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WHERE'S MY STUFF? EXAMINING THE ECONOMIC, ENVIRONMENTAL, AND SOCIETAL IMPACTS OF FREIGHT TRANSPORTATION

(116–45)

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON HIGHWAYS AND TRANSIT

AND THE

SUBCOMMITTEE ON RAILROADS, PIPELINES, AND HAZARDOUS MATERIALS

OF THE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

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U.S. House of Representatives
Washington, DC 20515

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DECEMBER 2, 2019

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Highways and Transit and Subcommittee on Railroads, Pipelines, and Hazardous Materials

FROM: Staff, Subcommittee on Highways and Transit and Subcommittee on Railroads, Pipelines, and Hazardous Materials

RE: Joint Subcommittee Hearing on "Where's My Stuff?: Examining the Economic, Environmental, and Societal Impacts of Freight Transportation"

PURPOSE

On Thursday, December 5, 2019, at 10:00 a.m., in 2167 Rayburn House Office Building, the Subcommittee on Highways and Transit and the Subcommittee on Railroads, Pipelines, and Hazardous Materials will jointly hold a hearing on "Where's My Stuff?: Examining the Economic, Environmental, and Societal Impacts of Freight Transportation." The purpose of the hearing is for Members of the Subcommittees to explore the importance of freight transportation, investment needed to support freight transportation, and the ways in which demand for goods movement is growing and changing. The Subcommittees will hear from representatives of the Coalition for America's Gateways and Trade Corridors (CAGTC), the American Short Line and Regional Railroad Association (ASLRRA), the University of Washington Supply Chain Transportation and Logistics Center, the Association of American Railroads (AAR), the Environmental Defense Fund (EDF), and the American Association of State Highway and Transportation Officials (AASHTO).

BACKGROUND

Freight transportation and related industries significantly contribute to the U.S. economy. The nation's freight system transports, on average, 51 million tons of freight, valued at approximately $55 billion, on a daily basis, which amounts to approximately 17.7 billion tons of freight, valued at approximately $16.8 trillion, annually.[1] In 2016, the demand for transportation accounted for 8.9 percent of U.S. Gross Domestic Product.[2] Demand for freight transportation is rising at a disproportionate rate to freight system capacity.[3] The U.S. Department of Transportation (U.S. DOT)

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[1] TRIP, "America's Rolling Warehouses: Opportunities and Challenges with the Nation's Freight Delivery System", October 2019.

[2] Bureau of Transportation Statistics, Transportation Economic Trends 2018 (https://www.bts.gov/transportation-economic-trends/tet-2018-chapter-2-contribution-economy).

[3] FHWA, Urban Goods Movement, https://ops.fhwa.dot.gov/freight/technology/urban__goods/index.htm.

estimates that freight movements are expected to grow across all modes, and by 2040, will increase by 42 percent.[4]

FREIGHT RAILROADS

The U.S. freight railroad industry operates a 140,000-mile network across the country, delivering on average five million tons of goods every day. This industry is composed of varying sized railroads measured by their annual operating revenues into three different classes. The largest railroads include the seven Class Is, which are the biggest railroads that collectively provide long-haul operations in 44 states and D.C.[5] The Class Is account for nearly 69 percent of the industry's mileage.[6]

The 603 short line and regional railroads operate nearly 40% of the nation's rail network by mileage.[7] Short lines are often the only way rural America can connect to the rest of the national freight rail network—playing an important role in providing first-mile and last-mile service that extends the reach of the rail network to rural communities, manufacturers, farmers, and others.[8] These smaller railroads range in size from small operators handling just a few carloads a month, to others that cross state lines and approach the size of the large Class I railroads. These railroads operate 100 percent of the rail network in five states; and 50 percent of the rail network in another 15 states.[9]

Volume of Freight Moved by Rail

In 2018, the freight railroads operating in the U.S. transported 17,910,549 carloads, including 17,708,351 moved by the Class Is and 202,198 moved by the short lines. Transported inside those carloads were a range of commodities such as: agricultural and food products; chemicals and petroleum; coal; forest products; metallic ores and metals; motor vehicles and parts; nonmetallic minerals and products; waste, scraps, and other products. Additionally, the freight railroads transported 18,066,668 intermodal units, which are shipping containers and truck trailers that are transferred to the railroads and moved on rail cars.

Environmental Impacts

In 2018, the freight railroads, on average, moved one ton of freight 473 miles on one gallon of fuel. This efficiency is a 101 percent improvement compared to 1980 and a 19 percent improvement from 2000.[10] As a result, the freight railroads reduced their consumption of fuel by nine billion gallons and emitted 100 million fewer tons of carbon dioxide.[11] In total, the freight railroads comprised just 2 percent of all transportation-related greenhouse gas emissions in 2017 and just 0.6 percent of total U.S. greenhouse gas emissions in 2017.[12]

The freight railroads use various technology systems to help achieve such levels of sustainability and efficiency. For example, fuel management systems are integrated into locomotives and draw on data about topography, track curvature, etc., providing the engineers with real-time instructions on how to operate the train to gain maximum fuel efficiencies that can net up to a 14 percent increase in fuel efficiency. The most advanced locomotives, Tier 4s, include hundreds of sensors that generate thousands of data points about the performance of the locomotives. That data is monitored from operations centers that alert the railroad of performance issues when necessary. These technologies reduce diesel locomotives' particulate and nitrogen oxide emissions by as much as 90 percent and 80 percent, respectively.[13]

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[4] U.S. DOT, National Freight Strategic Plan, Draft for Public Comment, p. 15.

[5] The seven Class railroads include Burlington Northern Santa Fe Railway (BNSF); Union Pacific Railroad (UP); Norfolk Southern Railway (NS); CSX Transportation; Canadian National Railway (CN); Canadian Pacific Railway (CP); and Kansas City Southern (KCS).

[6] Association of American Railroads https://www.aar.org/railroad-101/.

[7] American Short Line and Regional Railroad Association https://www.aslrra.org/web/About/About/web/About/About.aspx?hkey=ffdbe611-bc49-4db1-902b-1ac672226682.

[8] American Short Line and Regional Railroad Association https://www.aslrra.org/web/About/Industry_Facts/web/About/Industry_Facts.aspx?hkey=bd7c0cd1-4a93-4230-a0c2-c03fab0135e2.

[9] American Short Line and Regional Railroad Association https://www.aslrra.org/web/About/About/web/About/About.aspx?hkey=ffdbe611-bc49-4db1-902b-1ac672226682.

[10] Association of American Railroads, Freight Railroads Help Reduce Greenhouse Gas Emissions, April 2019, Available at https://www.aar.org/wp-content/uploads/2018/07/AAR-Railroads-Greenhouse-Gas-Emissions.pdf.

[11] Id.

[12] U.S. Environmental Protection Agency (2019, April). Inventory of U.S. Greenhouse Gas Emissions and Sinks. Publication No. EPA 430–R–19–001. Accessible at: https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf, page 38.

[13] Association of American Railroads, Putting Technology to Work, How Freight Rail Delivers the 21st Century, Available at https://www.aar.org/wp-content/uploads/2018/05/RailxTech-AAR-White-Paper-Final-Web.pdf Page 6.

The industry is also pursuing initiatives to reduce emissions in freight rail yards. This includes technologies that turn off locomotives that have idled for too long or automatically restart it if temperatures are low. Small diesel engines also may be used to keep the main locomotive engine warm when it is powered down to prevent freezing. These technologies reduce fuel that is wasted while locomotives idle.[14]

Federal Funding Opportunities

The short line and regional railroads, and any rail carrier (including Class Is) in partnership with at least one state entity, public agency, and/or local government, are eligible for grants under the FRA's Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant program.[15] These discretionary grants fund projects that improve the safety, efficiency, or reliability of freight (and passenger) rail transportation systems. Activities eligible for CRISI funds include capital projects that improve short line and regional railroad infrastructure; highway-rail grade crossing improvements projects; and rail line relocation and improvement projects, among others. The maximum Federal share of total project costs under the program is 80 percent. The Fixing America's Surface Transportation Act (FAST Act) (P.L. 114–94) authorized CRISI at $255 million in Fiscal Year 2019 and $330 million in Fiscal Year 2020. In addition, the Short Line Tax credit, known as 45G, allows a credit of 50 cents for each dollar short line railroads invest in track and bridge improvements, up to $3,500 per mile. The credit, first enacted in 2005, expired in December 2017.

The Railroad Rehabilitation and Improvement Financing (RRIF) program offers long-term, low-interest loans for improving rail infrastructure. Eligible recipients include railroads, state and local governments, government-sponsored corporations, and joint ventures that include at least one railroad. RRIF-eligible projects include the following: acquiring, improving, and rehabilitating track, bridges, rail yards, buildings, and shops; preconstruction activities; positive train control (PTC); transit-oriented development projects; and new rail or intermodal activities. Under this program, the U.S. DOT is authorized to provide direct loans and loan guarantees up to $35 billion to finance development of railroad infrastructure. To date the RRIF program has provided $6.286 billion in financing since 2002. There is currently about $30.2 billion available in loan authority under the RRIF program.[16]

TRUCKING

Freight moves by truck on more than four million miles of public roads (including 223,000 miles on the National Highway System) and 616,000 bridges. The trucking industry is made up by over 700,000 trucking companies and more than 3.5 million commercial drivers.[17]

Volume of Freight Moved by Truck

Trucks carried 11 billion tons of freight in 2017[18], and trucking accounts for approximately 72 percent of all freight tonnage by value and 66 percent by weight.[19] According to the Bureau of Transportation Statistics, long-haul freight truck traffic is projected to increase "dramatically" on the National Highway System over the next three decades, from 311 million miles per day in 2015 to 488 million miles per day by 2045.[20]

In recent years, online retail has fundamentally changed how products are purchased and distributed. According to the U.S. Census Bureau, e-commerce sales have grown from just over 4 percent of total retail sales in the first quarter of 2010 to over 11 percent of total retail sales in the third quarter of 2019.[21] From 2014 to 2018, e-commerce increased by 69 percent to $505 billion, and is expected to in-

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[14] Id at 7.

[15] 49 USC Section 24407. In addition to short line and regional railroads, states, Amtrak and other intercity rail passenger transportation provider, the Transportation Research Board, and others are eligible for CRISI.

[16] RRIF was originally established by Congress in Title V of the Railroad Revitalization and Regulatory Reform Act of 1976 and later amended in the Transportation Equity Act for the 21st Century.

[17] https://www.census.gov/library/stories/2019/06/america-keeps-on-trucking.html.

[18] BTS, Freight Facts and Figures, (https://data.transportation.gov/stories/s/Moving-Goods-in-the-United-States/bcyt-rqmu).

[19] TRIP, p.17.

[20] Bureau of Transportation Statistics, "Freight Transportation System Extent and Use" (https://data.transportation.gov/stories/s/Freight-Transportation-System-Extent-Use/r3vy-npqd).

[21] U.S. Census Bureau, Quarterly Retail E-Commerce Sales, 3rd Quarter 2019 (https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf).

crease another 39 percent by 2022, to $706 billion.[22] As a result of this trend, the demand for freight movements by truck, and the requirement for more timely and efficient deliveries, have grown significantly. This has also prompted changes to supply chains and increased the focus on last-mile delivery of freight, particularly in congested urban centers.

Environmental Impacts

Medium and heavy-duty trucks contributed 23 percent of all transportation-related greenhouse gas emissions in 2017, and 6.7 percent of total U.S. greenhouse gas emissions in 2017.[23] Greater congestion on roadways can exacerbate idling, emissions, and increase fuel use. More than two out of every five miles of America's urban interstates are congested.[24] Congestion cost the trucking industry $74.5 billion in 2017, $66.1 billion of which occurred in dense urban areas.[25] The cost of congestion for truck drivers grew by 40 percent between 2012 and 2017, compared to a 14 percent increase in congestion costs for non-commercial drivers.[26]

Federal Funding & FAST Act Freight Provisions

Federal investments in roads and bridges are funded through Federal excise taxes levied on motor fuels (gas and diesel) and on related products such as tires, which are deposited into the Highway Trust Fund (HTF). Congress has not adjusted these taxes on gas and diesel since 1993, and the purchasing power of these taxes have fallen over 40 percent in the last 25 years. Improved vehicle fuel efficiency, due to higher Corporate Average Fuel Economy standards required by law, has further eroded Federal revenues. As a result, revenues coming into the HTF have not kept pace with expenditures from authorized programs. Congress has had to transfer $144 billion from the General Fund and other funds to keep the HTF solvent since 2008. The Congressional Budget Office (CBO) estimates that over the next 10 years, the HTF will fall $171 billion short based on continuing currently-authorized highway, transit, and safety program levels. An additional $5 billion is necessary to ensure that there is a prudent balance in the HTF, which brings the shortfall to $176 billion. This does not include any higher investment levels to meet growing surface transportation needs.

According to U.S. DOT's *Conditions & Performance Report*, there is a $836 billion backlog of unmet capital investment needs for highways and bridges[27]. One in three interstate U.S. bridges have repair needs, and over 47,000 of the nation's bridges are structurally deficient.[28] Nearly one out of every five miles of highway pavement is in poor condition nationwide.[29]

The FAST Act, the last major surface reauthorization bill enacted by Congress in 2015, included several provisions to support and invest in the movement of freight.

The FAST Act established a new formula program to fund surface transportation freight improvements and provided $6.3 billion over the five-year bill. States may use the funds for a variety of projects related to freight movement for road and bridge segments in States that are designated on the National Highway Freight Network. Up to 10 percent of the funds each year may be used for freight intermodal or freight rail projects, including projects within the boundaries of public and private freight rail and port facilities and projects that facilitate intermodal operations.

The FAST Act also created a new competitive grant program, providing $4.5 billion over the life of the bill, to assist states in funding nationally-significant highway, bridge, and freight projects. The Nationally Significant Freight and Highway Projects program (referred to as INFRA by this Administration and FASTLANE by the previous Administration) is generally aimed at large-scale and multi-jurisdic-

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[22] TRIP, "America's Rolling Warehouses: Opportunities and Challenges with the Nation's Freight Delivery System", October 2019, p 4.

[23] U.S. Environmental Protection Agency (2019, April). Inventory of U.S. Greenhouse Gas Emissions and Sinks. (https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf).

[24] ASCE Report Card, 2017.

[25] "Cost of Congestion to the Trucking Industry." *American Transportation Research Institute*, Oct. 2018. https://atri-online.org/wp-content/uploads/2018/10/ATRI-Cost-of-Congestion-to-the-Trucking-Industry-2018-Update-10-2018.pdf.

[26] Texas A&M Transportation Institute, Urban Mobility Report 2019, https://mobility.tamu.edu/umr/.

[27] U.S. DOT, 2015 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance.

[28] ARTBA Bridge Report, 2019 (https://artbabridgereport.org/).

[29] U.S. DOT, 2015 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance.

tional projects that cannot be funded with highway funding apportioned to the states. At least 25 percent of the funding is reserved for projects in rural areas, and 10 percent of the funding are reserved for smaller projects (project costs of less than $100 million). Up to $500 million over the life of the FAST Act may be used to fund freight rail or intermodal projects if the projects will significantly improve freight movements on the National Highway Freight Network.

The FAST Act modified the National Highway Freight Network established by the Moving Ahead for Progress in the 21st Century Act (MAP–21) (P.L. 112–141) to specify that the core portion of the network will be comprised of a 41,518-mile highway network previously identified by the U.S. Department of Transportation. The FAST Act allowed States and metropolitan planning organizations to add to the network by designating urban and rural freight corridors. The FAST Act also encouraged each State to establish a freight advisory committee and required each State to develop a comprehensive freight plan, which can be done separately or incorporated into the State's transportation improvement plan (STIP).

In addition, the FAST Act established goals for a national multimodal freight policy and directed the Secretary to develop a National Multimodal Freight Network. U.S. DOT issued an Interim Network, published in the Federal Register, on June 6, 2016, and re-opened the comment period through February 22, 2018, in a notice published on October 25, 2017, but has not finalized the Network.

U.S. DOT was also required to develop a national freight strategic plan to identify bottlenecks on the multimodal freight network, including the cost to address each bottleneck and strategies to improve intermodal connectivity. U.S. DOT issued a draft plan for comment in December 2015.[30] The Strategic Plan has not yet been finalized. The draft plan identified several key trends and challenges facing the U.S. freight transportation system, including:

- High expected growth in freight traffic over the next three decades
- Underinvestment in the freight transportation system
- Difficulty of planning and implementing freight projects under current Federal programs
- Safety and security concerns with freight movement and facilities
- Impacts on our system of increasing international trade
- New technologies are revolutionizing freight movements

WITNESS LIST

- Ms. Erin Aleman, Executive Director, Chicago Metropolitan Agency for Planning, *on behalf of the Coalition for America's Gateways and Trade Corridors*
- Mr. Chuck Baker, President, American Short Line and Regional Railroad Association
- Ms. Anne Goodchild, Ph.D., Founding Director, Supply Chain Transportation and Logistics Center, University of Washington
- Mr. Ian Jefferies, President & CEO, Association of American Railroads
- Mr. Jason Mathers, Director, Vehicles & Freight Strategy, Environmental Defense Fund
- Mr. Jim Tymon, Executive Director, American Association of State Highway and Transportation Officials

[30] https://www.transportation.gov/sites/dot.gov/files/docs/DRAFT__NFSP__for__Public__Comment__508__10%2015%2015%20v1.pdf

WHERE'S MY STUFF? EXAMINING THE ECONOMIC, ENVIRONMENTAL, AND SOCIETAL IMPACTS OF FREIGHT TRANSPORTATION

THURSDAY, DECEMBER 5, 2019

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON HIGHWAYS AND TRANSIT, JOINT WITH
THESUBCOMMITTEE ON RAILROADS, PIPELINES, AND
HAZARDOUS MATERIALS,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The subcommittees met, pursuant to notice, at 10:02 a.m. in room 2167, Rayburn House Office Building, Hon. Eleanor Holmes Norton (Chairwoman of the Subcommittee on Highways and Transit) presiding.

Ms. NORTON. This is an unusual hearing because we are combining two subcommittees, and I think that says a great deal about the importance of this hearing today. So I want to welcome all of our guests, and all of you to a topic that has an effect on the daily lives of all Americans. Yet, as it turns out, few think about this subject: freight transportation. Goods appear magically. Nobody wants to think about how they got there and what it takes.

I want to thank Chairman Lipinski, my counterpart on the Subcommittee on Railroads, Pipelines, and Hazardous Materials, for joining with me to hold this joint hearing.

Facilitating commerce and goods movement is a fundamental role the Federal Government is supposed to do, and it is one of the essential responsibilities of this committee.

Remember, we are preparing for a surface transportation reauthorization in 2020. This hearing will help the committee understand the improvements that Congress can help make to facilitate and ensure our infrastructure is able to handle freight transportation needs.

And those needs are growing very rapidly. They are not only growing, they are changing. The well-established supply chains are now being challenged and reimagined as the rise of e-commerce—we didn't even talk about e-commerce 4 years ago, when the last transportation bill was passed.

Since then we have had the rise of e-commerce, and that has forced a fundamental shift. Consumers now expect that anything can be delivered to their doorstep in a few days, sometimes a few hours. This amazing leap, in only the 4 years since we had our last reauthorization, comes at a cost. Without appropriate planning for last-mile infrastructure, we run the risk of not only congestion,

which is clearly a major problem that we have discussed in this committee, but total gridlock in urban areas, where 80 percent of the American people now live.

We will also hear testimony that freight is a significant and growing source of greenhouse gas emissions. The freight sector will emit 535 million metric tons of carbon dioxide emissions in just 1 year, 2020, a figure that is expected to grow annually unless we take some very serious steps to reverse that trend.

I am committed to looking at a range of solutions under the purview of this committee to move trucking towards zero emissions. It is already too late. That is not a goal that is too steep to make.

We will also hear on a topic that I have long championed: strong support for intermodal and multimodal investments.

We understand, while Federal programs are currently and have been stovepiped since the beginning of this committee—and that is because of the unique funding streams for different modes. But we certainly can do more to provide flexible ways for our State and local partners to invest in their most pressing freight supply chain needs, regardless of mode, and to support seamless transitions between modes—nothing could be more important than not losing time going from one mode of transportation to another.

In the last surface transportation bill, Congress laid the foundation for policies and resources to address the needs of our freight network. Today, as needs are rapidly evolving, we must not be constrained by the transportation network we have. This is the transportation network we have had since the very beginning. But rather, we have to explore and evaluate policies that will develop the network we need for the future. This hearing is the first step to support the committee in doing that work.

[Ms. Norton's prepared statement follows:]

Prepared Statement of Hon. Eleanor Holmes Norton, a Delegate in Congress from the District of Columbia, and Chairwoman, Subcommittee on Highways and Transit

Welcome to this hearing on a topic that impacts the daily lives of all Americans, yet that few think about—freight transportation. Thank you to Chairman Lipinski, my counterpart on the Railroads Subcommittee, for holding this joint hearing.

Facilitating commerce and goods movements is a fundamental role of the Federal Government, and one of the essential responsibilities of this Committee. As we prepare our surface transportation reauthorization bill, this hearing will help the Committee understand the necessary improvements that Congress can help facilitate to ensure our infrastructure is able to handle freight transportation needs.

Those needs are growing and changing. As we will hear from Dr. Goodchild's testimony, well established supply chains are now being challenged and reimagined as the rise in e-commerce has forced a fundamental shift. Consumers now expect that anything can be delivered to their doorstep in days, or sometimes hours. This amazing leap in convenience, however, comes at a cost. Without appropriate planning for last mile infrastructure, we run the risk of not just congestion but total gridlock in urban areas, where 80 percent of Americans live.

We will also hear from Mr. Mathers' testimony that freight is a significant and growing source of greenhouse gas emissions. In the U.S., the freight sector will emit 535 million metric tons of carbon dioxide emissions in 2020, a figure that is expected to grow annually unless we take some serious steps to reverse the trend. I am committed to looking at a range of solutions under the purview of this Committee to move trucking toward zero emissions.

We will also hear from Ms. Aleman on a topic that I have long championed—strong support for intermodal and multimodal investments. While I understand why our Federal programs are currently stovepiped, because of unique funding streams

for different modes, we certainly can do more to provide flexible ways for our State and local partners to invest in their most pressing freight supply chain needs, regardless of mode, and to support seamless transitions between modes.

In the last surface transportation bill, Congress laid the foundation for policies and resources to address the needs of our freight network. Today, as needs are rapidly evolving, we should not be constrained by the transportation network we have, but rather we should explore and evaluate policies that will develop the network we need for the future.

This hearing is the first step to support the Committee in doing that. I thank our witnesses for joining us and to educate us in this important charge.

Ms. NORTON. Again, I thank our witnesses, and I ask unanimous consent that the chair be authorized to declare recesses during today's hearing.

Without objection, so ordered.

I also ask unanimous consent that Members not on the subcommittee be permitted to sit with the subcommittee at today's hearing and ask questions.

Without objection.

I will proceed now to ask our ranking member, Mr. Davis, for his opening statement.

Mr. DAVIS. I thank you, Madam Chair. And I would also like to thank Chairman DeFazio, Chairman Lipinski, and also our ranking member of the Subcommittee on Railroads, Pipelines, and Hazardous Materials, Mr. Crawford, for having this joint hearing today. And it is a great opportunity to welcome all of our witnesses, too. I look forward to hearing your testimony.

One of the key factors to America's economic competitiveness is the ability to effectively transport goods and products from where they are made, from where they are harvested, from where they are produced or processed, and eventually to where they are sold and consumed.

The strength of our freight system in my home State of Illinois' position as the Nation's premier freight hub, relies upon a dependable system of highways, roads, bridges, rail tracks, and open skies. This is important because nearly every load of freight will be transported on a truck at some point in the journey, too.

Over the next coming decades, demand for freight moved by truck is expected to increase significantly. Coupled with the dynamic nature of supply chains and changing consumer demands, we must focus on not only improving existing infrastructure, but also planning for a system that will take us into the future.

I look forward to hearing from each of you about how Congress can improve freight programs and increase efficiency and productivity for our freight transportation system.

[Mr. Davis' prepared statement follows:]

Prepared Statement of Hon. Rodney Davis, a Representative in Congress from the State of Illinois, and Ranking Member, Subcommittee on Highways and Transit

One of the key factors to America's economic competitiveness is the ability to efficiently transport goods and products from where they are made, harvested, or processed to where they are ultimately sold and consumed.

The strength of our freight system, and Illinois' position as the Nation's premier freight hub, relies on a dependable system of highways, roads, and bridges. This is

important because nearly every load of freight will be transported on a truck at some point in its journey.

Over the coming decades, demand for freight moved by truck is expected to increase significantly.

Coupled with the dynamic nature of supply chains and changing consumer demands, we must focus not only on improving existing infrastructure, but also planning for the system of the future.

I look forward to hearing from our witnesses about how Congress can improve freight programs and increase the efficiency and productivity of our freight transportation system.

Mr. DAVIS. And Madam Chair, I yield back the balance of my time.

Ms. NORTON. Thank you, Mr. Davis, for your opening statement.

Remember, I said this was a joint hearing. It is a joint hearing with the Subcommittee on Railroads, Pipelines, and Hazardous Materials. I now call on the chair of that subcommittee, Mr. Lipinski, for an opening statement.

Mr. LIPINSKI. Thank you, Chairwoman Norton. As we work now on the surface transportation reauthorization bill, I always go back and think that—oftentimes people refer to this as the highway bill, sometimes the highway and transit bill. But it is important to recognize that, in the FAST Act, we clearly made it highway, transit, and rail.

And so I think it is important and very fitting that the Subcommittee on Railroads, Pipelines, and Hazardous Materials is included in this hearing. And I expect that this reauthorization that we are working on right now will not only include Amtrak reauthorization and other passenger rail provisions, but also a robust investment in freight rail infrastructure.

I am a strong proponent of this investment, because it will make freight movement faster and more efficient. This investment would have far-reaching positive impacts by increasing jobs, many of them good-paying union jobs; making businesses more competitive; and decreasing greenhouse gas emissions.

I represent part of Chicagoland, which is the freight rail hub of North America. Six Class I railroads intersect in the region. About 25 percent of all freight trains and 50 percent of intermodal trains in the Nation pass through. The congestion in this region and its impact on freight movement in our country is well known.

In addition, Will County, just south of Chicago and partially included in my district, is the largest inland port in North America, with major intermodal facilities which cause significant congestion and safety issues on Interstate 80 and surrounding roads. This year, the State of Illinois committed to raising the revenue needed to invest in a nationally critical I–80 corridor.

It is time for the Federal Government to step up on this project and others like it across the country, and this reauthorization is the time to do it. As Ms. Aleman mentions in her testimony, the CREATE rail modernization program in Chicagoland, which has been ongoing for about 15 years, is a unique $4.6 billion public-private partnership designed to address the freight and passenger rail congestion, and to ease congestion on roads crossing rail lines. Through the years CREATE has been funded through Federal, State, local, and private sources.

I have long been a champion of this program. I am able to earmark money to it as one of the 25 projects of national and regional significance in SAFETEA–LU. This is how megaprojects were funded in SAFETEA–LU, and I have no problem talking about earmarks.

The FAST Act fund for megaprojects comes through Infrastructure for Rebuilding America, or INFRA grants, which are specifically for freight movement projects. INFRA grants have a $500 million aggregate cap for port, rail, and intermodal projects. This was a hard-fought compromise. The original proposal would have excluded multimodal projects altogether. This would have been a major mistake, because these projects clearly are critical to improving the movement of freight in our country.

In its upcoming reauthorization, the aggregate cap needs to be eliminated or greatly raised. We also need to talk about the structure of the program through which the money for megaprojects is going to be disbursed. I do not believe we should continue to hand over the money to do this to any Presidential administration, not just this one. I don't think we should be handing it over for these decisions to be made over there.

One thing I hope we can all agree upon, though, is that we need a robust level of funding for megaprojects which are critical to freight movement in our country and other projects critical to transportation in the country that, really, cannot be addressed by the States alone.

