Driving on California's Hydrogen Highway

Innovative Clean Cars Policy Remains Relevant to Federal Transportation Regulation

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Introduction

Light duty transportation accounts for 20 percent of annual greenhouse gas emissions in the United States.[1] Carbon emissions from the transportation sector can be reduced by lowering the number of miles driven each year, reducing the carbon intensity of transportation fuel, and increasing the efficiency of vehicles. On Nov. 16, 2011, the California Air Resources Board (CARB) announced its new clean cars policy.[2] The program combines four motor vehicle initiatives including greenhouse gas emissions standards for passenger cars and light trucks, reduced emissions limits for smog-forming air pollutants, an update of the Zero Emission Vehicles (ZEV) mandate, and continuation of the California Hydrogen Highway Initiative. The greenhouse gas emission standards will be harmonized with new federal regulations issued by the Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA).[3]

California has a history of leadership in setting greenhouse gas emission standards for passenger cars and light trucks. Because the 2017-2025 standards build on the existing federal-state joint framework, CARB's leadership role has shifted to enhancing advanced clean vehicles policy. But California's clean car standards still influence the federal program in three ways:

- California's continued participation in the joint federal greenhouse gas and fuel economy standards provides a backstop to the federal program if political situations change.
- California reasserted its leadership as a regulator of motor vehicle emissions through its advanced vehicles deployment policies.
- California's zero emission vehicle and clean fuel infrastructure programs are great examples of state standards serving as "laboratories of democracy" to test policy options that are not ready for national deployment.

CARB has established itself as a leader in innovative policy to promote advanced clean cars. In particular, the combination of the ZEV mandate and the Hydrogen Highway initiative are a philosophical shift toward regulating vehicles and fuels as a system. In this report, we will provide a brief history of California's role in pushing federal air pollution regulation for motor vehicles. Then we will discuss how California's clean car standards augment the federal standards. Finally, we will discuss some of the political attacks on California's clean car regulations, and broader attacks on climate and environmental regulations.

History of California's Clean Air Act Authority

In 1966, California issued the first regulations for smog-forming emissions in the nation.[4] In recognition of this leadership, the Clean Air Act permits California to set emission standards for vehicles that are more stringent than federal standards, provided that EPA grants a waiver to the state.[5] For more than 40 years, EPA and California have cooperated to enhance federal air quality standards for motor vehicles. More recently, California played a crucial role in pushing federal greenhouse gas standards for cars and light trucks. We will review California's role in the 2012-2016 greenhouse gas and

fuel economy standards, and the history of California's ZEV mandate and the Hydrogen Highway initiative.

California Leads the Way on Greenhouse Gas Regulations

In 2002, California adopted Assembly Bill 1493, which prompted CARB to issue greenhouse gas emission standards for passenger cars and light trucks.[6] Under the Clean Air Act, California must obtain a waiver from EPA before it can enforce motor vehicle standards that are more stringent than the federal standards. In 2005, California submitted its request for a waiver from the EPA to enforce these standards. Despite letters prompting from Governor Schwarzenegger, EPA failed to respond to California's request for a waiver until after the Supreme Court ruled in *Massachusetts v. EPA* in April 2007.[7] The Supreme Court decision held that EPA could regulate carbon dioxide as an air pollutant, provided that the agency made a finding that carbon dioxide "may be reasonably anticipated to endanger public health and welfare."[8]

Just weeks after the Supreme Court decision, EPA published a notice requesting comments on California's waiver request. But the political spectacle extended for many months, including an infamous episode where White House officials refused to open an email containing a EPA's draft document with the finding of whether carbon dioxide poses a threat to public health.[9] Sen. Barbara Boxer (D-CA) held hearings in the Environment and Public Works Committee to investigate the politics around EPA's decision about the waiver.[10] In December 2007, EPA Administrator Stephen Johnson announced that that the agency would deny the waiver request to meet the demands of a lawsuit brought by California against EPA.[11] EPA finally denied CARB's waiver request in March 2008.[12]

During the campaign, Obama promised he would revisit the California waiver, and EPA regulation of greenhouse gases from motor vehicles. After Obama took office, he ordered the EPA and NHTSA to work with CARB to devise a single, national standard for motor vehicle efficiency for model years 2012 and beyond. These agreements were made public through "letters of commitment." Although the letters were not legally binding, they did create a public record of the outcome of negotiations between the auto industry, environmental groups, and federal and state agencies.[13]

