the EPA and the US Department of Transportation. Using tactics familiar from decades of opposition, the industry and its trade groups are pushing at every level to weaken and roll back today's standards.

The State of the Industry Today

It is impossible to imagine retreating from decades of progress. No manufacturer would sell a vehicle to the general public without seat belts or airbags or market a vehicle that lacks basic pollution controls. The nation has raised the bar despite the intransigence of the auto industry. And while strong standards have pushed manufacturers to make the cleanest, safest cars in history, the industry is grossing \$600 billion in the United States alone, accounting for 3 percent of the US economy.

Drivers have benefited enormously from the advances in auto technology over the past decades, despite the industry's repeated efforts to derail the policies that have helped us progress. We cannot let the apocalyptic claims of auto industry executives and trade groups derail policies needed to improve cars and trucks for America's drivers.

What Comes Next?

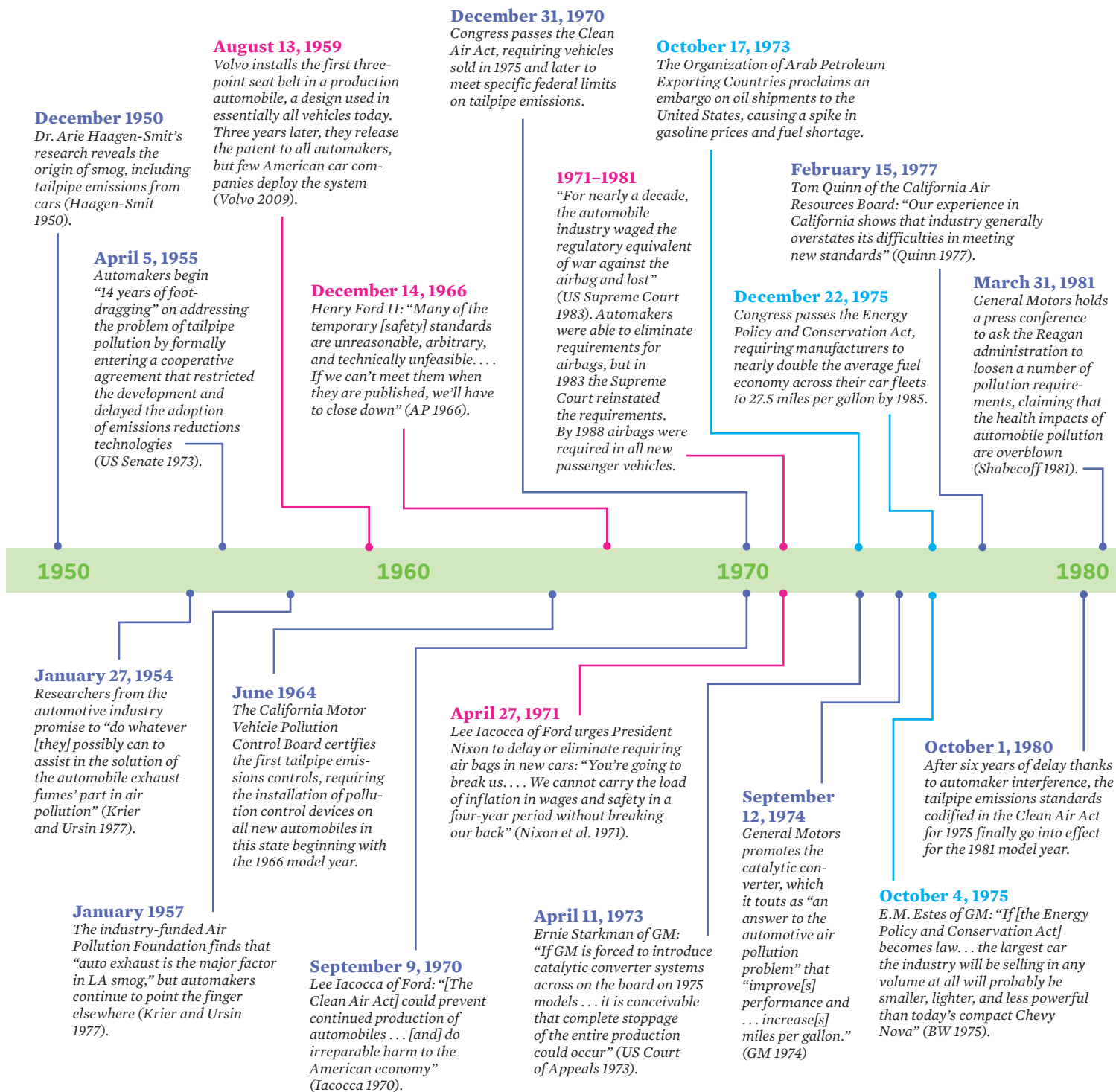
We have seen, repeatedly, what bad behavior from auto manufacturers looks like, but that pattern does not have to continue. Automakers have an opportunity to be honest and responsible as they address policy changes, and they can translate high-minded rhetoric about sustainability into action.

In 2009, Bill Ford, now executive chairman of the Ford Motor Company, said in an interview, "I hope that we will be recognized by customers for being a leader in the application of technology that makes their lives better." On Ford's website, he says, "Nothing is more important to me than our reputation as a family company that people trust to do the right thing."

Automakers can live up to those words. To build trust with the public and leave a history of intransigence behind, they must:

- support strong safety and emissions standards and keep the promises they made to the American people to build cleaner cars;
- distance themselves from trade groups that seek to undermine today's standards, and make it clear that these groups do not speak for all automakers on issues of safety and the environment; and
- cease spreading disinformation about the standards and their impacts.

A History of Automaker Intransigence, 1950–2017



Over the course of almost 70 years, the American automaker industry has maintained a "can't-do attitude" on tailpipe pollution, driver and passenger safety, and fuel economy and climate change, placing profits ahead of the needs of the public.

March 1, 1985

Ford and GM petition the National Highway Traffic Safety Administration to reduce fuel economy standards for the 1986, 1987, and 1988 model years, claiming that they would need to “deprive our customers of a product they want” in order to meet the standards, and that “if [they] have to pay fines, it will be with the capital. . . [needed] to develop more fuel-efficient cars” (Conte 1985).

October 1, 1985

NHTSA lowers fuel economy standards for 1986. It repeated the action one year later, reducing standards for 1987 and 1988, leaving GM “pleased” (Brown 1986).

November 1, 1989

Detroit automakers wage an ad campaign against stronger emissions standards, claiming there will be little public health benefit, little impact on lower fuel economy, a shortage of available vehicle models, driving performance issues, and higher costs for consumers.

July 11, 1995

A measure supported by House Majority Whip Tom DeLay prohibits NHTSA from setting new fuel economy standards; it appears in every appropriations bill for the Department of Transportation during the Clinton administration.

July 17, 1997

Robert Eaton, CEO of Chrysler, writes, “Autos are not a major contributor to total global warming emissions in the environment” and calls for delaying action on climate change. “It would be an unwise and unnecessary move even if scientists could agree that the earth’s atmosphere is getting warmer because of manmade carbon dioxide and other gases. It becomes even more so given the fact that they can’t” (Eaton 1997).

June 14, 2000

Walter Huizenga, president of a dealer trade group: “If Congress mandates an increase in fuel economy, certain models of pickups, minivans, and sport-utility vehicles could potentially be eliminated from the market” (AIADA 2000).

May 19, 2009

President Obama announces first joint fuel economy and global warming emissions standards. Automakers, labor, and environmental groups supported the announcement, and representatives of all three constituencies flanked the President in the announcement from the White House.

February 10, 2017

Every major automaker CEO signs a letter to President Trump requesting the midterm review be re-opened, citing a widely debunked claim that a million jobs are at risk and that costs to meet the standards exceed both EPA and NHTSA estimates.

December 31, 2016

Automakers enjoy back-to-back years of record-setting sales, selling 17.55 million vehicles in 2016.

1990

2000

2010

May 2, 1989

Robert Liberatore of Chrysler: “We believe that the potential impact of CAFE on the global issue of planetary warming are [sic] difficult to demonstrate” (US Senate 1989a).

November 1996

As part of a campaign against stronger air quality standards, Richard Klimisch of the American Automobile Manufacturers Association claims, “The effects of ozone are not that serious. . . what we’re talking about is a temporary loss in lung function of 20 to 30 percent. That’s not really a health effect” (Warrick 1996).

February 28, 2007

With gas prices rising and impending bankruptcies for Chrysler and GM, ex-GM economist Walter McManus noted the industry’s reticence to adapt: “[The industry has] had a change of heart, but it’s fairly recent. We had data about consumers’ preferences about fuel economy, but we chose to ignore it; we thought it was an anomaly. But it’s by having a bias against fuel economy that we’ve put ourselves in the pickle we’re in now” (Jones 2007).

January 12, 2017

After extensive analysis, EPA affirms the 2025 standards while acknowledging that manufacturers could meet even stronger standards.

August 11, 1985

Lee Iacocca, now of Chrysler, defends fuel economy standards: “Dialing back fuel standards on cars will set up the American people to be energy hostages again and again” (Chrysler 1985b).

October 1994

In response to a possible increase in light truck fuel economy standards, Robert Liberatore of Chrysler declares that such action “would have a very destructive effect on our business” (Templin 1994).

August 1999

The Alliance of Automobile Manufacturers fights Tier 2 tailpipe emissions standards, claiming that the regulations are neither necessary nor feasible.

October 21, 2015

Automaker trade associations testify in support of legislation that would allow auto manufacturers to meet fuel economy standards in part by adopting safety technologies that had not been proven to reduce oil consumption. The action is the first in a number of bills that automakers advocate for in Congress that would undermine vehicle efficiency standards.

- Tailpipe Pollution
- Safety
- Fuel Economy and Global Warming Emissions

Introduction

Over the past 70 years, the automobile has become dramatically safer and cleaner and it now travels much farther on a gallon of gas. Unfortunately, one thing has remained constant: automakers have been grudging partners in this progress, fighting tooth and nail at every step of the way when asked to make their vehicles safer, cleaner, and more economical.

Time and again, the industry has deployed the same set of tactics to restrain progress. Most often, it has assumed a Chicken Little posture, no matter what the issue: “such and such cannot be done; you will kill the auto industry if we are forced to do it!” Yet time and again, the industry has accomplished whatever “it” is, and, lo and behold, automakers are still here today, thriving (Box 1). As conservative columnist George Will noted four decades ago, “The industry has a dismal record of asserting what can’t be done, and an admirable record of doing what it is forced to do” (Will 1977).

Despite accomplishing impressive engineering feats when pushed, auto manufacturers have a consistently less-than-admirable record of sowing misinformation and doubt. Like the tobacco and oil companies, the auto industry has weaponized doubt about science in its attacks on regulation, pushing uncertainty on several fronts: about the safety of seat belts, the impact of the automobile on smog and health, and the evidence for the human causes of climate change. This diversionary tactic has delayed progress on critical issues.

Automakers regularly deploy another major delaying tactic: they claim that “the market” will fix the problem, whatever the problem is. By insisting on voluntary programs with no regulatory teeth, the industry delayed requirements

Automakers have fought tooth and nail at every step of the way when asked to make their vehicles safer, cleaner, and more economical.

for seat belts, improvements in fuel economy, and the development of pollution control devices. Ultimately, it was government requirements that overcame industry foot-dragging and market barriers and got these critical protections onto the road.

History has shown that we cannot take the rhetoric of reluctant automakers at face value as we consider policies to spur innovation and advance the public interest. Drivers and consumers have benefited enormously from decades of advances in auto technology, despite the industry’s repeated efforts to derail the policies that helped catalyze their development.

Once again, automakers are driving down the same road, this time fighting against stronger standards for fuel economy and global warming emissions for passenger vehicles—standards that have already saved consumers tens of millions of dollars in fuel costs.

Time for a U-Turn recounts the history of automaker resistance to progress, showing how industry tactics and

BOX 1.

Automotive Chicken Little: The Sky Is Falling

A consistent theme in automaker pronouncements over the years is the supposed fragility of their industry. It seems that whenever a proposed public policy would improve the vehicle fleet, automakers declare that the change would cripple them. Here in chronological order is a list of public policy proposals, all of which eventually occurred without causing any major problems for manufacturers, and all of which the industry claimed would be catastrophic:

- **Vehicle safety standards:** Minimum safety standards, including seat belts and safety glass, were said by automakers to be technically unfeasible and that requiring them eventually would close down the auto industry (AP 1966).
- **The Clean Air Act of 1970:** Automakers claimed that requirements to reduce tailpipe pollution “could prevent continued production of automobiles . . . [and] do irreparable harm to the American economy” (Iacocca 1970).
- **Mandated fuel economy standards:** Automakers claimed that vehicle efficiency standards would “outlaw” large cars, shutting down production of any vehicles except low-powered compacts (Byrne 2003).
- **Airbag requirements:** Manufacturers claimed that requiring passive safety restraints would “break the back” of the industry (Nixon et al. 1971).
- **The Clean Air Act of 1990:** The industry said that reducing tailpipe pollution would be beyond the capability of the industry without “crippl[ing] the U.S. economy and cost[ing] billions of dollars” (GM 1982).
- **National ozone standards:** “Ill-conceived” standards on air quality would be burdensome, according to the industry, and “scientifically unjustifiable” because “the effects of ozone are not that serious” (Warrick 1996).
- **Improved truck efficiency:** Increasing the fuel economy of new trucks by 10 percent was said by automakers to result in hundreds of thousands of lost jobs and thousands of unnecessary traffic fatalities (AAM 2003).
- **Energy Independence and Security Act of 2007:** Automakers claimed that requiring the average vehicle to consume 25 percent less fuel by 2020 would “break the industry” (Pope 2007).

Despite all the supposed adversity, the auto industry is on its way to capping off a third consecutive year of selling over 17 million passenger vehicles for the first time ever, grossing around \$600 billion in the United States alone, or about 3 percent of the nation’s economy.

rhetoric have sought to block vital standards on air pollution, fuel economy, and safety—the very rules that have made America’s roads safer and our air cleaner. Moreover, those same rules have benefited even the industry, spurring automakers to offer better products to consumers and making

them more competitive in an increasingly global market. For too long, far too many important policy advances have fallen by the wayside due to apocalyptic claims and political maneuvering. It is time to end that cycle.

“The industry has a dismal record of asserting what can’t be done, and an admirable record of doing what it is forced to do”

— George Will, conservative columnist, 1977

Haze of Collusion

Air pollution has been a concern for nearly two millennia, and researchers have documented cases of air pollution for the Los Angeles basin dating back nearly 500 years (Morrison 2016; Krier and Ursin 1977). However, it was not until the 1940s that smog began to appear regularly in the United States. Initially, Los Angelenos feared that a Japanese gas attack was underway until it became quite clear that these chemical clouds were a product of our own making (Krier and Ursin 1977).

Early Research on Smog

The first thorough study of L.A.'s smog problem, in the mid-1940s, did not find any specific cause, instead noting huge increases in population and industry as key factors (Krier and Ursin 1977). However, a 1949 football game in

Berkeley, California, gave an early clue to a central cause of smog. Intense traffic congestion before a game between the California Golden Bears and the Washington State Cougars led to a haze that irritated the eyes of thousands of fans. The California Assembly Committee on Air and Water Pollution remarked that it “could only be concluded that the cause of this particular eye irritation was in some way directly related to automobile exhaust” (California State Assembly 1952).

In 1950, Caltech biochemist Dr. Arie Haagen-Smit released the findings of his research into the cause of the smog (Haagen-Smit 1950). It turned out that smog resulted from a reaction between sunlight and pollutants, primarily those coming from refineries and automobiles. Additional research over the next few years solidified this conclusion.

Automakers Refuse to Recognize the Scientific Certainty of their Culpability

Recognizing the concerns, in 1953 the Automobile Manufacturers Association established a vehicle emissions program “to investigate thoroughly all available information on technical aspects of the air pollution program as it relates to motor vehicles and, on the basis of this work, develop an industry program for dealing with the problem” (Krier and Ursin 1977). According to a committee member, after two and a half weeks, “almost everyone on [the committee] was convinced it was the automobile” (Bedingfield 1970).

Despite this reported certainty, the industry waited years before publicly conceding the issue. By 1954, it admitted that the automobile was the “largest single source of hydrocarbons” and vowed to “do whatever [it] possibly can to assist in the



DeGolyer Library, Southern Methodist University

Dr. Arie Haagen-Smit's work found that the primary cause of smog was emissions from automobiles, and oil and petrochemical refineries.

BOX 2.

“14 Years of Foot-Dragging”

In 1969, the US Department of Justice filed suit against the Automobile Manufacturers Association, General Motors, Ford, Chrysler, and American Motors. The complaint alleged that the defendants (Esposito 1970):

- conspired to eliminate competition among themselves in the research, development, manufacture, and installation of pollution-control equipment in motor vehicles, extending to third-party suppliers;
- agreed to install control devices only on a date agreed upon by all parties, regardless of the ability of any individual manufacturer to install the equipment, thus delaying deployment;
- agreed in 1961 to delay by one year installation of devices to control crankcase emissions, a major source of smog-forming pollution;
- agreed a year later to delay installation of improved crankcase devices in California; and
- conspired among themselves to tell California regulators that exhaust emissions controls could not be installed before 1967.

The Justice Department presented the complaint to a grand jury but pulled it before criminal charges could be brought. Eventually, a civil suit resulted in a consent decree that Senator Edmund Muskie of Maine referred to as “a record of 14 years of foot-dragging by this industry on this [automotive emissions] problem, documented by a memorandum of the Department of Justice, and reflected in the consent decree” (US Senate 1973).

Although the consent decree included no official findings and did not require any admission of illegal activity, the settlement explicitly prohibited automakers from exchanging “restricted information,” such as trade secrets or unpublished technical information, and it prohibited them from jointly authoring any statements relating to emissions standards or any other government regulations. However, the Reagan administration dropped these restrictions in the 1980s (Doyle 2000).

solution of the automobile exhaust fumes’ part in air pollution”—but it still did not acknowledge that the automobile was the dominant source of smog (Krier and Ursin 1977). It reiterated that position a year later, acknowledging that “auto exhaust was probably the major source of air pollution” yet adding that “the evidence did not prove that it produced smog” (Doyle 2000).

As reported by Krier and Ursin (1977), by 1957 even the Air Pollution Foundation, funded in part by the industry, would note “final conclusive proof that auto exhaust is the major factor in Los Angeles smog.” Worse still, smog was appearing around the country, not just in metropolises like New York and Philadelphia but also in more agricultural, low-density areas like Bakersfield and Fresno (Doyle 2000).¹ Nevertheless, automakers sought to abdicate responsibility. In an effort to ward off federal action to control the pollution responsible for smog, they insisted in 1960 that smog was “not likely to occur anywhere else on earth with the frequency and intensity found in [Los Angeles]” (Esposito 1970).