Climate change is one of the most pressing challenges facing us today, and there is an urgent need for bipartisan solutions. The U.S. Environmental Protection Agency reports that the transportation sector is the largest emitter, by sector, of greenhouse gases, with 29 percent of the United States greenhouse gases in 2017 emitted by the transportation sector. One topic that I would like to hear about from our witnesses today is how we can mitigate the impact of freight movement on climate change.

Finally, we need to permanently authorize the 45G tax credit to give the short line rail industry the investment certainty they need. This tax credit has been expired since the end of 2017, and it is time we take care of this issue once and for all.

I look forward to hearing from our witnesses today on how we can make the U.S. freight network more robust, multimodal, and climate friendly.

[Mr. Lipinski's prepared statement follows:]

Prepared Statement of Hon. Daniel Lipinski, a Representative in Congress from the State of Illinois, and Chairman, Subcommittee on Railroads, Pipelines, and Hazardous Materials

Good morning. Today's joint hearing continues a series of hearings that the Rail Subcommittee has been conducting as we work on the surface transportation reauthorization. Our subcommittee is playing a significant role in the reauthorization because a rail title will once again be included in this bill as it was in the FAST Act. I expect this title to not only include Amtrak reauthorization and other passenger rail provisions, but also a robust investment in freight rail infrastructure. I am a strong proponent of this investment because it will make freight movement faster and more efficient. This investment would have far-reaching, positive impacts by increasing jobs—many of them good-paying union jobs, making our businesses more competitive, and decreasing greenhouse gas emissions.

I represent part of Chicagoland which is the freight rail hub of North America. Six Class I railroads intersect in the region and about 25 percent of all freight trains and 50 percent of all intermodal trains in the nation pass through. In addition, Will County, just south of Chicago and partially included in my district, is the largest inland port in North America with major intermodal facilities which cause significant congestion and safety issues on Interstate 80 and surrounding roads. This year the State of Illinois committed to raising the revenue needed to invest in the nationally-critical I–80 corridor; it's time for the federal government to step up on this project and others like it across the country and this reauthorization is the time to do it.

As Ms. Aleman mentions in her testimony, the CREATE rail modernization program in Chicagoland, which has been ongoing for about 15 years, is a unique $4.6 billion Public-Private Partnership (PPP) designed to reduce delays for freight and passenger trains and ease congestion on roads crossing rail lines. Through the years, CREATE has been funded through federal, state, local, and private sources. I have long been a champion of this program since I was able to earmark money to it as one of 25 Projects of National and Regional Significance Program. This was how megaprojects were funded in SAFETEA–LU.

The FAST Act funds for megaprojects come through Infrastructure For Rebuilding America or INFRA, grants, which are specifically for freight movement projects.

INFRA grants have a $500 million aggregate cap for port, rail, and intermodal projects. This was a hard fought compromise as the original proposal would have excluded multimodal projects altogether. That would have been a major mistake because these projects clearly are critical in improving the movement of freight. In this upcoming reauthorization, the aggregate cap needs to be eliminated or greatly raised. We also need to talk about the structure of the program through which the money for megaprojects is going to be disbursed. I don't believe we should continue to hand the money over to this or any presidential administration to make these decisions. But one thing I hope we all can agree upon is that we need a robust level of funding for megaprojects.

Climate change is one of the most pressing challenges facing us today and there is an urgent need for bipartisan solutions. The U.S. Environmental Protection Agency reports that the transportation sector is the largest emitter by sector of greenhouse gasses with 29 percent of the United States greenhouse gasses in 2017 emitted by the transportation sector. One topic I would like to hear about from our witnesses today is how we can mitigate the impact of freight movement on climate change.

Finally, we need to permanently authorize the 45G tax credit to give the short line rail industry the investment certainty they need. This tax credit has been expired since the end of 2017 and it is time we take care of this issue once and for all.

I look forward to hearing from our witnesses today on how we can make the US's freight network more robust, multi-modal, and climate friendly. Thank you.

Mr. LIPINSKI. Thank you, and I yield back.

Ms. NORTON. Thank you. Thank you, Mr. Lipinski.

I want to ask the ranking member of the Subcommittee on Railroads, Pipelines, and Hazardous Materials, Mr. Crawford, for his opening statement.

Mr. CRAWFORD. Thank you. I thank the chair for recognizing me.

Modern freight network means a strong, secure America. Farmers and businesses across my State—indeed, across the country—depend on our Nation's freight railroads to safely transport their goods throughout the country and the world.

Important to Arkansas are short line railroads, who most often provide first- and last-mile service for farmers, manufacturers, and other industries. I am proud to support H.R. 510, the BRACE Act, which would permanently extend the tax credit for short line railroad track maintenance, thereby increasing private investment in important rail transportation infrastructure.

As total freight demand grows, the critical investments made by the railroads in both their people and in their infrastructure help ensure a safe and efficient transport system for our goods. This in-

vestment helps spur economic activity, drive innovation, and make operations safer and more efficient.

In turn, the rail network can handle increased freight demand and help relieve congestion on our roads. I look forward to hearing about freight programs in the FAST Act and how Congress can improve the efficient flow of goods.

[Mr. Crawford's prepared statement follows:]

Prepared Statement of Hon. Eric A. "Rick" Crawford, a Representative in Congress from the State of Arkansas, and Ranking Member, Subcommittee on Railroads, Pipelines, and Hazardous Materials

A modern freight network means a strong, secure America.

Farmers and businesses across my state depend on our Nation's freight railroads to safely transport their goods throughout the country and the world.

Important to Arkansas are our short line railroads, who most often provide first and last mile service for farmers, manufacturers, and other industries. I am proud to support H.R. 510, the BRACE Act, which would permanently extend the tax credit for short line railroad track maintenance, thereby increasing private investment in important rail transportation infrastructure.

As total freight demand grows, the critical investments made by the railroads—in both their people and in their infrastructure—help ensure a safe and efficient transport system for our goods. This investment helps spur economic activity, drive innovation, and make operations safer and more efficient. In turn, the rail network can handle increased freight demand and help relieve congestion on our roads.

I look forward to hearing about freight programs in the FAST Act and how Congress can improve the efficient flow of goods.

Mr. CRAWFORD. Thank you to all of our witnesses for being here today, and I yield back the balance of my time.

Ms. NORTON. Thank you, Mr. Crawford. I would like to ask the chairman of the full committee, Mr. DeFazio, if he has an opening statement.

Mr. DEFAZIO. Thank you, Madam Chair. Yes, I do have a brief opening statement. I want to thank both the chairs and ranking members for holding this important hearing.

We just had Black Friday, Cyber Monday, and Americans think, just one click, and the goods magically appear. But they don't realize the complexity of the network upon which they are dependent for those goods to appear at the doorstep.

In addition to those sorts of issues, we obviously have the supply chain for industry. Our national freight system is crucial to connecting farmers' produce with kitchen tables, bringing logs out of the mountains to the sawmills in my State. The U.S. freight transportation network is critical to the economy of this Nation: 17.7 billion tons of freight valued at $16.8 trillion every year.

But we have challenges ahead of us. By 2040 we expect volumes to grow by 40 percent. How are we going to meet those demands? Our existing infrastructure is at capacity, nearing the end of—or, in many cases, has already passed—its useful life, but still limping along.

And how are we going to deal with this in the future? How are we going to reduce the environmental burden of the freight industry, both in terms of pollution in urban areas, and also in terms of the carbon that it contributes to climate change?

Medium and heavy-duty trucks contributed 23 percent of all transportation-related greenhouse gas emissions in 2017. And I

hope to hear today ideas about how we are going to reduce that burden.

The freight railroads have been working to deploy technologies. They have been upgrading their fleets, reducing idling and fuel consumption, and they are, obviously, a more efficient per-gallon, per-freight-mile deliverer of goods. And so they have done quite a bit. Between 2000 and 2018, the freight railroads consumed 9 billion fewer gallons of fuel and emitted 100 million fewer tons of carbon dioxide, but can we move beyond that? I think we need to.

As we will hear in testimony today, a significant portion of freight growth and a disproportionate share of the cost of freight movements come from the last mile. We have been reading some articles about congestion in our urban areas. It is extraordinary, because of this delivery adding new burdens to an already overburdened system.

Normally, these areas were not considered integral to freight movement, but they have become so. So we are going to have to figure out how we are going to deal with that—again, the pollution, the carbon, and so forth.

In the last reauthorization bill was the first time, in the FAST Act, really, that we established a dedicated funding source for freight. As important as it is, it has been neglected, in terms of our investment, as has the whole system been neglected by our levels of investment. And I am trying and hoping that we will do much better in our reauthorization.

The DOT implements the INFRA program, Nationally Significant Freight and Highway Projects program. But basically, the money is insufficient, and there is a huge line of very meritorious projects waiting for funding. So, we are going to have to both tighten up the criteria for grants that are coming out of DOT, but also we are going to need to put more money into those programs.

[Mr. DeFazio's prepared statement follows:]

Prepared Statement of Hon. Peter A. DeFazio, a Representative in Congress from the State of Oregon, and Chairman, Committee on Transportation and Infrastructure

Thank you for holding this joint Subcommittee hearing to consider how our trucking and freight rail transportation systems are growing and changing, and how the recent surge in goods movement is impacting transportation investment needs.

This hearing is timely, with consumers across the country preparing for the holiday season. Whether they realize it or not, shoppers who took advantage of Black Friday and Cyber Monday deals are relying on a vast and complex freight network to provide and deliver their purchases.

Our national freight system is crucial to our lives every day of the year, providing vital support to a functioning supply chain, transporting raw materials to factories and finished products to market, and connecting farmers' produce with kitchen tables. Today, the U.S. freight transportation system already moves 17.7 billion tons of freight, valued at $16.8 trillion, every year. By 2040, freight volumes are expected to grow by 42 percent.

We need to be proactive in preparing to meet these growing demands on existing infrastructure, much of which is at capacity and nearing the end of—or past—its useful life. We also need to actively work to reduce the environmental impacts of freight transportation.

Today, more than two out of every five miles of America's urban interstates are already congested, imposing costs on the trucking industry and non-commercial drivers, driving up fuel usage, and contributing significantly to greenhouse gas

emissions. Medium and heavy-duty trucks contributed 23 percent of all transportation-related greenhouse gas emissions in 2017.

Freight railroads have been deploying various technologies and upgrading fleets to reduce idling and fuel consumption. As a result of these efforts, between 2000 and 2018, the freight railroads consumed 9 billion fewer gallons of fuel and emitted 100 million fewer tons of carbon dioxide.

As we will hear in testimony today, a significant portion of freight growth—and a disproportionate share of the cost of freight movements—comes from the last mile of deliveries. As Americans do more of their shopping online—and expect goods to show up the day after they click a button or sooner, these new patterns rely on the use of infrastructure not typically considered as integral to freight movement.

Recent press accounts have documented that in already heavily congested cities and urban areas, there is a cost to this new convenience in the form of gridlock, the degradation of safety, and pollution. We need to figure out how best to balance the benefits of convenience with the numerous costs.

In the last reauthorization bill, Congress attempted to support goods movement by establishing formula and competitive grant programs to fund freight improvements. Today we will hear in witness testimony a call for greater transparency in the selection process in discretionary grant programs administered by the U.S. Department of Transportation. The Nationally Significant Freight and Highway Projects Program (known by the Administration as INFRA), created by Congress in the FAST Act, has proven to be dramatically oversubscribed. This points to a significant need for greater funding to be made available for freight projects. It also underscores that Congress needs to enact tighter rules around grant allocations to ensure the most worthy projects are funded, which I intend to look at in reauthorization.

I look forward to hearing from our witnesses today and learning how Congress can help address current and future freight needs in a surface transportation.

Mr. DEFAZIO. So with that, Madam Chair, I look forward to hearing from the witnesses, and thank you for holding the hearing.

Ms. NORTON. Thank you, Mr. DeFazio. I would now like to welcome our witnesses, and I am going to go first to Erin Aleman. She is the executive director of the Chicago Metropolitan Agency for Planning. She is here on behalf of that agency and the Coalition for America's Gateways and Trade Corridors.

Ms. Aleman?

TESTIMONY OF ERIN ALEMAN, EXECUTIVE DIRECTOR, CHICAGO METROPOLITAN AGENCY FOR PLANNING, AND BOARD MEMBER, COALITION FOR AMERICA'S GATEWAYS AND TRADE CORRIDORS; CHUCK BAKER, PRESIDENT, AMERICAN SHORT LINE AND REGIONAL RAILROAD ASSOCIATION; ANNE GOODCHILD, PH.D., FOUNDING DIRECTOR, SUPPLY CHAIN TRANSPORTATION AND LOGISTICS CENTER, UNIVERSITY OF WASHINGTON; IAN J. JEFFERIES, PRESIDENT AND CHIEF EXECUTIVE OFFICER, ASSOCIATION OF AMERICAN RAILROADS; JASON MATHERS, DIRECTOR, VEHICLE AND FREIGHT STRATEGY, ENVIRONMENTAL DEFENSE FUND; AND JIM TYMON, EXECUTIVE DIRECTOR, AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

Ms. ALEMAN. Thank you this morning for the opportunity to testify. I am here on both behalf of the Chicago Metropolitan Agency for Planning, and also on behalf of the Coalition for America's Gateways and Trade Corridors, a coalition of public and private partners who are dedicated to investing in America's multimodal freight infrastructure.

Thank you for your leadership, Chair Norton, Chairman Lipinski, Ranking Member Davis, and Ranking Member Crawford, and

members of the subcommittees for the opportunity to share my views today.

Investment in multimodal freight infrastructure is critical to this Nation's economy. Our Nation's ability to move goods safely, reliably, and responsibly to consumer demands will keep American businesses competitive in a global marketplace. Chronic underinvestment in our Nation's transportation system has resulted in companies spending $27 billion annually in expenses due to freight congestion.

Ms. NORTON. Speak up a little more, please. Would you speak up a little?

Mr. DEFAZIO. Just pull it closer.

Ms. ALEMAN. I am sorry, a little——

Mr. DEFAZIO. There you go.

Ms. ALEMAN. Sorry. With the FAST Act reauthorization around the corner, I am here today to ask you to include a robust freight program.

I applaud members of this committee for prioritizing freight infrastructure in the FAST Act. The program sparked an important dialogue, and brought into focus the incredible magnitude of freight needs across our country.

I would like to highlight how the FAST Act supported the Chicago region, changing how we pursue competitive funds, leveraging additional resources, and ensuring the projects that we put forth provide the greatest return on investment.

Prior to CMAP, I was on the team at the Illinois Department of Transportation, working closely with CREATE partners as we developed our INFRA application for the 75th Street Corridor Improvement Project. By untangling one of the worst bottlenecks in the Nation, $3.8 billion of economic benefits will be seen upon completion. Because the economic benefit was so great, and the need was so significant, we came together to prioritize this project amongst individual needs.

Together, the CREATE partners, both public and private, matched more than 2½ times the Federal INFRA ask. While more funding is necessary to complete the project, this project and investment will improve the reliability of 200 freight, 30 passenger, and 10 Amtrak trains daily.

Many of the largest and most complex freight improvements across our country cross State boundaries, and occur where multiple modes come together. These projects require a partnership at the Federal level to untangle choke points that burden our community and slow commerce.

Our region has successfully shown that prioritizing multimodal freight investment leads to success. For example, whereas it once took 40 hours for freight trains to get through Chicago, it now takes 25 to 30 hours. But more improvement is necessary. While we have been able to address some of these problems on our own, the fact is that States cannot and should not shoulder the burden of nationally significant freight movement alone.

Freight isn't confined to a single community or State. More than 77 percent of U.S. freight crosses State lines. I have often said that the public doesn't care who has jurisdiction over the roads they are driving on. The same can be said about our freight network. Busi-

nesses and consumers simply want a reliable system that gets their goods to market, or delivers their packages to their houses on time.

To address our urgent freight needs and build on successes, the coalition respectfully submits four recommendations.

First, a national strategy that guides long-term planning. An office of multimodal freight should be established within U.S. DOT's Office of the Secretary, emphasizing nationally significant projects.

Second, dedicated, sustainable, and flexible funding. In 2018 the INFRA program received $12 of unique requests for every $1 available. Given this level of oversubscription, we request $12 billion be invested annually in multimodal freight throughout the competitive programs. Congress should also eliminate caps on nonhighway spending.

Third, projects should be selected through a performance-based program and framework that allows us to prioritize projects that improve national freight efficiency. Oversight and transparency in the decisionmaking process is critical to the program's integrity.

And finally, funding should leverage private participation and support a variety of financing options.

The FAST Act's programs are increasing the safety, efficiency, and reliability of how we move our goods. Consumer demands have shifted dramatically over the years, and the planner in me knows that more change is on the horizon. We must be proactive about investing and prioritizing our critical freight infrastructure needs.

On behalf of the coalition and CMAP, I thank the subcommittees for their time and attention to this critically important topic.

[Ms. Aleman's prepared statement follows:]

Prepared Statement of Erin Aleman, Executive Director, Chicago Metropolitan Agency for Planning, and Board Member, Coalition for America's Gateways and Trade Corridors

I appreciate the opportunity to testify before two distinguished panels and thank the Subcommittee on Highways and Transit and the Subcommittee on Railroads, Pipelines, and Hazardous Materials for joining together on this important subject—after all, efficient freight movement requires multiple modes working together seamlessly and reliably. Improving the freight system to meet our growing freight needs is critical to our nation's economic competitiveness. Thank you for your leadership, Chair Norton, Chairman Lipinski, Ranking Member Davis, and Ranking Member Crawford.

I am representing both the Chicago Metropolitan Agency for Planning (CMAP) and the Coalition for America's Gateways and Trade Corridors (CAGTC), a diverse coalition of more than 60 public and private organizations dedicated to increasing federal investment in America's multimodal freight infrastructure.

CMAP is the federally-designated Metropolitan Planning Organization for the northeastern Illinois counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. We represent a region of nearly 8.5 million people, working closely with the region's 284 communities to address transportation, housing, economic development, open space, environment, and quality of life issues. Our most recent plan, *ON TO 2050*, calls for bold steps toward a well-integrated, multimodal transportation system that seamlessly moves people and goods within and through metropolitan Chicago. To strengthen our economic competitiveness while improving quality of life, freight recommendations in the plan emphasize strategic investment in the freight network, improving local and regional truck travel, and mitigating the negative impacts of freight—congestion, safety, and air quality—on adjacent communities.

The CMAP region is North America's freight hub. Six of the seven Class I railroads operate in our region, with one-fourth of the nation's freight rail traffic and nearly half of all intermodal trains passing through Chicago. Approximately 18 million twenty-foot equivalent units (TEUs) of cargo moved through the region's twenty

rail-truck intermodal facilities in 2018, an increase of 52 percent since 2009.[1] In short, our region moves more freight than the busiest seaports in the country.

As national freight demands grow, so too does the stress on our regional infrastructure. In 2003, the nationally and regionally significant Chicago Region Environmental and Transportation Efficiency (CREATE) program was formed. This innovative partnership between the U.S. Department of Transportation, the State of Illinois, Cook County, the City of Chicago, Metra, Amtrak, and U.S. freight railroads is a 70-project, $4.6 billion plan to improve the efficiency and effectiveness of freight, commuter, and intercity passenger rail and to reduce highway delay in the Chicago region.

Chicago has been a national rail hub for almost 150 years. Every day nearly 500 freight trains and more than 760 passenger trains operate in the region. But the rail lines, built over a century ago, were not built for the volumes nor the types of freight being carried, turning Chicago into the nation's largest freight rail chokepoint. Rail congestion, resulting in delays and unreliable transit times, can be exacerbated by increased demand and severe weather. In 2014, for example, congestion in Chicago caused lingering service disruptions for farmers across the Upper Midwest. Revenues decreased due to increased transportation and storage costs and losses caused by spoilage.[2] CREATE aims to address such bottlenecks to increase the reliability and efficiency of the region's rail infrastructure. More than $1.6 billion has been spent or committed, with an estimated $3 billion needed to complete the full program. To date, federal sources have provided 40 percent of spent and committed funds.

CREATE includes 25 rail grade separation projects to reduce freight and motorist delay and improve safety. Although only seven of the separations have been completed thus far due to insufficient funding, the success of CREATE cannot be underestimated. Whereas it once took freight trains more than 40 hours to pass through the Chicago region, due to implementation of CREATE, this is down to 25–30 hours. With continued funding, delays can be further reduced.

Our nation's ability to move goods safely, reliably, and expeditiously keeps U.S. businesses competitive in the global marketplace and supports a higher standard of living for all. In 2015, this Committee created the first-ever dedicated freight program in the Fixing America's Surface Transportation (FAST) Act. The program began an important dialogue and has taught us much in the intervening years since passage. Most importantly, it brought into focus the incredible magnitude of freight needs across the country, setting the stage for the 2020 reauthorization. I urge you to make a robust freight program the hallmark of this upcoming reauthorization.

All infrastructure investment has well-documented economic benefits, but freight infrastructure investment is inextricably linked to the long-term health of our national economy. The multimodal freight network directly supports 44 million jobs and impacts every American's quality of life.[3] Unfortunately, chronic underinvestment in our national transportation system has resulted in a "dysfunction tax." U.S. companies spend around $27 billion annually in extra freight transportation expenses due to congestion,[4] and the total cost of congestion is estimated at $1 trillion annually—roughly seven percent of U.S. economic output.[5]

Population growth will present capacity challenges across our multimodal system, which currently moves 55 million tons of goods daily, worth more than $49 billion.[6] That's roughly 63 tons per person annually; meanwhile, the U.S. population is expected to increase by 70 million by 2045 to reach a total of 389 million people.[7]

But it's not just population growth that is putting stress on our systems. Consumer demands have shifted dramatically over the last decade. Notably, the rise in e-commerce and quick delivery is shifting supply chains and requiring metropolitan

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[1] Chicago Metropolitan Agency for Planning, *Chicago Intermodal Facility Lift Counts and Regional TEU Estimate*, November 2019. <https://www.cmap.illinois.gov/mobility/freight/freight-data-resources>

[2] U.S. Department of Agriculture, *Rail Service Challenges in the Upper Midwest: Implications for Agricultural Sectors—Preliminary Analysis of the 2013–2014 Situation*, January 2015. <https://www.usda.gov/oce/economics/papers/Rail__Service__Challenges__in__the__Upper__Midwest.pdf>

[3] U.S. Department of Transportation, *National Freight Strategic Plan*, October 2015. <https://www.transportation.gov/sites/dot.gov/files/docs/DRAFT__NFSP__for__Public__Comment__508__10%2015%2015%20v1. pdf>

[4] U.S. Department of Transportation, *National Freight Strategic Plan*, October 2015. <https://www.transportation.gov/sites/dot.gov/files/docs/DRAFT__NFSP__for__Public__Comment__508__10%2015%2015%20v1. pdf>

[5] Ibid.

[6] Ibid.

[7] Ibid.

areas to refocus their plans with these trends in mind. CMAP is currently undertaking a research project to better understand and respond to the impacts of growing e-commerce on the transportation system, land use, and fiscal condition of communities. We look forward to sharing the results of this project with the Committee next year.

Public investment in our nation's multimodal freight infrastructure is chronically inadequate to meet the system's demands. States and localities have attempted to increase their infrastructure funding—since 1993, 42 states have raised their own gas taxes.[8] [9] My home state of Illinois, for example, this year increased the gasoline tax by 19 cents per gallon and the diesel tax by 24 cents per gallon; both are now indexed to inflation. However, states and localities cannot, and should not, shoulder the burden of nationally-significant freight movement alone. Through the Commerce Clause of the Constitution, the Federal Government is tasked with supporting interstate commerce. More than 77 percent of U.S. freight crosses state lines, illustrating the need for a federal role in freight planning and investment.[10] At its peak, the Federal Government provided 38 percent of public infrastructure funding, but that number has fallen to just 25 percent in recent years.[11] This places a strain on communities and local governments, many of whom have already raised user fees and are struggling to determine where to find additional funds.

While Congress and infrastructure advocates have contemplated a variety of federal funding solutions for transportation infrastructure, our group has coalesced around a waybill fee dedicated to freight infrastructure improvements, such as the one proposed by Congressman Lowenthal of this Committee. A waybill fee assessed on the cost of surface transportation movements would not skew the market for services and would grow along with the demand for freight transportation. Freight infrastructure needs are significant and continue to grow; CAGTC remains committed to exploring solutions that will provide robust and dependable funding.

Many of freight infrastructure's largest, most complex, and most desperately needed improvements cross local and state boundaries and occur where multiple modes come together. These instances frequently require a partnership at the federal level to untangle chokepoints that burden our communities and slow commerce.

The FAST Act created a number of much-needed tools to address the challenges described. The Nationally Significant Freight and Highway Projects Program, or INFRA program, is a competitive grant program designed to target investments in large freight and highway projects and contains criteria written into law that focus on goods movement infrastructure. The FAST Act also authorized the Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program, which provides grants for projects that improve the safety, efficiency, and reliability of intercity passenger and freight rail systems.

According to a 2019 study by the Congressional Research Service, "discretionary grants may be more effective in providing large amounts of federal funding for very costly freight-related projects, particularly those requiring interstate cooperation."[12] Competitive grant programs such as INFRA and CRISI assist in funding large-scale infrastructure projects, which often span modes and jurisdictional borders and are difficult, if not impossible, to fund through traditional distribution methods such as formula programs.

While formula programs typically invest through a standard 80 percent federal to 20 percent non-federal match, competitive grant programs encourage states and localities to bring their best possible deal to the table, driving innovative and creative funding and financing arrangements. Through the INFRA grant program's four rounds, USDOT awarded $2,394,979,933 to projects with a strong freight component. Those monies combined with funds from various other sources to result in $11,089,207,231 in total project investments—meaning 78.4 percent of funds came from sources other than the INFRA grant program.

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[8] Institute on Taxation and Economic Policy, *How Long Has It Been Since Your State Raised its Gas Tax?*, May 2019. <https://itep.org/how-long-has-it-been-since-your-state-raised-its-gas-tax-0219/>

[9] Institute on Taxation and Economic Policy, *Most States Have Raised Gas Taxes in Recent Years*, June 2019. < https://itep.org/most-states-have-raised-gas-taxes-in-recent-years-0419/ >

[10] Tomer, Adie and Joseph Kane, Brookings and JP Morgan Chase Global Cities Initiative, *Mapping Freight: The Highly Concentrated Nature of Goods Trade in the United States*, November 2014. <https://www.brookings.edu/wp-content/uploads/2016/06/Srvy__GCIFreightNetworks__Oct24.pdf>

[11] Council on Foreign Relations, *The State of U.S. Infrastructure*, October 2017. <https://www.cfr.org/backgrounder/state-us-infrastructure>

[12] Congressional Research Service, *Freight Issues in Surface Transportation Reauthorization*, January 2019. <https://fas.org/sgp/crs/misc/R45462.pdf>

Prior to joining CMAP, I was the director of planning and programming at the Illinois Department of Transportation (IDOT), responsible for long range multimodal planning and setting priorities for spending federal funds. I was at the table when IDOT and the CREATE partners were developing the INFRA application for the recently funded 75th Street Corridor Improvement Project (CIP). Recognizing the national significance of the CREATE program, USDOT awarded the 75th Street CIP, located on the south side of the City of Chicago, $132 million through the INFRA program's FY17/18 funding round. Historically, IDOT submitted several applications for USDOT's competitive programs from across the state. What was different this time was that CREATE partners agreed to only submit one INFRA application from the region—everyone's top priority. CREATE partners leveraged the federal INFRA ask with $342 million in local funds to pay for the first portion of this project to separate several freight and passenger rail lines. While more funding is necessary to complete the project, this investment will ultimately improve the reliability and travel time for more than 200 freight trains, 30 Metra commuter trains, and 10 Amtrak trains daily. Benefits will begin to accrue upon completion of the first portion; however, $474 million represents less than half the funds needed to complete the project. Completion of the full project will result in an anticipated $3.8 billion of economic benefits.

The INFRA program's ability to leverage federal dollars is impressive; but a small federal ask, or likewise, a significant private contribution should not be the primary considerations when deciding to fund a project. Perhaps more important are project outcomes—USDOT must consider the national benefits of a project, not just the source of the matching funds. Projects should first be evaluated on their ability to meet the program's goals, based on measureable and objective criteria defined by Congress. Just because a project requires less federal investment, does not make it the most valuable investment for the nation.

