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S. HRG. 113–655

NATURAL GAS VEHICLES: FUELING AMERICAN JOBS, ENHANCING ENERGY SECURITY, AND ACHIEVING EMISSIONS BENEFITS

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE

OF THE

COMMITTEE ON FINANCE
UNITED STATES SENATE

ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

DECEMBER 3, 2014

Printed for the use of the Committee on Finance

U.S. GOVERNMENT PUBLISHING OFFICE

94–819—PDF WASHINGTON : 2015

For sale by the Superintendent of Documents, U.S. Government Publishing Office
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NATURAL GAS VEHICLES: FUELING AMERICAN JOBS, ENHANCING ENERGY SECURITY, AND ACHIEVING EMISSIONS BENEFITS

WEDNESDAY, DECEMBER 3, 2014

U.S. SENATE,
SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE,
COMMITTEE ON FINANCE,
Washington, DC.

The hearing was convened, pursuant to notice, at 2:34 p.m., in room SD–215, Dirksen Senate Office Building, Hon. Michael F. Bennet (chairman of the subcommittee) presiding.

Present: Senators Wyden, Stabenow, Hatch, Cornyn, Thune, and Isakson.

Also present: Democratic Staff: Sean Babington, Senior Policy Advisor; Laura Sherman, Legislative Fellow; and Andrew Siracuse, Legislative Assistant.

Senator BENNET. So I am going to gavel this meeting to order with my hand, because I have no gavel. I do have a thing up here that says "Mr. Bennet, Chairman," but that is not going to be true for very long. So I want to thank my colleagues for not making it "temporary."

In the interest of time, we are going to start with Senator Hatch, who has a witness to introduce, and then I will do my opening statement and turn it over to Senator Cornyn, and then we will introduce the rest of the witnesses, if that is okay with everybody. Great.

OPENING STATEMENT OF HON. ORRIN G. HATCH, A U.S. SENATOR FROM UTAH

Senator HATCH. Well, thank you, Mr. Chairman. It is a pleasure to be here today. I can only be here for a minute or two to introduce a fellow Utahan.

Ron Jibson is the chairman, president, and CEO of The Questar Corporation, one of the largest natural gas companies in the country. Mr. Jibson has been with Questar for over 30 years. He started as a design engineer and has served as director of engineering, operations manager, general manager of operations, vice president of operations, and executive vice president.

Just prior to his current role with the company, he was the president and CEO of a subsidiary, the Questar Gas Company. Mr. Jibson has been very involved in the natural gas industry at large,

having served as chairman of both the American Gas Association and the Western Energy Institute.

He graduated from Utah State University. Go Aggies. BYU was very unkind to them the other night, but they are doing pretty good. He has a degree in civil engineering and has an MBA from Westminster College in Salt Lake City.

Welcome, Ron, and we want to thank you for your participation today. I am sure the subcommittee will benefit greatly from your knowledge and your expertise in this important area. I cannot stay, but I did want to get here and introduce you so they realize how important you really are to all of us in Utah and really across this country. So I appreciate having you here, and I am sure these fellows are all going to treat you very, very well.

Senator BENNET. We will.

Senator HATCH. Plus Senator Stabenow. She can be a little rough from time to time, but——

Senator BENNET. Not today.

Senator HATCH [continuing]. Not today. [Laughter.]

Senator BENNET. Thank you, Senator Hatch. Thank you very much for coming by.

OPENING STATEMENT OF HON. MICHAEL F. BENNET, A U.S. SENATOR FROM COLORADO, CHAIRMAN, SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE, COMMITTEE ON FINANCE

Senator BENNET. Good afternoon to everybody, and thank you to Senator Cornyn and to our distinguished panel and to our colleagues for being here today. The Subcommittee on Energy, Natural Resources, and Infrastructure will now come to order.

I want to thank our witnesses for traveling here today. We have convened to discuss an incredibly important topic, natural gas, and specifically the use of natural gas as a transportation fuel in the United States. As most know, the country has undergone a dramatic change in our domestic energy picture over the last decade. Thanks to innovations in the drilling processes, our domestic production of natural gas has quadrupled since 2005. That is good for jobs, good for energy security, and, when natural gas is produced responsibly, it also can be good for the environment.

I want to spend just a moment on that at the outset, because it is an important point. I am a firm believer that we can produce natural gas safely and in a way that protects drinking water, air quality, and adjacent communities. The State of Colorado has led the way in establishing a robust regulatory regime for natural gas production.

From first-in-the-Nation standards that dramatically reduce fugitive methane emissions all the way to the innovative Clean Air, Clean Jobs Act, it has led to increased natural gas usage in Colorado's power plants. This law and the associated fuel switching and efficiency targets will lead to sizable reductions in both criteria emissions and carbon pollution, which are two of the biggest environmental advantages of using more natural gas in power generation and transportation.

More important, these initiatives were broadly supported both by the industry and by the environmental community. On this topic,

like many others, I think that Washington would do well to learn a lesson from how we work together in Colorado.

While various aspects of natural gas have been discussed in front of the Energy and Environment Committees, we are here today to discuss natural gas as a transportation fuel. There is a huge opportunity to grow this market. It is amazing to me that over 40 percent of the country's public buses are currently powered by alternative fuels or blends. We have seen this happen in Colorado: Weld County Public Works has recently converted many of their cargo vans, snowplows, and school buses to natural gas. They predict this will save the school district $100,000 a year and will reduce emissions of smog-producing pollutants.

As we will hear today, this committee can do more to help this growing industry. Specifically, we can level the playing field on excise taxes on natural gas so that it is not taxed at a higher rate than diesel. Senators Burr, Hatch, and I have a bill that will do just that. It passed this committee and the full Senate during our consideration of the highway bill. It was stripped out of the House bill before final passage.

The Finance Committee also has jurisdiction over a variety of alternative fuel tax credits, specifically the 50-cent per-gallon equivalent credit for selling natural gas as a transportation fuel—a credit that has expired—and the 30-percent credit for the installation of new natural gas refueling equipment, which also has expired. Our tax laws are critical to the development of the new infrastructure needed to aid the growth of these vehicles and to exploit the potential of this domestic resource. Both of these credits were included in the EXPIRE Act that passed the Finance Committee with bipartisan support.

I would prefer, and I know that many in the Senate would too, that we move back to the bipartisan legislation that moved through this committee over 6 months ago. But in the meantime, we should pass the Senate Finance Committee bill, including the natural gas vehicle provisions, and get down to the hard work of tax reform.

As we do this, it is important that Congress understands the growing natural gas vehicle industry and its positive effect on our economy, national security, and our environment.

[The prepared statement of Senator Bennet appears in the appendix.]

Senator BENNET. Once again, I want to thank our panel for being here and to tell you that we are looking forward to your testimony. I will now turn it over to Senator Cornyn for his opening remarks. Thank you.

OPENING STATEMENT OF HON. JOHN CORNYN, A U.S. SENATOR FROM TEXAS

Senator CORNYN. Well, thank you, Mr. Chairman, and thanks to each of the witnesses for being here today. Listening to Senator Bennet's opening statement, I find that there is much that I agree with—not all, but most, which is a good start.

Obviously, coming from States like Colorado and Texas, we are no strangers to energy and the natural gas renaissance that we have seen in this country—and its impact not only on low-cost energy, but also on the promise to perhaps help us with the geo-

politics of energy, as well as job creation, which is so important at home. We know the key in my State to the energy sector and producing a growing economy is a stable and secure supply of affordable energy. We, of course, have a diverse array of energy sources and industries that provide solid employment not just in Texas, but around the country, at the same time that they provide for the energy needs of working families across the country.

I think one of the big challenges we are going to have is trying to figure out how to reconcile our tax policy with energy policy. It is no secret to any of us here that, while we all support an all-of-the-above approach, not all energy sources are treated the same. Indeed, many of the energy sources, like the oil and gas industry, pay vast sums of money in taxes to the Federal Treasury.

Other forms of energy depend on generous subsidies from the Federal Government, and obviously that is something we need to continue to study as we try to solve this puzzle of our tax code, which is so important. But we also need to remember and remind ourselves that a regulatory regime that makes it more difficult to produce and deliver affordable energy and to sustain and create jobs here at home is a recipe for more dependence and less independence. It can lead to more volatility and be a threat to our economy.

I continue to be concerned about the administration's pursuit of regulatory policies that will end up increasing the cost of energy for families and small businesses and, in the end, dampen the potential growth of our economy. Americans understand that raising taxes and piling on more regulations will translate into higher prices. Although I find myself in agreement again with Chairman Bennet's comments, this is not to suggest we proceed ignorant or unaware or unconcerned about impact on the environment. That remains a common concern.

I commend the chairman for holding today's hearing and look forward to the testimony from the witnesses.

Senator BENNET. Thank you, Senator Cornyn. We appreciate very much your leadership on this panel. And with that, we are blessed to be joined by our chairman, Ron Wyden, who is here to introduce the first witness.

OPENING STATEMENT OF HON. RON WYDEN, A U.S. SENATOR FROM OREGON, CHAIRMAN, COMMITTEE ON FINANCE

Senator WYDEN. Thank you very much, Chairman Bennet and Senator Cornyn. I very much appreciate both of you tackling this on a bipartisan basis, and I just have a couple of points to make.

We are so glad to have Mr. Carrick here. It seems like eons ago when you participated in our natural gas roundtable, when I was chair of the Energy Committee. So we are very pleased you are here.

So just a couple of quick points, and then I want to talk about his important work at Daimler, which, of course, is headquartered in my hometown.

First, this is an especially important hearing, Chairman Bennet and Senator Cornyn. It is important that we tackle this in a bipartisan way, because the reality is that natural gas, particularly because of what has happened in the Bakken, is advantage America.

Natural gas is, of course, the cleanest of all the fossil fuels. It is 50-percent cleaner than the other fossil fuels, and we have it, and the rest of the world wants it. It seems to me that this effort to look at how safely and efficiently we can use natural gas is especially important because of what is going on right now in discussions back and forth between the House and the Senate.

This committee, on a bipartisan basis back in April, passed a 2-year extension of the 30-percent investment tax credit for refueling infrastructure and a 2-year extension of the 50-cent per-gallon tax credit for natural gas transportation fuel. Right now—certainly in the absence of an alternative—the House is about to vote on providing what Senator Cornyn and I talked about this morning: essentially 4 weeks, a grand total of 4 weeks of certainty, at a time when our economy—and particularly for business decisions and matters that are so important to working-class families—hungers for certainty and predictability. So my view is—and what I have spent most of my day on and what I will be walking out of here in a minute to do is—I think the American people deserve an upgrade on that kind of approach. They deserve a bipartisan alternative, and my hope is—and Senator Cornyn and I have been talking about this through the day, a number of colleagues have—that we can do that.

Also, before we get to Mr. Carrick, I want to mention another bipartisan effort, which is Chairman Bennet and Senator Burr's effort to equalize the tax treatment of liquefied natural gas with diesel fuel. This passed as part of the highway bill, as colleagues will recall, and I very much hope that what Senator Bennet and Senator Burr are trying to do, again on a bipartisan basis, will become law in the very near future.

Mr. Carrick, you, of course, and Daimler are very much a part of Oregon's economic future. We are glad you are in my hometown, manufacturing natural gas vehicles and supplying those trucks that are used for regional and short-haul applications, but are especially valuable for utility companies, for municipal solid waste companies, and for pickup and delivery. So to have you, Mr. Carrick, as a representative of Daimler, which consistently provides vehicles that are reliable, powerful, and clean, I guess I am glad you are a recidivist. You came to the Energy Committee, and now you are here at the Finance Committee.

My apologies for having to go back to the extenders fray, but, colleagues, I think you are really going to enjoy his presentation, because this is the face of what the two of you are trying to do on a bipartisan basis, and I commend you for it and look forward to visiting with you at home as well, Mr. Carrick.

Senator BENNET. Thank you very much, Mr. Chairman. I think Senator Isakson is going to introduce our next witness.

OPENING STATEMENT OF HON. JOHNNY ISAKSON, A U.S. SENATOR FROM GEORGIA

Senator ISAKSON. Thank you very much, Chairman Bennet. I commend you on calling this very important hearing on a very important subject. It is really a pleasure for me to introduce Mr. Mike Whitlatch of the UPS Corporation in Atlanta, GA.

As I think all of the committee knows and the audience knows, UPS is a preeminent logistics company, internationally and worldwide, in the delivery of packages. If anybody knows trucks, fuel, and logistics, it is UPS Corporation.

Mike is vice president of global energy and procurement for UPS and is responsible for the energy strategy and energy supply chain that supports UPS in its worldwide enterprise. He is a 27-year veteran of UPS Corporation, and we are delighted to welcome you here today, Mr. Whitlatch.

I am going to take liberty with your introduction by making two other acknowledgments. Half the panel has a Georgia tie. Mr. Carrick ships all of his trucks in the Port of Brunswick, if I am not mistaken, on the southeast coast of the State of Georgia. We appreciate that business.

Mr. Harrison Clay's father, Steve, is one of the most prominent attorneys in the city of Atlanta. I met him when he came in this afternoon, and I had worked with him and Boone Pickens on other projects before.

We welcome you to the committee, and we welcome all of the panel members and their testimony today. Thank you, Mr. Chairman.

Senator BENNET. Thank you, Senator Isakson. In fact, this entire effort was just a way to showcase Georgia. So I am glad you are here. [Laughter.]

I know that Senator Portman wanted to introduce our next witness. He is not here, so I am going to take the liberty of introducing Joseph Calabrese. He is the CEO, general manager, and secretary-treasurer for the Greater Cleveland Regional Transit Authority. Mr. Calabrese was appointed to represent the public transit industry on the U.S. Department of Transportation's Intelligent Transportation Systems Advisory Committee. Under his leadership, the Greater Cleveland Regional Transit Authority is now converting its fleet of diesel buses to natural gas. We look forward to hearing your testimony.

Our next witness, Rich Kassel, is the senior vice president of east coast operations for Gladstein, Neandross, and Associates. He is an environmental policy advisor to governments, international organizations, nonprofits, and funders. Mr. Kassel is an expert in transportation, air pollution, clean energy, and climate change policy. In this capacity, he has played a major role in the development of government programs to reduce vehicle emissions, including new regulations and a set of programs. We are very glad that you are here as well.

Our final witness, Harrison Clay, is the president of Clean Energy Renewable Fuels, which is a division of Clean Energy Fuels Corporation. Clean Energy Renewable Fuels is dedicated to the production of renewable natural gas and organic waste. Mr. Clay has expertise in the financing and development of renewable energy products as well as the sale of renewable energy and carbon credits. Prior to joining Clean Energy, he served as director of corporate development and general counsel to the San Francisco investment bank, WR Hambrecht and Company.

We are delighted that all of you are here, and I think we will start, Mr. Carrick, with you and just go across. If you could try to

keep your comments to about 5 minutes or so, that will leave more time for questions, but we certainly want to hear your point of view.

STATEMENT OF ROBERT CARRICK, SALES MANAGER, NATURAL GAS, DAIMLER TRUCKS NORTH AMERICA, PORTLAND, OR

Mr. CARRICK. Thank you. My name is Robert Carrick, and I am the sales manager for natural gas for Daimler Trucks North America. We appreciate Chairman Bennet and Ranking Member Cornyn for holding this important hearing on the role of natural gas in the transportation sector.

Daimler Trucks North America is headquartered in Portland, OR, as Senator Wyden mentioned, and we are a leader among U.S. truck manufacturers in introducing natural gas technology to the transportation sector.

Since 2008, Daimler has sold and delivered over 5,000 natural gas heavy-duty trucks, Class 7 and 8 trucks, as well as thousands of school buses and step vans through our Thomas Built Buses and Freightliner Custom Chassis organizations. The Freightliner Business Class M2 112 has been ideal for utilities, refuse, municipalities, and other short- and regional-haul applications.

Our Freightliner Cascadia Natural Gas has been on the road for just over a year. It offers the next step in super-regional haul and lane applications. Freightliner now offers natural gas technology in nearly all of its truck applications, including the Vocational 114SD.

While DTNA is headquartered in Portland, much of our truck manufacturing is in North Carolina. DTNA operates four manufacturing plants in the State. Thomas Built Buses is headquartered in High Point; our parts manufacturing facility is located in Gastonia; the Freightliner truck manufacturing plant is in Cleveland, where we produce the Cascadia Natural Gas Truck; and in Mount Holly we manufacture our Freightliner Business Class M2 trucks, including the M2 and 114SD, powered by natural gas.

With record order intake so far this year, DTNA is adding capacity and jobs in North Carolina. Daimler is committed to natural gas because of customer demand for high-performing, reliable trucks that run with near zero emissions. With natural gas, greenhouse gas emissions are reduced by at least 20 percent versus comparable diesel engines. And because the United States has an abundant supply of natural gas, the fuel supply is less constrained by overseas developments.

As I travel around the country, I get asked a lot of questions from perspective truck buyers whether natural gas is right for their business. For some, the decision to go with natural gas makes sense, but for others, natural gas is not the best, most economical choice.

For example, natural gas-powered trucks are perfect for short- and regional-haul trucking. Today's natural gas trucks are ideally suited for 300 to 500 miles per day usage. For companies that operate in that environment, for example at ports and in regional hub-and-spoke distribution, natural gas is both economical and efficient.

Good examples of what I mean are delivery companies like UPS here on the panel with me today, food and beverage distributors, utility vehicles, and refuse and public transit vehicles that stay within a relatively compact radius and return to a dedicated depot or station to fill up daily.

Although natural gas trucks have distinct advantages, challenges do exist, particularly for long-haul trucking. The lack of a national network of natural gas stations is a leading obstacle facing natural gas long-haul trucking. Less than 1,500 CNG natural gas stations exist in the U.S., and only about half are publicly available. On the LNG side, there are approximately 100 retail stations in operation today. By comparison, there are about 168,000 gas and diesel stations out there.

Technology costs also remain high. The incremental cost of a typical natural gas truck is $45,000 to $60,000 more expensive than a comparable truck with a conventional diesel engine. And do not forget to add the Federal Excise Tax on top of that figure as well.

Engine technology is still a work in process, but the good news is that there are some new engine products on the market that have the potential to deliver game-changing results, particularly in the long-haul truck segment.

Thank you for this opportunity to participate on this panel today, and we look forward to addressing all of your questions.

Senator BENNET. Thank you, Mr. Carrick.

[The prepared statement of Mr. Carrick appears in the appendix.]

Senator BENNET. Mr. Whitlach?

STATEMENT OF MIKE WHITLATCH, VICE PRESIDENT, GLOBAL ENERGY AND PROCUREMENT, UPS, ATLANTA, GA

Mr. WHITLATCH. Thank you, Senator, for the introductions. Thank you for the kind words. Chairman Bennet, Ranking Member Cornyn, and members of the subcommittee, thank you for allowing me to testify in front of you today.

I think he referred to it, Senator Cornyn, as a renaissance in the U.S. with natural gas, and we do believe that, in fact, natural gas is revolutionizing transportation within the United States, especially for heavy-duty trucking—UPS included and the rest of the industry.

I have submitted my prepared testimony, and I would like to make three points to you today.

First, UPS is absolutely committed to developing transportation alternatives that reduce our dependence on petroleum-based fuels. In fact, UPS operates over 4,700 alternative fuel vehicles. Natural gas is a key part of that strategy. In fact, we operate over 100,000 pieces of equipment worldwide. Seventeen thousand of those pieces of equipment are heavy-duty, Class A over-the-road trucks that operate on diesel fuel. Out of those, 1,243 are LNG or CNG long-haul trucks that we have added to our fleet.

In fact, all of the heavy-duty trucks that we are buying this year, 2014, for a domestic U.S. small package operation which is the core of our business, will run on natural gas. The natural gas supply situation in the U.S. provides a tremendous opportunity to adopt

a cleaner-burning alternative fuel, and removing barriers will be the key to this transformation.

My second point is, although UPS has tested virtually every type of alternative fuel technology in our fleet, we have found that natural gas is one of the best alternatives for long-haul heavy-duty trucks. Natural gas heavy trucks are ideal because heavy trucks simply burn the most fuel. In fact, if you look at it, to put this into perspective, there are 2.4 million heavy-duty trucks on the road today. They only account for 1 percent of the vehicles on the road, but they consume 17 percent of the transportation fuel.

