



**TESTIMONY OF ROLAND J. HWANG
DIRECTOR, TRANSPORTATION PROGRAM
NATURAL RESOURCES DEFENSE COUNCIL**

**HEARING ON THE HISTORIC CLEAN CAR STANDARDS
BEFORE THE SUBCOMMITTEE ON REGULATORY AFFAIRS, STIMULUS OVERSIGHT
AND GOVERNMENT SPENDING**

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Thank you, Chairman Jordan and Ranking Member Kucinich, for the opportunity to testify today.

My name is Roland Hwang, and I am the Transportation Program Director of the Natural Resources Defense Council (NRDC). NRDC is a nonprofit organization of scientists, lawyers, and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.3 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles, San Francisco, Chicago, and Beijing.

President Obama's July 30th announcement is the third historic agreement to bring us cleaner cars and trucks, dramatically cutting carbon pollution and raising fuel economy for new cars, SUVs, minivans, and pick-ups built between 2017 and 2025. The latest announcement builds on the joint NHSTA and EPA rules for model years 2012 to 2016 passenger vehicles and for model years 2014 to 2018 medium- and heavy-duty trucks.^{1,2} These agreements exemplify how leadership, partnership, and compromise can help solve the enormous environmental, economic and energy challenges facing our country.

Far from "running on empty," these clean car and fuel economy standards will save Americans from emptying their wallets at the pump, stop the emptying of our national wealth for foreign oil, and cut the dangerous carbon pollution that is emptying our children's future.

¹ EPA and DOT. "Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for MY2017-MY2025 (Final Rule)." Federal Register 75:88 . May 7, 2010.

² EPA and DOT. "Greenhouse Gas Emission Standards and Fuel Efficiency Standards for Medium- and Heavy-duty Engines and Vehicles." Federal Register 76:179. September 15, 2011.

The latest agreement to strengthen clean car standards will cut carbon pollution by almost half from current vehicles and increase fuel-efficiency standards to 54.5 mpg by 2025. The combined savings of the first and second round of light-duty standards over the lifetime of 2012 to 2025 vehicles will save drivers \$1.7 trillion in fuel cost, reduce oil dependency by 12 billion barrels of oil, and cut heat-trapping pollution that drives global warming by approximately 6 billion metric tons.³

By 2030, the 2012 to 2025 National Program standards will reduce oil consumption by 3.1 million barrels per day, equivalent to 30 percent of the amount of oil we currently import.⁴ The National Program will act as a powerful economic stimulus by keeping \$100 billion annually in the U.S. economy instead of sending it overseas to Saudi Arabia, Iran, Venezuela and other oil-exporting nations. This higher level of investment in the U.S. economy, especially auto manufacturing, will result in roughly half a million more jobs by 2030.⁵

American consumers are already benefiting from the more fuel-efficient vehicle options available due to the current National Program requirements and will benefit more as the standards get stronger. By 2030, the new agreement will provide the equivalent of a \$330 tax rebate to every American household.⁶ Compared to today's average vehicle, a 54.5 mpg standard will save the average driver \$6,800 over the vehicle's lifetime, with most drivers seeing benefits *immediately* in the form of reduced total monthly payments for the car and fuel.⁷

Strong, Broad-Based Support for Latest Clean Car Agreement

The most recent clean car agreement has broad support from almost all of the auto industry⁸, and from Republicans and Democrats⁹, consumer advocacy groups^{10,11}, national security groups^{12,13},

³ The White House, "Driving Efficiency: Cutting Costs for Families at the Pump and Slashing Dependence on Oil." Report release July 2011.

⁴ NRDC estimate based on EPA/DOT 2010 and UCS and NRDC 2011 (UCS and NRDC. "Saving Money at the Gas Pump: State-by-State Consumer Savings from Stronger Fuel Efficiency and Carbon Pollution Standards". September 2011.)

⁵ Ceres. *More Jobs per Gallon: How Strong Fuel Economy/GHG Standards will Fuel American Jobs*. July 2011.

⁶ Op. cit. UCS and NRDC 2011.

⁷ NRDC analysis based on EPA/DOT 2010 and UCS and NRDC 2011.

⁸ Commitment letters from 13 automakers to Secretary LaHood and Administrator Jackson. Dated July 2011. Letters from BMW, Chrysler, Ford, GM, Honda, Hyundai, Jaguar Land Rover, Kia, Mazda, Mitsubishi, Nissan, Toyota Volvo. <http://epa.gov/otaq/climate/regulations.htm>

economists¹⁴, business leaders¹⁵, small business owners¹⁶, the UAW¹⁷, and environmental organizations¹⁸.

Numerous polls show that a large majority of Americans support raising fuel economy standards to 60 mpg by 2025. A Consumer Federation of America found 60 percent of American consumers support a 60 mpg standard with a payback of three and five years.¹⁹ A poll for national environmental groups found 83 percent of voters support a 60 mpg standard with a payback of four years.²⁰ Polls by the investor group Ceres found 56 percent of Michigan voters and 59 percent of Ohio voters support 60 mpg with a payback time of four years.²¹ Finally, a poll by the Public Policy Institute of California found that an overwhelming 84 percent of Californians support requiring automakers to significantly improve fuel efficiency, including 76 percent of Republicans.²²

Small business owners – many of whom buy cars and trucks for their businesses – also strongly support higher fuel economy standards. A recent poll by the Small Business Majority found that 87 percent of small business owners overwhelmingly support adopting strong fuel efficiency standards now and 80 percent support requiring the auto industry to increase mileage to 60 mpg by 2025.²³ According

⁹ Bipartisan Joint Letter to President Obama. Signed by The Honorable Diane Feinstein, US state Congress, D-California, et al. Dated July 25, 2011.

¹⁰ American Consumer Advocacy Groups. Joint Letter to President Obama. Signed by Consumer Federation of American, et al. Dated September 22, 2010.

¹¹ Consumer Union. Consumers Reports Says 56 Miles-Per-Gallon Vehicle Standard is Good, but 62 MPG is Better Aggressive Fuel Economy Standard by 2025 Will Save Consumers Money and Dramatically Cut Oil Consumption. Press Release. June 30, 2011.

¹² Securing America's Future Energy. *Oil Savings from the Proposed 2017–2025 Fuel Economy Standards*. Issue Brief. June 8, 2011

¹³ Ashley Howe. Truman Thanks Obama in POLITICO. Blog. Truman Project. August 3, 2011.

<http://www.operationfree.net/2011/08/03/truman-advertisement-featured-in-politico/>

¹⁴ American Economist Group Joint Letter to President Obama. Signed by Michael Anderson, Ph.D. University of California, Berkley, et al. Dated June 7, 2011

¹⁵ Environmental Entrepreneurs (E2) Joint Letter to President Obama. Signed by Curtis Abbott, Lucesco Lighting Inc., et al. Date June 30, 2011

¹⁶ Small Business Majority. Small Businesses Strongly Support Raising Fuel Efficiency Standards. Press Release. July 29, 2011

¹⁷ UAW. UAW supports administration proposal on light-duty vehicle CAFE and greenhouse gas emissions reductions. Press Release. July 29, 2011.

¹⁸ Environmental Advocacy Groups Joint Letter to President Obama. Signed by Cindy Shogan Alaskan Wilderness League, et al. Dated September 9, 2010.

¹⁹ Consumer Federation of America. The Consumer Case for Strong Fuel Economy Standards: 56 MPG by 2025 Works. Press Release. June 28, 2011.

²⁰ The Mellman Group, Inc. Memo to Environment America, The National Resources Defense Council, Sierra Club, & Union of Concerned Scientists. *Voters Overwhelmingly Support Stricter Fuel Efficiency Standards*. Released September 15, 2010.

²¹ Ceres. Voters in America's Auto & Manufacturing Heartland Want 60 MPG Fuel Economy Standards by 2025. Press release. May 25, 2011.

²² Public Policy Institute of California. PPIC Statewide Survey: Californians and the Environment. Press Release of Findings. July 27, 2011.

²³ Small Business Majority. *Small Businesses Strongly Support Raising Fuel Efficiency Standards*. Fuel Efficiency Poll. July 29, 2011.

to the Small Business Majority poll: “Small business owners say that in order to survive and remain competitive, they need automobiles that get better gas mileage and cost less to operate.”