Complementary to the INFRA competitive grant program is the FAST Act's freight formula program, which allows state departments of transportation to target freight system improvements, like first and last mile connectors. Some states, such as California and Illinois, have distributed the federal freight dollars through a state-level competitive program.

To make the most out of FAST Act funds, IDOT developed a transparent, performance-based, competitive program to ensure the dollars allocated provided the greatest return on investment. One of the challenges the agency had to overcome was an internal one—changing the internal conversation about transparency and performance metrics related to programming. Would we get an unwieldy number of projects if we posted the project evaluation criteria, or would we get better projects? In the end, it was the latter. Of 23 projects selected, 17 went to local agencies, and the non-federal match across the program was 35 percent. $17 million was awarded to intermodal projects that do not traditionally have access to federal funding sources.

In order to increase the flexibility afforded to state departments of transportation, we encourage Congress to eliminate the cap on non-highway projects, currently set at 10 percent of total funds, so each state can invest in its most pressing supply chain needs, regardless of mode. It should be noted, that even administered as a state-level competitive grant program, the formula program is not a replacement for INFRA, which funds nationally and regionally significant projects that frequently span multiple states and jurisdictions. As stated previously, such freight projects require a federally-administered competitive approach.

RECOMMENDATIONS

We need a strategic freight mobility program that prioritizes the current economic needs of our country while planning for generations to come. This campaign of strategic investment should expand capacity and increase efficiency, regardless of mode or political jurisdiction. Without such a campaign, U.S. productivity and global competitiveness will suffer.

To address these needs, we respectfully ask that Congress:

Develop a national strategy that guides long-term planning

We need a national "vision" and strategy to shape and guide our freight infrastructure needs. Such a strategy should have active coordination among states, regions, and localities and should endeavor to anticipate freight needs extending over multiple decades to allow for a smooth path for free-flowing freight both today and into the future.

Planning tools, such as the National Freight Strategic Plan (NFSP), the National Freight Network, and the National Multimodal Freight Program, should account for

resiliency, route redundancy, and shifting trade patterns. The NFSP would be enhanced by the inclusion of a comprehensive analysis of our system's freight infrastructure investment needs, created with high-quality data sets. Currently, planning is often frustrated by incomplete and outdated publicly available data sets. Recognizing that developing this analysis is a challenge, due to factors such as mixed-use infrastructure and intertwined public and private infrastructure, it is nevertheless a critical tool.

An office of multimodal freight should be established within the U.S. Department of Transportation's Office of the Secretary to guide freight mobility policy and programming with a particular focus on projects of national significance that aid in the movement of commerce. Because the movement of goods spans different modes of infrastructure, specialized knowledge at the federal level is essential. An office of multimodal freight will allow experts in the unique operational and economic needs of each mode to work together to make the best investments in our system. Additionally, this investment strategy should include innovative and flexible approaches to structuring federal financial assistance in a manner that encourages private sector investment.

Provide sufficient levels of funding that are dedicated, sustainable, and flexible

An investment program dedicated to multimodal freight infrastructure is necessary to ensure that public agencies can invest in their most critical goods movement needs—regardless of mode. Federal funding should incentivize and reward state and local investment and leverage the widest array of public and private financing. Funding should be based on revenue sources that are predictable, dedicated, and sustained. Because they are the primary beneficiaries of any system improvements, owners of goods should be part of the revenue user-base.

Existing programs available to freight infrastructure, like the INFRA competitive grant program, are oversubscribed. For example, in the combined FY17/18 round, the INFRA grant program saw $12 in unique requests for every $1 available. Currently funded at an average of $900 million annually, given this level of oversubscription, CAGTC calls for an annual investment of $12 billion in multimodal freight investment through a competitive grant program.

As we approach the FAST Act's reauthorization next year, we encourage Congress to not only increase the funding levels of both the freight formula program and the INFRA grant program, but to also eliminate the caps on non-highway spending under both programs. Freight does not move on highways alone—where public benefit is derived, public investment must be made. Intermodal freight is one of the fastest-growing sectors of the freight market.[13] And, it is often in the places where various modes come together that public assistance is needed to close the funding and infrastructure gaps, which result in capacity inefficiencies and bottlenecks. Examples include highway-rail grade crossings, rail spurs to access cargo, logistics or transfer facilities, tunnels and bridges for port access, border crossing capacity enhancements, and air-freight connectors.

Implement a set of merit-based criteria for funding allocation

Projects should be selected through the use of merit-based criteria that identify and prioritize projects with a demonstrable contribution to national freight efficiency. Goals should include increasing national and regional economic competitiveness, improving connectivity between freight modes, reducing congestion and bottlenecks, and improving the safety, efficiency, and reliability of the movement of freight and people. Long-term funding must be made available to ensure that, once a project is approved, funds will flow through to project completion. Funds should be available to support multi-jurisdictional and multi-state projects, regardless of mode, selected on the basis of objective measures designed to maximize and enhance system performance, while advancing related policy objectives. The U.S. Department of Transportation's decision-making process should be made transparent to ensure the integrity of the evaluation process.

Form a partnership with the private sector

Private participation in the nation's freight infrastructure is vital to system expansion. Federal funding should leverage private participation and provide transportation planners with the largest toolbox of financing options possible to move freight projects forward quickly and efficiently. We recommend that Congress consider establishing an advisory council made up of freight industry members and sys-

[13] U.S. Department of Transportation, *Beyond Traffic*, February 2015. <http://www.dot.gov/sites/dot.gov/files/docs/Draft__Beyond__Traffic__Framework.pdf >

tem users who could assist and partner with the U.S. Department of Transportation in order to optimize results from planning, coordination, and evaluation processes.

Provide oversight of existing freight programs

We recommend Congress oversee execution of the INFRA program to ensure projects are evaluated against criteria codified in law. We commend Congress' foresight in mandating that the Government Accountability Office (GAO) publish a report on the decision-making process for the first round of the INFRA grant program and encourage Congress to continue such oversight to aid decision-making transparency and adherence to Congressional intent.

The FAST Act's freight programs are increasing the safety, efficiency, and reliability of our nation's goods movement system, but they are only a beginning. On behalf of CAGTC and CMAP, I encourage you to implement these recommendations to improve the nation's competitiveness and respond to a changing economy. I thank Members of the Transportation and Infrastructure Committee for their time and attention to this critically important topic.

Ms. NORTON. Thank you, Ms. Aleman.

We go now to Chuck Baker, president of the American Short Line and Regional Railroad Association.

Mr. BAKER. Thank you, Chairman, Chairwoman, Ranking Members, and members of the subcommittees. I am Chuck Baker, and I am president of the American Short Line and Regional Railroad Association, representing the Nation's 603 small railroads.

This hearing will explore the economic, environmental, and societal impacts of freight transportation. And you have asked me to tell you where's my stuff, as it relates to the short line railroad industry.

Well, I am happy to report that short line railroads have lots of stuff. It is the right stuff. And we are here to transport America's stuff in a safe, efficient, and environmentally friendly manner. Together, short line railroads operate nearly 50,000 miles of track, or approximately 30 percent of the national rail network, and employ more than 17,000 hardworking Americans. We operate in 49 States. Short lines are often called the first mile and last mile of the Nation's railroad system.

The name "short line" can create the mistaken impression that all of these railroads are very short in length. The fact is we come in all sizes. The Peru Industrial Railroad in Illinois is 3 miles long. The Portland and Western is 516 miles long. Pan Am Railways operates 1,700 miles, and provides the majority of rail service in New England. Our common denominators are that we operate track that was not viable under the structure of the previous owners; we run lean and mean; we stay very close to our customers; we are dedicated to safety; and we hustle, scratch, and claw for every last carload of stuff we can help move.

Short lines have the right economic stuff. Short lines preserve service over track that was previously headed for abandonment. Particularly for smalltown and rural America, short line railroad service is the only connection to the national network. For the businesses and farmers in those areas, our ability to take a 25-car train 75 miles to the nearest Class I interchange is just as important as the Class I's ability to attach that block of traffic to a 100-car train and move it across the country.

Railroads are an all-American proposition. Virtually everything we buy for infrastructure improvement—the ties, the rails, the ballasts, the locomotives, the freight cars—it is made in America. So every dollar we spend is spent in America.

As those of you who represent rural areas know, it is difficult to create jobs in rural America. Short lines and the shippers we serve are a significant source of good-paying jobs in rural America.

Short line railroads lower transportation costs for our shippers, because one railcar holds the equivalent of three to four truckloads worth of stuff, and we use fuel more efficiently than trucks. Using an example from Oklahoma, moving 1 ton of freight 95 miles from Clinton to Enid via rail provides a 40-percent savings per mile versus truck. That level of savings exists across the country, and is a very meaningful number for the businesses we serve.

I will not pretend that the numbers I am talking about are a huge deal in an economy measured in the trillions. However, for those shippers we keep connected, for those communities where we create economic activity, for the employees we hire, these are meaningful numbers. It is not the biggest stuff, but it is important stuff.

Short lines have the right environmental stuff. Railroads are the most fuel-efficient way to move freight over land, three to four times more fuel-efficient than trucks. Today, a freight train can move 1 ton of freight an average of more than 470 miles on 1 gallon of diesel. The EPA has measured the sources of transportation-related greenhouse gas emissions, and rail is a big success story. Cars and light trucks account for 60 percent. Heavy trucking is 23 percent. Air travel is 9 percent. And freight rail is only 2 percent.

Highway congestion, in addition to being a soul-destroying way to spend your time, is also a significant contributor of harmful emissions. The average railcar holds the equivalent of three to four truckloads, and removing those trucks from the highway helps reduce congestion.

Finally, short lines have the right societal stuff. Rail is the safest option for moving freight by land in America. Measured on a comparable ton-mile basis, rail is approximately three to five times safer than trucking. Short lines are proud of our safety culture, and work diligently to reduce and eliminate injuries. In 2018, 265 of our short lines reported zero accidents. The average accident rate that year was a near record low of 1.84 per million train-miles. Because rail is the safest option for moving freight by land, any policies that Congress enacts that affect the balance between rail and trucking also affect public safety, and have major societal impacts.

As this committee considers a surface transportation bill, my written testimony offers specific policy recommendations that we believe will improve the economic, environmental, and societal impacts of freight transportation in America, such as supporting the CRISI grant program, improving the INFRA and State freight formula programs by making them more multimodal, maintaining the current truck size and weight limits, refraining from an unnecessary Federal law on train crew sizes, returning the Highway Trust Fund to something resembling a user-funded system, and, of course, our favorite topic, extending the short line rehabilitation tax credit. Thank you.

[Mr. Baker's prepared statement follows:]

Prepared Statement of Chuck Baker, President, American Short Line and Regional Railroad Association

Thank you Chairman DeFazio, Ranking Member Graves, Chairs Lipinski and Norton and Ranking Members Crawford and Davis, and Members of the Subcommittees for inviting me to testify as part of this important hearing. My name is Chuck Baker and I am President of the American Short Line and Regional Railroad Association (ASLRRA), the national trade association representing the nation's 603 Class II and Class III railroads (referred to here collectively as "short lines").

This hearing will explore the economic, environmental and societal impacts of freight transportation and you have asked me to tell you "where's my stuff" as it relates to the short line railroad industry. Well, I am happy to report that short line railroads have lots of stuff, it's the right stuff, and we are here to transport America's stuff in a safe, efficient, and environmentally friendly manner.

Together, short line railroads operate nearly 50,000 miles of track, or approximately 30% of the national railroad network and employ more than 17,000 hard-working Americans. We operate in 49 states and in 36 of those states we operate at least one quarter of the state's total rail network. In five states, short lines operate 100% of the state's rail network. In the states represented by the Members of the two Subcommittees holding this hearing, there are 450 short lines operating over 38,000 track miles. Short lines are often called the first mile/last mile of the nation's railroad system and handle in origination or destination one out of every five rail cars moving on the national system.

Although short lines are most often associated with small town and rural America, we also serve large urban areas and many of the nation's busiest ports, including Miami, Los Angeles and Long Beach, Hampton Roads, and New York/New Jersey. Likewise various short line railroads operate as neutral terminal switch carriers for multiple Class I railroads in Chicago, New Orleans and St. Louis. The nation's short lines are much more than a quaint name on the Monopoly Board.

The name "short line" can create the mistaken impression that all of these railroads are very short in length. The fact is we come in all sizes. The Peru Industrial Railroad in Congressmen Lipinski's and Davis's state of Illinois is three miles long. The Portland and Western in Congressman DeFazio's state of Oregon is 516 miles long. Pan Am Railways, headquartered in Massachusetts, is the nation's longest short line, operating approximately 1,700 route miles and providing the majority of rail service in New England. Our common denominators are that we operate track that was not viable under the structure of the larger national Class 1 railroads, that we run lean and mean, that we stay very close to our customers, that we are dedicated to safety, and that we hustle, fight, scratch and claw for every last carload of stuff we can help move.

SHORT LINES HAVE THE RIGHT ECONOMIC STUFF

Short line railroads preserve service and jobs over track that was headed for abandonment under previous Class I ownership. These were low density branch lines that could not generate enough profit under the cost structure of the big national carriers. Because these were marginal or money losing lines, they received little investment prior to their sale, resulting in significant deferred maintenance. To be successful, short line owners have worked hard to not only bring their tracks and bridges up to a state of good repair but to upgrade them to handle the heavier, longer trains that are becoming the national standard. To do that, short lines invest on average from 25 to 33% of their annual revenues in rehabilitating their infrastructure and this makes short line railroading one of the most capital-intensive industries in the country. To provide some dollar perspective, to upgrade one mile of typical 90-pound track up to the 115-pound rail needed to handle today's modern railcars costs more than $500,000 per mile and while short lines have been working hard to update their lines, we still need to do that across a large percentage of the 50,000-mile network.

The economic importance of this investment cannot be overstated. For large areas of the country, especially in small town and rural America, short line railroad service is the only connection to the larger national railroad network. For the businesses and farmers in those areas, our ability to take a 25-car train 75 miles to the nearest Class I interchange is just as important as the Class I's ability to attach that block of traffic to a 100-car train and move it across the country. While these shippers cannot complete the journey to their markets across the country without Class I railroad service, they cannot start or end the journey without short line service. This is especially true for much of the "merchandise" or "carload" traffic that comes from manufacturing, paper and agricultural shippers that does not typically move

in unit train quantities. We are crucial in providing those shippers access to the economic benefits of shipping by rail.

Short lines serve over 10,000 shippers in thousands of communities nationwide and we find those shippers quite willing to testify to the importance of this first mile/last mile service. I have attached at the end of my testimony a list of quotes from short line customers. We have selected a wide variety from across the country to give you a sense of the important relationship between shippers and their short lines. In general, they sound like this: "*Our serving short line railroad is truly a partner for our paper mill. The services provided, including freight haul in and out, daily switches, and rail car maintenance help us keep our mill running successfully day in and day out. It is critical to the 400 plus people employed here that our short line railroad be able to continue to operate successfully*."

The money invested by short lines also results in economic benefits beyond preserving local rail service.

Investing in better track leverages significant additional investment by railroad customers. For example, in South Dakota the improvements made by the 670-mile Rapid City, Pierre & Eastern Railroad since it began operations in 2014 have already attracted over $311 million in new facility investments by six South Dakota companies. Those facilities employ 260 workers. This result is being duplicated in the 49 states that are served by short line railroads.

Railroads are an all-American proposition. We can not take our operations or jobs overseas. Virtually everything we buy for infrastructure improvement—the ties, the steel rail, the ballast, the locomotives and the freight cars—is made in America, so every dollar we spend is spent in America.

Railroad rehabilitation is a labor-intensive effort. As small businesses, most short lines do not have the necessary in-house labor force or specialized equipment to complete major rehabilitation projects so we staff up or hire contractors and lease heavy machinery for new projects, so that new investment typically results immediately in new jobs. The FRA estimates that half of every dollar spent on short line track rehabilitation goes to pay workers.

As those of you who represent rural areas know, it is difficult to create jobs in rural America. According to the US Department of Agriculture, from its post-recession low in 2010 through 2017, rural employment grew at an average annual rate of only 0.5%, compared to 1.8% in urban areas. In urban areas, the prime-age labor participation rate was just 0.8 percentage points below its 2008 level while in rural counties the prime-age participation rate in 2017 was 2.7 percentage points below its 2008 level. Short lines and the shippers we serve are a significant source of good paying jobs in rural America. In the case of short lines themselves, these jobs also include health care benefits and a generous Railroad Retirement program.

Short line railroads lower transportation costs for their local shippers. The economics stem from the fact that one rail car holds the equivalent of three to four truckloads worth of stuff and also that railroads use fuel much more efficiently than trucks. In testimony we recently submitted to the House Ways & Means Committee in support of the short line rehabilitation 45G tax credit, we cited an example from an Oklahoma short line, Farmrail. The cost of moving a ton of freight 95 miles from Clinton to Enid, Oklahoma is $2.24 per mile on the railroad versus $3.75 per mile for comparable truck service. That level of savings can be cited with most short lines across the country and is a very meaningful number for the businesses we serve, which lets them compete effectively in both the domestic and global markets. Without a viable rail service option, some of these businesses would just disappear.

Last year the ASLRRA engaged Pricewaterhouse Coopers (PwC) to take an independent look at the 45G tax credit and the economic contributions of the short line industry. I have attached a copy of that report. Among the study's findings:

- The short line industry directly provides 17,000 jobs annually, paying labor income of $1.1 billion and adding $2.2 billion to the nation's GDP;
- Operational spending by the industry supported 33,730 indirect and induced jobs and capital spending supported another 10,240 jobs;
- Across the US economy .51% of business inputs rely on transportation services provided by short lines, amounting to 478,820 jobs, $26.1 billion in labor income and $56.2 billion in value added.

I will not pretend that the numbers I am talking about are a huge deal in an economy measured in the trillions of dollars. However, for those shippers we keep connected, for those communities where we create economic activity, for the employees we hire, these are meaningful numbers. It is not the biggest stuff but it is important stuff.

SHORT LINES HAVE THE RIGHT ENVIRONMENTAL STUFF

As my colleague at the AAR has said, railroads are the most fuel-efficient way to move freight over land—three to four times more fuel efficient than trucks. Today, a freight train can move one ton of freight an average of more than 470 miles on one gallon of diesel fuel, double the average in 1980. The EPA has measured the sources of transportation-related greenhouse gas emissions and rail is a big success story. Of the greenhouse gas emissions from transportation, cars/light trucks/motorcycles account for 60.5%, trucking is 23.1%, aircraft 9.1%, and freight rail is only 2%.

Highway congestion, in addition to being soul-crushing and quality-of-life-destroying, is a significant contributor to harmful emissions. Motor vehicles idle for hours on overcrowded roads—in total there were more than 8.8 billion hours wasted in traffic in the last year measured—that's the equivalent of a full working year from 4.4 million Americans! The average railcar holds the equivalent of three to four truckloads and removing those trucks from the highway helps reduce that congestion. The short line industry handles over 12 million carloads annually which equals about 40 million truckloads not on the highway.

Short lines are often custodians of expensive infrastructure, such as bridges and tunnels that were originally built by the much larger railroads and are reaching the end of their useful life. Rehabilitation or replacement of this legacy infrastructure can be very challenging for small companies, but the benefits are substantial. These benefits are documented through the cost benefit analysis required by the BUILD (formerly TIGER) program. As an example, a federal grant award made through the TIGER program in 2014 enabled replacement of a failing strategic short line bridge in southwestern Indiana. This investment prevented over 45 million truck miles from being added to the regional road network over a 20-year period. This saved the public over $11 million in truck traffic costs through avoided emissions, accidents, congestion and local road damage. Some 3.2 million gallons of diesel fuel consumption were also avoided.

While advances in fuel efficient locomotives do not garner the headline grabbing attention of Tesla's electric cars, the railroad industry is making steady progress in that regard. Tier 4 locomotives maximize locomotive performance and reduce emissions. As you know, Tier 4 diesel engine standards are the strictest EPA emissions requirements for off-highway diesel engines and the railroad industry is increasingly incorporating Tier 4 locomotive into its fleet. I am pleased to report that one of our short line members, Knoxville Locomotive Works, has earned EPA's Tier 4 certification for its SE series four and six axle locomotive designs and is providing these locomotives to short lines for switching operations. These locomotives reduce existing emission levels by more than 90%. The Chairman of Knoxville Locomotive Works is Pete Claussen who is also the Chairman of short line company Gulf and Ohio Railways and his son Doc is President of that railroad and is currently serving as Chairman of our Short Line Association.

SHORT LINES HAVE THE RIGHT SOCIETAL STUFF

Rail is the safest option for moving freight by land in America. Using USDOT data and measuring on a comparable ton-miles basis, rail is approximately 3–5 times safer than trucking.

Short lines are proud of our safety culture and work diligently to reduce and eliminate injuries. In 2018, 265 short lines reported zero accidents to the FRA. The average accident rate that year was a near record low of 1.84 per million train miles. We are also proud of the Short Line Safety Institute, which exists to provide voluntary intense safety culture assessments on short lines all over the country as we continually strive for zero accidents, injuries, and fatalities.

Because rail is the safest option for moving freight by land, any policies that Congress enacts that affect the balance between rail and trucking also affect public safety and have major societal impacts.

THE RIGHT LEGISLATIVE STUFF

As evidenced by the discussion above, short line railroads have the right stuff when it comes to moving America's stuff, and we would like to share with the Committee several legislative recommendations that we believe will help our industry provide more of that stuff in the future.

As you likely know, our number one legislative priority is the extension of the Short Line Rehabilitation Tax Credit known as 45G. I will mention this only briefly for three reasons. First, it is not in the jurisdiction of this committee. Second, you are no doubt as tired of hearing us talk about it as I am of talking about it. Third,

49 of the 62 Members of these two Sub-Committees are co-sponsors of this legislation so I'd only be preaching to the choir. Suffice it to say that this credit allows short lines to maximize infrastructure investment that is critical to producing the kind of economic, environmental, and societal results described above, and to the extent that any of the members of this committee are able to work with your colleagues on Ways & Means and in leadership to ensure that an end-of-the-year tax package advances that includes 45G, that would be a big win for the thousands of communities and shippers that count on short lines. The credit has been expired since December 31, 2017 and we respectfully call on Congress to address this before the end of this year. The negative consequences of the credit being lapsed are becoming more apparent by the day.

We strongly support the Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant program as it specifically provides for short line eligibility and puts a focus on benefit-cost analysis. We have seen that with this level playing field, short line projects fare well. Further, it includes a special focus on the deployment of railroad safety technology, which can potentially help our work implementing positive train control (PTC) in compliance with the federal mandate. The yearly authorized level for the program should be increased—we suggest to $592 million, which was the high-water mark appropriated in fiscal year (FY) 2018. We also recommend that program eligibility be tweaked to include non-profit associations representing short line railroads. These types of associations have previously been eligible for similar grant programs and successfully received grants that provided safety support to many short line railroads. The current FY20 House THUD Appropriations bill includes language to this effect. We believe CRISI is an important and effective program that should be continued in the next surface transportation authorization bill.

We are also supportive of the INFRA grant program. There is value in a merit-based discretionary grant program open to multiple modes of transportation, especially one that is focused on freight and goods movement, but we do recommend two changes to this program:

1) Allow the program to support the most efficient and effective freight projects by fully removing or at least significantly increasing the $500 million cap on non-highway portions of the multimodal freight projects. Such a cap is particularly anachronistic now that the highway trust fund has been subsidized by more than $140 billion(!) in general funds since 2008.
2) Ensure that the program is able to fund all efficient and effective projects by increasing the "small projects" set aside. Currently, the 10% cap on small projects, defined as projects that do not meet the $100 million project minimum, does not provide enough opportunity for INFRA grants to be used to help with most short line infrastructure projects. The 10% set aside should be increased to 25% to more accurately represent the many needs in small town and rural America and the small but effective projects that are possible everywhere.

Similar to the INFRA grant program, the state freight formula program is also a beneficial program that could be improved by increasing the percentage of the grants that can go to the non-highway portions of multimodal freight projects. Again, artificially limiting the types of projects that can be funded results in less than optimal projects being selected, and it also makes no sense in a world where road user fees are not funding anywhere near the full cost of the highway trust fund.

We also support the BUILD program. While BUILD has traditionally not been an authorized program, if this committee is inclined to authorize the program going forward, we would suggest including language that encourages the USDOT to select projects that are multi-modal in nature and not just projects that could just as easily be done within the normal state highway allocation. And the committee could also strengthen language around prioritizing the environmental and societal benefits of projects.

The RRIF loan authorization of $35 billion is viewed by many as a potential solution to railroad rehabilitation. That has unfortunately not been the case so far. Since its inception in 1998, the program has provided miniscule support for short line rehabilitation. Notwithstanding its relatively limited utility, we wake up optimistic every day and believe there are ways to improve the program and thus offer the following suggestions.

- Provide subsidies for RRIF loan credit risk premiums, along the same lines as TIFIA;
- Provide assistance for advisory fees associated with RRIF loan applications;
- Extend RRIF loan terms from the present 35 years to 50 years to more accurately match loan terms with the economic life of railroad assets;

- Facilitate earlier identification of credit risk premium ranges so that an applicant knows if it's worth engaging in the process;
- Implement an express framework for RRIF applications meeting certain criteria;
- Ensure that RRIF loans are considered local matching funds for other federal programs provided that they are repaid with local funds, as is the rule under TIFIA; and
- Allow short line holding companies to be applicants.

I know that Members of this Committee have been vocal advocates for a comprehensive infrastructure program that addresses well-documented and critical needs. We share your frustration with the political gridlock that has halted progress on this important subject. In the hope that good sense will eventually prevail, we offer up five general principals that will help short lines better utilize any grant programs funded within a surface transportation reauthorization bill or larger infrastructure package, whether those are the existing programs noted above or new programs:

1. Short lines should be directly eligible applicants for project grants, similar to CRISI. Too often in the past, federal programs have been only open for application to local units of government, which in turn requires short lines to create unnecessarily complex and burdensome applicant structures and which sometimes favors politically popular projects over economically beneficial projects.
2. The application process needs to be as simple and transparent as possible. Short lines are small businesses and generally the individuals writing these applications are employees with other duties on the railroad. We do not have full time grant writers or the resources to hire expensive consulting firms.
3. The analysis used to judge a project should not be a rigid one-size-fits-all process. For example, the process to apply, the public planning and the engineering required, and the appropriate benefit-cost analysis format for incrementally upgrading a ten-mile segment of existing track serving five small grain elevators should not be the same as building a new subway line or adding lanes to an interstate highway.
4. If there is to be an associated environmental approval process, it must be completed in a reasonable period of time. Approval processes that last for years are a deal-killer to those running a business.
5. Imposing limits on a state DOT's number of grant submissions allowed in a round of a program forces pre-application competition between smaller short line projects and other larger projects, often putting the smaller short line project at a disadvantage.

Finally, I will wrap up with three policy issues to keep in mind as the Committee looks towards a surface transportation reauthorization bill and considers how to increase the economic, environmental, and societal benefits of freight movement:

1) Infrastructure legislation that this committee advances will be a target vehicle for those who want to increase truck size and weight. Short lines are part of a broad coalition of interests, including safety advocates, law enforcement officials, rail labor, truck labor, independent truckers, Class I railroads, and even some truckload carriers, who oppose bigger and heavier trucks. Bigger trucks mean diversion from rail to truck and thus more trucks, more expensive damage to our highways and bridges, more highway congestion, more environmental damage, and more danger for the motoring public. Of all the aspects of my job, this is the only thing that all the relatives at the Thanksgiving dinner table care about and agree on—NOBODY wants bigger trucks! The biggest hurdle to enacting new infrastructure funding legislation is finding the funding, so including a provision that guarantees higher infrastructure repair costs makes the hurdle all the more difficult to overcome and that just would not make sense.
2) Mandating crew sizes on trains would be counter-productive in that it would just make trains less competitive with other transportation modes and would do so for no good reason as there is no evidence of a safety benefit generated by a second crew member. It is ironic that as the government is working to facilitate the move to driverless vehicles on the complex open architecture of the highway system, Congress is considering making the railroads do just the opposite on the simpler closed architecture of the railroad system. Short lines operate safely all over the country with a variety of business models and crew sizes, and we need the ability to be flexible and to adapt to an ever-changing competitive marketplace or else we will simply vanish in the face of competition.