Under the negotiated program, CARB would harmonize its program with the federal program, which set both fuel economy and greenhouse gas targets for model years 2012-2016. California agreed to consider compliance with the federal program to count as compliance with the state program in exchange for concessions from the auto industry. At the time, auto dealers were engaged in lawsuits in several states that would challenge the state greenhouse gas standards. The auto dealers agreed to drop their lawsuits in exchange for a single, national standard. Auto makers and their trade associations also agreed to support the level of standards established under the national program. California benefited from engaging in the harmonized program, because auto dealers agreed to withdraw from lawsuits against state standards in California and several other states. By engaging in the federal policy, efforts to strip California of its special Clean Air Act authority to set greenhouse gas standards were also temporarily suspended.

California had played an important role in setting the final federal standards. When EPA and NHTSA harmonized their standards with CARB's, the program set standards that were higher than Congress had mandated for the 2020 model year.[14] The Obama administration expressed its intent to extend the national framework for standards beyond the 2017 model year, which meant that California would work with federal agencies from the beginning of the process. This changed California's leadership role from pushing greenhouse gas standards to promoting policies to deploy advanced technology vehicles.

California Continues to Promote Innovative Clean Cars Policy

California has not lost its status as a leader in clean cars policy. California combined four vehicles programs into one coordinated policy. In addition to greenhouse gas standards, California has been expanding on efforts to support the deployment of advanced technology vehicles in the state. As policymakers seek to raise efficiency standards (or lower greenhouse gas emission standards), they will have to find ways to encourage auto manufacturers to deploy advanced technology vehicles like battery electric and hydrogen fuel cell vehicles.

California first introduced the zero emission vehicle program in 1990 when GM released its concept battery electric vehicle, the EV1. The program requires a certain percentage of vehicles sold in the state to be ZEVs. California has identified that only battery electric and fuel cell electric vehicles meet these emission criteria. Although California has faced several setbacks in implementing the ZEV program, automakers are more enthusiastic about their advanced technology vehicles because federal greenhouse gas standards will require them to roll out plug-in hybrid or battery electric vehicles for the 2011 model year.

In 2005, Governor Schwarzenegger signed a bill that would fund a demonstration project in California to build hydrogen fueling stations and deploy a fleet of hydrogen fuel cell buses. The project, called the "Hydrogen Highway," compliments the ZEV program by supporting refueling infrastructure for advanced technology vehicles.[15] The combination of these two programs represents a shift toward regulating vehicles and fuels as a system. This type of approach will be necessary to generate the level of greenhouse gas emission reductions needed to avoid the worst consequences of climate change.

California's Role in the 2017-2025 Greenhouse Gas Standards

In May 2010, President Obama ordered EPA and NHTSA to begin work, in coordination with CARB on greenhouse gas and fuel economy standards for 2017 and beyond.[16] CARB has two roles to play in pushing the federal process. First, CARB contributed substantial technical expertise to the technical assessment process, which undergirds the federal standards. Second, CARB reserved the right to challenge the federal standards if they deviate from the policy framework laid out in the Notice of Intent, which makes the California standards serve as an important backstop for the federal process.

The federal vehicle efficiency standards are set using complex mathematical models of the auto industry. The agencies build these models based on a joint analysis of vehicle technology availability, cost, and effectiveness. The level of standards depends on the cost and effectiveness assumptions, so the technology assessment directly influences the level of standards that the agencies will support.

CARB is well suited to participate in the technology review because it has significant expertise modeling the auto industry, forecasting future auto markets, and analyzing engineering challenges automakers face in complying with new standards. California's participation in the technology review helps to push the federal agencies to make more aggressive technology assumptions than they would make on their own.

One example of how technology assumptions can influence the level of standards is weight reduction. In theory, automakers could employ a greater amount of weight reduction than the agencies consider in modeling the vehicle efficiency standards, but the agencies apply a limit to the amount of weight reduction automakers will employ based on a policy decision that too much weight reduction might increase motor vehicle fatalities. CARB has played a role in pushing the technology assumptions through its own technical research. CARB commissioned a study of weight reduction and safety that theorized more weight reduction could be achieved without negatively impacting vehicle safety.[17]

California's standards provide an important backstop to the federal standards during the mid-term review for fuel economy and greenhouse gas standards for 2022-2025. Under the statute, NHTSA can only issue fuel economy standards for up to five model years at a time.[18] This provision presented a problem for EPA and NHTSA in setting joint standards for model years 2017-2025, because statutorily, NHTSA cannot finalize standards beyond model year 2021. The proposed rules explain that NHTSA's standards for 2022-2025 are "provisional" and the agency, in coordination with EPA and CARB will conduct a "mid-term" review of technology and automaker progress before issuing final standards for 2022-2025.[19] NHTSA will conduct a second notice-and-comment rulemaking to issue binding fuel economy standards for these model years.