Slow Walking Progress

Denying the existence of smog delayed action on the hazard, and the auto industry further impeded solutions through an industry-wide “cross-licensing” agreement. The agreement, begun in 1955 and ostensibly aimed at pooling resources toward addressing smog, significantly delayed the deployment of any pollution-control device. It also resulted in antitrust charges brought by the US Department of Justice, which documented a conspiracy among the auto companies (Box 2).

Through their agreement, the manufacturers had eliminated competition among themselves by ensuring that no one company could benefit from the discovery and application of a pollution-control mechanism. Additionally, they stifled innovation by agreeing not to outsource the problem to third-party suppliers. Finally, even when they agreed on a specific mechanism to control pollution, they delayed making it available, seeking to stall regulatory action by California.

¹ See, for example, *United Press 1956 and Riverside County Air Pollution District 1958*.

Whenever a manufacturer stepped out ahead of the group, industry action was swift—and it was the American public that bore the cost. For example, in 1957 Ford touted the benefits of a new “vanadium pentoxide” device, essentially a precursor to the catalytic converter (Redlands Daily Facts 1957). After receiving feedback from both Chrysler and General Motors about a “breach of promise,” Ford tried to tamp down its press statement (Doyle 2000). The first catalytic converter would not make its way into production until the 1975 model year.²

Voluntary Action to Avoid State and Federal Requirements

The lack of smog mitigation in the 1950s and the resulting problem for California would prove pivotal. State regulators recognized that smog related specifically to automobile emissions and tried for years to target a specific level of emissions reductions based on public health needs. However, the apparent lack of available pollution-control technology challenged the ability of regulators to enforce a standard. And due to the industry pact, automakers could delay the deployment of technological solutions, whether developed in house or by suppliers.

This impasse frustrated state and federal officials and regulators, building support for stronger action. General Motors tried to appease regulators by offering a relatively cheap way to reduce engine emissions, known as a PCV valve.³ First developed in the 1940s, the valve did not address the larger share of emissions from the exhaust, but automakers hoped that the announcement would “slow down any regulatory action” (Doyle 2000). Incredibly, automakers delayed installation of even this simple technology by two model years.

California Finds a Solution in Suppliers

By the end of the 1950s, multiple suppliers to the industry had noticed the automakers’ sluggish pursuit of pollution controls. Experts at DuPont noted that the industry was “doing whatever it can . . . to postpone installation of exhaust control devices” while their counterparts at Maremont Automotive Products said the automakers were “not pushing as rapidly as they could toward a solution of the smog abatement problem” (Doyle 2000).

The California Motor Vehicle Pollution Control Act, enacted in 1959, helped alter this dynamic. It established a board to certify pollution-control devices and required the installation of such a device in all new vehicles once developed. This enabled entrepreneurial suppliers to bypass automakers entirely—prove that a device works, and California would require manufacturers to install it.

Automakers tried to bluff California into delaying requirements on exhaust controls by claiming that the earliest they could deploy their own emissions reductions strategies was the 1967 model year. Nevertheless, regulators approved four exhaust control technologies from independent manufacturers: either automakers would have to install their own devices a year earlier (1966) or install those made by a third-party supplier. According to *Pollution and Policy*, by James Krier and Edmund Ursin (1977), miraculously, every single major automaker deployed its own engine modifications by the deadline.

With major automakers deploying an in-house strategy centered on engine controls, the upstart independent suppliers developing catalytic converters shelved their own programs. This decision would prove to be significant, as the auto manufacturers’ engine strategies proved quite flawed.

{ “We gathered that the automobile industry will do whatever it can within the scope of California legislation and of political pressure to postpone installation of exhaust control devices.” }

— J.D. Ullman, DuPont, 1960 }

2 By 1959, Ford had established a working catalytic converter with a durability of 10,000 miles (VanDerveer and Chandler 1959). However, these early designs did not reduce carbon monoxide emissions, an additional pollutant, and Ford changed the direction of the program significantly to respond to this challenge (Schaldenbrand and Struck 1962; Chandler, Struck, and Voorhies 1966). General Motors produced the first catalytic converter deployed in a vehicle (Stoffer 2008).

3 Called crankcase emissions, these direct engine emissions are the small amount of unburned fuel and exhaust gases that can escape from around the combustion chamber and into the body of the engine, which encases the pistons, crankshaft, etc. The technology used to control this is the positive crankcase ventilation (PCV) valve, which essentially helps recycle the gases back into the intake port of the engine.

Fighting Clean Air

By the end of the 1960s, automakers felt that they had accomplished all that should be required of them, with Chrysler engineer Charles Heinen boldly declaring, “[T]he main battle against automotive air pollution has been won” (Heinen 1969). However, from a health perspective, the fight had barely started—and data on the ground were showing that even some of the automakers’ fixes worked poorly in the real world. Even worse, some remediation strategies increased nitrogen oxides, another smog-forming pollutant. With stricter state and federal regulation looming, automakers fought to avoid any additional requirements.

Uncapped Emissions

Many of the initial pollution control systems were deployed with the understanding that they would meet the pollution control standards as long as they were regularly maintained. However, initial indications were not just that many cars failed to meet the targets in the real world, but that recently serviced vehicles were actually more likely to fail (Brubacher and Raymond 1969). In one example, nearly 20 percent of the “caps” used by Ford to limit idle emissions were found missing, indicating that dealership mechanics were actually removing the devices.

While the standards resulted in significantly lower emissions in California over the life of a vehicle (60 percent compared to uncontrolled vehicles), by the end of the decade the improvement was not yet evident in air-quality monitoring (Brubacher and Raymond 1969). This was hardly the victory claimed by manufacturers.

Initial indications were not just that many cars failed to meet the targets in the real world, but that recently serviced vehicles were actually more likely to fail.

Even more importantly, other states were becoming interested in addressing their smog problems, setting up a battle around federal and state regulation that automakers would try to wage to their own advantage.

Using States’ Rights as an Argument Against Cleaner Air

The Clean Air Act of 1963 established federal authority for air quality similar to its authority for water. However, the federal role was largely advisory, with work to meet pollution targets left primarily to state and local governments.

California Governor Jerry Brown saw federal action as an important lever as he sought to address his state’s air pollution problem, particularly when it came to automobiles. He noted that “the automobile industry is in interstate commerce and



Mazda vehicles waiting to be shipped out in 1972, including a number of RX-3s which featured a rotary engine that met the 1975 standards of the Clean Air Act.

the Federal Government clearly has jurisdiction,” according to Krier and Ursin (1977). A US Senate subcommittee shared this sentiment:

[A]utomotive air pollution is a problem of national concern and scope . . . [so] the subcommittee is greatly concerned by the fact that automobiles designed and built to curb exhaust emission, when they are available, will, under the present situation, be shipped for sale only in California. (US Senate 1964)

The automakers disagreed, suggesting that each state should tailor regulations to its own needs (Krier and Ursin

1977). Of course, this position immediately changed when New York and Pennsylvania began proposing standards that, in some cases, would be even tougher than California’s. The industry had hoped to head off federal action with its disingenuous defense, not realizing that other states dealing with smog would call their bluff.

To preempt further state action, automakers supported the Motor Vehicle Air Pollution Control Act of 1965, which required emissions standards for new vehicles at a level consistent with what automakers had already achieved in vehicles sold in California. As Congress drafted the Air Quality Act of 1967, automakers further pressed for federal preemption of state standards. However, a Senate compromise allowed California to continue to set standards stricter than those enacted federally, a recognition of its leadership on the issue and its ability to act as a testing ground for stricter regulation (Krier and Ursin 1977).

Technology-Forcing Standards

The Clean Air Act of 1970 built upon the momentum of the 1960s, setting public health as a priority for Congress. Sen. Muskie put it succinctly:

Our responsibility is to establish what the public interest requires to protect the health of persons. This may mean that people and industries will be asked to do what seems to be impossible at the present time. But if health is to be protected, these challenges must be met. (Congressional Record 1970)

Automotive emissions were a key target in debates on this critical environmental legislation, and the auto industry

AUTOMOTIVE CHICKEN LITTLE

“This bill could prevent continued production of automobiles . . . [and] do irreparable harm to the American economy.” —Lee Iacocca, Ford Motor Company, referring to the Clean Air Act of 1970 (Iacocca 1970).

Since passage of the Clean Air Act, tailpipe emissions from the average automobile have fallen by more than 90 percent, vehicle sales have nearly doubled, and the US economy has grown.

4 The upstart American Motors Corporation (AMC), founded in 1954 from the merger of Nash Motors Company and the Hudson Motor Car Company, struggled to compete against the Big Three’s market dominance. It succumbed to liquidation in the 1980s, sold to Chrysler. Its popular Jeep brand continues to be a major source of profit for Chrysler.

This loophole positioned the industry to delay regulations, once again sabotaging progress at the expense of the American people.

hopped into action to quash the bill. American Motors declared that if the bill became law, the company would have to liquidate (Doyle 2000).⁴ Ford CEO Lee Iacocca declared that not only would cars no longer be produced, but that the bill would “do irreparable harm to the American economy” (Iacocca 1970). To sway public opinion, General Motors and others took out ads proclaiming all the great work they were doing voluntarily toward reducing pollution.

The clearest fight was one that Sen. Muskie had foreseen: every single automaker declared the impossibility of hitting the emissions targets by 1975 as the bill would require. And just as in the case of exhaust emissions, an upstart upbraided the Motor City’s “can’t do” culture and showed the impossible to be possible. Five months after the bill’s introduction had made Detroit furious, Honda announced an engine that could

meet the standards. In the ensuing months, not only would Honda show that it could meet the standards in the Honda Civic, but it also proved it feasible in a modified Chevy Vega and began licensing the technology to other automakers, including Ford. Mazda’s new rotary engine also proved capable of meeting the standard.

A Costly Amendment to the Clean Air Act

The auto industry had begun to falter on Capitol Hill thanks largely to a shortage of credibility and the perception that it was lobbying against the public interest when it came to both air pollution and safety (Fowlkes 1970). As such, it failed to secure an amendment to the Clean Air Act preempting California’s authority and relaxing some vehicle testing requirements.

However, automakers did get one critical provision added to the bill to amend the Clean Air Act. Before the Senate passed bill, automakers gained the right to petition the agency overseeing the Clean Air Act for relief if they made too little progress on emissions controls by 1973. This loophole positioned the industry to delay regulations, once again sabotaging progress at the expense of the American people. It would prove to be the battleground for the next fights over emissions.

Our responsibility is to establish what the public interest requires to protect the health of persons. This may mean that people and industries will be asked to do what seems to be impossible at the present time. But if health is to be protected, these challenges must be met.

— Senator Ed Muskie introducing the Clean Air Act of 1970

The False Choice: Less Pollution or Less Fuel

In 1970, automakers convinced Congress to amend the Clean Air Act to include a review of progress in reducing emissions. This review enabled automakers to delay regulations at the federal level just as they had in California. In this case, automakers claimed that the costs were too high and that the standards were not justifiable to protect public health. The tactic bought the industry a one-year delay in the standards.

Before even the delayed standards were to take effect, however, automakers found another weapon, and they would wield it to turn the tables against tailpipe regulations. By leveraging the country's desire for energy conservation in the wake of the 1973 Arab Oil Embargo, the auto industry was able to put off meeting the requirements of the Clean Air Act until the 1980s.

Lobbying for a One-Year Delay

Echoing earlier claims that the pollution problem had been solved, the Big Three automakers went on the offensive against the need for stricter exhaust standards. This was not a delaying tactic; rather, automakers sought to eliminate the need for any further standards. As part of a misinformation program, Chrysler took out newspaper ads calling the standards “wasteful, unnecessary, and unrealistic” (Box 3). Ford took to the road to wine and dine community leaders while declaring that “Congress went overboard.” And General Motors expressed confidence that the public would realize that automotive pollution “is not significant in many localities” (Doyle 2000).

Automakers claimed that the costs were too high and that the standards were not justifiable to protect public health.

Initially, EPA Administrator William Ruckelshaus held firm, finalizing strong standards for the 1975 model year and finding that control technology was available to meet the requirements. However, a legal challenge by the automakers led first to a reexamination of the decision and then to court-mandated hearings. The industry continued to plead its case as part of the review required under the amended Clean Air Act.

After the hearings, which the press covered heavily, the EPA decided to delay the 1975 standards, implementing instead much weaker federal standards while approving California's waiver to set standards more closely aligned with the 1970 Clean Air Act. Administrator Ruckelshaus justified this decision as avoiding “the potential societal disruptions” the automakers claimed would result from requiring pollution controls on all vehicles nationwide, while allowing California to serve as a test bed.

This was a clear win for the automakers, buying them time to invest in their entire fleets to meet the Clean Air Act standards. Yet automakers continued to press for delaying



The oil embargo led to a severe gas shortage and an interest in energy conservation and improved fuel economy.

the standards indefinitely, this time leveraging a development that occurred just a few months after Ruckelshaus delayed the emissions standards.

Oil Crisis Provides Opportunity

In October 1973, the Organization of Arab Petroleum Exporting Countries proclaimed an embargo on oil shipments to the United States and a number of other countries in response to their support of Israel in the ongoing Arab-Israeli conflict, and specifically in what was later termed the “Yom Kippur War” or “October War.” Gasoline prices spiked, shortages ensued, and “energy independence” entered the political lexicon.

As concerns about the amount of gasoline consumed by cars rose, automakers used the fuel crisis as a wedge against emissions controls. General Motors leveraged its popular Chevrolet brand with misleading ads claiming the country could save five billion gallons of gasoline if it pulled back on pollution control devices (Figure 2, p. 19). Yet there was little evidence of a tradeoff between fuel economy and pollution controls. Not only that, General Motors would later show some of the greatest improvements in fuel economy thanks to technologies designed to reduce tailpipe pollution.

The ads were so misleading that Ruckelshaus asked the Federal Trade Commission to investigate, yet Representative Louis Wyman (R-NH) introduced a bill to essentially legalize General Motors’ proposal to remove emissions controls

AUTOMOTIVE CHICKEN LITTLE

“[I]f GM is forced to introduce catalytic converter systems across the board on 1975 models . . . it is conceivable that complete stoppage of the entire production could occur, with the obvious tremendous loss to the company, shareholders, employees, suppliers, and communities.” —Ernie Starkman, General Motors, referring to tailpipe emissions standards of 1975 (US Court of Appeals 1973)

Statements like this helped automakers convince the EPA to delay the standards. Yet just two months after obtaining the delay, and with little fuss, GM announced it would install catalytic converters across the board in 1975 models (US House 1973). It went so far as to advertise the fuel-saving and pollution-reducing benefits of the technology (Doyle 2000).

devices except in areas where air pollution posed “a demonstrable and severe” hazard to public health. The bill failed, but its introduction showed the power of misinformation, prompting EPA Deputy Administrator John Quarles to remark:

In normal times, false information would fail the test of time because the truth has a way of getting out. But when there is a near-panic atmosphere to enact legislation to meet a crisis, one big blast of false advertising could send this country down the wrong path with statutory requirements that are very hard to change. (Doyle 2000)

Ford, as well as other automakers, continued peddling the notion of a “fuel penalty” on Capitol Hill to secure further delay emissions controls. They got their wish: the 1974 Energy Supply and Environmental Coordination Act delayed the 1975–1976 tailpipe standards until 1977–1978. Less than three months after the law was enacted, General Motors advertised that its catalytic converters “improve performance and . . . increase miles per gallon,” nullifying the very claim used to spark Congressional action in the wake of the oil crisis. In fact, General Motors improved its fleet’s fuel economy by about 28 percent between 1974 and 1975, thanks in large part to the catalytic converter it now touted as the “answer to the automotive air pollution problem” (Figure 3. p. 20).

BOX 3.

Chrysler’s Campaign Against the Clean Air Act

As part of a misinformation campaign against federal tailpipe emissions standards, Chrysler took out a full-page ad in the *New York Times* on March 13, 1973 (Figure 1, p. 17). The ad urged readers to contact Congress about weakening federal tailpipe pollution standards, but it was so chock full of misleading statements that the EPA responded directly, sending a fact sheet to members of Congress. Summarized here are a few of Chrysler’s inaccurate and disingenuous statements, along with information explaining how they misled the American people:

- “Natural processes emit quantities of air pollution much larger than those emitted by the automobile.”

The formation of smog is a complex reaction, with some components of smog emitted from trees and other natural sources. However, the problem of smog relates explicitly to the concentration of emissions from industrial and transportation sources, particularly in urban areas. It is false to assert that a tree pollutes more than a Chrysler.

- “California, with the oldest and most severe auto-related air pollution problems in the nation, does not support the Federal new car standards for 1975 and 1976.”

California set its standards for 1975 years before the federal government took action, but it did so before advances in pollution control technologies. In fact, even with the stricter federal tailpipe standards, California did not expect to meet its ambient air quality requirements under the Clean Air Act. When automakers delayed and weakened federal requirements, California passed stricter requirements for 1975 that would require the use of catalytic converters, signifying the state’s agreement with the need for stricter standards than were on the books when the ad ran.

- “It could be as much as \$1,300 extra to own and drive a car after 1975.”

The EPA provided its own estimate of the cost to comply with the standard: less than \$500, plus less than \$25 per year in added fuel costs. Even this would prove to be an overestimate: manufacturers achieved strict tailpipe pollution standards without any fuel economy penalty (EPA 1977). The upfront cost of achieving the 1975–1976 standards was \$200 to \$400 in 1975 dollars (Chen, Burke, and Sperling 2004).

- “There is no scientific evidence showing a threat to health from automotive emissions in the normal, average air you breathe. Not even in crowded cities.”

Since this ad appeared, a wealth of information has been collected about the adverse health impacts of both direct traffic-related emissions of pollutants like carbon monoxide and particulate matter and secondary pollutants like ozone, even from relatively low-dose, chronic exposure (EPA 2017; HEI 2010). However, even at the time of publication, Chrysler’s statement flew in the face of the scientific record, which showed that pollutants from auto emissions:

have detrimental effects on persons with respiratory illnesses, cause eye irritation and watering . . . can as well cause adverse respiratory effects . . . [and] have also been shown to have adverse effects on heart patients. The national air quality standards are designed to protect against these harmful effects. (US Court of Appeals 1973)

FIGURE 1. Chrysler Advertises Clean Air Act Misinformation

THE NEW YORK TIMES, TUESDAY, MARCH 13, 1973

Facts about the 1975-'76 Federal Emissions Standards

c 21

Time is running out.
The automobile industry is already freezing design, buying materials and committing production facilities for emissions control systems to meet federal standards set for your 1975 and 1976 car. We work that far ahead.

The automobile industry is concerned about air quality, just as you are. We have already done a large part of the job of cleaning up emissions from motor vehicles. And we are totally dedicated to taking the automobile out of the air pollution problem. But we believe the '75 and '76 federal standards are more stringent and more expensive than necessary.

The control systems for meeting them will cost you a whopping increase in the price of your car, starting in 1975. You'll be paying more for gas and maintenance too.

We don't think you are going to get your money's worth.
If you will take the time to read the rest of this page, you will see why we believe that. You will see why we believe that the 1975 and '76 federal emissions controls . . .