Clean Car Agreements Shows Clean Air Act Works

But maybe the most important result of the newest clean car agreement is what it shows about getting beyond political gridlock in today’s America. The President, the auto companies, states, labor and environmentalists have, once again, shown what it means to govern effectively and what can be accomplished by constructive compromise.

In the last half-century, it would be tough to find more implacable enemies than the car companies and advocates for cleaner air and higher mileage. We fought for decades over the Clean Air Act and Corporate Average Fuel Economy (CAFE). Over the last 10 years, California took the lead by setting its own carbon pollution standards under the Clean Air Act, with other states following suit. And a coalition of environmental organizations and states battled all the way to the Supreme Court, winning not one but two landmark rulings that it’s EPA’s job under the Clean Air Act to curb the pollution that causes global warming.^{24,25}

By late in the last decade, some of the biggest firms in the auto industry had ground themselves into bankruptcy, while environmentalists found that their legal victories still had not translated into cleaner cars. The time was right for win-win solutions that cut pollution, cut oil dependence, saved consumers billions at the pump, and helped the auto companies get back to profitability in the new world of higher gas prices.

In 2009 the Obama administration hammered out an agreement – backed by every major auto company, the United Auto Workers, states, and environmental organizations – on a consistent set of carbon pollution and fuel economy standards for 2012-16. The standards are jointly implemented by EPA, the National Highway Traffic Safety Administration (NHTSA), and the California Air Resources

²⁴ *Connecticut v. American Electric Power*, 564 U. S. (2011).

²⁵ *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007)

Board, acting under both the Clean Air Act and the Energy Independence and Security Act. In 2010, the administration forged a similar pact for highway trucks and other heavy vehicles. And now in 2011, the President's team has reached a third agreement, which will do even more than the first two historic pacts to cut pollution, cut our oil dependence, save consumers money, and create jobs.

The auto industry as and the environment are both fortunate that the Obama administration acted quickly in 2009 to seize the opportunity for consensus. In its first three months, the administration reached out, separately, to each of the contending parties – domestic and foreign car makers, the UAW, the states, and environmental organizations – and quickly found the above-described formula for common ground on the National Program for 2012-2016 that harmonizes standards from NHTSA, EPA, and California.

The agencies followed the same process of consultation regarding the standards for 2017 through 2025. And again they have been able to find common ground that works to the mutual advantage of the affected parties.

I want to emphasize that agencies routinely consult with and collect data from affected parties before proposing important regulations. You would not want it otherwise. How else can agencies learn what they need to know to develop smart, effective, efficient, and fair solutions to the problems Congress has tasked them to solve?

The period for consulting with and taking input from industry, environmentalists, states, and others often lasts longer than the formal interval between proposal and promulgation, and the input received before proposal is often more useful and important than that which is received in the formal comment period. This pre-proposal consultation is completely consistent with the Administrative Procedures Act and the procedural provisions of the Clean Air Act. Reflecting the fact that much technical work and interaction with affected parties precedes a formal proposal, the Clean Air Act specifically requires that both documents created by the agency and documents submitted by affected

parties will be put in a public docket at the time of proposal. EPA undoubtedly will do that when it issues the forthcoming proposed standards for 2017 through 2025.

The complaints you are hearing today from other witnesses are difficult to understand. In any event, what has been announced so far is just a proposal. Everyone will have a chance to submit public comments, and the agencies must consider and respond to those comments. If dealers or others feel there is important data that the process so far has somehow overlooked, let them bring that data forward in comments. That is how the process is designed to work.

No one has surrendered any legal rights. In fact, exercising their legal rights, an odd assortment of challengers has brought suit against the 2012-2016 clean car standards. The auto industry, environmentalists, and states find themselves on the same side, defending EPA's standards. There is no disinterested observer who thinks that the lawsuits will upset the standards, but no one argues with their right to bring it.

Bush Administration Initiated the Use of the Clean Air Act to Control Carbon Pollution in 2008

It may come as surprise to some committee members that using the Clean Air Act to control carbon pollution was first initiated by the Bush administration. In fact, in May 2007, a month after the Supreme Court's landmark decision in *Massachusetts v. EPA*, President Bush went to the Rose Garden and ordered EPA Administrator Johnson to carry it out by setting carbon pollution standards for new vehicles. And for a while it looked like the EPA actually would be allowed to act – until Johnson sent a proposed endangerment finding to the Office of Management and Budget in December of that year, and the OMB officials refused to open the email.

In January 2008, Administrator Johnson appealed directly – albeit unsuccessfully – to President Bush to stand by his Rose Garden pledge and let EPA carry out the law. His letter to the president stated that the science supported “a positive endangerment determination” on carbon pollution and “does not

permit a negative finding.”²⁶ Consequently, Johnson proposed an action plan to curb emissions from motor vehicles and industrial sources *just like the action plan actually carried out by the Obama EPA.*

The Johnson letter reveals three new and important facts:

(1) *That the Bush administration’s EPA thought “a positive endangerment finding” was compelled by both the science and the law.* Johnson wrote that the Supreme Court’s decision “combined with the latest science of climate change requires the Agency to propose a positive endangerment finding.” He continued: “the state of the latest climate change science does not permit a negative finding, nor does it permit a credible finding that we need to wait for more research.”

(2) *That Johnson’s action plan – to issue an endangerment finding, set vehicle standards, and more – had “Cabinet-level” buy-in.* Johnson wrote that the scientific and legal need to issue a positive endangerment finding “was agreed to at the Cabinet-level meeting in November.” He continued: “A robust interagency policy process involving principal meetings over the past eight months has enabled me to formulate a plan that is prudent and cautious yet forward thinking.”

(3) *That Johnson’s action plan contained exactly the same steps that his successor, Lisa Jackson, has carried out.* Johnson told President Bush he had formulated a “prudent and cautious yet forward thinking” action plan that “will fulfill your Administration’s obligations under the Supreme Court decision.” The plan is attached to his letter. Phase 1 called for these actions, and I quote:

- In response to the Supreme Court mandate in *Massachusetts v EPA*, issue a proposed positive endangerment finding for public notice and comment as agreed to in the policy process.
- In response to the direction in [the Energy Independence and Security Act], issue a proposed vehicles rule jointly with the Department of Transportation to implement the new EISA and address issues raised in the Supreme Court case.
- To address requirements under the Clean Air Act, issue a proposed rule to update the New Source Review program to raise greenhouse gas thresholds to avoid covering small sources and to better define cost-effective, available technology.

²⁶Steven L. Johnson, Former EPA Administrator, Memo to Former US President George Bush, January 31, 2008.

Timing: Proposal in March or April. Final by the end of 2008.

Johnson's letter noted that further actions were required: "[W]ithin the next several months, EPA must face regulating greenhouse gases from power plants, some industrial sources, petroleum refineries and cement kilns." So in his plan he proposed to address these sources in Phase 2, in spring 2008.

National Program Critical to Auto Industry's Turnaround

In a world of volatile but steadily rising gasoline prices, it is *regulation* that has played a crucial role in providing *business certainty*. That's right, the *regulatory certainty* provided by the National Program has been critical to the U.S. auto industry's recovery and international competitiveness. The current recovery of the auto industry demonstrates higher sales, greater profitability, and higher fuel efficiency can all go hand-in-hand.

In 2009, the auto market sales hit rock bottom with just 10.4 million vehicles sold, GM and Ford alone combining for losses of \$19.3 billion, and average fuel efficiency of new passenger vehicles was just 20.9 mpg.²⁷ In a remarkable turnaround, today sales, profits and fuel efficiency are all dramatically higher. 2011 sales are estimated to be on track to reach 13.6 million, GM and Ford have already combined for \$9.6 billion in profits for the first half of 2011 alone, and average calendar year 2011 fuel efficiency year-to-date is 22.5 mpg.²⁸ The first National Program in 2009 was critical in creating the predictable, stable regulatory environment that enabled the auto industry to effect this remarkable turnaround.