The mid-term review provides an opportunity for automakers to undermine the federal vehicle efficiency standards. The agencies will have to go through the arduous rulemaking process to justify the 2022-2025 standards. Although EPA is not bound to amend its standards as part of the mid-term review, the standards for both agencies are built on the same technical analysis. If the 2017 technology review concludes that automakers are significantly behind in the fuel economy program, the same assumptions will translate to the greenhouse gas program.

CARB can help to prevent erosion of vehicle efficiency targets for 2022-2025 in two ways. First, California will participate in the technology review for the mid-term review. CARB will bring its perspective, engineering expertise, and its own commissioned studies to this technology review. Second, CARB reserved the right in its letter of commitment to challenge standards promulgated by NHTSA and EPA following the technology review.[20] CARB's letter does not specify what this "challenge" might entail, but one option would be for California to enforce its own greenhouse gas standards separate from the federal standards. The threat of enforcing state standards may be enough to discourage the federal agencies from deviating too far from the original policy in the mid-term review. The auto manufacturers have made it clear that the industry is more averse to having state and federal standards than it is to new greenhouse gas standards.

The Obama administration set a long horizon for the next standards to provide the auto industry with a signal that the nation is committed to increasing the efficiency of vehicles. This approach gives the auto industry substantial time to divert resources to engineering and redesign of vehicles. But the administration also assumes some risk in setting the standards so far in advance. The mid-term review will not happen until after Obama leaves office, even if he is elected for a second term. By statute, NHTSA must provide automakers with 18 months of lead time to adjust to new fuel economy standards.[21] The 2017 model year begins in September 2016, so 18 months of lead time would be April 2014. If Obama is not elected for a second term, this gives an incoming administration just enough time to set new fuel economy standards for 2017. The Clean Air Act does not specify lead time for air pollution standards for motor vehicles, so automakers would face difficulties arguing that lead time similar to NHTSA's was insufficient for new greenhouse gas standards.

Environmentalists should pay attention to political attacks against California's authority, because California's participation and presence in the federal policy provides some assurance that federal efficiency standards will persist beyond Obama's presidency. CARB would also be well-served to maintain its specific technical expertise on vehicle efficiency issues. CARB should maintain a presence in technical discussions about the future of gasoline combustion vehicles, while continuing to promote policy to deploy advanced clean cars.

California's Clean Car Program as a "Laboratory of Democracy"

As policy makers seek ways to further reduce greenhouse gas emissions from the transportation sector, they will increasingly have to consider options that take a systematic approach to vehicles and fuels. To make bigger reductions in greenhouse gas emissions from light duty vehicles, drivers will have to shift away from gasoline vehicles to electric vehicles and other advanced technology vehicles like fuel cells. California's clean car initiatives are innovative policy that will provide important information to federal agencies as they move forward in promoting advanced technology vehicles.

California's clean car initiative includes two inter-related programs that seek to address some of the historical failures of promoting alternative fuels and advanced technology vehicles. The ZEV program and the Hydrogen Highway seek to encourage manufacturers to deploy advanced technology vehicles, and to support a refueling infrastructure that encourages car buyers to choose these advanced technology vehicles. The combination of the two programs together is meant to address the historical challenges facing automakers and car buyers in switching to alternative fuels.

Automakers and vehicle purchasers face a conundrum in spreading new technology. Automakers hesitate to invest in building vehicles they might not be able to sell, and car buyers are wary of buying vehicles they cannot easily refuel. This problem is well illustrated by the experience with flex fuel vehicles, which can use gasoline or a blend of ethanol and gasoline called E85. Despite decades of government subsidies, the refueling infrastructure for high blend ethanol has never reached a level that makes it a practical alternative fuel for a large number of drivers. According to Growth Energy, a trade association of ethanol producers and retailers, there are 2,468 fueling stations that sell E85, which accounts for just 1.4 percent of the 175,000 fueling stations nationwide.[22] Although manufacturers have

built millions of flex fuel vehicles because they can receive a credit toward fuel economy compliance, most drivers cannot use E85 because it is not available where they drive.

