Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

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BY
DAVID FRIEDMAN, RESEARCH DIRECTOR AND SENIOR ENGINEER

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Mr. Chairman and Members of the Committee, I appreciate the opportunity to testify before you today. I am a research director and senior engineer with the Union of Concerned Scientists (UCS). UCS is a leading science-based nonprofit that has been working for a healthy environment and a safer world for over 30 years.

The topic of this hearing, transportation and climate change, could not be more urgent. Put simply, global warming is the single biggest long term environmental threat facing the country and the world. But within this threat are buried opportunities. Every step we take to curb transportation's role in global warming will also cut America's oil addiction—and most, if not all, of these will also save consumers money. At the same time, the investments we make to become the world's leader in climate change solutions will strengthen our economy as we export the technology that will be essential to avoid the worst impacts of global warming.

Transportation, Targets, and Climate Caps

If we are to avoid the worst impacts of climate change, **our nation and the world must adopt a target that will keep global temperature from rising more than 2°C above pre-industrial levels.** That means stabilizing the concentration of global warming pollutants in our atmosphere at no more than 450 parts per million carbon dioxide equivalent. Analysis by UCS shows that **one part of achieving this goal means the United States must cut global warming pollution by at least 80%** compared to emission levels in 2000.[1] In addition, UCS analysis indicates that **U.S. global warming pollution must be cut by more than 20% below 2000 levels by 2020, and at least 50% below by 2030**

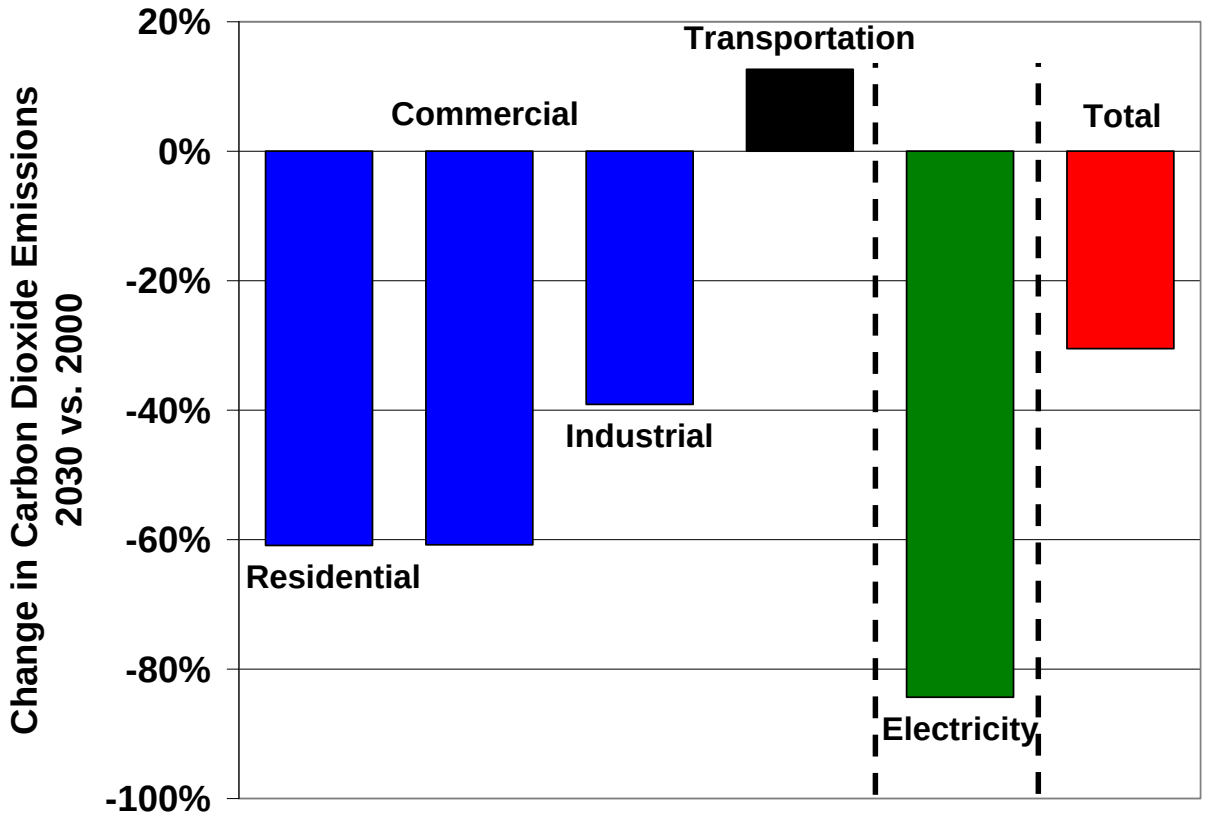
There is no single silver bullet that will dramatically cut U.S. global warming pollution and no single sector will be able to carry the full burden. Instead, **the country will have to put in place a comprehensive climate and energy policy that encourages a diverse portfolio of solutions in every sector**. Transportation, including the cars and trucks consumers drive every day, will have to play a significant role in meeting this essential 80% reduction minimum and all options for cutting pollution from transportation must be on the table. The good news is that **every sector, including transportation, has many tools at its disposal**.