- Go beyond what is necessary to protect our health
- Will not result in significantly cleaner air
- Will waste both money and natural resources

• Could (according to the National Academy of Sciences) "constitute an episode of considerable national turmoil."
We also believe that there is a positive alternative in the proposed California standards . . . standards which are more than adequate to protect our health and our environment, but at a far more reasonable cost.

WHAT YOU PAY

It could be as much as \$1,300 extra to own and drive a car after 1975.

The federal emissions standards for motor vehicles set by the 1970 Clean Air Act call for reducing emissions of hydrocarbons, carbon monoxide and oxides of nitrogen to almost zero. Specifically, by 93% to 97% from uncontrolled levels.

It seemed like a good idea at the time. People were genuinely concerned about air pollution, and it was assumed that motor vehicles were a real threat to health. Congress reacted on that assumption. We can't fault them for that.

But we had come a long way before the Act was passed, and we have come a long way since, both in cleaning up the exhaust from your car and in learning more about the effect of motor vehicle emissions on air quality.

Four things you should know:

1. Science has learned a great deal more about the sources of hydrocarbons, carbon monoxide and oxides of nitrogen in the atmosphere. The fact is that nature, not man, is the major source of these gases. Nature produces six times the hydrocarbons, ten times the carbon monoxide and fifteen times the oxides of nitrogen man produces.
2. The part played by motor vehicles today in the air quality problem is smaller than most people realize. In terms of harmfulness, scientists say that cars account for only about 10 to 12 per cent of our potentially harmful man-made emissions.
3. No automotive company we know about has found a way to meet both the 1975 and 1976 standards. Even with our breakthrough electronic ignition system, and even with our reputation for "extra care in engineering," Chrysler Corporation engineers have not been able to do it, either.
4. The only system with any hope of meeting the standards will be very expensive. It could add as much as \$1,300 to the cost of buying and driving a car for just the first five years.

Why so expensive?
The reason is simple. To get from the control level we have now to the level demanded by the government, we'll need very costly catalytic converter systems on every car. And at this point, these systems are delicate and not fully proven.

There has been a wide range of estimates of the probable cost to you, the car buyer, for the catalytic converter and the hardware for controlling and protecting it. The lowest is about \$275.

That's just the beginning.
When you burn out a catalytic, you will have to pay to replace it.
Cars using catalytic may pay a fuel cost penalty of as much as 30%. That could cost the nation as much as \$10 billion a year. And that's about \$100 a year for every car and truck on the road.

It could cost you as much as \$100 more per year to fuel the car.

It all adds up to about \$1,300 for the first five years you drive your car. And that's not our guess. Here's how we arrived at the figure: According to a recent report of the committee appointed by Congress to advise on emissions control:

"Average annual costs of a dual-catalyst emissions-control system, including maintenance and fuel, with the increase in sticker price amortized over five years, is estimated to be \$260 per year, compared with a 1970 model year vehicle."
(Source: National Academy of Sciences.)

(\$300 times five years equals \$1,500.)

Obviously the car owner who keeps his car for less than five years will pay even more per year, since the cost of the original equipment will be amortized over less time.

There's more.
Here are a couple of other serious problems you should know about:

- Catalytic converters must utilize expensive and exotic metals like platinum and palladium. (The National Academy of Sciences says it would take up to 3 million ounces a year. That's equal to the entire world supply in 1970.) We don't have these metals in the United States.
- They would have to be imported from Russia and South Africa, making a major U.S. industry dependent on these countries for its operation.
- The petroleum industry would have to spend about \$5 billion for new refineries and distribution systems for the unleaded gas required by cars equipped with catalytic.
- Oil imports, because of catalytic-equipped cars, could total \$42 billion for the ten years from 1975 to 1985. (That amount would pay for nearly all the U.S. annual expenditure for health and medical care!)

WHAT YOU GET

Very little more than you already have.

Most of the job has been done
The automobile industry has not been asleep. We were working hard to reduce harmful emissions from cars some 20 years before the Clean Air Act. And we've made a lot of progress.

Your 1973 car emits 80% fewer hydrocarbons, 70% less carbon monoxide, 80% less oxides of nitrogen than a car without controls. *Result, the air in our cities is getting cleaner every year.*

Most of the job has been done
The automobile industry has not been asleep. We were working hard to reduce harmful emissions from cars some 20 years before the Clean Air Act. And we've made a lot of progress.

Your 1973 car emits 80% fewer hydrocarbons, 70% less carbon monoxide, 80% less oxides of nitrogen than a car without controls. *Result, the air in our cities is getting cleaner every year.*

instance, acceleration capability would be reduced. And in the words of the National Academy of Sciences, "There is also concern that poor performance of such cars will make them unsafe in certain circumstances, for example, if the vehicle stalls when accelerating into fast-moving traffic."

Why not the California standards?
We're all for emissions controls . . . but only to the extent that scientists agree is necessary to protect public health and improve air quality.

The State of California (which has the most serious automotive air quality problem) has proposed standards which are tougher than current federal standards, but more realistic than those called for by the Clean Air Act for 1975 and '76. California believes that they are adequate to protect the public health. And so do we. For all America.

And . . . given an additional year of development time . . . we believe we can meet those tough California standards without expensive catalytic! Without the big fuel-cost penalty. Without an adverse effect on our international balance of payments. And at a cost about 1/3 that of the federal standards.

That means that you, as a car-buyer, can have the cleaner air we all want . . . a healthy environment . . . and a more efficient, better performing car . . . and at a reasonable price.

If you agree, we urge that you write your Senators and your Congressmen. Tell them you want clean air . . . but that you expect a dollar's worth of benefits for the dollar you spend to get it. Let's have clean air . . . but let's not throw money away!

Some interesting comparisons:

- Heating your home for eight hours with an oil furnace would use up your car's 1975 daily quota of oxides of nitrogen.
- Driving one mile in your Freeway would produce as much carbon monoxide as the 1975-76 model called for your car to emit.
- The vegetation in your back yard can offset as many hydrocarbons as the 1975-76 law permits your car.

• A study of the effects of carbon monoxide on 30,000 people living in crowded cities shows that the level of CO in the blood of non-smokers is well below the level at which anyone has observed any effect.

CHRYSLER CORPORATION
Extra Care In Engineering . . . It Makes A Difference.

A Chrysler advertisement in the March 13, 1973, edition of the New York Times urged readers to contact Congress to weaken federal tailpipe standards.

SOURCE: CHRYSLER CORPORATION 1973.

Birth of a Fuel Economy Mandate

The oil crisis made American consumers much more fuel-conscious, leaving domestic automakers, whose vehicle portfolios focused on larger, less efficient options, scrambling to respond. Domestic car sales dropped by more than 20 percent (WardsAuto n.d.). Moreover, fuel economy had become not only an energy issue but also an economic one.

Manufacturers claimed they lacked the resources to save fuel and reduce air pollution simultaneously, but Congress was considering pressuring the automakers to do just that. In May 1975, faced with a proposal requiring manufacturers to produce a fuel-efficient fleet, Elliott Estes, then-president of GM, responded as the industry had before: “We can’t even begin to talk about mandatory fuel economy until we get some action on relaxing emission standards.”

Detroit automakers again placed ads in newspapers, this time urging a five-year delay of emissions standards, until 1982–1983, in order to achieve a 40 percent gain in fuel economy. However, a National Academy of Sciences panel

Automakers engaged in a game of chicken, daring Congress to shut down the industry for not complying with the standards on the books.

was addressing the subject. Its conclusion: “Gains in fuel economy can be made at the same time as emissions standards are met” (NAS 1975). A report by the EPA and the US Department of Transportation had reached the same conclusion the previous year (DOT and EPA 1974).

In the end, the Energy Policy and Conservation Act of 1975 required manufacturers to nearly double average fuel economy across their car fleets to 27.5 miles per gallon by 1985. Congress rejected all amendments to further delay



During the fuel crisis, Chevrolet pushed to remove pollution controls from vehicles like the Camaro as part of a campaign built on the false choice between lower emissions and lower fuel use.

David Falconer/US National Archives

FIGURE 2. Chevrolet Misleads the Public on Emissions and Fuel Economy

THE NEW YORK TIMES, MONDAY, DECEMBER 17, 1973

You are entitled to know!

By relaxing emission controls somewhat, we can start saving 5 billion gallons of gas right now. Right now!

The things we've put in cars in recent years to cut air pollution are great. Eventually they will lead to smog-free air. But in the present emergency, by relaxing these controls to 1969 standards, we could save 5 billion gallons of gas. The change in your car could be made in minutes and RIGHT NOW. RIGHT NOW we could start saving 5 billion gallons of gas a year. If you would like to bring this information to the attention of the law makers who represent you, please use the coupons below or write your own letter on the subject. But do it RIGHT NOW. Because it could mean a saving of 5 billion gallons of gas per year and possibly a 25% increase in your own gas mileage.

A public interest message from
your
Chevrolet Dealer
of Essex, Hudson, Middlesex, Morris, Monmouth, Somerset, Sussex, Union and Warren counties, N.J.

Your Senators. In NY: Jacob Javits, James Buckley. In NJ: Clifford Case, Harrison Williams, Jr.

<p>Senator _____ Senate Office Building Washington, D.C. 20510</p> <p>Relaxing car emission controls to the 1969 standards, for the current emergency, could start saving 5 billion gallons of gas RIGHT NOW. Canada has already legalized removal of gas-wasting emission equipment. I urge you to give this full consideration.</p> <p>Name _____ Address _____</p>	<p>Senator _____ Senate Office Building Washington, D.C. 20510</p> <p>Relaxing car emission controls to the 1969 standards, for the current emergency, could start saving 5 billion gallons of gas RIGHT NOW. Canada has already legalized removal of gas-wasting emission equipment. I urge you to give this full consideration.</p> <p>Name _____ Address _____</p>	<p>Congressman _____ House of Representatives Washington, D.C. 20515</p> <p>Relaxing car emission controls to the 1969 standards, for the current emergency, could start saving 5 billion gallons of gas RIGHT NOW. Canada has already legalized removal of gas-wasting emission equipment. I urge you to give this full consideration.</p> <p>Name _____ Address _____</p>	<p>President Richard Nixon White House Washington, D.C. 20050</p> <p>Relaxing car emission controls to the 1969 standards, for the current emergency, could start saving 5 billion gallons of gas RIGHT NOW. Canada has already legalized removal of gas-wasting emission equipment. I urge you to give this full consideration.</p> <p>Name _____ Address _____</p>
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This ad from Chevrolet dealers urged readers to contact Congress to weaken emissions standards under the misguided notion that this was necessary to save fuel.

SOURCE: CHEVROLET DEALERS 1973.

FIGURE 3. GM Claims an Emissions “Fuel Penalty” in Washington While Touting a Solution to the Public

General Motors believes it has an answer to the automotive air pollution problem...

...and the catalytic converter has enabled GM engineers to improve performance and to increase miles per gallon.

Starting with the 1975 models, General Motors will put catalytic converters on its cars. Our testing program, carried out at an accelerated pace over the last several years, shows that the converters work and that they reduce exhaust emissions to such a low level that as older cars not equipped with catalytic converters are gradually replaced, the automobile will cease to be a significant part of the air pollution problem in most areas of the country.



Catalytic Converter

Because the catalytic converter will be a part of the 1975 model GM car you buy, we would like to tell you here as much as we can in non-technical terminology about the catalytic converter and how it works.

What is a catalyst?

A catalyst is a substance, in this case a metal, that speeds up a chemical reaction but remains unchanged itself by the process. For example, some chemical reactions only happen quickly at very high temperatures. A catalyst can make them happen at lower temperatures.

Why do cars need catalytic converters?

Automotive exhaust is composed mainly of non-toxic or harmless gases, those that we find in “pure” air. The parts of the exhaust that are called pollutants occur in very small quantities. They are usually measured in “parts per million.”

The two pollutants that are changed by the catalytic converter are hydrocarbons and carbon monoxide. They are changed into harmless carbon dioxide and water vapor.

Automotive pollutants already are declining in the atmosphere because of the control systems we’ve been putting on cars for the past ten years. In most parts of the country, present controls are good enough to remove the automobile from the local air pollution problem. But some areas need more stringent auto emission controls—and that’s where the catalytic converter comes in.

Why is GM using platinum and similar metals in its converter?

There are two basic demands made upon a catalyst: it must be efficient and it must be durable. GM scientists have determined that small quantities of platinum and palladium coated on pellets of aluminum oxide meet these requirements.

Nearly a thousand other metals and combinations of metals were tested by GM scientists. Some needed very high temperatures in order to be efficient. Others were quickly rendered inoperable by the heat of the exhaust or some of the components of automotive exhaust. Platinum and palladium best met the specifications.

The next step then had to be to find a way to use these noble metals in the smallest possible quantities. GM scientists helped develop a bead

with a very rough surface. Because of the tiny hills and valleys on the surface of this bead (shown actual size), the real surface area of a material is then spread on the great surface of the bead as sparsely as possible.

To give you an idea of how sparsely the catalyst is deposited on the beads, there are thousands of beads in a converter (actually 150,000 beads per GM converter) and all of them can be treated with less than a tenth of a troy ounce of platinum and palladium.

How will the converter affect gas mileage?

In recent model years, we have had to compromise engine efficiency to “tune” the engine for low emissions. Since the catalytic converter treats the exhaust after it leaves the engine, we have been able to retune the engine for maximum efficiency and let the converter control emissions. Estimates based on preliminary tests indicate that 1975-model GM cars with catalytic converters will be more economical to operate than the current models.

Prototype 1975 cars tested on a simulated city/suburban driving schedule have averaged about 15% more miles per gallon over their 1974 data, are available, the results of the Environmental Protection Agency urban test generally confirm this improvement in gasoline economy.

How will the converter affect performance?

The engine retuning allowed by the converter will also result in a noticeable improvement in the performance qualities of GM cars. The responsiveness to driver demands of our 1975 cars will be excellent.

The converter itself has very little effect on performance. Engine and drive train refinements, designs that are more aerodynamically efficient, even tires will play a role in the continuing improvement of the performance qualities of GM cars. And GM designers and engineers are working on ways to make cars lighter in weight without sacrificing safety features or passenger comfort.

How long will a catalyst last?

If unleaded gasoline is used exclusively and normal engine maintenance is performed at recommended intervals, there is no reason why the catalytic converter should not last the life of the car. Lead in gasoline “poisons” the catalyst and therefore, our 1975-model cars have special fuel tank filler necks that allow only the smaller unleaded fuel pump nozzles to be used. However, in case of emergency, a motorist can use a few gallons of leaded fuel without significant or permanent effect on the converter, and of course, with no effect on engine operation.

In all over 25 million miles of development testing have been completed, both at the GM Proving Grounds and in field experience. Under normal circumstances, no maintenance or replacement of the catalytic converter is recommended.

Will unleaded gas be available everywhere?

Federal law required all large gasoline stations to offer unleaded gas by July 1, 1974. It has been estimated that 60% of all U.S. gas stations will offer unleaded gas by the time cars equipped with catalytic converters are on the road. As the public becomes aware that the use of unleaded gas lowers maintenance costs by



1975 Emission-Control System

greatly increasing the life of spark plugs, engine oil and exhaust system components, the demand for unleaded gas should cause it to become available at most other U.S. gas stations.

Will the converter remove 100% of all pollutants from automotive exhaust?

To scientists absolute or 100% effectiveness is strictly theoretical. For example, if you scaled down the earth to the size of a ball bearing, it would be an extremely smooth ball bearing. But one look at the Rocky Mountains or the Himalayas tells us that the earth is not extremely smooth.

The same kinds of questions occur in automotive engineering. There are laws of probability and physical limits to contend with. Machines can't ever be perfect. And the closer we come to perfection, the more expensive the process becomes.

The goal of anti-pollution systems is not perfection. It is to remove so much of the pollutants from automotive exhaust that the effect of the unremoved or unconverted pollutants on the atmosphere will be insignificant. We believe GM cars equipped with catalytic converters will achieve that goal.

What are hydrocarbons and carbon monoxide?

Hydrocarbons are the basis of all fossil fuel. An ideal engine would burn all of the hydrocarbons in gasoline. But there are no ideal engines. A very small part of the hydrocarbons in gasoline comes out of the engine unburned. The purpose of the catalytic converter is to oxidize (burn without combustion) these hydrocarbons.

Carbon monoxide is a byproduct of the combustion of all carbon-based materials. Cigarette smoke, for example, has a high carbon monoxide content. As with hydrocarbons, the catalytic converter oxidizes the carbon monoxide in engine exhaust.

What happens to carbon monoxide inside the converter?

Oxygen comes into the converter along with exhaust gases as a result of excess combustion air or from air supplied by an auxiliary air pump. The oxygen sticks to the surface of the catalyst. As the carbon monoxide molecules pass over the catalyst, they also stick to the catalyst's surface and join together with the oxygen to form carbon dioxide, the gas you exhale when you breathe.

What happens to hydrocarbons inside the converter?

Hydrocarbons are more complicated than

carbon monoxide. They are generally made of a chain of carbon atoms, each of which is attached to several hydrogen atoms. As the hydrocarbons on the surface of the catalyst and begin to change. The oxygen pulls the carbon chains apart, forming carbon dioxide from the carbon atoms and gas atoms.



Catalytic Converter

The process by which certain hydrocarbons change into carbon dioxide and water is so complex that physical chemists still do not completely understand the exact order of the process. They can, however, measure what goes into the converter and what comes out, so they know it happens.

Will the catalytic converter be the ultimate answer to the automotive air pollution problem?

Frankly, we don't think there are any ultimate answers to anything in science. Research at General Motors goes on, no matter how good somewhere down the road.

We're working with turbine engines, diesel engines, stratified charge engines, to name just a few of the projects now going on at the General Motors Technical Center.

There are mass-production problems with some kinds of engines. Vehicles powered by electricity stored in on-board batteries still require improvement. Other kinds of engines are low in one pollutant and high in another.

For the immediate future we believe the catalytic converter is the best answer to the problem of changing the very small amounts of hydrocarbon and carbon monoxide pollutants in automotive exhaust into harmless gases.

It is the practical answer. But the engineers and scientists at General Motors are looking for better answers all the time, that's their job.

GM cares about cars.
GM cares about people, too.

General Motors

Chevrolet, Pontiac, Oldsmobile, Buick, Cadillac, GMC Truck

While General Motors had argued that there was a “fuel penalty” from emissions controls, this September 12, 1974, advertisement in the Washington Star touted the catalytic converter as the “answer to the automotive air pollution problem” precisely because it both saved fuel and reduced emissions.

SOURCE: GM 1974.

tailpipe emissions standards. The tailpipe pollution requirements of the Clean Air Act would survive for the time being, but another fight was brewing.

Above the Law

1977 was the year automakers would have to meet Clean Air Act standards enacted in 1970. Faced with this deadline, they had two options: provide cleaner vehicles or fight for an extension. Unfortunately for the American public, they chose the latter.