The combination of CARB's ZEV program and Hydrogen Highway is designed to prevent this problem with hydrogen fuel cell vehicles. The ZEV program will spur demand for advanced vehicles including hydrogen fuel cell vehicles in the state. At the same time, California will support the infrastructure development with plans to build nine hydrogen refueling stations. The Hydrogen Highway initiative also requires the state to invest in hydrogen fuel cell buses, which in turn will help to support the hydrogen refueling infrastructure by creating a reliable source of demand.

The American system of federalism works best when states are given the opportunity to experiment with policy options that provide different approaches to environmental and public protection. California has consistently led the way, particularly with respect to motor vehicle regulations, pioneering the first air pollution standards for motor vehicles. When the EPA applied similar motor vehicle emission standards nationally, it looked to California's program, and benefited from California's experience. California has consistently pushed for greater levels of environmental protection than the federal government.

EPA and other federal agencies will benefit from California's experiment with these two programs. Federal agencies are understandably hesitant to adopt new programs without some information about how they might work. Deploying a similar type of program nationally would be logistically complicated, potentially expensive, and the consequences for failure on the federal level are greater. EPA may undermine a future program by pushing to attempting such a policy on the national scale too quickly. But California's example will provide valuable data that the agency can use to determine whether a similar program would serve the goals of greenhouse gas emission reduction.

Threats to California's Authority

California's Clean Air Act authority has been attacked directly by legislation that would block EPA from granting CARB a waiver to enforce its standards. Some members of Congress have also introduced legislation to delay or block regulation of greenhouse gases. Under the Republican majority in the House of Representatives, members of Congress have also offered legislation that would block, delay, or burden environmental and other regulations more broadly. These legislative proposals could change California's role in federal clean vehicles policy, so clean vehicle advocates should remain aware of these legislative attacks.

Since the Obama administration announced that it would strive to promote a single, national standard, auto manufacturers and their trade associations have largely stopped challenging California's authority to set standards. Automakers have also entered agreements with CARB through letters of commitment including not challenging federal or state standards that are consistent with the federal framework policy. But auto dealers have continued to challenge California's authority, saying that the joint standards still require manufacturers to comply with three separate standards. Dealers also complain that the agencies have not sufficiently considered the impact to auto sales and dealership jobs that will result from the increase in the cost of new vehicles resulting from the standards.[23]

The auto dealers have supported attacks on California's authority, including an amendment to the fiscal year 2012 EPA appropriations legislation sponsored by Rep. Steve Austria (R-OH).[24] The Austria amendment would affirm that NHTSA is the only agency with the authority to regulate vehicle efficiency, would block EPA from using any funds to promulgate greenhouse gas regulations for 2017 and beyond, and would block EPA from using any funds to permit California to enforce its own greenhouse gas standards.[25] Another example of legislative attacks on California's authority to regulate motor vehicles is Rep. Fred Upton's (R-MI) Energy Tax Prevention Act of 2011, which would block EPA from granting a waiver to California to regulate greenhouse gas emissions for any model year 2017 or after.[26]

Auto dealers also prompted House Oversight Committee Chair Darrell Issa (R-CA) to target California's participation in the negotiations leading to the 2017-2025 proposed standards. Issa sent a letter to CARB Chair Mary Nichols that sought information about how California participated in negotiations leading up to the 2017-2025 proposed greenhouse gas standards.[27] He attacked California for failing to participate in an Oct. 11, 2011 hearing in which the Subcommittee on Regulatory Affairs investigated how the negotiations leading up to the Supplemental Notice of Intent blocked public participation in the rulemaking process. One of the core complaints raised in the hearing was whether the negotiations prevented dealers and other stakeholders from voicing concern about the projected cost of the fuel economy and greenhouse gas standards.

Members of Congress have also introduced legislation that could affect California's authority by attempting to block EPA from regulating greenhouse gas emissions under the Clean Air Act. One representative example of this is a provision included in the House version of a continuing resolution for appropriations. The continuing resolution would prevent EPA from spending any funds to propose or enforce Clean Air Act regulations, including granting a waiver to California or any other state to regulate greenhouse gases.[28] This type of provision has been included in many legislative proposals, and typically seeks to block EPA from regulating greenhouse gases all together, or to delay regulations for one year.

