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ECONOMIC, EMISSIONS IMPACT OF TRUMP ADMINISTRATION FUEL ECONOMY AND GHG EMISSIONS STANDARDS FREEZE; IMPLICATIONS FOR CALIFORNIA, "SECTION 177" STATES, CANADA

BY MEGAN MAHAJAN AND ROBBIE ORVIS ● AUGUST 2019

Note: This research note updates a version released in 2018[1], to incorporate newer data and assumptions, as well as evaluate Canada's recent Memorandum of Understanding[2] with California to partner on reducing transportation emissions.

The Trump administration is working to freeze federal fuel economy and greenhouse gas (GHG) emissions standards for cars, SUVs, and light-duty trucks for model years 2021 through 2026 at 2020 levels, thereby undoing fuel economy increases and vehicle emission reductions set by the previous administration. Under the Trump Administration's proposal, light-duty vehicle fuel economy would stagnate at 37 mpg rather than increasing to 51.4 mpg.[3]

Energy Innovation's modeling predicts that freezing these standards would damage the U.S. economy, costing up to $400 billion (real 2018 U.S. dollars, discounted at three percent annually) through 2050 and increasing transportation emissions by up to 10 percent in the year of maximum impact.

The Trump administration's standards freeze also includes a proposal to undermine clean car policies in multiple states. Under the Clean Air Act, California has the authority to set more stringent vehicle emissions standards than the federal government, and other states can adopt the stronger standards (California's current standards are harmonized with the national standards).

Fourteen states plus D.C., the "Section 177 States" (the states that have adopted California's standards under Section 177 of the Clean Air Act), have adopted California's standards, totaling more than 35 percent of the automobile market. The Trump Administration has threatened to revoke California's waiver, granted more than five years ago, and argues that it has the authority to prevent California and any other state from ever setting stronger GHG pollution standards, an unprecedented move.

[1] https://energyinnovation.org/wp-content/uploads/2018/07/Trump-Fuel-Efficiency-Standard-Rollback-Research-Note_7.26.18.pdf

[2] https://www.climatechange.ca.gov/climate_action_team/intergovernmental/ECCC-CARB-MOU-June-26.pdf

[3] See Table ES-2 of EPA's Final Determination. This value differs from the initial projection of 54.5 mpg based on updated vehicle fleet assumptions.

The technical, economic and legal basis of the Trump administration's proposal have been critiqued and will also be subject to extensive litigation. California and numerous other states have filed lawsuits against the Trump administration's threshold determination that U.S. GHG emissions standards must be weakened, with the case set for argument on September 6, 2019, and its decision to reduce automaker penalties for violating standards. California is also working with a large coalition of state Attorneys General that are prepared to litigate should the Trump administration finalize its rollbacks and its attack on long-standing state authority to provide for cleaner cars.

Should California and the state coalition prevail in protecting long-standing state authority, as Clean Air Act legal experts believe, the GHG emissions standards freeze would only affect 65 percent of automobile sales, creating a split market catering to two different standards. Some automakers may design their product lines around meeting California's standard, therefore over-complying with the federal standard. However, some may opt to sell their more efficient vehicles in California and the Section 177 States and inefficient vehicles in the rest of the country, so that their average fleets meet the federal target while also complying with state-level standards. Further, there will be considerable regulatory uncertainty associated with the litigation challenging the vehicle standards freeze. The economic and emissions impacts of a split standards scenario are therefore unclear, but according to this analysis could cost U.S. consumers between $240 and $400 billion.

Adding to this uncertainty, four major automakers recognized California's authority to set its own standards by announcing a voluntary agreement with the state on compromise vehicle emissions rules, in an attempt to avoid separate state and federal standards. This move isolates and weakens the Trump administration's efforts to attack state authority, but the Trump administration seems unlikely to reverse its plans. Because of the way fuel economy and GHG emissions standards are structured to use tradable credits, a scenario where the four automakers in the agreement comply with stricter standards would allow other companies to buy their excess credits and produce even more inefficient vehicles, greatly reducing the agreement's impact. Alternatively, the other automakers could also end up complying or even over-complying with federal standards.

