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Committee on Environment
and Public Works Washington, D.C.

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HEARING TO EXAMINE S.____, DIESEL EMISSIONS REDUCTION ACT OF 2019

Wednesday, March 13, 2019

United States Senate

Committee on Environment and Public Works

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The committee met, pursuant to notice, at 10:07 a.m. in room 406, Dirksen Senate Office Building, the Honorable John Barrasso [chairman of the committee] presiding.

Present: Senators Barrasso, Carper, Inhofe, Braun, Rounds, Ernst, Cardin, Whitehouse, and Van Hollen.

STATEMENT OF THE HONORABLE JOHN BARRASSO, A UNITED STATES
SENATOR FROM THE STATE OF WYOMING

Senator Barrasso. Good morning. I call this hearing to order.

Today we are here to discuss the Diesel Emissions Reduction Act of 2019, which would extend the program.

Since Congress first created the program in 2005, the program has enjoyed broad bipartisan support. We owe it to our dear friend, the late Senator George Voinovich, from Ohio, and Ranking Member Carper, for working together across the aisle to push for the creation of this program.

The legislation we are discussing today would reauthorize the Diesel Emissions Reduction Act through fiscal year 2024, so I want to thank the Ranking Member and his entire staff for their leadership on this legislation over the years. I am pleased to chair the second bipartisan legislative hearing on reducing emissions to address climate change in this Committee in the last two weeks.

Like the USEIT Act, the focus of our last hearing, this legislation supports innovation-led solutions to environmental protection. Diesel engine emissions of particulate matter and nitrogen oxides are well known. We have all driven behind an older bus or tractor and experienced the exhaust. This program has gone a long way to reducing those emissions.

States, localities, and private companies can use funds from this program to replace or upgrade diesel engines. These projects could reduce emissions of those pollutants by more than 90 percent. It is astonishing, more than 90 percent.

From 2008 to 2016, these funded projects have reduced emissions of nitrogen oxides by more than 472,000 tons, and the program has reduced particulate matter by over 15,000 tons. These are big numbers. These reductions help improve the air quality for local communities.

The State of Wyoming has used these funds over the last few years to replace old diesel school buses. In fact, school buses have been a major focus of the funding of this project in this legislation. One of our witnesses today, Mr. Dale Krapf, has brought a state-of-the-art school bus to the EPA headquarters just last year. I understand you have been working with Senator Inhofe for, you said, several decades.

Senator Inhofe. That is right.

Senator Barrasso. Go back a long time.

He also was invited by then Acting Administration Wheeler for an event during Children's Health Month. So I am pleased Mr. Krapf is able to join us today to talk about the positive impact that this legislation is having on children's health in Wyoming and all across the Country.

One of the other benefits of this program is it reduces

emissions of greenhouse gases. Upgrading diesel engines reduces greenhouse gas emissions on both black carbon and carbon dioxide. Black carbon has a global warming potential that is thousands of times higher than carbon dioxide over a 20-year time frame. Through this program, we have reduced black carbon emissions by more than 11,000 tons and carbon dioxide by more than 5 million tons.

This program is going after the gases that contribute to climate change. I emphasize this point because of a false narrative out there that Republicans haven't put forth solutions to climate change. That is simply not true. This program is a great example of bipartisan policy that has reduced emissions now for over 10 years.

Our USEIT Act is another. That bill would support the buildout of both carbon capture and direct air capture projects. Importantly, it would support the infrastructure we need to move carbon dioxide from where it is captured to where it can be used for commercial purposes. That might mean injecting it into oil wells or using it in making building materials or feeding it into greenhouses.

In addition to those pending bills, I would also remind my colleagues about the FUTURE Act. The Clean Air Task Force called that bill, which passed a year ago, one of the most important bills for reducing global warming pollution in the last two

decades. I would also note the successful bipartisan work this Committee has done to promote advanced nuclear energy.

I and many of my colleagues on this Committee support these initiatives and this Committee will continue to lead on this important issue. When we work together, we can solve and we can show that we can promote American leadership, grow our economy, and lower our emissions.

I would now like to turn to Ranking Member Carper for his opening comments.

[The prepared statement of Senator Barrasso follows:]

STATEMENT OF THE HONORABLE THOMAS R. CARPER, A UNITED STATES
SENATOR FROM THE STATE OF DELAWARE

Senator Carper. Thanks, Mr. Chairman. I have been looking forward to this day all year and am thrilled to be alive. It is a beautiful day outside, sunshine, blue skies, and we have a great bipartisan coalition supporting the legacy of George Voinovich, one of my all-time favorite governors. We served as governor together for six years and then here in the U.S. Senate, in this room, on this Committee.

George's wife is still alive. I get to talk with Janet on her birthday every year; call her on her birthday in Cleveland. She sends her love.

Some of you may recall George was not just a U.S. Senator from Ohio, he was not just a governor from Ohio, he was not just lieutenant governor of Ohio, he was not just mayor of Cleveland, a lot of people said he saved Cleveland, and he was, I think, county auditor before that. He did it all. And he served here sort of like the conscience of the Senate, and was just a great role model for all of us as Democrats and Republicans on how we can work together and get things done.

One day he said to me, I forget what year it was, but I had been here a couple years as a Senator, I came in 2001, and he said to me, Tom, how would you like to be my lead Democrat on legislation that, as our Chairman has said, will actually reduce

soot, reduce particulate matter, NOx, black carbon, and CO2? How would you like to be my lead Democrat? I said, I am not interested. Actually, I said I would be very interested.

He laid out what it was and it was what turned out to be the Diesel Emission Reduction Act, where we actually have the ability to use a relatively modest amount of Federal money to leverage a whole lot of other money from State and local sources, from private sources, in order to reduce emissions in the air and using American technology that I think our folks from Corning may have actually developed in the beginning.