[1] http://www.ucsusa.org/assets/documents/global_warming/emissions-target-report.pdf

The debate has already begun on one of the most important tools that must be put in place to limit the total amount of global warming pollution humans create: a cap-and-trade policy that would ensure that the U.S. is on a path to do its part to limit global temperatures from rising above 2°C, including at least an 80% reduction in US global warming pollution by 2050.

This cap must apply to all sectors, including transportation, but even that will still not be enough to ensure that transportation does its part. While it needed significant strengthening, the recently discussed Climate Security Act (S.2191) provides a good example of the strengths and weaknesses of cap-and-trade policy. By 2030, EIA estimated that S.2191 would cut global warming pollution by more than 30% compared to emissions in 2000.[2] However, at the same time that most sectors are projected to contribute reductions of 40% to 80%, the transportation sector is projected to continue to increase.

Figure 1. Energy Information Administration Analysis of the Climate Security Act (S.2191).



Supporting Transportation Climate Policy on a Three Legged Stool

The transportation sector simply does not do its share under a cap-and-trade system. Instead, despite the fact that **many transportation solutions can save money while cutting global warming pollution**, other sectors must pick up the slack to ensure that the overall cap is

[2] http://www.eia.doe.gov/oiaf/servicerpt/s2191/index.html

still met. This dynamic is a sign of market failures that will lead to higher costs than are necessary for controlling global warming pollution.

Put simply, the market fails transportation consumers because there are too few alternatives to doing things other than the way we have been doing them for the past sixty years:

- **Most of the planes, trains, ships, and automobiles we rely on were designed during the days of cheap oil when fuel efficiency was not a priority**. Manufacturers have been slow to respond to recent consumer demands for fuel economy. In addition, consumers have shown themselves slow to change. Gas prices have more than tripled since 2000 and consumers have only just begun to shift their purchasing and driving habits.

- **Both personal travel and goods movement have evolved around our extensive and dispersed national highway system.** Compact, walk-able or bike-able communities and easy access to transit are the exception rather than the rule. Consumers and corporations lack choices to substitute for reliance on our cars and trucks.

- **The transportation sector is almost exclusively reliant on fossil fuels**, a fuel with a very high global warming footprint. Alternative fuels meet only about 0.2% of U.S. transportation fuel needs.

These faults can be fixed by moving beyond the piecemeal approach that has historically characterized U.S. energy and transportation policy and instead applying a comprehensive approach that addresses these three market failures to build a solid foundation to support transportation's role in a national cap-and-trade policy.

Increasing Fuel Economy

To tackle global warming, reduce America's oil addiction, and save consumers tens of billions of dollars, we must give consumers and corporations new options to use fuel more efficiently when they travel or ship goods. This can be achieved either through vehicle global warming pollution standards or by setting fuel economy standards.

Through the Ten in Ten Fuel Economy Act, **this committee led the nation forward on fuel economy for cars and light trucks for the first time in more than three decades**. And for the first time ever, **the door was opened to fuel economy standards for medium and heavy duty trucks thanks to this committee**.