There is also a price for technology. Mr. Carrick just referred to that in his opening statement. Each natural gas-powered alternative vehicle costs significantly more than a conventional diesel truck, and it requires investment in infrastructure.

This incremental up-front cost for a Class A tractor can run between $60,000–$70,000 per unit depending on how it is equipped. But in addition to the investment risk, we face a 12-percent excise tax that is applied to the total purchase price. This simply means that we pay extra taxes for purchasing alternative fuel vehicles.

So for example, 12 percent on an incremental investment of $70,000 is $8,400 in extra taxes when compared to a diesel truck, all for investing in a vehicle that uses domestic fuel, creates jobs here in America, and makes for cleaner air.

My third point is, the biggest impediment to greater adoption of LNG trucks in the U.S.—in the heavy-duty truck market—is a very simple glitch in how the Federal excise tax is applied to fuel. So you may ask what is the glitch—and I think everyone in this subcommittee understands the glitch very well. Today the Federal excise tax on both diesel and LNG fuel is 24.3 cents per gallon. This is a volumetric tax. I think it was mentioned earlier that not all of these fuels are equal in their energy content, and this is definitely not the case with LNG.

So, to illustrate this, a gallon of LNG only has 58 percent of the energy content when compared to a gallon of diesel fuel. This requires you to burn 1.7 gallons of LNG for the same work that 1 gallon of diesel fuel would require. So in short, we are effectively taxed at 170 percent of the rate of an equivalent diesel fuel gallon on an equivalent energy basis. So this means that LNG is disadvantaged from the start, costing 17 cents more for every diesel gallon equivalent. So another way to look at this is that the effective tax rate on an LNG-equivalent gallon is 41.3 cents compared to 24.4 cents on diesel.

Seventeen cents does not sound like a lot, but it adds up over the life of the vehicle. In fact, for a company like UPS, the extra LNG fuel tax will cost more than the incremental investment of that vehicle over the life of the truck. So in short, the glitch with this LNG excise tax is probably the biggest impediment to the general adoption of LNG trucks.

If the Congress wants to accelerate the adoption of alternative fuels, fuels like LNG, increase the use of domestic natural gas to enhance our energy security, and clean the air, then we must start with just fixing the LNG glitch in the tax code. That is my primary message here today. Let us just provide simple parity for this fuel.

Consequently, UPS is pleased to support Senate Bill 1103, the LNG Excise Tax Equalization Act of 2013, which Chairman Bennet—we thank you very much—sponsored and Senator Burr of this subcommittee cosponsored. We commend you for your leadership on this matter and hope that we can get LNG taxed at the same rate as diesel fuel.

Again, I would like to thank the subcommittee for allowing me to testify. Thank you.

[The prepared statement of Mr. Whitlatch appears in the appendix.]

Senator BENNET. Mr. Calabrese?

STATEMENT OF JOSEPH A. CALABRESE, CEO, GENERAL MANAGER, AND SECRETARY-TREASURER, GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY, CLEVELAND, OH

Mr. CALABRESE. Yes. Thank you very much. I thank the chairman and the committee for giving me this opportunity to talk and testify on the importance of continuing the alternative fuels tax credit.

Public transit ridership is growing, and projections are it will continue to grow at an increasing rate. Our cities are growing in population, our seniors are getting older and relying on public transportation both in our urban and our rural areas, and the younger generation is using public transit much more than their parents and even their grandparents.

While public transit is important for both rural and urban areas, certainly the bulk of it is in the urban areas where environmental concerns are the greatest. I think that is a very important point. Without public transit, an additional 4.2 billion gallons of gasoline will be burned in the Nation—4.2 billion. Now I think that is a very important service we provide. And my agency, the Regional Transit Authority in Greater Cleveland—we are a multi-modal agency with heavy rail, light rail, bus, Bus Rapid Transit, and paratransit service—we serve about 200,000 customers on a typical weekday and, as in other cities, the appreciation and value of public transit is growing, not just in terms of mobility, but also in terms of economic development.

If the first thing RTA is about is mobility, the second thing it is about is sustainability. During our mission in greater Cleveland, we remove about 50,000 cars each day from the streets and the congestion and pollution associated with that.

I am pleased to talk about two programs that are underway in greater Cleveland in terms of alternative fuels. The first relates to our paratransit service, which is designed to serve people with disabilities. We have 20 propane-powered 12-passenger vehicles that run on propane, modified by Rousch Corporation. These cutaways travel about 150 miles a day serving, again, exclusively people with disabilities.

The cost of these vans is more than the cost of the diesel vehicles they replaced. We think over the life of the vehicle—about 6 or 7 years—that up-front capital cost will be addressed through a lower fuel cost; however, we still have the up-front cost of the infrastructure to deal with. The good news is, over the same life cycle of the vehicles, we will drastically reduce particulate matter and elimi-

nate 20 percent of the NO_X compared to the diesel vehicles they have replaced. We hope this pilot is successful. If it is, we will replace all of our vehicles in that fleet with propane vehicles.

In our big bus fleet, we just received a delivery of the first of 240 CNG 40-foot transit buses. They are being produced in California by Gillig Corporation. We hope to eventually replace the other 500 vehicles with CNG. Again, the capital costs for the CNG buses were more than the diesel buses they replaced—about a $40,000 differential. We feel that, over the life of the vehicle, that $40,000 would be more than offset by lower fuel costs.

And again, the great news is that one diesel coach emits 170 tons of CO_2 annually, but one CNG coach emits only 4 tons of equivalent CO_2 annually. When we transition the entire fleet to CNG, we will save over 41,000 tons, really a tremendous improvement in air quality.

For both projects, in addition to the increased capital costs, really the big thing is increased infrastructure costs. With stagnant, at best, Federal investments, allocating discretionary funds for the purchase of vehicles that are more expensive, and then investing in infrastructure needed to fuel and maintain the CNG vehicles, is a real, real challenge. We are investing right now between $15 million and $20 million in the two facilities that we are upgrading so the CNG vehicles can be serviced and operated.

So the good news is, alternative fuel is cleaner. The good news is, it is being produced locally, it is helping American jobs, and there is significant interest—as you are hearing here at this table—by fleet operators to go to CNG.

The bad news is, the vehicles cost more. There is an issue in the public transit industry—in the State of Ohio, for example, 1,000 of the 3,000 vehicles, or over one-third, right now are already beyond their useful lives. So we are having a difficult time replacing buses of any type, let alone buses that cost more up front.

The third and probably the biggest challenge is the cost of the infrastructure, as I have mentioned. In making our decision, we relied on the alternative fuels tax credits, and we hope to rely on them to finance some of the infrastructure investments that we are going through right now.

Transit has been moving to alternate fuels in big numbers, as the chairman mentioned. Over 40 percent of the Nation's buses now operate on alternative fuels or blends, over 20 percent on CNG or LNG. For many, what made that possible was the alternative fuels tax credit, and many systems are weighing the alternatives right now. And the future of the alternative fuels tax credit is going to be the make-or-break in those decisions. So there is a real opportunity to expand the use of CNG buses in public transit, but the alternative fuels tax credit is so very important to make that happen, especially in times of very critical funding.

I strongly request that the alternative fuels tax credit be extended. I certainly also have to say that we encourage a bipartisan approach to the mass transit and transit bill in general because, without that bill, we really cannot move forward on this or any other important project.

Thank you very much.

Senator BENNET. Thank you very much.

[The prepared statement of Mr. Calabrese appears in the appendix.]

Senator BENNET. Mr. Jibson?

STATEMENT OF RONALD JIBSON, CHAIRMAN, PRESIDENT, AND CEO, QUESTAR, SALT LAKE CITY, UT

Mr. JIBSON. Thank you and good afternoon.

Senator BENNET. Good afternoom.

Mr. JIBSON. Chairman Bennet, Ranking Member Cornyn, thank you for this opportunity. I am pleased and appreciate the opportunity to appear before you today.

I would like to begin by thanking the committee for holding today's hearing. It is critical that Congress remains current on the dynamic discussion regarding natural gas brought about by the obvious shale gas revolution. The new abundance of natural gas reserves in our country has fundamentally shifted our energy landscape.

A decade ago it seemed inevitable that the United States would become a major importer of natural gas, yet today we are the world's leading producer of natural gas, with over 100 years of supply of natural gas right here at home. We have made great strides in turning down the curve of petroleum imports through increased domestic petroleum production and landmark fuel economy standards for light-duty vehicles.

But energy security means more than reducing our petroleum imports below the 50-percent mark. In past decades, we have successfully reduced or virtually eliminated petroleum use in other sectors, such as in electrical generation and in home heating. Yet our transportation sector depends on petroleum for 94 percent of its primary energy.

Our singular dependence on oil for transportation fuel makes us vulnerable to economic and national security risks. Every American recession over the past 4 decades has been preceded by or occurred concurrently with an oil price spike, including the most recent.

Our armed forces expend enormous financial and human resources ensuring that oil transit routes remain open and critical infrastructure is protected. Our relations with foreign governments are too often influenced by our need to minimize disruptions to the flow of oil.

The path that we are on is not sustainable, and it is not smart. The smart path forward includes diversifying our transportation energy mix and seeking to displace high-cost imports with lower-cost domestic alternatives. Greater use of natural gas as a transportation fuel delivers on both of these objectives. While natural gas provides 24 percent of the primary energy used to drive our economy, only 0.1 percent is currently being used for transportation.

Natural gas has tremendous potential for the transportation sector, and many nations are ahead of the United States in grasping this opportunity. There are currently over 18 million natural gas vehicles in use worldwide today. That is up from over 4 million over a decade ago. Yet only about 150,000, less than 1 percent of the global total, are on U.S. roadways.

There is good news, however, and this is that the market is recognizing that switching from gasoline to diesel to natural gas, as has been discussed by other witnesses today, can mean significant costs savings. Major fleet operators, like Swift Trucking, obviously UPS, Waste Management, Verizon, Ryder, and many others are switching to natural gas vehicles because of the business case that is obviously there.

But good policy choices can support the adoption of natural gas vehicles by leveling the playing field with other fuels. Currently, liquefied natural gas is taxed at a higher rate than the diesel fuel it competes with, working against NGV adoption in the heavy truck market. Resetting the tax rate so that it is applied on an energy-content basis is a common-sense measure that would remove an artificial barrier from the market.

The alternative fuels tax credit should also be reset to apply on an energy-content basis for natural gas fuels like LNG and CNG and for all other alternative fuels. Weight restrictions on trucks using natural gas also work against NGV adoption in the heavy-truck market because of the weight of storage tanks and the lower energy density of the fuel compared to a diesel. To comply with Federal highway weight restrictions, NGV operators must compensate with smaller payloads. Allowing an adjustment for these vehicles would remove an unfairly imposed market disadvantage. As this market continues to grow, natural gas utilities will play a key role in supplying the fueling infrastructure needed to support these vehicles.

The gas utilities in our membership maintain over 2 million miles of natural gas distribution pipelines nationwide. This distribution network means that we can place compressed natural gas fueling stations around the country without the need to truck that fuel. Currently, there are over 1,400 compressed natural gas stations in the United States, and many of these are owned and operated by our gas utilities.

Natural gas utilities like Questar can help greatly in building a national fueling infrastructure for natural gas vehicles. Working with their regulators, a number of natural gas distribution companies are exploring many innovative methods for supplying this gas infrastructure for participation in this market.

Research to develop affordable, reliable home refueling for natural gas vehicles could greatly expand the appeal for natural gas vehicles to residential customers. As that technology matures, companies again, like ours and others, will be involved in ensuring the safe and reliable operation of home-refueling appliances, just as we have ensured safe and reliable natural gas services to homes and businesses today.

The attractive price of natural gas is creating momentum in the market that is translating into growth in our fueling infrastructure for natural gas vehicles. Since 2008, the number of CNG stations has grown by over 11 percent per year. This sustained growth has occurred even as we have weathered one of the worst economic recessions our Nation has seen in decades.

Our domestic abundance of natural gas and the fact that, unlike petroleum, its price is not set on a global market, means that we are likely to see low and stable prices for natural gas for many

years to come. To stay on the smart path forward, we need policies that help us sustain the momentum we are seeing in the adoption of natural gas vehicles and fueling infrastructure. The most important component of this is maintaining a level playing field that allows natural gas vehicles to compete fairly in the market.

Developing the market for natural gas vehicles enhances our energy security and our competitiveness and encourages the expansion of transportation fueling infrastructure and technological advances. The American Gas Association, with member companies like Questar, urges the Congress and appreciates what you are doing in regards to this important issue.

Senator BENNET. Thank you very much, Mr. Jibson.

[The prepared statement of Mr. Jibson appears in the appendix.]

Senator BENNET. Mr. Kassel?

STATEMENT OF RICH KASSEL, SENIOR VICE PRESIDENT, EAST COAST OPERATIONS, GLADSTEIN, NEANDROSS, AND ASSOCIATES, NEW YORK, NY

Mr. KASSEL. Chairman Bennet, Ranking Member Cornyn, members of the committee, thank you for the opportunity to testify today. My name is Rich Kassel, and I am a senior vice president with Gladstein, Neandross, and Associates or GNA.

For more than 20 years, GNA products around the country have helped to demonstrate the feasibility of natural gas vehicles. More personally, I have been involved with natural gas vehicles since the mid-1990s when I was working with the Natural Resources Defense Council and we put together a project to bring hundreds of natural gas buses to New York City.

For more than 30 years, I have worked in a variety of capacities to reduce emissions from vehicles across a range of fuels and vehicle types. From this work, we know that natural gas vehicles can provide clean, safe, cost-effective transportation, while reducing our dependence on oil and creating American jobs.

In my remarks, I am going to limit my focus to the air quality and the energy side of this discussion. But in brief, as we have already heard, here is the challenge: converting operations to natural gas pairs up-front capital costs with considerable savings in fuel costs. For many fleets, these up-front costs are a barrier that keeps them invested in older, dirtier diesel trucks.

All new truck engines are at least 90 percent cleaner than the ones they replace, regardless of the fuel they use. So our main challenge is to create mechanisms that accelerate the replacement of today's legacy fleet of roughly 7 to 8 million so-called "dirty diesels" with cleaner engines in the most cost-effective manner possible.

We will not be able to use natural gas everywhere cost effectively. We know that. But using natural gas in those niches where it is most cost-effective to do so will reduce costs for operators and thereby accelerate the overall cleanup of our transportation sector.

Switching to natural gas tends to be most cost-effective, as you have already heard, as the engine gets larger or its fuel consumption goes up. Thus, the most cost-effective natural gas applications are found among truck and bus fleets that use a great deal of fuel or in high-horsepower applications like mining and locomotives and marine engines.

From an air quality and an energy perspective, this approach also yields the greatest benefits. I would like to share with you a couple of quick examples. On the energy side, switching to natural gas for a long-haul truck can displace 20,000 gallons of diesel fuel each year. Using it in a locomotive can displace 250,000 gallons each year. Using it in a ferry vessel can displace 800,000 gallons, more than 40 trucks, in a single year. And converting a small container ship to liquefied natural gas or LNG can displace more than 35 million gallons of fuel each year. That is a lot of petroleum displaced.

In a moment, you will hear about renewable natural gas or RNG. RNG moves us off of fossil fuels entirely and emits 90 percent less greenhouse gases than diesel. That is the energy side.

Now I would like to shift to the air quality perspective and provide a few examples there as well. A recent California and West Virginia University study found that natural gas trucks used in port drayage—one of the areas of most concern about dirty diesels—emitted 91 percent less smog-forming nitrogen oxide emissions than comparable trucks. Just to be clear, these are diesel and natural gas trucks that are certified at the exact same emission levels by the EPA in the State of California. What happens in the real world, as this study shows, is that the natural gas trucks in real hard-duty applications, are emitting much less nitrogen oxides.

Second example: by 2017, we should see new direct-injection technologies that will enable natural gas engines to meet not only EPA's upcoming Tier 4 emission standards, but also create the potential for up to 25 percent lower greenhouse gas emissions.

Third example: container ships and cruise lines are increasingly looking at liquefied natural gas as a significantly less expensive way to comply with the fuel and emission requirements of the emission control area that is being put into effect on our coastlines. With LNG currently roughly 25 to 35 percent lower than diesel on an energy-equivalent basis—that is about $1 a diesel gallon equivalent—we can see why there is so much interest in the marine sector in liquefied natural gas. In fact, there are 19 different projects around the country that are investing in LNG on the marine side.

Fourth and last, natural gas engines are already on the path to meeting California's optional low NO_X emission standards for highway truck and bus engines. These are engines that will be up to 90 percent lower than even EPA's cleanest in the world standard.

To put it into perspective, these are what we call in our world "power plant equivalent emissions levels." In other words, they are competitive with what we see from fuel cell vehicles and electric vehicles, yet with the mileage range and the cost-competitiveness of natural gas that we do not yet see on the fuel cell and electric side. These are the kinds of numbers that are necessary for sustainable, cost-effective goods movement.

To close, at GNA we believe that well-framed tax policy, such as basing the highway excise tax on the energy content of the fuel, is necessary—as Senator Cornyn said in his opening remarks—to conform our tax policy with our energy policies. Taking these kinds of steps can help end-users accelerate the positive return on their investments, and they are going to be more likely to make those investments.

That is great for individual companies for sure, but from a broader perspective, doing so will accelerate the overall cleanup of the transportation sector, the legacy fleet of 7 to 8 million dirty diesels that are still out there. Doing so will translate into increased economic benefits, increased energy security, reduced oil consumption, and less air pollution for everybody.

Thank you for the opportunity to testify.

Senator BENNET. Thank you, Mr. Kassel.

[The prepared statement of Mr. Kassel appears in the appendix.]

Senator BENNET. Mr. Clay, you are going to bring us home here. The testimony has just been excellent. Thank you. Not to put any pressure on you. [Laughter.]

STATEMENT OF HARRISON CLAY, PRESIDENT, CLEAN ENERGY RENEWABLE FUELS, NEWPORT BEACH, CA

Mr. CLAY. Mr. Chairman, members of the committee, thank you for inviting me to testify before you today. I work for Clean Energy Fuels. We are the largest LNG and CNG fuel provider in North America today.

Within Clean Energy, I am responsible for leading our efforts to produce and sell renewable natural gas, or biomethane, that is derived from the decomposition of organic waste such as that found in landfills or in wastewater treatment plants.

By fully utilizing the enormous natural gas resources that are just below our feet and developing the inexhaustible potential of renewable natural gas, this Nation has the building blocks for a cleaner, greener future with more jobs and opportunities, less reliance on foreign oil imports, and a healthier environment than we have seen in generations.

Natural gas is an increasingly important vehicle fuel for heavy-duty trucks, taxis, transit vehicles, airport shuttles, and fleets. Clean energy fuels fleets at airports and cities across the country, and we have built a network of fueling stations within 43 States to allow heavy-duty trucks to travel coast-to-coast fueled entirely by natural gas.

We have also innovated in renewable natural gas. Renewable natural gas is the only alternative fuel available in commercial quantities today that can meet 100 percent of the fuel requirements of an 18-wheeler, achieve a 90-percent reduction in greenhouse gas emissions, compared to diesel, leverage existing infrastructure, and be cost effectively sold at a substantial discount to current diesel prices.

We have a branded biomethane vehicle fuel product we call Redeem. We are the largest producer and marketer of renewable natural gas as a vehicle fuel in North America. We sold 14 million gallons last year. We expect to sell 20 million this year and 45 million next.

When the EPA classified renewable natural gas as a cellulosic biofuel earlier this year under the renewable fuel standard, it was really a game changer for us and our industry. It is really an important program for those of us producing low-carbon alternative fuels, and I am asking that you ensure the long-term viability of the renewable fuel standard. Any efforts to gut it will derail the

promise of viable fuel solutions like Redeem that are just coming to market today.

Bringing stability to the RFS and the Renewable Identification Number market will spur further development with a commitment to long-term investment and innovation. I urge every member of the committee to consider standing up for what is becoming an amazing opportunity for our Nation's energy future. I also believe that adopting a performance-based, technology-neutral renewable energy tax incentive would be a game changer.