So here we are, create American jobs, reduce harmful emissions, with a little bit of Federal money, leverage a whole lot of other money. I think for every dollar that we have in the Federal side we leverage about three dollars, as I recall, from other sources, public and non-public. My staff tells me that for every dollar we spend in Federal money we get about \$13 worth of value in terms of health benefits and economic benefits.

What is not to like about this legacy from George? I am thrilled to find a package that, with George's departure, Jim Inhofe stepped up. Actually, he was an original cosponsor of the bill too way back in the beginning, but Jim has been a great champion of this and we are grateful for his leadership on this, and his team and his staff.

I just want to say to my staff a special thanks. To our witnesses, welcome.

I have a statement I want to admit for the record, but as the Chairman says, this is another good example of how we can work together and get stuff done. We have been doing it through DERA for a number of years, but he mentioned the USEIT Act, which I think has great potential, and the FUTURE Act, which is another one that we worked on.

There are a number of things that we are working on together. A lot of people say, oh, you never get anything done in Congress these days. Well, beneath the radar screen we actually do. It doesn't make news, but it is good news, and I am happy to celebrate the good work that has been going on and will hopefully continue to go on for some time to come.

Thank you, Mr. Chairman. I would ask unanimous consent that my full statement be admitted to the record.

Senator Barrasso. Without objection.

[The prepared statement of Senator Carper follows:]

Senator Barrasso. Senator Inhofe, would you like to --

Senator Inhofe. Yes, I do. I do. And I would ask the same unanimous consent.

Senator Barrasso. Without objection.

STATEMENT OF THE HONORABLE JAMES M. INHOFE, A UNITED STATES
SENATOR FROM THE STATE OF OKLAHOMA

Senator Inhofe. Everything in my printed statement has been said, but I will use this time -- I was talking to Gabe back here. Hold your hand up, Gabe.

We go all the way back to when I was on this Committee in the House. Now, we are talking about 30 years ago. And John Paul Hammerschmidt, I just mentioned to Senator Barrasso and he had never heard of him. Of course, that is the way it is with most of the people, Gabe.

Anyway, the Chairman did talk about all the things we are doing right now that are really good, and so did the Vice Chairman. He mentioned the USEIT Act. I think the recognition that fossil fuels are going to be there and are going to be a part of our lives for at least the rest of my life, maybe not yours, but we recognize that.

But I am going to take advantage of this and say to my friend, Mr. Nagle, to remind people of something nobody knows about, it is the best kept secret in America today, and that is that my State of Oklahoma is navigable. We go all the way from coast to coast. We are out there.

I remember a guy came to me, he was the head of the World War II Veterans Association back when I was in the State legislature, and he said to me, he said nobody knows that we are

navigable in Oklahoma; I have a way to do this and we will pay for it. He said, we'll go ahead and we are going to have and put together, if you find a submarine for us, we are going to bring a submarine all the way up the river up to Muskogee, Oklahoma. And I thought, what a great idea.

I found the USS Batfish in Orange, Texas. It fit the thing just perfectly. So we went down and we started up there. We had to artificially bring it down to get under bridges and then flow it up. We got it all the way up there. And all the time this is taking place, because I used to be controversial and all my adversaries were saying we're going to sink Inhofe with his submarine. We got it all the way up there and it is still proudly sitting in Muskogee, Oklahoma, a submarine, coming all the way from Orange, Texas to Oklahoma.

So, anyway, we have that interest, as Kurt Nagle is fully familiar with, and we want to join everyone else in this cause that we have believed in for a long period of time, so it is nice to be with my friends. It shows that when we put our heads together, we can get things done.

[The prepared statement of Senator Inhofe follows:]

Senator Barrasso. Let the record reflect that the Senator from Oklahoma used to be controversial, but has mellowed.

[Laughter.]

Senator Barrasso. Senator Whitehouse, thank you for working on this legislation.

STATEMENT OF THE HONORABLE SHELDON WHITEHOUSE, A UNITED STATES
SENATOR FROM THE STATE OF RHODE ISLAND

Senator Whitehouse. Thank you, Chairman. I cannot match our Ranking Member's durability on this issue over many, many years, but I am very pleased to be a supporter of this legislation and one of its bipartisan cosponsors.

If you look up close at the belching fumes that come out of these older engines and the particulates and the people coughing and waving away the exhaust, you see that this type of legislation can have a real effect in communities, on streets, and in neighborhoods. And if you dial up a couple thousand feet into the atmosphere, you see that the black carbon problem that it ameliorates has a big effect, particularly in northern States where it falls on snow and it changes the albedo, the reflectiveness of the snow; and that is one of the feedback loops that is dangerous with respect to climate change. I think that is one of the reasons that Senator Collins of Maine has supported legislation regarding black carbon.

So both up close and from on high this is a piece of legislation that has very significant and positive effects, and I am proud to be a part of it. I am equally proud to be one of the supporters of the USEIT bill and the FUTURE Act and the nuclear measures that the Chairman was kind enough to recognize.

I would just offer one hesitation, which is that if you add

up the effects of this bill, the USEIT Act, the FUTURE bill, and our nuclear reforms, I don't think they get us anywhere near the climate goals that we need to reach. So as much as I enjoy and even treasure our bipartisan work on these issues, I see it as a bipartisanship pilot light burning in the hopes that soon we will be able to do something bipartisan that actually addresses the problem in the way that we need.

So, much appreciation to you, Chairman, for your cooperative spirit on this and others, and much appreciation also to the newly non-controversial Senator Inhofe for his leadership in this area. And to my Ranking Member, much gratitude for his long support.

[The prepared statement of Senator Whitehouse follows:]

Senator Barrasso. Well, thank you.