The Republican majority in the House of Representatives have targeted any new regulations, particularly environmental regulations, claiming that they prevent economic recovery and maintain high unemployment. The legislative proposals seek to delay or hinder agencies, particularly EPA, from issuing new regulations by imposing additional analytical requirements, or requiring regulations to be affirmed by Congress before they can be enforced. We will discuss a few of these bills below.

The bill with the most support in Congress is the Regulations from the Executive In Need of Scrutiny Act (REINS Act), which would, among other things, require Congress to approve new regulations before the agencies could enforce them.[29] This provides Congress with the ability to stall or block regulations, and would subject the expert technical work Congress delegated to the agencies to the political calculus of Congress. If Congress fails to vote to approve a regulation in time, it will be considered to have been blocked, and agencies would not be permitted to issue the same or "substantially similar" regulations until the end of a given Congress.

Rep. John Sullivan's (R-OK) Transparency in Regulatory Analysis of Impacts on the Nation Act (TRAIN Act), would require special additional economic analysis for regulations stemming from EPA's endangerment finding for greenhouse gas pollution.[30] But EPA regulations, like all government regulations are already subjected to the requirements of Executive Order 12,866, which requires the agencies to submit a cost-benefit analysis of regulations for review to the Office of Management and Budget's Office of Information and Regulatory Affairs. The TRAIN Act would require EPA to take into account "indirect" effects of regulations, which further unbalances the already industry-biased cost-benefit analysis process. Cost-benefit analysis is often biased in favor of the regulated industry because the benefits of environmental regulation – clean air, avoided adverse health effects – can be hard to measure and monetize.

Finally, Sen. Susan Collins' (R-ME) Regulatory Time Out Act would place a one-year moratorium on finalizing significant rules.[31] This kind of legislative proposal could derail the joint process by delaying it just long enough for a new administration to come in and change the policy framework. President Obama is unlikely to sign any of these bills into law, but the time horizon of these regulations is so far in the future, that political dynamics may change in the future.

The good news is that Congressional attacks on California's clean cars program have mainly focused on the greenhouse gas standards under the program. Even if California lost the authority to enforce its greenhouse gas standards, it would still be able to move forward with the ZEV program and the Hydrogen Highway project. While environmentalists should continue to support California's authority to set greenhouse gas emission standards for cars and light trucks, California's other vehicle regulations are more influential in the wake of Obama's single national vehicles policy. In the near future, California's most important role will be promoting the development of advanced technology vehicles, and modeling ways that refueling infrastructure can be deployed to support advanced technology vehicles.

Conclusion

California's role in driving improved greenhouse gas standards for passenger cars and light trucks has shifted since 2007. CARB still has a role to play in the 2017-2025 standards, but California's status as a leader in vehicle regulation lies in the continuation of the ZEV and Hydrogen Highway projects. These programs represent the kind of leadership that the federal agencies will need to follow to achieve greenhouse gas reductions from the transportation sector. Federal programs can only benefit from experimentation, so the federal agencies should encourage programs like California's.

California should focus its attention on its strengths: technical expertise, innovative policy, and flanking the federal agencies. Although California has an important role to play as a backstop in the mid-term review, CARB should put more effort into devising and developing policies to promote deployment of advanced technology vehicles. These policies move toward a regulatory regime that combines vehicle and fuel regulation. To meet the greenhouse gas reductions needed by mid-century, state and federal agencies will need to shift to a systematic regulatory approach that combines vehicle and fuel policies. The ZEV and Hydrogen Highway programs provide one example of how this type of policy could be implemented.

Environmentalists should be vigilant about attacks on California and other state programs to promote advanced technology vehicles. Since the 2017-2025 standards are many years in the future, there is substantial time for a new administration to change the federal policy for fuel economy and greenhouse gas standards. But environmentalists should also stay attuned to attacks on environmental and other regulations in general. Legislative proposals like the REINS Act and TRAIN Act have the potential to delay or block state and federal clean vehicles policy. The legislative language for these proposals may be arcane, but the impacts in terms of lost time to reduce greenhouse gas emissions from the transportation sector could have dire consequences for the nation.

Endnotes

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