We recognize the importance of current and expired tax incentives to our businesses. We believe that a permanent long-term incentive can provide the kind of business certainty that would supercharge the industry.

In addition, correcting the highway excise and fuel tax treatment of LNG and addressing other barriers currently hindering LNG adoption are important. LNG competes directly with diesel in heavy-duty vehicles. The Federal highway excise tax credit on diesel and LNG is set at 24 cents per gallon. LNG effectively pays 170 percent of the diesel rate, since it has less energy per liquid gallon. This applies to every gallon of Redeem LNG we sell as well.

So our renewable, low-carbon, domestically produced, and cleaner fuel is being taxed at a higher rate than diesel. The proposal we support, promoted by Senators Bennet and Burr, would change the excise tax on LNG so that it is imposed on the energy content of a gallon of diesel fuel or a diesel gallon equivalent.

There is also the Federal highway excise tax credit of 12 percent on heavy-duty trucks and tractors and interstate weight limits, both of which put LNG and Redeem-powered heavy-duty trucks at a competitive disadvantage compared to diesel-fueled counterparts. We are asking for a level playing field for LNG, whether it comes from renewable or conventional natural gas, and we appreciate the leadership that so many of you have shown to address it.

Lastly, I want to stress the importance of enacting a retroactive reinstatement and expansion of the expired alternative fuels tax credit as well as the alternative fuel vehicle refueling property credit. These important infrastructure and alternative fuels tax credits provide critical incentives for individuals and businesses to increase their use of natural gas as an alternative transportation fuel. Both of these provisions were proposed for retroactive reinstatement, as well as extension, in Chairman Wyden's EXPIRE Act of 2014 and the Bridge to a Clean Energy Future Act of 2014 in the House.

We joined more than 30 others, from the American Trucking Association and Cummins Westport to UPS and Waste Management, to ask for consideration of the LNG fix and several tax-based actions in a recent letter that I hope you will consider, which was included with my written testimony.

Congress has a key role to play in ensuring that the journey that we have started, leading to a cleaner future using domestic renewable energy, does not get derailed. I hope you will consider taking action on these important regulatory matters, tax incentives, and extensions, as well as addressing the technical corrections I have outlined.

Thank you for your leadership in the area and the time and attention you have dedicated to it. I will be more than happy to answer any questions or provide any further information you might need.

Senator BENNET. Thank you, Mr. Clay.

[The prepared statement of Mr. Clay appears in the appendix.]

Senator BENNET. Thank you, again, to all of the witnesses for your great testimony. It is down to the two of us, and we are going to go in 5-minute rounds. Thank you, Senator Cornyn, for hanging in there.

I think what is clear, if you listen to this, is that there is a revolution going on out there, the beginnings of one anyway, that American entrepreneurs are figuring out how to invent the future when it comes to driving our fleets. But there are some things Congress can do to help along the way to create an ecosystem that actually gets us to a place where maybe we can get off refined petroleum imported from other places and on to our own cleaner-burning natural gas.

In that spirit, I would like to start with you, Mr. Jibson. You mentioned in your testimony that other countries have moved ahead of where we are in terms of their implementation of natural gas as a transportation fuel. I wonder if you could talk a little more about that: the conditions that have allowed that to happen and what you think the hang-up has been here.

Mr. JIBSON. Yes, thank you, Chairman Bennet. I appreciate the question.

I think it is something that we have wrestled with for a long time. I think it has a lot of dynamics associated with it. Back in the mid-1990s, when we were starting to see more vehicles being converted to natural gas, I think we were keeping up a little bit better at that time with the rest of the world.

What we saw was that engines became very model-specific, very computerized, requiring specific kits for each engine. We also, I think, had a time period there where we saw gasoline prices being much lower, and I think, as a Nation, we probably did not see the need to go to smaller vehicles or more efficient-type vehicles. That is, obviously, open for debate, but I think at that point, we saw a lot of different models of vehicles being introduced throughout the world, certainly in South America, Europe, and some other countries, where economics was emphasized more, but also there was the willingness to have a smaller-type vehicle.

I think that is the point where we started to see that divergence, and we are now seeing that turn around. I think, as far as the growth we are seeing in the U.S., including infrastructure as well as the move to natural gas by so many tremendous companies that you have heard from today and referenced today, that we are starting to obviously catch up.

But I think cost is a big issue. I talked about home refueling units. In other parts of the world, we are seeing home refueling units in the $1,000 to $1,200 range. That is making it more possible for those personal vehicles.

I also think air standards, other things maybe, are of greater importance than they are in the U.S. I think that has also fueled that conversion.

Senator BENNET. Thank you. Mr. Whitlatch, you were kind enough to mention the bill that I have with Senator Burr that would tax natural gas and diesel by energy content instead of by volume. I wonder if you could talk a little bit about what that would mean economically to UPS or to others in your industry and what kind of effect that might have on the adoption of vehicle technology across the country. How big a deal is it?

Mr. WHITLATCH. Sure. So I think we heard that a Class 8 vehicle can burn 20,000 gallons-plus of fuel per year. So, if you do the math, and, at the end of the day, you are operating a fleet of, say, 1,000 Class 8 vehicles, that is 20 million gallons of fuel. A 17-cent conversion on that is almost $4 million—$4 million to the bottom line just in excise tax when compared to diesel.

So when this scales, you can see this is a recurring tax forever. So, getting back to your leadership on this bill here, this equalizes this and makes it on parity with diesel fuel, which is what we need.

Senator BENNET. I will turn it over to you, Senator Cornyn.

Senator CORNYN. Well, thank you all for your testimony. This has been very encouraging, but it seems to me—and I would like to have you comment on this—it boils down to four different points. I would like to get your advice, because I think this is something we are going to need your help to figure out.

First of all, these vehicles are more expensive than traditional diesel vehicles, and the question is, do the advantages of natural gas provide enough benefit to the owner of the vehicle that they are going to pay the extra money without some additional help from the Federal Government in terms of tax credits and subsidies? I know when the Pickens Plan was being proposed, that was one of the hang-ups because, frankly, while everybody thought it was a good idea, at the same time that we are talking about flattening the tax code and doing tax reform, we are, on the other hand, talking about adding additional credits and subsidies.

The second thing is, obviously, there need to be refueling stations. I was interested, Mr. Jibson, in what you had to say about the role of natural gas utilities and the capacity there.

Third, we basically have a tax code problem that I alluded to a moment ago, and, of course, every tax deduction, subsidy, and the like essentially comes from the taxpayer. And when you start thinking about tax expenditures with our $18 trillion in debt, you can see how this starts to get to be pretty complicated.

And then there is the Highway Trust Fund. If we do what Mr. Whitlatch and Senator Bennet have proposed, it cries out as a fair resolution, but at the same time, that is less money going into the Highway Trust Fund, which is already operating at a deficit.

Maybe you will start, Mr. Clay, and I will give other people a chance to comment, but you mentioned a performance-based, technology-neutral tax policy, and that that would be a game changer. What would that look like?

Mr. CLAY. We would be supportive of something comparable to what Senator Baucus introduced, last year I believe. That was a really, I thought, interesting idea. It provided long-term incentives for renewable energy production—without regard to whether it was solar, wind, or biofuels—entirely based on the performance, based

on the greenhouse gas emission reductions that that particular renewable fuel or energy would provide.

And we have something comparable to that in California with a low-carbon fuel standard as a technology-neutral, performance-based carbon credit generation program, which I think is very effective. It really gets the government out of the game of trying to figure out what the solution will be, but rather just saying, these are the qualities of the renewable energy that we want to incentivize, whether it is reduction of carbon or fuel diversity or moving away from petroleum, to get to more domestic fuel sources. We can set those kinds of guidelines out there and then let the industry figure out what the most cost-effective solution is.

A perfect example is what we produce: biomethane. It was not even on the radar when the renewable fuel standard was put together 5 years ago, and now we are the largest generator of cellulosic biofuel RINs by a wide magnitude of any biofuel. That was not something anyone anticipated, but it is something we have been able to accomplish.

I think that incentivizes the industry. And programs that do not pick the fuels but rather provide technology-neutral incentive programs are the most effective in stimulating that kind of activity.

Senator CORNYN. Mr. Whitlatch, do companies like UPS need tax benefits to make this commercially viable?

Mr. WHITLATCH. Yes. I think you saw in our prepared remarks that incentives have played a key role in the initial adoption. I think what we would like to stress is that, when you have a new technology, getting to scale, getting to the tipping point, is absolutely critical.

I think what you have seen with the folks on this panel is, when you have incentives, they can make a marginal business case attractive. Once you get to that level of scale, it brings the cost down for everyone across the board. Infrastructure comes down, cost per unit comes down, which leads to widespread adoption, which leads to greater scale.

So initially we believe, like any other alternative fuel that we have seen, you need to have some sort of incentives, and they do help. You get to scale. It is just a matter of how you achieve that.

Senator CORNYN. I was smiling as you were making those remarks. I agree with your analysis. The problem Congress has is, for example, in the case of the Production Tax Credit for wind, I think it is 20 years old, and we are still having a debate about whether this is a mature enough industry to not require Congress to provide additional subsidies. We all see the benefits of it, but that is the challenge.

Mr. Carrick, let me just close with you, in the time I have, and just ask, in terms of your business and producing these engines and these trucks, how critical is the tax treatment?

Mr. CARRICK. Thank you for the question. It is a very good one and there are a lot of different answers to it.

Senator CORNYN. Okay.

Mr. CARRICK. Our customers today that we are selling larger volumes of product to, like UPS—and I could go down a list of them—probably 80 percent of them have installed their own fuel stations and operate in applications where they are running very high mile-

ages, turning the vehicles 100,000 to 200,000 miles a year, burning a lot of fuel, and they are making this work. They are making this pencil out.

So where incentives may be needed or tax credits may be needed is with the smaller customers; 30,000 miles a year beverage distributors want to be green but cannot afford to because they do not burn enough fuel to make the return on investment. When we meet with CFOs in these different companies, they do very, very extensive business plans to make sure that this is going to work for them.

The 50-cent tax credit, if you look at that—these CFOs want certainty. I think Senator Wyden brought that word up. It is a great word. They want certainty. What is this 50 cents going to entail? Is it going to be here for the next 3 years, or is it going to be here for a year and they might get something retroactive? So really what we need to do is—we certainly appreciate what is going on right now and the chance of getting it extended—if we could come out with a plan that was 3 years in duration and said, until 2018, you have this, I think it would make a remarkable difference in some of the adoption rates of some of these big fleets.

Senator CORNYN. Okay.

Senator BENNET. Thank you, Senator Cornyn, very much for being here.

I just have a few more questions, although I want to say, for the record, that the bill I have with Richard Burr is not one that would create a tax credit for anything. What it is doing is removing a disincentive that is making people make a choice they would not make if the Congress were allowing the market to work properly. And that is what we are trying to do. We are going to get through it one of these days, but, in the meantime, you are going to have to stick with us.

Mr. Calabrese, would you talk a little bit more about the development of the fueling infrastructure in the Cleveland Transit Authority and how your decisions would have been different—this is actually apropos the conversation we were just having—if the alternative fuels tax credit for natural gas financing had not been in place?

Mr. CALABRESE. Yes, thank you. When I went from New York to Cleveland in 2000, Cleveland really had a CNG-only policy on diesel buses and full-size transit buses. When we looked at that—we had about 400 buses that needed to be replaced—I just could not come up with the money to replace the diesel buses with CNG buses because, number one, it was $70,000 additional per unit and, number two, because of the additional infrastructure costs we would incur.

So I really went to my board and said, "We really cannot afford this." We went away from CNG back to diesel because I felt that the best thing we could do as an organization was to be sustainable, and the best thing we could do in terms of sustainability was to put as much high-quality public transit on the road as possible, as opposed to a cleaner versus a less-clean bus.

So we went away from it. The bottom line is, what I said to the community was, at a time in the future when the incentives were different or when the technology had improved, when the differen-

tial cost between the CNG and diesel buses had come down, we would reevaluate that.

That is what we did 2 years ago. Part of that evaluation was the alternative fuels tax credit, and we made the decision to go back to CNG in a very big way. Number one, the tax credit was important. Number two, the cost of diesel fuel had risen significantly from 2002 to 2012. We did the analysis, and Mr. Clay's organization helped us with the analysis, by the way, really to make the decision.

And that tax credit was a very important piece of it, not just for us, but for my counterparts in the industry. I think that credit is, in many cases, a deciding factor.

Senator BENNET. So how do you think your counterparts in the industry are thinking about this now?

Mr. CALABRESE. Well, I think that the American Public Transportation Association in a very strong way is supporting the continuation. When we make a decision to buy a CNG bus, that is probably a 14-year decision, so that consistency and continuity, I think, are very important. I think there are a number of people in my industry who are waiting on the fence right now to see if that tax credit is there and makes it financially worthwhile to go ahead with the increased cost of the vehicle and the increased costs necessary for the fueling infrastructure.

Senator BENNET. Thank you. Mr. Kassel, could you talk a little bit more, elaborate a little bit about the technological changes that you are seeing in these engines? I was curious about that, just because that also is going to contribute to adoption rates, I think, going forward. Do you think, ultimately, this could end up going as far as passenger cars? You had mentioned railroads and marine craft as well. Where are we on the technology curve, and what does the future look like?

Mr. KASSEL. I think there are three different things going on that I would like to touch on. The first is, we are in a moment where there is finally some regulatory certainty in some of these high-horsepower applications that is driving investment in new technologies, whether it is high-pressure direct-injection for large natural gas engines or other technology pathways that companies are taking on. What is driving it is, on both the locomotive side and on the marine side, there is regulatory certainty.

So on the marine side, we now are implementing the emission control area, which requires low-sulfur fuels and much lower emissions from ships. We are essentially going from a world of 35,000 parts per million sulfur bunker fuel and no emission controls to a world of a low-sulfur distillate fuel combined with some form of scrubbers or selective catalytic reduction or LNG.

So that regulatory certainty is driving everybody to say, "How am I going to comply? What is the most cost-effective way for me to do that? And I am going to have to invest in something, so what will I invest in?"

It changes completely the analysis from where the shipping industry would have been, which is: we have our stock. We are continuing to use it for as long as we were going to use it, and we are not looking to make major capital investments. Everybody has to do something because of this. What will they do?

On the locomotive side, it is the EPA Tier 3 regulations that, again, are driving towards much, much cleaner low-sulfur fuels and emissions that are 90 percent or more, depending on the pollutant, lower than where they are. That gets the operators to say, "What am I going to do?" That, in turn, gets the engine makers, everybody involved in the chain of companies that produces the locomotive or a piece of mining equipment or a ship, to ask, "How are we going to provide what our customers need, which is a fuel-efficient vessel, an energy-efficient vessel, that meets these standards and is cost-effective?"

With car buyers, we buy our cars because we like the car. Most people do not walk in to the dealer and say, the only thing I care about is energy efficiency or the lifetime fuel costs of my vehicle. In the trucking sector, in the mining sector, in locomotives and marine applications, we are talking about asset turnover that is very, very slow and companies and operators that are facing that sort of life cycle.

So regulatory certainty is number one. That is what is driving it.

Two is, of course, the race to figure out how you create a product that is going to meet not just the regulatory goals, but the operating goals of your customers, which include maintenance and durability and low cost of energy, because, after all, energy is a huge, huge variable. Think of a container ship; there are not a lot of labor costs, but there are a lot of fuel costs. So I think that is the second attribute.

I think the third is, really, that the word is getting around. When we did a study recently of what is happening in the marine sector, we looked at 19 different projects around the country. And really, wherever you are in that sector, if you are operating ferries, if you are operating cruise ships, if you are operating container vessels, if you are operating dry bulk vessels in the Great Lakes, you can save a million dollars a year by converting, so everybody is looking at these different issues. I think that is what is really driving it.

Senator BENNET. Mr. Carrick, do you have anything you would like to add? You talked about potential game-changing technology changes.

Mr. CARRICK. Well today, on the transportation side, there really is nothing new on the horizon. There is no silver bullet. Cummins just came out with the 12-liter engine. It came out about a year ago and has made a big change in the applications we were able to take from a 9-liter engine to a 12-liter engine, which is now up in the 400 horsepower, 1,450 torque range, which is required by most heavy customers.

So they were looking at a 15-liter engine. They put that on the back burner for the time being, and I think it is really because the adoption rate has slowed down. It is still growing at about 40 or 50 percent a year, which is not bad except that it is from a very, very low base, and, until we start to get more adoption of these vehicles, I do not think you are going to see any engine manufacturers step in at this time.

Senator BENNET. So that is the problem of scale that we talked about earlier?

Mr. CARRICK. That is right.

Senator BENNET. I have two more questions, and we are done—one for Mr. Whitlatch and one for Mr. Clay.

UPS's commitment to this has been really very strong, and you had to make a business case—or somebody had to make a business case—to build the infrastructure that is required. A lot of the fueling stations are yours, right? They are not commercial. There are more than 1,100 natural gas fueling stations in the United States. In Colorado, we have 21 compressed natural gas fueling stations, which is obviously a tiny number compared to more than 100,000 traditional gas stations across the country.

So could you talk a little bit about your approach, why it made sense in your context, if it did, and then any other thoughts you have about our trying to get to scale, other than the stuff we have already talked about? What have we left out?

Mr. WHITLATCH. I think you have covered it. From our perspective, we are kind of in a unique situation. We have a very large home base where we domicile vehicles, and those vehicles go out and they drive a lot of miles and they come back to the same refueling point. So for us, we have a very captive network.

So you asked how we got there. It is really based upon the cost of the technology, the spread of the fuel prices, and how many miles do you run it. So in our case, how we make it pencil out is—and we do make it pencil out—it makes absolute sense for us to do this. We run a lot of miles, and we refuel back at one main station. And for us, that allows us to amortize the cost of this over that network. So having a captive network is one of the keys, as is running lots of miles and having the right equipment density to do that.

So we are fine. We are finding LNG works. Now we will see where CNG works. In our network, our scale allows us to do that and for it to pencil out.

Senator BENNET. Mr. Clay, you have a very different kind of network that you are thinking about, including a station at Denver International Airport.

Mr. CLAY. Yes.

Senator BENNET. Can you talk about that and what that buildout looks like?

Mr. CLAY. Sure. So we supply renewable natural gas to clean energy stations, and the decision to build those stations is somewhat independent of the buildout of our renewable and natural gas production facilities.

As a company, when we are looking to build CNG or LNG stations, typically what we look for is an anchor tenant. So we will go out and build a station anywhere where there is a fleet that is willing to commit to convert their vehicles over time to run on natural gas and has enough fuel demand to justify the capital investment in the station so that we can get a minimal level of capital return on that station.

Then, over time, we market the availability of that station to other fleets in the area and build demand on the station. So today, our most successful and largest sales stations are three that we have at the Los Angeles International Airport, at LAX. We sell 20,000 gallons a day from those facilities to shuttles and fleets, but it sure did not start out that way.

We had to go out and find the customers, create programs for them to finance vehicles, and look for creative ways to get them into natural gas vehicles that could fuel at those stations. With the over-the-road trucking——

Senator BENNET. What kind of customers are those?

Mr. CLAY. So it is typically return-to-base fleets; high fuel consumers are really the kind of customers you are looking for, people who purchase a lot of gas because they are going to get the most economic benefit, produce the most environmental benefit, per customer. If you look at a heavy-duty truck burning 20,000 gallons a year, versus a passenger car burning 500, it is pretty clear you can get a lot more bang for your buck building a station for 20 heavy-duty trucks than trying to build one for the passenger car market.

So it is high fuel consumers, return-to-base fleets where they can fuel at one centralized fueling infrastructure. So airports are great markets for us. The station you see in Denver has fueling for taxis that come to the airport regularly, airport shuttle buses, airport service vehicles, small trucks, those kinds of light-duty and medium-duty refuse trucks, which are another great market for us.

This year, 60 percent of the trash trucks that will be bought in North America will run on natural gas. It is perfect for refuse trucks. They are return-to-base fleets, they can fuel overnight, they can get enough fuel onboard to run their route during the day, and they can see significant savings on the fuel that they are buying.