We will now hear from our witnesses. I am pleased to introduce our three witnesses to the panel today: Mr. Dale Krapf, who is Chairman of Krapf Group Incorporated. Thank you for being here. Mr. Kurt Nagle, who is President of the American Association of Port Authorities; and Dr. Timothy Johnson, Consultant to Corning Inc.

I want to remind the witnesses that your full written testimony will be part of our official hearing, so if you could please keep your statements to five minutes so that we will have some time for questions. We all look forward to hearing your testimony.

Mr. Krapf.

STATEMENT OF DALE N. KRAPF, CHAIRMAN, KRAPF GROUP INCORPORATED

Mr. Krapf. Good morning, Chairman Barrasso, Ranking Member Carper, Senator Inhofe, and members of the Committee. My name is Dale Krapf, and I am Chairman of the Board of the Krapf School Bus Company, headquartered in southeastern Pennsylvania, a family-owned and operated passenger transportation business established in 1942. We are now the largest privately held school bus contractor in the Nation, operating in Pennsylvania, New York, New Jersey, Delaware, and Virginia.

I am pleased to support the reauthorization of the Diesel Emissions Reduction Act, or DERA, one of the most effective clean air tools in improving air quality concerns at the local level. I also want to express my appreciation to Senators Carper and Inhofe, original cosponsors of the 2010 and the current reauthorization bill.

I am here today on behalf of the National School Transportation Association, the trade association for private school bus contractors around the Country. Private companies provide over one-third of the Nation's public school bus service. I was proud to serve as president of NSTA from 2003 to 2005, and today my son Blake serves in that same role. Another son, Brad, also serves on the NSTA Board.

My family business has been successful not just because we have followed sound business practices, but because our focus

has always been on our communities and, most importantly, our precious cargo, the children we transport to and from school every day. We have a saying in our industry, that we bleed yellow, which signifies our commitment to the safety of the children we transport.

School transportation is a uniquely American industry and is part of our Country's commitment to free public education. Each day, nearly 500,000 school buses transport over 26 million children to and from school, more than inner city and intercity bus transportation, rail and aviation combined.

School buses help ease congestion, help save energy, and reduce pollution by taking an average of 36 cars off the road for each trip. Taken together, this represents 17 million fewer cars and a savings of 20 million tons of CO2 each year. Further, the technology of today's school bus is tremendously improving, incorporating not only clean engine and emission reduction technology, but also the most advanced safety features, all designed to protect the children on and around the bus and the air they breathe.

According to DOT statistics, the school bus is the safest form of transportation, bar none. Our commitment to safety and the children's health is not only focused on preventing accidents, but also protecting the overall health of the kids on the bus or waiting for the bus, at the bus stop or at the

school. That is why we have been an early and strong and consistent supporter of the DERA program, and even before that the Clean School Bus program. Over the last decade, NSTA, through our D.C. representatives, has helped lead an informal coalition of not just school bus interests, but also representatives of other sectors who support the reauthorization of the continued funding for the DERA program.

Funding can be used for projects to purchase newer, cleaner vehicles or equipment, repower older equipment, or retrofit equipment with the latest after treatment technologies. The program is technology agnostic, meaning that all types of clean vehicles and equipment are eligible, including diesel, propane or natural gas, electric or hybrid, and it supports vehicles and equipment in all sectors, from tug boats to transit buses, locomotives to school buses.

Seventy percent of all the funds go to EPA, with 30 percent going directly to support State programs. EPA administers grants through the regions on a purely competitive basis, with a goal of funding the projects that produce the highest benefits. We are proud of the progress that has been made, and especially the school bus sector has probably been the single largest sector to benefit from the program since the program was established.

Communities around the Country benefit by having new or

retrofitted buses to take children to and from school. We have worked with EPA to help pioneer access to grant funds to both public and private entities using the authority in the Act to fund projects through nonprofit entities working to improve air quality and transportation safety.

However, because the grants can be a challenge for a small rural school district or their transportation contractor, we pushed for language in the last reauthorization bill to help streamline the process through the use of rebates as a way to get the funds to where they are needed quickly and efficiently.

The EPA School Bus Rebate program allows local school districts and companies under contracts to those districts equal access to funding for taking older buses off the road and replacing them with newer buses that often can emit at least 95 percent less pollution than the ones being removed. I am delighted that Krapf School Bus received one of those rebates in 2017.

Some have questioned why a program that was originally authorized in 2005 is still needed. The answer is simple: it still works and it produces benefits well in excess of cost. Diesel vehicles are the workhorses of our economy and they last a long time. In our school bus fleet in Pennsylvania, we work hard to get newer vehicles into service, but we also helped take over a county system in Virginia where the buses were

considerably older. Some States operate systems where the average age of the bus may be more than 15 years old. That means there are many buses in those States older than 15 years as there are newer buses. DERA helps communities get those older buses off the road, cleaning the air in the process and also improving transportation safety.

We believe the program is still extremely valuable and needed, and we strongly support its reauthorization as provided in the legislation introduced earlier this week by Senators Carper, Inhofe, Barrasso, and other members of the Committee.

Thank you for the opportunity to be here today and to speak in support of the bill before the Committee. I would be happy to answer any questions. Thank you.

[The prepared statement of Mr. Krapf follows:]

Senator Barrasso. Thank you very much.

Senator Whitehouse.

Senator Whitehouse. Mr. Chairman, thank you. I just wanted to interject a word of welcome to Mr. Nagle and thank him for the American Association of Port Authorities' work on oceans issues and dealing with sea level rise and the ocean planning near our ports. It is so important. I think the AAPA has taken a real leadership role and has been a very constructive partner, and I just wanted to take the opportunity to express my appreciation as you made your comments and to welcome you to the Committee.