3) As has been said thousands of times by most of you all on this Committee and most of us in the transportation community, it is essential that the highway trust fund return to a largely user- funded system. There are many important reasons for this, but from our short line perspective the current system amounts to a $10b+ per year government subsidy to our biggest competitors, which artificially shifts traffic from the freight rail system to the highway system and thus loses the economic, environmental, and societal benefits that can be provided by freight rail.

In summary, short Line railroads have the right stuff, and with your continued support in the areas I have identified, we will provide even more of the stuff that matters—jobs, economic opportunity, environmental sustainability, and business growth, particularly in small town and rural America.

I appreciate the opportunity to appear before you today and am pleased to answer any questions you might have.

ATTACHMENT

SHORT LINE RAILROAD CUSTOMERS TALK ABOUT SERVICE AND THE SHORT LINE REHABILITATION 45G TAX CREDIT

Dana Shellberg, of Allweather Wood LLC, in Loveland, CO (a customer of the Great Western Railway of Colorado)

"Without the Great Western Railway of Colorado we would have to truck all our lumber in from Oregon, Washington, Alabama, and Arkansas. This would not allow us to stay competitive in the lumber market."

Robert Glezen, of Mont Eagle Mills, Inc., in Oblong and Palestine, IL (a customer of the Indiana Rail Road)

"Short line railroads are an increasingly important piece of our nation's infrastructure. Our business depends upon the Indiana Rail Road to serve the agricultural base of southeastern Illinois."

David Doti, of Jadcore, LLC, in Terra Haute, IN (a customer of the Indiana Rail Road)

"The Indiana Rail Road is our only connection to the main line. All of the other carriers have either merged or are out of business. The plastics industry relies on the railroad for its delivery of finished products all over the country."

Daniel Semsak, of Pacific Woodtech Corporation, in Saginaw, MI (a customer of the Lake State Railway)

"We depend on short lines to get into our customers' facilities. Rail access is essential for our company and our customers to be able to grow. As the Class 1 railroads have focused more and more on unit trains for inefficiencies, small business has relied on short lines for survival. We need the short lines for the "last mile"."

Brian Arnhalt, of Minn-Kota Ag Products, in Breckenridge, MN (a customer of the Red River Valley & Western Railroad)

"Our rail service from the Red River Valley & Western Railroad is outstanding. The personalized attention to our customer needs is a big help in the success of our business."

Curt Warfel, of Akzo Nobel, Inc., in Columbus, MS (a customer of the Alabama and Gulf Coast Railway)

"Akzo Nobel has long been supportive of the short line railroad tax credit. We see this as an excellent way in which short line railroads may "stretch" a dollar to upgrade their railroads and improve service to rail shippers."

Chuck Hunter, of PSC Metals, Inc., in St. Louis, MO (a customer of the Terminal Railroad Association of St. Louis)

"The six short lines that serve our facilities have and will play a vital role in the growth of our company. They have worked with us to add rail service to several of our facilities, issued rates to incent rail service-vs-truck. Their local presence and willingness to partnership in problem solving has been a blessing. These service providers are an essential part of our continued success in the North American marketplace."

Levi Ross, of Dead River Company, in North Walpole, NH (a customer of the Green Mountain Railroad)

"Our retail petroleum business is dependent on the service of short lines for a dependable regional supply chain."

Jason Tininenko, of Freeport McMoRan, in Hurley, NM (a customer of the Southwestern Railway)

"There are several short line railroads that are integral to our business. They provide a consistent, cost effective option for us to move large volumes of freight both to and from our mining locations."

Mike Sawyer, of Western Producers Cooperative, in Dill City, Rocky, and Sentinel, OK (a customer of Farmrail)

"Our livelihood depends on railroads shipping our grain. Farmrail does a great job in taking care of our needs. We need their services!"

Steve Stivala, of MacMillan-Piper, in Tacoma, WA (a customer of Tacoma Rail)

"Tacoma Rail is an integral part of our business and overall operation in Tacoma. The short line railroad provides us with consistent and reliable service on a daily basis. By meeting our needs and requirements, we are better able to service our customers. This would not be possible without the assist from Tacoma Rail."

Maurice Bohrer, of Michels Materials, in Janesville and Waterloo, WI (a customer of the Wisconsin & Southern Railroad)

"Our short line and regional railroad, the Wisconsin & Southern Railroad, is the only railroad that provides service to our black granite quarry and without them we would not be able to sell our granite to many of our customers and the other railroads that use our ballast!"

ATTACHMENT

THE SECTION 45G TAX CREDIT AND THE ECONOMIC CONTRIBUTION OF THE SHORT LINE RAILROAD INDUSTRY

The report entitled "The Section 45G Tax Credit and the Economic Contribution of the Short Line Railroad Industry" is retained in committee files and is available online as an attachment to Mr. Baker's written testimony at the U.S. House of Representatives Document Repository at https://docs.house.gov/meetings/PW/PW12/20191205/110277/HHRG-116-PW12-Wstate-BakerC-20191205.pdf.

Mr. LIPINSKI [presiding]. Thank you, Mr. Baker.

Ms. Goodchild, you are recognized for 5 minutes.

Ms. GOODCHILD. Good morning, Chairs Norton and Lipinski, and Ranking Members Davis and Crawford, as well as distinguished members of the committee. Thank you for the opportunity to speak with you about this important topic.

My name is Anne Goodchild. I am a professor of civil and environmental engineering at the University of Washington, and the director of the Supply Chain Transportation and Logistics Center. I am the founding director of the Urban Freight Lab, and an urban freight expert.

It is an uncommon pleasure to be in a room full of policymakers so interested in freight transportation.

The freight system allows for economic specialization, and is a requirement for city living. It provides markets to producers and strengthens competition.

I am here today to highlight that freight infrastructure is more than interstates, ports, pipelines, and rail facilities. It is also city streets, curbs, and sidewalks. This is where a supply chain's last mile is carried out. That is the infrastructure that gets a good to its final destination.

When we talk about freight infrastructure investment and building a better freight system, we must include the last mile, and even the final 50 feet. Investments in this infrastructure and innovations in the last mile provide a substantial opportunity to improve supply chain efficiency, more effectively delivering essential services and the economic and social benefits that they promise.

The last mile is not, as the name suggests, a small part of the freight system. It is the current obsession of the supply chain industry, and an increasing burden for cities and neighborhoods. The last mile is the most difficult and costly mile of the entire freight system, estimated to absorb between 25 and 50 percent of total supply chain transportation spent.

Dramatic growth in online shopping and faster and faster home delivery is increasing the cost of the last mile and the amount of last-mile traffic. Investments in improving the last mile and the final 50-feet infrastructure will bring disproportionate benefits to the freight system, carriers, and consumers.

We will have to rethink how we build and manage our infrastructure if it is to accommodate the expected growth in delivery services. Departments of transportation are facing many rapid and complex changes and competing demands for space. For example, growth in home delivery, the use of ride-hailing services, the construction of dedicated bike lanes, and autonomous vehicles all want additional curb space. Relying on intuition can lead to policies such as truck bans that actually increase congestion and emissions.

In fact, our research demonstrates that organized, efficient freight carriers reduce traffic and emissions because a single delivery truck can replace dozens of car trips. On the street we see high rates of unauthorized parking, long dwell times, and high failed delivery rates, which means both poorly utilized vehicles and drivers, high emissions, and poorly utilized public space.

Developing effective solutions to these urban freight challenges requires new approaches. We need evidence-based solutions that will improve efficiency for carriers and improve transportation system performance. In the face of a fast-changing industry, limited data, and freight planning capacity, this requires new approaches. Our response at the University of Washington was to establish the Urban Freight Lab, an innovative partnership between private industry, academic researchers, and the Seattle DOT, as well as other public agencies, to jointly solve urban freight problems.

Private-sector members, as well as the public sector, contribute financially to the research, and collectively decide on a research agenda. While all members contribute and play an essential role in defining and identifying needs, lab fees do not and should not cover the cost of all research. The findings have national impact, and testing solutions at scale cannot be the responsibility of only this group.

Important financial support for the center also comes from the Department of Energy, Office of Energy Efficiency and Renewable Energy, and the University Transportation Center Program. These and other Federal programs play an essential role in sponsoring and guiding the direction of national research.

I encourage you to include approaches to study and improve urban freight performance in future policies. Thank you very much for your time.

[Ms. Goodchild's prepared statement follows:]

Prepared Statement of Anne Goodchild, Ph.D., Founding Director, Supply Chain Transportation and Logistics Center, University of Washington

Good morning, Chairs Norton and Lipinski and Ranking Members Davis and Crawford as well as distinguished Members of the Committee. Thank you for the opportunity to speak to you about this important topic. My name is Anne Goodchild and I am a professor and the Director of the Supply Chain Transportation and Logistics Center at the University of Washington. I am an urban freight expert. The freight system, ultimately, allows for economic specialization; it supports city living, provides markets to producers, and strengthens competition. On its own, the transportation and logistics sector represents approximately 10% of the US gross domestic product—a larger sector than either retail, or financial services [1]. The freight system is more than interstates, ports, pipelines and rail facilities. The freight system is city streets, local highways, sidewalks, bike lanes, and front steps—the last mile of where these supply chains is carried out. It is the delivery man walking to your door or mailbox. When we talk about freight infrastructure investment and building a better freight system, we must remember to include the last mile and particularly the Final Fifty Feet to the final delivery destination. Without completing this final step, supply chains fail to deliver the economic and social benefits they promise.

LAST MILE COSTS BUSINESSES A DISPROPORTIONATE AMOUNT OF TIME AND MONEY

The last mile is essential, and expensive; the most difficult and costly mile of all. While estimates vary, the cost of the last mile has been estimated at between 25% and 50% of total supply chain transportation costs [2] [3].

The last mile is costly because:

1) It relies more on human labor than the other segments of supply chain transportation with drivers going door-to-door to drop off packages. In cities, drivers can spend 80 or 90% of their time outside the vehicle [4].
2) Goods are more fragmented the farther you travel down the supply chain. Upstream, goods are moved in large, consolidated shipments such as single commodities but the closer goods get to the consumer the more they are broken down into shipments for individual customers.
3) 80% of Americans live in congested regions [5] where travel speeds are slower and less reliable. This increases the number of vehicles and drivers required to do the same work.
4) There can be high rates of failed deliveries requiring repeated delivery attempts and resulting in ballooning costs. Failed delivery attempts can mean that two or three additional trips are require to accomplish the same task.

While the high cost of the last mile is in part due to the distributed nature of deliveries, the cost is inflated by congestion, a lack of reasonable parking options, and other constraints put on commercial vehicle operations such as specific street or time of day bans.

ONLINE SHOPPING GROWING AND SPEEDING

Online shopping rates are growing and this is increasing demand for last mile delivery. UPS, the world's largest package delivery company, experienced 23% revenue growth from 2014 to 2018 (5.5% annually [6]). With one-click shopping and free home delivery it is now often cheaper and easier to order something online than it is to go to the store. Retail e-commerce sales as a percent of total retail sales in United States rose to 9% in 2017 and this figure is expected to reach 12.4% in 2020 [7]. With store-based shopping, most Americans use their personal vehicles for shopping trips; driving to the store alone, purchasing a few items, and returning home in their car. With an online purchase, the trip—now a delivery—is made with a commercial vehicle, extending the supply chain from the store or warehouse and bringing increasing numbers of commercial vehicles into towns and neighborhoods. The volume of daily deliveries to homes has soared—from fewer than 360,000 a day in New York City in 2009 to more than 1.5 million today [8]. Households now receive more deliveries

[1] https://www.bea.gov/system/files/2019-10/gdpind219__2.pdf
[2] https://www.kuebix.com/the-high-costs-of-final-mile-delivery/
[3] https://www.supplychaindive.com/news/last-mile-spotlight-retail-costs-fulfillment/443094/
[4] https://www.greenbiz.com/article/we-will-still-need-drivers-driverless-future
[5] http://css.umich.edu/factsheets/us-cities-factsheet
[6] https://www.forbes.com/sites/greatspeculations/2019/10/18/ups-revenues-strong-last-few-years-but-slower-growth-ahead/#323b065368e4
[7] https://nrf.com/insights/economy/state-retail
[8] https://www.nytimes.com/2019/10/27/nyregion/nyc-amazon-delivery.html

than businesses; and this, with online retail representing only 10% of all retail. Imagine how many more trips there will be when online retail hits 20% or 50%.

In addition to growth in the number of deliveries, the pace of delivery of speeding. Amazon, which currently holds about a 50% share of the online market in the US has, in the last 3 years, halved their average click-to-door speed from about 6 days to about 3 days[9]. Other retailers are attempting to keep pace. Just this week I received an email from Amazon notifying me that Amazon Fresh would now deliver at "ultrafast speeds" in my area: "You can schedule same-day deliveries from 6:00am–10:00pm and get FREE 2-hour scheduled delivery windows on orders over $35". Free two-hour delivery. This was not in response to a request, rather this is being rolled out to all Prime members. Depending on your location, you can also get 1-hour delivery for a small additional fee. This is also available in DC and Northern VA. There has also been a proliferation of on-demand delivery services, particularly in the food delivery sector, where online platforms now serve close to 30% of the market.

The US leads the world in online shopping activity and speed of delivery[10]. Supply chains have spent decades investing in technology and building the information systems required to deliver on home delivery and service promises. More recently, venture capital has also invested in transportation and logistics, with PitchBook reporting $14.4 billion invested globally in privately owned freight, logistics, shipping, trucking, transportation management system (TMS), and supply chain tracking startups since 2013[11]. Not only do these changes affect transportation and logistics companies, but these changes affect peripheral sectors as companies reorganize their operations to service these new demands.

As customers are offered, and accept, shorter and shorter click-to-delivery times, delivery companies have less opportunity to make consolidated, efficient deliveries. Instead of waiting for more orders and sending out full trucks, vehicles are sent out to meet their quick delivery promise; reducing vehicle utilization. This increases the number of vehicles on the road, increases the cost per delivery, and increases vehicle emissions.

THERE IS A SIGNIFICANT IMPACT ON CITIES

It is the roads and sidewalks built by American cities and towns that enable this last mile delivery. In Seattle, 87% of buildings in greater downtown rely solely on the curb for freight access[12]. These buildings have no off-street parking or loading bays.

Our cities were not built to handle the nature and volume of current freight activity and are struggling to accommodate growth[13]. At the same time, delivery of goods is just one of the many functions of our transportation networks. The same roads and sidewalks are also used by pedestrians, cyclists, emergency vehicles, taxis, ride hailing services, buses, restaurants, and street vendors, to name a few.

Capacity on our transportation networks is increasingly scarce. Texas Transportation Institute's 2019 Urban Mobility Report, a summary of congestion in America, is titled "Traffic is Bad and Getting Worse"[14]. Over the past 10 years, the total cost of delay in our nation's top urban areas has grown by nearly 47%. It is on top of this already congested network, that we add this growing last mile traffic. American cities have yet to make any headway with congestion, and delivery traffic both adds to, and suffers from, this condition.

To address congestion, many state Departments of Transportation are working to provide safe and competitive alternatives to single occupancy vehicle travel such as transit, bicycling, and walking. Other federal agencies are also working on addressing this issue, such as the Department of Energy, which has awarded UW and Seattle an EERE grant. In building dedicated bicycle facilities, one common solution is to convert the curb lane to a bike lane, removing commercial vehicle load and unload space. At the same time, American's are increasingly using ride-hailing services such as Uber and Lyft[15]. This also increases the demand for curb space as passengers request pickup and drop-off instead of parking their own vehicle off-street.

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[9] https://www.emarketer.com/chart/221703/average-click-to-door-speed-us-digital-purchases-made-on-amazon-vs-other-retailers-dec-2015-march-2018

[10] https://unctad.org/en/pages/PressRelease.aspx?OriginalVersionID=505

[11] https://www.joc.com/technology/vcs-taking-long-odds-big-logistics-wins__20190523.html

[12] http://depts.washington.edu/sctlctr/sites/default/files/SCTL__Final__50__full__report.pdf

[13] https://www.nytimes.com/2019/10/27/nyregion/nyc-amazon-delivery.html

[14] https://mobility.tamu.edu/umr/

[15] https://www.citylab.com/transportation/2019/08/uber-lyft-traffic-congestion-ride-hailing-cities-drivers-vmt/595393/

The result is too much demand for too little space, and there is ample evidence of a poorly functioning system. From a study in Seattle, 52% of vehicles parked in commercial vehicle load zones were passenger cars, and 26% of all commercial vehicles parked in passenger load zones. In New York City, UPS and Fedex received 471,000 parking violations in 2018. Everyone has seen an image of a truck parked in a bike lane, or been stuck behind a delivery truck occupying an entire residential street. While we might expect a small percentage of violations, these levels reflect a failure of planning and design to deliver reasonable alternatives to commercial vehicles, and a city that has not caught-up with the changes in supply chain and shopping patterns.

In addition to these operational challenges, commercial vehicles have impacts on American's health and safety. Per mile, trucks produce disproportionately more carbon dioxide and local pollutants (NOx, PM) than passenger vehicles so a substitution of delivery trucks for passenger vehicles has the potential to increase emissions [16]. However, delivery services also present an opportunity to reduce emissions per package as they can consolidate many packages into one vehicle; the same way transit or carpooling can be an emissions advantage over single occupancy vehicle trips. Research shows that in most cases a well-run delivery service would provide a carbon dioxide reduction over typical car-based shopping behavior [17]. While there is the opportunity for delivery services to provide this emissions benefit, the move towards very fast delivery erodes that benefit as delivery services are unable to achieve the same level of consolidation and begin to look more like butler services.

Diesel powered vehicles, often used for the movement of freight, produce disproportionately more particular matter and NOx pollution than gasoline engines, so the use of these vehicles in urban areas, where human exposure levels are higher, has significant negative outcomes for human populations in terms of asthma and heart disease [18]. This is particularly true for the very young, elderly, or immunosuppressed.

While it may seem intuitive that replacing a car trip to the store with a truck delivery would be bad for the city, in fact, delivery services can reduce carbon emissions and total vehicle miles travelled. This is because the truck is not just delivering to one home, but to many. In this sense, the truck delivery behaves like a transit vehicle or very large carpool. This can reduce congestion by reducing the number of vehicles on the road. Delivery trucks can be an asset when performing in this efficient manner because they consolidate many goods into a single vehicle reducing per package cost, emissions, and congestion impacts.

Banning trucks and requiring or encouraging the use of smaller vehicles INCREASES the number of vehicles and the vehicle miles travelled; exacerbating traffic and parking problems.

Growth in two and one-hour delivery INCREASES the number of vehicles and vehicle miles travelled; exacerbating traffic and parking problems.

THE URBAN FREIGHT LAB AS A PUBLIC AND PRIVATE SECTOR COLLABORATION

Businesses are challenged by the high cost of the last mile, and the increasing time pressure for deliveries. Cities are working to manage congestion, the competing demands of many users, emissions, and intense pressure for curb space. This presents a complex set of problems, where:

- private carriers are struggling to comply with city regulations and remain financially competitive while meeting customer expectations
- customers are benefiting from high levels of convenience but also experiencing high levels of congestion and suffering from the effects of growing emissions
- cities and towns are struggling to meet demands of multiple stakeholders and enforce existing rules

All of this, in a context where there are very limited data regarding truck or commercial vehicle activity, numbers of deliveries, or other measures of efficiency. The Freight Analysis Framework [19], which compiles the nation's most significant freight datasets such as the Commodity Flow Survey, breaks the country into 153 zones, so that most states can only see what came into or out of the state, not how vehicles move around within cities and towns. The more recently developed National Per-

[16] https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-commercial-trucks

[17] http://depts.washington.edu/sctlctr/research/publications/evaluating-impacts-density-urban-goods-movement-externalities

[18] https://www.lung.org/our-initiatives/healthy-air/outdoor/air-pollution/particle-pollution.html

[19] https://www.bts.gov/faf

formance Management Research Data Set (NPMRDS)[20], presents truck specific data, and allows for highway speeds to be monitored at a county level, but does not show vehicle volumes, or give any insights into origin-destination patterns. At the national level, mode-specific datasets provide more spatial, temporal, and activity detail. For example, the Carload Waybill sample[21] provides important data on rail cargo movements and the Air Operators Utilization Reports[22] provide important data on airplane activity. Unfortunately, the Vehicle Inventory and Use Survey, which provided detailed data on truck and goods movements, was discontinued in 2002. This leaves cities and towns have no nationally consistent sources of or guidelines for collecting truck activity data.

The most economically efficient solutions to these challenges will be identified through collaboration between cities and private partners. One particularly successful and innovative solution can be found in the Urban Freight Lab at the University of Washington (https://depts.washington.edu/sctlctr/urban-freight-lab-0). As the director of the Urban Freight Lab, I have built a coalition of private companies and public agencies who work together to identify and measure problems, and develop and pilot-test solutions that will provide benefits for a diverse group of public and the private sector stakeholders. The goal is to find win-win solutions for businesses and city dwellers, and to avoid short-sighted solutions like blanket truck bans[23].

The Urban Freight Lab is successful because:

1. *All participants have skin in the game.* Private sector contributions elevate public sector research funding and ensure that all participants fully engage. This is fundamentally different from an advisory board or oversight committee because members must report back to their leadership and justify participation with measurable returns on investment. This participation from the private sector improves relevance and timeliness of public sector support.
2. *Collaboration amongst the private and public sector* ensures that products of the lab are as mutually beneficial as possible.
3. *Problems, evaluation metrics, and research ideas* come from the group and are connected directly to real-world challenges faced, not the research directors, the public, or private sector alone.
4. *Private- and public-sector participants are senior executives who have the authority to make decisions in quarterly meetings.* They do not need to return to the organization for approval.
5. *Cities need freight planning capacity* but currently don't have any. The work of the Urban Freight Lab fills gaps in problem definition, data collection, solution generation, orchestration and evaluation of pilot tests.
6. *Robust analysis is conducted by University researchers*—they serve an important role in taking an unbiased view and base their analysis on data.
7. *Quarterly meetings are working meetings with detailed agendas and exit criteria*. The focus is on making progress, making decisions, and moving forward, not simply information sharing.
8. *Private sector partners are operational and technical* staff with knowledge of operations.
9. *Public sector partners represent a breadth of functions* including planning, engineering, curb management, mobility, and innovation.
10. *University research focusses on practical outcomes* and does not hide in theoretical concepts.
11. *Solutions are tested on the ground* through pilots and real tests. The slow work of collaboration building and overcoming obstacles to implementation is part of the research.

Current private-sector lab members include Boeing HorizonX, Building Owners and Managers Association (BOMA)–Seattle King County, curbFlow, Expeditors International of Washington, Ford Motor Company, General Motors, Kroger, Michelin, Nordstrom, PepsiCo, Terreno Realty Corporation, US Pack, UPS, and the United States Postal Service (USPS). The Seattle Department of Transportation represents the public-sector.

Seattle is a growing City and has now been ranked in the top 4 for growth among major cities for five consecutive years. It is a geographically constrained city surrounded by water and mountains, and boasts some of the highest rates of bike,

[20] https://ops.fhwa.dot.gov/perf_measurement/index.htm
[21] https://www.stb.gov/stb/industry/econ_waybill.html
[22] https://www.faa.gov/data_research/aviation_data_statistics/
[23] https://nyc.streetsblog.org/2018/08/20/city-abandons-clear-curbs-program-that-reduced-traffic-congestion-and-made-roosevelt-avenue-safer/

walk, and transit commuting in the country[24]; with less than a quarter of City Center commuters now driving alone to work. It is a technologically oriented City; with the region serving as the home to many technology companies such as Amazon, Convoy, Facebook, Google, Microsoft, and Tableau. The City was one of the first to launch PayByPhone, electronic toll tags, weigh-In-motion, high-occupancy-toll lanes, passive bicycle counters, real-time transit monitoring, bike and car share programs, and most recently, an Open Data Portal[25]. In this sense, the City provides an excellent example for experimentation where the public and private sector face intense pressure to look for new solutions and approaches; and levels of congestion and pressure that other US Cities can anticipate in their future as populations grow and infrastructure construction does not keep pace.

With this private- and public-sector funding the Urban Freight Lab has:

- produced foundational research on the Final Fifty Feet of the supply chain[26]
- developed and applied approaches to quantify urban freight infrastructure[27]
- developed and applied approaches to measure infrastructure[28]
- generated and tested approaches to reducing dwell time and failed deliveries in urban areas including common lockers[29]
- developed and implemented an approach to measuring the volume of vehicles entering and exiting the City of Seattle.[30]

Ongoing work is supported in large part by a grant from the Department of Energy U.S. Department of Energy: Energy Efficiency & Renewable Energy (EERE) titled Technology Integration to Gain Commercial Efficiency for the Urban Goods Delivery System, Meet Future Demand for City Passenger and Delivery Load/Unload Spaces, and Reduce Energy Consumption. This project, funded by DOE, provides $1.5 million over 3 years with matching funds from the City of Seattle, Sound Transit, King County Metro, Kroger, the City of Bellevue, and CBRE. The project will evaluate the benefit of integrated technology applications on freight efficiency. Within the scope of this grant, Urban Freight Lab members and the Seattle DOT will be involved in developing and testing applications of technology in the Belltown area of Seattle that will increase commercial efficiency and reduce impact of freight activity on city residents[31].

MOVING FORWARD

Shopping patterns have evolved, but our infrastructure has not. We need to rethink how we use our streets, curbs, and sidewalks if we want to maintain and grow our current shopping and delivery habits.

By consolidating many goods into a single route, delivery services could be an asset to communities; growing economic activity, reducing total vehicle miles travelled and associated carbon emissions, and supporting communities[32] less dependent on cars. However, the current trend towards faster and faster deliveries; and businesses subsidizing delivery costs means we see lower vehicle utilization, higher numbers of vehicles and congestion, and increased emissions.

While some town and city governments have invested measuring the state of urban freight in their communities and developed improvements, most have limited resources and no guidance from the state or federal level. For example, they do not know how many trucks operate in the region, what they carry, whether the current curb allocation is satisfactory, or what benefit might result from improvements.

New modes, technologies, and operational innovations provide opportunities for win-win solutions. These new conditions may allow new modes such as electric assist cargo bikes[33] to outcompete existing modes. Electric and hybrid vehicles can reduce both global and local pollutants. New technologies such as robotics, artificial intelligence, and electronic curbs may fundamentally shift the existing infrastruc-

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[24] https://commuteseattle.com/mediakit/2017-mode-split-press-release/

[25] https://data.seattle.gov/

[26] https://depts.washington.edu/sctlctr/sites/default/files/SCTL__Final__50__full__report.pdf

[27] https://depts.washington.edu/sctlctr/sites/default/files/SCTL__Alley__Infrastructure__Occupancy__Study__12-11-18.pdf

[28] https://depts.washington.edu/sctlctr/sites/default/files/SCTL__Alley__Infrastructure__Occupancy__Study__12-11-18.pdf

[29] https://depts.washington.edu/sctlctr/sites/default/files/SCTL__Urban__Freight__Lab__5.18.18.pdf

[30] https://depts.washington.edu/sctlctr/research/publications

[31] https://depts.washington.edu/sctlctr/research-projects/current

[32] http://depts.washington.edu/sctlctr/research/publications/evaluating-impacts-density-urban-goods-movement-externalities

[33] http://depts.washington.edu/sctlctr/research-projects/ups-e-bike-delivery-pilot-test-seattle-analysis-public-benefits-and-costs-task

ture paradigms. Private companies are ready to test these innovations, and the US and state DOTs can play a role in supporting these tests and conducting evaluations.

Investments in the freight system must include the last mile, and in particular the final fifty feet of the delivery route as a consideration to ensure economic vitality and support quality of life. This includes supporting towns and cities in investigating and understanding the current state of goods movement at the municipal scale, identifying and evaluating new solutions for cities and towns to adapt to changing supply chains, integrating freight planning and passenger planning, and ultimately providing healthy environments for businesses to thrive and great places to live.