Senator BENNET. When I interrupted you, you were going to——

Mr. CLAY. With the over-the-road trucks in the long-haul trucking industry, we did, as a company, make a decision to go out and vary from our usual strategy of building stations only where there was already a committed customer or one that would be at that station. We went out and did build those stations for LNG and CNG heavy-duty trucking because we felt, with the introduction of the Cummins Westport 12-liter engine and the availability of that vehicle, that in order to get those vehicles out on the road, somebody had to build the stations.

We had to kind of solve the chicken-and-egg question. So we did. We went out and built the stations to enable over-the-road trucks to run from coast to coast fueling on natural gas.

Senator BENNET. Thank you, everybody. I really appreciate the thoughtfulness. The testimony will help us as we try to make the case moving forward.

I am also a strong believer that we ought to be moving toward technology-neutrality in our tax code. How we do that and what that transition looks like is going to be very complicated, but I think it is essential that we do it, for a lot of reasons.

One of the reasons is that, every time I hear somebody on the television say that the government should not pick winners and losers, that is when I hold onto my wallet, because they say it as if the government has not already made decisions to pick winners and losers. If you happen to be in the winning category, you happen to be an incumbent interest that earned something deep in the last century in our regulatory code, our tax code, that is great for you, but it is not great for innovation in this country. That is why I think this set of issues is so critical, beyond even the discussion of natural gas.

So I thank you all for what you do, for being here, for being willing to take time out to come here, and I give you an open invitation on behalf of the entire committee that, as we go forward, please do not be shy about coming to us with your ideas or suggestions for how we can actually get this stuff done.

Thank you. We are adjourned.

[Whereupon, at 3:50 p.m., the hearing was concluded.]

APPENDIX

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

Senator Michael Bennet Opening Statement

12/3/14 Hearing Entitled:
Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, and Achieving Emissions Benefits

Good afternoon. Thank you to Senator Cornyn; to all of our distinguished witnesses; and to all of you for being here today. The subcommittee on energy, natural resources and infrastructure will come to order.

Once again, I want to thank our witnesses for being here today.

We're convening to discuss an important topic – natural gas, and specifically the use of natural gas as a transportation fuel. As most know, the country has undergone a dramatic change in our domestic energy picture over the last decade. Thanks to innovations in the drilling process, our domestic production of natural gas has quadrupled since 2005. That's good for jobs, good for energy security, and – when natural gas is produced responsibly – it can also be good for our environment.

And I want to spend just a minute on this at the outset because it's an important point. I'm a firm believer that we can produce natural gas safely and in a way that protects drinking water, air quality, and adjacent communities. The state of Colorado has led the way in establishing a robust regulatory regime for natural gas production. From first-in-the-nation standards that dramatically reduced fugitive methane emissions, all the way to the innovative "Clean Air, Clean Jobs Act" that led to increased natural gas usage in Colorado's power plants. This law, and the associated fuel switching and efficiency targets, will lead to sizable reductions in both criteria emissions and carbon pollution -- which are two of the biggest environmental advantages of using more natural gas in power generation and transportation. Most importantly, these new initiatives were broadly supported, both by the industry and the environmental community. On this topic, like many others, I think Washington could learn a lesson from the collaborative approach we've taken in Colorado.

While various aspects of natural gas have been discussed in front of the Energy and Environment Committees – we're here today to discuss natural gas as a transportation fuel. There's a huge opportunity to grow this market. It's amazing to me that over 40% of the country's public buses are currently powered by alternative fuels or blends. We've seen this in Colorado -- Weld County Public Works has recently converted many of their cargo vans, snowplows, and school buses to natural gas. They predict that this will save the school district $100,000 a year and will reduce emissions of smog-producing pollutants.

As we'll hear today, this Committee can do more to help this growing industry. Specifically, we can level the playing field on excise taxes so natural gas isn't taxed at a higher rate than diesel. Senators Burr, Hatch and I have a bill that would do just that. It passed this committee and the full Senate during our consideration of the highway bill, but was stripped out by the House before final passage.

The Finance Committee also has jurisdiction over a variety of alternative fuel tax credits. Specifically, the 50 cent per gasoline-gallon-equivalent credit for selling natural gas as a

transportation fuel – a credit that has expired. And the 30 percent credit for the installation of new natural gas refueling equipment, which has also expired. Our tax laws are crucial to the development of the new infrastructure needed to aid the growth of these vehicles. Both of these credits were included in the EXPIRE Act that passed the Finance Committee with bipartisan support.

As most of us here know, today's hearing is timely because the House is now considering a very short-term "extenders" bill. Under the House bill, dozens of temporary tax laws will expire once again at the end of the month. This isn't exactly the certainty that American businesses and families are looking for from Congress. I would prefer, and I know many in the Senate would too, that we move back to the bipartisan legislation that moved through this Committee over 6 months ago. That bill passed our Committee overwhelmingly and nearly every member indicated that the bill was designed to give us a nearly two year window to work on tax reform.

As we do this, it's important that Congress understands the growing natural gas vehicle industry and its positive effect on our economy, national security, and our environment. Once again, I want to thank our panel for being here. We're looking forward to your testimony.

Testimony
U.S. Senate Committee on Banking, Housing and Urban Affairs
Energy, Natural Resources and Infrastructure Subcommittee
Senator Bennet - Chairman
Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, & Reducing Air Pollution
December 3, 2014
By: Joseph A. Calabrese, CEO, General Manager/Secretary-Treasurer
Greater Cleveland Regional Transit Authority

My name is Joe Calabrese and I am the General Manager of the Greater Cleveland Regional Transit Authority (RTA). I have worked in the Public Transit Industry for over 35 years and have been in my current position for nearly 15 years.

Public Transit ridership is growing, and the projections are that it will continue to grow at an increasing rate. Our cities are growing in population. Our Senior Citizens are relying more and more on public transit in both urban and in rural areas, and our younger generations are much more public transit oriented than were their parents or even their grandparents.

Without public transit, an additional 4.2 billion gallons of gasoline would be burned annually throughout our nation.

The Greater Cleveland RTA is a multi-modal transit system providing heavy rail, light rail, BRT, buses and paratransit services, which provide needed mobility to approximately 200,000 customers on the typical weekday.

Approximately 63% of our customers use our services to get to work, with an additional 22% traveling to schools and universities.

As in many other cities, the use of public transit, and the appreciation for the important role transit plays, is growing. No city can function effectively without an effective public transit system. In Greater Cleveland, RTA "Connects the Dots".

If the first thing RTA is all about is mobility, the second is sustainability. In doing its day to day mission, RTA replaces 50,000 cars each weekday, along with the associated congestion and pollution.

That passion for sustainability is well ingrained in our day to day business practices as we move towards ISO 14001 certification.

I'm pleased to be here today to talk about two recent initiatives my agency has undertaken, both relating to clean alternative fuels.

RTA has 20 propane-powered 12-passenger paratransit vehicles, purchased in early 2014, after being modified by Rousch Corporation. These cut-away vans, operating under a pilot project, travel approximately 150 miles each day transporting persons with disabilities to important appointments.

Although the capital cost of these vans was a slight premium over the cost of the diesel units they replaced, it is estimated that over their six-year life, RTA will save approximately $16,000 per vehicle in fuel costs as compared to diesel.

Even better, over this same life cycle, each propane fueled bus will drastically reduce particulate matter and 20% of the NoX as compared to diesel. If this pilot is successful, we hope to replace our entire diesel paratransit fleet with propane.

For our big bus fleet, RTA has just received delivery of the first of 240 CNG powered buses awarded to Gillig Corporation. We hope to eventually replace our entire fleet of nearly 500 diesel buses with CNG.

Although the capital cost for CNG propulsion for these 40 foot buses was a $40,000 premium each, it is estimated that over their 12-year life, RTA will save even more due to lower fuel costs.

Even better, while one diesel coach emits 107 tons of CO2 annually, one CNG coach emits only 4 tons of C02 equivalent annually. With the first delivery of our 60 new buses, which we will receive next March, RTA will save 6,900 tons of emissions in the first year alone.

When the entire fleet is transitioned, the annual environmental savings is estimated to be over 41,000 tons.

For both of our projects, in addition to the increase in vehicle capital cost, was the investment in fueling infrastructure needed to make it all work. With stagnate (at best) Federal investments in transit, finding discretionary funds for the fueling infrastructure is difficult, and prohibitive in many cases.

The cost to design and construct the CNG fueling infrastructure needed to support our fleet will be between $15 million and $20 million.

So what is the good news?

- Alternative fuels burn much cleaner than diesel
- Using alternative fuels reduces our nation's dependence on foreign crude
- Using alternative fuels creates American jobs
- There is significant interest in many, especially fleet operators in using alternative fuels

So what are the problems?

- A major challenge to accelerating the deployment of Alternative Fuel buses is simply money to replace older buses with newer buses. In a recent Ohio Department of Transportation (ODOT) study, it was determined that between 2015 and 2025, over 3,000 buses would need to be replaced based upon current replacement schedules – that represents a great opportunity for Alternative Fuels. The problem is, as the study goes on to say, there are currently over 1,000 buses, or 1/3 the fleet that are being operated beyond their useful life due to lack of replacement funding.
- A second challenge of doing the right thing is that Alternative Fuel buses cost more money than their diesel counterparts.
- A third challenge, which may be the biggest of all, is the upfront costs associated with needed fueling infrastructure.

In RTA's case, we counted on the Alternative Fuels credit to make the financing work. With our entire fleet operating on CNG, our alternative tax credit of about $1 million annually was projected to finance about 80% of the cost of the needed fueling infrastructure.

Transit systems have actually moved to alternative fuels in big numbers. Today, over 40% of the nation's buses operate on alternative fuels or blends, with over 20% operating on CNG or LNG.

For many, what made this possible was the alternative fuels credit.

For many other transit systems that are now considering the transition to alternative fuels, the continuation of the alternative tax credit may be the deal maker or deal breaker.

Therefore, I strongly request to help defray the increased costs associated with alternative fuels, and to continue the roll-out of clean fuel vehicles, that Congress move for the continuation of the Alternative Fuels Tax Credit.

I must also urge, at this time, a timely long-term fix for the Highway Trust Fund and the Mass Transit Account, which includes an increased investment for infrastructure state-of-good-repair and workforce development efforts.

Without a long term solution with predictable and dedicated funding, important projects that provide mobility to people and employ thousands of Americans, simply cannot happen.

Thank you for your consideration.

Opening Statement of Robert Carrick,
Sales Manager-Natural Gas
Daimler Trucks North America

Senate Finance Committee
Subcommittee on Energy, Natural Resources, and Infrastructure

Hearing on "Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, and Achieving Emissions Benefits"
December 3, 2014

My name is Robert Carrick and I am the Sales Manager for natural gas vehicles at Daimler Trucks North America. I appreciate Chairman Bennet and Ranking Member Cornyn for holding an important hearing on the role of natural gas in the transportation sector. Daimler Trucks North America (DTNA), headquartered in Portland, Oregon, is a leader among US truck manufacturers in introducing natural gas technology in its lineup of trucks.

Since 2008 Daimler has sold and delivered over 5,000 Class 7 and 8 vehicles, as well as thousands of school buses and step vans through Thomas Built Buses and Freightliner Custom Chassis Corp. The Freightliner Business Class M2 112 NG has been ideal for utilities, refuse, municipalities and other short and regional-haul trucking applications. The Freightliner Cascadia Natural Gas has been on the road for over a year, and it offers the next step in super regional haul and lane applications. Freightliner now offers Natural Gas technology in nearly all of its truck applications including the Vocational 114SD.

While DTNA is headquartered in Portland, much of our truck manufacturing is in North Carolina. DTNA operates four manufacturing plants in the state. Thomas Built Buses is headquartered in High Point; our parts manufacturing facility is located in Gastonia; a Freightliner truck manufacturing plant in Cleveland where we produce our Cascadia natural gas truck; and in Mt. Holly we manufacture our Freightliner Business Class M2 trucks including the M2 and 114SD powered by natural gas. With record order intakes so far this year, DTNA is adding capacity and jobs in North Carolina.

Daimler is committed to natural gas because of customer demand for high-performing, reliable trucks that run with near zero emissions. With natural gas, greenhouse gas emissions are reduced by at least 20 percent versus comparable diesel engines. And because the United States has an abundant supply of natural gas, the fuel supply is less constrained by overseas developments.

As I travel around the country I get asked a lot of questions from prospective truck buyers about whether natural gas is right for their business. For some, the decision to go with a natural gas engine makes sense, but for others, natural gas is not the best, most economical choice. For example, natural gas powered trucks are perfect for short and regional-haul trucking. Today's natural gas trucks are ideally suited for 300 to 500 miles per day usage. For companies that operate in that environment, for example at ports and in regional hub and spoke distribution, natural gas is both economical and efficient. Good examples of what I mean are package delivery companies like UPS here on the panel with me today, food and beverage distributors,

utility vehicles, refuse and public transit vehicles that stay within a relatively compact radius and return to a dedicated depot or station to fill up.

Although natural gas trucks have distinct advantages, challenges exist, particularly for long-haul trucking. The lack of a national network of natural gas stations is the leading obstacle facing natural gas long-haul trucking. Less than 1,500 CNG natural gas stations exist in the US, and only about half are publicly available[1]. On the LNG side, there are approximately 100 retail stations in operation today[2]. By comparison, there are about 168,000 gas stations[3]. Technology costs remain high. The incremental cost of a typical natural gas truck is $45,000 to $60,000 (plus a 12 percent federal excise tax on all new truck sales) more expensive than a comparable truck with a conventional diesel engine. Engine technology is still a work in process, but the good news is there are new engine products on the market that have the potential to deliver "game changing" results particularly for the long-haul truck segment.

Thank you for the opportunity to participate in today's hearing and I am happy to answer any questions.

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[1] Natural Gas Vehicles for America (www.ngvamerica.org)
[2] Natural Gas Vehicles for America (www.ngvamerica.org)
[3] Fueleconomy.gov

Testimony of

Mr. Harrison Clay
President, Clean Energy Renewable Fuels,
A Subsidiary of Clean Energy Fuels Corporation

Before the

United States Senate Committee on Finance
Subcommittee on Energy, Natural Resources, and Infrastructure

Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security,
and Achieving Emissions Benefits
Wednesday, December 3, 2014

Mr. Chairman, Members of the Committee:

Thank you for inviting me to testify before you today — it's a pleasure to see so many energy champions in the same room. My name is Harrison Clay. I am the President of Clean Energy Renewable Fuels, a subsidiary of the Clean Energy Fuels Corporation, based in Newport Beach, California. In this role, I am responsible for leading Clean Energy's efforts to produce and sell renewable natural gas — or biomethane — that is derived from the anaerobic decomposition of organic waste, such as that found in landfills or wastewater treatment plants.

I am here today because we believe that natural gas, and renewable natural gas, hold tremendous promise, and if further developed and made more widely available, can be even greater components of America's energy portfolio than they already are. By tapping into and fully utilizing the enormous natural gas resources that are just below our feet, and developing the inexhaustible potential of renewable natural gas, this nation has the building blocks for a cleaner, greener future with more jobs and opportunities, less reliance on foreign oil imports and a

healthier environment than we have seen in generations. Natural gas offers the potential for the United States to set the energy standard for other countries to follow.

Obviously, this nation's laws and regulations play a vital role in the continued development and expansion of these technologies, as they do with all industries. To that end, my testimony will focus on four areas where we believe Congress can play a critical role:

1. **Ensuring the long-term viability of the Renewable Fuel Standard (RFS);**
2. **Adopting a performance-based, technology-neutral renewable energy tax incentive;**
3. **Correcting the tax and regulatory treatment of Liquefied Natural Gas (LNG); and**
4. **Reinstating and expanding important tax credits.**

What's encouraging is that these issues enjoy bipartisan and industry-wide support. In addressing these areas, you will remove the barriers, and the fear of business uncertainty, that could potentially slow or even altogether halt a growing American success story.

It has been long recognized that there is no single solution to solving the energy needs of a nation as large and diverse as the United States. Today, natural gas is an increasingly important vehicle fuel for heavy-duty trucks, taxis, transit vehicles, airport shuttles and fleet vehicles. Many of you have likely seen Clean Energy fueling stations in some of your communities. You can find us refueling fleet vehicles at major airports, including Los Angeles, Denver International, Dallas Fort-Worth, Newark and New Orleans, and in major cities like Charlotte, Atlanta and Orlando. You'll see Waste Management and Republic Services refuse trucks across the country being

fueled by natural gas from Clean Energy-built stations. Recognizing the importance of fleets and heavy-duty trucks to every state, Clean Energy built and is continually expanding America's Natural Gas Highway, a nationwide network of natural gas fueling stations in 43 states coast-to-coast. This means that for the first time heavy-duty trucks can travel coast to coast in North American fueled entirely by natural gas!

While use of natural gas in fleets is in our company's DNA, Clean Energy has invested and innovated in other areas, most notably renewable natural gas.

I'm particularly bullish and proud of the work we've done to pioneer the use of this amazing, and 100-percent renewable, energy source. Renewable natural gas is the only alternative fuel available in commercial quantities today that can meet 100 percent of the fuel requirements of an 18-wheeler, achieve a 90 percent greenhouse gas reduction compared to diesel, leverage existing infrastructure and be cost-effectively sold at a substantial discount to current diesel prices.

Its potential can be seen in the success of Redeem, the first commercially available, renewable natural gas vehicle fuel, which is offered at Clean Energy stations. It is derived entirely from organic waste streams and is available in either Compressed Natural Gas (CNG) or LNG form. Redeem makes us the largest producer, marketer, and distributor of renewable natural gas, or biomethane, as a vehicle fuel in North America. And this is not about the promise of the future — we sold 14 million gallons of Redeem last year, over 20 million this year and expect to double our sales of Redeem next year, to over 40 million gasoline gallons.

Once, waste from farms and landfills decomposed and emitted large amounts of methane — a potent greenhouse gas — into the atmosphere. But with the development of Redeem, there is a way to capture the gas emitted from this waste and turn it into usable energy. The beauty of renewable natural gas is that it can be produced economically anywhere there are large organic waste streams — typically near major population centers or agricultural operations. So as long as we produce organic waste, we will be able to produce Redeem. And since we source renewable natural gas from facilities located in eight different states — including Washington, Michigan, Ohio, Texas, Tennessee, Arkansas, New York and Oklahoma — we can say that Redeem is truly a national effort.

Put simply, Redeem is harnessing the energy trapped in America's landfills, wastewater treatment plants and on farms. It's creating jobs and reducing oil imports in the process. It's renewable. It's immeasurably cleaner than traditional fuels. You can only call Redeem a "win by a factor of four."

I'm not the only one who's bullish — just look at how the market has responded. Earlier this year, the EPA classified renewable natural gas as a cellulosic biofuel under the RFS. In just two months — between August and September of this year — biomethane vehicle fuel generated 11 million cellulosic biofuel Renewable Identification Numbers (RINS) under the RFS. Compare that to the 423,000 cellulosic biofuel RINS generated by non-biogas cellulosic fuels in 2013. Biomethane vehicle fuel has arrived and validates the vision of the RFS and justifies the effort of preserving it and enforcing it.

By some estimates, the potential for renewable natural gas could be as much as 30 billion gallons of fuel annually. Just reaching a fraction of that potential, 10 percent, would be enough to run approximately 190,000 garbage trucks and 50,000 heavy-duty vehicles annually. That's more than the entire garbage truck fleet in America today.

Ensuring the long-term viability of the RFS is critical for the next chapter of this success story to be written. Efforts to gut the RFS will only derail the promising, and just now emerging, viable fuel solutions like Redeem. Rather, bringing stability to the RFS and RIN market will spur further development of this tremendous, 100-percent renewable resource with a commitment to long-term investment and innovation. I urge every member of the committee to consider standing up for what's becoming an amazing opportunity for our nation's energy future.

We're not alone in this assertion. Clean Energy and Clean Energy Renewable Fuels are proud members of the Coalition for Renewable Natural Gas, joined by many other organizations that share our enthusiasm, including BP America, Constellation Energy, Waste Management and many others.