Mr. Nagle. Thank you, Senator Whitehouse. Appreciate that and we certainly value that partnership.

Senator Barrasso. Please proceed.

Senator Carper. Mr. Nagle, why do people call you Nagle? I have heard you pronounce your name Nogle.

Mr. Nagle. Well, I was born in Pennsylvania, in the Pennsylvania Dutch area, so we have stuck with the German pronunciation of Nogle. But most people say Nagle and I am fine with either one.

Senator Carper. All right.

Senator Whitehouse. So I don't owe you an apology? Because if I do, you have one.

Senator Carper. Nagle or Nogle, we welcome you.

STATEMENT OF KURT J. NAGLE, PRESIDENT, AMERICAN ASSOCIATION OF
PORT AUTHORITIES

Mr. Nagle. Chairman Barrasso, Ranking Member Carper, Senator Cardin and Senator Whitehouse, the American Association of Port Authorities strongly supports reauthorization of EPA's Diesel Emissions Reduction Act program.

Over the last 10 years, this funding has been key to incentivizing and expanding port environmental programs to improve air quality impacted by port operations.

As you know, ports are vital gateways to the global marketplace for American farmers, manufacturers, and consumers, and serve as critical infrastructure for the U.S. military. Port cargo activity supports over 23 million American jobs, accounts for over a quarter of our national economy, and, importantly, generates over \$320 billion a year in local, State, and Federal tax revenues.

As public agencies, AAPA member port authorities are committed to delivering prosperity through environmentally sustainable business practices. Ports are multi-modal facilities served by vessels, trucks, and rail and use cargo-handling equipment, many of which use diesel fuel. Reducing air emissions continues to be a high priority for ports, and partnerships like DERA provide great value.

AAPA was an early supporter of the creation of the DERA

program and has advocated for robust funding over the years. Additionally, AAPA supported the adoption of the North American Emissions Control Area, which has significantly reduced air emissions from ocean-going ships. DERA helps address other contributors such as trucks, locomotives, cargo-handling equipment, and other marine vessels.

According to EPA, between 2008 and 2018, a total of 150 clean diesel grants have been awarded to port-specific projects totaling \$148 million. An additional \$64 million was awarded through DERA to multisector projects that involve ports. Here are just a few examples:

Just last month, EPA awarded a DERA grant of \$400,000 to the Alabama State Port Authority to replace a 1982 locomotive with a Tier IV locomotive engine. When completed, the port will have converted half of its locomotive fleet from Tier 0 to Tier IV, yielding significant reductions in the port's emissions profile. Other ports have used DERA funds for cleaner locomotives as well.

DERA has been especially helpful in supporting ports' clean truck programs. This includes clean truck programs in New York-New Jersey, the Port of Baltimore, Mass Port, Houston, Seattle, and Georgia. These programs help truckers buy newer, clean drayage trucks that not only reduce emissions, but also are more fuel efficient.

The Port Authority of New York-New Jersey has a very successful clean truck program that has been expanded due to DERA grants. In February of this year, EPA announced it has awarded \$2 million to the Port Authority of New York-New Jersey to replace up to 80 model year 2006 and older short-haul trucks that serve as Port Authority facilities with cleaner, newer model year trucks.

The Maryland Port Administration has utilized DERA grants to exchange 181 port drayage trucks, 110 pieces of cargo-handling equipment, 4 marine diesel engines, and 6 switcher locomotives. Between 2012 and 2016, due to the availability of funding programs like DERA, the Port of Baltimore was able to reduce emissions by 19 percent, while cargo throughput increased by 10 percent.

A number of ports have also used DERA grants for supporting repowering or replacing cargo-handling equipment. Mass Port, for example, received a grant to retrofit five rubber-tired-gantry cranes with new Tier IV engines, resulting in sizable emissions reductions.

The Georgia Ports Authority used two DERA grants to assist in the repowering of 20 rubber-tired-gantry cranes with variable frequency inverters. GPA was on the forefront of changing RTG technology with the variable inverters that provide power when needed, instead of having to run at full power constantly. This

change resulted in immediately cutting fuel use by 33 percent and the associated emissions.

Other ports have used DERA grants for marine vessels, including Cleveland, Portland, New York-New Jersey, Puget Sound, Long Beach, and Connecticut. For example, the Port of Portland helped leverage a DERA grant to repower the Dredge Oregon that resulted in diesel particulates reduction of 80 percent and a reduction of greenhouse gases by 25 percent.

The Port of Virginia has also seen significant benefits from DERA grants related to dredge repowering, as well as a hybrid shuttle carrier project that is now underway.

In summary, DERA continues to be an incredibly successful program in helping reduce emissions in and around America's ports. We appreciate the Committee's leadership on reauthorization of this important program and we strongly support its reauthorization.

Thank you.

[The prepared statement of Mr. Nagle follows:]

Senator Barrasso. Well, thank you so much for your testimony, for being here with us today.

Mr. Johnson.

STATEMENT OF TIMOTHY V. JOHNSON, CONSULTANT, CORNING
INCORPORATED, FORMER DIRECTOR OF EMERGING REGULATIONS AND
TECHNOLOGIES AT CORNING ENVIRONMENTAL TECHNOLOGIES

Mr. Johnson. Thank you, Senator Barrasso and Senator Carper, Senator Van Hollen, for the invitation to testify today in favor of the Diesel Emissions Reduction Act.

I have worked for Corning for about 30 years, spending 20 of those years tracking emerging engine efficiency and emissions. About seven years ago, after years of investigation, the International Agency for Research on Cancer concluded that diesel exhaust is a known human carcinogen, their most toxic designation. We, as a society, should desire that all diesel exhaust emissions be reduced as much as is practical.