Mr. LIPINSKI. Thank you, Ms. Goodchild.

I now recognize Mr. Jefferies.

Mr. JEFFERIES. Good morning, Chairs DeFazio, Holmes Norton, and Lipinski, Ranking Member Davis, Crawford, and members of the committee. Thank you for the opportunity to be here today representing the U.S. freight railroads.

As you examine the capability of U.S. freight modes to meet the challenges of today and tomorrow, know this: due to sustained private investment, the freight rail network is in the best shape of its storied history.

Today's railroad is different than the railroad of the past. But the capital intensive nature is a constant, enabling railroads to safely serve today's customers and plan for tomorrow's demands. Case in point: in the past 3 years, Class I railroads averaged $25 billion in private investments to manage and upgrade infrastructure and equipment. That is more than $68 million a day of private capital poured back into our network. This year is no different. Class I capex is up almost $1 billion through the third quarter of this year, year over year.

Railroads play the long game, and the industry is executing a strong vision for the future. The positive impacts of this vision can be found every day.

First, railroads operate safely. Railroads maintain a safety culture second to none, constantly looking for ways to further the safety performance. The evidence of this commitment is clear. In 2018 the train accident rate was down 36 percent from the year 2000, while the employee accident rate was its second lowest in history, down 48 percent. To continue these trends, the industry is deploying new inspection and detection technologies that allow for significantly more advanced assessments of rail, track, and locomotive health. We will not be satisfied until we reach a future of zero incidents.

Second, railroads are the most environmentally sound way to move freight over land. To reiterate what my colleague said, on average, railroads move 1 ton of freight 473 miles per gallon of diesel fuel. To put that in perspective, that is equal to moving 1 ton of freight on 1 gallon of diesel from DC to Cincinnati or Chicago to Omaha. While moving nearly one-third of long-distance freight volume, railroads account for just 2 percent of transportation-related greenhouse gas emissions. In fact, if just 10 percent of freight that is currently moved by trucks were transported by rail instead, annual greenhouse gas emissions would fall by more than 17 million tons.

Third, railroads alleviate highway congestion and deterioration. Because a single train can carry the freight of several hundred trucks, railroads cut gridlock and lower the costs of road construction and upkeep.

And finally, freight rail is a critical economic engine. U.S. freight railroads move roughly 40 percent of intercity ton-miles of freight, ship one-third of U.S. exports, and support more than 1 million jobs across the Nation.

So looking forward, a positive future for freight rail and other transportation modes relies on a sound public policy. Robust private investment in the rail sector is made possible by a balanced economic regulatory system overseen by the Surface Transportation Board that relies on market-based competition, while providing a backstop for rail customers. The structure benefits the entire freight ecosystem. Rail rates in 2018 were 44 percent lower than they were in 1981, when adjusted for inflation. To continue the success story, the STB must adhere to sound economic principles and all actions, and reject reregulatory efforts by some stakeholders.

At the same time, Congress has a role to ensure modal equity across freight transportation by fixing the Highway Trust Fund. To do this, railroads believe a mileage-based solution, such as a weight-distance fee, is the most appropriate and sustainable long-term solution. I give credit to my friends in the trucking industry for advocating for a higher gas tax.

The bottom line, though, all stakeholders agree a viable funding solution is a must, one that enables full cost recovery for highway wear and tear.

In closing, privately owned railroads have their eyes on the future. The industry will continue to invest to meet market demand and maintain our core role in the Nation's integrated transportation network. We look forward to working with this committee and others in Congress as you look towards surface transportation reauthorization and develop and implement policies that best meet this country's infrastructure needs. Thank you.

[Mr. Jefferies' prepared statement follows:]

Prepared Statement of Ian J. Jefferies, President and Chief Executive Officer, Association of American Railroads

On behalf of the members of the Association of American Railroads, thank you for the opportunity to appear before you today. AAR members account for the vast majority of freight railroad mileage, employees, and traffic in Canada, Mexico, and the United States.

Simply put, railroads are indispensable to the U.S. economy. They connect producers and consumers across the country and the world, expanding existing markets and opening new ones. Whenever Americans grow something, mine something, or make something; when they send goods overseas or import them from abroad; when they eat their meals or take a drive in the country, there's an excellent chance that railroads helped make it possible.

The affordability of freight rail saves rail customers (and, ultimately, American consumers) billions of dollars each year and enhances the global competitiveness of U.S. products. Average rail rates (measured by inflation-adjusted revenue per ton-mile) were 44 percent lower in 2018 than in 1981. This means the average rail shipper can move close to twice as much freight for around the same price it paid more than 35 years ago.

Several years ago, the American Association of State Highway and Transportation Officials (AASHTO) estimated that if all freight rail traffic were shifted to trucks, rail customers would have to pay an additional $69 billion per year. Adjusted for increased freight volume and inflation, it's probably close to $100 billion today.

An October 2018 study from Towson University's Regional Economic Studies Institute found that, in 2017 alone, the operations and capital investment of America's major freight railroads supported approximately 1.1 million jobs (nearly eight jobs for every railroad job), $219 billion in economic output, and $71 billion in wages. Railroads also generated nearly $26 billion in tax revenues. In addition, millions of Americans work in industries that are more competitive in the tough global economy thanks to the affordability and productivity of America's freight railroads.

Without railroads, American firms and consumers would be unable to participate in the global economy anywhere near as fully as they do today. International trade accounts for around 35 percent of U.S. rail revenue, 27 percent of U.S. rail tonnage, and 42 percent of the carloads and intermodal units U.S. railroads carry.

SUSTAINABILITY

According to the Environmental Protection Agency (EPA), transportation accounted for 28.4 percent of U.S. greenhouse gas emissions in 2017. The vast majority of transportation-related greenhouse gas emissions are directly related to fossil fuel consumption: higher fuel consumption means more emissions.

Railroads, though, are the most fuel-efficient way to move freight over land. In 2018, railroads moved one ton of freight an average of 473 miles per gallon of fuel—roughly the distance from Coos Bay, Oregon to San Francisco, or from Hannibal, Missouri to Columbus, Ohio. In fact, freight railroads, on average, are three to four times more fuel efficient than trucks—meaning that moving freight by rail instead of truck reduces greenhouse gas emissions by up to 75 percent. The rail fuel efficiency advantage helps explain why freight railroads account for just 2.0 percent of transportation-related greenhouse gas emissions and just 0.6 percent of total U.S.

greenhouse gas emissions, according to the EPA, even though railroads account for one-third or more of long-distance freight volume (measured in ton-miles).

If just 10 percent of the freight that moves by the largest trucks moved by rail instead, fuel savings would be more than 1.5 billion gallons per year and annual greenhouse gas emissions would fall by more than 17 million tons—equivalent to removing some 3.2 million cars from the highways for a year or planting 400 million trees.

Railroads are constantly looking for ways to improve their fuel efficiency and further reduce emissions. Steps railroads have taken individually or collectively in recent years include:

- Installing highly advanced computer software systems that calculate the most fuel-efficient speed for a train on a given route; determine the most efficient spacing and timing of trains on a railroad's system; and monitor locomotive performance to ensure peak efficiency.
- Installing idling-reduction technologies, such as stop-start systems that shut down a locomotive when it is not in use and restart it when it is needed, and expanding the use of distributed power (positioning locomotives in the middle of trains) to reduce the total horsepower required for train movements.
- Acquiring thousands of new, more efficient locomotives and removing from service thousands of older, less fuel-efficient locomotives.
- Providing employee training to help locomotive engineers develop and implement best practices and improve awareness of fuel-efficient operations.

Railroads also help reduce the huge economic costs of highway congestion. According to the Texas Transportation Institute's 2019 Urban Mobility Report, highway congestion cost Americans $166 billion in wasted time (8.8 billion hours) and wasted fuel (3.3 billion gallons) in 2017. Lost productivity, cargo delays, and other costs add tens of billions of dollars to this tab. A single freight train, though, can replace several hundred trucks, freeing up space on the highway for other motorists. Shifting freight from trucks to rail also reduces highway wear and tear and the pressure to build costly new highways.

In recent years, railroads have begun to investigate moving away from diesel locomotives in favor of alternatives—for example, to natural gas, or even potentially to batteries or fuel cells. At this point, it's not clear if an alternative will have the combination of affordability, reliability, and capability to be feasible for widespread use, but it does show that railroads are "looking outside the box" in terms of enhancing sustainability and environmental preservation.

INVESTING FOR THE FUTURE

As America's economy and population grow, the need to move more freight will grow too. The Federal Highway Administration forecasts that total U.S. freight shipments will rise 35 percent from 2017 to 2040. Railroads are getting ready today to meet this challenge.

America's freight railroads operate overwhelmingly on infrastructure that they own, build, maintain, and pay for themselves. By contrast, trucks, airlines, and barges operate on highways, airways, and waterways that are almost entirely publicly funded.

From 1980 to 2018, America's freight railroads spent more than $685 billion—their own funds, not taxpayer funds—on capital expenditures and maintenance expenses related to locomotives, freight cars, tracks, bridges, tunnels and other infrastructure and equipment. That's more than 40 cents out of each revenue dollar spent to keep our economy moving.

Railroads are much more capital intensive than most industries. Over the past decade, the average U.S. manufacturer has spent about 3 percent of revenue on capital expenditures. The comparable figure for U.S. freight railroads is close to 19 percent, or about six times higher. Railroads know that if America's future transportation demand is to be met, they must have the capacity to handle it. Railroads are preparing for tomorrow today.

Capital Spending as % of Revenue †

Average all manufacturing	**2.9%**
Food	2.2%
Petroleum & coal products	2.4%
Machinery	2.6%
Fabricated metal products	3.1%
Primary metal products	3.1%
Wood products	3.1%
Motor vehicles & parts	3.2%
Chemicals	3.4%
Plastics & rubber products	3.6%
Paper	4.0%
Nonmetallic minerals	4.8%
Computer & electr. products	5.1%
Class I Railroads	**19.1%**

† Avg. 2007–2016
Source: Census Bureau, AAR

Thanks to their massive investments, freight railroad infrastructure today is in its best overall condition ever—quite a contrast to, say, America's highway network. The challenge for railroads, and for policymakers, is to ensure that the current high quality of rail infrastructure is maintained, and that adequate freight rail capacity exists to meet our nation's current and future freight transportation needs. Policymakers can help by avoiding policies that discourage rail investment.

Always Pushing to Improve Safety

For our nation's railroads, pursuing safe operations is not an option, it's a business imperative. Most importantly, it's the right thing to do. Railroads are not just faceless corporations from somewhere far away. Rather, your neighbors are their neighbors. No matter where you live, chances are good that current or former rail industry employees live nearby. Railroads know they have an obligation to operate safely for their benefit and for the benefit of all members of the communities they serve.

Railroads recognize they've not yet reached their goal of zero accidents and injuries, but we should all be encouraged by their progress. Recent years have been the safest for railroads in history. From 2000 to 2018, the train accident rate fell 35 percent, the employee injury rate fell 48 percent, and the grade crossing collision rate fell 36 percent. Railroads today have lower employee injury rates than most other major industries, including trucking, airlines, agriculture, mining, manufacturing, and construction—even food stores.

Rail operations are subject to stringent safety oversight by the Federal Railroad Administration (FRA). For example, stringent FRA regulations cover track and equipment inspections, employee certification, operating speeds, and signals. FRA safety inspectors (and in some states, state inspectors) evaluate rail facilities and operations. Railroads are also subject to oversight by the Occupational Safety and Health Administration, the Pipeline and Hazardous Materials Safety Administration, and the Department of Homeland Security.

Railroads are constantly incorporating new technologies to improve safety. Just a few examples: sophisticated detectors along tracks that identify defects on passing rail cars; ground-penetrating radar that identifies problems below ground, such as excessive moisture, that could destabilize track; and specialized rail cars that use sophisticated instruments to identify defects in tracks.

Many railroad safety-related technological advancements were developed or refined at the Transportation Technology Center, Inc. (TTCI), the finest rail research facility in the world, in Pueblo, Colorado. TTCI is a wholly owned subsidiary of the AAR. Forty-eight miles of test tracks, highly sophisticated testing equipment, metallurgy labs, simulators, and other diagnostic tools are used to test track structure, evaluate freight car and locomotive performance, assess component reliability, and much more. The facility is leased by the FRA from the state of Colorado, but has been operated by TTCI since 1984.

Rail industry safety is also being enhanced by the Asset Health Strategic Initiative (AHSI), a multi-year rail industry program that is applying advanced information technology processes to improve the safety and performance of freight cars

across North America. Through this program, advanced defect detection systems use a wide array of sensors to identify potential problems with freight cars and freight car components such as wheels, axles, bearings, and brakes. Advanced analytical programs flag suspect railcars so they can be removed from service and fixed before issues arise. Freight cars often travel across the networks of different railroads, but thanks to the sharing of information at the individual railcar level facilitated by AHSI, no matter where a particular railcar is at a particular time, preemptive action can be taken. The sharing of information across the industry allows problems to be detected that would not be detectable otherwise. AHSI is based on the recognition that the best approach to railcar health encompasses monitoring the entire railcar life cycle.

Finally, freight railroads are committed to safely completing the implementation of positive train control (PTC) as quickly as possible so that further safety gains can be achieved. The seven Class I freight railroads all met statutory requirements by having 100 percent of their required PTC-related hardware installed, 100 percent of their PTC-related spectrum in place, and 100 percent of their required employee training completed by the end of 2018. In aggregate, Class I railroads had 93 percent of required PTC route-miles in operation as of October 2019. Each Class I railroad expects to be operating trains in PTC mode on all their PTC routes no later than 2020, as required by statute. In the meantime, railroads, in coordination with Amtrak, other passenger railroads, and other tenant railroads, are continuing to test and validate their PTC systems thoroughly to ensure they are interoperable and work as they should.

Changing Markets Present a Serious Challenge to Railroads

Freight railroads are what economists call a "derived demand" industry. This means that demand for rail service is a function of demand elsewhere in the economy for the products railroads haul. For example, automakers' demand for rail service rises when consumers are buying more cars but dries up if consumers stop buying cars. Therefore, what affects the broad economy affects railroads too.

It's no secret that the economy has not been doing as well, especially recently, as we all would like, and rail traffic has suffered accordingly. Total rail carload and intermodal volume in 2019 through October was down 4.4 percent over the same period last year. Weakness in U.S. rail volumes today is consistent with an economy in which manufacturing and commodity-related industries especially are hurting. The ongoing trade war and accompanying uncertainty has had the most direct impact on manufacturing and commodity-related industries that are heavily served by railroads. Railroads are hopeful that this uncertainty will be eliminated and that firms here and abroad can again devote full attention to helping our economies grow.

Railroads are also impacted by what's happening in specific industries. Wheat is a good example. In a typical year, exports account for more than 40 percent of U.S. wheat production and railroads move approximately 60 percent of U.S. wheat exports. When wheat producers elsewhere in the world have good crops, or when trade restrictions are put into place, U.S. wheat exports—and, consequently, U.S. rail carloads of wheat—are impacted.

All this illustrates that the U.S. and global economies are constantly evolving. Firms, even entire industries, can and do change rapidly and unexpectedly, and railroads must be able to deal with that flux. These broad, often unanticipated economic changes are reflected in changes not only in the volumes but also in the types and locations of the commodities railroads are asked to transport, and in the amounts and uses of railroad assets. When traffic changes occur in different areas—as is usually the case and has certainly been the pattern in recent years—the challenges to railroads become magnified.

To successfully adapt to these challenges, railroads must be flexible and innovative while improving the efficiency and productivity needed to maintain their long-term financial health. Railroads may also have to invest in additional capacity to meet changing demand. Public policies that hamstring railroads by preventing or limiting this flexibility and innovation are sure to have a negative impact on railroads and on their ability to meet the transportation needs of our evolving economy.

The Importance of Appropriate Public Policies

Prior to passage of the Staggers Rail Act of 1980, excessive regulation put our nation's freight railroads in a huge financial and operational hole. By enacting Staggers, Congress recognized that regulation prevented railroads from earning adequate revenues and competing effectively. Survival of the railroad industry required

a new regulatory scheme that allowed railroads to establish their own routes, tailor their rates to market conditions, and differentiate rates on the basis of demand.

One of the fundamental principles of the Staggers Act was something that had been essentially ignored for decades prior to it: if our nation is to have a viable, efficient, privately owned freight rail system, someone has to be willing to pay for it, and the market is far superior to the government in determining who should pay.

Importantly, the Staggers Act did not completely deregulate railroads. In addition to retaining authority over a variety of non-rate areas, the Interstate Commerce Committee, and now its successor, the Surface Transportation Board (STB), retained the authority to set maximum rates if a railroad is found to have "market dominance" and to take other actions if a railroad engages in anticompetitive behavior.

Nevertheless, some rail customers and their supporters in Congress and elsewhere want the STB to make major changes in the scope and intensity of railroad rate and service regulation. Most of these changes would, in one way or another, limit the prices that railroads can charge and therefore limit the revenue railroads can earn. If successful, these regulatory changes would make it much more difficult for railroads to make the investments they need to maintain and upgrade their networks and to provide the safe, efficient, and reliable service their customers need to prosper.

It would be a grave mistake to let this happen. A fundamental tenet of the economics of competition says that where competition exists, there should be no regulatory intervention. Because the vast majority of rail freight movements are subject to strong competitive forces—including competition from other railroads, from trucks and barges, product competition [1], and geographic competition [2]—the vast majority of rail movements should likewise be free of governmental oversight. Moreover, no amount of rhetoric about "competition" can change the fact that if a railroad cannot cover its costs, it cannot maintain, replace, or add to its infrastructure and equipment. Nor can it provide the services upon which its customers depend. Simply put, if the existing balanced regulatory structure were changed, either taxpayers would have to make up the difference or the industry's physical plant would deteriorate, and needed new capacity would not be added. The rail industry would not collapse overnight, but over time rail service would become slower, less responsive, and less reliable.

It's true that freight railroad financial performance in recent years has been better than it once was. However, policymakers should not view these improvements as a reason to cap rail earnings through price controls or artificial competitive constraints, since it would cause capital to flee the industry and severely harm railroads' ability to reinvest in their networks.

Today, our nation faces a number of serious transportation-related problems, many of which this Committee, to its credit, is working hard to address. It makes no sense to add to that list by trying to fix something that isn't broken. The current rail regulatory system is working well. At a time when the pressure to reduce government spending on just about everything—including transportation infrastructure—is enormous, it makes no sense to enact public policies that would discourage private investments in rail infrastructure that would boost our economy and enhance our competitiveness.

With respect to FAST Act reauthorization priorities, the freight railroad industry supports the following:

(1) Highway-Rail Grade Crossing Safety

Reducing accidents and fatalities at highway-rail grade crossings is of paramount importance given that most collisions are preventable. Engineering solutions (such as closing unneeded crossings and upgrading warning devices), education and enforcement are key. Thanks in part to the Section 130 federal program, grade crossing collisions are down 37% from 2000 to 2018, but much work remains.

- The federal Section 130 program, which provides funds to eliminate hazards at highway-rail grade crossings, should continue to receive dedicated, formula funding out of the Highway Safety Improvement Program.
- Funding for Section 130 should be maintained at least at current levels ($245 million in fiscal year 2020) or increased.

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[1] Substituting one product for another in a production process—for example, generating electricity from natural gas (which is not carried in significant amounts by railroads) instead of coal (which is).

[2] The ability to obtain the same product from, or ship the same product to, a different geographic area. For example, clay is used for taconite pelletization in Minnesota. This clay is available from Wyoming mines served by one railroad and from Minnesota mines served by another. Iron ore producers can play one railroad against the other for clay deliveries.

- Increase Section 130 incentive payments for grade crossing closures from the current cap of $7,500 to $100,000.
- Expand flexibility in the use of Section 130 funds by eliminating the arbitrary 50% cap on spending for hazard elimination projects and by enabling replacement of certain protective warning devices.
- Enable costs by public and private entities incurred for preliminary engineering for grade crossing projects to be counted toward the non-federal share.
- Enable or incentivize states to bundle grade crossing projects into a single grant application under applicable discretionary grant programs, such as BUILD, INFRA or CRISI.
- Require or incentivize accelerated deployment of navigational warnings for motorists (e.g., smartphone apps) to warn of grade crossings.
- Require future fleets of automated vehicles to provide grade crossing warnings and/or prevention of incursions into grade crossings where gates or other devices have been activated.
- Require grade crossing safety training in driver education curricula at NHTSA through recommendations to states.
- Authorize at least $3 million per year for Operation Lifesaver through FHWA, FRA and FTA.

(2) Innovations for Deployment of Safety Technologies

Freight railroads require a modernized approach to federal regulations that allows them to innovate with new technologies and processes for an even safer and more efficient rail network. The current regulatory approach to rail safety is largely prescriptive and does not easily allow for the incorporation of the best technologies to improve safety and performance. Safety and efficiency improvements should be encouraged by the FRA.

(3) Project Permitting Reforms

While much has been done in recent years to cut the red tape associated with infrastructure project approval and construction, more can be done to fast-track routine maintenance and replacement construction projects without sacrificing environmental or historical preservation concerns. These include:

- Codify that a categorical exclusion and a Finding of No Significant Impact are the only NEPA documentation needed on projects where replacement of infrastructure on existing operating railroad right-of-way is the purpose.
- Convert select executive orders on streamlining the permitting process—such as timeclocks, intermediate deadlines and One Decision for large projects—to statute.
- Continue streamlining the Sec. 106 historic preservation review process, especially for projects needed to enhance or maintain safety.

(4) Support Funding for Amtrak & Public Partnering with Freight Railroads

The freight railroad industry supports funding for grant programs that enable the public sector, including state and local governments and passenger and commuter railroads, to partner with freight railroads to advance projects of mutual interest, including projects to help lessen road and port congestion, enhance safety at highway-rail grade crossings, improve port connectivity, facilitate intercity passenger and commuter rail service and improve the quality of life for communities. The following programs should continue to be authorized at existing or increased levels:

- INFRA Discretionary Grants ($1 billion in FY 2020). Caps should be upwardly adjusted or removed on multimodal freight eligibility in proportion to General Fund contributions to the HTF.
- BUILD Discretionary Grants (not authorized, but typically $1 billion appropriated).
- CRISI Discretionary Grants ($330 million in FY 2020).
- Federal-State Partnership for State of Good Repair ($300 million in FY 2020).
- Funding and authorization for Amtrak and state-supported passenger routes.

(5) Restore the Highway Trust Fund to a True User-Based Fund

The current underpayment by road users, especially commercial trucking, has required a transfer of some $144 billion in General Funds to the HTF over the past ten years. Consequently, the rail sector is perennially placed at an unfair competitive disadvantage.

- Support mechanisms such as an increase in the gas tax, a vehicle miles traveled fee or a weight-distance tax that could help remedy this fundamental imbalance.
- Oppose measures to fund the HTF that would increase taxes or fees on freight railroads.

- Retain a competitive tax environment for the private sector.

(6) Oppose Policies that Harm Railroads' Ability to Operate Safely and Efficiently

Congress must reject policies that would disadvantage the freight railroad industry, the most environmentally friendly way to move freight over land. These include:

- Proposals to allow longer and heavier trucks on roads, bridges and highways, until, at a minimum, trucks of all legal dimensions pay the full cost of the damage that they cause to publicly provided infrastructure.
- Mandates requiring specific operating models such as railroad crew size.
- Mandates resulting in property takings on railroad rights of way for utility or broadband access.

CONCLUSION

America's freight railroads are working toward a single goal: to ensure that they remain the safest, most efficient, cost-effective, and environmentally-sound mode of transportation in the world. They are always willing to work cooperatively with you, other policymakers, their employees, their customers and all other interested parties to advance our shared interests in moving our nation forward with the help of our best-in-the-world freight railroads.

Mr. LIPINSKI. I thank you, Mr. Jefferies. I am going to go back and make sure I say this, because I think I did—I forgot to do it: Mr. Jefferies is the president and CEO of the Association of American Railroads.

And I was up here for Ms. Goodchild, so I know I skipped that, and Ms. Anne Goodchild is a Ph.D. and founding director, Supply Chain Transportation and Logistics Center, University of Washington. So I wanted to go back and correct that.

And I will recognize Mr. Jason Mathers, the director of vehicle and freight strategy with the Environmental Defense Fund.

Mr. Mathers, you are recognized.

Mr. MATHERS. Great, thank you, Chair Lipinski, Chair Norton, Ranking Members Davis and Crawford, and members of the subcommittee for having me here today.

Now is the time to implement policies that will reduce air pollution and set us on a path of net zero carbon emissions by 2050.

Earlier this year, the Senate Environment and Public Works Committee unanimously approved its version of the highway reauthorization bill. And for the first time ever, it included a title on climate change. This committee can build on that effort in its version, and lock in the certainty needed to unleash public and private investment to clean up the transportation sector.

Pollution from freight transportation has pernicious health impacts on communities near freight facilities and highways. Heavy trucks are, by far, the most significant source of freight pollution. Yet reducing pollution from freight movement is not primarily a technology matter. It is a matter of political will.

The operational and equipment choices that can drive down air pollution are well-known. Many of these are being used today to create business value while improving community health. With congressional leadership we can make tremendous strides in reducing the nearly 11,000 premature deaths annually that occur from exposure to freight pollution in this country, and put the sector on a path to contribute to 100 percent clean economy by 2050.

A few years back, I authored the "Green Freight Handbook," which examined opportunities for freight shippers to reduce pollution. This work was based on projects EDF undertook with large companies, including Walmart, FedEx, Ocean Spray, and Cater-

pillar, among others. We condensed into three broad categories the range of tactics companies can use to reduce freight pollution and transportation costs. These are, first, get the most out of every move, which is about making sure that we use our freight capacity to the fullest; second, choosing the most efficient mode of transportation, which is about sending goods intermodally, rather than just by truck alone; and demand cleaner equipment.

My testimony has examples of all these categories. I will focus now on this last category.

Zero-emission heavy-duty vehicles are increasingly viable for freight. Services these trucks can do today include transporting cargo in and out of ports like NFI, one of the Nation's largest fleets, is doing today in L.A.-Long Beach; moving freight from a distribution center to a retail outlet like Penske is doing for a leading quick service restaurant chain; positioning trailers within a distribution yard, as Kraft is doing in Ohio; and delivering packages to businesses and homes, as FedEx is doing.

We should invest in these trucks with policies that reward innovation and recognize the full cost of operating combustion engines. Investing in zero-emission trucks is a win-win opportunity. Fleets want these trucks, as they can drastically reduce fuel spend. Developing the manufacturing capacity for these vehicles will support good jobs. And households across this country will see lower cost goods.

Congress can make this investment through policies that advance four objectives: first, encourage the production of zero-emission heavy-duty vehicles; second, increase the demand for these vehicles; third, ensure public expenditures drive just and equitable outcomes; and fourth, support the development of appropriate charging infrastructure.

As this committee considers the highway reauthorization, I want to provide two specific ideas.

First, create a commission to develop strategies for transitioning drayage trucks, those trucks moving goods in and out of ports and rail yards, to zero emission. The work performed by these trucks is a great match for the zero-emission technology. And given that they typically operate in urban environments, these trucks are highly polluting. There are unique challenges to move this sector to zero emissions. These can be overcome. A Federal commission should be established to develop recommendations for fully transitioning these vehicles to zero emissions by 2030.

Second, create a Federal revolving loan fund for the purchase and installation of EV charging infrastructure. Creating charging systems for trucks remains a barrier. Congress could create a fund to help offset costs associated with charging equipment, facility upgrades, and the grid improvements necessary to power large fleets.

Thank you for the opportunity to be here today. I look forward to your questions.

[Mr. Mathers' prepared statement follows:]

Prepared Statement of Jason Mathers, Director, Vehicle and Freight Strategy, Environmental Defense Fund

Thank you Chair Norton, Chairman Lipinski, Ranking Members Davis and Crawford and members of the subcommittees for the opportunity to testify today. My name is Jason Mathers. I am the Director of Vehicle and Freight Strategy for Environmental Defense Fund. EDF is a leading international nonprofit that creates transformational solutions to the most serious environmental problems. EDF links science, economics, law and innovative private-sector partnerships. With more than 2.5 million members and a global staff of 700 scientists, economists, policy experts, and other professionals, we're one of the world's largest environmental organizations.