According to *Automotive News*, even automakers now admit that they are benefiting from stronger 2012 to 2016 standards that they fought so hard against: "Many automakers believe that the work they've done since the last big [gas] price surge, and in anticipation of higher government fuel-

²⁷ NRDC calculation based on monthly sales data from Ward's Auto and average monthly fuel efficiency from University of Michigan Transportation Research Institute (UMTRI). *Average sales-weighted fuel economy of purchased new vehicles for October 2007 through September 2011*. October 5, 2011. Sources at <http://www.umich.edu/~umtristwt/EDI_sales-weighted-mpg.html>

²⁸ NRDC calculation based on data from UMTRI 2011 monthly fuel efficiency data for January 2011 to September 2011. Note that this calculation will differ slightly from the EPA 2010 *Fuel Economy Trend* report which reports fuel efficiency on a model year basis, October to September.

economy standards, leaves them better prepared this time, with stables of more competitive small cars and crossovers.”²⁹

Who are the biggest winners from stronger pollution and fuel economy standards? Perhaps ironically, Detroit: “It could be a fairer fight this time,” wrote *Automotive News*. “GM and Ford not only have more competitive small cars, but hot-selling crossovers such as the Chevrolet Equinox and Ford Edge that could benefit if consumers abandon big SUVs.”³⁰

Alan Mullaly, Ford’s chief executive, told Bloomberg that his company is better able to cope with rising fuel prices now than in 2008, when it was too heavy on trucks and large SUVs. Ford suffered more than \$30 billion in losses from 2006 to 2008 but is now profitable with its renewed emphasis on fuel-efficiency and small cars. It reported net income of \$2.4 billion in the second quarter of 2011.

GM is also now profitable and reported net income of \$2.5 billion in the second quarter of 2011 after losing \$28 billion in 2008 and 2009. “GM’s investments in fuel economy, design and quality are paying off around the world as our global market share growth and financial results bear out,” said Dan Akerson, chairman and CEO.³¹

Job creation benefits from the manufacturing of fuel-efficient vehicles and components are already accruing across the country. Both GM and Ford are having trouble keeping up with demand for their respective compact cars, the Chevrolet Cruze and Ford Focus. GM is adding overtime shifts to the Ohio plant that builds the Cruze, and Ford said it is stepping up overall production by 9 percent in the fourth quarter from what it was at the end of 2010.³² Honda is already adding a second shift at its Greensburg, Indiana plant, where Civics are built, and plans to hire 1,000 people by the end of the year.³³ GM

²⁹ Colias, Michael. Buyers move toward better fuel economy *Automotive News*. March 14, 2011. Sourced at <<http://www.autonews.com/apps/pbcs.dll/article?AID=/20110314/RETAIL07/303149972/1135> >

³⁰ Ibid.

³¹ Hanan Smith, Dottie. GM Investments in Fuel Economy, Design and Quality Paying Off *Automotive Discovery*. August 5, 2011. Sourced at <<http://automotivediscovery.com/gm-investments-in-fuel-economy-design-and-quality-paying-off/929726/>>

³² Bunkley, Nick. Car Buyers Unfazed by Storms, Financial and Tropical, in August *New York Times*. September 1, 2011. Sourced at <<http://www.nytimes.com/2011/09/02/business/car-sales-improved-in-august-over-a-year-ago.html> >

³³ Network Indiana. Greensburg Honda Plant Adding Jobs *Network Indiana*. June 17, 2011. Sourced at <<http://indianapublicmedia.org/news/greensburg-honda-plant-adding-jobs-16957/>>

announced last year that it was hiring 1,000 engineers and researchers in Michigan to work on electric vehicles.³⁴ General Motors is just starting production of the 40 mpg 2012 Chevy Sonic at its Orion Township assembly plant suburban Detroit, the only subcompact car produced in the U.S.

Job Creation Benefits of 2017-2025 Clean Car Standards

The new standards will also help create tens of thousands of new jobs in the auto sector and even more across the economy. A recent study by the business group Ceres found that a 2025 standard of 51 MPG would create 484,000 full-time jobs in the economy, with 43,000 jobs directly in the auto industry by 2030.³⁵ Job benefits will be spread to all 50 states in both the form of more money to spend in the economy through fuel savings rebates and through more workers to build clean, efficient components and vehicles.

As shown in Figure 1, drivers in all 50 states will see a fuel savings rebate equivalent to \$330 per household in 2030. Figure 2 shows that there are already more than 300 suppliers of fuel-efficient components located in 43 states and the District of Columbia. These companies are responsible for employing more than 150,000 workers directly and for employing hundreds of thousands of others indirectly.³⁶

The reason for increased jobs is quite simple. Barbara Somson of the UAW summed it up best in a recent Senate testimony: "The simple equation for understanding how this job creation occurs is that the new technology required to meet tailpipe emissions standards represents additional content on each vehicle, and bringing that additional content to market requires more engineers, more managers, and more construction and production workers."³⁷

³⁴ Thompon, Chrissie. GM to hire 1,000 to boost electric vehicle efforts *Detroit Free Press*. November 30, 2010 . Sourced at < http://www.usatoday.com/money/autos/2010-11-30-volt_N.htm >

³⁵ Op. cit. Ceres 2011

³⁶ Natural Resources Defense Council, National Wildlife Federation, United Automobile, Aerospace and Agricultural Implement Workers of America (UAW). *Supplying Ingenuity U.S. Suppliers of Clean, Fuel-Efficient Vehicle Technologies*. August 2011.

³⁷ Testimony of Barbara Somson, Legislative Director, UAW. Clean Air Act and Jobs. Senate Committee on Environment and Public Works, Subcommittee on Clean Air and Nuclear Safety, Subcommittee on Green Jobs and the New Economy. March 17, 2011

The Energy Information Agency of the U.S. DOE agrees with UAW that more content means more jobs. According to EIA: "Use of more fuel-efficient technology is likely to increase the number of employees needed to manufacture a vehicle" and that the "implicit assumption that employment per vehicle does not increase as vehicles incorporate additional technology to become more fuel efficient does not seem reasonable."³⁸

Consumer Demand for Clean, Efficient Cars

Gasoline prices have been rising since 2005 and as a result, consumers are demanding more fuel-efficient cars. The national average gasoline price averaged about \$3.50 in the beginning of October, a 25 percent increase compared to this time last year and a 50 percent increase since 2005. Twice in the last decade the automakers, especially the Detroit Three, got caught short of fuel-efficient models in response to gas price shocks. Sales trends, price data and consumer polls all strongly indicate that consumer demand for fuel-efficient vehicles is currently and will remain robust.

Despite the slight rebound in the market of SUVs and pickups in September, the long-term trend towards greater fuel efficiency is clear. As shown in Figure 3, sales-weighted fuel economy has steadily increased since model year 2005, rising from a 19.9 mpg to 22.5 mpg in model year 2010.³⁹ As shown in Figure 4, overall 2011 year-to-date average fuel economy of 22.5 is than the 2010 average of about 22.1 mpg, peaking at 23.0 mpg in March, before receding to 22.1 mpg in September.⁴⁰ With most experts expecting oil prices to remain high, the long-term demand for fuel-efficient vehicles is likely to remain robust. According to Fatih Birol, chief economist to the International Energy Agency (IEA), oil prices are likely to rise 30 percent over the next three years.⁴¹

³⁸ Roland, Neil. Agency: Alliance job-loss claim is faulty. *Automotive News*. June 27, 2011. Sourced at <<http://www.autonews.com/apps/pbcs.dll/article?AID=/20110627/OEM01/306279984/1143>>

³⁹ EPA. *Light-Duty Technology, Carbon Dioxide Emissions and Fuel Economy: 1975 Through 2010*. EPA-420-S-10-00. November 2010.

⁴⁰ Op. cit. UMTRI 2011.