However, there are some problems in doing this with in-use engines. Namely, the owner of the engine bought a legal engine and, despite that, this engine will last 20 years; it will operate with none of the advanced emission control equipment being installed on new engines today; and the added cost of upgrading isn't contemplated when the engine was purchased. One pre-2007 engine emits the same particulate pollution as about 20 of today's clean engines.

In 2005, DERA started as a very effective public investment to clean up these in-use emissions. By providing funding, motivated owners can clean up these dirty engines without

damaging their business plans, and the engines are motivated as DERA is oversubscribed. Only about 1 in 35 applicants gets a rebate under DERA, and only 1 in 7 gets a grant. For each Federal dollar invested in the program, others invest \$3 more. EPA estimates that this one Federal dollar delivers \$5 to \$21 in societal health benefits, and the technology is available.

There are upwards of 15 different verified technologies that have been employed, including clean fuels like advanced biodiesel, aerodynamic-resistant reductions for trucks, and the most effective of all, diesel exhaust particulate filters that reduce the fine particulate emission levels to lower than in city air. Trucks with diesel particulate filters clean the air; the more you drive them, the cleaner the air gets.

As such, the DERA investment is an amazing success. It provides seed money to clean up diesel exhaust using a wide variety of verified technology without breaking the owner's wallet, and it delivers up to \$21 returned to society for every Federal dollar invested. The Federal Government has invested an average of \$40 million a year in DERA in the last seven years. Obviously, this is a good, practical, and popular way for the Federal Government to invest in the infrastructure and health of the Nation, and the program ought to be funded with an increase.

I want to briefly shift my discussion to updating the Committee on the latest trends in diesel nitrogen oxide emission

reductions.

The NOx emissions from diesel engines pose a number of health concerns. Once in the atmosphere, they react with other compounds to form ozone, the major component in smog. Ozone is a reactive and corrosive gas that contributes to many respiratory problems. Ozone, in particular, is harmful to children and the elderly. To our collective credit, 85 percent of the regions in the U.S. are meeting the EPA's new maximum allowable 8-hour ambient ozone standard of 74 parts per billion. However, there are still 51 areas in the United States, and the District of Columbia, not meeting the new standard.

California and the EPA are developing truck tailpipe emission standards that will drop NOx emissions by another 90 percent. This time around, the Government has the engine industry support for cost-effective and practical solutions. The NOx emissions that are mainly targeted are those generated in urban driving, when the exhaust catalyst is not hot enough to fully function.

Eliminating these emissions is not an easy task, but the technology is becoming available and will have a minimum impact on the operation of the vehicle, and it will be used with advanced biodiesel, perhaps up to 20 percent formulation, for greenhouse gas reduction. These new engines will be essentially non-polluting, and in many cases the NOx level is lower than in

ambient air. With NOx emissions this low, one European truck will pollute as much as about 20 of these clean U.S. trucks, so Europe, China, and the rest of the world will ultimately move in this direction, utilizing U.S.-borne technology.

As battery electric trucks and cars enter the market, the emissions benchmark for internal combustion engines will get tighter. The Federal Government can have a major role in helping current diesel owners clean up their engines and improve their image, and in making sure that new diesel engines are as clean as practical.

It is amazing how far we have come under government initiatives and private industry innovation to make both legacy and new diesel engines virtually non-polluting and as clean as practical.

Thank you very much.

[The prepared statement of Mr. Johnson follows:]

Senator Barrasso. Can you repeat that? Government initiative and private innovation, did you say?

Mr. Johnson. Yes.

Senator Barrasso. Thank you. Terrific.

Mr. Krapf, over the last couple of years, the State of Wyoming has leveraged about \$900,000 in Federal DERA funds to purchase new buses across the State. The City of Cheyenne Parks and Recreation replaced two buses used for student transportation. We have school districts in Big Horn County, Campbell County, Lincoln County, Park County, Sheridan County, Sweetwater County, Uinta County have all used Federal DERA funding to order 43 replacement school buses.

Can you just talk a little bit about how important DERA funding is for school districts across the Country that want to purchase more environmentally friendly buses to provide cleaner air for our children and our communities?

Mr. Krapf. I think one of the main things here is that the DERA funding is really just a drop in the bucket to the amount of money spent for new school buses each year. My company alone spends about \$20 million a year for new school buses. But part of my professional mantra has been "lead by example," and I think when the Federal Government and the State governments have DERA funds available to get to the school districts, and as well to the private operators, that it sets an example. We get a lot

of press in the industry about the DERA funding and I think it sets a tone for other people to follow that.

As we said earlier in my testimony, school buses are already a form of pollution prevention by taking many cars off the road, 36 cars for each trip, so school buses, I think, really can be a poster child for the DERA funds.

Senator Barrasso. Dr. Johnson, I said in my opening comments that the DERA program was first created as a program to target localized air emissions, but what we now know is that it has reduced greenhouse gases as well. Clean diesel technologies effectively reduce carbon dioxide and black carbon.

Do you agree that DERA is an important policy tool to address climate change and, if reauthorized, it will actually continue to reduce emissions over the next five years?

Mr. Johnson. Yes, it is a good first step. The in-use engines are emitting on the order of 20 times more black carbon than modern diesel engines today and, as you mentioned, black carbon is one of the most potent greenhouse gases. So, yes, it is a good first step to cleaning up these emissions.

Senator Barrasso. A question for all of you. Dr. Johnson's final statement in his prepared remarks talk about the U.S. and innovation, private innovation. The United States is a world leader in innovation. The DERA program not only protects the environment, I think it also helps drive economic activity,

to your point.

Can each of you outline perhaps the ways that clean diesel projects are of benefit to the economy and, in particular, to American manufacture?