Adopting a performance-based, technology-neutral renewable energy tax incentive could also be a game-changer. As you know, major business decisions are driven in part by certainty and commitment. In taking a long view at the potential marketplace, I was buoyed by discussions in the last year to enact a performance-based, technology-neutral renewable energy tax incentive to replace the current patchwork of tax incentives. Please don't misinterpret this statement as not recognizing the importance of current and expired tax incentives to our business

— and the fact that we have, and will continue to, ask for their reinstatement as important to our future (and I will do so shortly). But optimally, we believe that a permanent incentive that is performance-based and technology-neutral can supercharge the industry with the kind of business certainty that long-term investments to transform our energy infrastructure require.

We are grateful for the leadership shown by this committee and many of your colleagues to create a foundation of tax incentives that have enabled so many businesses and municipalities to turn to American natural gas, and now renewable natural gas, as their vehicle fuel of choice. Making these kinds of incentives permanent can take these success stories to the next level.

But the progress that we've made, the new energies we've harnessed and the jobs we have created in the process could all be slowed, or even jeopardized, if Congress fails to preserve the RFS, extend expiring tax credits and correct some technical, but important, inequities. To that end, and in hopes of securing a domestic, renewable portfolio of energy for the America's next 100 years, I'd like to discuss two final issues before the subcommittee today.

Congress should correct the highway excise and fuel tax treatment of LNG and address other barriers currently hindering LNG adoption. LNG competes directly with dirty, and often imported, diesel as a transportation fuel for use in heavy-duty vehicles. While the federal highway excise tax on both diesel and LNG is set at 24.3 cents per gallon, LNG effectively pays 170 percent of the diesel rate since it has less energy per gallon because of the way the tax is calculated. This applies to every gallon of Redeem LNG we sell, as well.

The proposal that we support (S. 1103 and HR 2202) is promoted by Senators Bennet (D-CO) and Burr (R-NC) of this Committee and Congressmen Thornberry (R-TX) and Larson (D-CT) in the House of Representatives. Senators Bennet and Burr propose that the excise tax on LNG be changed so that it is imposed on the energy content of a gallon of diesel fuel, known as the diesel gallon equivalent. This gallon equivalency fix should address both the LNG-diesel excise tax and the Alternative Fuel Excise Tax Credit. Doing so would create policy consistency and restore a competitive balance between LNG, CNG and diesel as transportation fuel choices. According to a Joint Committee on Taxation review, simply making these two technical changes simultaneous would raise $9 million in new revenue. These technical changes were included in the Senate version of the MAP-21 Reauthorization Act (S. 2322), which passed the Senate in July of this year. Unfortunately the changes did not make it into the final version of the legislation that was signed by President Obama.

There also exists a Federal Highway Excise Tax (FET) of 12 percent on heavy-duty trucks and tractors. Because of the greater up-front costs of LNG-powered heavy-duty trucks compared to diesel ones, the tax puts LNG-powered heavy-duty trucks at a competitive disadvantage to their diesel counterparts. We hope that Congress will consider eliminating this tax or at a minimum amending the code to exempt the incremental cost of natural gas trucks and other advanced technology trucks from the tax. We need more of the trucks on the road fueled by domestic, renewable, low carbon fuels like Redeem.

Lastly, we also ask Congress to consider exempting heavy-duty natural gas trucks from the interstate weight limits, which can reduce their total load abilities and have an impact of as much

as 3 percent on their revenue. This issue is caused by the extra weight of the natural gas fuel tanks.

As you can see, there are several regulatory and tax barriers in place that put vehicles running on American natural gas or renewable natural gas — LNG in particular — at a competitive disadvantage. All we're asking for is the proverbial "level playing field" and appreciate the leadership that so many of you have shown to address it.

Enacting a retroactive reinstatement and expansion of the expired Alternative Fuel Tax Credit, as well as the Alternative Fuel Vehicle Refueling Property Credit, would contribute to the industry's continued success. These important infrastructure and alternative fuel tax credits provide critical incentives for individuals and businesses to increase their use of natural gas as an alternative transportation fuel. Both of these provisions are currently proposed for retroactive reinstatement as well as extension in Chairman Wyden's EXPIRE Act of 2014 (S. 2260) and the Bridge to a Clean Energy Future Act of 2014 (H.R. 5559) in the House of Representatives.

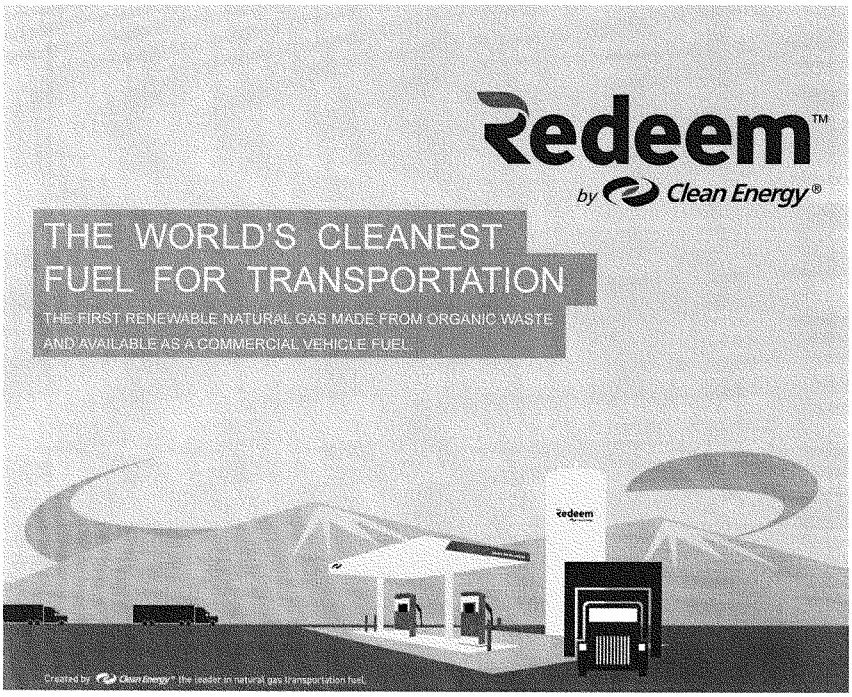
I believe it is important to highlight that many of the above actions were outlined in a recent letter sent to this Committee and the House Ways and Means Committee. Clean Energy joined more than 30 associations, coalitions, companies and organizations — ranging from the American Trucking Association and Cummins Westport to UPS and Waste Management — asking for consideration of these actions during this session. I ask that a copy of this letter, dated November 7, 2014, be submitted for the record.

Members of the Committee, I would like to stress once again that Congress has a key role to play in ensuring that the journey that we've started that leads to a cleaner future using domestic, renewable energy doesn't get derailed. Clean Energy currently fuels over 30,000 vehicles a day at over 500 fueling stations throughout the U.S. and Canada. With a broad and expanding customer base in a variety of markets, we truly believe that now is our time. I hope you will consider taking action on these important regulatory matters and tax incentives and extensions, as well as addressing the technical corrections I've outlined.

In closing, natural gas and renewable natural gas are working for America and we are at a pivotal moment in history. You have an historic opportunity to amend and extend critical tax credits that will immediately have a positive and dramatic impact on our energy, jobs, national security, and environment.

Thank you for your leadership in the area and the time and attention you have dedicated to it. I would be more than happy to answer any questions or provide any further information you might need.

# # #


Redeem™
by Clean Energy®
THE WORLD'S CLEANEST
FUEL FOR TRANSPORTATION
THE FIRST RENEWABLE NATURAL GAS MADE FROM ORGANIC WASTE
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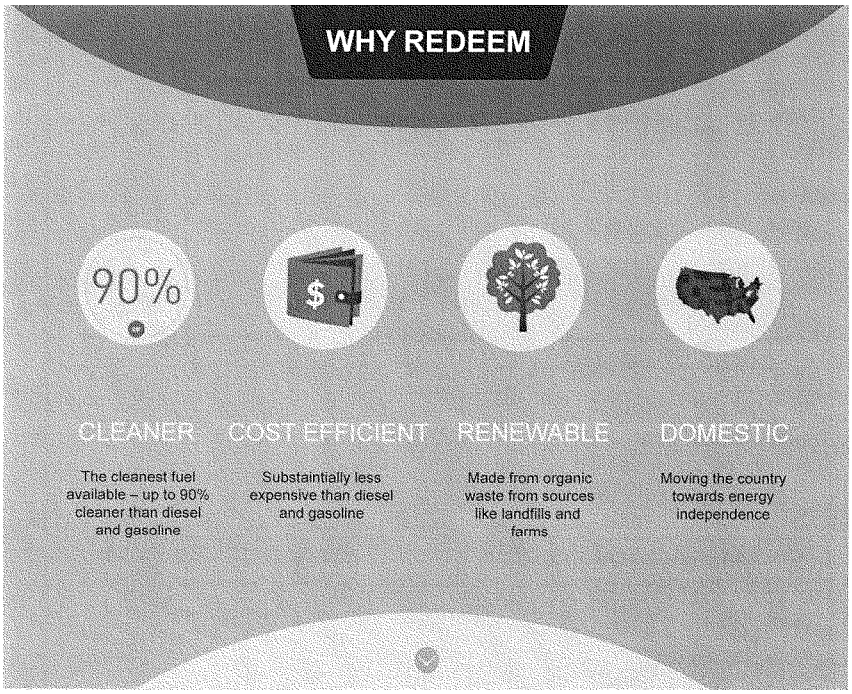
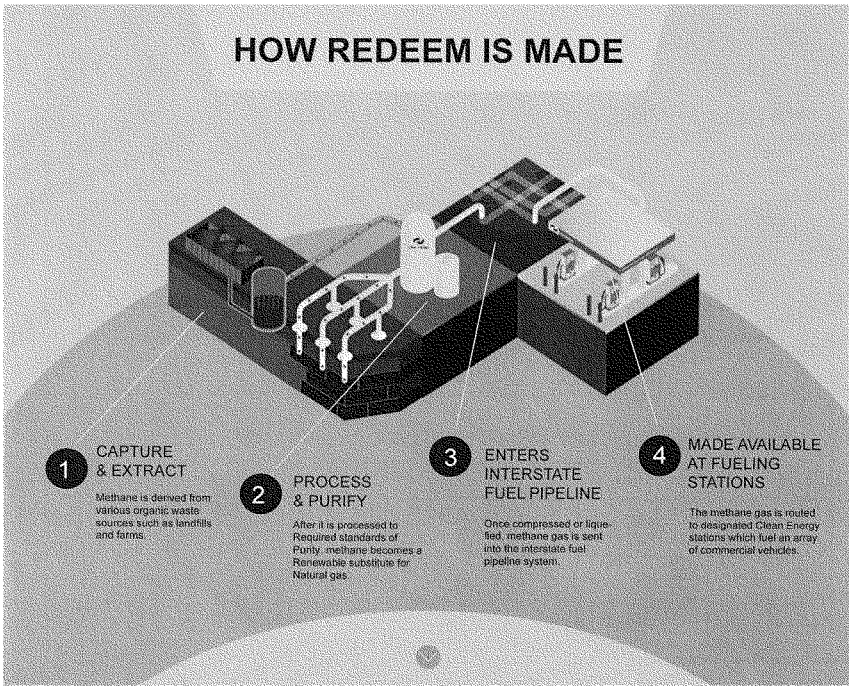
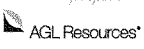

WHY REDEEM
90%
CLEANER
The cleanest fuel available – up to 90% cleaner than diesel and gasoline
COST EFFICIENT
Substaintially less expensive than diesel and gasoline
RENEWABLE
Made from organic waste from sources like landfills and farms
DOMESTIC
Moving the country towards energy independence


HOW REDEEM IS MADE
1
CAPTURE & EXTRACT
Methane is derived from various organic waste sources such as landfills and farms.
2
PROCESS & PURIFY
After it is processed to Required standards of Purity, methane becomes a Renewable substitute for Natural gas.
3
ENTERS INTERSTATE FUEL PIPELINE
Once compressed or liquefied, methane gas is sent into the interstate fuel pipeline system.
4
MADE AVAILABLE AT FUELING STATIONS
The methane gas is routed to designated Clean Energy stations which fuel an array of commercial vehicles.

NGVAMERICA
Natural Gas Vehicles for America

November 7, 2014



The Honorable Ron Wyden
Chairman, Committee on Finance
United States Senate
Washington, DC 20510

The Honorable Orrin Hatch
Ranking Member, Committee on Finance
United States Senate
Washington, DC 20510

The Honorable Dave Camp
Chairman, Committee on Ways and Means
United States House of Representatives
Washington, DC 20515

The Honorable Sander M. Levin
Ranking Member, Committee on Ways and Means
United States House of Representatives
Washington, DC 20515

Dear Chairmen Wyden and Camp and Ranking Members Hatch and Levin,

We, the undersigned, understand that the United States Senate Finance Committee and the United States House of Representatives' Ways and Means Committee may soon initiate efforts to extend expired and expiring tax incentives. The Congress has long recognized the importance of fuel diversity in the American economy, and we thank you for your past support for natural gas as a transportation fuel. Increased use of natural gas vehicles helps address several public policy goals simultaneously -- including increasing U.S. jobs and reducing greenhouse gases, urban pollution, and dependence on imported oil. We would like to bring our interests and concerns to your attention as you begin your deliberations.

Alternative Fuel Tax Credit Extensions

We support the retroactive reinstatement and extension of the expired Alternative Fuel Excise Tax Credit (26 USC §§ 6426 and 6427) and the Alternative Fuel Vehicle Refueling property credit (26 USC § 30C). These alternative fuel and infrastructure credits incentivize individuals and businesses to increase use of natural gas as an alternative transportation fuel. These provisions are currently proposed for retroactive reinstatement and extension in the S. 2260 and H.R. 5559.

LNG-Diesel Excise Tax Fix

We also support efforts that correct the highway excise tax treatment of LNG. LNG competes with diesel fuel as a transportation fuel for use in heavy duty vehicles. The federal highway excise tax on both diesel and LNG is set at 24.3 cents *per gallon.* However, because LNG has less energy *per gallon* than diesel fuel, on an energy equivalent basis LNG effectively pays 170 percent of the diesel rate. The current highway excise tax treatment of LNG is a disincentive to investment in new LNG trucks and fueling stations, and should be corrected to encourage capital investments.

We request that the highway excise tax on LNG be changed so that it is imposed on the *energy content* of a diesel gallon (known as a diesel gallon equivalent), as proposed in S. 1103, bipartisan legislation introduced by Senators Michael Bennet (D-CO) and Richard Burr (R-NC), a version of which was included in the Senate-passed Highway bill, H.R. 5021, The Preserving America's Transit and Highways Act, and H.R. 2202, bipartisan legislation introduced by Congressmen Mac Thornberry (R-TX) and John Larson (D-CT).

Alternative Fuel Tax Credit Fix[1]

Finally, similar to the LNG excise tax, we encourage you to alter the value of the Alternative Fuel Excise Tax Credit (26 USC §§ 6426 and 6427) for LNG so that the credit is based on the *energy content* of a diesel gallon and not on a per gallon basis. Correcting both the LNG excise tax treatment and the excise tax credit treatment at the same time creates policy consistency and would restore the competitive balance between LNG, CNG and diesel as transportation fuels. Furthermore, according to a Joint Committee on Taxation review, making these two changes simultaneously would raise $9 million in new revenue.

We appreciate your consideration of our request.

cc: Members of the Senate Finance Committee
Members of the House Ways and Means Committee

Sincerely,

Trade Associations:

American Gas Association
American Public Gas Association
American Trucking Associations
National Association of Truck Stop Operators
National Waste and Recycling Association
NGVAmerica
Truck Renting and Leasing Association

Coalitions, Companies and Organizations:

Agility Fuel Systems
AGL Resources
ANGI Energy Systems, LLC
Blu. LNG
Center Point Energy
Chart Industries
Clean Energy Fuels
Coalition for Renewable Natural Gas
Cummins Westport
Encana
Gladstein, Neandross & Associates
Linde
Luxfer Gas Cylinders
Mack Trucks
Noble Energy
Ryder
Sempra Energy
Shell Oil Co.
Tenaska
Titeflex
Trillium
UPS
Volvo Trucks
Waste Management
Westport Innovations

[1] Attachment (Joint Committee on Taxation Memorandum dated April 2, 2014)

ORAL TESTIMONY OF
RON JIBSON
PRESIDENT AND CEO
QUESTAR
400 NORTH CAPITOL, NW
WASHINGTON, DC 20001

Good afternoon, Chairman Bennet, Ranking Member Cornyn, and members of the Subcommittee. I am Ron Jibson, President and CEO of Questar, and I am pleased to appear before you today. Questar Corporation is an integrated natural gas company that develops, produces and delivers clean energy in the heart of the Rockies. Questar Corporation has three major lines of business: retail gas distribution, interstate gas transportation and gas production, which are conducted through its three principal subsidiaries – Questar Gas, Questar Pipeline and Wexpro.

I am here also on behalf of the American Gas Association (AGA). AGA represents more than 200 local energy companies delivering clean natural gas throughout the United States.

I'd like to begin by thanking the committee for holding today's hearing, because it is critical that Congress remains current on the dynamic discussion regarding natural gas brought about by the shale gas revolution. The new abundance of natural gas reserves in our country has fundamentally shifted our energy landscape. A decade ago, it seemed inevitable that the United States would become a major importer of natural gas. Instead, today, we are the world's leading producer of natural gas with well over a hundred years supply of natural gas right here at home.

We have made great strides in "turning down the curve" of petroleum imports through increased domestic petroleum production and landmark fuel economy standards for light-duty vehicles. But energy security means more than reducing our petroleum imports below the fifty percent mark. In past decades, we have successfully reduced – or virtually eliminated – petroleum use in other sectors, such as electrical generation and home heating. Yet, our transportation sector depends on petroleum for 94 percent of its primary energy.

Our singular dependence on oil for transportation fuel makes us vulnerable to economic and national security risks. Every American recession over the past four decades has been preceded by – or occurred concurrently with – an oil price spike, including the most recent recession. Our armed forces expend enormous financial and human resources ensuring that oil transit routes remain open and that critical infrastructure is protected. Our relations with foreign governments are too often influenced by our need to minimize disruptions to the flow of oil.

The path that we are on is not sustainable, and it is not smart. A smart path forward includes diversifying our transportation energy mix and seeking to displace high cost imports with lower cost domestic alternatives. Greater use of natural gas as a transportation fuel delivers on both of these objectives.

And while natural gas provides 24 percent of the primary energy used to drive our economy, only 0.1 percent of transportation energy is supplied by natural gas. Natural gas has tremendous potential for the transportation sector, and many nations are ahead of the United States in grasping this opportunity. There

are over eighteen million natural gas vehicles (NGVs) in use worldwide today, up from just four million a decade ago. Yet only about 150,000 vehicles – less than one percent of the global total – are on U.S. roadways.

There is good news – and that is that the market is recognizing that switching from gasoline or diesel to natural gas can mean significant cost savings. Major fleet operators like Waste Management, UPS, Verizon, Ryder and others are switching to natural gas vehicles because the business case is there. But good policy choices can support the adoption of natural gas vehicles by leveling the playing field with other fuels. Currently, liquefied natural gas (LNG) is taxed at a higher rate than the diesel fuel it competes with, working against NGV adoption in the heavy truck market. Resetting the tax rate so that it is applied on an energy-content basis is a common sense measure that would remove an artificial barrier from the market. The alternative fuel tax credit should also be reset to apply on an energy-content basis for natural gas fuels like LNG and compressed natural gas (CNG), and for all alternative fuels. I'm told that consideration is being given to address these issues in the context of a "tax extenders" bill during this Congress. I would urge this Committee to act in favor of the enactment of such legislation.

Weight restrictions on trucks using natural gas also work against NGV adoption in the heavy truck market because of the weight of storage tanks and the lower energy density of the fuel compared with diesel. To comply with federal highway weight restrictions, NGV operators must compensate with smaller payloads. Allowing an adjustment for these vehicles would remove an unfairly imposed market disadvantage.

As this market continues to grow, natural gas utilities will play a key role in supplying the fueling infrastructure needed to support these vehicles. The gas utilities in our membership maintain over two million miles of natural gas distribution pipelines nationwide. This distribution network means that we can place compressed natural gas fueling stations around the country without the need to truck in fuel. Currently, there are over 1,400 CNG stations in the United States, and many of these are owned and operated by gas utilities.