⁴¹ Village. Alternatives to Expensive Oil (June 2011) *Village*. October 7, 2011 Sourced at <<http://www.villagemagazine.ie/index.php/2011/10/alternatives-to-expensive-oil/>>

Sales of smaller vehicles are growing. Small and mid-sized vehicles account for 48 percent of sales this year versus 38 percent in 2005. Fuel-inefficient, truck-based SUV sales are half of what they were in 2005, accounting for 7.5 percent of sales year-to-date in 2011 down from 15.4 percent in 2005. These heavier, less fuel-efficient truck-based SUVs have largely been replaced by car-based, more fuel-efficient “Crossover Utility Vehicles” which now comprise 25.8 percent of the market. Pickup sales are down from 3.2 million units in 2005 to just 1.6 million units in 2010, dropping from 18.7 percent to 13.9 percent market share.⁴²

Four cylinders have replaced sixes as America's most popular engine choice, powering 43 percent of U.S. light vehicles sold in the first half of this year up from 25 percent in 2005.^{43,44} Ford recently noted the shift away from V-8s: “EcoBoost-equipped F-150s had their best-ever sales month, and V6 engines continue to outsell V8s among F-150s, with Ford’s new 3.5-liter EcoBoost and 3.7-liter V6 engines representing 57 percent of F-150 retail sales in September.”⁴⁵

The F-150 EcoBoost also clearly demonstrates consumer willingness to pay extra for higher fuel economy. The F-150 EcoBoost engine has 20 percent better fuel economy and more power than the model it replaces, and F-150 customers are willing to pay the \$750 to \$1,750 premium over less fuel-efficient versions.

Another indication of consumer demand for fuel efficiency is the used car market. Used cars overall are retaining a higher percentage of their original value than ever before, according to auto analysts who track prices. Compact cars that are 1 to 5 years old are worth, on average, about 30 percent more on the wholesale market now than just six months ago, the National Auto Auction

⁴² NRDC calculations based on Ward’s Auto sales data.

⁴³ Snyder, Jessie. They could've had a V-8 -- but more opt for 4 *Automotive News*. July 25, 2011. Sourced at < <http://www.autonews.com/apps/pbcs.dll/article?AID=/20110725/RETAIL07/307259989/1261>>

⁴⁴ Alan Baum & Associates, sales data.

⁴⁵ Ford. Ford Motor Company’s September Sales Post 9 Percent Increase, Paced by Strong Utility and Truck Sales. Press Release October 3, 2011. Sourced at < http://media.ford.com/article_display.cfm?article_id=35311>

Association reports.⁴⁶ According to Kelly Blue Book, “fuel efficient” used cars in September continue to outperform the market, with values up 5 percent since January while fuel-inefficient vehicles dropped in value about 5 percent.⁴⁷

The used Toyota Prius has come to be one of the hottest cars available – new or used. The National Auto Dealers Association monthly used car guide set the value of a 3-year old used Prius (model year 2008) in September at \$3,635 higher than in January (a 21.6 percent increase). On the other hand, if you are willing to pay \$100 to fill up your tank, then you are in luck because you can get a bargain on a 3-year old Ford Expedition 4WD XLT. It will cost you \$4,000 less than in January (a 14.7 percent drop).

Finally consumer polls consistently rank fuel efficiency at the top of the list of desirable attributes. According to a Consumer Report survey released just last May, 62 percent of consumers expect to choose a model with much better or somewhat better fuel economy and 58 percent willing to pay more for a fuel-efficient vehicle. Furthermore, consumers expect their next car to deliver 29 mpg, a 30 percent increase over the current average of about 22 mpg.⁴⁸ A recent Consumer Federation of America survey found that 62 percent of respondents are willing to pay more if the cost of the higher efficiency was paid back in five years through fuel savings.⁴⁹

Stronger Standards and Safer Cars Can Go Hand-in-Hand

With modern materials and current safety design practices, higher fuel-efficiency standards and improved safety can go hand-in-hand. It’s simplistic and incorrect to assume that reducing weight will decrease fleet-wide safety. The auto industry has already demonstrated that it can make vehicles that are lighter and are at least as safe, if not safer, than the average vehicle of the same type and weight.

⁴⁶ Bunkley, Nick. Used Gas Sipper, Keeping That New Car Value *New York Times*. June 23, 2011. Sourced at <<http://www.nytimes.com/2011/06/24/business/24auto.html>>

⁴⁷ Kelley Blue Book. “Blue Book Market Report”. October 2011. Sourced at <<http://mediaroom.kbb.com/blue-book-market-report>>

⁴⁸ ConsumerReports.org. Consumer Reports Survey: Car buyers want better fuel economy and are willing to pay for it. Press Release, May 25, 2011.

⁴⁹ Consumer Federation of America. Mark Cooper, Director of Research. Issue Brief: Public Support for a 60 Mile Per Gallon Fuel Economy Standard. September 2010.

According to the National Research Council of the National Academy of Sciences, “Vehicle mass can be reduced without compromising size, crashworthiness, and NVH,...”⁵⁰

There are three key issues that are important to understand:

- First, safety is about *good design* such as high-strength materials and engineering. A wide variation in safety risk exists for individual vehicle models of the same type and weight.
- Second, it’s widely accepted that *size matters more than weight*. In recognition of this fact, regulators have adopted standards that are indexed to vehicle size and therefore there is no *regulatory* incentive to downsize to meet comply with stronger fuel economy or CO₂ standards.
- Third, today’s auto engineers have the technology and know-how to make vehicles *lighter and just as safer or safer*.

Based U.S. DOE analysis, there is a wide variation in safety risk for individual vehicle models of the same type and weight.^{51,52} The DOE analysis shows lighter vehicles can be just as safe, or safer, than a larger, heavier vehicle. According to Tom Wenzel of DOE: “...however, there is still a wide range in casualty risk for individual vehicles of the same type, weight, and footprint. The worst car models can have a casualty risk 50% higher to two times higher than the safest car models, even after accounting for differences in the number of miles driven, driver age and gender, and crash location by vehicle models.” For example, the weight of vehicles with the same safety risk of about 260 casualties per crash varies from 3,000 to 4,000 pounds. For car models of the same weight, 3500 pounds, the safety risk varies by 300 percent, from about 100 to over 400 casualties per crash. This difference in safety risk among vehicle models of the same type and weight can be primarily attributed to better vehicle design.

⁵⁰ National Research Council. *Assessment of Fuel Economy Technologies for Light-Duty Vehicles*. National Academies Press. 2011.

⁵¹ Wenzel, Thomas. “Comments on the Joint Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards”, Docket No. NHTSA-2009-0059 and EPA-HQ-OAR-2009-0472, Lawrence Berkeley National Laboratory, October 27, 2009. Wenzel, Tom, 2010. *Analysis of the Relationship Between Vehicle Weight/Size and Safety, and Implications for Federal Fuel Economy Regulation*. LBNL-3143E

⁵² Note that, although the DOE data do not fully account for the effect of differences in drivers and locations among vehicle models, crashes involving risky young male drivers and frail elderly drivers, and crashes in relatively unsafe rural areas and in relatively safe urban areas, have been excluded to partially account for differences in vehicle drivers and crash locations.

Numerous studies have concluded that size is more important than weight for safety risk.^{53,54,55} In recognition of this widely accepted conclusion that size is more important than weight, NHTSA consciously chose to adopt a “size-based” standard over a “weight-based” standard since such an approach addressed their concerns regarding safety impacts of higher standards adopted for light-trucks for model year 2011 and for their proposed passenger car and light truck rule for model years 2011 to 2015.

NHTSA originally adopted the size-based system at the direction of Congress, the Energy Independence and Security Act of 2007, and was given the latitude to choose between a size-, weight-, or other attribute-based system. It is also important to recognize that the EPA and the California Air Resources Board have both conformed the structure of their CO₂ standards to be functionally identical to the NHTSA size-based fuel economy system.