I don't know if you want to start with you, Mr. Johnson. We can go that way.

Mr. Johnson. Yes, sure. Thank you very much for the question. All of the emission control or emissions initiatives have been started in the United States. The United States is the leader in doing this so, therefore, the technologies initially developed to meet the U.S. requirements. And as the other nations of the world follow suit, that gives the American companies, the American technology the advantage to address the needs of those other markets as well.

On the flip side, the tight regulations here in the United States also present a, for lack of a better term, a barrier to foreign companies from coming into the United States and selling vehicles that won't meet the regulations. We don't see any Chinese cars here in the United States yet because our emission control and safety requirements are prohibitive, and Indian companies have attempted to come into the United States and have not been able to meet these requirements.

Finally, to illustrate the point, in China they are now implementing diesel particulate filters on their heavy-duty

trucks, and the bulk of that business is going to American companies.

Senator Barrasso. Mr. Nagle?

Mr. Nagle. Yes. Certainly, with over 90 percent of the goods movement through our Country being handled by equipment that utilizes diesel power, it certainly benefits not only the health benefits, but also our economy. As Mr. Johnson has indicated, the U.S. is a leader in this clean diesel technology and 13 States, including Indiana, New York, Maryland, Iowa, Mississippi, and Alabama, all manufacture heavy-duty clean diesel engines. This provides good paying American jobs, boosts our economy, and also, importantly, as Mr. Johnson indicated, that technology is highly valued by the rest of the world, so it results in increased U.S. exports, which certainly helps our trade situations as well.

It also stimulates small businesses. As an example, in and around ports, with the clean truck programs, the partnerships with the independent owner-operators not only provides them benefit, provides health benefits, but also helps them with their move toward fuel efficiency.

Senator Barrasso. Mr. Krapf, any thoughts?

Mr. Krapf. Yes, I will speak specifically to the school bus industry, because I think the other gentlemen have answered the other questions. In my testimony, I specifically said that

the school bus industry is an American industry. It started in this Country and it still is predominantly located only in this Country.

All school buses that are made are made in the United States. We already export many, many school buses to other countries. They use them particularly in South America and Central America for commercial vehicles because of the cost versus a large commercial transit bus.

But now there are several countries that are looking into the U.S. model of school buses, getting their students to and from school as they have entered a phase where they have gotten out of the little hamlets to a suburbia type country. Particularly Australia and New Zealand are looking at school buses and, as I said, now they are all produced in the United States.

Senator Inhofe's State of Oklahoma has the largest producer of school buses with the international plant in Tulsa.

Senator Barrasso. Senator Carper.

Senator Carper. Again, our thanks to each of you for joining us today and also in the past in some cases.

A follow-up question if I could, Mr. Johnson. Do you agree that Federal action to reduce emissions, both financial incentives like DERA and regulation sections such as heavy-duty vehicle emission standards, are instrumental in driving American

clean energy investments and innovation?

Mr. Johnson. Yes, indeed.

Senator Carper. Let me just say in particular. Let me modify that a little bit. In particular, do you believe we would have the clean diesel technology that we have developed here today without strong emission standards as well, and has this carrot and stick approach been beneficial to American companies and commerce?

Mr. Johnson. The diesel particulate filter is the most effective diesel emission control technology available, and this was developed in the United States for heavy-duty application to meet the 2007 regulation. Those filters have expanded into Europe that did a similar regulation as the United States, and now into China, and these are all excellent examples of how the U.S. regulation incentivized and initiated the companies like mine to develop this kind of technology. So, yes, I think being on the forefront of good, sound environmental regulation is not only good for society, but it is good for private industry as well.

Senator Carper. Thank you.

To my colleagues, I would just say I remember when Lamar Alexander and I were working on mercury reductions, emission mercury reductions from coal-fired utility plants, maybe six, seven, eight years ago, and we had a panel kind of like, only

had about four or five folks from the utility industry, and we had one fellow who was representing a technology association where they developed air emission technology, including for removing mercury from emission streams. We had our four or five witnesses from a utility said -- Lamar and I were focused on reducing mercury emissions by 80 percent, eight zero. Lamar wanted to go to 90 percent reduction.

Anyway, in the panel we had that day, the folks from utility companies said, you know, we just don't think we can get to 80 percent; that is just like a bridge too far. The fellow from the trade association in the technology camp said, no, we can not only get to 80, we can get to 90; and within literally a few years we were at 90 percent.

To your point, Mr. Johnson, what we did with that technology, we just didn't use it in this Country, we sold it around the world. We sold it around the world. And to the extent we can create great jobs with that technology here and sell it around the world, that is the holy grail as far as I am concerned.

There is an old saying, at least for me, I have said this a million times, if things are worth having, they are worth paying for. Think about that. If things are worth having, they are worth paying for. If you look at the budget that we received from the Administration this past Monday, it actually

dramatically cuts funding, and in some cases eliminates funding, for research and development, assistance to States and grant programs like the Diesel Emission Reduction Act, and that is a fraction of the funding compared with the \$87 million that Congress appropriated for DERA in the fiscal year 2019 omnibus.

If implemented, the President's budget would take our Country, I think, in the wrong direction with respect to our clean air and climate goals.

My question of really the entire panel is, based on your experience, is the Administration's funding level for DERA too low for such a successful program? Your thoughts, please.

Mr. Krapf.

Mr. Krapf. Was your question is the funding level too low?

Senator Carper. Yes, for DERA. Is it too low?

Mr. Krapf. Yes, I think it is.

Senator Carper. He would take it down from 87 million down to about 10 in that budget. What do you think?