In fact, automakers engaged in a game of chicken, daring Congress to shut down the industry for not complying with the standards on the books. Sen. Muskie declared:

It is clear to me from every evidence of the reaction of the automobile industry to this bill, that they are doing their best to kill it. . . . And I understand the attitude they take is: 'Well, Congress would not dare hold us accountable for failing to meet the law. They wouldn't dare. We are too important, economically; there are too many jobs involved. We are above the law, and unless we can have the law written the way we want it Congress is not going to get a law, and we will break the present law and dare Congress to do anything about it. (Congressional Record 1976)

Sen. Muskie was right. Automakers made 1978 cars to 1977 standards, yet Congress never held the industry accountable, instead amending the Clean Air Act to legalize the industry's inaction retroactively.

Stronger Standards Show Industry Can Comply

While the fight over emissions standards raged at the federal level, California's more stringent tailpipe standards went into effect. And manufacturers met them. This prompted the chair of California's Air Resources Board, Tom Quinn, to get involved at the federal level, emphasizing that when manufacturers sold compliant vehicles in California, it proved they could achieve simultaneous reductions in fuel use and tailpipe pollution.

Noting a "lack of maximum effort by manufacturers," Quinn urged the federal government to adopt California's standards, providing the catalyst needed to push the industry:

Our experience in California shows that industry generally overstates its difficulties in meeting new standards and then makes a maximum effort to comply once the requirements are set. In 1973 when California adopted stringent



Lynnda Scott Eiler/National Archives

This young woman's car passed 1975 emissions standards. However, such in-use emissions inspections revealed that manufacturers too often ignored standards by deploying faulty emissions control systems.

When manufacturers sold compliant vehicles in California, it proved they could achieve simultaneous reductions in fuel use and tailpipe pollution.

1975 standards, the industry warned of catastrophic fuel penalties and other problems. But when those 1975 cars came along, the first automobiles equipped with catalysts, we saw the greatest improvement in fuels and drivability ever achieved. (Quinn 1977)

Sen. Muskie had long pointed out the industry's inconsistencies. For example, he noted that Chrysler, when fighting against the emissions requirements for 1975, had said there would be a fuel economy penalty, but instead fuel economy improved 12 percent. The 1977 requirements reduced emissions of nitrous oxides, which Chrysler again claimed would produce a fuel economy penalty. Instead, they saw no change. GM, too, claimed the standard would lead to a reduction in fuel economy; instead, fuel economy increased 9 percent (US Senate 1978).

In addition to their erroneous claims of a fuel penalty, automakers obstructed the development of emissions technologies by omitting critical data on research and

development plans that would have shown greater advancement in engine technology. Noted an investigative report by the House Commerce Committee: “The only data forwarded to EPA is that which the automobile manufacturers determine will best serve their own purposes” (US House 1977).

Everyone Loses

Automakers had proven not just unreliable as sources of information but also insatiable when it came to rolling back

regulations. Said Muskie, “Every time we give way to the industry they move for more relaxation” (*CQ Almanac* 1977). In this particular fight, the automakers did not get their way: Congress quashed a weaker bill and enacted Sen. Muskie’s 1977 amendments to the 1970 Clean Air Act, setting a path toward compliance with the level of standards included in the original act.

The bill was not weakened to the extent the automakers desired, yet even Muskie’s amendments would not require them to meet the Clean Air Act standards until well after Congress had intended in 1970: 1981 instead of 1975.

BOX 4.

Excess Emissions

After the passage of the 1970 Clean Air Act, automakers lobbied heavily against tailpipe emissions standards. At the same time, they often simply ignored the standards, resulting in a number of scandals for pollution emissions beyond legal levels, including via “defeat devices”—hardware or software that disables a vehicle’s emissions controls under real-world driving conditions. In fact, the EPA calculated that between 1972 and 1978, automakers recalled nearly one in five vehicles for problems with emissions control systems (Love 1978).

Here are a few of the more notable cases:

- 1972: **Ford** cooked the books when submitting certification data to the EPA, omitting a number of illegal adjustments to the engine. Ford had to recertify all of its engines and received the maximum penalty of \$7 million (Salpukas 1973).
- 1973: **American Motors, Chrysler, Ford, General Motors, Nissan, and Toyota** used two types of “defeat device” in their automobiles. One such device would disable emissions controls during cold weather; another limited the use of pollution controls at low speeds. A stop-sale order affected an estimated 2 million vehicles (UPI 1972). A similar issue with a temperature sensor led to the recall of **Volkswagen** vehicles the following year (*Washington Post* 1974).
- 1975: Engines in the 1970s had a number of adjustment screws that could significantly affect the fueling rate and fuel combustion, a problem that roiled regulators. Even if a vehicle left the factory in compliance, one trip to the mechanic or even a simple do-it-yourself adjustment to the engine’s timing could result in tons of excess pollution. Perhaps the most famous case involved **Chrysler**. Its emissions control system was so complex that local mechanics were unlikely to have equipment to calibrate it properly. Even a well-intentioned driver could not ensure that the emissions controls were operating as intended. Nor could Chrysler mechanics maintain the vehicles properly. The result was a recall of nearly a quarter of Chrysler’s 1975 production and a lengthy court battle that the EPA eventually won with a finding that held manufacturers responsible for ensuring the operation of the emissions control devices under normal maintenance (US Court of Appeals 1980).
- 1977: Evidence came forward that **General Motors** was handpicking the vehicles for the EPA to test for emissions, leading to results overstating the level of emissions control. For this reason, the EPA began instituting “spot checks,” measuring vehicles on the assembly line. GM sued the EPA, claiming the practice forced the company to meet a higher standard than Congress had required (AP 1978). The case was settled with no fault assessed, but the practice of spot-checking and random selection remained in effect. The incident also led the EPA to promulgate a rule clarifying manufacturers’ responsibility to remedy all vehicles found in violation during their useful lives. Again GM responded with a legal challenge, but this time the courts ruled in EPA’s favor (US Court of Appeals 1984).

These cases represent some early fights in the auto industry’s battle against regulation. In general, the outcomes favored regulators and held manufacturers accountable for the average vehicle produced to achieve emissions standards over its useful life under proper maintenance.

The Automaker War on Safer Cars

While automakers fought restrictions on the amount of pollution their vehicles could spew into the air, they also engaged on a second front: fighting safety requirements on passenger vehicles. In this, they employed many of the same tactics used against clean air restrictions: questioning the science, stalling the development of key technologies, and predicting economic devastation.

Early Studies in Safety

Safety restraints had been around since the dawn of the 20th century, used on the earliest automobiles to keep passengers from falling out of often door-less vehicles traveling on rough roads. However, it was in the 1920s that seat belts began literally to take off—in this case, in civilian aircraft.

Aircraft seat belts represented a shift in thinking on safety, from a focus on preventing accidents to preventing injury should a crash occur. Seat belts became standard on airplanes. A 1953 Cornell University Medical College report on airplane crashes found definitively that “the safety belt provides

protection of the body in crashes,” and that the installation of safety belts combined with the improved design of energy-absorbing structures surrounding the cabin could reduce both spinal and internal abdominal injury (DeHaven, Tourin, and Macri 1953). This combined safety recommendation became known as the “packaging principle,” highlighting the dual importance of the vehicle’s structure and passenger restraints.

Work on airplane safety resulted in many studies of the potential for seat belts to reduce injury in automobiles. One such study, led by Hugh DeHaven, an author of the Cornell airline safety study, challenged the conventional wisdom that passengers were more likely to survive a crash if they were thrown clear of the car. On the contrary, ejection from the vehicle more than doubled the risk of significant injury (Ronan 1979).

By the mid-1950s, doctors around the country had begun pushing the auto industry to offer seat belts, recognizing the benefits to public health and safety. In 1954, the American Medical Association “recommend[ed] to the Motor Car Manufacturers of America that they consider equipping all

“The motorcar manufacturers make no provision whatsoever for the control of occupants when they must decelerate rapidly. . . . Anywhere from 70 to 80 percent of these deaths and injuries need never have occurred if the most rudimentary provisions had been made for the control of decelerations, that is, the safety belt as used in airplanes.”

— Dr. Horace Campbell, 1954 symposium on trauma at the American College of Surgeons

automobiles with safety belts and furthermore that they give increasing emphasis to safety in design of all automobiles,” according to *Styling Versus Safety* by Joel Eastman (1984). A few months later, Dr. Horace Campbell, at an American College of Surgeons symposium on trauma, asserted that automobile accidents over the past 20 years had killed more than 38,000 people and injured 1.5 million. As quoted in *Styling Versus Safety*, Campbell told the symposium that:

the motorcar manufacturers make no provision whatsoever for the control of occupants when they must decelerate rapidly. . . . Anywhere from 70 to 80 percent of these deaths and injuries need never have occurred if the most rudimentary provisions had been made for the control of decelerations, that is, the safety belt as used in airplanes. (Eastman 1984)

Automakers Challenge the Science

In the mid-1950s, Ford began conducting its own crash studies, convinced that the Cornell data represented a potential breakthrough in safety. Their results were consistent with the Cornell findings. However, the rest of the industry sought to undermine those findings, led by the nation’s largest producer of vehicles, General Motors, and the industry’s trade organization, the Automobile Manufacturers Association. As reported in *Bluebook Magazine*, Howard Gandelot, GM’s leading safety engineer, suggested that the Cornell report only showed that people were hurt exiting a crash and emphasized that the jury was out on the effectiveness of seat belts. “General Motors hasn’t said they’re no good. We’re just waiting to find out if they are any good. Nobody knows” (Mehling 1955).

Gandelot even pushed back on the Cornell analysis, claiming that one particular motorist in the study would have been better off had he not worn his seat belt:

A fellow . . . ordered seat belts in a new convertible. Wouldn’t drive out of the agency without them. Some time later he turned the car over, and was pinned under it and

GM’s leading safety engineer claimed that one particular motorist in the study would have been better off had he not worn his seat belt.



Senator George Romney, former CEO of American Motors, was one of many in the industry to declare that the public did not want seat belts.

crushed. He would have been thrown clear, probably, without the seat belt—and landed on soft ground. (Mehling 1955)

As reported by Mehling, the Automobile Manufacturers Association pushed back even harder, claiming that seat belts could actually be *more* dangerous:

Until it is factually known whether seat belts, during major collisions, provide increased protection for the wearer or cause increased bodily injury, it would be unethical for the engineers on the vehicle safety committee to recommend their use; further, it would not be legally justifiable for auto manufacturers to equip their cars with seat belts or offer them as optional equipment. (Mehling 1955)

By this time, studies clearly indicated that seat belts, when worn in cars, substantially reduced dangerous and fatal injuries (Garrett 1962). Edward Dye of Cornell noted that “injury by a seat belt is so rare as to be practically non-existent” (Ronan 1979).

Some in the industry were beginning to turn against the stance of General Motors and the trade group. Both Ford and Chrysler began selling seat belts as optional equipment in the mid-1950s, seeing an opportunity to differentiate themselves from competitors.

Safety Sells

Industry thinking at the time was that people did not care about safety. George Romney of American Motors remarked on the industry’s experience with seat belts in the 1940s:

“The public did not want them, and the dealers found that the customers wanted them taken out, and they did not want them in the vehicle” (US House 1956). Lee Iacocca, first CEO of Ford and later CEO of Chrysler, put the industry position even more succinctly: “Safety doesn’t sell” (Judge 1990).

Automakers built their marketing strategies in the 1950s on making driving feel enjoyable. A “horsepower war” to boost the excitement of vehicles led to a 50 percent increase in power output in just five years (Ronan 1979). Dan Cordtz (1966) described the mentality in this way: “General Motors had a strong feeling that if you said or did anything that made it look like driving cars was anything but fun—the most fun of anything in the world—you were hurting business.”

Robert McNamara of Ford decided to buck the industry logic and made safety a key part of the 1956 Ford model campaign; about one-third of the ad budget promoted safety. With ads emphasizing “Ford Lifeguard Design,” the company promoted a package of safety door latches, a rearview mirror that would detach upon impact, and optional seat belts and padded dashboard, all of which were designed to make passengers safer in a crash.

The campaign met with mixed success. Ford sales exceeded expectations, but the company did not gain on General Motors’ market share. Still, it was clear that safety was a hot sales point. No other option in Ford’s history had sold as well in its first year as the crash padding and seat belts, and 14 percent of 1956 customers indicated that safety was the biggest reason they selected a vehicle from Ford. Seat belts proved so successful that Ford could not meet dealers’ demand for them, prompting General Motors to offer seat belts as options soon after Ford’s ad blitz (Ronan 1979).

AUTOMOTIVE CHICKEN LITTLE

“Many of the temporary standards are unreasonable, arbitrary, and technically unfeasible. . . . [If] we can’t meet them when they are published we’ll have to close down.” —Henry Ford II, Ford Motor Company, responding to the first motor vehicle safety standards (AP 1966)

The first action by the National Highway Traffic Safety Administration, formed in 1966 within the Department of Transportation, called for such “unreasonable” requirements as safety glass and seat belts, features that are commonplace today and have saved countless lives. Ford met these “technically unfeasible” standards and remains in business.

In 1963, just 9 percent of US-made cars had seat belts; that number grew to about 30 percent by 1966, still well short of what the medical community and safety advocates sought.

Safety Remains Optional

Despite evidence of the benefits of seat belts, and even slight progress on making them available to car buyers, the industry completely and totally opposed any requirement to install this safety feature. So engrained was the opposition that some automakers even fought against establishing quality standards for seat belts. The Automobile Manufacturers Association declared that “it would be premature and not a productive expenditure of time and effort for the [American Standards Association] to call a general conference on this subject in the immediate future” (Mehling 1955). The Society of Automotive Engineers did recommend specifications based on the seat belts used in airplanes, but in 1966 *Consumer Reports* noted that many of the aftermarket seat belts available to consumers failed to meet minimum performance standards in automobiles (Ronan 1979).

In 1963, just 9 percent of US-made cars had seat belts; that number grew to about 30 percent by 1966, still well short of what the medical community and safety advocates sought (Waters, Macnabb, and Brown 1998). Even with seat belts installed, consumers failed to use the restraints from about half to three-quarters of the time, depending on the length of the trip.

One reason for this consumer reticence was that US automakers initially adopted an inferior product. In 1959, Volvo invented the three-point harness now in use, and in 1962 it released the patent freely so that other manufacturers could deploy an invention that saved lives (Volvo 2009). Contrary to their European counterparts, American automakers stuck to a two-belt system, with separate lap belts and shoulder belts. Moreover, the shoulder harness was not self-adjusting, which restricted movement even for something as simple as reaching into the glove box. And when the two-belt system was installed across a three-person bench seat, it

looked, as one manufacturer told *New York Times* reporter Jerry Flint, like “spaghetti;” another described it as “the entrance to Tarzan’s cave” (Figure 4) (Flint 1967).

It is no surprise that many consumers resisted a poorly designed product, but it seems as though the poor design was intentional. Not only were manufacturers coming to the table

FIGURE 4. US Automakers Refuse to Upgrade Seat Belts



Volvo Car Corporation



69pace.com

Though in 1962, Volvo released the patent for its three-point harness seat belt system (top), American automakers like Chevrolet continued to use inferior two-belt systems, shown here across a Camaro bench seat (bottom).

on safety only reluctantly, but they also made sure the press knew that was the case. One auto manufacturer told the *New York Times*, “With the seat belt on and the shoulder harness across your chest, you really can’t move. It’s not comfortable” (Flint 1967). A Chrysler executive complained, “We can’t think of a better way of doing it,” despite the fact that Volvo, SAAB, and others had exported vehicles with a three-point belt to the United States for years (Flint 1968).

Claiming Federal Mandates Would Be Costly

Throughout the early 1960s, Congress looked at what it could do to improve highway safety. Without fail, automakers steered away from any mandated requirements. They tried the same stall tactic they had used against tailpipe standards, claiming that they were working on the problem and the market would figure it out. They further painted a picture in which mandated safety features would drive down sales because “safety doesn’t sell” and safety features were expensive. (How that squared with the market’s supposed ability to address the tens of thousands of highway deaths was unclear.)

At the same time automakers were claiming the market would figure it all out, a lawyer by the name of Ralph Nader was busy writing a book on automobile safety. *Unsafe At Any Speed* documented numerous flaws in the design of automobiles, including the suspension-related problems that caused the Chevy Corvair to be prone to crashes and for which the book is probably best known. Perhaps more importantly, the book re-emphasized “the second collision” that had come to light in the early studies of seat belts and pertains to the injuries sustained by passengers during collision with the interior of the car. Nader also happened to be advising the US Senate on issues of automobile safety (Eastman 1984).

By 1965, the US Senate had begun moving toward legislation that would create minimum safety standards for automobiles. To test the industry’s commitment to safety, the subcommittee responsible for examining potential traffic safety legislation questioned General Motors as to how much of its budget it spent on safety. GM board chair Frederic Donner responded that it spent \$1.25 million on automobile accident research—compared with a \$1.7 billion profit in 1964 (US Senate 1965). Moreover, it came to light that automakers had recalled 8 million vehicles due to more than 400 different reliability issues, putting into question General Motors’ claims about the safety of its vehicles.

Feeling the tide turning against them, automakers also employed another tried-and-true tactic: inflate the costs of compliance with regulation. For example, automakers asserted that mandatory seat belts cost consumers between \$23 and

\$34, but Senators Warren Magnuson and Walter Mondale found evidence that the real cost was \$3 to \$4 (UPI 1968).

President Lyndon Johnson called for an end to the industry's "picayunish" opposition to safety legislation: "We can no longer tolerate unsafe automobiles," he declared (Fowlkes 1970). Reading the handwriting on the wall, the Automobile Manufacturers Association dropped most of its opposition to safety requirements, and Congress enacted the National Traffic and Motor Vehicle Safety Act by the end of 1966. However, the industry secured three key concessions: the final bill dropped criminal penalties; standards would be performance-based rather than design-based;⁵ and cost would be considered as a factor in determining requirements for automakers (Fowlkes 1970).

The Passive Restraint Controversy

The new law authorized the creation of the National Highway Traffic Safety Administration (NHTSA), charged with setting automobile safety standards. While automakers met each new performance-based standard with hemming and hawing, one of the most crucial fights under the law would begin about a decade later.

The first patent for automobile airbags was filed in the 1950s, but the technology only got off the ground with the development of an affordable crash sensor in the 1960s. By 1969, when it was clear that seat belt regulations did not do enough to reduce traffic fatalities, the NHTSA introduced a requirement, to begin in 1972, for passive restraints that would protect individuals without any action on their part. Initially thought to be a mandate that every car come equipped with airbags, the agency eventually ruled that other technology would suffice, including automatic seat belts.