As the Trump administration's decision draws closer, additional states and foreign governments are voicing opposition to the proposed freeze. Recently, 23 state governors representing 170 million people and 50 percent of U.S. automobile sales jointly issued the "Nation's Clean Car Promise" to support California's vehicle standard as the single "strong, science-based national standard." And while Canada has historically aligned itself with U.S. federal standards, it recently signaled it will side with California in the case of two separate standards, following California's requirements should the waiver remain in place. However, should California lose its ability to set its own standards and prompt Canada to continue aligning with U.S. federal standards, the freeze would cost Canadian consumers $70 billion through 2050.

To predict the impacts of freezing fuel economy and GHG emissions standards, Energy Innovation utilized the U.S. and Canada versions of the Energy Policy Simulator (EPS). This open-source and peer reviewed computer model uses non-partisan, public data from respected government sources such as the U.S. Energy Information Administration to predict the effects of policy changes on pollution, financial costs and savings, premature deaths, vehicle deployment and fleet turnover, and more. The EPS is freely available for public use.

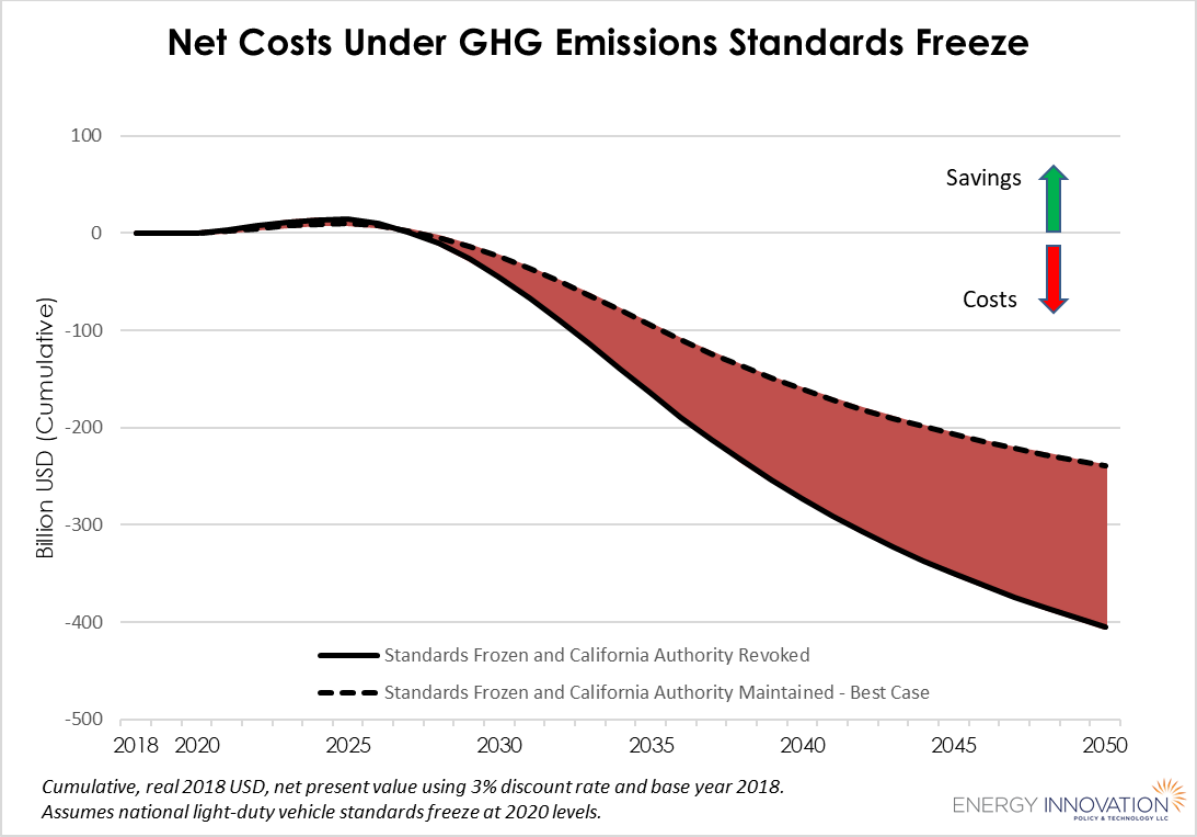
FINANCIAL LOSSES FROM FREEZING FUEL ECONOMY AND GHG EMISSIONS STANDARDS

Freezing fuel economy and GHG emissions standards would create small economy-wide financial gains in the first few years, because less efficient cars are cheaper to build (although research has shown that consumers who buy their cars with loans would see net savings immediately as the incremental vehicle price is spread out over the term of the loan). However, these gains are quickly outweighed by increased fuel expenses that grow each year, as more and more years of fuel savings are relinquished; EPA's Final Determination finds the payback periods for five-year loan and cash purchases are less than one year and five years, respectively.