The projected benefits of just the light-duty portion of the Ten in Ten Fuel Economy Act highlight the importance of keeping efficiency a top priority. Meeting the minimum fuel economy requirement of 35 miles per gallon would cut global warming pollution for new cars and trucks nearly 30% by 2020. The minimum will also reduce oil consumption by nearly 9 billion barrels through 2030, rising to about 30 billion barrels saved through 2050. And finally, boosting fuel economy from today's 25 mpg average to 35 mpg will save consumers the equivalent of reducing the price of today's $4 per gallon gasoline by more than one dollar.

The example of car and truck efficiency must be repeated and reinforced throughout the transportation sector. **Delivery trucks and 18-wheelers could increase fuel economy from today's level of less than 7 mpg for new vehicles to 10-11.5 mpg by 2030**. This represents a boost of 50-70% while maintaining or expanding today's hauling capacity. However, because of language in Ten in Ten, it may be at least eight years before this committee's medium and heavy duty standards are put to work. Given the significant impacts the freight sector will feel from climate change, this committee should work to accelerate the Department of Transportation's reporting and rulemaking responsibilities in this area.

Rail, air, and shipping can also benefit from improved efficiency. For example, **rail efficiency could be improved by about one percent per year starting in 2015**.

Finally, there is more work to be done on the fuel economy of cars and trucks. A recent UCS report indicates that automakers can cost-effectively boost the fleetwide average fuel economy of cars and trucks to 40 mpg by 2020 and to more than 50 mpg by 2030.[3] Yet the recent notice of proposed rulemaking from the Department of Transportation's National Highway Traffic Safety Administration (NHTSA), at best, just barely puts cars and trucks on the road to the 35 mpg minimum by 2020.[4]

Instead of doing the bare minimum to satisfy the law, **NHTSA should put cars and trucks on a path to 40 mpg by 2020 and at least 50 mpg by 2030. This would cut global warming pollution from new cars and trucks in half by 2030 and would save about 50 billion barrels of oil through 2050.**

NHTSA appears unwilling or unable to move the country on this path and **this committee should exercise its oversight authority to ask NHTSA to fix a variety of flaws used in setting their proposed standards**:

- While gasoline prices soared above $3 per gallon this winter and have crossed $4 per gallon this summer, NHTSA relied on projections of $2.25-$2.50 per gallon.

- While carbon dioxide is currently trading at more than $40 per metric ton in Europe, NHTSA used a value of $7 per ton. NHTSA even considered $0 per ton to be in the range of possible values, implying that global warming does not exist or will cause no harm.

- NHTSA left out the military and strategic costs of America's oil addiction.

- NHTSA assumed light trucks would grow in market share, but between 2005 and 2008 the market share of light trucks sold from January to May dropped from 54% to 48%.

- NHTSA assumed hybrids were not available until 2014 despite the fact that the Toyota Prius, a hybrid, is the 9th best selling car in the country today.

[3] http://www.ucsusa.org/assets/redesign-documents/clean_vehicles/UCS-Setting-the-Standard.pdf
[4] http://www.ucsusa.org/news/press_release/new-fuel-economy-proposal-star-0111.html

- NHTSA based its rulemaking on costs and benefits on the margin rather than the total costs and benefits of improved standards.

Changes along these lines would redirect NHTSA's efforts to the intent, not just the letter, of the law passed as part of Ten in Ten. **NHTSA's own analysis confirms that simply switching to total benefits, even with their poor gas price assumptions, would have led them to propose a fleetwide average of at least 35 mpg by 2015—five years earlier than the required minimum**.[5] More realistic gas prices, even only setting the standard based on the marginal benefits, would also have led NHTSA to propose a fleetwide average over about 35 mpg by 2015.[6]

Making matters worse, not only will NHTSA's poor analysis shortchange consumers and lead to lower global warming pollution reductions, we can expect a similar approach to shortchange trucking companies and the environment when NHTSA address fuel economy standards for medium and heavy duty vehicles. **This committee's oversight role is essential** to avoiding this outcome.