Automakers responded with concern over their ability to meet the 1972 deadline imposed by the passive-restraint standard. Yet Ford had been testing and developing airbags with Eaton, one of its suppliers, for quite some time and was bullish on its ability to get a functioning device ready for at least one model by 1971 (Flint 1969). General Motors, on the other hand, was graphic in its complaints, blowing back a child-sized dummy with lethal force to emphasize the explosive nature of the devices and illustrate concerns for the safety of all occupants in the vehicle. It was this type of presentation that likely resulted in a one-year delay.

By 1969, it was clear that seat belt regulations did not do enough to reduce traffic fatalities, leading to a requirement for restraints that would protect riders without any action on their part.

When the NHTSA issued the rule, it required passive restraints in 1973 rather than 1972.

Automakers pushed for further delay, admitting they had made progress but insisting that a bevy of concerns remained (Albaum 2005). For General Motors, testing and statistical analysis became a major sticking point. At a 1970 conference, GM executive Edward Cole noted:

General Motors believes that our industry and other competent research and development organizations should aggressively pursue answers to unresolved problems of air cushion restraints as a number one safety priority. . . . As far as General Motors is concerned we cannot say when our air cushion restraint system will be ready for volume production. We will do it as soon as possible, consistent with time requirements for thorough testing, necessary tooling and pilot production procedures to insure a high degree of manufacturing quality in volume production and reliability in the field. (Albaum 2005)

General Motors proposed a very specific schedule to the agency: airbags would make it into the fleet beginning in 1972, but the company would need till 1975 to phase them in fully. All major automakers, foreign and domestic, gave a similar timeline: airbags were possible but not by 1973 (Albaum 2005).

Meanwhile, Ford had gotten cold feet on airbag development. Its automotive safety director, J.C. Eckhold, maintained that "an appropriate belt restraint system that is used can be as effective and may be more effective than an airbag"

⁵ A performance-based standard bases a regulation on a specific metric. A product that meets the metric is deemed compliant. For example, tailpipe emissions standards require that measured emissions in grams per mile meet a specific threshold over a test cycle, but no requirement says precisely what technology approach a manufacturer must deploy to achieve this. A design-based standard specifies precisely what a manufacturer must do, with no flexibility. A requirement to have side-view mirrors on a car is a design standard. Other methods could be used to ensure a driver can see around the vehicle (for example, cameras), but federal law specifies the use of side-view mirrors that meet certain specifications in order to accomplish this goal.

(Eckhold 1970). To ensure that the belt was engaged, Ford developed an ignition interlock system: front-seat passengers would need to engage their seat belts before the vehicle would start.

The NHTSA essentially stuck to its initial proposal, although it delayed the start of the rule until the 1974 model year. General Motors, the lead opponent of seat belt regulation, represented the lone voice of moderate support for the standards when it came to airbags, although the company still called for changes to the schedule and test procedure. The rest of the auto industry launched a full-out assault on the regulation. Chrysler filed suit against the NHTSA, claiming that no evidence in the rulemaking process showed that passive restraints would save lives or that they could be available on the schedule required. Ford and American Motors also objected to the regulation and petitioned for a judicial review.

Ford did not wait for the legal challenge to wrap up before making its next move. Henry Ford II and Lee Iacocca went straight to President Nixon. Ford had already complained about the high costs of frontal airbags in its response to the regulation, and Iacocca, then-president of Ford, doubled down on that strategy with the President. He claimed that the industry was in peril, emphasizing that it already was struggling with both inflation and fuel-efficient Japanese imports, not to mention the costs of complying with current standards.

President Nixon pressured the NHTSA to issue a revised rule, delaying the regulation until 1976 provided that manufacturers installed ignition interlocks beginning in 1974, as

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“You’re going to break us. . . . We cannot carry the load of inflation in wages and safety in a four-year period without breaking our back.”

—Lee Iacocca, Ford Motor Company, to President Richard Nixon. (Nixon et al. 1971)

In his autobiography, Lee Iacocca boasted about his fight against airbags. His meeting with President Nixon was a key reason why the federal government delayed requirements for passive restraints, first until 1976 and eventually until 1988. By then, Iacocca, now CEO of Chrysler, supposedly had changed his tune on the technology. More likely, he saw that regulations were imminent and that the public would pay for safety, contrary to his oft-repeated assertion that “safety doesn’t sell.”

Automakers now leveraged the increase in seat belt use as a reason why airbags were not necessary.

Ford had proposed in the rulemaking process. This option ended up causing the industry quite a headache: immediately after the new rule went into effect, automakers raised all sorts of complaints about such an interlock. And in 1974, the requirement led to an immediate consumer backlash. In achieving the delay of airbag requirements, the industry had created a whole new problem for itself.

A Deal to Delay

The interlock standard was short-lived, but it had the desired effect: seat belt use rose, although nowhere near the levels necessary for seat belts to be as effective as airbags at saving lives. Automakers now leveraged that increase in seat belt use as a reason why airbags were not necessary, even becoming major proponents of state-based efforts to mandate seat belt use.

Meanwhile, manufacturers came up with more excuses for why they had not deployed airbags as widely as they had projected. General Motors continued to cite problems with procedures in its simulated crash testing, now noting that passing on the \$200 cost of airbags to consumers would mean a decrease in sales of more than 5 percent and the loss of more than 100,000 jobs.

The automakers had created a novel situation: they all agreed that only airbags would meet the standards, but not a single domestic manufacturer had any plans to produce to them. In 1975, the NHTSA would grant yet another delay, but it would now require manufacturers to produce a small fleet of vehicles with airbags by 1980 as a field test of their effectiveness. However, there was a catch: the manufacturers could void the production requirements if the NHTSA engaged in further rulemaking on passive restraints.

Frustrated by another delay in occupant safety, Donald Schaffer, general counsel to Allstate Insurance, noted:

We are convinced that the installation of airbags is not being delayed because the technology is not ready or because the cost outweighs the benefits. Rather their installation is resisted for politico-economic and philosophic reasons unrelated to the technical merits or their ability to save lives and prevent injuries. (Schaffer 1972)

The insurance industry was already encouraging consumers to adopt airbags by offering discounted policies to drivers of vehicles equipped with the technology.

“The Regulatory Equivalent of War”

In 1977, just months after the agreement between the NHTSA and the automakers, NHTSA Administrator Joan Claybrook proposed a new rule, throwing in doubt any sort of field test for airbags. In its stead, the NHTSA made a fresh commitment to set a binding passive-restraint rule that would protect the public. Edward Cole, retired president of General Motors, embraced the challenge to the industry in a letter to the president of the Insurance Institute for Highway Safety, Dr. William Haddon:

I think the only way passive restraints are going to get to first base is making them mandatory. Another test will prove nothing. Let the passive air cushion evolve like all other systems. . . . Mandating the basic performance requirement and not telling the industry how it should be done will get the job done. (Haddon 1977)

Suppliers generally agreed that they could produce reliable airbags and do so within three years (Haddon 1977). Automotive manufacturers attacked the airbag requirement in a new way, by showing the benefits of automatic seat belts that needed no action on the part of the driver or passenger. These qualified as passive restraints under the NHTSA’s regulations: the issue with seat belts was not that they were ineffective but rather that neither drivers nor passengers used them, so automatic seat belts could reduce traffic fatalities significantly.

There was one catch. Users could still disable the automatic seat belts. As reported by Martin Albaum (2005), Administrator Claybrook recognized and tried to rectify the problem, but she could not accomplish a fix before the Reagan administration took over and eliminated the passive-restraint regulation. Because that standard could be met by a technology that would add cost to a vehicle but impart no

real-world benefit to the public (since they could—and many would—just disable it), it could no longer be justified and was rescinded (*Federal Register* 1981a).

Claybrook attacked the rescission immediately:

Essentially what they have done is delegate to the auto companies the ability to decide the issue, not the government, by saying that the auto companies offer the worst possible system and the public does not like it; then, there is no payoff on the standard. (Claybrook 1981)

Eventually, the insurance industry attacked the move to rescind the rule as arbitrary and capricious. They took the fight all the way to the Supreme Court. *Motor Vehicle Manufacturers Association v. State Farm Mutual* forced the Reagan administration to either reinstate the original 1977 rule or institute a new one that would be substantially the same. In fact, the court found that “for nearly a decade, the automobile industry waged the regulatory equivalent of war against the airbag and lost—the inflatable restraint was proved sufficiently effective” (US Supreme Court 1983).

Throughout the court fight, progress on airbags continued, thanks largely to competitive pressure from Mercedes-Benz, at that time the only manufacturer that made airbags available in its vehicles. Willi Reidelbach of Mercedes-Benz stated in public testimony:

Our decision [to provide optional airbags], is supported by market surveys of luxury car owners which show, among the other things, that safety is prominent among reported purchase considerations, and that 53 percent of Mercedes-Benz drivers sometimes, or almost always, use their seat belts. (Albaum 2005)

The rule eventually would give automakers until 1989 to fully phase front passenger airbags into their fleets (Stuart 1987).⁶ By that time, manufacturers found that Mercedes was right—safety was a selling point. Even Iacocca had changed his tune, but with more than a decade delay in the requirement, it is tough to know the cost to the public.

{ *“For nearly a decade, the automobile industry waged the regulatory equivalent of war against the airbag and lost—the inflatable restraint was proved sufficiently effective.”*

— United States Supreme Court, *Motor Vehicle Manufacturers Association v. State Farm Mutual*, 1983 }

⁶ A later extension gave automakers until 1993 to deploy passenger-side front airbags, provided they installed driver-side airbags by the original deadline (Stuart 1987).

Retreating on Fuel Economy

Safety was not the only point of dispute between regulators and automakers during the Reagan administration. With gas prices back to historic lows, the industry urged President Reagan to eliminate its obligation to provide options for more efficient vehicles. Even the growing awareness of the impact of fossil fuel use on the climate did not change the minds of automakers. For almost two decades, their victories on a number of battles would even cause fuel economy to deteriorate.

Early Fuel Economy Standards

The oil crisis of 1973 had stimulated public demand for efficient vehicles and helped change the face of the auto industry. Eventually, the administration and the American people would win out over industry objections to required improvements in energy efficiency, but it is worth noting some of the rhetoric that automakers used in this battle.

Long-time sellers of large vehicles, US manufacturers were slow to adapt to the influx of smaller, more efficient cars from their international competitors. Knowing that they profited more from bigger cars, they tried to leverage their historic fleets, dominated by large vehicles, as an economic reason why the mandates would bankrupt the industry. Said Henry Ford II, “mini cars” lead to “mini profits” (Ingrassia 2010). American manufacturers were not interested in making smaller cars.

Chrysler vice president Alan Loofburrow imagined a bleak world resulting from fuel economy standards, which would “outlaw a number of engine lines and car models including most full-size sedans and station wagons” (Byrne

2003). Pete Estes, president of General Motors, presented this dystopia through an economic lens: with only a few “big” cars on the market, people would start competing to buy them, prices would skyrocket, and a black market would develop:

The big loser in all this would be the low-income family which is more likely to need a larger car to meet its transportation needs. Even bigger losers, of course, would be the workers whose jobs would disappear along with those three million sales we would be losing. (Macomber 1975)

AUTOMOTIVE CHICKEN LITTLE

“If this proposal becomes law and we do not achieve a significant technological breakthrough to improve mileage, the largest car the industry will be selling in any volume at all will probably be smaller, lighter and less powerful than today’s compact Chevy Nova, and only a small percentage of all models being produced could be that size.” —E.M. “Pete” Estes, president of General Motors (BW 1975)

Fuel economy requirements for 1980 and beyond became law, and as anyone on today’s roads can attest, the auto industry did not have to stop selling large cars. In fact, the industry has exploited loopholes in the regulations to avoid “technological breakthroughs” and pad their profits with the sale of large automobiles (Mackenzie, Bedsworth, and Friedman 2005).



Automakers tried to claim that the diversity of the fleet shown here in LA traffic would cease to exist in the face of fuel economy regulations.

For the record, General Motors sold nearly three million more vehicles in 1985, while complying with the standards, than it did when Estes expressed his concerns in 1975 (WardsAuto n.d.). And none of the dire predictions came true, although manufacturers did scramble to compete with the more-efficient Japanese vehicles appearing on the market. But by the 1980s, they were well on their way to doubling fuel economy, as intended by Congress.

Automakers Lose Their Nerve

In January 1981, because of progress in fuel economy, Administrator Claybrook issued a notice signaling the NHTSA's interest in extending the current trajectory even further. The agency already required fuel economy for cars to double between 1975 and 1985, to 27.5 miles per gallon (mpg); the new notice suggested the feasibility of targets of 40 mpg in 1990 and 48 mpg by 1995.

The incoming Reagan administration immediately withdrew that proposal, claiming that “market pressures . . . are creating strong consumer demand for fuel efficient vehicles and sending clear signals to the vehicle manufacturers to produce such vehicles” (Federal Register 1981b).

Knowing that they profited more from bigger cars, they tried to leverage their historic fleets as an economic reason why the mandates would bankrupt the industry.

Such claims that market forces would continue to drive auto manufacturers to deliver more efficient vehicles would soon be proved wrong.

From 1982 to 1983, General Motors' fuel economy actually declined, from 24.6 mpg to 24 mpg, well below the federal target (26 mpg). It crept up to 24.8 mpg in 1984, but that was well short of the requirement (27 mpg). Ford, too, fell well short of the federal targets, and both manufacturers were on the hook in 1985 for hundreds of millions of dollars in fines.

Facing the likelihood of significant fines, Ford blamed consumers, putting the Reagan administration's reasoning behind withdrawing Claybrook's proposal at odds with the comments of the very beneficiaries of that action. To meet the standards, Ford would cut production of its largest, most inefficient cars, "which would deprive our customers of a product they want" (Conte 1985). A General Motors spokesperson took a different tack, claiming that "pay[ing] the fines [would] be with the capital that we need to develop more fuel-efficient cars" (Conte 1985).

If General Motors had put that capital toward efficiency in the first place, the company would have been able to comply with the standards, which is precisely what Chrysler did and said. "Chrysler made the hard choices necessary to comply with the law," said Robert Perkins, Chrysler's vice president of Washington affairs. "GM and Ford chose a different course. They should not be relieved of the consequences" (Barron 1985). Indeed, Chrysler had invested more than \$1 billion in its "K-Car" platform of compact and midsize vehicles, and by 1984 the vehicles accounted for about half of Chrysler's operating profits (*New York Times* 1984). Not only had Chrysler made the investments, but they were paying off, not just in regulatory compliance but in dollars and cents.

Fuel Economy Goes Back in Time

The auto industry had fought for years for a correction to how the EPA tested fuel economy. In 1985, the agency released its correction, resulting in "higher" fuel economy as accounted for under the standards, and bailing General Motors and Ford out of the fines they faced. But that temporary reprieve was not enough for the industry. Its goal during the Reagan administration was to eliminate fuel economy standards.

The classic time-traveling film *Back to the Future*, released in 1985, seems to have inspired Ford and General Motors. They petitioned the administration to dial the standards back to 1984 levels, and let them stay there through the next three years. As Chrysler said in its comments on the petition opposing the Ford and GM proposal, "It would be essentially no standard at all" (Chrysler Corporation 1985a).

Elaborating further, Chrysler found the entire situation one of Ford and General Motors' own making, and part of a clear attempt to flaunt regulation:

Petitioners' strategy for obtaining a rollback has now become apparent—file at the eleventh hour and claim economic impracticability due to unexpected shifts in consumer demand. Although petitioners have known since at least 1983 that their CAFE [Corporate Average Fuel

Roiled by the billions it had invested to comply, Chrysler took out ads promoting the benefits of the fuel economy standards.

Economy] performance would come up short in 1985 and 1986, they took no adequate corrective action to raise their CAFE averages. On the contrary, many of their actions since 1983 have actually had the effect, as NHTSA acknowledges, of further reducing their CAFE averages. . . . To determine whether Congress prescribed a standard for 1986 that really was above the 'maximum feasible' average, the agency must know how petitioners wound up in their present predicament. . . . Petitioners' 'plan' was to do nothing and hope for a change in the weather. The 'unforeseen event' that evidently foiled their 'reasonable efforts' was the non-occurrence of any new changes in market conditions. (Chrysler Corporation 1985a)

Chrysler was not frustrated just by the situation; it was frustrated by the unconvincing rhetoric being spouted by the other domestic manufacturers:

They seek to raise the stakes drastically in this proceeding by insisting at every opportunity that they would sooner withhold products from the marketplace, close factories, and lay off in excess of one hundred thousand autoworkers than allow themselves to fall into noncompliance. It does no good to tell them that the statute requires nothing remotely like this kind of self-flagellation. (Chrysler Corporation 1985a)

Said Iacocca about the exaggerated forecasts:

GM and Ford said if they couldn't sell big cars in order to meet [fuel economy standards] they would have to shut their plants and lay off people. Would GM shut a plant because instead of making \$5,000 profit on a car they had to pay a . . . fine and only make \$4,500? That's mad; that's crazy. (Mateja 1985)

Roiled by the billions it had invested to comply, Chrysler took out ads promoting the benefits of the fuel economy standards (see Figure 5), also known as the CAFE (Corporate Average Fuel Economy) standards. The program "reduces

FIGURE 5. After Complying with Standards, Chrysler Warns Against Weakening Them

“Dialing back fuel standards on cars will set up the American people to be energy hostages again and again.”

Lee A. Iacocca

Either some pages fell out of our history books, or some people just refuse to read them.

After the first energy crisis in 1973, the government established Corporate Average Fuel Economy standards (CAFE). The law required American car manufacturers to meet increasingly stringent mileage standards for the cars they sell in the U.S.

CAFE is saving billions of gallons of fuel a year. It's a conservation program that works.

But now, the U.S. Department of Transportation, at the urging of GM and Ford, has decided to roll back mileage standards for passenger cars. If we let it happen, America will be making a tragic mistake.

America: Still hooked on oil.

America's economy still runs on oil, and three out of every ten gallons we use is imported. The nearly \$60 billion we paid for foreign oil in 1984 was the single biggest item in our record trade deficit.

In 1979, our gasoline stocks dropped only 5 percent and almost caused panic. And the news is full of evidence that the foreign oil pipeline could be blown up tomorrow.

Chrysler obeyed the law.

Chrysler Corporation obeyed the law on fuel-efficiency standards, and we did so at a time when we were on the verge of bankruptcy. We invested a record \$4.8 billion to convert the overwhelming majority of our fleet to fuel-efficient, front-wheel drive powertrains.

On the other hand, why shouldn't people who prefer cars that are less fuel-efficient pay a tax for the privilege?

Ignoring the law.

General Motors fell short of the 1984 standard by 2.2 miles per gallon. It produced 4.7 million cars in '84, and that means their fleet will use more than an extra 220 million gallons of fuel in the first year of driving alone. Over ten years, that fleet will consume more than 1.7 billion extra gallons of gasoline. And Ford's '84 fleet could waste almost another 500 million.

But if every car on the road in America averages 27.5 miles per gallon—the 1985 standard that Chrysler will meet—the U.S. would save more than 20 billion gallons of gasoline each year, or about four months of imported oil at current import levels.