According to NHTSA:

- “... unlike a weight-based function, a footprint-based function helps achieve greater fuel economy/emission reductions *without having a potentially negative impact on safety* and is more difficult to modify than other attributes because it cannot be easily altered outside the design cycle in order to move a vehicle to a point at which it is subject to a lower fuel economy target.” [emphasis added]⁵⁶
- “... attribute-based standards *eliminate* the incentive for manufacturers to respond to CAFE standards in ways harmful to safety. Because each vehicle has its own target (based on attributes chosen), attribute-based standards provide no incentive to build smaller vehicles

⁵³ R. M. Van Auken and J. W. Zellner. Dynamic Research, Inc. *An Assessment of the Effects of Vehicle Weight and Size on Fatality Risk in 1985 to 1998 Model Year Passenger Cars and 1985 to 1997 Model Year Light Trucks and Vans*. SAE International (2004)

⁵⁴ R. M. Van Auken and J. W. Zellner. Dynamic Research, Inc. *A Further Assessment of the Effects of Vehicle Weight and Size Parameters on Fatality Risk in Model Year 1985-98 Passenger Cars and 1985-97 Light Trucks*. (January 2003)

⁵⁵ R. M. Van Auken and J. W. Zellner. Dynamic Research, Inc. *Updated Analysis of the Effects of Passenger Vehicles Size and Weight on Safety*. (February 25, 2011)

⁵⁶ DOT. “Average Fuel Economy Standards Passenger Vehicles and Light Truck Model Year 2011 (Final Rule).” Federal Register 74:59. March 30, 2009. p. 14358.

simply to meet a fleet-wide average, because the smaller vehicles will be subject to more stringent fuel economy and emission targets.” [emphasis added]⁵⁷

Automakers clearly have technologies at their disposal to reduce weight and increase fuel economy, without reducing size. There is a variety of technologies to raise fuel economy without affecting weight (e.g., turbocharged gasoline direct engines) or reduce weight without affecting size (lighter body constructions, including using lighter weight, high strength steel).⁵⁸ One of the best examples is the next generation iconic SUV, the Ford Explorer. Keeping size essentially the same, Ford has taken out 150 pounds of weight from its next generation, by moving to a car-like chassis and lighter weight materials. And with an EcoBoost engine, the vehicle is 20 to 30 percent more fuel-efficient, with no compromises in safety. Drivers can expect more of this type of innovation from other automakers as a result of the National Program.

As shown in Figure 5 from DOE, even with vehicles of similar size, the use of high-strength materials and current safety design approaches can greatly improve safety. As summarized in a white paper by Professor Marc Ross of the University of Michigan and Tom Wenzel of DOE, several studies found that reducing weight without changing size can save lives.⁵⁹ Figure 5 shows that the model year 2005 Toyota Corolla, Honda Civic, and Toyota Matrix have the same safety risk as the Dodge Neon, but weigh 5 to 15 percent less. The difference is greater use of high-strength materials and better design.

Finally, Figure 6, also from DOE, shows that car-based “Crossover Utility Vehicles” (CUVs) have much lower safety risk than truck-based SUVs and of similar size. Crossovers use lighter-weight unibody construction, which also has safety advantages over truck-based SUV body-on-frame designs, including a lower center of gravity that reduces their propensity to roll over, and less rigid frames and lower

⁵⁷ DOT. “Average Fuel Economy Standards, Passenger Cars and Light Trucks; Model Years 2011-2015 (Proposed Rule).” Federal Register 74: 86. May 2, 2008. p. 24388.

⁵⁸ Deborah Gordon, David L. Greene, Marc H. Ross, Tom P. Wenzel. ICCT. *Sipping Fuel and Saving Lives: Increasing Fuel Economy Without Sacrificing Safety*. (2007)

⁵⁹ Tom Wenzel and M. Ross, *Increasing the Safety and Fuel Economy of New Light-Duty Vehicles*, Lawrence Berkeley National Laboratory, September 18, 2006, LBNL-60449.

bumpers that make them less dangerous to the cars they collide with. Many drivers may be unaware that besides smaller crossovers like the Ford Escape, Honda CRV and the Toyota RAV-4, many of the most popular mid-size “SUVs” are now “CUVs”, including the 2012 Ford Explorer and Dodge Durango. Crossover vehicles now outsell traditional truck-based SUVs by a factor of almost four to one.

According to Mr. Wenzel of DOE, “there is strong evidence that weight can be reduced while maintaining size and at least maintaining, if not increasing, occupant safety...Crossovers with the same footprint have about 10% lower mass, and substantially lower risk, than truck-based SUVs...”⁶⁰

Heavy-Duty Truck National Program: Another Clean Air Act Success Story

The 2014 to 2018 Heavy-Duty National Program for CO₂ and fuel economy standards is another example of how well the partnership between NHSTA, EPA and the state of California has worked to deliver fuel saving and pollution reductions in a process that enjoys support from industry and environmentalists. The Heavy-Duty National Program has been developed with input and support from engine and vehicle manufacturers, truck fleets operators, the State of California, and environmental stakeholders. The long list of industry supporters includes the American Trucking Association, Con-way Inc., Cummins Inc., Eaton Corporation, Fedex Corporation, the Truck & Engine Manufacturers, Wabash National Corporation, and Waste Management Inc.

The agencies estimate that the combined standards will reduce CO₂ emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of vehicles built for the 2014 to 2018 model years. The reduced fuel use will save truck drivers \$42 billion, even after considering technology costs.⁶¹

Operators of long-haul trucks, the largest category affected by the new program, will see an enormous net lifetime cost savings, after considering the additional technology costs, of \$73,000 with a

⁶⁰ Wenzel, “Comments on the Joint Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards”, Docket No. NHTSA-2009-0059 and EPA-HQ-OAR-2009-0472, Lawrence Berkeley National Laboratory, October 27, 2009.

⁶¹ EPA “EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles”, Factsheet, EPA-420-F-11-031, August 2011.

payback period time of less than two years.⁶² Owners of other trucks types, vocational, heavy-duty pickups and vans, will similarly accrue net fuel savings benefits with payback times of two to four years. As with drivers of more fuel-efficient cars, truck owners who finance the purchase of their vehicle will see monthly savings accrue immediately, since the fuel savings costs will offset the additional monthly vehicle payment costs.⁶³

Conclusion

Chairman Jordan, Ranking Member Kucinich, and members of the subcommittee, the Clean Car and Truck National Programs are examples of government at its best. The results speak for themselves. The programs will deliver over a trillion dollars in fuel savings, cut our dependency on imported oil by roughly a third, and take a major step towards averting dangerous global warming. The latest agreement enjoys a virtually unprecedented depth and breadth of support, from automakers to environmentalists, Republicans to Democrats, consumer advocates to energy security advocates, business leaders to labor unions.

Upsetting this important program would only raise drivers' fuel bills, increase dangerous pollution, and make us more dependent on imported oil. Upsetting the National Program would deprive the auto industry of the certainty it needs to make the long term technology investments it needs to be competitive in a global market, and deprive our economy of hundreds of billions of dollars that could be invested to strengthen our manufacturing base. In view of its overwhelming benefits and overwhelming support, if anything, Congress should be urging the agencies to implement this important program sooner rather than later. Thank you for your attention, and I welcome your questions.

⁶² EPA and NHTSA, "Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles", Final Rule, 76 FR 57106.

⁶³ National Wildlife Federation, "Trucks that Work: How new fuel efficiency and greenhouse gas standards will deliver better, cleaner, cheaper-to-operate trucks – and why it matters for truck owners, wildlife and the U.S. economy", 2011.

FIGURES

Figure 1: 2030 Fuel Savings “Rebate” Equal \$330 per Household

Source: UCS and NRDC. “Saving Money at the Gas Pump: State-by-State Consumer Savings from Stronger Fuel Efficiency and Carbon Pollution Standards”. September 2011.)