By 2050, these increased costs swell to a cumulative $400 billion (in real 2018 USD, discounted at three percent annually). If this loss were represented as a tax on gasoline (the increase in amount spent on gasoline divided by the quantity of gasoline consumed), it would add 50 cents per gallon in the year of maximum impact (2036), and added costs would be more than 45 cents per gallon in every modeled year after 2032.

If California along with the Section 177 States retain the ability to set stringent vehicle emissions standards, the economic impacts are more uncertain. If automakers meet state standards in California and the Section 177 States yet sell under-complying, inefficient vehicles in other states so that their national average meets the federal standard, then net consumer costs may look similar to a total freeze.

However, if automakers met the federal standard in non-Section 177 States, then net consumer costs would be closer to $240 billion. Due to significant uncertainty over potential compliance, this analysis does not estimate the impacts of the recent agreement between California and four major automakers.

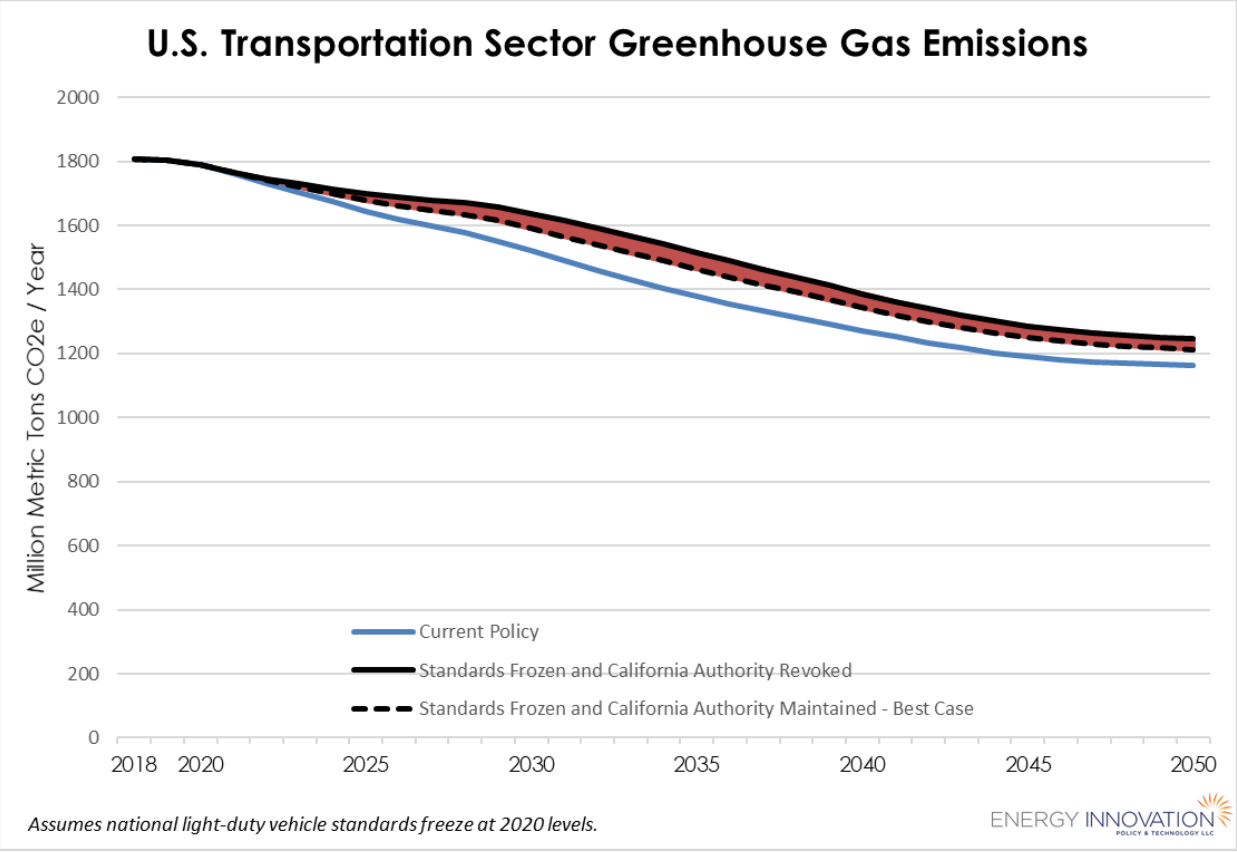


A HIGH CLIMATE TOLL: INCREASED EMISSIONS

Freezing fuel economy and GHG emission standards would increase transportation sector GHG emissions, worsening climate change. The greatest emissions increases due to the freeze would occur in the 2030s; the growing market share of electric vehicles (EVs) reduces the importance of gasoline-powered vehicles' emissions in the 2040s relative to the 2030s.