Natural gas utilities, like Questar, can help greatly in building a national fueling infrastructure for natural gas vehicles. Working with their regulators, a number of natural gas distribution companies are exploring innovative approaches to participation in this market.

Research to develop affordable, reliable home refueling for natural gas vehicles could greatly expand the appeal of natural gas vehicles to residential consumers. The MOVE program at the Department of Energy's ARPA-E has supported this kind of work for the past three years, and that work should continue. As that technology matures, companies like Questar will be involved in ensuring the safe and reliable operation of home refueling appliances, just as we ensure safe and reliable natural gas service to homes and businesses today.

The attractive price of natural gas is creating momentum in the market that is translating into growth in our fueling infrastructure for natural gas vehicles. Since 2008, the number of CNG stations has grown by over 11 percent each year, and LNG stations have grown significantly as well. This sustained growth has occurred even as we have weathered the worst economic recession our nation has seen in decades.

While oil prices have declined in recent weeks, we must remember that oil prices are – and will continue to be – volatile. Our domestic abundance of natural gas – and the fact that unlike petroleum, its price is not set on a global market – means that we are likely to see low and stable prices for natural gas for many

years to come. The consulting firm IHS CERA concluded in a study released earlier this year, *Fueling the Future*, that even under aggressive demand scenarios, the price of natural gas is likely to stay within an envelope of $4 to $6 per mmBtu through the year 2035.

To stay on the smart path forward, we need policies that help us sustain the momentum we are seeing in the adoption of natural gas vehicles and fueling infrastructure. The most important component of this is maintaining a level playing field that allows natural gas vehicles to compete fairly in the market.

Developing the market for natural gas vehicles enhances our energy security, our competitiveness and encourages the expansion of transportation fueling infrastructure and technologic advances. We at Questar urge the Congress, and the Administration, to ensure that we set policies that set us on the path to capture these benefits to our nation.

GLADSTEIN, NEANDROSS & ASSOCIATES
Building an Environmentally & Socially Responsible Future

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Testimony of
Rich Kassel
Senior Vice President,
Gladstein, Neandross & Associates
Before the
United States Senate Committee on Finance
Subcommittee on Energy, Natural Resources, and Infrastructure
Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, and Achieving Emissions Benefits

December 3, 2014

Chairman Bennet, Ranking Member Cornyn, and Members of the Committee:

Thank you for the invitation to testify today about the potential air quality benefits presented by natural gas vehicles.

My name is Rich Kassel, and I am a senior vice president at Gladstein, Neandross & Associates (GNA).[1] GNA is an environmental consulting firm specializing in low-emission, alternative fuel and advanced vehicle technologies, infrastructure, and fuels for on-road and off-road applications. For more than twenty years, GNA projects have helped demonstrate the feasibility of natural gas and other alternative fuels and advanced vehicle technologies in a wide range of applications.

Although I am testifying solely on behalf of GNA today, my testimony is based on our work with dozens of clients in every corner of the natural gas vehicle world, including:

- Companies that are converting their truck fleets from diesel to natural gas to cut their emissions and operating costs
- Class I railroads, marine vessel operators, and others that are investigating the potential use of natural gas to cost-effectively meet stringent EPA and/or international emissions standards that will be implemented in the next few years

[1] For more information, I can be reached at rich.kassel@gladstein.org or (646) 783-4090.

- Engine and other companies that make the equipment that powers natural gas vehicles
- Fuel companies and utilities that sell natural gas for transportation use
- Government agencies and non-profit environmental organizations that we work with across a wide range of transportation issues

More personally, I have been involved in natural gas vehicle issues since the 1990s, when I directed the "Dump Dirty Diesels" campaign for the Natural Resources Defense Council. In those days, there was no such thing as a "clean diesel." During that time, I helped develop some of the nation's first large-scale natural gas vehicle programs, including a program that brought hundreds of natural gas transit buses to New York City and the surrounding suburbs.

More recently and equally relevant to today's hearing, I co-chaired the task force that developed the Truck Replacement Program at the Port Authority of New York and New Jersey, which successfully eliminated the oldest, dirtiest port drayage trucks at the busiest port in the eastern U.S. through a series of targeted financial incentives.

Introduction and Summary

Natural gas vehicles provide clean, safe, cost-effective transportation across a wide range of vehicle types. Because most natural gas used in our country is produced here, using natural gas reduces our dependence on foreign oil and creates American jobs. Converting operations to natural gas often pairs an upfront capital cost for the vehicle, the fueling infrastructure, or both with considerable savings in fuel costs.

Switching to natural gas tends to be more cost-effective as the engine gets larger or as fuel consumption goes up. Thus, the most cost-effective natural gas applications tend to be found among truck fleets that use a great deal of fuel, or in high horsepower applications like mining, locomotives, and marine engines. For example:

- A long-haul truck travelling 120,000 miles annually may use 20,000 gallons of diesel per year (in contrast to a typical school bus, which drives 10 percent of those miles)
- A locomotive might use 250,000 gallons and a container ship can use more than 35,000,000 gallons per year.[2]

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[2] Neandross, Erik. *Natural Gas Vehicles in California*. California Energy Commission Integrated Energy Policy Report Update Workshop. CEC Hearing Room, Sacramento, CA. 23 Jun. 2014. Conference

It is important to be clear that, with the implementation of EPA's Highway Diesel Rule,[3] Nonroad Diesel Rule,[4] and Locomotive and Marine Diesel Rule,[5] all new engines are certified to extremely clean levels, regardless of the fuel used. Particulate matter (PM) and nitrogen oxides (NOx) emissions from new heavy-duty, nonroad, locomotive, and large marine engines are certified at emissions levels that are more than 90 percent lower than the engines they replace.

Consequently, the main challenge is to create mechanisms that accelerate (1) the retirement, retrofitting, or rebuilding of the millions of "dirty diesels" that remain in use, and (2) their replacement with cleaner engines that meet EPA's most current PM and NOx standards *in the most cost-effective manner possible*. According to our research, between roughly 7 and 8 million trucks are on the road today that predate EPA's PM standard, comprising roughly two-thirds of the trucks in use nationwide.[6] Choosing the most cost-effective approaches will accelerate the clean-up of these trucks by spreading the finite pool of investment dollars as widely as possible.

Across the goods movement spectrum, asset turnover is slow, and it will take decades to replace the existing generation of dirtier engines with the next generation of cleaner engines. This is true for trucks, locomotives, and ships—in other words, all of the

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Presentation; Gladstein, Neandross & Associates (2014). *LNG Opportunities for Marine and Rail in the Great Lakes, Gulf of Mexico, and Inland Waterways*. Santa Monica, CA.

[3] "Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements". Environmental Protection Agency. Federal Register Vol. 66, No. 12, January 18, 2001. http://www.gpo.gov/fdsys/pkg/FR-2001-01-18/pdf/01-2.pdf.

[4] "Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel". Environmental Protection Agency. Federal Register Vol. 69, No. 124. June 29, 2004. http://www.gpo.gov/fdsys/pkg/FR-2004-06-29/pdf/04-11293.pdf.

[5] "Control of Emissions of Air Pollution from Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder". Environmental Protection Agency. Federal Register Vol. 73, No. 126, June 30, 2008. http://www.gpo.gov/fdsys/pkg/FR-2008-06-30/pdf/R8-7999.pdf.

[6] GNA independent analysis, 2014 and EPA, Second Report to Congress: Highlights of the Diesel Emission Reduction Program, 2012 (hereafter, "EPA Second Report to Congress"), Figure 1, Page 7, accessed at http://www.epa.gov/cleandiesel/documents/420r12031.pdf. Since 2007, all new heavy-duty truck engines have had to meet a 0.01 g/bhp-hr PM standard. We estimate that there are 3.8 million trucks in use that were manufactured in 2007 or later, comprising 35.7 percent of the nation's truck fleet. These trucks would have been equipped with diesel PM filters that reduce PM by more than 90 percent, compared with engines that do not have these filters. We estimate that 6.9 million trucks on American roads (i.e., 64.4 percent) predate that standard, and therefore are unlikely to be equipped with diesel PM filters. EPA does not keep a current tally of trucks by model year, but previously projected that roughly 8 million pre-2007 trucks would be on the road in 2014 and roughly 7 million pre-2007 trucks would be on the road in 2015.

means by which goods are delivered from their point of manufacture to their point of sale or delivery. In nonroad niches like farming, construction, mining, and oil & gas development, turnover rates can be even slower.

Accelerating the pace of replacing this "legacy" fleet of engines and equipment is *the* critical factor in reducing the aggregate emissions from the transportation sector. Nobody drives an old, dirty truck because they prefer its smoking tailpipe or rattling engine. They do so because they cannot overcome the initial capital cost of a new truck.

Tax policies that accelerate the pace of turnover by helping fleets and other stakeholders get over the hurdle of high, upfront capital costs and into the most cost-effective long-term fleet strategies will go a long way towards reducing emissions across the entire transportation sector. Because of the unique economic characteristics of the natural gas vehicle market (i.e., higher upfront capital costs, lower ongoing fuel costs), tax policies that incentivize and accelerate the purchase of natural gas engines or equipment will provide particularly important means of accomplishing the economic, energy, and environmental objectives that will be achieved by replacing the entire legacy fleet.

In my testimony, I will highlight two areas of potential air quality benefits from the use of natural gas in a range of transportation applications. These are:

- Natural gas can provide lower "in-use" emissions than diesel—and even cleaner natural gas engines are on the way
- Lower fuel costs can accelerate the phase-out of the millions of remaining "dirty diesels" in trucking and other diesel vehicle niches

Natural gas can provide lower in-use emissions than diesel—and even cleaner natural gas engines are on the way

As I have noted above, all new engines are dramatically cleaner than the engines they replace, on a certification basis, regardless of the fuel used. However, in the real world, engines do not operate in the controlled environment of EPA certification tests. "In-use" data provide evidence that natural gas engines can perform better than comparable diesel engines in a number of scenarios.

A recently published study conducted by California's South Coast Air Quality Management District (SCAQMD) and West Virginia University found that three-way catalyst stoichiometric natural gas vehicles emit significantly lower NOx emissions than

diesel vehicles in refuse, goods movement, and transit applications.[7] (The diesel vehicles were equipped with selective catalytic reduction, or SCR, emission controls). This finding was particularly pronounced in operations like port drayage and refuse applications, which involve periods of considerable idling. In these applications, natural gas trucks emitted 91% lower and 20% lower NOx emissions, respectively, than comparable SCR-equipped diesel trucks. Interestingly, the tailpipe exhaust global warming potential (i.e., including both carbon dioxide and methane emissions) of the natural gas vehicles was also lower than the diesel vehicles—by 22% for refuse trucks and by 6% for the goods movement application.

Looking ahead, we see several areas of optimism for even greater environmental performance from natural gas engines in the transportation sector:

- Harrison Clay of Clean Energy Renewable Fuels is testifying today about the potential for using renewable natural gas (RNG). RNG is the only alternative fuel available in commercial quantities today that can meet 100 percent of the fuel requirements of a full-sized tractor-trailer truck, achieve a 90 percent greenhouse gas reduction compared to diesel, leverage existing natural gas infrastructure, and be cost-effectively sold at a substantial discount to current diesel prices.
- A new generation of natural gas engines is being developed for high horsepower transportation applications such as locomotives, mining equipment, and ships. We expect these engines to use high-pressure direct injection engines or comparable technologies that will enable them to meet EPA's upcoming Tier 4 standards while offering the potential for up to 25% greenhouse gas emissions reductions. We expect to see these engines in the marketplace in or near 2017. Indeed, one locomotive manufacturer has already reported that their natural gas locomotives reduce greenhouse gas emissions by 20% compared to their comparable diesel engine, and exceeds current EPA Tier 3 emission standards.[8]
- In the marine sector, new EPA and International Maritime Organization (IMO) requirements have dramatically cut the amount of sulfur allowed in the marine fuel used by large category 3 (C3) ships used in the Emission Control Area (ECA) that extends 200 nautical miles from most of the U.S. coastline. Since natural gas has only trace amounts of sulfur, it can be a less expensive way to

[7] Carder, Daniel et al. Center for Alternative Fuels, Engines, & Emissions West Virginia University (2014). *In-Use Emissions Testing and Demonstration of Retrofit Technology for Control of On-Road Heavy-Duty Engines*. Prepared for the South Coast Air Quality Management District (Contract No. 11611).
[8] Lenz, Marti. *EMD Locomotives: Pulling Freight with Natural Gas*. High Horsepower Summit. Ernest N. Morial Convention Center, New Orleans, LA. 9 Oct. 2014. Conference Presentation.

comply with these sulfur limits over the long run than the competing compliance strategy that involves switching to a higher-cost, low-sulfur distillate or diesel fuel and adding an additional emissions control technology such as scrubbers or SCR. This is especially true in the case of vessels that operate solely within the ECA.

- Recently, California adopted optional low NOx exhaust emission standards for highway truck and bus engines that are 50 to 90% cleaner than EPA's current standard.[9] Natural gas engines are already on the path to meeting the low NOx requirements without the use of additional emissions control technologies. For example, the 2013 model year Cummins ISL G natural gas engine is already certified at 35% below EPA's NOx standard and 50% below its PM standard.[10] We understand that natural gas engines that emit 90% below the current EPA NOx standard are already being tested and will be commercially available in the 2017-2018 timeframe.[11] These natural gas engines will play an important role in meeting California's current and future ozone targets, and are likely to play an important role in other nonattainment areas, especially after the recently proposed National Ambient Air Quality Standard for ozone is finalized and implemented.

Lower fuel costs can accelerate the phase-out of the millions of remaining "dirty diesels" in trucking and other diesel vehicle niches

Even without tax incentives, lower fuel prices are shifting some truck and other transportation niches to natural gas. As noted above, the key factor is using enough fuel to overcome the initial capital cost of switching to natural gas.

For a number of large, national fleets, the higher upfront cost of natural gas project development can be mitigated on a reasonable timetable, given the long useful life and high fuel consumption of the vehicles, thereby allowing the fleets to reap long-term cost savings. GNA estimates that a heavy-duty truck travelling 57,000 miles per year can see an annual fuel cost savings of $11,400, at a price spread of $1.50 per diesel-gallon-

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[9] California Air Resources Board. *Public Meeting to Consider Five Regulations or Regulatory Amendments to*
Reduce Greenhouse Gas and NOx Emissions for On-Road Medium- and Heavy-Duty Trucks. Monthly Board Meeting, Item 1. Sacramento, CA. 12 Dec. 2013.

[10] California Air Resources Board, Executive Order A-021-0588 for engine family DCEXH0540LBH, December 2012.

[11] Neandross, Erik. *Natural Gas Vehicles in California.* California Energy Commission Integrated Energy Policy Report Update Workshop. CEC Hearing Room, Sacramento, CA. 23 Jun. 2014. Conference Presentation.

equivalent (DGE). This would yield a simple payback timeframe of 4.4 years.[12] Indeed, GNA has surveyed more than 200 fleets across the country, which collectively operate almost 60,000 vehicles. From this work and our other research, we estimate that the average pay back of a truck in a regional goods movement operation can be as short as 2.2 years (in contrast, a lower-mileage utility truck can take four times as long to become cost-effective).[13]

Calculations like this have helped a number of large truck fleets commit to natural gas. Thus, UPS committed to purchasing 1,000 NGVs in 2014, 90 percent of Waste Management's new fleet purchases are fueled by natural gas each year, and Frito-Lay has committed to replacing its entire heavy-duty fleet with compressed natural gas (CNG) in 3 years.[14] At a more regional level, Kwik Trip, a convenience store chain in the Midwest, has found that their investment in CNG trucks gives them a 48% cost advantage compared to diesel, which continues to drive additional vehicle purchases.[15]

Unfortunately, for smaller fleets, the hurdle of initial capital costs remains a severe barrier to entry, preventing the investment in natural gas technologies that could clean up their fleet and lower their long-term operating costs. This underscores the importance of effective policy and grant funding opportunities to accelerate the turnover rate of these aging fleets to advance air quality goals.

It is worth noting the cost savings possible with using liquefied natural gas (LNG) in certain high horsepower applications. At a fuel price spread of $1.38 per DGE, LNG costs 41 percent less than diesel on an energy-equivalent basis.[16] Therefore, despite a capital investment in the millions of dollars for a cargo ship or ferry, payback may only take 3-5 years due to the significant fuel cost savings.[17] Converting a dry bulk ship operating in the Great Lakes can offer more than $1 million in annual fuel cost savings and a payback period of only 3.3 years, assuming an annual diesel usage of 1.35

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[12] Gladstein, Neandross & Associates (2014). *Wyoming LNG Roadmap*. Santa Monica, CA.
[13] Information gathered by GNA during fleet surveys and other research in 2013.
[14] Neandross, Erik. *Natural Gas Vehicles in California*. California Energy Commission Integrated Energy Policy Report Update Workshop. CEC Hearing Room, Sacramento, CA. 23 Jun. 2014. Conference Presentation.
[15] Exel Gord. *NGV Fuel Economy*. Alternative Clean Transportation Expo. Long Beach Convention Center, Long Beach, CA. 6 May 2014. Conference Presentation.
[16] Gladstein, Neandross & Associates (2014). *Wyoming LNG Roadmap*. Santa Monica, CA.
[17] Gross, Leif. *LNG Engine Solutions for Today's Ships*. High Horsepower Summit. Ernest N. Morial Convention Center, New Orleans, LA. 9 Oct. 2014. Conference Presentation.

million gallons.[18] In the rail sector, we estimate that an operation that utilizes 150,000 diesel gallons per year could see an annual fuel cost savings of more than $100,000 per locomotive per year, yielding a payback timeframe of 7 years.[19]

The role of tax incentives to accelerate fleet turnover through the use of natural gas; specific recommendations

At GNA, we believe that well-framed tax policy can help engine manufacturers, fuel suppliers, end-users, and other key stakeholders overcome the challenges imposed by the higher upfront capital costs of natural gas vehicles, equipment, and infrastructure. Effective tax policy can help end-users reduce the time necessary to achieve a positive return on their investments and ultimately see lifetime savings over comparable diesel operations.

Doing so will not only help the bottom line of the companies that take advantage of a cost-effective natural gas approach, but will accelerate the clean-up of the existing legacy fleet by reducing its overall cost. This, in turn, will bring cleaner air to America's cities and towns more quickly and reduce our overall health costs. Indeed, EPA estimates that every dollar invested in retiring the legacy fleet yields up to $18 in health benefits.[20]

Earlier this month, GNA joined a number of industry stakeholders in a letter to the Chairmen and Ranking Members of the Senate Committee on Finance and the House Committee on Ways and Means. This letter is attached hereto and made a part hereof as Appendix 1. It summarizes our views of the key tax incentives that would be desirable to incentivize the use of natural gas vehicles for many reasons, including to accelerate the retirement of the legacy fleet that I have discussed above.

The letter recommends the following:

- We support the retroactive reinstatement and extension of the expired Alternative Fuel Excise Tax Credit and the Alternative Fuel Vehicle Refueling property credit, as currently proposed in S. 2260.
- We support efforts to correct the highway excise tax treatment of LNG to eliminate existing disincentives in new LNG trucks and fueling stations. The

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[18] Gladstein, Neandross & Associates (2014). *LNG Opportunities for Marine and Rail in the Great Lakes, Gulf of Mexico, and Inland Waterways*. Santa Monica, CA.
[19] Gladstein, Neandross & Associates (2014). *Wyoming LNG Roadmap*. Santa Monica, CA.
[20] EPA Second Report to Congress, page 9.

correct tax treatment should be based on the energy content of a diesel gallon, rather than on a per-gallon basis, as found in proposed S.1103.

- We encourage you to update the value of the Alternative Fuel Excise Tax Credit for LNG so this credit is also based on the energy content of a diesel gallon, rather than on a per-gallon basis.

It is worth noting that adopting the two LNG recommendations would create policy consistency and restore the competitive balance between CNG, LNG, and diesel as transportation fuels, as well as raise several million dollars in new revenue annually.