Mr. Krapf. Yes, I think it definitely is too low, and I don't think that in all the years that we have had the DERA funding, the amount that was requested versus the amount that was finally authorized was probably I think we have gotten two-thirds of what we have actually asked for over the years, so I do think it is too low. And the program, after it was originally introduced in 2005, I think it was two or three years

until it really got started, so we missed a few years there at the beginning, so, absolutely, we could use more. There are many, particularly district-owned fleets, in the United States that have buses in the fleets that are 25 and 30 years old.

Senator Carper. I believe one of our witnesses said, Mr. Chairman and to my colleagues, that for every dollar we have available through DERA to go out to grants or rebates, it is like a \$35 request from across the Country to reduce emissions.

Mr. Nagle, is \$10 million in the Administration's request too much, too little?

Mr. Nagle. Definitely too little. We certainly fully support at least the \$87 million that had been provided for this current year. We believe that the fully authorized level is more approaching what had been a 100 million level previously certainly at least what should be provided. As you said, it can leverage a lot of local public investment, but also private investment. Again, in and around marine terminals, a lot of that investment is with private partners, so we think it should be at least at the 87, toward the \$100 million level.

Senator Carper. And very briefly, Mr. Johnson, your thoughts. Too much, too little, the Administration's proposal?

Mr. Johnson. Well, it is a good investment and good public policy. I would love to find an investment where I could put \$1 in and get up to \$21 out, and that is probably over a 15 or 20

year accounting, but still it is a fantastic investment.

The other thing to keep in mind, aside from the leverage of private monies and State monies three to one for every Federal dollar invested is that the program is oversubscribed. We have more fleet owners that want to clean up their emissions, but the money is not available to do this. Keep in mind that they are operating a legal engine, and there is no other way to get them motivated to clean up their engines aside from incentives and help with investment.

Senator Carper. Okay.

Mr. Johnson. So, yes, it is underfunded, significantly.

Senator Carper. Thank you so much.

Thanks, Mr. Chairman.

Senator Barrasso. Thank you, Senator Carper.

Senator Inhofe. Come on, you guys. You know, it just amazes me. I don't think in the years that I have been here I have ever been before a panel where the question was asked wouldn't you like to have a little more money, and the answerer says no.

[Laughter.]

Senator Inhofe. Anyway, don't get your hopes up on that.

[Laughter.]

Senator Inhofe. You know, I chair a little committee called the Armed Services Committee, and during the eight years

of Obama, taking the last five years, we went down using constant dollars, 2018 dollars, from, in 2010, \$796 million down to \$583 million. Anyway, that was a drop of \$200 billion during that period of time. It had never happened before. There has never been a bureaucracy before in a five-year period that has dropped by 20 percent.

Now we find that China and Russia both have passed us up in areas such as hypersonics and artillery and other areas where we have never been behind before, and now we are going to -- that is what we are fighting for right now, is to try to get back where we have been since World War II, and that is a leader in the free world in terms of funding for our military, so that is your competition out there.

I think every question I had has already been answered. I would like to say something about Navistar, Mr. Krapf, because I can't imagine there is any larger manufacturer of school buses anywhere in the world than Navistar, but I understand we are number three or number four, so it is a huge thing for us. We supply the surrounding States. It is a great thing for us.

I would just ask the question would the schools be able to upgrade their fleets without the help of DERA that we have all been working on for such a long time now?

Mr. Krapf. I am not sure that I understand the question.

Senator Inhofe. Well, I am just saying that without this

program would we be able to upgrade our fleets?

Mr. Krapf. Well, I think that --

Senator Inhofe. Well, I think the answer is yes.

[Laughter.]

Senator Inhofe. That made that a lot easier.

Then, Mr. Nagle, the ports do have a variety of projects that benefit from DERA. I think that is the one thing that hasn't been addressed during the course of this time. What other projects receive the benefit from DERA on our ports?

Mr. Nagle. Yes, sir, it is really a variety of both cargo handling equipment in terms of at the facilities themselves, whether it is rubber-tired-gantry cranes, various yard equipment, but also, importantly, the marine vessels, whether it is tug boats, other assist vessels in and around the harbor, because those can have engines that last anywhere from 30 up to 50 years.

A recent study has indicated can last up to 50 years, so programs like DERA can advance significantly moving toward the more efficient engines. Same with locomotives, the switcher locomotives moving the cargo in and out of ports. Those have life spans from 40 up to even 70 years, so programs like DERA can have very significant impacts in replacing those really long-standing, older equipment.

Senator Inhofe. And I don't think a lot of people are

aware of that.

Dr. Johnson, you talk about where our leadership is. You mentioned China twice. Is there anything further you would like to say that you haven't had a chance to say concerning what our posture is relative to some of our competitors out there?

Mr. Johnson. Well, I think I have covered it quite well.

Senator Inhofe. I think you have.

Mr. Johnson. I would like to mention one emerging trend that is happening. I think we have all heard of electric vehicles, and China has a mandate on electric vehicles. They are looking at requiring 15 to 20 percent of their new car sales in 2025 being electric vehicles, and the industry is generally acknowledging that China is the center of technology development regarding electric vehicles.

At the Detroit Auto Show last year we saw our first exhibition booth from a Chinese auto company, and they have expanded their booth this year and they plan on introducing electric vehicles into the United States market within a few short years, so it is an example of the government initiative in China incentivizing or mandating electric vehicles, and I think the experts in the transportation industry will acknowledge that the electric vehicle has a future in many, many different segments of the transportation.

Senator Inhofe. I would only observe that China is famous

for having government tell people what they want, and this is an extension of that. I also would observe that that has to come from, in China, coal powered plants supply electricity, so there we have it.

Thank you, Mr. Chairman.

Senator Barrasso. Thank you, Senator Inhofe.

Senator Carper.