In 2035, under current policy, transportation sector emissions are projected to be 1,370 million metric tons (MMT) of carbon dioxide equivalent (CO2e). With the GHG emissions standards frozen across the country, that year's emissions would total 1,510 MMT, a 10 percent increase. Assuming retention of California's and the Section 177 states' authority, 2035 emissions would total between 1,460 and 1,510 MMT

It's important to note that our modeling assumes manufacturers will continue to sell more efficient vehicles even when EV adoption increases. Since the existing fuel economy and tailpipe standards are fleet-wide, manufacturers could sell less efficient gasoline vehicles while selling more EVs and still comply with the standard, which would increase emissions. Therefore, this analysis should be viewed as a lower bound on the potential emissions, fuel consumption, and cost impacts, with potentially greater impacts should manufacturers undo earlier fuel economy improvements or projected EV adoption does not occur.

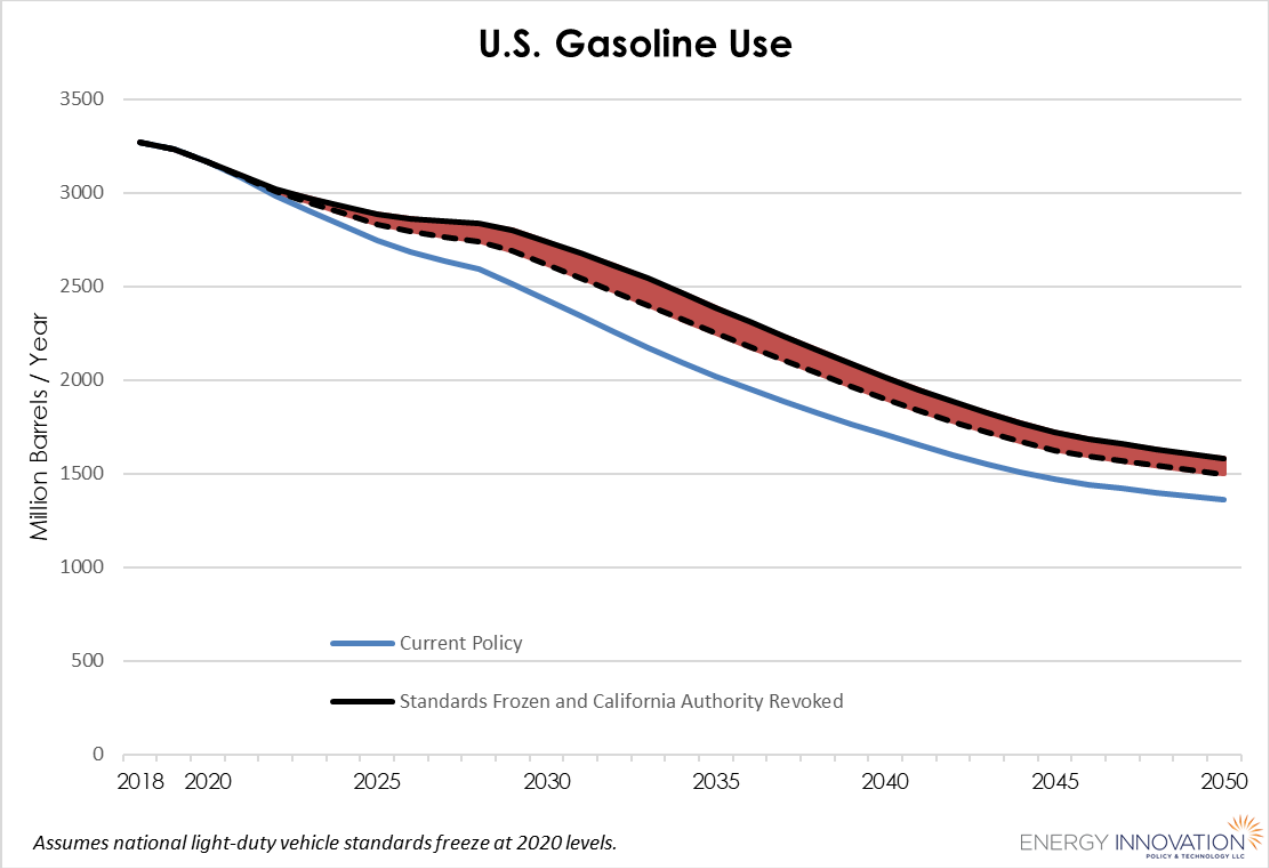