OVERVIEW

Now is the time to implement policies that will reduce carbon pollution and set us on a path of net-zero carbon emissions economy-wide by 2050.

Earlier this year, the Senate Environment and Public Works Committee unanimously approved its version of the Highway Reauthorization Bill and for the first time ever it included a title on climate change. This was a major step in accepting that the problem is real and the title provided some ways to start addressing it. This committee can build on that effort in its version and lock in the certainty needed to unleash public and private investment in the transportation sector, which is the leading source of climate pollution in the nation.

Every mode of freight transportation has a significant pollution footprint and pernicious health impacts on communities near freight facilities and highways. Yet, reducing pollution from the freight movement is not primarily a technology matter. It is a matter of political will.

The operational and equipment choices that can drive down air pollutants, including carbon emissions, are well-known. Many are being used today to create business value while improving community health and climate effects. Others will be ready to scale over just the next couple of years. The most significant uncertainty is whether we will have the policies in place to reward innovation and recognize the full cost of operating combustion engines.

With Congressional leadership, we can—by the close of this coming decade—make tremendous strides in reducing the nearly 11,000 premature deaths annually that occur from exposure to freight pollution in this country and put the sector on a path to contribute to a 100% clean economy by 2050.

As an environmentalist, father of young children and veteran who cares deeply about the future of this country, I urge us to act.

1. The freight movement has significant impacts on human health and the environment.

In 2015, transportation pollution resulted in 385,000 premature deaths globally, with on-road diesel vehicles accounting for half of this impact—by far the largest contributor. Collectively, on-road diesel accounted for 3.6 million lost years lived and over $450 billion in economic damage annually.[1] In the U.S., international shipping and on-road diesel—two modes primarily used for moving freight—accounted for nearly 11,000 deaths in 2015. The health impacts of diesel-fueled heavy-duty vehicles are concentrated in urban areas, often in disadvantaged communities close to major freight hubs like distribution centers and port facilities.[2]

EDF has been studying how pollution from fossil-fueled trucks dirty our air at a hyper-local level, leading to more asthma, heart attacks and premature deaths. New sensor technology is allowing EDF scientists to collect data in innovative ways using Google Street View cars and dense stationary pollution detection networks. With the help of our partners, we are better able to see how changes in air pollution lead to harmful health effects that are distributed unevenly.

Our recent analysis in Oakland, California showed that residents living near one particular freeway that is home to much of the city's diesel-fueled traffic were exposed to concentrations of black carbon (soot) 80% higher than those living near a similar road that had less diesel traffic. The more polluted roadway produced 60% more nitrogen dioxide—a lung irritating and smog forming gas.

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[1] Anenberg et al, "A Global Snapshot of the Air Pollution-related Health Impacts of Transportation Sector Emissions in 2010 and 2015," ICCT and Climate & Clean Air Coalition. (2019)

[2] Houston, D, Disparities in Exposure to Automobile and Truck Traffic and Vehicle Emissions Near the Los Angeles-Long Beach Port Complex, Am J Public Health. 2014 January; 104(1): 156–164.

Combining our Google Street View project data with Kaiser Permanente's electronic health records of over 40,000 people in Oakland, we found that elderly people living in areas with the most elevated traffic-related air pollution had a 40% higher risk of heart attack,[3] compared to elderly people living in places with less pollution. This is similar to an individual having a history of smoking.

EDF also looked at air pollution hotspots near the Port of Oakland where diesel-powered ships, trucks and trains transport goods throughout California and across the United States.

- At an intersection near the entrance to the port, EDF found that black carbon levels were more than three times higher than the West Oakland neighborhood average.
- In a West Oakland neighborhood where homes mix with industrial facilities and heavy-duty trucks often fill nearby parking lots, black carbon concentrations were about twice as high as the neighborhood average at certain busy times of the day.
- At a nearby park downwind from a trucking company, air monitors found increased pollution exposure for children and adults playing soccer, football and baseball.

We are now undertaking a similar analysis in Houston. The people living along the heavily industrialized Houston Ship Channel face higher exposure to air pollution than the region at large.

Freight is a significant—and fast growing—source of climate pollution. Globally, the sector is on pace to add four gigatons of additional climate pollution per year by 2050. In the U.S., the freight sector will emit 535 million metric tons of carbon dioxide emissions in 2020. This pollution is on pace to increase by another 25 million metric tons annually by 2050.[4]

Within freight, heavy trucks are—by far—the most significant source of climate pollution. The phase two EPA greenhouse gas emissions standards—originally adopted in 2016 with stringency increases in 2021, 2024 and 2027—are critical in slowing the growth of emissions from this sector. Yet, even with these standards, pollution from freight trucks is projected to increase by 40 million metric tons of carbon dioxide between 2036 and 2050. We must do more to ensure long-term pollution reductions from this sector if we have any hope of reining in climate pollution.[5]

2. Solutions exist today to significantly reduce this impact.

Heavy-duty trucks require specific focus, as the leading source of both local and global air pollutants from freight. Zero-emission heavy-duty vehicles are increasingly viable, as evidenced by the surge of product announcements over the past two years for parcel delivery trucks, urban delivery trucks, yard trucks, and regional trucking. Over two dozen truck models are in production or development. All major original equipment manufacturers and several new entrants have zero-emission offerings (see table 1). Reflecting the industry's interest in a cleaner future, Cummins—which has engines in 70% of trucks on the U.S. roads—just announced a goal of net-zero emissions in its operations and products by 2050.[6]

While we build for a zero-emission future, we must also push for further improvements from combustion engine trucks. Reducing emissions of nitrogen oxides (NOx)—a precursor to ozone—is critical to providing cleaner air for communities and families across the nation. NOx emissions standards for heavy-duty vehicles were last issued in 2001 and implementation was completed in 2010. In the nearly 20 years since the last standards were promulgated, technology has continued to advance.

It is also clear that additional reductions in ozone forming NOx are needed from the heavy-duty sector. In places like California—where much of the state is hard hit by ozone pollution—heavy-duty trucks still account for 33% of statewide NOx emissions.[7]

Developing technologies, together with the improvement of existing emissions controls, can provide additional cost-effective, meaningful in-use NOx reductions from

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[3] Alexeeffet al, *High-resolution mapping of traffic related air pollution with Google street view cars and incidence of cardiovascular events within neighborhoods in Oakland, CA*, Environmental Health (2018) 17:38

[4] U.S. Energy Information Agency, Annual Energy Outlook, *Table 19. Energy-Related Carbon Dioxide Emissions by End-Use*, January 24, 2019.

[5] U.S. Energy Information Agency, Annual Energy Outlook, *Table 19. Energy-Related Carbon Dioxide Emissions by End-Use*, January 24, 2019.

[6] Gibson, London, *Cummins' most ambitious environmental plan yet targets net-zero emissions by 2050*, Indianapolis Star, November 15, 2019

[7] CARB presentation at Board Hearing, "*Update on the Proposed Federal Phase 2 GHG and Fuel Efficiency Standards for Medium- and Heavy-Duty Vehicles*," Sacramento, July 23, 2015

the nation's heavy-duty fleet.[8] California is researching the technologies needed to reduce NOx significantly.[9] Other states recognize the need for further NOx controls.[10] EPA announced a Cleaner Truck Initiative to "update standards for nitrogen oxide (NOx) emissions from highway heavy-duty trucks and engines."[11] EPA should issue standards that leverages the best technology options to reduce NOx emissions and protect human health. The agency should fully partner with California's Air Resources Board in this effort.

Solutions also exist for international shipping. International shipping can meet its target of at least halving its emissions by 2050, and can unleash trillions of dollars of investment opportunities in sustainable industrial infrastructure—particularly in developing countries—by using clean fuel such as "green" ammonia, as long as the fuel is produced using untapped renewable potential without increasing fossil fuel use.[12] The International Maritime Organization (IMO) must act quickly to bring in legally enforceable measures to its April 2018 commitment to reduce the sector's greenhouse gas pollution by at least 50% by 2050 compared to 2008 levels, and to start reducing total emissions.

Demand for air freight is expected to grow, especially with the dramatic increase in package delivery services. At the most local level, some shippers are starting to use drones. At the international level, the International Civil Aviation Organization (ICAO), the UN body that sets standards for international flights, has capped the net carbon emissions of these flights at 2020 levels, and adopted a four-pillar strategy, including new technologies, operational efficiencies, alternative fuels, and a carbon offsetting and reduction system for international aviation ("CORSIA"). While considerable work remains to be done to ensure that CORSIA is implemented with integrity, it is already spurring investment in lower carbon innovation. The aviation industry has asked ICAO to adopt a long-term goal for the industry, and we respectfully suggest that goal should be zero climate impact by 2050.

There are also operational approaches that can reduce emissions today. EDF worked with leading companies to document three broad opportunities to reduce freight pollution.

Get more out of every move: We are using only 43% of the capacity of our freight trucks on the road today, between empty miles and underutilized ones. Capturing just half of this under-utilized capacity would cut freight truck emissions by 100 million tons per year and reduce expenditures on diesel fuel by more than $30 billion a year.[13]

A high profile example of further increasing truck productivity comes from Walmart. The company set a goal of doubling its freight efficiency between 2005 and 2015. In 2015, the company delivered 1 billion more cases and drove 460 million fewer miles than in 2005 by improving truck loading.[14]

Colgate and Kimberly-Clark demonstrated how companies can collaborate to reduce the number of trucks on the road. The two companies pooled trips to CVS. Instead of each sending partially filled trucks to CVS, the companies worked to co-load their freight on the same trucks. The result was less pollution, fewer trucks and increased levels of service for CVS.[15]

Choose the most carbon-efficient mode of transportation: Typically, the more carbon intensive option for transportation is also the most expensive. Air freight emits 47 times more carbon per ton-mile than container ships, while costing 6.5 times

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[8] CARB, upcoming "Draft Technology Assessment: Lower NOx Heavy-Duty Diesel Engines."

[9] California Air Resources Board, *Staff White Paper: California Air Resources Board Staff Current Assessment of the Technical Feasibility of Lower NOx Standards and Associated Test Procedures for 2022 and Subsequent Model Year Medium-Duty and Heavy-Duty Diesel Engines*, April 2019

[10] Marin, Arthur, Statement On the U.S. Environmental Protection Agency (EPA) Cleaner Trucks Initiative, Northeast States for Coordinated Air Use Management (NESCAUM), November 13, 2018

[11] U.S. EPA Press Office, *EPA Acting Administrator Wheeler Launches Cleaner Trucks Initiative*, November 2018.

[12] Ash, N. and Scarbrough, T., *'Sailing on solar: Could green ammonia decarbonise international shipping*?', Environmental Defense Fund, London, 2019.

[13] Russell D. Meller, Kimberly P. Ellis, Bill Loftis "From Horizontal Collaboration to the Physical Internet: Quantifying the Effects on Sustainability and Profits When Shifting to Interconnected Logistics Systems" Final Research Report of the CELDi Physical Internet Project, Phase I. September 2012.

[14] Mathers, Jason, *The Fast and the Furious: A Company's Guide to Reducing Transportation Emissions*, a webinar for the Climate Collaborative. June 2017.

[15] Logistics Management, *Getting from Me to We: Creating a Shared Distribution Infrastructure*, June 2014.

more.[16] Because rail is about 3.5 times more fuel efficient than trucks, companies can lower costs at least 15–20% with intermodal rail based primarily on fuel savings.[17]

Ocean Spray was shipping products by truck from a manufacturing facility in New Jersey to a Florida distribution center. Both Ocean Spray facilities were a short distance from rail yards used by a competitor, Tropicana, which shipped orange juice north from Florida in special refrigerated boxcars, via CSX Rail. These boxcars often traveled empty back to Florida. Tropicana's third party logistics provider (3PL) saw an opportunity for collaboration and proposed that Ocean Spray operate an intermodal lane from New Jersey to Florida that would put Tropicana's empty cars to use. By going from truck to rail and taking advantage of ready rail capacity, Ocean Spray cut transportation costs more than 40% for that lane and reduced greenhouse gas emissions by 65%.[18]

Demand cleaner equipment: Companies using freight services have a responsibility to push for the cleanest equipment available.

Anheuser-Busch is deploying 21 Class 8 battery-electric trucks. It is also testing Class 8 fuel cell trucks.[19] The company set a goal to convert its long-haul dedicated fleet to renewable powered trucks by 2025.[20]

IKEA is insisting on zero-emission home deliveries from its carriers. In 2020, it will demonstrate this model in five cities and expand it globally by 2025.[21]

3. The United States of America would benefit by immediately adopting these solutions

By leading a transition to a freight industry that supports a 100% clean economy, the U.S. will be well positioned to retain and expand manufacturing jobs. Automotive manufacturing employs a million U.S. workers.[22] These jobs occur across the country[23] and support both the domestic and export market. Manufacturing zero-emission heavy-duty vehicles can provide good paying, union jobs.[24]

Global markets will see much of the growth in truck fleets in the decade ahead.[25] If the U.S. invests in developing zero-emission trucks, our manufacturers will be well positioned to serve these markets. Conversely, failure to invest in these trucks risks disadvantaging U.S. manufacturers in the global marketplace where other markets—notably China and Europe—are already investing in their domestic manufacturing capacity for zero-emission heavy-duty vehicles.

In addition to reducing healthcare costs associated with diesel pollution, an investment in zero-emission trucks will help cut costs for families. The average U.S. household spends $1,100 a year to fuel heavy-duty trucks,[26] which are paid through higher prices at the store. Zero-emission trucks will significantly reduce fuel costs, while also lowering the total cost of ownership.[27]

4. The U.S. Congress should pass policies that increase the adoption of these solutions today and invest in the development of solutions that can further drive progress over the next decade.

Given the outsized pollution impact of trucking, I will focus my recommendations on this sector and outline how the U.S. Government can help accelerate a transition to a net-zero emissions future.

Despite the recent zero-emission truck product announcements, the pace of progress remains much too slow. At our current pace of adoption, diesel trucks will

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[16] Simchi-Levi, David, Operations Rules, 2010, Massachusetts Institute of Technology.

[17] Kane Is Able, Look Who's Riding the Rails, 2013.

[18] Bradley, Peter, *Collaboration bears fruit*, DC Velocity, May 2013.

[19] Transport Topics, *Anheuser-Busch, Nikola, BYD Complete First Zero-Emission Beer Run*, November 21, 2019.

[20] ABInBev, *Climate Action: Anheuser-Busch Drives Leadership in Clean Energy*, February 14, 2016

[21] Peters, Adele, *Ikea is quickly shifting to a zero-emissions delivery fleet*, Fast Company, September 2018.

[22] U.S. Bureau of Labor Statistics, *Automotive Industry: Employment, Earnings, and Hours*, September 2019

[23] BlueGreen Alliance, *VISUALIZING THE CLEAN ECONOMY: THE AUTOMOTIVE SECTOR*.

[24] Dean, S., *Unionizing L.A. bus workers and their CEO come together over fighting climate change*, Los Angeles Times, Nov 2019

[25] McKinsey & Company, "ROUTE 2030—A Regional View of Truck Industry Profit Pools," (2018)

[26] Cooper, Mark, *PAYING THE FREIGHT: THE CONSUMER BENEFITS OF INCREASING THE FUEL ECONOMY OF MEDIUM AND HEAVY DUTY TRUCKS*, Consumer Federation of America, August 2015

[27] California Air Resources Board, *Advanced Clean Trucks Total Cost of Ownership Discussion Document Preliminary Draft for Comment*, February 2019.

still account for more than half of the trucks on the road in 2050.[28] Federal policy leadership will be critical to accelerate the uptake of zero-emission vehicles, which would drive down carbon emissions; reduce air pollution, especially in urban communities; and strengthen a cornerstone manufacturing base that provides well-paying jobs. EDF urges Congress to enact policies that ensure zero emission vehicles account for at least 30% of new heavy-duty vehicles sales nationally by 2030.

A well-designed policy can advance four objectives that collectively will determine the impact and pace of adoption for zero emission trucks. These objectives are:

- Encourage the production of zero-emission heavy-duty vehicles.
- Increase the demand for zero-emission heavy-duty vehicles.
- Ensure public expenditures drive just and equitable outcomes.
- Support the development of appropriate charging infrastructure.

Encourage the production of zero-emission heavy-duty vehicles.

Policy can create the long-term certainty necessary to stimulate production investments from truck manufacturers and component suppliers. The federal government also has an important role in catalyzing the development and scaling of advanced technology solutions through robust R&D investments. To advance this objective, the U.S. Congress could:

- *Launch a heavy-duty version of the Advanced Technology Vehicles Manufacturing Direct Loan Program*. Through this program, the U.S. Government provided direct loans for light-duty vehicle manufacturers to produce fuel efficient cars. This program supported the production of over 4 million advanced technology vehicles and invested $8 billion into American auto manufacturing. A similar program would enable manufacturers to expedite bringing ZEV trucks to market.
- *Increase and expand R&D funding for heavy-duty vehicle technologies*. Through the DOE Office of Energy Efficiency and Renewable Energy, the U.S. Government supports critical research into advanced vehicle technology. The Super Truck program, for example, has played a critical role in accelerating the introduction of vehicle efficiency solutions. Increased funding could be targeted at technology advancements such as enhancing charging systems and advancing battery design to enable lighter, more energy-dense and lower-cost batteries.

Additionally, the U.S. EPA should strengthen emission standards for heavy-duty vehicles. The EPA regulates greenhouse gas and criteria emissions from heavy-duty vehicles. The current GHG program standards increase in 2021, 2024 and 2027. However, criteria emissions standards have not changed since 2010. Technology advancements, including the emergence of zero-emission solutions, necessitate a significant strengthening of this program.

Increase the demand for zero-emission heavy-duty vehicles.

Another critical policy lever is to bolster market demand for these vehicles. To advance this objective, the U.S. Congress could:

- *Expand the Low or No Emission Vehicle Program*. Transit buses are largely purchased with funding contributions from DOT's Federal Transit Administration (FTA). FTA's Low or No Emission Vehicle Program provides competitive grants for state and local governments to purchase zero- and low emission transit buses and infrastructure. Given that electric buses are a viable option for much of the nation's fleet and will further expand their appeal as battery costs continue to fall, this program should be expanded significantly.
- *Pass the Green Bus Act*. EDF supports the Green Bus Act, introduced by Rep. Brownley, which would increase the funding for this program from $85 million in 2019 to $900 million in 2029 and require all new transit buses to be zero-emission by 2029.
- *Expand the Diesel Emissions Reduction Act (DERA)*. DERA, which was first enacted in 2010, funded a highly popular and bipartisan set of projects that protect human health and improve air quality by curbing diesel emissions. It is currently funded at $75 million a year. A significant increase in this program to support the replacement of old diesel vehicles with ZEVs could help increase fleet turnover and get more ZEVs on the road as quickly as possible.
- *Suspend the federal excise tax on zero-emission trucks*. New heavy-duty trucks pay a 12% federal excise tax to provide funding for the Highway Trust Fund. This tax is based on the purchase price of the vehicle and therefore exacerbates the upfront cost discrepancy between diesel and ZEV vehicles, as the more ad-

[28] EDF analysis: Extrapolated annual market growth rates Bloomberg New Energy Finance projected for each sector in its 2019 EV Outlook report. EDF assumed 12 year turn over cycle and that the 2050 fleet volumes per sector reflect 2019 mix.

vanced technology in ZEVs—which leads to significantly lower operating costs—currently results in higher upfront costs than diesel vehicles. Policymakers should waive this tax for ZEVs through the mid-2020s, when the upfront cost of diesel vehicles and ZEVs are expected to start converging.

- *Enact the Clean School Bus Act*. Introduced in both the House (Rep. Hayes) and the Senate (Sen. Harris), the Clean School Bus Act would authorize $1 billion over five years at the Department of Energy to fund a Clean School Bus Grant Program, which would award funding on a competitive basis to replace existing school buses with ZEV models. Several manufacturers are already producing quality ZEV buses, including Thomas and Blue Bird. EDF encourages these policies because the electrification of these vehicles will help reduce children's exposure to harmful diesel emissions while reducing GHG emissions.

Ensure public expenditures drive just and equitable outcomes.

The pernicious health impacts of diesel trucks disproportionately impact low-income communities and communities of color. Policies should prioritize replacing combustion vehicles with ZEVs in these communities. To advance this objective, the U.S. Congress could:

- *Prioritize deployments of ZEVs within front-line communities.* Grant programs that support the adoption of ZEVs, such as the Low/No Emissions Vehicle Emission program for transit buses and the DERA should give preference to vehicle deployments within highly impacted communities.
- *Create a commission to develop strategies for transitioning drayage trucks to ZEVs*. Drayage trucks—which transport goods over short distances, for example, hauling cargo in and out of ports and rail yards—are often old and poorly maintained. The low-speed, high idling operation of these vehicles exacerbates the shortcomings of diesel emission control equipment. These vehicles also operate in densely populated areas. The combination of these factors results in drayage trucks being a significant contributor to poor air quality in numerous major metro areas. ZEV demonstrations are currently underway, but while the technology is ready, several systemic barriers remain to the wide-scale adoption of ZEVs for drayage. These include the lack of charging infrastructure to serve drayage drivers and few financing options for drayage operators seeking ZEVs. Given that the performance requirements of drayage operations pair well with the EV drivetrain, and the urgent need to drive down pollution around ports and rail yards, a federal commission should be established to develop recommendations for transitioning these vehicles to zero emissions by 2030.

Support the development of appropriate charging infrastructure.

A well-developed charging network is essential to accommodating large-scale deployments of electric vehicles of all kinds. This infrastructure should be deployed to effectively alleviate range anxiety, mitigate expensive, unnecessary grid upgrades, and facilitate greater integration of renewable energy. To achieve a robust charging network, Congress should direct the Department of Transportation (DOT) and the Department of Energy (DOE) to work with states to define a comprehensive national EV charging infrastructure plan. Such a plan should, among other things, detail how Congress should:

- *Create a grant program to help states and municipalities develop and implement charging programs*. Provide technical assistance to states regarding technology choices, purchasing practices, infrastructure options and siting.
- *Create a grant program to incentivize commercial fleet operators and owners of large, non-government-owned parking facilities, to install charging stations*.
- *Create tax incentives for private companies to develop employee and customer charging opportunities*. Reward companies that tie their charging networks to renewables, local storage, and utility providers' demand response programs.
- *Create a federal revolving loan fund for the purchase and installation of EV charging infrastructure*. Such a fund could be targeted at state and local governments and multijurisdictional transit agencies. Separate portions of the funds should be dedicated to creating infrastructure designed for use by light-duty and by heavy-duty vehicles. Large trucks and buses will have significantly different charging patterns than light-duty vehicles. These vehicles will have larger batteries, use most of their capacity daily and be mainly recharged at centralized facilities while also using some opportunity charging during their daily operations. Providing infrastructure funds specifically for this class of vehicle would help offset costs associated with charging equipment, facility upgrades and grid improvements necessary to power large fleets.
- *Research, develop and fund best practices for depot charging*. Given their distinct needs and patterns from light-duty vehicles, heavy-duty vehicles would

benefit from dedicated research into how to manage their charging load. DOE should identify opportunities for heavy-duty vehicle electrification through a report similar in scope to the National Plug-In Electric Vehicle Infrastructure Analysis it conducted in September 2017. DOE should then make grants available to realize the opportunities identified in that report.

- *Enact an investment tax credit for large-scale storage*. Opportunities to enhance the use of renewables-based charging and to facilitate and encourage grid integration can be multiplied exponentially if Congress were to increase incentives for the deployment of large-scale storage. The goal would be to develop and advance—in Congress and in willing states—policies to achieve additional emissions reductions through the integration of electric charging infrastructure with local grids. Such initiatives would focus on policies that:
  - Encourage the use of renewable energy and storage solutions to power charging stations. This work is a critical component of ensuring that electrification actually delivers the maximum potential emissions reductions.
  - Demonstrate the use of smart charging infrastructure, storage and EV batteries to reduce utility grid impact through advanced services such as time-of-use rates, as well as balancing and ancillary services using "virtual power plants." Leveraging the flexibility in these technologies can provide significant additional emissions reductions by, for example, alleviating the need for fossil fuel based short duration generation.

CONCLUSION

Reducing pollution from the transportation sector presents a significant challenge for the U.S. and the world. However, EDF's work, and that of our partners and colleagues in the private sector, universities and research centers underscore that the solutions—most notably the electrification of heavy-duty vehicles—are cost-effective and technologically feasible. While freight is a major source of air pollution, solutions are at hand, and Congress should act to provide the needed support to make the transportation sector a part of a 100% clean economy. Doing so will help bolster our manufacturing base, create jobs, and position the U.S. to export solutions globally, while equitably reducing health impacts to communities and showing global leadership in fighting climate change. The Senate took the first step by including a climate title in its highway reauthorization bill. Now the House can build on that foundation to create investment certainty for businesses, towns, states and the federal government.

	Sample EV Models from Original Equipment Manufacturers				
Manufacturer	Truck Model	Photo	Duty Cycle	Fleet Piloting	Production
Freightliner	eCascadia		Regional Haul	Penske Truck Leasing and NFI	2021
Volvo	VNR		Regional Haul	NFI	Late 2020
Peterbilt	579EV		Regional Haul		Low-volume late 2020
Xos	ET-One		Regional Haul		
Navistar	eMV		Urban Delivery		Early 2021
Daimler	eM2		Urban Delivery	Penske	2021
Peterbilt	Model 220EV		Urban Delivery		Low-volume late 2020

Mr. LIPINSKI. Thank you, Mr. Mathers.

I now recognize Mr. Jim Tymon, executive director, American Association of State Highway and Transportation Officials.

Mr. Tymon, you are recognized.

Mr. TYMON. Thank you. Chair Norton, Chairman Lipinski, Ranking Member Davis, Ranking Member Crawford, and members of the subcommittee, thank you for the opportunity to provide the perspective of the Nation's State departments of transportation on freight transportation.

My name is Jim Tymon, and I serve as the executive director of the American Association of State Highway and Transportation Officials. And it is my honor to testify on behalf of AASHTO's membership, comprising the State departments of transportation for all 50 States, Washington, DC, and Puerto Rico.

My remarks today center around the following key points: importance of freight transportation in the context of surface transportation reauthorization; AASHTO's core principles for reauthorization, including freight, Federal freight policy, and specific freight policy recommendations for the next surface transportation bill.

State DOTs strive to deliver the most effective and efficient surface transportation system that strengthens and grows the economy. It is the interconnected national multimodal transportation system, with States as a principal owner and operator of that system, that has enabled the United States to become the most vibrant and powerful Nation in history. To that end, we strongly support your efforts to enact a well-funded, multiyear, surface trans-

portation reauthorization bill prior to the expiration of the FAST Act on September 30th, 2020.

Nearly 2 years ago, AASHTO began soliciting input from policy experts in all 50 States on surface transportation reauthorization. Based on this membership-driven approach, I would like to share with you our core policy principles.

First, ensure timely reauthorization of a long-term Federal surface transportation bill. Getting the next bill completed on time will ensure uninterrupted investment in our freight transportation infrastructure, which, in turn, will enable us to build on the current economic expansion.

Second, enact a long-term, sustainable revenue solution for the Highway Trust Fund. Our current funding challenges demand bold action to invest in our transportation infrastructure. This action has the clear support of the American public, and it is time for the President and Congress to make it happen.

Third, increase and prioritize formula-based Federal funding provided to the States. In the next reauthorization, we urge you to focus on maximizing Federal formula-based dollars provided directly to States through the existing highway core formula programs. Efficient goods movement nationwide is dependent on the Interstate Highway System and the National Highway System. Many of these facilities are over 50 years old, and nearing the end of their useful life. States rely on these formula dollars to keep these assets in a state of good repair. The next bill should continue to provide 90 percent of highway funding to States by formulas, so that States can continue to provide an efficient system for the movement of people and freight.