Senator Carper. Just let me follow up on that conversion a little bit, if I can. You mentioned the Detroit Auto Show. I go almost every year, and have for more than 20 years. Delaware used to produce more cars, trucks, vans per capita than any State, and we lost both of our Chrysler plants and our GM plants about 10 years at the bottom of the great recession, and we are repurposing the Chrysler plant to be a science technology and research center for the University of Delaware. It is so exciting to see it come up out of the ground. We mourn the loss of our Chrysler and GM plant, but it is wonderful to see thousands of new jobs being created.

When I used to go to the Detroit Auto Show, I remember 11 years ago the car of the year at the Detroit Auto Show was the Chevrolet Volt, a hybrid. The first 38 miles it went on electric charge; after that it was on gasoline. That was 11 years ago. A year ago, at the Detroit Auto Show, the car of the year was the Bolt, Chevrolet Volt, and all electric, 140 miles

on a charge; 140 miles, up from 38. I was at the Detroit Auto Show two months ago. and I suspect you were as well, and I saw a dozen or more vehicles from U.S. manufacturers and from foreign manufacturers that get 250 miles on a charge and more.

The Chairman and I and our colleagues are beginning to work on transportation reauthorization legislation that we hope to be able to maybe introduce in the middle of this year, the middle of summer, and part of the infrastructure I think needs to include charging stations and hydrogen fueling stations.

For those in the room who have never driven electric-powered vehicles or hydrogen-powered vehicles, they are fun. Incredible torque, just a lot of fun to drive. The hydrogen fuel cell vehicles, they produce as their only emission water so clean you can drink it.

To Jim Inhofe's point about China, they are burning coal to produce electricity for electric-powered vehicles, so they have some work still to do, but we are going to be driving vehicles that consume gasoline and diesel for a long time. My Chrysler Town & Country minivan I bought 18 years ago, the year I stepped down as governor and came here, so it is a 2001. I was driving home from the train station in Delaware last week, Mr. Chairman, and I looked at my odometer in my Chrysler minivan and it went 499,999 miles to 500,000 miles on my way home, so I have had 18 years. Not many people drive a vehicle for 500,000 miles, but

it gets about 25 miles per gallon, which is not great, but it is better than some, I suppose.

But vehicles like that are going to be on the road for a while, for quite a while, actually, so we are still going to use gasoline and diesel into the future, but it would be smart to make the transition to the other as well.

I have a question on glider trucks I would like to ask and then I am done. EPA currently is taking action to undo the clean diesel progress we have made and you mentioned in your testimony, Mr. Johnson. For example, EPA has proposed to exempt heavy-duty glider trucks from the Clean Air Act. Glider trucks are known by several names, including zombie trucks. They have new shells on the outside, but on the inside they have the old high polluting diesel engines that lack modern pollution controls.

EPA's own research indicates that a 2017 glider truck can emit up to 43 times more nitrogen oxide than a model year 2014 or 2015 truck. Let me say that again. EPA's own research indicates that a 2017 glider truck with the old diesel engine can emit up to 43 times more nitrogen oxide than a model year 2014 or 2015 truck. Our current EPA administrator has signed a proposal to completely exempt these what I think are dangerous trucks from emission standards and he said that he may finalize this rule.

My question, Mr. Johnson, is if EPA decides to go forward with this glider truck rule, would allowing for the sale of thousands more heavy polluting diesel trucks undermine the progress we have made to reduce emissions through DERA? How would it affect the clean diesel industry as a whole?

Mr. Johnson. The exclusion of glider trucks from regulation is essentially taking advantage of an unintended loophole in the regulation. The EPA regulations require that when an engine is rebuilt, it needs to be rebuilt to the original emission standards under which that engine was manufactured, which is a reasonable requirement. So, in the case of the glider truck, they are taking engines or the block of the engine that in many cases is taken out of service, is no longer suitable for revenue service, finding these engines, rebuilding them, and then putting them on a new truck chassis, which is completely contrary to the purpose of the regulation.

Imagine two trucks pulling up to a stoplight. Both of them look brand new and one truck has a rebuilt engine from 1995, 1997, 1998 with obsolete or no emission control equipment on it, polluting 40 times more than the new truck that looks identical to it pulled up to that stoplight. What does the fleet owner of that new truck think when they invested and paid for emission control equipment that this truck next to him does not have, and polluting the equivalent of 40 of the trucks that are clean?

Keep in mind that as we move forward with the EPA in California low NOx initiatives, that one glider truck will no longer be polluting equal to 40 trucks, the pollution will equal hundreds of trucks. So it is just entirely inappropriate and not fair to not close that loophole and prohibit the use of glider trucks.

Senator Carper. Thank you for that response.

Mr. Chairman, thank you for pulling this together. This is a joy for a lot of us. I think the rest of the Congress could do well to look at the way we operate here, Mr. Chairman. We try to work across the aisle and find common ground. We are always looking for ways to improve the quality of air, our water, better public health, and create jobs, and this is a great example of that. If George Voinovich is looking down at us today from on high, we will just say, George, you done well. God bless you. Thank you.

Senator Barrasso. Well, thank you, Senator Carper, for your ongoing leadership for this over the decades, it has been remarkable. There is so much support for this legislation.

I ask unanimous consent to enter letters that we received from the DERA Coalition and the Diesel Technology Forum. These groups strongly support reauthorization of the program.

Without objection, that will be introduced.

[The referenced information follows:]

Senator Barrasso. I want to thank our panel for being here, each of the witnesses. Thank you for your testimony.

We are now going to hold the record open in case some of the other members have questions, written questions. We will submit those to you and we would ask that you get those responses back to us. The record will remain open for two weeks.

Thanks so much for being with us.

This hearing is adjourned.

[Whereupon, at 11:11 a.m. the committee was adjourned.]