INCREASED FUEL CONSUMPTION

Freezing fuel economy and GHG emissions standards increases fuel consumption. As in the case of GHG emissions, the greatest effects come in the 2030s, before expected growth in EV adoption reduces fuel

consumption in the 2040s under all scenarios. In 2035, with standards throughout the country frozen, gasoline use would increase from 2,000 to 2,400 million barrels per year, a 20 percent increase.

Without California and Section 177 States retaining their standards, gasoline use would increase to between 2,300 to 2,400 million barrels per year. Cumulatively, from 2021-2050, the freeze would increase gasoline consumption by up to 7.6 billion barrels.



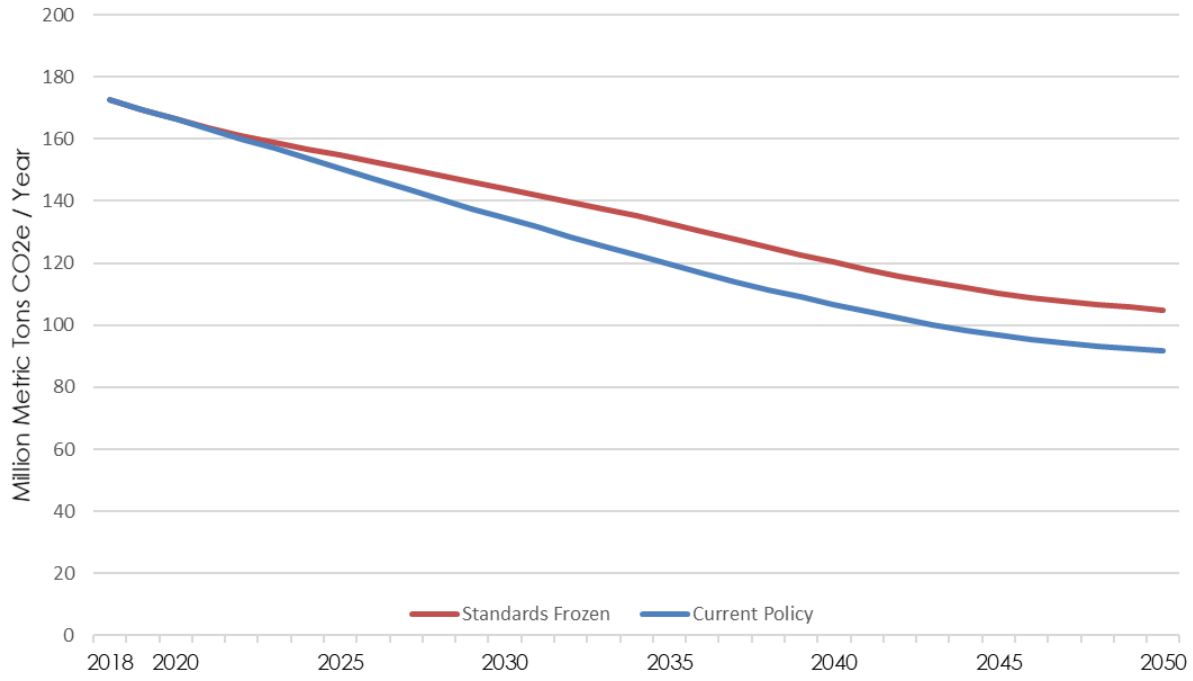
GLOBAL IMPACTS: CANADA'S FUEL ECONOMY AND GHG EMISSIONS STANDARDS

In addition to hurting U.S. consumers, a fuel economy and GHG emissions standards freeze would have global implications. Many other countries have used U.S. fuel economy and GHG emissions standards as a model, including Canada, which has an automobile market roughly the size of California.