Conclusion

For more than twenty years, GNA has worked with our clients and all stakeholders to develop and implement cost-effective solutions to our country's transportation, air pollution, and energy challenges. Today, we see a number of niches where natural gas can play an enhanced role in meeting these challenges in an increasingly cost-effective way. In particular, we believe that natural gas vehicles can play an important role in accelerating the retirement and replacement of the legacy truck fleet.

The hurdle of upfront capital costs remains an impediment in many settings, despite the promise of significant long-term fuel cost savings. Thus, we support the use of targeted tax policies to help fleets and others overcome these upfront hurdles as expeditiously as possible. Our recommended changes to the tax code are outlined above.

Thank you for the opportunity to testify today. I am happy to answer any questions you may have, or to provide additional information on any of the topics discussed herein.

APPENDIX A

NGVAMERICA
Natural Gas Vehicles for America

November 7, 2014

The Honorable Ron Wyden
Chairman, Committee on Finance
United States Senate
Washington, DC 20510

The Honorable Orrin Hatch
Ranking Member, Committee on Finance
United States Senate
Washington, DC 20510

The Honorable Dave Camp
Chairman, Committee on Ways and Means
United States House of Representatives
Washington, DC 20515

The Honorable Sander M. Levin
Ranking Member, Committee on Ways and Means
United States House of Representatives
Washington, DC 20515

Dear Chairmen Wyden and Camp and Ranking Members Hatch and Levin,

We, the undersigned, understand that the United States Senate Finance Committee and the United States House of Representatives' Ways and Means Committee may soon initiate efforts to extend expired and expiring tax incentives. The Congress has long recognized the importance of fuel diversity in the American economy, and we thank you for your past support for natural gas as a transportation fuel. Increased use of natural gas vehicles helps address several public policy goals simultaneously – including increasing U.S. jobs and reducing greenhouse gases, urban pollution, and dependence on imported oil. We would like to bring our interests and concerns to your attention as you begin your deliberations.

Alternative Fuel Tax Credit Extensions

We support the retroactive reinstatement and extension of the expired Alternative Fuel Excise Tax Credit (26 USC §§ 6426 and 6427) and the Alternative Fuel Vehicle Refueling property credit (26 USC § 30C). These alternative fuel and infrastructure credits incentivize individuals and businesses to increase use of natural gas as an alternative transportation fuel. These provisions are currently proposed for retroactive reinstatement and extension in the S. 2260 and H.R. 5559.

LNG-Diesel Excise Tax Fix

We also support efforts that correct the highway excise tax treatment of LNG. LNG competes with diesel fuel as a transportation fuel for use in heavy duty vehicles. The federal highway excise tax on both diesel and LNG is set at 24.3 cents *per gallon*. However, because LNG has less energy *per gallon* than diesel fuel, on an energy equivalent basis LNG effectively pays 170 percent of the diesel rate. The current highway excise tax treatment of LNG is a disincentive to investment in new LNG trucks and fueling stations, and should be corrected to encourage capital investments.

We request that the highway excise tax on LNG be changed so that it is imposed on the *energy content* of a diesel gallon (known as a diesel gallon equivalent), as proposed in S. 1103, bipartisan legislation introduced by Senators Michael Bennet (D-CO) and Richard Burr (R-NC), a version of which was included in the Senate-passed Highway bill, H.R. 5021, The Preserving America's Transit and Highways Act, and H.R. 2202, bipartisan legislation introduced by Congressmen Mac Thornberry (R-TX) and John Larson (D-CT).

Alternative Fuel Tax Credit Fix[1]

Finally, similar to the LNG excise tax, we encourage you to alter the value of the Alternative Fuel Excise Tax Credit (26 USC §§ 6426 and 6427) for LNG so that the credit is based on the *energy content* of a diesel gallon and not on a per gallon basis. Correcting both the LNG excise tax treatment and the excise tax credit treatment at the same time creates policy consistency and would restore the competitive balance between LNG, CNG and diesel as transportation fuels. Furthermore, according to a Joint Committee on Taxation review, making these two changes simultaneously would raise $9 million in new revenue.

We appreciate your consideration of our request.

cc: Members of the Senate Finance Committee
Members of the House Ways and Means Committee

Sincerely,

Trade Associations:

American Gas Association
American Public Gas Association
American Trucking Associations
National Association of Truck Stop Operators
National Waste and Recycling Association
NGVAmerica
Truck Renting and Leasing Association

Coalitions, Companies and Organizations:

Agility Fuel Systems
AGL Resources
ANGI Energy Systems, LLC
Blu. LNG
Center Point Energy
Chart Industries
Clean Energy Fuels
Coalition for Renewable Natural Gas
Cummins Westport
Encana
Gladstein, Neandross & Associates
Linde
Luxfer Gas Cylinders
Mack Trucks
Noble Energy
Ryder
Sempra Energy
Shell Oil Co.
Tenaska
Titeflex
Trillium
UPS
Volvo Trucks
Waste Management
Westport Innovations

[1] Attachment (Joint Committee on Taxation Memorandum dated April 2, 2014)

Testimony of Mike Whitlatch

Vice President, Global Energy and Procurement, United Parcel Service

Atlanta, GA

To the United States Senate Committee on Finance,

Subcommittee on Energy, Natural Resources, and Infrastructure

Hearing on "Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, and Achieving Emissions Benefits"

215 Dirksen Senate Office Building

December 3, 2014

Chairman Bennet, Ranking Member Cornyn, and Members of the Subcommittee:

Thank you for the opportunity to testify on the importance of natural gas vehicles for UPS and the nation. Natural gas is revolutionizing trucking, especially heavy-duty trucking, for UPS and the rest of the industry, creating domestic jobs, enhancing our energy security, and providing for a cleaner environment. To appreciate just how important natural gas production is to UPS today requires some history.

Our company began in Seattle in 1907, over a century ago, as couriers of messages, not packages, couriers on foot with a few bicycles. We graduated to motorcycles, but six years elapsed before the company purchased its first truck, a Model-T Ford. As the telephone gradually displaced message couriers, the company reinvented itself and began delivering customers' packages for department stores. Over the next three quarters of a century, UPS acquired more and more trucks, eventually an aircraft fleet, and became ever more dependent on petroleum. This petroleum dependence brought two problems. The first was vulnerability to petroleum supply disruptions, higher oil prices, and especially to the volatility of those prices. Even today, we reflect this as a business risk in our financial reports, even while we enjoy relatively low oil prices today. We have seen

lower oil prices before, only to see them rise dramatically with higher world oil prices.

The second problem was that the proliferation of motor vehicles, among other sources, created air pollution, especially in urban areas. Remember that there were no significant emission controls on large trucks until 2007. Compared to diesel fuel, natural gas, actually compressed natural gas ("CNG") offered an inherently cleaner, domestically sourced fuel and at times natural gas was cheaper than petroleum. Beginning in the 1980's, UPS began testing medium-sized delivery trucks that operated on natural gas.

In short, UPS spent its first 80 years growing our dependence on petroleum, but the last 30 years trying to find alternative energy sources to use in our global fleet of vehicles and airplanes. Of course, we know that we will remain dependent on petroleum for many years to come. We currently have nearly 100,000 trucks worldwide, some 17,000 heavy tractor trailers in the U.S. alone, and about 60,000 package delivery trucks.

In these last 30 years, we tested in service several alternative fuels and advanced technologies in what we call our "rolling laboratory" seeking ways to reduce our use of petroleum and emissions. That included electricity, hybrids (both electric and hydraulic hybrids), propane, and of course natural gas. The chart included in my testimony of this "rolling laboratory" shows 3,631 alternative fuel/technology vehicles domestically and a total of 4,718 alternative fuel/technology vehicles worldwide. From just 2010 through 2014, UPS will have committed over $400 million on this alternative fuel fleet and its infrastructure in the U.S. and Canada. Since 2000 through 2013, these alternative fuel vehicles traveled more than 350 million miles, the average distance from Earth to Mars.... And back. By the end of 2017, we expect that fleet to have traveled a billion miles.

So with all these alternative fuel options available to UPS, why has natural gas become our key alternative fuel?

First, we quickly realized that the best candidate for conversion to alternative fuels was the large, over-the-road heavy truck, the tractor trailer. Although the 2.4 million heavy trucks on the road today account for only 1% of all vehicles on the road, they consume nearly 17% of the on-road transportation fuel.[1]

In our case, our big rigs travel an average of 450 miles per day and can consume 100 gallons per day, as compared to a package delivery vehicle that might burn only a tenth of that much diesel fuel per day. Alternative fuel vehicles nearly always cost more to purchase than conventional vehicles and so the more diesel

[1] [1] Stacy Davis, Susan Diegel, and Robert Boundy, *Transportation Energy Data Book*, Edition 32, ORNL-6989 (Oak Ridge, TN: Oak Ridge National Laboratory, July 2014), http://cta.ornl.gov/data/tedb33/Edition33_Full_Doc.pdf.

fuel you displace with the cheaper alternative fuel, the more savings there are to pay the higher upfront cost of that alternative fuel vehicle.

While there were several alternative fuels suitable for the small delivery trucks, for these big rigs, the semis, we had no alternative fuel to give us the range and power that diesel fuel provided us. Not electricity, not propane, not hybrids, not even CNG at first. However, around 2000, diesel engines became available that ran on cryogenically-cooled liquid natural gas (LNG) and a small amount of diesel fuel to ignite the combustion in the engine. This dual-fuel engine worked well. In fact, in 2002, UPS began in-service use of 11 of these LNG/diesel powered tractors, as a part of our "rolling laboratory" and has had a growing fleet of these LNG trucks ever since.

Unfortunately, the early switch to natural gas vehicles lost traction when domestic natural gas supply decreased and prices surged around 2005-2006. We and others lost confidence that natural gas would remain low enough in cost to become a viable alternative vehicle fuel. Since then, the enormous expansion in U.S. natural gas production and natural gas reserves has created new confidence that natural gas prices will remain attractive as compared to diesel prices for the foreseeable future. This and other factors led UPS to increasingly shift to natural gas as a fuel and justify paying the considerable extra cost of limited production natural gas vehicles. New engine designs coming on the market today permit the heavy trucks to run on CNG with tolerable performance reductions, as compared to LNG powered trucks. Natural gas in LNG or CNG form remains the only widespread commercial alternative to diesel for heavy trucks.

Today, natural gas in the U.S. is significantly less expensive than crude oil on an energy equivalent basis. Many cite specific per gallon equivalent cost figures for natural gas, but there is wide variation geographically and generalization is difficult. Yet consider that natural gas at $5 per MMBTU is equivalent to crude oil at $29 per barrel, well below oil's current market price. This actual price gap is much narrower, however, as it costs more to convert natural gas to a transportation fuel (CNG or LNG), there are additional specialized fueling

infrastructure costs, and finally the alternative fuel vehicles themselves are more expensive.

UPS is making significant investments and commitment to natural gas and would like to accelerate the shift to natural gas where the business case exists. We already have more than 1,000 CNG medium "package cars" operating on natural gas (CNG) and currently, we have 1,243 heavy tractors operating on LNG or CNG. In fact, in 2014, the only new tractors that UPS is purchasing for its domestic, small package delivery business will run on natural gas. This will in one year nearly double the number of our natural gas vehicles here in the U.S. By the end of this calendar year, UPS will have LNG fueling operations across 10 states serving one of the largest LNG truck fleets in the world.

To the extent that natural gas is used as a transportation fuel, it will create jobs in the domestic natural gas industry to satisfy demand from the transportation sector. Further, engine and truck manufacturers are investing in technology and manufacturing infrastructure to delivery alternative fuel vehicles.

The environment is also a big winner here. As I said before, natural gas burns cleaner than diesel or gasoline. EPA's emission requirements on trucks today make new diesel trucks burn very cleanly because each truck has very expensive on-board, emissions after-treatment equipment requiring considerable maintenance. We estimate that this equipment and its maintenance on a new heavy diesel truck can cost $30,000 per truck over its life. A truck burning natural gas alone needs much less of such equipment, if any.

Besides our commitment to invest in natural gas vehicles, UPS has sought for years to partner with federal and state governments for incentives for the vehicles themselves and the necessary fueling infrastructure. Generally, all our alternative fuel deployments have enjoyed such incentives and they often determine just where we decide to deploy.

Our biggest concern when investing in natural gas vehicles is the tax disincentives to our use of these vehicles, and ironically, the federal government is the biggest impediment. What will drive deeper penetration of natural gas vehicles into the

market is ultimately the price differential, including taxes, between petroleum fuels and natural gas fuels, especially between LNG and diesel fuel. We have to pay more to purchase an alternative fuel truck than we pay for a conventional diesel truck. That vehicle price differential for a class 8, 18-wheeler, has been as much as $100,000 per truck, although vehicle prices have come down recently to a price differential of roughly $65,000 per truck.

The question for every business contemplating shifting to alternative fuel vehicles is this. Will the savings in the price of the alternative fuel as compared to conventional fuels, be enough over time to offset the extra initial cost of the alternative fueled vehicle?

As this Subcommittee knows, the federal excise tax on both diesel fuel and LNG is 24.3 cents per gallon, which is taxation by volume. Yet, a gallon of LNG produces only 58 % of the energy produced from a gallon of diesel. In short, LNG is effectively taxed at 170% of the rate of diesel fuel on an energy equivalent basis. That works out to a 17 cent per equivalent gallon extra tax on LNG than diesel fuel. Because LNG is a substitute for diesel, both should be taxed at the same rate on an energy equivalent basis.

UPS knows from its experience with the actual average number of miles that our LNG powered trucks run per year (160,000 miles). We know how many gallons of LNG they use per year and the life expectancy of our LNG trucks. The result is that the extra 17 cents per equivalent gallon for LNG adds up over the life of the truck to more than the extra initial cost of an LNG truck over a conventional, new diesel truck. In short, the extra tax burden on LNG fuel is a bigger impediment to our buying LNG trucks than the extra initial cost of the LNG truck, over a conventional diesel truck. That is my primary message here today.

If the Congress wants to accelerate the adoption of LNG heavy trucks and their use of domestic natural gas, we must fix the LNG "glitch" in the tax code.

Consequently, UPS is pleased to support S. 1103, the LNG Excise Tax Equalization Act of 2013, which Chairman Bennet sponsored and Senator Burr of this Subcommittee co-sponsored.

In addition to correcting the LNG fuel tax, we need to remove other tax barriers that discourage investing in alternative fuel vehicles. As mentioned earlier, each natural gas powered alternative fuel vehicle costs significantly more than a conventional diesel truck. In addition to the investment risk, a 12% Federal Excise Tax for heavy duty trucks is applied to the total purchase price of the vehicle. This simply means that we are required to pay extra taxes for purchasing an alternative fuel vehicle. For example, 12% on the $70,000 incremental cost of a natural gas truck results in $8,400 in extra taxes when compared to a diesel powered truck. All for investing in a vehicle that uses a domestic fuel, creates jobs here in America, and makes for cleaner air.

Finally, we support the retroactive reinstatement and extension of the expired Alternative Fuel Excise Tax Credit and the Alternative Fuel Vehicle Refueling property tax credit to incent investment.

I thank the Subcommittee for permitting me to testify and would welcome any questions.

COMMUNICATIONS

CAL DOOLEY
PRESIDENT AND CEO

December 3, 2014

The Honorable Michael F. Bennet
Chairman, Subcommittee on Energy, Natural Resources and Infrastructure
Committee on Finance
United States Senate
Washington, DC 20510

The Honorable John Cornyn
Ranking Member, Subcommittee on Energy, Natural Resources and Infrastructure
Committee on Finance
United States Senate
Washington, DC 20510

Dear Chairman Bennet and Ranking Member Cornyn:

As the nation's largest industrial consumer of natural gas, the American Chemistry Council has a strong interest in today's hearing: "Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, and Achieving Emissions Benefits."

Policies that either constrain domestic natural gas supplies or distort natural gas markets put economic growth and job creation at risk, and are flawed from the start. Tax expenditures that subsidize the manufacture and purchase of natural gas vehicles are an expensive and inefficient use of taxpayer dollars and would disadvantage manufacturing industries that rely on natural gas.

The U.S. chemical industry is undergoing an unprecedented expansion made possible by the shale gas revolution. As of November 2014, the U.S. chemical industry has announced 211 projects – new facilities, expansions, and process changes to increase capacity – representing potential cumulative investment of $135 billion. However, these projects will be in jeopardy if government policies divert large supplies of natural gas to subsidized markets.

Natural gas is an abundant and affordable commodity that is in growing demand in a number of sectors, including transportation, power generation, industry and export. Government policies should avoid creating market distortions that favor gas use in one sector over another. The market, not government policy, should allocate available supplies of natural gas and other commodities.

Thank you for considering ACC's views on natural gas and natural gas vehicles. If you have any questions, please contact Stephen Elkins at stephen_elkins@americanchemistry.com or (202) 249-6207.

Sincerely,

Cal Dooley

americanchemistry.com

700 2nd Street, NE, Washington, DC 20002 | (202) 249-7000

December 8, 2014

The Hon. Michael Bennett
Chairman
Subcommittee on Energy, Natural Resources, and Infrastructure
Committee on Finance
Russell Senate Office Building, Room 458
Washington, DC 20510

The Hon. John Cornyn
Ranking Member
Subcommittee on Energy, Natural Resources, and Infrastructure
Committee on Finance
Hart Senate Office Building, Room 517
Washington, DC 20510

Dear Chairman Bennett and Ranking Member Cornyn:

We thank you for holding the recent hearing titled *Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, and Achieving Emissions Benefits.* In heavy duty on- and off-road applications, diesel fuel and engines are the standard bearer moving vehicles, equipment and stationary industrial engines. Alternative fuel powertrains such as natural gas variants are frequently compared to diesel to highlight unique attributes. On behalf of the Diesel Technology Forum, we would like to highlight the impressive fuel efficiency and clean air milestones achieved from diesel.

By way of background, the Diesel Technology Forum serves as a not-for-profit educational and advocacy organization raising awareness of the latest clean diesel innovations along with the importance of diesel fuel, engines, vehicles and equipment to the economy. Our members represent the leaders in clean diesel technology including engine, vehicle and equipment manufacturers.

Diesel is the Standard Bearer for Heavy Duty Applications...and That Standard is Getting Cleaner and More Efficient

Regulations promulgated over a decade ago called for the dramatic reduction in criteria emissions from heavy duty vehicles and equipment. For heavy duty trucks and vehicles, the first clean diesel standards were required beginning in model year 2007 and further tightening of these standards for model year 2010. Manufacturers developed and brought to market a series of technologies that resulted in near zero emissions of particulate matter (PM), or soot, and oxides of nitrogen (Nox), a smog forming compound. A diesel truck manufactured today emits 98% less NOx and PM emissions. It would take 60 trucks manufactured in 1988 to generate the same level of emissions as one clean diesel truck on the road today.

Similar technologies deployed for the heavy duty fleet are now required of off-road applications beginning January 1, 2014. New engines found in construction, agricultural, mining and other off-road applications must meet the "Tier 4" clean diesel standards. Technologies deployed to significantly reduce emissions also improve fuel

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www.dieselforum.org

economy. The introduction of Tier 4 equipment is expected to reduce emissions and improve air quality at job sites while saving fuel costs for equipment owners.

2.8 Million Clean Diesel Vehicles are On the Road Delivering Clean Air

According to state vehicle registration data for 2013, almost 3 million of the roughly 8.8 million Class 3-8 heavy duty vehicles on the road across the country are deployed with an engine that meets the first 2007 clean diesel standard. Another 1.2 million vehicles is deployed with an engine that meets the stricter 2010 standard. These vehicles range from Class 3 vocational pickups, to school and transit buses, delivery trucks, first responder vehicles, up to large Class 8 over-the-road tractors. By way of reference, there are only roughly 150,000 registered Class 3-8 natural gas powered vehicles on the road.