Chrysler proved that the American auto industry can design and build vehicles that conserve energy without compromising performance, comfort or choice. Example: Chrysler pioneered the most fuel-efficient people mover of all, the mini-van. And the public response proves our point.

Chrysler is not depriving the American consumer of family-size sedans. As a matter of fact, Chrysler's percentage of mid-size or larger cars is higher than Ford's. And yet, Chrysler will meet the CAFE standard of 27.5 miles per gallon, but Ford won't.

CAFE benefits you, the consumer.

The American consumer and the American public stand to benefit most from keeping CAFE.

CAFE holds our trade deficit down by reducing our dependence on foreign oil from unstable regions of the world.

CAFE gives the American automotive consumer a broader choice of fuel-efficient American cars.

CAFE saves jobs.

And CAFE protects American jobs. If CAFE is weakened now, comes the next energy crunch American manufacturers will not be able to meet the demand for fuel-efficient cars...again. Americans will turn to fuel-efficient imported cars...again. And American workers—both in the auto industry and in the other industries that serve it—will be out on the street. Many of their jobs—as was true the last two times around—will disappear forever.

The penalty for dialing back CAFE.

A CAFE dialback would penalize a company for obeying the law and reward those who ignored it.

And in the long run—when the next energy crisis hits—the CAFE rollback will penalize all of America.

What's good for America.

The CAFE standard for passenger cars is the last vestige of an effective U.S. energy policy. Despite current supplies, America's energy future is still vulnerable. The choice is ours. We can open ourselves to yet another energy crisis, or we can keep an energy conservation program that works.

CAFE is good for America—and what's good for America should be good enough for America's automakers.

If you believe that energy conservation and fuel standards are important for America, please write to your U.S. Senators and Representatives and Mrs. Elizabeth Dole, U.S. Secretary of Transportation. You have only 10 days to make your opinions known in Washington.



CHRYSLER CORPORATION

In 1985, Chrysler pushed back against relaxation of fuel economy standards because such action would “open ourselves to yet another energy crisis.”

SOURCE: CHRYSLER CORPORATION 1985b.

dependence on foreign oil, . . . gives the American consumer a broader choice of fuel-efficient American cars, . . . and . . . protects American jobs” (Chrysler Corporation 1985b).

Incredibly, Chrysler’s advertising even foreshadowed the company’s later bailout:

If CAFE is weakened now, comes[sic] the next energy crunch American manufacturers will not be able to meet the demand for fuel-efficient cars . . . again. Americans will turn to fuel-efficient imported cars . . . again. . . . And in the long run—when the next energy crisis hits—the CAFE rollback will penalize all of America. (Chrysler Corporation 1985b)

Ford and General Motors won a reprieve on the 1986 standards but complained that the action did not go far enough (Brown 1985). NHTSA acquiesced to the automakers’ demands again, lowering the standards for 1987, 1988, and 1989 (Bovee 1988; Brown 1986). Said Iacocca, “We should put up a tombstone that says, ‘Here lies the American energy policy’” (Mateja 1985).

A Warming World Puts Heat on Automakers

At the end of President Reagan’s second term, Congress heard testimony from NASA scientist James Hansen about the greenhouse effect and how it was resulting in global warming. By May 1989, members of the George H.W. Bush administration were talking about improving automotive fuel economy, reducing America’s energy dependence, and reducing global warming emissions (Bureau of National Affairs 1989).

At the same time, automotive suppliers broke with the nay-saying manufacturers: It was possible to achieve more than 40 mpg by the end of the 1990s, they declared, opening the door to increased fuel economy standards that would push the industry to innovate (Chappell 1989). Combined with threats of climate change and military action in the Persian Gulf, both of which put energy security at the forefront, Congress set to work with a flurry of proposals to improve energy efficiency, particularly from the nation’s automobile fleet.

While many proposals were on the table, Senator Richard Bryan’s Motor Vehicle Fuel Efficiency Act (S. 1224, 1990) would become the leading motion to progress through the 101st Congress. It called for a 20 percent increase in fuel economy over 1988 levels by 1995 and a 40 percent increase by 2001. This would roughly correspond to a 40 mpg standard for cars in 2001 (consistent with what suppliers said was

possible) and a 30 mpg standard for light trucks. In trying to avoid one of the major issues that led to the weakening of fuel economy standards in the 1980s, it set individual standards for each manufacturer, ensuring that rather than a single fleet-wide requirement, each company would have to improve its fleet by the same amount. No longer could industry laggards leverage their historic lack of investment against the standard itself. Interestingly enough, manufacturers agreed with this general proposal.⁷

Combined with threats of climate change and military action in the Persian Gulf, Congress set to work with a flurry of proposals to improve energy efficiency, particularly from the nation’s automobile fleet.

Manufacturers responded to Sen. Bryan’s bill with familiar arguments. Indeed, he noted that “their testimony now is almost a carbon copy of their testimony in 1974, the thrust of which is: It can’t be done” (US Senate 1989b). The similarities were notable: consumers, not regulations, would determine fuel economy; more stringent fuel economy standards would benefit foreign manufacturers and could hurt US workers and the economy; there are tradeoffs between fuel economy and safety and fuel economy and air pollution; and the industry already had exhausted all known technologies.

The automakers’ approach to global warming provided an interesting new wrinkle. All manufacturers downplayed the impact of gasoline use on the overall global scale of the problem. Robert Liberatore of Chrysler emphasized, “While global warming and CAFE are related subjects, we believe that the potential impact of CAFE on the global issue of planetary warming are [sic] difficult to demonstrate” (US Senate 1989a).

Marina Whitman of General Motors went a step further, focusing on raising doubt about the importance of regulation: “Because the global warming issue has long-term implications with many scientific uncertainties, we believe strongly that

⁷ See, for example, Chrysler’s written response to Sen. Bryan and the statement of Helen Petruskas, Ford’s top safety executive (US Senate 1989a).

realism, responsibility and reason must prevail in considering its implications for public policy” (US Senate 1989a).

Whitman went on to profess the industry’s support for a 10-year plan for research into global warming, noting that:

actions by the United States alone will in themselves be marginally effective in slowing the increase in global carbon dioxide emissions and could result in economic and competitive disadvantages for U.S. goods and services in world markets. (US Senate 1989a)

Such arguments continue today, even with the near-total certainty about the ramifications of continued fossil fuel use on climate change.

Rather than the global issue of climate change, however, it would be local politics that would doom Sen. Bryan’s bill. As automobile manufacturing had spread beyond the Motor City, so did its influence. Senators from states like California, Delaware, Kentucky, Ohio, and Tennessee—all home to new assembly plants—began withdrawing their support. Sen. Bryan lost his filibuster-proof majority, ensuring the bill’s demise.

Questioning Climate Science

With international action on climate change moving forward through the 1990s, automakers increasingly stressed uncertainty in the science, arguing for caution in any potential international treaty.

As reported by Doyle (2000), the Big Three’s leaders—Jack Smith of General Motors, Robert Eaton of Chrysler, and Alex Trotman of Ford—and a number of other industry CEOs signed a 1996 letter to Bill Clinton questioning the reliability of the computer models supporting the impacts of climate change. They questioned whether it would not be better to delay action on the issue:

[G]iven the long term nature of the issue, there is time to determine optimum strategies—that are economically sound, comprehensive, market-based, and can be adjusted over time as new data and technologies become available. For example, a policy of accelerated research and development efforts leading to breakthrough technologies may achieve the same or better results with less cost and economic disruption than near-term strategies aimed at incremental reduction in greenhouse gas emissions. (Smith et al. 1996)

A year later, Eaton came out even more strongly against not just the Kyoto Protocol, which committed signatory nations to reducing greenhouse gas emissions, but also the science of global warming. In a *Washington Post* op-ed, he wrote:

In response to uncertain science and pressure from environmental activists and from countries eager for our jobs and our living standards, the Clinton administration seems poised to agree to a United Nations global warming treaty next December in Kyoto that would compel us—probably unilaterally—to curtail our fossil-fuel energy use in the next dozen years by more than 20 percent, one certain consequence of which would be a decline in the country’s economic growth by a similar amount. It would be an unwise and unnecessary move even if scientists could agree that the earth’s atmosphere is getting warmer because of manmade carbon dioxide and other gases. It becomes even more so given the fact that they can’t. (Eaton 1997)

The op-ed went on to stress the importance not just of delay but of research and development. The irony of touting the benefits of technology development at the same time Chrysler was fighting fuel economy standards because it had run out of technology options did not seem to occur to Eaton. He did want readers to understand that “autos are not a major contributor to total greenhouse gases in the environment” before ending on a message of delayed action, complete with a bevy of straw men:

We have plenty of time to make intelligent decisions based upon solid science. . . . Science may eventually tell us that dimming the lights, turning off the air conditioning, sacrificing some of our industrial competitiveness and curtailing economic growth is the responsible thing to do. If so, we should do it. But if so, it should be the last thing we do, not the first. (Eaton 1997)

Automakers Say Size Matters (It Doesn’t)

As the fight on fuel economy dragged on, automakers reached into a familiar bag of tricks.

Many studies noted that the industry already had developed a significant number of technologies that could save fuel. For example, the National Academy of Sciences had concluded:

Better engines, more efficient transmissions, body designs with improved aerodynamics, and lighter weight vehicles are all staples of the sales and marketing activities of major automobile and light-truck producers. On the other hand, most of these technologies have reached only a fraction of their potential application in vehicles sold in the United States, and . . . rather substantial increases in new-car and light-truck fuel economy . . . could be achieved if they were to be employed to their maximum potential. (NAS 1992)

The industry disagreed. Said Peter Pestillo of Ford: “Reducing size and weight is the only way to achieve significant additional improvements. That is the law of physics, not policy” (US Senate 1991). To this end, automakers continued to stress a tradeoff between fuel economy and safety.

The Motor Vehicle Manufacturers Association pulled out all the stops to tout this message. It created a front group, the Coalition for Vehicle Choice, that ran ads and lobbied against the standards. The group, which coordinated its activities with the Secretary of Transportation and the White House, staged a series of crashes between big, inefficient cars and smaller vehicles with better fuel economy. Photos and video of the crashes showed the carnage that the automakers were looking for—but that was because the group had designed the crashes precisely to provide such an effect. The tests were conducted without safety features like airbags common on the vehicles. Ironically, the first crashes actually showed *better* safety performance for the small car than the large car, but these results were buried. Worst of all, the fact that the Department of Transportation conducted the tests lent an air of independence, even though the stunt was coordinated with the Motor Vehicle Manufacturers Association (Doyle 2000).

Fuel economy for bigger vehicles would be a major focus of debate in the 1990s. For domestic manufacturers, sales of sport-utility vehicles were taking off and providing tremendous profits. Those concerned about energy efficiency, on the other hand, were angry that such vehicles fell under the much lower fuel economy standards for trucks, thanks to an outdated definition of “passenger vehicles.”

The Light Truck Loophole

The first fuel economy standards applied only to cars. Light trucks represented only a small fraction of the vehicle fleet, and their owners used them mostly for work, such as farming and construction. However, by the 1970s, more and more light trucks were being used for personal transportation, thanks in large part to advertising from automakers encouraged by the greater profit margins of larger vehicles. NHTSA Administrator Claybrook went to work setting the first light-truck fuel economy standards, applicable to vehicles with a gross vehicle weight rating up to 8,500 pounds, but these standards were far lower than those for cars.⁸

A number of characteristics would define what constituted a “passenger vehicle” versus a “light truck,” including

Because of the much greater profit margins on light trucks, manufacturers were particularly sensitive to any stiffened requirements on the production of those vehicles.

ground clearance and off-road capability. During the 1980s, the tremendous success of its minivan caused Chrysler to push for the “flat floor” provision: a vehicle would not be considered a passenger automobile if its seats could be removed to create a flat, floor-level surface. This provision would ensure the classification of many passenger vehicles as light trucks—including Chrysler’s clearly car-like PT Cruiser. Greater sales of light trucks, their lower fuel economy requirements, and stagnant fuel economy standards all combined to decrease the fleet fuel economy throughout the 1990s.

Because of the much greater profit margins on light trucks, manufacturers were particularly sensitive to any stiffened requirements on the production of those vehicles. When the Clinton administration merely suggested that it was considering increasing the fuel economy standard for trucks, Robert Liberatore, then a vice president of Chrysler, immediately pushed back, claiming that it “would have a very destructive effect on our business” (Federal Register 1994; Templin 1994).

In fact, with the size of SUVs growing as much as their sales, domestic manufacturers were struggling to meet even the meager fuel economy standards on the books. At one point, General Motors altered the suspension of its biggest SUV, the Suburban, so that the vehicle would qualify as a medium-duty truck, entirely exempting it from the light-truck fuel economy standards. Ford took this tack as well when introducing its 19-foot-long Excursion. Rather than investing some of the large profit margin back into the development of more efficient engines for this growing segment of the market, the Big Three took to games to avoid millions of dollars in regulatory fines.

Rep. Tom DeLay, Texas Republican and House Majority Whip, recognized the critical importance of this segment to

⁸ Gross vehicle weight rating represents the maximum total weight of the vehicle, including occupants and any freight. The unladen curb weight of these vehicles would be much less than 8,500 pounds.



Vehicles like Ford's Excursion SUV exploited loopholes which allowed automakers to grow sales of inefficient light trucks without having to improve the rest of their vehicle fleet.

the industry and parroted the automakers' talking points: "Because the light-truck market now represents over 40 percent of total vehicle sales, and it is a segment dominated by domestic manufacturers, this action would be devastating to the nation's economy" (Bennet 1995). Rep. DeLay would sponsor a rider to the House's appropriations bill each year that would freeze funding for NHTSA's technical resources and staff, preventing them from using resources to develop new CAFE standards.

Even with limited resources, the Clinton administration raised the standards by 0.1 mpg, up to 20.7 mpg, a level that already had been achieved more than a decade earlier, before the size wars caused the efficiency of this segment to drop. Automakers lobbied hard to ensure the passage of the so-called "freeze rider" in 1999, with William Clay Ford flying into town to pressure senators (Eilperin 1999). The industry succeeded: Sen. DeLay's rider remained in effect through the 1990s, ensuring that fuel economy standards did not increase further.

“CAFE is savings billions of gallons of fuel a year. It's a conservation program that works. But now, the U.S. Department of Transportation, at the urging of GM and Ford, has decided to roll back mileage standards for passenger cars. If we let it happen, America will be making a tragic mistake.”

— Chrysler Corporation, 1985

Bad Science and Bad Air

While fuel economy regulation was stalling in the 1990s, clean air regulation was moving forward. As Americans drove more and more, their travels had begun to negate some of the benefits of the hard-fought victory around tailpipe regulations. In addition, a better understanding of the long-term impact of air pollution on health led to a new fight on a national ozone standard.

In waging these new battles against pollution standards, automakers resuscitated a familiar set of tactics. They fought against amendments to strengthen the Clean Air Act, stronger tailpipe standards in California, and even national air-quality protections. They claimed that these rules were impossible and unnecessary even though time would show that the manufacturers could achieve the standards, and in doing so prevent the premature deaths of hundreds of thousands of people.

Reagan, Bush, and General Motors Seek “Regulatory Relief”

The election of Ronald Reagan in 1980 gave automakers a political opportunity to erode many of the federal protections put in place since the 1950s, especially for air quality, and they seized the moment. During a press conference on March 31, 1981, General Motors asked the government to loosen a number of pollution requirements. It also asked for a general re-examination of the science underpinning tailpipe emissions and air quality regulations, claiming that the health risks were overblown (Shabecoff 1981). Less than a week later, Vice President George Bush, heading the President’s Task Force on

Regulatory Relief, announced a number of actions the administration would take in response to the industry’s requests. These included relaxing standards for nitrous oxides emissions from heavy-duty diesel engines, waiving statutory standards for light-duty passenger vehicles to the maximum extent, reducing auditing and enforcement, and eliminating some regionally specific requirements (Reagan 1981).

This action marked the beginning of automaker requests to weaken the Clean Air Act instead of strengthening it. GM chair Roger Smith followed up with requests directly to Congress: roll back emissions standards, he said, and General Motors could eliminate pollution-control devices from its cars, passing the savings on to consumers “dollar for dollar. . . . The air will keep getting cleaner and cleaner, and car prices will go down. That’s the best way I know of affecting sticker shock right now” (*CQ Almanac* 1981). Smith suggested that the regulations were costing consumers billions of dollars (AP 1981).

Public opinion did not side with the automakers. According to a Harris Survey poll released in June 1981, the vast majority of the public wanted standards that were at least as stringent as those on the books. Just 18 percent of Americans believed that federal air pollution rules were “overly protective,” and even fewer (12 percent) believed that Congress should act to weaken them (*San Bernardino Sun* 1981).

With some members of Congress seeking to strengthen the Clean Air Act, automakers came out with a familiar refrain. V.J. Adduci, president of the Motor Vehicle Manufacturers Association, testified to Congress:

- The cost of stronger pollution controls was lowering vehicle sales, hampering progress on cleaner air by preventing the introduction of newer cars that were cleaner

than the average vehicle on the road but would not meet the more stringent requirements;

- manufacturers like Ford and General Motors would have to halt production of trucks due to “arbitrary” and “unreasonable” requirements, resulting in lost jobs; and
- required standards would have “little or no discernible air quality benefit” (Adduci 1982).

In a fact sheet it sent to Congress, General Motors said that “certain amendments . . . would, if enacted, have a crippling effect on the automobile industry and severe adverse effects on the entire economy.” The fact sheet predicted tens of thousands of lost jobs due to a halt in production because “GM knows of no technology available to produce vehicles to meet . . . these standards” (General Motors 1982).

In the years that followed, automakers would continue to try to sway public opinion against further reductions in tailpipe pollution, claiming that doing anything better was like getting “blood out of a turnip” (Darst 1987). This tension between industry and public opinion created a stalemate in Congress, delaying any amendments to the Clean Air Act until George H.W. Bush became president.

Environmental Awareness Leads to a Push for Revising the Clean Air Act

By 1988, public opinion had turned further against industry, and the environment became an issue in the presidential election. By the summer, George H.W. Bush would seize upon the issue and use it to push both air quality and global warming to the forefront, calling for “strengthening of our clean air laws,” international agreement to address global warming, and unilateral US action on energy conservation (Bush 1988). Within months of being sworn in, President Bush introduced a broad outline for a new Clean Air Act, with a focus on urban air pollution and the use of alternative fuels to gasoline, including a specific requirement that automakers produce a minimum number of alternatively fueled vehicles.