Smarter Travel, Freight, Cities

While great strides can be made to improve vehicle efficiency**, it is unlikely that technology alone will be able to keep pace with growing demand for personal and freight travel if we continue on our current path**. As a result, despite the potential for parts of the transportation sector to increase efficiency by 50% or 100%, global warming pollution from transportation will continue to increase beyond current levels.

For example, if projected trends from the Energy Information Administration's Annual Energy Outlook 2008 continue through 2050, medium and heavy duty vehicles could see demand increase by more than 130%. If the fuel economy of all delivery trucks and 18-wheelers on the road were increased by about 70%, that would still not be enough to compensate for the increase in demand. As a result, global warming pollution in this sector would still rise by more than 20% in 2050 compared to levels in 2000. Compared to a goal of an 80% reduction in global warming pollution, a 20% increase clearly won't cut it.

Growing travel demand is a core barrier to avoiding the worst impacts of climate change, but historical travel growth has also been a key part of U.S. economic growth. **The challenge is to rethink and redesign our transportation system to allow for continued economic growth without as many miles**.

As with efficiency, the first step is to ensure that consumers and corporations have alternatives other than business as usual. **Both urban and suburban areas need greater access to public transportation**, which produces significantly less global warming pollution per person than cars and trucks. As of 2001, less than one-third of the U.S. population lived within about a block of a

[5] Page III-6 in NHTSA's Preliminary Regulatory Impact Analysis for their proposed fuel economy standards for Model Year 2011-2015 cars and light trucks.
[6] Ibid, pages IX-12 and IX-13.

bus line, while only about 40% lived within a half mile.[7] The situation is even worse for rail, where only about 10% of U.S. population lived within a mile of a rail stop, while only about one quarter lived within five miles.[8]

In addition to transit, **consumers need improved access to high occupancy vehicle (HOV) lanes, bike lanes, and more affordable housing near where they work**. Corporations need many of the same things. While 18-wheelers provide a lot of flexibility in the freight world, it takes 5-7 times more energy to ship a ton of goods on a truck than on rail—**switching more miles from long-haul trucking to rail will put a real dent in global warming pollution from freight. Trucks and buses might also benefit from their own dedicated lanes where they are not caught up in as much stop and go traffic, making highways safer as well**.

For these various new options to work, two key resources are needed: the money to fund them and the willingness to use them. Thankfully, in many cases, a system that makes sure people and products carry the full cost of their travel can help with both. **Whether it is insurance, wear and tear on highways and bridges, or the costs of the pollution produced from tailpipes, charging per mile rather than per year or per gallon can create both a revenue stream for the needed investments and a more direct incentive to try out the newly available approaches.**

Some examples of these approaches include:

- **Pay as you drive insurance**: If you drive less, you are less likely to get into an accident. Paying for insurance by the mile rather than just by the car would both provide a more equitable distribution of insurance payments and encourage people to drive less.

- **Per mile road user fees**: Current highway construction and maintenance costs, and some transit costs, are covered by per gallon fuel taxes. Because fuel efficiency must go up to address global warming, projected tax receipts will go down compared to a business as usual scenario. Per mile road user fees, adjusted to vehicle weight, could maintain a steadily growing revenue stream to keep our roads and bridges from falling apart while encouraging consumers and corporations to seek less expensive alternatives.

- **Per mile pollution or congestion fees**: Accidents and wear and tear are not the only costs associated with every mile we drive. Vehicles of all sizes cause smog-forming and toxic pollution that lead to increased health care costs and even fatalities. Traffic also costs time because of the delays created by congestion. Per mile pollution and congestion fees can become steady funding sources to hold people responsible for the damage they create while creating a funding stream for alternatives, plus they would provide another incentive to drive less. Per mile pollution and congestion fees tied to air travel and freight could be great ways to finance high-speed rail or simply much needed reinvestment into the country's conventional rail infrastructure.

[7] Public Transit in America: Analysis of Access Using the 2001 National Household Travel Survey, Center for Urban Transportation Research, University of South Florida, Tampa, February 2007.
[8] Ibid.