Recent forecasts of the Class 3-8 vehicle market have determined that diesel will continue to dominate the medium and heavy duty sector for some time. A recent report published by the Fuels Institute found that 99.4% of medium and heavy duty vehicles were powered by a diesel engine in 2012. By 2023, diesel is expected to give up anywhere from 2% to 5% of market share. [1] Recent press reports have confirmed that the anticipated boom in heavy-duty natural gas vehicles has not been as large as expected. The *Wall Street Journal* recently reported sales of natural gas vehicles this year have fallen well short of industry expectations.[2]

Clean diesel vehicles on the road today are delivering real-world benefits for communities and vehicle owners. According to research commissioned by the Diesel Technology Forum, the almost 3 million clean diesel trucks on the road today since 2007 have reduced NOx emissions by 27,000 tons and particulate matter by 1 million tons. Fuel savings technologies deployed as a part of the second 2010 emissions milestone results in a reduction of 5.7 million tons of carbon emissions while reducing petroleum consumption by 13.3 million barrels. This carbon reduction is equivalent to reducing 1.2 million passenger vehicles from the road for one year. While we all benefit from the clean air attributes of diesel technology on the road today, vehicle owners also benefit from these technologies. According to research commissioned by the Diesel Technology Forum, the owner of a typical Class 8 tractor on the road for about 130,000 miles per year will see fuel savings that total about $3,500 each year. This is substantial savings for vehicle owners.

Heavy duty clean diesel vehicles are delivering more than their required clean air benefits. According to the Advanced Combustion Engine Study (ACES): Phase 2 research conducted by the Southwest Research Institute and the Coordinating Research Council, heavy-duty clean diesel engines result in real world emissions below the regulated threshold.[3] This study analyzed the emissions from three heavy duty vehicle engines manufactured in 2010 and found that emissions of PM were more than 80% below the 2010 requirement and emissions of NOx 60% below the standard.

In fact, clean diesel and natural gas engines display almost identical emissions profile. In many cases, a clean diesel engine and a comparable natural gas engine emit nearly identical levels of NOx and PM. According to a recent study commissioned by the Clean Air Task Force, a diesel engine and a comparable natural gas engine both

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[1] "Tomorrow's Vehicles: What Will We Drive in 2023?" http://www.fuelsinstitute.org/ResearchArticles/TomorrowsVehicles.pdf

[2] "Slow Going for Natural-Gas Powered Trucks" *Wall Street Journal.* August 25, 2014. http://online.wsj.com/news/article_email/natural-gas-trucks-struggle-to-gain-traction-1408995745-lMyQjAxMTA0MDAwMTEwNDEyWj

[3] http://www.healtheffects.org/Slides/AnnConf2013/Khalek-TuesPM.pdf

manufactured in 2010 resulted in indistinguishable emissions relative to a comparable diesel engine manufactured in 2000. [4]

Energy Density of Diesel Fuel and Inherent Efficiency of Clean Diesel Engines Keeps Diesel on the Road

More freight and people can be moved and more work performed on a gallon of diesel fuel than any other transportation fuel around making diesel one of the most efficient fuels around. This fact largely explains the predominance of diesel in the Class 3-8 vehicle market. Other transportation fuels may beat diesel on price, but not on energy density or even fuel availability. The energy content of diesel fuel coupled with the inherent efficiency of the diesel engine make the diesel package an all around efficient choice for vehicle and equipment owners. Efforts to tax transportation fuels according to their energy content would create a disincentive to invest in the inherent efficiency of diesel. A wise energy policy should encourage owners to seek the most efficient choice rather the subsidizing other powertrains to make up for the lack of efficiency.

Diesel Helps Us Achieve Energy Security and a Sustainable Future

Today, most clean diesel engines found in heavy duty applications are capable of operating on blends of high quality biodiesel up to 20%, or B20. Biodiesel is characterized by the U.S. Environmental Protection Agency (EPA) as an advanced biofuel delivering at least a 50% reduction in greenhouse gas emissions. Today, many diesel engines are capable of operating on blends of high quality second generation biofuels, including renewable diesel, that deliver further carbon emissions coupled with NOx emission reductions.

The leaders in clean diesel technology are also refining the diesel powertrain to deliver even more fuel savings and emissions reduction benefits. This is the first year of the first ever fuel economy rules for heavy duty vehicles promulgated jointly by the EPA and the National Highway Traffic Safety Administration (NHTSA) for model year 2014-2018. Manufacturers are meeting these fuel economy requirements by deploying a variety of technology including low rolling resistance tires, light weight materials, aerodynamics, advanced transmissions, hydraulic and battery hybrid packages, and further refinements to engine design. In fact, the National Academy of Sciences calculates that advanced engines represent one of the largest single contributors to fuel economy improvements providing benefits anywhere from 10% to 30% depending on the vehicle type.

During the lifetime of the rulemaking applicable for model year 2014-2018, NHTSA estimates that technology deployed will result in a reduction of carbon emissions of 270 million tonnes while reducing petroleum consumption by 500 million barrels of crude. By way of reference, the anticipated carbon emissions achieved by 2018 from this rulemaking represents about ¼ of the carbon emissions reduction called for by 2030 from the power generation industry in the Administrations' proposed "Clean Power" rule.

Diesel also plays a vital role in achieving energy security. While much attention has been paid to recent discoveries of domestic sources of natural gas, little focus has been paid to other energy sources. A lot more is coming out of the ground than natural gas these days. The U.S. Energy Information Agency (EIA) recently announced that proven petroleum reserves in the U.S. exceeded 36 billion barrels for the first time since 1975.[5] Domestic production of finished petroleum products, including gasoline and diesel is up too and the EIA predicts that the U.S. on track to become a net exporter of finished petroleum products. In 2013, the U.S. exported over a million barrels of diesel fuel a day making diesel exports the largest single finished petroleum product sold abroad and generating export revenue. This trend is expected to continue.

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[4] "Clean Diesel versus CNG Buses: Cost, Air Quality, & Climate Impacts". http://www.catf.us/resources/publications/files/20120227-Diesel_vs_CNG_FINAL_MJBA.pdf

[5] http://www.eia.gov/naturalgas/crudeoilreserves/?src=home-b1

Diesel Technology is a US Success Story

The manufacture of diesel engines, vehicles, equipment and the production of fuel is a homegrown American success story. The diesel industry generates $183 billion in national income in 2009 and supports 1.25 million jobs across the U.S. 90% of the heavy-duty trucks on the road in the U.S. are manufactured domestically. Roughly one half of economic sectors in the U.S. are dependent on diesel technology to deliver freight and people and perform work including the construction, agricultural, forestry, mining and other sectors. The industry is also an enormous generator of exports. In 2009, the diesel industry exported about $24 billion of domestically manufactured engines, vehicles and trucks abroad.

Conclusion

We hope that you recognize the large and growing fleet of 3 million clean diesel trucks and vehicles on the road today along with the important clean air benefits these vehicles contribute. Diesel is the predominant powertrain in the heavy- and medium-duty segment and is expected to remain so for the next decade. While much attention has been placed on natural gas vehicles, we would also underscore that a comparable clean diesel and natural gas engine exhibit nearly identical emissions profile. Natural gas may prove beneficial for some medium- and heavy-duty vehicle markets, such as some refuse haulers, short haul delivery and transit, but is not a single solution or sole option for all. The diesel powertrain is improving to meet fuel economy standards today and is expected to provide further future benefits. We also hope you recognize the important role diesel fuel plays in our energy security future while generating billions in export revenues and providing jobs to millions of Americans.

Please feel free to contact us with any questions or concerns at (301) 668-7230.

Sincerely,

Allen R. Schaeffer

Allen Schaeffer
Executive Director

NGVAMERICA
Natural Gas Vehicles for America

STATEMENT OF NGVAMERICA

Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, and Achieving Emissions Benefits

UNITED STATES SENATE

SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE

December 3, 2014

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Introduction

NGVAmerica respectfully submits the following statement in regards to the Subcommittee on Energy, Natural Resources, and Infrastructure December 3, 2014 hearing on *Natural Gas Vehicles: Fueling American Jobs, Enhancing Energy Security, and Achieving Emissions Benefits.* NGVAmerica welcomes the opportunity to discuss the benefits of NGVs and address how tax policy can aid in accelerating the use of NGVs.

NGVAmerica is a national trade association dedicated to creating a profitable, sustainable and growing market for compressed natural gas and liquefied natural gas powered vehicles. NGVAmerica represents more than 230 companies, including vehicle manufacturers; natural gas vehicle component manufacturers; natural gas distribution, transmission, and production companies; natural gas development organizations; non-profit advocacy organizations; state and local government agencies; and fleet operators.

Benefits of Advancing the Use of NGVs

Accelerating the use of natural gas vehicles provides an unprecedented opportunity to reduce reliance on imported petroleum while also spurring on economic activity here at home. Today, the U.S. has an abundant supply of clean, efficient, and economically-priced domestic natural gas. In fact, the U.S. is now the world's number one producer of natural gas. Sadly the U.S. ranks fifteenth in the world in numbers of NGVs in operation. Expanding the use of this low-cost domestic fuel will save businesses and consumers money by lowering transportation costs while also helping communities address important environmental issues such as smog and greenhouse gas emissions. Today's natural gas vehicles are certified to very demanding emissions levels and often exceed the performance of the cleanest gasoline or diesel powered vehicles. In particular, medium and heavy duty natural gas vehicles were the first vehicles to certify to the U.S. EPA's demanding 2010 emissions standards. In heavy-duty applications, natural gas engines typically reduce nitrogen oxide emissions by up to 50 percent more than comparable diesel engines. Natural gas vehicles also provide about a 10 – 20 percent reduction in greenhouse gas emissions compared to gasoline and diesel vehicles. Renewable natural gas provides even more significant reductions in greenhouse gas and can readily be used in natural gas applications.

Improving energy security and reducing reliance on foreign petroleum has been a national priority for over four decades. Much of the focus of energy policy has

sought to reduce reliance on petroleum in the transportation sector, as it remains reliant on petroleum while most other energy consuming sectors now rely on a diverse mix of fuels. Despite recent events, we believe that enhancing energy security through increased use of alternative transportation fuels like natural gas should continue to be a national priority. Oil prices recently have declined considerably and the U.S. is producing oil at levels not seen since the 1970's. Greater reliance on domestic oil is helping to lessen reliance on foreign oil and lower payments for foreign oil, which in 2012 and 2013 amounted to more than a half a trillion dollars.

The surge in U.S. oil production combined with domestic natural gas means that the U.S. is much closer to energy independence than it was a few years ago, and quite possibly could be energy independent in the next several decades. However, the world's oil market continues to be susceptible to supply disruptions and price spikes. These global events, if they occur, will impact U.S. consumers even if they are less dependent on foreign oil. The major oil supplies continue to be in the hands of countries located in regions of the world that are unstable. Thus, the need to diversify the fuels used in the transportation sector continues and natural gas provides the best opportunity for doing so, in applications ranging from light to heavy-duty on-road vehicles as well as many off-road applications like marine, rail, and mining.

Displacing petroleum with natural gas provides huge economic benefits to the U.S. economy. It creates and sustains jobs in the domestic natural gas industry and related industries (e.g., processing, handling, transmission and distribution of natural gas). Studies estimate that the natural gas industry currently supports nearly 2.2 million jobs. Increased domestic production will *add* to these numbers. A 2011 study commissioned for America's Natural Gas Alliance indicates that in the next several decades 1.6 million *new jobs* will be created as a result of the growth in shale gas production.[1] This same study also projects that the industry will make $1.9 trillion in capital expenditures between now and 2035 to support expanded development of domestic shale gas. The production of natural gas also directly benefits federal and state budgets because of the taxes paid, royalties and other fees associated with development and production.

Displacing petroleum imports with natural gas not only keeps dollars here in this economy but it lowers the transportation costs for U.S. businesses making them more competitive, and allowing them to expand their businesses. Fleets converting to natural gas will be able to lock-in these lower costs for years because the price outlook

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[1] HIS Global, *The Economic and Employment Contributions of Shale Gas in the United States* Prepared for ANGA (December 2011).

for natural gas is stable. EIA's *Annual Energy Outlook* projects that natural gas will be $1 - $2 less costly than diesel and gasoline for many years to come. Recent volatility and declines in the price of oil may have short term impacts on the pricing advantage of natural gas, but most analysts expect that petroleum prices will return to higher levels as economic activity picks up and demand increases in the developing countries.

Today, virtually every heavy-duty truck manufacturer and most transit bus manufacturers offer a selection of natural gas vehicles. Many prominent light duty manufacturers – Chrysler, Ford, GM, American Honda – offer factory built products or have arrangements with suppliers to make natural gas vehicles available to their customers. Fuel providers also have been actively adding to the number of fueling outlets that offer vehicular natural gas. Today, there are more than 1,450 natural gas fueling stations in the U.S. This total is up significantly from just a few years ago as about 15–20 new stations are being added each month. The capital required to build out these stations is easily $250 - $500 million a year in new investment and the pace of this investment is expected to pick up as even more stations are built. However, the total number of stations is still miniscule compared to the nearly 150,000 service stations in the U.S. that provide conventional motor fuels. And the sales of natural gas, while making sizable gains in key markets like transit and refuse, remain small relative to overall market sales.

The near-term prospects for natural gas are best in high-fuel use applications where the pay-back or return on investment makes the most economic sense. It is for this reason that natural gas holds the potential to vastly change the freight transport and heavy-duty transportation market. Companies like Anheuser-Busch, Ryder, Penske, Swift, UPS, Waste Management, Republic Services, Kwik Trip, and Love's are making the switch to natural gas for their truck fleets. Truckers are not just interested in today's low natural gas prices but also are interested in the prospect of price stability and the long-term outlook for locking in lower fuel prices with natural gas. For many applications, however, the incremental cost of natural gas vehicles is currently too high even with the low fuel prices because these applications simply do not use enough fuel to provide a return on investment in the necessary time period (often 2 -3 years for most fleets). As the natural gas industry grows and larger numbers of vehicles are produced, the first-cost of natural gas vehicles will come down because of economies of scale and competition. That process would be greatly accelerated by removing tax barriers that currently are impeding the growth of natural gas vehicle use, and, further, by providing targeted incentives to the early adopters of natural gas vehicles and to the businesses investing in fueling stations.

Policies That Can Accelerate the Use of NGVs

The Congress has long recognized the importance of fuel diversity in the American economy and has sought to encourage this diversity through tax policy. As the 113th Congress comes to an end, it must decide what to do with respect to now expired tax incentives for natural gas. NGVAmerica supports action to extend these expired tax credits. The tax incentives highlighted below would have an immediate impact on the use of natural gas vehicles as they provide an incentive for fleets to order natural gas trucks that already are available. The last three policy actions do not involve tax policy but nevertheless would help accelerate the market for NGVs. Addressing the weight penalty of natural gas trucks as described below would have a significant impact on new orders and also on the economics of operating existing Class 8 natural gas trucks by allowing operators to haul increased loads. Research and development funding would aid in the development of state-of-the-art new engines and vehicle technologies ensuring that NGVs continue to make gains in efficiency and emissions performance. The last item addresses how natural gas is sold at retail stations and it would ensure that consumers and business fleets are provided with the information needed to readily and easily understand the economic benefit of natural gas relative to gasoline and diesel fuel.

Extending the Alternative Fuel Excise Tax Credit and the Fueling Infrastructure Credit

Specifically, we support the retroactive reinstatement and extension of the expired Alternative Fuel Excise Tax Credit (26 USC §§ 6426 and 6427) and the Alternative Fuel Vehicle Refueling property credit (26 USC § 30C). The alternative fuel and infrastructure credits incentivize individuals and businesses to increase use of natural gas as an alternative transportation fuel. These provisions are currently proposed for retroactive reinstatement and extension in the S. 2260 and H.R. 5559.

Modifying the Tax Treatment of LNG

We also support efforts to correct the highway excise tax treatment of LNG, which competes with diesel fuel as a fuel for heavy duty vehicles. The federal highway excise tax on both diesel and LNG is set at 24.3 cents *per gallon*. However, because LNG has less energy *per gallon* than diesel fuel, on an energy equivalent basis LNG effectively pays 170 percent of the diesel rate. The current highway excise tax treatment of LNG is a disincentive to investment in new LNG trucks and fueling stations, and should be corrected to encourage capital investments.

To correct this disincentive, the highway excise tax on LNG should be changed so that it is imposed on the *energy content* of a diesel gallon (known as a diesel gallon equivalent). To this end, we would urge the Congress to enact S. 1103, a bipartisan bill introduced by Senators Michael Bennet (D-CO) and Richard Burr (R-NC), a version of which was included in the Senate-passed Highway bill, H.R. 5021, The Preserving America's Transit and Highways Act, and H.R. 2202, bipartisan legislation introduced by Congressmen Mac Thornberry (R-TX) and John Larson (D-CT).

Adjusting the Excise Tax Credit for LNG

In addition to taking action to address the tax treatment of LNG, we urge the Congress to alter the value of the Alternative Fuel Excise Tax Credit (26 USC §§ 6426 and 6427) for LNG so that the credit is based on the *energy content* of a diesel gallon and not on a per gallon basis. Correcting both the LNG excise tax treatment and the excise tax credit treatment at the same time creates policy consistency and would restore the competitive balance between LNG, CNG and diesel as transportation fuels. Furthermore, according to a Joint Committee on Taxation review, making these two changes simultaneously would raise $9 million in new revenue.

Federal Excise Tax Penalty on Trucks

Current law imposes a 12 percent Federal Excise Tax (FET) on heavy trucks and tractors. Because natural gas trucks cost more to buy than comparable diesel trucks, the FET imposes a much higher tax payment on a natural gas truck than on a comparable diesel truck, making the economics unacceptable to many fleets. Congress should do away with this tax or, at a minimum, amend Section 4051 of the code so that the incremental cost of natural gas trucks and other advanced technology trucks is exempted from the tax.

Addressing the Weight Penalty for the Interstate Operation of a CNG or LNG Heavy Duty Trucks

Despite the positive attributes of operating a CNG or LNG heavy duty truck, the extra weight of the natural gas fuel containers means that a fully loaded natural gas truck might not be allowed to carry the same amount of freight as a diesel truck given the federal restrictions on the weight allowed (i.e. 80,000 pounds) for heavy duty trucks. This could cause a revenue loss of up to 2-3 percent due to reduced payload. Some states (e.g., Ohio and Indiana) have already passed legislation to correct this problem, but this only impacts intrastate highways. Congress should provide an interstate weight exemption to heavy-duty natural gas trucks to level the playing field

and ensure that trucks fleets switching to natural gas are not limited in the amount of freight they can haul.

Research & Development Funding

The federal government currently has no ongoing research and development effort to secure advancements in the use of NGVs. The lack of an R&D program for NGVs signals to industry and the market that the federal government is not interested in facilitating the use of NGVs. As new efficiency and emission regulations are proposed, manufacturers typically prioritize efforts to focus on those product lines for which they sell the most vehicles/engines and that means gasoline and diesel fuel. Natural gas products continue to show great promise but the sales volumes currently do not justify the research and development efforts to maximize the performance and efficiency of natural gas products. Government programs can help by partnering with vehicle and engine companies and sharing in the cost of making sure the natural gas products provide superior efficiency and emissions reduction benefits. Given the huge amount of domestic natural gas available and the ability to readily displace petroleum motor fuel and thereby enhance energy security and economic prosperity, including NGVs in its future R&D plans should be a priority of the U.S. Department of Energy.

Retain the Gallon Equivalent Standards for Natural Gas

Since 1994, natural gas in the U.S. has been sold in gasoline gallon equivalent (GGE) units. This was done so that consumers could readily compare the amount of energy and cost with gasoline. Today all public retail stations use the recognized GGE unit for compressed natural gas (CNG) sales. More recently, natural gas retailers have requested that the National Conference of Weights and Measures (NCWM) recognize a new standard for the sales of CNG and liquefied natural gas (LNG) that is sold for use in heavy duty trucks; there currently is no nationally recognized standard for selling LNG. A proposal put forward by industry and supported by some 29 states would use a diesel gallon equivalent (DGE) as the unit for heavy-duty truck sales. Unfortunately, the leadership of NCWM and its government advisors within the National Institutes of Standards and Technology (NIST) are opposed to the DGE standard and would like to also do away with the GGE standard. Earlier this year, 54 members of the House and 32 members of the Senate wrote to urge the Department of Commerce, which oversees NIST activities, to urge it to support the gallon equivalent sales of natural gas. This common sense approach is consistent with federal fuel economy regulations, vehicle labeling rules, federal and state tax rules, and it should be continued. We urge the Congress to look into what it can do to support continued use of the gallon equivalent method of sale law.

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