Table 1: Annual Consumer Savings of Proposed 2017-2025 Standards on Transportation Fuel Bills in 2030, by State and Household

State	Fuel Savings (million gallons)	Total State Fuel Bill Net Savings (\$ millions)	Fuel Bill Net Savings per Household	Carbon Pollution Reductions (Thousands of metric tons CO ₂ -e)
Alabama	366	\$737	\$387	4,335
Alaska	52	\$96	\$312	610
Arizona	733	\$1,536	\$387	8,675
Arkansas	258	\$535	\$423	3,050
California	2,668	\$4,954	\$314	31,585
Colorado	412	\$825	\$370	4,890
Connecticut	239	\$457	\$324	2,825
Delaware	71	\$139	\$360	840
District of Columbia	35	\$70	\$374	410
Florida	2,098	\$4,223	\$371	24,835
Georgia	814	\$1,607	\$364	9,635
Hawaii	83	\$153	\$313	975
Idaho	132	\$270	\$378	1,560
Illinois	759	\$1,190	\$240	8,985
Indiana	400	\$631	\$241	4,730
Iowa	199	\$351	\$302	2,360
Kansas	195	\$356	\$314	2,305
Kentucky	345	\$705	\$393	4,080
Louisiana	363	\$739	\$415	4,300
Maine	97	\$189	\$329	1,145
Maryland	484	\$960	\$365	5,730
Massachusetts	457	\$881	\$327	5,405
Michigan	622	\$976	\$240	7,365
Minnesota	417	\$767	\$316	4,940
Mississippi	219	\$451	\$396	2,590
Missouri	433	\$793	\$314	5,130
Montana	77	\$153	\$368	905
Nebraska	122	\$219	\$309	1,440
Nevada	297	\$629	\$391	3,515
New Hampshire	107	\$210	\$332	1,265
New Jersey	504	\$727	\$204	5,960
New Mexico	145	\$293	\$374	1,710
New York	1,022	\$1,485	\$205	12,095
North Carolina	877	\$1,768	\$372	10,385
North Dakota	42	\$74	\$303	490
Ohio	691	\$1,058	\$234	8,180
Oklahoma	311	\$635	\$417	3,675
Oregon	319	\$605	\$321	3,770
Pennsylvania	701	\$991	\$200	8,290
Rhode Island	76	\$148	\$330	900
South Carolina	363	\$718	\$365	4,295
South Dakota	53	\$94	\$307	625
Tennessee	557	\$1,148	\$396	6,595
Texas	2,411	\$5,024	\$425	28,550
Utah	202	\$408	\$373	2,390
Vermont	48	\$92	\$326	560
Virginia	691	\$1,366	\$365	8,180
Washington	562	\$1,060	\$319	6,655
West Virginia	129	\$253	\$361	1,325
Wisconsin	365	\$571	\$239	4,320
Wyoming	38	\$73	\$358	445
U.S. Aggregate	23,660	\$44,394	\$330	280,000

Figure 2: 150,000 Jobs, 300 Facilities in 43 States and DC in Clean, Fuel Efficient Vehicle Supply Base

Source: Natural Resources Defense Council, National Wildlife Federation, United Automobile, Aerospace and Agricultural Implement Workers of America (UAW). *Supplying Ingenuity U.S. Suppliers of Clean, Fuel-Efficient Vehicle Technologies*. August 2011.

Figure 1: United States Suppliers of Low-Emission, Fuel-Efficient Vehicle Technologies (Number of Supplier Facilities by State)

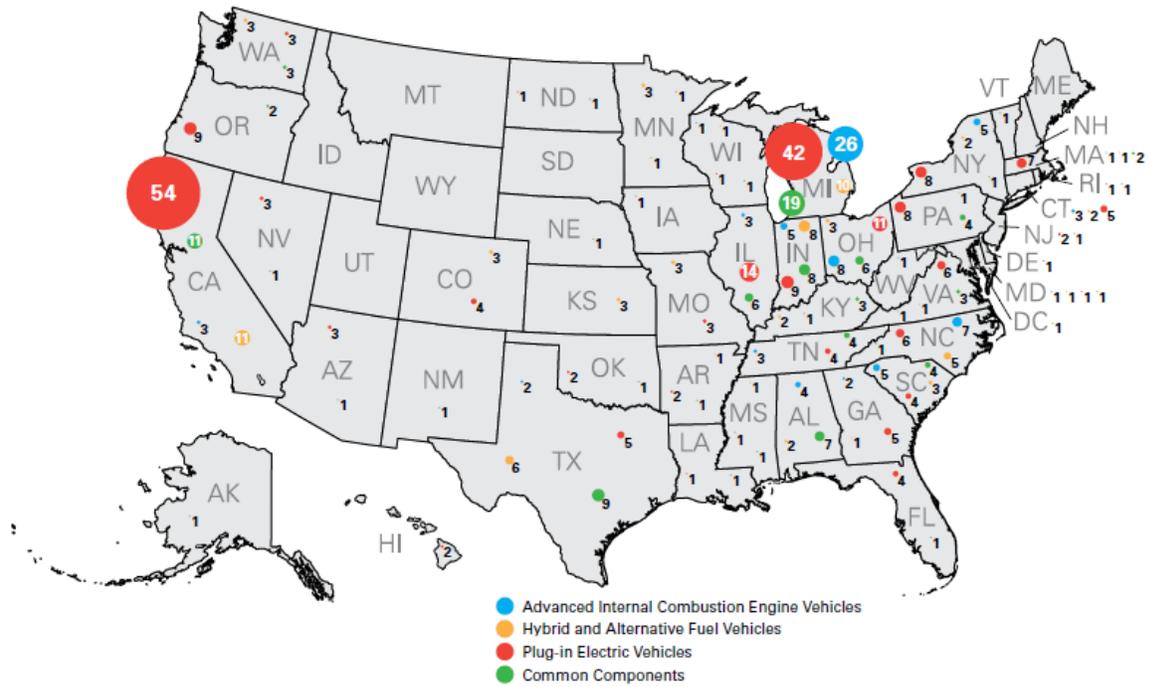


Table 1: Top 15 States Currently Employing the Highest Number of Autoworkers in Clean, Efficient Technologies

State	Facilities	Employment
Michigan	97	38,067
Ohio	28	13,753
Indiana	30	11,819
Kentucky	6	9,775
Pennsylvania	13	8,662
Texas	22	8,558
Alabama	13	8,285
California	79	7,422
South Carolina	16	6,934
North Carolina	19	5,928
Tennessee	11	5,393
New York	16	5,339
Illinois	23	4,715
Virginia	11	2,373
Arizona	4	1,765
Other States	116	12,380
Total	504	151,168

Figure 3: Average Fuel Economy of New Light-duty Vehicles Has Steadily Increased Since 2005

Source: EPA. *Light-Duty Technology, Carbon Dioxide Emissions and Fuel Economy: 1975 Through 2010*. EPA-420-S-10-00. November 2010.

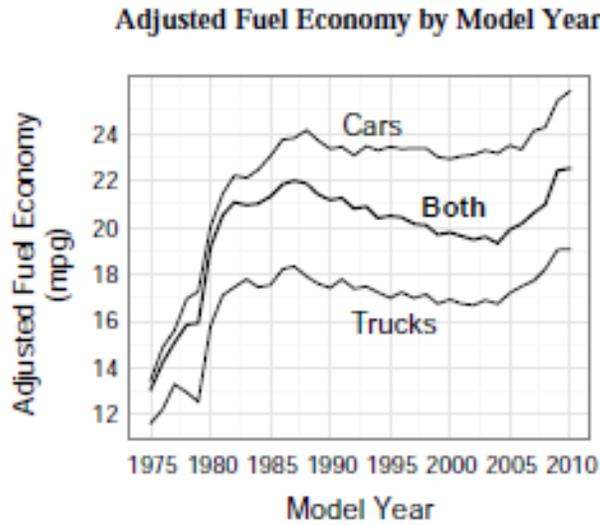


Figure 4: Demand for Fuel-efficient Vehicles Remaining Strong in 2011

Source: University of Michigan Transportation Research Institute, "Eco-Driving Index: Average sales-weighted fuel economy of purchased new vehicles for October 2007 through September 2011", http://www.umich.edu/~umtristwt/EDI_sales-weighted-mpg.html