Canada's market is heavily linked to the U.S. and has therefore historically adhered to U.S. fuel economy and GHG emissions standards. It recently signaled it would side with California if the U.S. freezes its standards and divides its vehicle market, although Canada does not intend to announce any official course of action until after the Trump administration finalizes its plan.

However, if the Trump Administration revokes California's authority to set its own standards, Canada may continue to mirror federal U.S. standards. This decision would cost Canadian consumers $67 billion through 2050 and increase gasoline use by 19 percent. Canada's transportation GHG emissions would also rise by 11 percent, contributing an additional 13 MMT CO2e in 2035.

Canadian Transportation Sector Greenhouse Gas Emissions



Assumes national light-duty vehicle standards freeze at U.S. 2020 levels.

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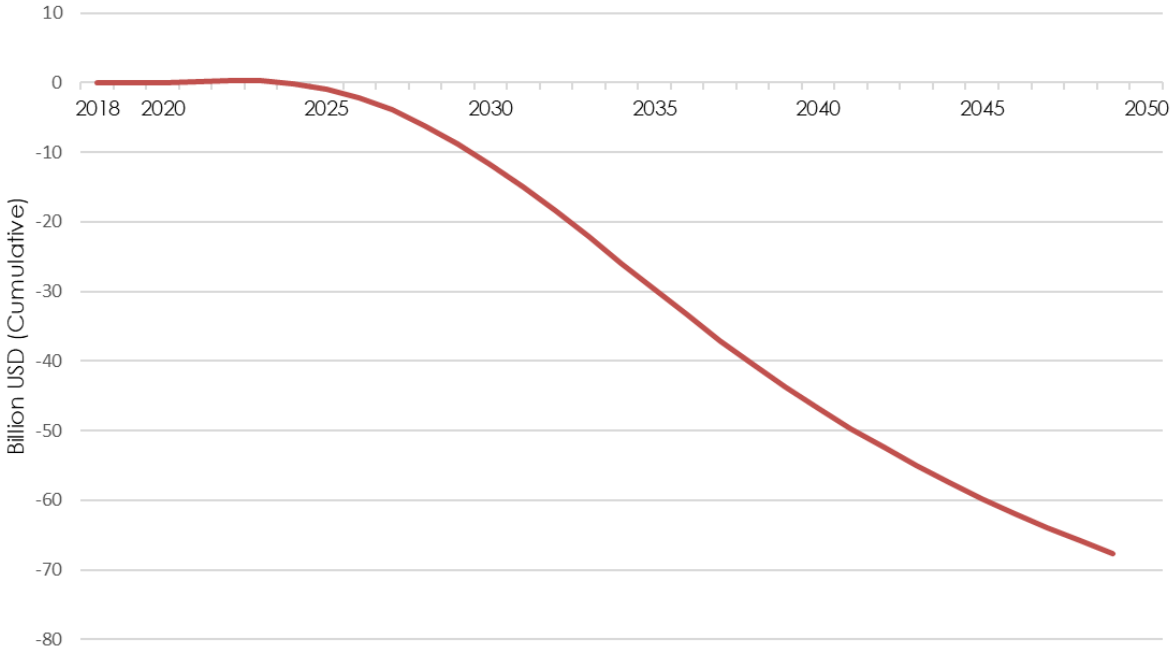
Net Costs of Canadian GHG Emissions Standards Freeze



Cumulative, real 2018 USD, net present value using 3% discount rate and base year 2018.
Assumes national light-duty vehicle standards freeze at U.S. 2020 levels.

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FREEZING FUEL ECONOMY AND GHG EMISSIONS STANDARDS HURTS AMERICAN BUSINESS

Freezing federal fuel economy and GHG emissions standards will harm U.S. consumers, who will pay more money to drive their cars the same distance. It will harm businesses that rely on light-duty vehicles, such as taxi, food delivery, and ride-sharing services. It will worsen climate change and reduce U.S. energy security. It will lead to court battles with California and the Section 177 states and fragment the North American automobile market, increasing costs to automakers.

The Trump administration says that it will help sell more cars, but as the United Auto Workers union and 17 major automakers have let the Trump administration know, it will reduce the competitiveness of U.S. vehicle manufacturing – U.S. companies will be left behind as foreign manufacturers produce increasingly efficient vehicles to meet fuel efficiency and GHG emissions standards in other global markets. And according to the Trump administration's own analysis, it will cost Americans 60,000 jobs.

The only winners are the oil companies, who stand to sell more gasoline at the expense of American consumers, manufacturers, and the environment.