Fourth, we ask that you increase flexibility, reduce program burdens, and improve project delivery. We recommend increased flexibility of and transferability between the various Federal programs to enable States to target their scarce resources toward the most beneficial freight programs and projects. Transportation priorities here in the District of Columbia are different from the priorities in rural Arkansas, and we should continue to provide States the program-level flexibility to use Federal dollars as efficiently as possible. In addition, assigning more decisionmaking authority to the States and cutting unnecessary redtape will help these projects get built faster.

Fifth, support and ensure State DOTs' ability to harness innovation and technology. Specifically, we need to preserve the 5.9 gigahertz spectrum for transportation, safety, and connectivity purposes. For example, a U.S. DOT-funded connected vehicle pilot program on I–80 in Wyoming has used the spectrum to improve snow-related incident management in the corridor that carries 55 percent of all traffic in that State.

In addition to these core principles, we recommend in the next bill that you expand eligibility to use Federal freight program dollars on any portion of a State's multimodal freight network, as defined in the State's freight plan; increase FAST Act freight funding caps for multimodal projects; reinstate additional funding for the National Cooperative Freight Research Program; and help identify ways to improve coordination between States and railroad partners.

State DOTs remain committed to assisting Congress in the development of the next surface transportation legislation that further enables freight transportation to improve our quality of life and grow the economy.

I want to thank you again for the opportunity to testify today, and I am happy to answer any questions that you may have.

[Mr. Tymon's prepared statement follows:]

Prepared Statement of Jim Tymon, Executive Director, American Association of State Highway and Transportation Officials

INTRODUCTION

Chair Norton, Chairman Lipinski, Ranking Member Davis, Ranking Member Crawford, and Members of the Subcommittees, thank you for the opportunity to provide the perspective of the nation's state departments of transportation on economic, environmental, and societal impacts of freight transportation.

My name is Jim Tymon, and I serve as Executive Director of the American Association of State Highway and Transportation Officials (AASHTO). Today it is my honor to testify on behalf of AASHTO, which represents the transportation departments of all 50 States, Washington, DC, and Puerto Rico.

In my role, I oversee a staff of 120 dedicated professionals who support our state departments of transportation (state DOT) members in the development of transportation solutions that create economic prosperity, enhance quality of life, and improve transportation safety in communities, states, and the nation as a whole. Before, I was AASHTO's Chief Operating Officer and the Director of Policy and Management from 2013 to 2018, working closely with state DOTs in the development of AASHTO's transportation policy positions and overseeing the monitoring of legislative, administrative, and regulatory activities relating to transportation; as AASHTO's COO, I also oversaw the management of the Association's internal operations. Prior to AASHTO, I had the great honor to serve as a staff director of the Highways and Transit Subcommittee, working on both MAP–21 and SAFETEA–LU.

We appreciate your Subcommittees' focus on the topic of freight today because we share your recognition that the benefits of freight transportation to the economy are enormous. Freight transportation increases the value of goods by moving them to locations where they worth more. And it also encourages competition and production by expanding the spatial boundaries of commodity and labor markets where economic activities can take place. Freight transportation also facilitates the growing demand for goods and services and employs millions of people. Simply put, freight transportation and the infrastructure needed to support it is a significant component of our nation's wealth and productive capacity.

My remarks today center around the following key points:

- Importance of freight transportation in the context of surface transportation reauthorization
- Core principles for reauthorization including federal freight policy
- Specific freight policy recommendations in the next surface transportation bill

IMPORTANCE OF FREIGHT TRANSPORTATION IN THE CONTEXT OF SURFACE TRANSPORTATION REAUTHORIZATION

From the very beginning of our developing nation, we have valued investment in our freight transportation infrastructure, starting with rivers, harbors, and post roads, and later taking major leaps through canals, the transcontinental railroad, and the Interstate Highway System.

Built on this national heritage of transportation investment, state DOTs strive to deliver the most effective and efficient surface transportation system that strengthens and grows the economy by increasing productivity, enhancing jobs and labor market accessibility, opening new markets for businesses, and optimizing supply chain efficiency for freight movement. It is this interconnected national transportation system—with states as a principal owner and operator of a multimodal surface transportation infrastructure system—that has enabled the United States to become the most vibrant and powerful nation in history.

As such, AASHTO's vision for policy recommendations are founded upon transportation serving as the key enabler for a higher purpose: to provide the safest system possible, highest possible quality of life, and most robust economic opportunities for

everyone. And we strongly support your efforts to enact a well-funded, multiyear surface transportation reauthorization on time by September 30, 2020. We believe given the strong bipartisan support from the American public for robust infrastructure investment, it is time for the President and Congress to take bold action on this consensus national priority.

CORE PRINCIPLES FOR REAUTHORIZATION INCLUDING FEDERAL FREIGHT POLICY

Over the past two years, our state DOT experts engaged in a bottom-up policy development process that resulted in our comprehensive package of reauthorization recommendations, which was adopted by our Board of Directors in October. Based on our members' extensive work, I would like to share with you the following "core principles," which we believe sets the appropriate federal framework, including for national freight transportation policy.

1. Ensure timely reauthorization of a long-term federal surface transportation bill

- Funding stability provided by federal transportation programs is absolutely crucial to meet states' capital investment needs, which take multiple years to plan and construct.
- A long-term transportation bill is needed so that there is no authorization gap upon FAST Act expiration in September 2020. Short-term program extensions cause unnecessary program disruptions and delays safety and mobility benefits to states and communities.

Our state DOT members do everything in their power to deliver needed priority projects to improve freight movement as quickly as possible, but due to the nature of large capital programs, including an extensive regulatory process, many of the projects take several years to complete. The lack of stable, predictable funding from the Highway Trust Fund makes it nearly impossible for state DOTs to plan for large projects that need a reliable flow of funding over multiple years. And these projects are what connect people, enhance quality of life, and stimulate economic growth in each community where they are built.

Getting the next long-term surface reauthorization completed on time will ensure uninterrupted investment in our freight transportation infrastructure, which in turn will enable our nation to continue building on the current economic expansion.

2. Enact a long-term, sustainable revenue solution for the Highway Trust Fund

- Ensuring Highway Trust Fund solvency in supporting a six-year federal surface transportation bill that simply maintains current FAST Act funding levels, will require approximately $100 billion in additional revenues for the Highway Trust Fund.
- To achieve a state of good repair, USDOT's 2015 Conditions and Performance Report estimates highway and bridge needs at $836 billion and transit needs at $90 billion, which would require significant additional investment.
- Federal funding solutions can draw upon the experience of 31 states that have successfully enacted transportation revenue packages since 2012.

Despite substantial and recurring funding challenges facing our transportation system, the investment backlog for transportation infrastructure continues to increase—reaching $836 billion for highways and bridges and $90 billion for transit according to the United States Department of Transportation. According to the Congressional Budget Office, in order to simply maintain the current Highway Trust Fund (HTF) spending levels adjusted for inflation after the Fixing America's Surface Transportation (FAST) Act, Congress will need to identify $100 billion in additional revenues for a six-year bill through 2026. At the same time, the purchasing power of HTF revenues has declined substantially mainly due to the flat, per-gallon motor fuel taxes that have not been adjusted since 1993, losing over half of its value in the last 26 years.

Fortunately, infrastructure investment has been one of the top national policy agenda items for both Congress and the American people over these last few years, even if significant action is yet to be taken at the federal level. Americans get it—they understand the benefits, and they want to see investment in our transportation systems. According to a Politico and Harvard poll earlier this year, 79 percent of respondents said that infrastructure investment is, "extremely important," falling just behind lowering prescription drug prices and substantially reducing the federal deficit on the list of issues polled.

Infrastructure investment ranks high for both parties, with 88 percent of Democrats and 81 percent of Republicans surveyed calling it, "extremely important." A crucial step we can take to harness this momentum is to complete the FAST Act reauthorization before October 2020 without relying on any short-term extensions.

We believe this truly is a unique window of opportunity to ensure the continued quality of life and economic vitality that make America a nation we are proud to call home. To do this, the situation demands bold action to invest in our transportation infrastructure at the appropriate level to guarantee the success of our nation's future. This action has the clear support of the American public, and it is time for the President and Congress to make it happen.

3. Increase and prioritize formula-based federal funding provided to states

- The current federal highway program optimally balances national goals with state and local decision-making.
- Formula-based transportation funding reflects the successful federal-state partnership by ensuring the flexibility necessary for each state to best meet its unique investment needs.
- Congress should increase the formula-based program's share of the Federal-aid Highway Program from 92 percent currently in the FAST Act.

The heart and soul of the Federal-aid Highway Program are the formula dollars supporting state and local investment decisions. This nation-building program, starting with the Federal-aid Road Act of 1916, established the foundation of a federally-funded, state-administered highway program, and has been perfectly suited to a growing and geographically diverse nation like ours. The stable federal investment enabled by the Highway Trust Fund has allowed states and their local partners to fund locally critical projects that at the same time serve the interests of the nation as a whole.

As the full Committee unveils your reauthorization bill early next year, we urge you to focus on maximizing federal formula-based dollars provided directly to states though the existing core formula programs rather than looking at untested new programs and approaches that can divert the federal government's focus and role in the surface transportation program.

Congress recognized in the MAP–21 legislation the need to consolidate a complex array of federal highway programs into a smaller number of broader programs, with the eligibilities generally continuing under such programs. This revised program structure was continued in the FAST Act and it has provided state DOTs with greater flexibility to deliver projects—including key freight projects—more efficiently, and it better supports data-driven investment decisions to meet national performance targets.

Efficient goods movement nationwide has especially benefited from the formula-based program framework that built the Interstate Highway System and the National Highway System, the backbone of our national network of roads and bridges that drives our national economy. This remains the optimal approach to underpin the next surface transportation legislation that will serve all corners of our country—by improving mobility and quality of life in urban, suburban, and rural areas.

4. Increase flexibility, reduce program burdens, and improve project delivery

- Increase programmatic and funding flexibility to plan, design, construct and operate the surface transportation system.
- Reduce regulatory and programmatic burdens associated with federal programs that are not part of the project approval process.
- Modernize Clean Water Act, Clean Air Act, and Endangered Species Act processes to improve transportation and environmental outcomes and reduce delays.
- To streamline and improve project delivery, states should be provided with opportunities to assume more federal responsibilities and the associated accountability.

As mentioned earlier, state DOTs are appreciative of the flexibility in the federal program that supports the right mix of projects to meet the unique investment needs of their own states. To further enhance the effectiveness of federal funding, we recommend increased flexibility of and transferability between the various federal programs, which will better enable states to target their scarce resources into the most beneficial freight programs and projects.

Each program has rules that are not always flexible regarding how the funds may be used, and each program is governed by transferability provisions that are established in statute. Specifically, because some set-aside programs have strict guidelines for use or narrow purposes, these programs tend to be underutilized. Yet limitations in the flexibility of set-aside programs prevent states from prioritizing projects based on local needs, as well as limiting the ability of state DOTs to maximize the use of available funding if a partner is not ready to begin a set-aside project.

In addition, given the difficulties that local transportation partners face in obligating federal fund, we can further improve the efficiency of how limited federal

transportation dollars are put to work under the suballocated portion of the Surface Transportation Block Grant Program (STBGP). The latest available data shows that 80 percent of total unobligated STBGP funds nationwide belong to the suballocated STBGP even though it comprises 54 percent of total STBGP funding in 2019, rising to 55 percent next year. Increased program-level flexibility for STBGP would enable state and local governments to target funding to better meet their needs, whether for preservation, capacity, safety, or other unmet needs.

With regard to project delivery, even with significant progress being made in the past decade, getting the projects done—especially larger improvements—still takes too long and is unduly costly and delay-prone. We believe there remain opportunities to not only make continued improvement in the National Environmental Policy Act (NEPA) process itself, but also in making the NEPA process work more efficiently with other federal requirements, all the while carefully and responsibly stewarding optimal environmental outcomes.

Beyond NEPA, AASHTO has identified a number of touchpoints where states can make determinations in lieu of seeking Federal Highway Administration (FHWA) approval. Examples include: federal funds obligation management, project agreements, right-of-way acquisition, preventive maintenance, repayment of preliminary engineering and right-of-way costs, and credits toward non-federal share, among many other possible areas of current federal oversight.

5. Support and ensure state DOT's ability to harness innovation and technology

- Innovative approaches and technologies should be embraced to achieve a safer and more resilient, efficient and secure surface transportation system.
- State DOTs, as infrastructure owners and operators, need the 5.9 GHz spectrum for transportation safety and connected vehicle deployment purposes.
- Preserve state and local government authority to regulate operational safety of autonomous vehicles.
- Preserve state and local government authority to responsibly manage data collected from transportation technologies.

Today, the dramatic technological change underway within the transportation arena is no less significant than when the combustion engine was merged with the wagon in the early 1900s. Today, with the merger of technology between the car, truck and other vehicles—and with the roadway itself—we will enable unprecedented improvements to safety and mobility. This will change the way we move goods, services and people on our roads and highways. It is more important now than ever that we respect the roles at local, state and federal levels and work hard to develop a shared vision of this transportation future in order not to be a bottleneck to continued innovation.

The top priority for the state DOTs and AASHTO has been—and will always remain—the safety of all transportation system users. The loss of 36,750 lives last year on our nation's highways and streets demands that we act boldly. To this end, connected vehicles (CV) utilizing Vehicle-to-Everything (V2X) communication in the 5.9 GHz spectrum will save lives by creating a seamless, cooperative environment that significantly improves the safety of our transportation system. This dedicated spectrum is currently at risk due to proposed action by the Federal Communications Commission next week to take away more than half of the safety band away from transportation safety and connectivity purposes.

The FCC's proposed action would put great progress, such as what we recently saw in Wyoming, at risk. To improve safety along the 402 miles of Interstate 80, the Wyoming Department of Transportation implemented a USDOT pilot program using DSRC-enabled technology to connect vehicles to infrastructure and to other vehicles. This corridor along the southern section of Wyoming is prone to winter crashes affecting both commercial and private vehicles. It is subjected to some of the most extreme winter weather conditions—especially blowing snow and vehicle blow overs—of any highway on the Interstate Highway System. From October 2015 to September 2016, more than 1,600 crashes occurred on I–80 in Wyoming, resulting in 18 fatalities and 271 injuries. During this period, all or parts of I–80 were closed to all vehicles for a total of over 1,500 hours—impacting not only travelers but also the trucks that make up roughly 55 percent of the state's total annual traffic stream and carry more than 32 million tons of freight across the state each year.

The Wyoming pilot program tested applications, such as advanced forward collision warnings, to let travelers know of crashes ahead. It also provided immediate situational awareness warnings about weather alerts, speed restrictions, and parking availability; detailed and current work zone warnings; specialized spot weather impact warnings for ice, fog, and other hazards; and notifications from disabled vehicles. Other sites under the federal pilot program looked at hot, humid weather (Tampa, Florida) and congestion (New Jersey/New York City) applications.

We recognize that oversight of communications technology may lie outside of your Committee's jurisdiction—but it is important to understand how the FCC's decision could impact the transportation sector and the policy priorities of this Committee. So we very much appreciate your willingness to stand with the state DOTs to make sure that our nation's highway infrastructure assets are provided the necessary technology to greatly improve safety outcomes for all users.

SPECIFIC FREIGHT POLICY RECOMMENDATIONS IN THE NEXT SURFACE TRANSPORTATION BILL

Based on the extensive input from the freight policy experts at our state DOTs, the following are the specific recommendations we would like to make in the next bill.

Expand the Extent of both the Primary Highway Freight System and National Multimodal Freight Network

The current definition and limitations of the Primary Highway Freight System (PHFS), National Highway Freight Network (NHFN) and the National Multimodal Freight Network (NMFN) will not allow states to attain the comprehensive goals set forth in MAP–21 and the FAST Act and do not take into account the geographic and economic differences in states, including the challenges of rural, large, land-based states and other concerns of states.

The PHFS network currently consists of 41,518 centerline miles, including 37,436 centerline miles of Interstate and 4,082 centerline miles of non-Interstate roads. The designation of PHFS roads in various states has resulted in a limited and disconnected network. The ability of a state to designate some additional mileage to the NHFN as critical urban and rural corridors still leaves an unduly limited and disconnected network. For the NMFN, the current draft network is limited and does not include all of the National Highway System (NHS) roads nor critical rural and urban transportation links.

Since states are required to complete state freight plans, which must then be approved by USDOT, a framework exists to identify and define the appropriate freight network in any given state.

We recommend the following changes:

- Expand eligibility of the National Highway Freight Program to include all of the NHFN. Eliminate the 2 percdent rule so states can spend funds on any NHFN route (to include Critical Urban Freight Corridors and Critical Rural Freight Corridors).
- Expand the PHFS to include all Interstate System roadways regardless of how much freight funding a state receives. Given that the Interstate System is just that—a system—a fragmented designation of the Interstate System is not appropriate to addressing freight transportation and goods movement. Freight program eligibility should include all Interstate miles by default.
- Remove restrictions on state authority to add mileage to the PHFS, NHFN and NMFN, including but not limited to mileage caps on critical urban and critical rural corridors.
- Add eligibility to use funds on any portion of a state's multimodal freight network as defined in a state's freight plan.

Expand Eligible Activities through National Highway Freight Program

The use of the nation's transportation system for freight is increasing, and with it the need for integrated solutions to better move freight throughout the country. Currently, no more than 10 percent of NHFP formula funding may be used for intermodal, freight rail, or water transportation. Integrated freight management solutions, freight safety programs, and research supporting future investments should be codified as eligible for NHFP and INFRA funds in new surface transportation reauthorization legislation.

We recommend the following changes:

- Reform the National Highway Freight Program, both the formula program to states and the discretionary program (INFRA), to more clearly include eligibility for investment in integrated freight technology, management and operations strategies and solutions, freight safety programs (including for emergency responders), and research supporting future investments.
- Remove the 10 percent multimodal cap to provide flexibility for states to use discretion in determining the amount of NHFP formula funding to go toward multimodal freight projects identified in the state's freight investment plan and to invest more in multimodal projects if appropriate for that state. Eligibility should include multi-state proposals and projects for regions and corridors to improve freight intermodal connectivity.

Changes to Infrastructure for Rebuilding America (INFRA) Discretionary Grant Program

The FAST Act established a new discretionary grant program for Nationally Significant Freight and Highway projects. Grant eligibility is limited to highway projects on the NHFN, highway or bridge projects on the NHS, railway-highway grade crossing or grade separation projects, or intermodal or rail projects, including those within the boundaries of public or private freight facilities.

Under the FAST Act, not more than $500 million in aggregate of the $4.5 billion authorized for INFRA grants (previously known as FASTLANE grants) over fiscal years 2016 to 2020 may be used for grants to freight rail, water (including ports), or other freight intermodal projects that make significant improvements to freight movement on the National Highway Freight Network.

We recommend the following changes:

- Reauthorize the program and remove or increase the caps used for grants to freight rail, water (including ports), or other freight intermodal projects.
- Add eligibility to use funds on any portion of a state's multimodal freight network as defined in a state's freight plan.
- Minimize annual changes to the Infrastructure for Rebuilding America (INFRA) Discretionary Grant Program for consistency in grant applications and award criteria.

Reinstate the National Cooperative Freight Research Program

Throughout its history, a core element of the FHWA Research, Development, and Technology Transfer's (RD&T) mission has been to promote innovation and improvement in the highway system. Over the last decades, this critical mission element has developed into a broad array of research and technology activities covering the spectrum of advanced research, applied research, technology transfer, and implementation.

The National Cooperative Freight Research Program, however, was last authorized under SAFETEA–LU. MAP–21 and the FAST Act provided much more emphasis on freight, while simultaneously reducing funding for freight research at the national level. States are concerned that freight research needs are not being met solely through the National Cooperative Highway Research Program (NCHRP). A dedicated national freight research program is needed.

We recommend the following change:

- Reestablish the NCFRP to provide research products to assist states in their delivery of freight transportation projects with funding beyond the amount prescribed for the federally-managed Research Technology & Education programs and State Planning & Research funded programs.

Railroad Coordination

We heard from our state DOT members in every region of the country this past summer that restrictions and delays imposed on transportation agencies by railroad owners, either intentionally or unintentionally, are significantly affecting the timely delivery of transportation projects.

We recommend the following changes:

- Congress should establish consistent requirements, commitments, and timeframes across all public and private railroad owners to facilitate transportation work within and across railroad rights of way, and provide USDOT the authority to enforce those provisions with the railroads.
- Congress should require USDOT to establish template or model agreements for standard activities conducted by the state DOTs in railroad rights-of-way (and vice versa), and provide guidance on the establishment of agreements for special or more complex activities.

CONCLUSION

State DOTs remain committed to assisting Congress in the development of the next surface transportation legislation that recognizes the importance of freight transportation, the investment needed to support freight transportation, and the ways in which demand for goods movement is growing and changing.

Over the past year, AASHTO's members have been engaged with USDOT in their effort to develop a national freight strategic plan to identify bottlenecks on the multimodal freight network, including the cost to address each bottleneck and strategies to improve intermodal connectivity. We share your desire to see this national freight strategic plan come to fruition soon, which will enable all of us to take a holistic look at the national freight movement picture prior to reauthorization of the next long-term bill.

I want to thank you again for the opportunity to testify today, and I am happy to answer any questions that you may have.

Mr. LIPINSKI. Thank you, Mr. Tymon, and thank all of our witnesses for your testimony today. We are now going to move on to Member questions.

Each Member will be recognized for 5 minutes, and I will start by recognizing myself. The first thing I wanted to address is the section 130 program for grade separations. I wanted to ask Mr. Jefferies.

Can you elaborate on your thoughts in your written testimony where you talk about how we can improve the section 130 grade crossing safety program?

Mr. JEFFERIES. Absolutely. Thank you. So section 130 is one of our primary priorities when it comes to FAST Act reauthorization, and we have laid out a detailed proposal attached to my written statement.

But a few examples that we would like to see is, one, any increase in funding, or even fully funding the authorized level of the program is a step in the right direction. But another example would be increasing the flexibility of how funds can be used.

Right now, if you use section 130 funds to implement some grade crossing safety devices, time goes by, there are more effective devices that come available, you cannot use section 130 funding to upgrade, and we think that is common sense to allow for upgrades, especially at those higher risk crossings, to make sure you have the most up-to-date technology available.

Mr. LIPINSKI. Thank you. In grade separations—I mean section 130 covers all grade crossing safety programs. Grade separations are the best way to improve safety. I want to ask Ms. Aleman.

Would the establishment of a dedicated Federal grade crossing separation program to help advance some of the grade separation still unfunded in CREATE be a good idea?

CREATE has made great strides over the 15 years. But one thing that has lagged far behind is the grade separations. There are 25 that were included originally, and less than half of those have been funded.

Ms. Aleman?

Ms. ALEMAN. Yes, addressing the grade separations is of critical importance, not only to the CREATE program, but to the movement of freight in our region and beyond. Like you said, 25 CREATE grade separations have been identified. Of those, only seven have been completed. This clearly shows that there is a need for additional funding to be able to address those critical cross points.

Mr. LIPINSKI. Thank you. And I just wanted to ask about this, and I know a couple of our witnesses raised it, and I raised it in my opening statement—I just wanted to see, by show of hands, how many witnesses support eliminating or greatly raising the multimodal cap in the INFRA, or whatever kind of megaprojects program we are going to have.

[Show of hands.]

Ms. GOODCHILD. I am just abstaining. I am not not voting.

[Laughter.]

Mr. LIPINSKI. OK, thank you. I was going to ask that.

The big question is how do we structure this program?

And I don't want to keep talking about the INFRA program itself, because what we have done with each of the past reauthorizations is we create a somewhat different program. So I don't want to just say that we are going to move ahead with INFRA, but there has to be something for megaprojects.

But how do we target that? And I want to start with Ms. Aleman. You know, given the limited amount of Federal dollars, should our freight strategic plan and our megaproject dollars focus on freight infrastructure bottlenecks, or improving the large freight network generally?

How do we do that, in terms of targeting? What would you recommend?

Ms. ALEMAN. I would recommend a comprehensive look at our national freight infrastructure as it exists today. I mean, really taking a comprehensive look across the United States will help Congress be able to evaluate the effectiveness of the programs that we have had to date, and will also allow you to shape future reauthorizations. So while we may not be able to increase funds, I think, thinking about this in a performance-based way, where you are applying those metrics on a national system as opposed to locally, will help greatly improve the next transportation bill.

Mr. LIPINSKI. Thank you. I just very quickly want to ask Dr. Goodchild. Yesterday, New York DOT announced a pilot freight program which will encourage the use of cargo electric bikes instead of trucks to move freight within New York City. I am just personally intrigued by this, and how this would actually work.

I am not sure where these cargo bikes are going to go, but have you looked at this, and would this type of climate-friendly transportation mode play an important role?

Ms. GOODCHILD. So I am currently leading a project to evaluate a pilot of electric-assist cargo bikes in the city of Seattle. And so our task there is to evaluate the environmental safety and efficiency benefits of that approach.

There is some complexity in that, because it doesn't replace a truck. It can only move smaller packages, and it has a much shorter range. And so it is used in complement with a truck. And it is important when we evaluate this system to look at the relationship between those two modes.

Certainly, it is a more nimble vehicle. And depending on what the rules are, if it is allowed to use a bike lane, or if it is allowed to park in a sidewalk, or if it is allowed to park in a commercial vehicle load zone, it can provide some better maneuverability at a local scale. And if it is electric, then there is the local zero-emissions benefit of that mode.

Mr. LIPINSKI. Thank you. We will look forward to seeing the results there.

So my time is expired. I will now yield 5 minutes to Mr. Davis.

Mr. DAVIS. Thank you, Mr. Chairman. And thanks again to the witnesses. I enjoyed your testimony. And I wish I had longer than 5 minutes to get to each of you to ask a few different questions. But I don't, so I will start with Mr. Tymon.

In your testimony you mentioned the freight plans that each State has developed. And can you describe any trends that were

identified across multiple States, and strategies that were employed to address these needs?

Mr. TYMON. I am sorry. Across?

Mr. DAVIS. Yes, can you describe any trends? You mentioned the freight plans that each State has. Are there any trends that kind of go beyond State lines that were employed to address kind of the freight strategies?

Mr. TYMON. Well, I think the important point here is that each State is required to put together a State freight plan. And you are seeing that States are working with their partners across borders to identify projects that cut across States.

As everybody here knows, freight doesn't just stop at the State line, and it is important that States are able to work with their neighbors to make sure that freight is moving as efficiently as possible. So most, I think, of the freight projects that are identified are done in concert with their neighbors to make sure that, once you get to a State border, that that freight doesn't back up there because the State on the other side of that border hasn't worked to make similar improvements.

So we are seeing more and more coordination among States as they put together these plans to make sure that freight moves as efficiently as possible.

Mr. DAVIS. Good. Have you seen the States finding strategic value in the plans that they have put in place? And have those plans helped to reduce congestion?

Mr. TYMON. I don't think we have enough of a sample size to be able to say whether or not we are reducing congestion. But I think it is a step in the right direction. It has really required States to take a look at their entire inventory that handles freight transportation to make sure that they are making the investments that benefit freight as efficiently as possible.

Mr. DAVIS. OK. Well, in my home State of Illinois, they took an innovative approach using their formula freight dollars to develop a transparent, competitive grant program that is open to stakeholder applications. It is like kind of a State-level INFRA grant program.

What other innovative approaches have other States taken to use their freight formula funds? And have they allowed States to leverage more dollars for reducing congestion and improving performance?

Mr. TYMON. Absolutely. We are seeing the Federal dollars, in a lot of cases, being used as seed money to bring in local dollars to address freight bottlenecks. The example that you have given in Illinois is a great example of States having the flexibility to use those formula dollars to create a program that works in that State by, essentially, setting up a mini-INFRA grant program, where it is competitive, and you are inviting other stakeholders to come to the table with their innovative ideas.

If the States didn't have that flexibility, we wouldn't be able to do projects like that in Illinois.

Mr. DAVIS. Great. Ms. Aleman, it is great to sit here with my good friend, Chairman Lipinski, who I know is always looking at improving the CREATE project. We have talked about it my entire 6½ years here working with him on this issue.