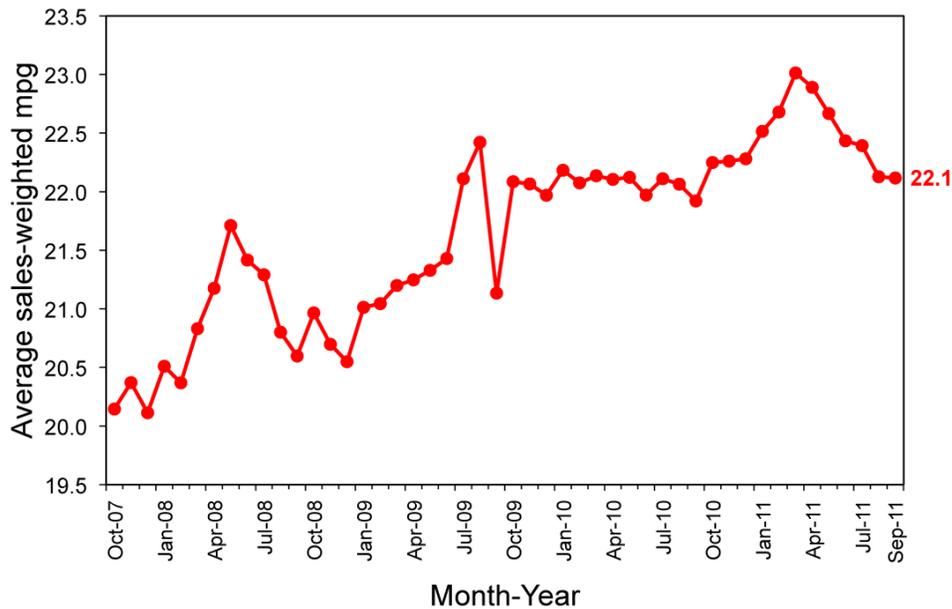


Figure 5: Design Matters, Compact Cars of Similar Size and Weight have Very Different Safety Risks

Source: Wenzel, Thomas. "Comments on the Joint Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards", Docket No. NHTSA-2009-0059 and EPA-HQ-OAR-2009-0472, Lawrence Berkeley National Laboratory, October 27, 2009.

Figure 5. Example of effect of design on casualty risk to drivers (from Figure 1)

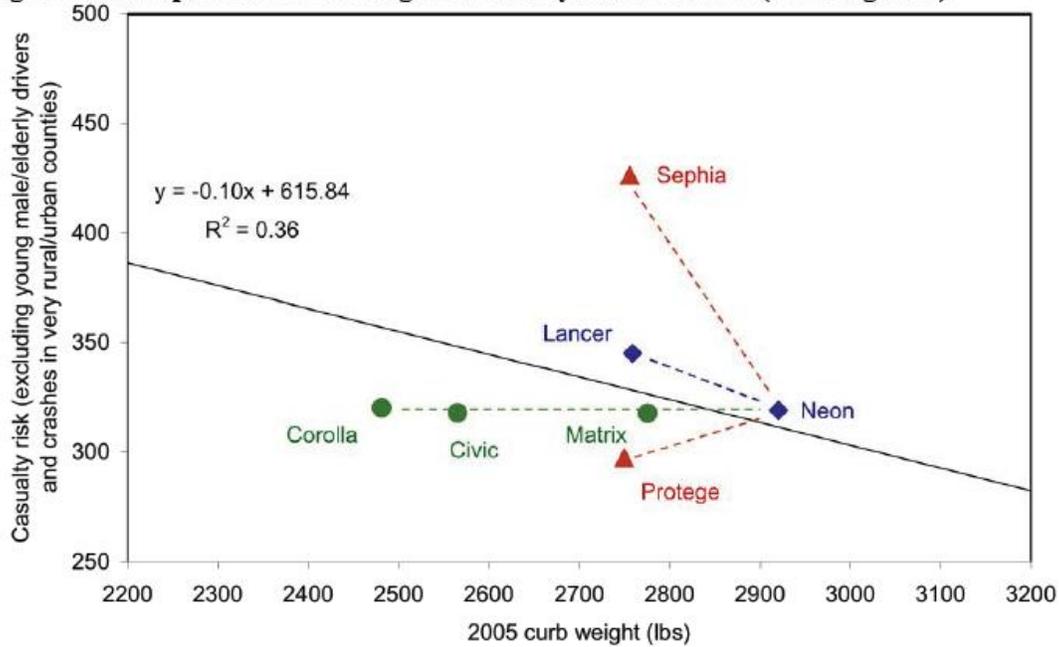


Figure 6: Safety by Design, Car-based Crossovers Have Much Lower Safety Risk than Similar Sized Truck-based SUVs

Source: Wenzel, Thomas. "Comments on the Joint Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards", Docket No. NHTSA-2009-0059 and EPA-HQ-OAR-2009-0472, Lawrence Berkeley National Laboratory, October 27, 2009.

Table 1. Comparison of footprint, curb weight and fatality risk, for model year 2003 to 2007 SUVs and crossover SUVs

Item	Compact SUV	Midsize SUV	Compact Crossover SUV	Midsize Crossover SUV
Footprint (sq ft)*	42	49	43	49
Curb weight (lbs)*	3672	4500	3359 (-313)	4081 (-419)
Casualty risk to drivers	69 ± 9	63 ± 4	44 ± 4 (-36%)	32 ± 3 (-49%)
Casualty risk to others	52 ± 8	59 ± 4	36 ± 4 (-31%)	37 ± 4 (-37%)

* Sales-weighted averages for MY05 models

ROLAND J. HWANG

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Albany, California 94706
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Natural Resources Defense Council

111 Sutter Street, 20th Floor
San Francisco, California 94104
415/875-6100

PROFESSIONAL EXPERIENCE

- December 2009 to present **NATURAL RESOURCES DEFENSE COUNCIL**, San Francisco, California.
Director, Transportation Program
- Formed NRDC's Transportation Team in 2009.
 - Promote sustainable transportation policies to promote clean vehicles, clean fuels, and less driving at both federal and state levels.
 - Develop and direct campaigns at both federal and state levels.
 - Oversee seven staff.
 - Responsible for annual operating budget of \$1.0 million and foundation grants of \$720,000.
- January 2007 to November 2009 **NATURAL RESOURCES DEFENSE COUNCIL**, San Francisco, California.
Director, Clean Vehicles and Fuels Project
- Directed NRDC's Clean Vehicle and Fuels Project.
 - Promoted sustainable transportation policies to promote clean vehicles and clean fuels at both federal and state levels, including the California Low Carbon Fuel Standard (2009) and adoption of California's Pavley program nationwide (i.e., "National Program").
 - Developed and directed campaigns at both federal and state levels.
 - Oversaw five staff.
 - Responsible for annual operating budget of \$650,000 and foundation grants of \$436,000.
- October 2000 to December 2006 **NATURAL RESOURCES DEFENSE COUNCIL**, San Francisco, California.
Senior Policy Analyst, Clean Vehicles and Fuels Project
- Developed and analyzed sustainable transportation policies to promote clean vehicles and clean fuels at both federal and state levels, including amendments to the California Zero Emission Vehicle programs, the Pavley Clean Cars Law (2002) and regulation (2004), California AB 118 (Nunez 2007) alternative fuel program, and the 35 mpg federal fuel economy standard (CAFE) in the 2007 energy bill.
 - Regularly conducted outreach to media, legislators, regulators, and the public.
 - Responsible for supervision and development of junior vehicle analyst.
 - Prepared and oversaw project budget of \$300,000/yr.
 - Cultivated new funding sources and wrote grant proposals.
- September 1996 to September 2000 **UNION OF CONCERNED SCIENTISTS**, Berkeley, California.
Director, Transportation Program
- Developed overall policy positions and objectives for Transportation Program.
 - Planned and directed all research, campaign, grassroots, and media activities.
 - Advocated for policies with government, legislators, media, and public.
 - Supervised six program staff.
 - Prepared and oversaw program budget.

ROLAND J. HWANG

PROFESSIONAL EXPERIENCE (CONTINUED)

March 1993 to August 1996 **UNION OF CONCERNED SCIENTISTS**, Berkeley, California.
Senior Analyst, Transportation Program

- Designed and carried out research to assess energy, environmental, and other social impacts of alternative transportation fuels and market-based transportation programs.
- Advocated for policies to regulators, legislators, media, and public.
- Provided technical assistance on transportation issues to the public, government, and others.

May 1992 to March 1993 **LAWRENCE BERKELEY LABORATORY**, Energy Analysis Program, Berkeley, California. *Senior Research Associate*

- Developed appliance modules for household level residential energy demand forecasting model (REEPS 2.1).
- Compiled and analyzed historic appliance shipment data, data on existing appliance stocks, and engineering data.
- Econometric modeling of consumer purchase decisions using qualitative choice analysis.