Paralleling national attention on environmental protections was activity at the state level. In 1989, eight Northeastern states adopted California’s tailpipe pollution standards, which were not only stronger than the federal standards but also stronger than President Bush’s proposed targets. Automakers were disappointed, with General Motors claiming:

If auto manufacturers are forced to respond to a patchwork of different emissions standards throughout the nation,



US National Archives

Within the first few months of the Reagan presidency, Vice President George H. W. Bush announced a number of administrative actions to roll back environmental protections in response to industry requests.

production, distribution, and sales of vehicles will become increasingly complex and costly to consumers. (Wald 1989)

Recognizing the need for Congressional action, this statement helped catalyze one of the industry’s biggest supporters to action. Representative John Dingell (D-MI) put forth a proposal with Representative Henry Waxman (D-CA) to adopt California’s tailpipe standards across the country, eliminating the “patchwork” to which automakers had objected. However, Dingell worked toward eliminating any requirement for alternatively fueled vehicles, a requirement that had drawn the ire of the automaker lobby.

However, automakers were set on eliminating the stronger tailpipe standards, initiating another ad campaign against moves to strengthen environmental protections (Figure 6, p. 40). They claimed that progress on emissions was “guaranteed” as new vehicles replaced old ones and that the tighter tailpipe standards being considered by Congress were not feasible. This echoed earlier GM statements that the Waxman-Dingell bill would “bring virtually no significant benefits over what the [White House] bill provides” (*CQ Almanac* 1989). Tim MacCarthy of the Motor Vehicle Manufacturers Association went further, suggesting that the regulations would result in lower fuel economy, a shortage of available vehicle models, driving performance issues, and higher costs for consumers. He added, “We’re disappointed that they went as far as they did in their proposal” (Gold 1989).

Congress moved forward with the legislation, codifying federal standards comparable to California’s in two phases: Tier 1 regulations would phase in from 1994 to 1996; stronger

9 Previous lobbying by automakers regarding the Clean Air Act of 1970 ensured that the “patchwork” of regulations was limited to two distinct standards, the federal standard and the California standard that the states were adopting.

FIGURE 6. The Big Three Claim that Clean Air Costs Outweigh the Benefits

A42 WASHINGTON, NOVEMBER 1, 1989 The Washington Post

CHRYSLER, FORD AND GENERAL MOTORS ARE CLEANING UP THE AIR.

Congress is working to update the Clean Air Act. The U.S. automobile industry supports responsible action to solve the nation's environmental problems — including tighter tailpipe standards.

Clean air is standard equipment on today's cars.

- Today's new cars eliminate 96 percent of the hydrocarbons, 96 percent of the carbon monoxide and 76 percent of the nitrogen oxides that come out of the tailpipe compared with uncontrolled cars.
- Because emissions control systems already are so effective, not much more can be accomplished by tighter tailpipe controls. By comparison, actions underway to reduce evaporative emissions can yield a 25 percent air quality improvement.
- The biggest reduction in auto emissions will come as new cars replace older cars on the road. Today's highly efficient emissions systems will reduce tailpipe emissions by 38-50 percent just from normal turnover.
- Cars equipped with the latest emissions technology account for almost 60 percent of all the miles driven in the U.S., but less than 20 percent of tailpipe emissions. Older cars account for the other 80 percent.

Future requirements should build on this progress in a sensible manner.

- We support tighter standards as proposed in the bipartisan administration bill and we would support a workable alternative-fuels program for cities with major smog problems.
- A House subcommittee has decided to go beyond the President's original bill. This subcommittee bill sets nationwide standards at levels adopted for the mid-1990s for California—the nation's worst air quality area.
- This legislation goes further than necessary for other parts of the country.

The Senate is considering legislation that government technology experts say is not feasible.

- According to the U.S. Environmental Protection Agency, the Senate bill—even if feasible—would improve air quality by only about 2 percent, compared to the bipartisan administration bill, at an added cost of \$6.5 billion annually—or \$500 a car.
- In addition, the Senate would set carbon dioxide (CO₂) standards, which would require the equivalent of 50-mpg fuel economy standards. Such standards would sharply reduce vehicle size, function and consumer choice. Today, only the smaller subcompacts come close to the fuel economy levels of this bill.

What Congress should do.

- Remember the progress that already is guaranteed from vehicle replacement.
- Set goals that are achievable—certainly nothing more extreme than the mid-1990s California standards makes sense from a feasibility, cost or benefit standpoint.
- And remember American car owners—who already pay billions of dollars a year to do their part for clean air.

In this November 1, 1989, ad in the Washington Post, the Big Three pushed back against the Senate's amendments to the Clean Air Act, calling instead for weaker standards put forth by the administration of George H.W. Bush.

SOURCE: CHRYSLER CORPORATION, FORD MOTOR COMPANY, AND GENERAL MOTORS 1990.

Tier 2 regulations would phase in from 2003 to 2006 if the EPA affirmed the need and feasibility of the higher Tier 2 standards by 1999. Having lost the battle but refusing to lose the war on regulation, the automakers had again won a consolation prize from Congress in the form of a formal review of stronger standards. As before, this would lead to a regulatory battle pitting the industry against the American people.

Claiming New Standards Will Worsen Air Quality

After Congress finalized the Tier 1 program in 1990, automakers first aimed their sights on states set to implement the Tier 2 standards ahead of the federal schedule.¹⁰ Their first goal was to prevent California from putting stronger standards on the books.

The tactics were familiar. For example, GM spokesperson William Winters claimed that achieving the California standards would cost \$800 per car, even though the final total would prove to be less than one-third the automakers' claim (Anderson and Sherwood 2002). Similarly, to try to kill a provision in California's Clean Cars program requiring the deployment of electric vehicles, Ford vice chair Alan Gilmour claimed that such a regulation would cost Ford more than \$2 billion, a number inflated by including costs well beyond the vehicles themselves such as marketing and the establishment of a new dealer network.

California regulators held firm.¹¹ With California's rules on the books, automakers now sought to deal with each of the Northeastern states interested in adopting the strong tailpipe standards. The adoption process for each state was different: some required legislative action, in others executive action from the governor would suffice, and still others only required action by the state environmental agency. In some cases, automakers pushed alternatives to California's regulations to deal with the problem of smog and avoid further vehicle regulation. In New Jersey, they advocated for: a "cash for clunkers" program to get older cars off the streets, with the added bonus of bumping up vehicle sales; a program targeted at creating cleaner-burning gasoline, especially important given the refineries in the state; and a program focused on reducing emissions from non-road engines like motorboats and all-terrain vehicles (Doyle 2000).

In Maine and New York, automakers sued to prevent the adoption of California's standards. In both cases, they lost,

In 1989, eight Northeastern states adopted California's tailpipe pollution standards, which were stronger than the federal standards.

although the New York decision forced the state to adopt California's program in its entirety, not just the pieces of it the state had initially adopted (Scott 1997). Again, automakers inflated the price tag. Now they claimed that meeting the California standards would cost at least \$1,000 per vehicle (Wald 1993).

Despite these tactics, the Northeastern states adopted the California program. This shifted the focus of automakers back to federal action.

In 1991, General Motors adopted a list of "environmental principles" it claimed governed both its daily conduct and its future plans and programs. Among those principles were commitments to "actions to restore and preserve the environment," "pursue vigorously the development and implementation of technologies for minimizing pollutant emissions," and "work with all governmental entities for the development of technically sound and financially responsible environmental laws and regulations" (General Motors 1999a). However, these principles, in effect in 1999, did not stop General Motors from attacking the EPA's Tier 2 emissions standards. In a three-volume tome submitted in response to the regulation, it claimed that the rules were neither necessary nor feasible, and were in fact "arbitrary and capricious." General Motors even went so far as to say that the rules were counterproductive and would result in increases in harmful ozone pollution if they went into effect, imposing significant health risks to the American people (General Motors 1999b). Other manufacturers echoed GM's comments via their trade group, the Alliance of Automobile Manufacturers (EPA 1999).

Despite the hundreds of pages of complaints from the automakers, the EPA finalized Tier 2 emissions standards on time, ensuring strong national tailpipe standards. However, automakers also were fighting the basic science on smog and ozone that underlined the urgent need for action by the EPA.

¹⁰ The Northeastern states would adopt California's LEV-II tailpipe standards; for the sake of simplicity, we do not distinguish between the two programs here because of the relative similarity in stringency.

¹¹ Years after California finalized its Zero Emissions Vehicle (ZEV) requirements, adopted as part of its first LEV regulations, the state would first delay and then effectively eliminate them. However, California would revive the requirements as part of its Advanced Clean Cars program, helping to drive all manufacturers to invest in and deploy electric vehicles by 2025.

Growing Evidence Supporting Stronger Clean Air Standards

Since the 1970 passage of the original Clean Air Act, borne out of an understanding of smog and its negative health consequences, the auto industry has repeatedly claimed that reductions in pollutants to date have negated any further need for action and that further reductions would not result in additional health benefits.

The Clean Air Act governs air quality around the country from all sources—and ultimately, what is important to its success is not whether tailpipe emissions are declining but whether the air itself is clean enough to protect public health and welfare. To that end, the EPA looks at not just whether or not different industries are meeting their responsibilities but also at the definition of “clean air” itself.

In the waning years of the Reagan administration, new studies showed that adverse health impacts may arise at levels below the then-current ozone standard of 120 parts per billion. The EPA summarized these results in a review of the ozone standards in 1986, indicating that while the impact on the average adult generally showed small changes in lung function, a class of individuals showed heightened sensitivity to ozone that could lead to medically significant decreases in lung function (EPA 1986). Automakers downplayed this finding, with GM environmental specialist Richard Klimisch suggesting that such an impact is just “the same kind of effect you get from walking out into the cold” and “within the normal healthy range” (Darst 1987).

The EPA under President George H.W. Bush found even more evidence supporting concerns that the current ozone standards did not protect public health and welfare adequately, leaving no margin for safety. The EPA had been required to make a decision on the National Ambient Air Quality Standards (NAAQS) by the end of 1990 but had not done so. The American Lung Association, together with the Environmental Defense Fund, Natural Resources Defense Council, and the states of New York, Connecticut, Massachusetts, Maine, and Rhode Island, took the agency to court over the matter to force its hand. The court then ordered the agency to undertake a formal review of the standard by 1996.

Automakers Tell Public to Avoid Bad Air

The Clinton administration inherited this requirement. In 1994, the EPA began its review of the NAAQS requirements on both particulate matter (soot) and ozone pollution (smog). And just as the agency moved forward with its review, industry moved forward to attack it. Automakers called the move to strengthen the standards incomprehensible (Frame 1996).

Along with their trade associations, they were among the more than 500 entities pooling resources to halt new standards on soot and smog, forming the industry-funded group, the Air Quality Standards Coalition.

Automakers raised the specter of big government run amok, claiming that not only would fuel costs go up but also that the government even could restrict the use of cars, lawnmowers, boats, fireplaces, and outdoor grills. “We even see the return of long lines for gasoline,” said Richard Klimisch, now vice president of engineering at the American Automobile Manufacturers Association (Warrick 1996). One of the most colorful examples of the industry’s apocalyptic vision came from Stephanie Williams of the California Trucking Association:

It would cause suffering and possible death to nearly 44 million people. Citizens would be unable to drive to work. Public transportation would be crippled. Children would be unable to attend school. Hospitals would be unable to obtain medical supplies, and there would be no way to get food to grocery stores. (Barry 1997)

The industry did not just fictionalize the future; it lied about the science underpinning the regulations. Reiterating points from fights past, the coalition called the standards “scientifically unjustifiable” because they would “produce no significant improvement in public health.” Automakers themselves even diminished the notion that ozone was an issue to begin with, with Klimisch adding, “The effects of ozone are not that serious. . . . What we’re talking about is a temporary loss in lung function of 20 to 30 percent. That’s not really a health effect” (Warrick 1996).

Some within the industry coalition suggested an avoidance strategy when it came to minimizing the effects of pollution. Said one oil lobbyist, “People can protect themselves. They can avoid jogging. Asthmatic kids need not go out and ride their bikes.” Not to be outdone, another industry representative callously noted that the excess deaths reported from pollution were people who would have died anyway (Kriz 1997).

An industry ad campaign, estimated to cost as much as \$30 million, helped magnify statements like this minimizing the health impacts of then-current levels of pollution (Warrick 1997). Automakers targeted supporters in Michigan to push back against the standards, with long-time industry supporter Rep. Dingell a major voice in Congress and Mayor Dennis Archer of Detroit urging mayors around the country to push back against cleaner air. Andrew Card, president of the American Automobile Manufacturers Association, emphasized the purported local economic damage from the new air-quality standards, which he claimed were “ill-conceived, economically disadvantageous to the country and will put a particular

burden on the auto industry and the people of Michigan” (Bradsher 1997).

The campaign was rebutted not just by the science but also by a counter-campaign from nonprofit groups that geared up to deliver accurate scientific information to the public. And the public responded. As part of the process for revising the standards, the EPA held hearings in Boston, Chicago, Durham (North Carolina), and Salt Lake City, with supporters of the clean air standards outnumbering the opposition up to three to one (Barry 1997).

Buoyed by numerous scientific studies and public support, the EPA held firm to its proposed standards, requiring lower levels of both smog and soot. Looking back, it is clear that the EPA’s findings were necessary to counter auto industry claims, but they actually did not go far enough to protect public health. In 2015, ozone standards were again tightened based on the best-available science, a decision that is now being delayed by the Trump administration (Goldman 2017).

BOX 5.

Excess Emissions, Part II: More Recalls

While fighting against tougher pollution standards, the auto-makers were ignoring existing standards in millions of vehicles. Just as the first Clean Air Act had sparked automaker malfeasance around “defeat devices,” a wave of automakers chose to pollute the air instead of complying with revisions to the Clean Air Act. Many of their strategies involved changes to the computer systems that govern how engines behave.

- 1995: **General Motors**, responding to customer complaints about a tendency of certain Cadillac models to sputter or stall with the air conditioner on, modified a computer chip on the vehicles. That fixed the stalling problem but caused carbon monoxide levels to be two to three times higher than allowed under law, comparable to levels of pollution predating the Clean Air Act (Brown and Thomas 1995). The issue affected 470,000 vehicles for model years 1991 to 1995 and caused more than 100,000 tons of excess carbon monoxide pollution. General Motors was fined \$11 million and forced to spend another \$9 million to mitigate the impact of the action.
- 1998: **Honda** deployed defective emissions control equipment in 1.6 million vehicles for the 1995 to 1997 model years. The company programmed its on-board diagnostics computer to ignore spark plug failures that allowed the uncombusted hydrocarbons to pass through the engine and exhaust to the air (Ostrow and Cone 1998). Honda was fined \$12.6 million and required to spend an additional \$4.5 million in fees for pollution mitigation, part of which was devoted to funding environmental research.
- 1998: **Ford** put defeat devices in 60,000 1997 Econoline vans. The devices turned off the emissions control systems at highway speeds, leading to emissions of nitrogen oxides well above the tailpipe standards (Ostrow and Cone 1998). Ford also failed to disclose a fueling strategy in its popular Ford Escort compact that caused the engine to operate

under “lean-burn” conditions, which increased the amount of air in the combustion chamber and resulted in an increase in nitrous oxides emissions (US District Court of the District of Columbia 1998). This design mode affected nearly all Ford Escorts for model years 1991 to 1995. Ford was fined \$2.5 million and required to spend \$1.5 million on pollution mitigation.

- 2015: **Volkswagen** was found in violation of the Clean Air Act, having installed defeat devices in nearly every diesel-powered vehicle it sold from 2008 through 2015. Software on the vehicles could tell whether the vehicle was being run under conditions mimicking the EPA’s test cycle. When the vehicle was driven in the real world, it disabled pollution control systems, allowing excess emissions of nitrogen oxides up to 40 times the allowed standard. Volkswagen sold about 580,000 vehicles with this defeat device, resulting in an excess of more than 40,000 tons of nitrogen oxide pollution emitted (Barrett et al. 2015). The resulting fines exceeded \$10 billion, and Volkswagen must spend more than \$2.7 billion to mitigate the pollution and more than \$2 billion to support the increased use of zero-emission vehicles (US District Court, Northern District of California 2016).

With each phase of tailpipe standards, technology has become more complex, but the need for clean air has not entirely diminished. Numerous areas around the country continue to fall short of the EPA’s air quality targets. Tailpipe emissions standards play a central role in the plans of many localities to protect public health. Stronger Tier 3 emissions regulations went into effect for the 2017 model year. Auto-makers should stop trying to skirt regulations and instead protect the public from the harmful emissions associated with passenger vehicles.

A New Kind of Fuel Economy Standard

The new millennium brought a new administration in Washington and a new outlook among policymakers, scientists, and the public on the need for both energy security and action on climate change. However, the need for a fresh look at how to set those standards was evident, given the ultimately limited success over two decades of the long, hard campaigns to increase fuel economy standards. This fresh look would yield significant improvements for the first time in two decades—but not without a fight from automakers.

California Moves First on Global Warming Emissions

Frustrated by a lack of leadership in addressing global warming amid decades of stalled progress at the federal level on reducing global warming emissions from passenger vehicles, California State Assembly member Fran Pavley decided in 2001 that it was time to act, developing a proposal to reduce global warming emissions from passenger cars and trucks to the maximum possible extent (Davidson 2010).

When the Clean Cars bill was introduced in California in 2002, the auto industry went into overdrive to kill it. The automakers mobilized their dealers to persuade their customers to fight the legislation—one well-known car dealer in particular, Cal Worthington, took out a bevy of radio and full-page print ads against the bill (Karapin 2016). The automakers themselves also mounted a multi-million dollar advertising effort against the bill, including ads that claimed the “SUV law” would “take away your minivans and SUVs,” limit the number of cars a family could own, raise vehicle taxes by

The fight against the California Clean Cars Law didn't stop with passage—instead, Ford and GM sued the state.

thousands of dollars, and even reduce speed limits (Sperling and Gordon 2009; Adams and Adams 2010; Davidson 2010). Though initially withdrawn, strong public support eventually helped pass the bill, with about 8 in 10 Californians (including SUV owners) supporting the legislation (Davidson 2010). The bill was signed into law in July.

The automakers' fight against the California Clean Cars Law didn't stop with passage—instead, Ford and General Motors sued the State of California, claiming that because only the federal government can set fuel economy standards, and because the principle source of global warming emissions from vehicles is the combustion of fuel, that only the federal government could enact standards to reduce global warming emissions from vehicles. In the end, the court ruled against the automakers, noting that the Clean Air Act explicitly allows California to regulate pollutants from passenger cars and trucks, provided that the EPA grant the state a waiver to do so.

Unfortunately, while the California Clean Cars Law prevailed against the automakers in the courts, the state was

denied a waiver by the EPA under George W. Bush. The state's effort to reduce emissions from its passenger car fleet was thus put on hold.

Attribute-Based Standards

At the federal level, Congress was gaining momentum to evaluate the stalled progress to improve fuel economy. In 2001, Congress asked the National Academy of Sciences to evaluate the effectiveness and impacts of the CAFE fuel economy standards and provide future guidance on the program. The study, completed in 2002, produced several key conclusions (NAS 2002):

- The CAFE program had contributed to the increase in fuel economy over the previous 22 years. "If fuel economy had not improved, gasoline consumption (and crude oil imports) would be about 2.8 million barrels per day greater than it is, or about 14 percent of [2002] consumption."