- **Location efficient mortgages**: Current tax codes give consumers the same break on their mortgage interest no matter where they live. While these tax breaks have helped many live out the American dream of owning a house, they have also helped lower the cost of owning homes that are farther from where people work, increasing daily travel. Revamping that tax code to provide greater tax breaks for those who live closer to work or transit will still help people realize a part of the American dream while ensuring it does not become a nightmare of pollution and congestion.

This is not intended to be an exhaustive list, but instead points the way to policies and practices that could help cut projected personal travel by 25% to 35% by 2050 (15%-20% by 2030) and could contribute to reducing the amount of freight that is trucked by 20% or more by 2050. Even more innovative approaches, such as reserving downtown areas for walking, biking, and public transit, or directly integrating our personal and freight vehicles with a mass transit system, could be part of a smart growth revolution that allows us to rethink how we move people and goods.

Fueling Up with Low Carbon Alternatives

The combination of investments in improved vehicle efficiency and alternatives to continuing historic growth in travel can go a long way to cutting global warming pollution from the transportation sector. However, **if our economy continues to grow as it has over the last 20 years, these solutions will not be enough to cut global warming pollution from transportation by at least 80% compared to levels in 2000**.

To reach those deep cuts while continuing to strengthen our economy, we must also tap into transportation fuels that do not release significant amounts of carbon dioxide. If we combine all of the approaches above for our light-duty cars and trucks, then by 2050 we will still need to supply the equivalent of 80 to 110 billion gallons of gasoline with 70-80% less global warming pollution than today's fuel. For medium and heavy duty trucks, we will need the equivalent of another 30 to 40 billion gallons of gasoline with 75-80% less global warming pollution. And for the remainder of the transportation sectors, we will need yet another 40 to 50 billion gallons of low carbon fuel.

That means, **by 2050, we will need the equivalent of 150 to 200 billion gallons of gasoline with as much as an 80% reduction in global warming pollution compared to today's gasoline**. And, while **biofuels will play an important part in a low carbon future**, it is unlikely, at best, that we can sustainably produce sufficient low-carbon biofuel in the U.S. A more realistic estimate of sustainable biofuel potential, one that minimizes tradeoffs between food and fuel and does not encourage deforestation in other countries, would be closer to 40 to 50 billion gallons, unless breakthroughs are achieved in novel biomass resources.

To supply the rest of transportation's needed energy, we must to tap into renewable electricity and clean hydrogen. But these resources will not appear overnight, nor will the vehicles that must be sold to use these low-carbon fuels. We will need multiple policies to bring about the needed fuel revolution:

- **A low carbon fuel standard (LCFS) must be put in place to cut global warming pollution by 10% by 2030 and up to 80% by 2050.** While the recently passed

Renewable Fuel Standard applies global warming pollution standards to biofuels, the required amount would only represent about 10% of current demand, leaving 90% of transportation fuel unregulated.

- **An ultra-low carbon fuel standard is also needed to accelerate demand for fuels that dramatically cut global warming pollution.** While a 10% low carbon fuel standard may be appropriate for 2030, it will mainly put a stop to dirty fuels such as liquid-coal and encourage fuels with only modest improvements. **To created demand for the cleanest biofuels, electricity and hydrogen, there should be a carve-out in the LCFS for a minimum volume of the cleanest fuels**.

- **Vehicle incentives and an ultra-low carbon vehicle requirement will also be essential to ensure that the vehicles are there to use the fuel**. Fuel cell vehicles, battery electric vehicles, and plugins are currently significantly more expensive than conventional vehicles or even hybrids. Economic incentives and requirements will be needed to overcome the valley of death experienced by new technologies.

Conclusion

If left unchecked, climate change will have direct and significant impacts on our transportation system. But that same system can be an essential part of the solution set to help avoid the worst impacts of climate change.

The U.S. needs to move away from a piecemeal approach to transportation energy and environmental policy and instead adopt a comprehensive set of policies that will tap into both the near term and long term solutions that are available or on the drawing boards. This will require a longer term perspective and a combination of **consistent, significant, and sustained policies**. Yes, **we do need to rethink our transportation system,** but in doing so, **we will not only dramatically lower global warming pollution, we will save consumers billions, create new jobs in America and ultimately cut our addiction to oil.**