December 1990 to June 1992 **LAWRENCE BERKELEY LABORATORY**, Energy Analysis Program, Berkeley, California. *Graduate Student Research Assistant*

- Developed model of U.S. industrial energy consumption and evaluated policies to reduce industrial energy demand.
- Compiled and analyzed historic industrial production and energy consumption data. Econometric estimation of model parameters.
- Forecasted future industrial energy intensity and consumption under several policy scenarios, including carbon taxes and demand side management programs.
- Analyzed macroeconomic and energy data from mainland China.

October 1988 to July 1990 **CALIFORNIA AIR RESOURCES BOARD**, Sacramento, California.
Air Resources Engineer

- Assessed environmental and health impacts of proposed hazardous waste incinerator sites. Reviewed risk assessments and environmental impact reports.
- Coordinated review of permits with other agencies. Conducted seminars on hazardous waste incinerator permit process.
- Developed guidelines for air districts to evaluate toxic air emissions from municipal solid waste landfills based on a simplified risk assessment procedure.

EDUCATION

1990 to 1992 **GRADUATE SCHOOL OF PUBLIC POLICY, UNIVERSITY OF CALIFORNIA AT BERKELEY**, Berkeley, California.
Master of Public Policy, May 1992
Cumulative Grade Point Average: 3.8/4.0
Fellowship, U.C. Berkeley School of Public Policy

1986 to 1988 **MECHANICAL ENGINEERING, UNIVERSITY OF CALIFORNIA AT DAVIS**, Davis, California.
Master of Science, September 1988
Cumulative Grade Point Average: 3.9/4.0
Earle C. Anthony Fellowship, U.C. Davis

ROLAND J. HWANG

EDUCATION (CONTINUED)

1982 to 1986 **MECHANICAL ENGINEERING, UNIVERSITY OF CALIFORNIA AT DAVIS**, Davis, California.
Bachelor of Science, June 1986
Cumulative Grade Point Average: 3.9/4.0
Tau Beta Pi, Phi Kappa Phi, Dean's Honor List, Pacific Gas & Electric Career Scholar

SKILLS

Advocacy	Experienced in developing and directing major state and federal legislative and regulatory campaigns to promote clean vehicle and fuels policies.
Research and Report Writing	Researched and written numerous technical reports and white papers. Regularly write a professional blog.
Media	Experienced in print, radio and TV interviews. Experienced in writing press releases, statements and blogs.
Project Management	Developed and directed numerous research projects. Experienced in developing and overseeing consultant contracts.
Supervision	Currently responsible for supervising, mentoring and developing nine staff.
Fund Raising	Responsible for maintaining and cultivating new donor relationships, including foundations and donors.
Experienced Negotiator	Experienced in policy and legislation negotiations. Co-chaired with major oil company the US Climate Action Partnership's Transportation Working Group that resulted in the <i>Blueprint for Legislative Action</i> .

PROFESSIONAL SOCIETIES AND OTHER ORGANIZATIONS

Transportation Research Board, Committee on Transportation Energy and Alternative Fuels
Society of Automotive Engineers
American Society of Mechanical Engineers
Tau Beta Pi (engineering honor society)
Phi Kappa Phi (science honor society)
Asian American Policy Review Journal
Sacramento Asian Community Resources/Asian Legal Service Outreach, former Board Member

PUBLICATIONS

CAFE and the US Auto Industry Revisited: A Growing Auto Investor Issue, 2011-2016, Citigroup Global Markets, Global Research, October 13, 2009.

CAFE and the US Auto Industry: A Growing Auto Investor Issue, 2012-2020, Citigroup Global Markets, Global Research, October 22, 2007.

Roland Hwang and Matt Peak, *Innovation and Regulation in the Automobile Sector: Lessons Learned and Implications for California's CO₂ Standards*, Natural Resources Defense Council, April 2006.

Walter McManus, Alan Baum, Roland Hwang, Dan Luria, *In the Tank: How Oil Prices Threaten Automakers' Profits and Jobs*, University of Michigan Transportation Research Institute, Natural Resources Defense Council, July 2005.

Ann Bordetsky, Roland Hwang, Ann Korin, Deron Lovaas and Luke Tonachel, *Securing America: Solving Our Oil Dependence through Innovation*, Institute for Advancement of Global Security, Natural Resources Defense Council, March 2005.

Roland Hwang, Mary Jean Burer, Michelle Bell, *Smog in the Forecast: Global Warming, Ozone Pollution & Health in California*, Natural Resources Defense Council, September 2004.

ROLAND J. HWANG

PUBLICATIONS (CONTINUED)

Timothy Lipman and Roland Hwang, *Hybrid Electric and Fuel Cell Vehicle Technological Innovation: Hybrid and Zero-Emission Vehicle Technology Link*, submitted to the 20th International Electric Vehicle Symposium and Exposition, November 15-19, 2003, Long Beach, California.

Dan Lashof and Roland Hwang, *Dangerous Addiction 2003: Breaking the Chain of Oil Dependence*, Natural Resources Defense Council, March 2003.

Roland Hwang, Deron Lovaas, and Donna Liu, *Fueling the Future: A Plan To Reduce California's Oil Dependence*, Natural Resources Defense Council, September 2002.

David Doniger, David Friedman, Roland Hwang, Daniel Lashof, Jason Mark, *Dangerous Addiction: Ending America's Oil Dependence*, Natural Resources Defense Council, Union of Concerned Scientists, January 2002.

Roland Hwang, Bryanna Millis, and Theo Spencer, *Clean Getaway: Toward Safe and Efficient Vehicles*, Natural Resources Defense Council, July 2001.

Roland Hwang and Dean Taylor, "Electric Vehicle Air Quality Impacts: Evaluation of Methods Used in the South Coast Air Basin Study," conference paper, Electric Vehicle Symposium 14, Orlando, FL. December 1997.

Roland Hwang, *Are Cars Still a Problem? Real-World Emissions Reductions from Passenger Vehicles Over the Past 30 Years*, Berkeley, California: Union of Concerned Scientists. December 1997.

Jeff Allen, Roland Hwang, and Jane Kelly. *An Equity Analysis of 'Pay-As-You-Drive' Automobile Insurance in California*, Berkeley, California: Union of Concerned Scientists. November 1994.

Roland Hwang, Marshall Miller, Ann B. Thorpe, and Debbie Lew, *Driving Out Pollution: The Benefits of Electric Vehicles*, revised edition, Berkeley, California: Union of Concerned Scientists. November 1994.

Committee on Oversight and Government Reform
Witness Disclosure Requirement – "Truth in Testimony"
Required by House Rule XI, Clause 2(g)(5)

Name: Roland Huang

1. Please list any federal grants or contracts (including subgrants or subcontracts) you have received since October 1, 2008. Include the source and amount of each grant or contract.

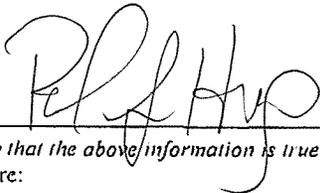
NONE

2. Please list any entity you are testifying on behalf of and briefly describe your relationship with these entities.

Transportation Program Director, Natural Resources Defense Council

3. Please list any federal grants or contracts (including subgrants or subcontracts) received since October 1, 2008, by the entity(ies) you listed above. Include the source and amount of each grant or contract.

See attached page titled "Federal Grants and Contracts NRDC has received over FY 2009-FY 2011" information provided by NRDC's accounting and finance department



I certify that the above information is true and correct.
Signature:

10/7/11
Date:

Federal Grants and Contracts NRDC Has Received Over FY 2009-FY 2011

1. US EPA

Market based approach-Green House Gases (Clean Air Act program)

Award \$1,150,123

2. US DOS

Expanding DSM Practice in China" Under the Asia-Pacific Partnership on Clean Development and Climates" (APP) program

Award \$750,000

3. US DOE

NRDC is subcontractor to Vermont Energy Investment Company develop best practices, fact sheets, webinars, and similar resources to offer ARRA grantees successful models to use as they implement their projects

Award \$100,000

4. USDA

NRDC is subcontractor to SureHarvest

NRCS Conservation Innovation Grant work

Award \$205,000