BOX 6.

The Flex-Fuel Vehicle Loophole

One possible way to reduce oil usage is through the use of fuel derived not from petroleum but from organic materials. In 1988, Congress passed the Alternative Motor Fuels Act to stimulate the use of so-called "biofuels"—manufacturers were given extra credit towards meeting fuel economy standards if they produced vehicles which could run on biofuel.

To take advantage of this provision, automakers began producing vehicles which could run on both traditional gasoline and E85, a fuel which is just 15 percent gasoline and 85 percent ethanol derived from organic material, predominantly corn. Because they were flexible in their choice of fuel, the vehicles became known as Flex Fuel Vehicles (FFVs).

The idea was that if there were now vehicles that could use the fuel, a market for biofuel would naturally develop. However, this hope never really came to pass. Even though there are millions of FFVs on the road today, they run on gasoline more than 95 percent of the time. This means that automakers were given bonus credits for oil reductions that never actually happened, and they turned around and used these credits to avoid improvements in fuel efficiency.

While Congress has since capped the use of FFV credits, the impacts of this loophole continues to linger today.

Industry achievements over the years reveal just how conservative the manufacturers have been when it comes to statements about their own ability to innovate.

- Certain flexibilities in the program had not worked as intended, resulting in negative impacts on fuel economy. These included both the light-truck loophole and a flex-fuel vehicle loophole that credited vehicles for the use of bio-based fuel based on the capability of the vehicle regardless of whether or not such fuel was used (Box 6).
- Since 1975, manufacturers had made tremendous progress on vehicle technologies. However, most of the improvements relating to fuel economy had occurred in the decade after 1975. After 1985, "technology improvements were concentrated principally on performance and other vehicle attributes."
- "The CAFE program might be improved significantly by converting it to a system in which fuel economy targets depend on vehicle attributes."

That last conclusion is of particular importance. An oft-repeated argument from automakers with regard to raising fuel economy standards was that doing so would alter the mix of vehicles sold to consumers—people like big cars and should be allowed to buy them. Furthermore, the automakers argued, not all companies have the same vehicle portfolios, so it is much easier for manufacturers that do not sell as many large vehicles to meet higher targets. This set of arguments effectively coerced Congress and numerous administrations into setting standards based on the worst performing fleet.

Senator Richard Bryan sought to get around this by requiring a set percentage improvement in fuel economy for each manufacturer, a proposal that was more amenable to the domestic manufacturers (US Senate 1991). An "attribute-based standard" would go one step further: for example, in a size-based standard, a large car would have a lower overall fuel economy target than a small car; a manufacturer's overall fuel economy target would be based on the number of large and small cars it sold.

The NHTSA took heart from the National Academy of Sciences' conclusions. A prestigious, peer-reviewed, consensus

AUTOMOTIVE CHICKEN LITTLE

“If Congress mandates an increase in fuel economy, certain models of pickups, minivans, and sport-utility vehicles could potentially be eliminated from the market.” —Walter Huizenga, president of the American International Automobile Dealers Association (AIADA 2000)

Fuel economy standards for trucks went up shortly after this statement in 2000, yet manufacturers have continued to sell large volumes of trucks and SUVs. In fact, the Big Three continued to sell more “light trucks” than cars, and foreign automakers like Toyota and Nissan have joined them.

study had vindicated the fuel economy program overall, and the committee had also provided insight into a path forward to raising the standards for both cars and light trucks.

No Step Too Small to Say No To

Shortly after the report appeared in 2002, the NHTSA began steps to raise fuel economy standards, first by soliciting information in response to the report, and then by proposing to raise the light-truck standards to be more commensurate with the passenger fleet. Its proposals would raise the standard for the light-truck fleet from 20.7 to 21.0 mpg in 2005 and then to 22.2 mpg by 2007, just a 2 percent per year improvement—and the real year-over-year increase was effectively much less, as manufacturers acknowledged that they had already been adding technology to vehicles in anticipation of raised standards. However, the Alliance of Automobile Manufacturers (2003) deemed even this small step “extremely challenging.”

The Alliance’s comments on the proposed rule enlisted many now-typical arguments. The agency, it said, had understated costs and overstated the benefits of technologies by not recognizing what the industry is already doing, which would entail risk on the part of manufacturers to meet the standards and demand a technological breakthrough. The rules could adversely affect safety, resulting in unnecessary deaths. Consumers do not want fuel economy and do not want to pay for it. “Higher standards would decrease GDP [and] cause

job losses (about 100,000 lost jobs by 2010)” (AAM 2003).

In hindsight, it is clear that industry achievements over the years reveal just how conservative the manufacturers have been when it comes to statements about their own ability to innovate. The industry recommended that each of these technologies had issues restricting their deployment: continuously variable transmissions, aerodynamic drag reduction, tires with improved rolling resistance, integrated starter/generator (stop-start), electric power steering, cylinder deactivation, low-friction lubricants, multivalve (per cylinder) engines, engine friction reduction, variable valve lift and timing, continuously variable lift, and five- and six-speed transmissions (AAM 2003).

Contrary to automaker assertions, the companies eventually would make all of those technologies available in significant numbers in the time frame of the rule. Some notable examples are electric power steering (found on about one-quarter of vehicles), variable valve lift and timing (about 15 percent of vehicles), and six (or more)-speed and continuously variable transmissions (over 30 percent of the fleet) (NHTSA 2012). The industry either did not believe in its own engineers, or it simply low-balled its estimates to regulators to try to reduce the stringency of the standard.

Despite the automakers’ objections, the NHTSA set levels as proposed, and not one of the automaker projections came true. Traffic fatalities decreased; consumers bought the more efficient trucks; fleet-wide fuel economy increased for the first time in nearly 20 years; and jobs remained essentially constant.¹²

AUTOMOTIVE CHICKEN LITTLE

“We don’t even know how to reach [35 miles per gallon by 2020], not in a viable way. [It] would break the industry.” —Susan Cischke, Ford Motor Company (Pope 2007)

Rather than breaking the industry, the strong efficiency standards required by the Energy Independence and Security Act and under the Clean Air Act have driven vehicle efficiency upward while automakers have seen record sales. And the industry is well on its way to achieving 35 mpg by 2020 as required.

¹² It is more difficult to disentangle the jobs picture related to the rule compared with the status quo economic factors in the industry. There were some small losses in automotive sector jobs (although less than the industry’s projections), but those were entirely consistent with both nationwide and industry-specific gains in productivity. There was no statistically significant change in employment before and after the standards were enacted.

CAFE Becomes an Attribute-Based Program

For the next phase of light truck regulations, the NHTSA decided to reform the CAFE standard, altering it from a single, fleet-wide average to a size-based standard. The pace of the program remained roughly constant, although the administration maintained separate standards for passenger cars and light-duty trucks. In the initial years of this change, the NHTSA allowed manufacturers to choose between the historic, uniform CAFE standard and the “reformed,” size-based standard. Manufacturers could thus choose whichever standard was easier for their fleets to achieve, slightly reducing the fuel economy gains of the program. However, by the 2011 model year, the entire program for both cars and trucks had to shift to a size-based standard.

Manufacturers generally found the structure of the new program favorable but inevitably complained about the targets. Even though the industry had been over-complying with the standard overall by more than 1 mpg each year, manufacturers again declared that the proposed standards were “technically challenging” and that “the standards and targets may be beyond manufacturer’s capabilities” (AAM 2005). They further expressed concern that the NHTSA had shifted away from determining maximum feasible fuel economy levels by focusing on the “least capable” manufacturer and instead aimed for “the social optimum for the manufacturers as a group.” Focusing on the least capable manufacturer had been the Achilles’ heel of the program in the 1980s; clearly the manufacturers were concerned about giving up that leverage.

Congress Takes Action

In 2007, President George W. Bush announced his “20 by 10” initiative, calling for a cut in projected gasoline usage of 20 percent within 10 years, primarily accomplished by requiring a greater fraction of alternative fuels and by raising fuel-efficiency standards. While the NHTSA was free to adjust light-truck standards, Congressional action was required to adjust passenger car standards similarly.

With public pressure building for action, the President’s initiative challenged Congress, and it responded with the Energy Independence and Security Act (EISA) of 2007. The act required the average fuel economy of the national fleet to improve from about 25 mpg to 35 mpg by 2020. This essentially codified at a minimum extending the rate of improvement that the NHTSA already had implemented in its light-truck program, now requiring passenger cars to achieve that same rate of improvement.



Eric Denareq/Creative Commons (Pikler)

By model year 2011, the entire CAFE program required size-based standards for both cars and trucks, negating automakers’ arguments that fuel economy standards will alter the mix of vehicles available to consumers.

Automakers were livid at the possibility of raising standards to such levels, and their nationwide campaign urged voters to pressure their elected officials to oppose the bill and its “unrealistic fuel economy increases” (Rosebro 2007). Susan Cischke of Ford highlighted the challenges of relying upon technology: “We understand our role is to improve fuel economy. But technology drives that, not just picking a number because it sounds good. . . . We have to make sure we’re not making up (fuel economy) numbers arbitrarily” (Pope 2007). She further suggested that while Ford was working on new, more advanced technologies, these would not be ready anytime soon, predicting that plug-in hybrid electric vehicles could be on the road in “five to ten years.” The Chevy Volt beat this timetable considerably, coming to market three years later, and Ford’s own electric vehicles (Focus Electric, C-MAX Energi, and Fusion Energi) went on sale less than five years after that statement.

The House and Senate approved the Energy Independence and Security Act with plenty of margin, and President Bush signed it into law in December 2007.

That Was Then, This Is Now

In 2007, the US Supreme Court ruled that the EPA has an obligation to regulate the release of carbon dioxide if the agency finds that it threatens public health and welfare—which it did. Not only must the EPA regulate tailpipe pollutants like nitrogen oxides and particulate matter, but the Clean Air Act requires it to regulate global warming emissions from vehicles as well, including carbon dioxide released as a result of combustion and hydrofluorocarbons emitted from the air-conditioning system.

As a result of this determination, President Obama directed the EPA to set global warming emissions standards together with the NHTSA, which administers the CAFE fuel economy program, and the California Air Resources Board, which administers California's Clean Cars program to reduce vehicle pollution.¹³

Together, the agencies developed the One National Program, which created size-dependent standards regulating both the efficiency and global warming emissions of the new light-duty vehicle fleet. By 2025, the program would nearly double the efficiency of the average new vehicle; it also would reduce global warming emissions from these vehicles by 40 percent.

Automaker Support

When the Great Recession hit in the late 2000s, domestic automakers were ill-prepared for the shift away from trucks

and SUVs as gas prices rose. This was exactly what Lee Iacocca, back in 1985, had warned could happen, and industry observers like *New York Times* reporter Keith Bradsher (1998) had reiterated that warning: “Ford has some serious vulnerabilities. Few of its car models other than the Mustang have produced much enthusiasm in the marketplace. That could prove to be a serious problem if gas prices rise or if sport utilities go out of favor.”

Ford, Chrysler, and General Motors all found themselves in significant trouble, with Ford requiring billions in loans to avoid bankruptcy in 2006 and General Motors and Chrysler both requiring a government bailout a few years later when the bottom fell out of the auto market. Perhaps this result of shrinking sales pushed automakers to finally change their tune.

Walter McManus, an ex-General Motors economist, noted the industry's reticence to change:

[The industry has] had a change of heart, but it's fairly recent. We had data about consumers' preferences about fuel economy, but we chose to ignore it; we thought it was an anomaly. But it's by having a bias against fuel economy that we've put ourselves in the pickle we're in now. The overall fuel economy leader is Honda, and then comes Toyota and Nissan and then the Big Three. And which of those automakers is making all the money out there?
(Jones 2007)

¹³ Under President Obama, the EPA overruled the previous administration's rejection of California's right to regulate global warming emissions under the California Clean Cars Law. The Clean Cars program administered by the California Air Resources Board thus included not just soot and smog-forming pollution but also reduction in global warming emissions.



Over the years, Ford's Dearborn headquarters has been home to a number of decisions which have undermined consumer and environmental protections. Today presents a new opportunity for the company.

Automaker Influence

In 2009, automakers fully supported the One National Program, flanking President Obama at a ceremony in the White House Rose Garden where the initiative was announced. They also were heavily involved in the design of the program, meeting with White House, EPA, and NHTSA officials regularly to discuss product plans, technology development, and the structure of the new program.

According to Margo Oge, director of the EPA's Office of Transportation and Air Quality at the time, meetings involved a number of provisions automakers wanted in the regulation. Specifics included advanced technology credits for vehicles sold by one manufacturer and credit for flex-fuel vehicles because another manufacturer depended on them for compliance with CAFE. Agreement was so strong on the regulations for 2012 to 2016 that even the agencies' cost estimates were consistent with industry's own values, an historic first (Oge 2015).

Setting standards out to 2025 meant looking not just at what automakers already could put forth in product plans but also at technologies still in development. While automakers had a number of closed-door meetings with technical staff from the agencies, history had shown that "they aren't showing . . . all their cards" either (Oge 2015). The agencies therefore relied on independent analysis, too. The NHTSA paid for a study by the National Academy of Sciences (NAS 2011). The EPA took advantage of its 50-year experience of running an automotive lab facility to simulate and test

packages of the best technologies available together, even if they came from different vehicles.

Manufacturers were not monolithic in the level of standards they said they could achieve in 2025. Some manufacturers forecast that a 6 percent year-over-year increase was achievable; others claimed only half that was possible. Ford clung to what it claimed could be done on its high-profit big trucks, and this represented the biggest challenge. In the end, regulators and the industry stalwarts compromised: cars would be required to improve about 5 percent every year; trucks would be required to improve only 3.5 percent each year through 2021 and 5 percent thereafter (Oge 2015). This proposal caused Volkswagen and Mercedes to oppose the rules, but it helped gain support from the rest of the industry for the 2025 standards (Greiling Keane 2012).

Unfortunately, old habits are hard to break. Just as in the 1970s during the review of the Clean Air Act standards, automakers are pivoting today to delay and weaken the regulations. A facet of the regulation requires a review of the 2022 to 2025 standards—precisely those standards that increase the requirements on light trucks. Automakers repeatedly touted this "midterm review" when the rules were finalized (e.g., Greiling Keane 2012).

Automaker Revolt

The mid-term review process required the EPA and the NHTSA to assess the standards considering progress made

in the industry, including evaluations of the availability and effectiveness of technology, changes in technology costs, the feasibility of the standards, and the effect of the standards on emissions, oil conservation, energy security, and fuel savings by consumers. More than five years of detailed study resulting in numerous peer-reviewed publications, updated computer modeling, and thousands of pages of documentation showed that, if anything, the standards could be made even more stringent. In January 2017, the EPA issued a Final Determination that its standards for 2025 remained appropriate based on this comprehensive review. Automakers immediately began to fight the standards.

If the industry is serious about turning the page and acting responsibly, this is a perfect opportunity to walk the talk and start fresh.

A letter to the incoming Trump administration asked it to withdraw the determination. Automakers again claimed that the agencies had underestimated the cost burden because more expensive, advanced technologies would be required. That claim echoes what automakers said when California first set tailpipe emissions standards, then again when truck fuel economy standards were raised, and again in the fight over the Energy Independence and Security Act. Each time, costs proved lower as innovation led to the development of new low-hanging fruit to deploy. In this case, automakers' own consultants also found that the standards could be met with little electrification, but this result did not appear in any press material or comments to the agency (Novation Analytics 2015).

A letter from automaker CEOs to EPA Administrator Scott Pruitt again exaggerated the potential economic impact of the standards, claiming that more than a million jobs could be lost under the current standards. The letter cited a deeply flawed and widely debunked study (see e.g., Cooke 2016). Automakers ignored a more thorough analysis, paid for by industry, that showed the standards would result in net job gains under a wide range of fairly conservative assumptions (Carley et al. 2017).

The industry has pushed to expand the review and lower 2021 standards, even while admitting that "product plans through 2021 are essentially already in place, and changes that would significantly alter those plans would be difficult to

implement" (AAM 2017). The reasoning given for the request is not that automakers believe the 2021 standards are not achievable. Rather, they are looking for relief "any way we can get it," as Chris Nevers, speaking on behalf of the Alliance of Automobile Manufacturers, told an EPA hearing (Alderson Court Reporting 2017).

An Opportunity to Start Anew

While automakers actively seek to weaken the regulations, some within the industry talk a good game about responsibly reducing emissions from the vehicle fleet. For example, Ford CEO Jim Hackett and Executive Chairman Bill Ford wrote, "We remain absolutely committed to improving fuel efficiency and reducing emissions for our customers, and . . . to do our part to help to address climate change issues" (Ford Motor Company 2017).

If the industry is serious about turning the page and acting responsibly, this is a perfect opportunity to walk the talk and start fresh. Indeed, at times, automakers have acknowledged their past transgressions. Max Gates of the American Automobile Manufacturers Association agreed that "there have been instances where the companies opposed a regulation and then successfully complied" (Scott 1997). Acceptance of a problem is the first step on a path to change, and the current midterm review process offers automakers a number of opportunities to show that they mean what they say by ceasing to undermine the regulations.

To build trust with the nation and leave a history of intransigence behind, automakers can seize the moment to:

- support strong safety and emissions standards and keep the promises they made to the American people to build cleaner cars;
- distance themselves from trade groups that seek to undermine today's standards, and make it clear that these groups do not speak for all automakers on issues of safety and the environment; and
- cease spreading disinformation about the standards and their impacts.

Automakers have waged a multidecade war against regulations on all fronts, and the American people have been the losers when automakers won the battles. The data overwhelmingly show that regulations concerning fuel economy and pollution save drivers money, reduce our use of oil, and help us to avoid harmful global warming emissions. Moreover, history shows that manufacturers can meet the strong standards out to 2025. It is time for manufacturers to let their engineers get to work designing and building efficient cars for the nation.

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Time for a U-Turn

*Automakers' History of Intransigence
and an Opportunity for Change*

The auto industry now faces an opportunity to turn away from its long history of intransigence by living up to its promises to reduce emissions and oil use and supporting strong standards.

Over the decades, automobiles have improved tremendously—unfortunately, the automobile industry has not. As this report shows, automakers have consistently fought to block or undercut rules on safety and the environment, utilizing exaggerated rhetoric, misinformation, and political influence to undermine the public interest. At the same time, the industry has proven up to each new engineering challenge. From airbags to pollution control, automotive engineers have proven their lobbyists wrong—contrary to the doom and gloom scenarios pushed by industry, regulation has instead proven a catalyst for innovation and American leadership.

Just a few years ago, the industry seemed ready to turn a corner, aligning investments with a more sustainable future and working with regulators toward the public's interest. Yet today, industry naysayers are again standing in the way of progress, fighting fuel economy and emissions standards which not only reduce emissions and oil but put fuel savings back in the pocket-books of their customers. The industry now faces an opportunity to turn away from its long history of intransigence by living up to its promises to reduce emissions and oil use and supporting strong standards.

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