And I know you mentioned how CREATE, in your testimony, will improve the rail system in our home State of Illinois. How does improved efficiency in the Chicago rail network benefit agriculture and manufacturers in the 13th Congressional District that I represent in central Illinois?

Ms. ALEMAN. Sure. I think a great example is that in 2014 there was a severe weather incident that really shut down and reduced the delivery service and infrastructure network in Chicago. And what that meant was that—it was prime agriculture movement season—produce was rotting on train cars, because they couldn't get through Chicago. And that produce wasn't headed toward Chicago, it was headed towards other parts of the country.

So, you know, 25 percent of all freight trains and 50 percent of all intermodal trains from the Nation's goods movement cross through Chicago. So this really is a national issue, and something that we really need to think comprehensively about.

Mr. DAVIS. Great. It is important, obviously, being a center of freight movement in the Midwest. Not just the rail network, but also our locks and dams, waterways, and our roadways in infrastructure improvements.

One last question. As somebody who believes we need to pass the USMCA through this institution, could you estimate how much traffic through the Chicago rail network would go to our greatest trading partners, Canada and Mexico?

Ms. ALEMAN. I don't have those numbers at my fingertips, but I can get them for you for the record.

Mr. DAVIS. Thank you, that would be great. I yield back the balance of my time.

Mr. LIPINSKI. Now I will recognize Ms. Norton for 5 minutes.

Ms. NORTON. Thank you very much. You will note the interest in this committee in multimodal investments, multimodal approaches. And, of course, our way in which we allocate funds is anything but that. It is stovepiped funding, which makes this even more challenging.

We also know that the railroads, for the first time, were included—or at least freight needs were included in the FAST Act for the first time. That is really amazing, isn't it, considering how important freight has always been?

And, of course, Mr. Lipinski spoke about the cap on funding. I am not sure how funding would operate, but I would like to ask perhaps Mr. Tymon, Ms. Aleman, why flexibility to pursue multimodal investments to meet freight needs, why that is important to States, or to cities, to planning agencies, and why you view it as an appropriate use of program funds.

Ms. ALEMAN. So, from our perspective, freight doesn't move on highways alone, as you see from the stakeholders that are here today. We have got rail. Also in our State and across the country there are ports. And we believe that, where public goods are moving, public dollars should be invested.

Mr. TYMON. And we absolutely agree that, you know, State DOTs right now are all departments of transportation. Gone are the days where we had departments of roads or departments of highways. All 50 States now have transportation as part of their name, and I think that reflects a movement towards a multimodal approach

to transportation. It is not just about moving freight by one mode or another; it is an all-of-the-above approach.

And I think, in order to solve the challenges that we have, both on the freight and the passenger side, we need to be looking at all modes of transportation, and we need the Federal programs to provide that flexibility so that States can choose the projects and strategies that work best in that State.

Ms. NORTON. Thank you.

Ms. Aleman, I was intrigued by a suggestion on—I think it is page 8 of your testimony—to develop a national strategy that guides long-term planning. And you even say that there should be an office of multimodal freight.

We have heard here that everything from the curbs down to the last inch of infrastructure is simply not ready for the 21st century. Would you talk more about this national strategy?

Ms. ALEMAN. Thank you, Chairwoman. The national strategy is critical, because we have the data to know where the freight bottlenecks are across this country, and we can use that as our North Star for programming project funds, and making sure that the projects that are funded are advancing the goals of this country and of Congress. And so that allows you a measurable tool to be able to look back and track your progress over time, and hold these programs and these discretionary funds more accountable.

Ms. NORTON. So I take it—Dr. Goodchild, your testimony highlighted the importance of supporting cities and local communities to grapple with this rapidly changing freight supply chain. What kind of tools would help cities build the capacity to plan for the future of freight deliveries, which are changing and perhaps becoming obsolete, even as they develop those strategies?

That is why I asked Ms. Aleman about long-term planning. But what kind of tools do you have in mind?

Ms. GOODCHILD. So one would be data about goods movement that is relevant at sort of the municipal scale, or even megaregion scale. When we just look at State-to-State, or regional data, like the Puget Sound, it doesn't provide any insight about movements within the region of the Puget Sound.

Another would be to encourage groups like the Urban Freight Lab, local collaborations that could contribute to defining local problems, and there could be a Federal role in supporting, and initiating, and in catalyzing those kinds of organizations.

Ms. NORTON. Thank you very much. I see my time has expired.

Mr. LIPINSKI. Thank you, Chairwoman Norton. The Chair will now recognize Mr. Crawford for 5 minutes.

Mr. CRAWFORD. All right. Thank you, Mr. Chairman. I want to start with Mr. Jefferies.

I am going to direct this question to you. The advancement of technology over the past few decades is undeniable. It has led to tremendous gains throughout the economy. Can you provide some examples of how technology is being used in the rail industry, and the impacts they are having?

And what do you think Congress can do to ensure an environment where future technologies are not stymied by regulatory burdens?

Mr. JEFFERIES. Absolutely, thank you. So, I mean, you hit the nail on the head, that technology has played an evolutionary role in the railroad. If you look at where it was 10, 15, 20 years ago, today's railroad, while still steel-on-steel, is a completely different animal.

Locomotives are super-computers on wheels, and they are able to gather data throughout every aspect of the trip, pair that with detectors and other inspection equipment that is along the right-of-way throughout the system that is listening, watching, and analyzing not only the track as you go over it, but also the locomotive as it comes by, to identify potential flaws in the system, potential risk areas. It allows you to, through predictive analytics, to identify possible risks before they become serious problems.

Even on the environmental side, using emissionless cranes in the yards, idle-reduction technology in the yards to reduce emissions in yard movements, which is where a lot of the emissions occur.

And really, our main issue is, when we look at regulations, let's talk about where we want to go, and let railroads find that path to meet the outcome that Congress or the regulator is staking out. And let's not focus on the prescriptive way to get there, because I think ingenuity is a powerful tool, and it is amazing what people will come up with if you tell them the goal and let them get there via their best methods.

Mr. CRAWFORD. Excellent, thank you. This is just general. Anybody that wants to chime in, feel free.

The current rate of highway capacity growth sufficient to address the growing freight demand and the—what do we need—what is the expanded capacity that is needed the most?

Mr. TYMON. So, Mr. Crawford, I think that that is a great question, because I think it varies, depending on what part of the country you are in. Right now I think that the number-one priority for State DOTs is maintaining the assets that they currently have. But there are certainly some parts of the country and on certain facilities where additional highway capacity will help improve the efficient movement of both people and freight.

With the projected growth that we are going to see in freight transportation in the future, I would have to assume that there are multiple projects in each State across the country where additional capacity will help make sure that that freight continues to move as efficiently as possible.

Mr. CRAWFORD. Do you think the demand for freight transportation is directly correlated to highway capacity, or is it more closely tied to other factors like economic growth?

Mr. TYMON. I think that it is a combination of things. I think that, as the economy grows and the country demands more products and goods, there is just going to be more of a demand on the system. How we meet that demand, I think it will have to be a multimodal approach. I think it is going to have to be an all-of-the-above approach. It will have to be a, in some cases, additional highway capacity, but it will also have to be additional freight rail capacity in some way, shape, or form.

So, you know, I think State DOTs out there are looking for multimodal solutions, not just one solution. But I do think that highway capacity increases are part of that solution.

Mr. CRAWFORD. In your view, what are the most significant trends in transportation and distribution that will impact where, how, how much freight will be moving over the Nation's highways in the coming years?

Mr. TYMON. I am sorry, could you repeat that, again? It is——

Mr. CRAWFORD. What are the most significant trends that you see in transportation and distribution that would impact where, how, and how much freight would be moving over the Nation's highways in the years to come?

Mr. TYMON. I think the number-one trend that we are seeing is changes in how people expect to get their goods and services, right?

I mean I think Chairman DeFazio mentioned earlier we are just through Black Friday and Cyber Monday, and the real-time nature of what people expect and now demand, as consumers, is going to put a different stress on the system than we were thinking about 20, 30 years ago. And the system is going to have to adapt to be able to meet those demands. I think the consumers are now—you know, we thought 2- or 3-day delivery was a push 10 years ago. Now we have 4- to 6-hour delivery windows. If consumers are going to expect that kind of responsiveness, the system is going to have to adapt, and there is going to have to be some expansion and innovation within the system to be able to accommodate that.

Mr. CRAWFORD. Thank you, I yield back.

Ms. NORTON [presiding]. Chairman DeFazio for 5 minutes.

Mr. DEFAZIO. Thanks, Madam Chair.

Mr. Mathers, you point out that we are using 43 percent of the capacity of our freight trucks. You give some examples. You had examples of Ocean Spray, Colgate, Kimberly-Clark, and Walmart. What Federal policies could we adopt to encourage higher utilization so we don't have part-full trucks running everywhere?

Mr. MATHERS. Thank you, Mr. Chairman. It is a great question. I think, as we have seen, there is a lot of, you know, just operational choices that the shippers themselves have to make. So it is less clear to me exactly on Federal policy choices.

But, I would think that part of this is kind of information- and data-sharing between companies. I think we see a great opportunity between shippers to co-load and collaborate in their shipping. And that was the example in the testimony of Colgate and Kimberly-Clark, right, where they are taking trucks off the road, they are delivering more products to CVS, inventory costs are going down.

I think the big barrier there is data and transparency and companies working together. And so I think it could be an effort to study that issue, to bring shippers together, and really try to understand how they can get better data transparency amongst shippers.

Mr. DEFAZIO. OK. I am still thinking about what the Federal policies would be, but I agree with the transparency and the data-sharing. But I have got to figure out ways to incentivize that or encourage that.

Mr. Jefferies, as you know, a couple of decades ago Congress gave Amtrak trains preference over freight. And DOJ can enforce that preference. They have only done it once. And under PRIIA,

Congress directed the FRA and Amtrak to develop minimum performance standards.

And then, of course, the freight industry sued, and now our delays and on-time performance are up dramatically.

I just was recently meeting with Richard Anderson.

And, you know, I live 112 miles from Portland. I would rather not drive on Interstate 5, but their scheduled time is 3½ hours for 112 miles. And they frequently don't meet that.

We now have freights that are running 3 miles long, they don't have 3-mile-long sidings.

How do you recommend that we might better deal with this issue? Because I am pretty much getting to the point of some pretty strong legislation. So do you have any suggestions, short of that?

Mr. JEFFERIES. So I think we are happy to see FRA moving forward with a rule. They estimated at a hearing in the Senate Commerce, Science, and Transportation Committee they expect to have that out next June, I believe. We think they are taking the right approach by taking information from all stakeholders and moving forward.

I think, on the——

Mr. DEFAZIO. Was that the FRA?

Mr. JEFFERIES. Yes, sir.

Mr. DEFAZIO. Well, yes. We had Mr. Batory here. He is one of the most embarrassing witnesses we ever had, to tell the truth. So I am not putting a lot of stock in his rule, but we will see how that works out.

But you have got to do something here, or we are going to have to do something in the surface bill that you are probably not going to like, and it is going to be very prescriptive. So I just want to get that——

Mr. JEFFERIES. Well, we think it is important that FRA move forward with a rule to get metrics and standards——

Mr. DEFAZIO. Yes, message across.

Ms. Goodchild, you point out a whole host of issues, but I guess you are an academic. It is kind of short on solutions at this point, particularly the urban congestion, the last-mile delivery stuff.

Ms. GOODCHILD. Well, I think that the industry is experimenting. I think if you look at—the example was raised of e-bikes in New York City. I am encouraged by the motivation to try new solutions. And those need to be tried before we can identify them as well-established solutions. So I think there is a need for experimentation.

We can start with ideas. There are lots of ideas. But it is important to move from ideas to evaluation and consensus and establishing those as things we might want to set forth as solutions that communities should consider.

So I think, you know, experimentation and test and supporting that, to the extent possible, allowing that to the extent possible, is important right now. And part of that also comes from having data and information, investing in data that we can use to actually evaluate and compare and contrast.

Also, to the point about sort of trucks not being particularly well utilized, there is a very strong market incentive for trucking companies to utilize their equipment. They are very good at that. And the reason they don't is that they are responding to customer de-

mands. And so, I think allowing—you know, considering the motivation and the role of the private carrier, listening to what would help them run a more efficient system, is important.

So we have zero visibility about parking availability. If you run a tour in the city of Seattle and your goal is to do that quickly and efficiently, you have no idea what parking will be available, at what time. And it is essential to having good performance.

So investing in technology that allows us to see what infrastructure is available, and to measure its performance, will result in benefits in supply chain efficiency.

Mr. DEFAZIO. OK. That is interesting, thank you.

I thank you, Madam Chair.

Ms. NORTON. Mr. Gibbs?

Mr. GIBBS. Thank you, Madam Chair. Well, I will say the good news is the economy is really strong, so that gives us more stuff to move. Consumers are buying a lot of stuff, they are driving this economy. And plus, just earlier, the consumer demands—the attitudes are changing. More challenges for all of us in the transportation sector, right?

I wanted to say, also, we need all modes. I think we all agree to that. If one mode breaks down or stumbles, it is going to affect all the other modes. So we always should be conscious, we—you know, keep that in mind.

And I know we don't have any representation here, I guess, from the trucking industry, but hopefully we can in the future.

I know we have met with the auto manufacturers. And on the passenger side they are pretty much saying they are going to be all electric at some point on passenger vehicles, all electric.

Now, Mr. Mathers, I see in your testimony on the trucks, you are talking about heavy trucks, all electric. I just got a few questions on that.

On your charts here, you have got urban delivery, regional haul. There is not long haul on there. So the first thing that comes to my mind is horsepower. Is the technology there? Where are we on the technology for the horsepower and also the cost for the, you know, industry driving this?

And then take that a bit further, because I think we have reduced our greenhouse gas emissions in this country in the last decade about 13 to 15 percent, the reports I have seen, and that is from natural gas. And I think most people agree to that. If we have an all-electric passenger fleet, and we move to an all-electric freight fleet, has anybody studied what does that do to our demands on our grid, our electric generation, and the overall emissions, overall?

So I guess my question is—most to Mr. Mathers, I think—do you know what the costs are to make these heavy-duty trucks electric in their operating costs, how that compares to a CNG or an LNG vehicle, and then also how it relates from the start of generation all the way through.

Mr. MATHERS. Great. Well, thank you. Thank you, Mr. Gibbs.

I think that maybe the first thing to talk around is the horsepower, right? You are asking about, you know, right now, Daimler has—I believe it is 20 e-Cascadias pulling cargo out of L.A.-Long Beach. The horsepower is there, and the technology is working for

drayage applications and kind of making inroads in the regional haul, which are, you know, 150-, 200-mile kind of duty cycles.

And I think that is what we are looking for when we think about zero-emission, Class 8 trucks is having that day cab operation, going from a distribution center to a grocery store.

And then, for the long haul, I think the question is how do you use that capacity in the long haul to the fullest, how do you use intermodal? And I actually think there is a great pairing between using intermodal to move freight for the long haul and using the zero emission to deliver the freight regionally.

On the cost question, I think just yesterday Bloomberg New Energy Finance came out with their annual update of the cost of EV battery packs. And it was $156 per kilowatt hour. That is down from $1,100 per kilowatt hour in 2010. We are seeing a dramatic reduction in——

Mr. GIBBS. How about cost of heavy-duty trucks, electric, the cost——

Mr. MATHERS. The trucks. Yes. So, like, the trucks on the—there is a paucity of data right now on the trucks themselves, because the trucks in operation right now are largely demonstrational projects. Where you have electric, heavy-duty vehicles is in the transit space.

And right now, the electric transit buses cost more upfront, but they deliver savings over the life cycle of cost——

Mr. GIBBS. I am running out of time. Your organization, the Environmental Defense Fund, are you pro or con, integrating more natural gas where it makes sense to move this, or——

Mr. MATHERS. It is a great question. So I think I will make two really quick points on that.

One is that electric power is inherently more efficient. So if you want to take natural gas and get miles out of it, you will get twice the miles by making electricity, and putting that electricity into a battery, and using that to move the vehicle.

The second point is freight has two sources of emissions: criteria emissions that harm local air pollution, and global climate emissions. Natural gas can help with one. It hurts with global climate emissions because of the serious issue of methane leaks throughout the supply chain.

Mr. GIBBS. I am out of time, so I have to yield back.

Ms. NORTON. The gentleman's time has expired. Mrs. Napolitano?

Mrs. NAPOLITANO. Thank you, Madam Chair.

Ms. Aleman, you have discussed economic importance of freight investments. You also represent local communities throughout which freight moves, much like the Alameda Corridor in my district. Would you discuss the community impacts of freight movement on the quality of life impacts and concerns, and what projects are best at addressing these issues?

And should the freight industry be more invested in addressing local impacts of rail?

Ms. ALEMAN. Thank you for the question, Congresswoman. You know, we estimate the motorist delay in the Chicago region cost about $58 million in 2018, but we are reexamining that research

to really look at what the local impacts are of congestion on communities across our region.

We have 284 municipalities in 7 communities that I represent here, as the MPO. You know, and we are seeing that perhaps the number, just based on our preliminary research and the data that we are collecting, that perhaps the number of congestion is even worse in our communities.

And, you know, to local communities, the impacts of congestion are real. Air quality impacts are real. The deterioration of their local roads, the safety impacts, and the noise impacts, these are things that communities are grappling with.

So, as a planning organization, we are working with communities to help them address these projects, these concerns, proactively. We are doing local plans, we are helping them build their capacity at the local level, and really trying to get ahead of freight movement and freight demand increases by helping them figure out where trucks should be, and what time of day those trucks should be in different places. So thank you.

Mrs. NAPOLITANO. Thank you for your answer.

Mr. Mathers, I represent part of southern California, which is home to the Ports of Los Angeles and Long Beach. Forty-five percent of the Nation's imports and exports go through it.

Our ports have done a remarkable job in the past 10 years, and continuously greening their drayage trucking fleets.

One problem with the retrofits is that their costly upgrades get passed on to the truck drivers themselves. This is a problem to where many corrupt trucking agencies force their employees to lease-own trucking models and then severely underpay drivers and force them into bankruptcy trying to pay for engines. How do we deal with this problem?

Mr. MATHERS. Thank you for the question. I think the drayage space is a complex and challenging space. As we are thinking about zero-emission opportunities there, I think the big challenge is just the connect between the cost of the technology and the availability of capital for the drivers themselves.

And so I think one of the things I am noting here is hoping that this committee moves forward and brings stakeholders together to create a plan for moving that industry to 100 percent zero-emission drayage trucks by 2030, and a key part of that is going to be financing mechanisms for the drivers and understanding the roles that the shippers should be playing, and that other folks, other stakeholders have, to make sure that drayage drivers can move into zero-emission vehicles.

Mrs. NAPOLITANO. Thank you very much.

Ms. Aleman and Mr. Tymon, the FAST Act created two freight funding programs, one at 4.5 competitive grant, and the other at 6.3 formula for the States. We are all concerned that competitive freight has been overly politicized, and that projects are not being awarded.

Should transportation put all the freight funding into the formula National Highway Freight Program so that each State is given freight equity?

Ms. ALEMAN. I want to be sure that I understood your question, Congresswoman. Was it about the equity of the distribution of the funds in the program?

Mrs. NAPOLITANO. Should we move——

Ms. ALEMAN. Yes.

Mrs. NAPOLITANO [continuing]. All the funds into the National Highway Freight Program, instead of having the other competitive—by the administration.

Ms. ALEMAN. So I think both programs are necessary. I mean one of the things that I saw when I was at the DOT is that, you know, freight impacts across the State are very different than the freight programs where folks would come together across jurisdictional borders to work on those highly complex projects. And those competitive funds were really an incentive for communities, for multistates to be able to work together.

And then, at the local level, to the distribution of those funds to the States, we are helpful in them addressing sort of the intrastate commerce challenges.

Mrs. NAPOLITANO. Mr. Tymon?

Mr. TYMON. May I weigh in on that, as well? I think that that is—you bring up a great point. And I do think there is a role for both discretionary and formula programs.

But the fact that there is such variation from Congress to Congress, or administration to administration, in how those discretionary dollars are distributed, I think, really adds more merit to the formula-based program, because it is a predictable stream of funding that will allow project sponsors such as States to be able to pick the projects that they need to do over a long period of time.

So I just think that what you have highlighted there is a great supporting statement for formula dollars and the value for them.

Mrs. NAPOLITANO. I think you are right, and I think we should move them.

Thank you, Madam Chair.

Ms. NORTON. Thank you, Mrs. Napolitano. We move on to Mr. Stauber.

Mr. STAUBER. I thank you, Chair Norton and Ranking Member Pence.

Before I go into questioning, I think it is important to illustrate the freight networks in my district of Minnesota, and how they interact with each other.

In northeastern Minnesota we have freight rail lines that carry taconite from the Iron Range to the Port of Duluth to be shipped by lakers across the Great Lakes through the Soo locks, and to be made into American steel.

We have freight lines that transport coal and ag products from the upper Midwest to the Port of Duluth to be shipped to the east coast and across the Atlantic Ocean.

The Port of Duluth, the most inland port in the Nation, accepts intermodal traffic, from trucks that must navigate through a treacherous traffic interchange to drop off or pick up their products. Our entire freight network in northeastern Minnesota is interconnected and codependent on each other. This means that if and when parts of the network fail, or are inefficient, the entire system suffers.

Mr. Baker, can you please speak to the importance of the 45G tax credit—which I support, by the way—to the interconnectedness of freight networks?

Mr. BAKER. Thank you very much for the question. Normally people ask me to stop talking about 45G, because I do it so frequently, but I appreciate you asking.

It is the most critical policy that we have identified to help with short line railroads. We are largely a privately funded network. But given the nature of short line railroads, preserving service into small towns in rural America, Congress has long seen the wisdom in helping out a little bit.

The credit has been expired since the end of 2017. It is beyond critical and crucial for us at this point. It is an extraordinarily effective way to get upgrades done in small railroads and——

Mr. STAUBER. Remain competitive?

Mr. BAKER. To remain competitive, and those small railroads can do an awful lot with just a little bit of help.

Mr. STAUBER. Thank you very much.

Mr. Tymon, as I mentioned before, the Twin Ports Interchange project, also known as the "Can of Worms"—so this tells you a little bit about the nature of this traffic issue just coming out of the Port of Duluth and in the city of Duluth. It is a major inefficiency, and endangers the freight network in my district around the port.

Can you please speak a little bit about how the highways—and specifically, the interchanges such as the "Can of Worms" in Duluth, Minnesota, can impact freight travel, and how important it is to ensure there are efficiencies to maximize our shipping capabilities?

Mr. TYMON. Thank you for that question. You know, I think, first, you mentioned safety. And safety is the number-one priority for every State DOT across the country. So, in addition to making sure that we can move that freight as efficiently as possible, we need to make sure that the system operates as safely as possible.

So, you know, I think that the project that you have described, there is probably a project like that in every State across the country, whether it is called the "Spaghetti Bowl," or the "Zoo," or the "Can of Worms"—I can't say I have heard that one before.

You know, there are strategies that States can do to work with localities to make sure that they either look for ways to operate that facility as efficiently as possible, whether it is use of technology, or, in some cases, you know, looking at that facility and seeing if there are changes that need to be made, from an infrastructure standpoint, to help it operate efficiently.

I think that the biggest problem there is funding. And if there aren't the resources that are necessary for a State or a locality to take on a major project like that, if you are talking about reconstituting that interchange in a way that looks significantly different than what it does now, you are going to need a significant amount of dollars to be able to do that.

So, having a robust Federal program that will be able to fund those types of projects would be extremely helpful in having a State be able to tackle something like that.

Mr. STAUBER. So would you say that, in our case, if the "Can of Worms"—and they are working on it—if that was fixed, if it was

safer and more efficient, what would be the timetable that you would see an economic increase? Would it be immediate, or over a period of time, in your experience?

Mr. TYMON. Well, I think you would see both immediate impacts as well as long-term impacts for a major project like that. You would see probably an immediate impact, from a congestion standpoint and from a safety standpoint. But then, you are making that area more economically competitive if you are able to increase throughput and increase the reliability and efficiency of that facility.

Mr. STAUBER. Thank you for your questioning. And to all the witnesses, thanks for your testimony. It is greatly appreciated.

And Madam Chair, I yield back.

Ms. NORTON. Thank you, Mr. Stauber. Next would be Mr. Malinowski.

Mr. MALINOWSKI. Thank you. Thank you, Madam Chair.

Mr. Jefferies, you and I had an exchange the last time I was here that I wanted to follow up with you on, and I want to say at the outset that I very, very clearly understand the essential role that freight railways play in our economy, and the profoundly beneficial role that they play in helping us maintain a transportation system, while keeping the environment clean, and dealing with climate change. It is undeniable.

I do have concerns about safety, though. And in our last exchange you placed a great emphasis on data, on basing decisions on data, which, of course, I agree with. And you came today with data about falling accident rates in the freight rail system. And it was interesting to me that you chose a timeframe going back to the year 2000, which is quite a long time.

Well, we actually have data that came out, I think, even today on 2019 that allows us to look, I think, at a more significant time period, given changes in the freight rail industry just the last few years. So let me read you some data.

Since 2016, from 2016 to 2019, total fatalities are up from 519 to 617, almost a 16-percent increase. Trespasser deaths, up by over 25 percent. The rate of train accidents per million freight train-miles, up by around 9 percent since 2016. Hazmat cars damaged or derailed, up by over 20 percent since 2016.

Since you are so focused on data, I wonder if you could offer us an explanation as to why things have gotten so much worse in just the last 3 years.

Mr. JEFFERIES. So, first, thank you for that. Let's start with the deaths. You know, you mentioned trespassers. Grade crossings, I don't know if you mentioned grade crossings specifically, but that is an area of challenge, absolutely. Ninety-six percent of rail fatalities are at grade crossings or are trespassers. And that is an area where we continue to focus on driving that number down. And it is certainly a responsibility, it is a shared responsibility with the railroads, with the communities, with individuals involved. And it is something that we need to continue to work on. And absolutely, we will do that.

That number is dramatically lower than it was, historically, but it is not low enough, because it is still above zero. So we have more work to do.

Mr. MALINOWSKI. Well, it is not just that these numbers are above zero. Of course, we always want to get down——

Mr. JEFFERIES. Right.

Mr. MALINOWSKI [continuing]. To zero. It is that they have been going up.

Mr. JEFFERIES. Well, I think——

Mr. MALINOWSKI. Really, across the board, not just——

Mr. JEFFERIES. Every year we want to drive them down, but——

Mr. MALINOWSKI. Well, since 2016, virtually every safety-related statistic looks worse and worse——

Mr. JEFFERIES. Well——

Mr. MALINOWSKI [continuing]. In the freight rail industry. And, you know, you are touting this miraculous technology. Locomotives are super-computers on wheels, identifying all these——

Mr. JEFFERIES. Absolutely.

Mr. MALINOWSKI [continuing]. Problems before they arise. And yet things are getting worse. And I——

Mr. JEFFERIES. Well, I——

Mr. MALINOWSKI. And I would stress this——

Mr. JEFFERIES. I would challenge they are getting worse. I am not looking at the same data you are, but——

Mr. MALINOWSKI. I am looking—I am happy to share this. This is from the FRA.

Mr. JEFFERIES. Yes. When we look at hazmat transportation——

Mr. MALINOWSKI. The category——

Mr. JEFFERIES [continuing]. We are in the safest era ever, 99.998 of hazmat movements move from point to destination without any incident, whatsoever.

Mr. MALINOWSKI. Compared to the early 20th century——

Mr. JEFFERIES. That is not 100 percent——

Mr. MALINOWSKI [continuing]. Perhaps, but in the last few years something has happened.

Mr. JEFFERIES. That is actually current data, but——

Mr. MALINOWSKI. And, look, I am stressing this because you are up here advocating for certain things.

Mr. JEFFERIES. Right.

Mr. MALINOWSKI. You are advocating that we do nothing on the length of freight trains, that we do nothing on crew requirements for freight trains. You are advocating that we allow increasingly hazardous materials, like LNG, to move on freight trains.

You said something earlier today. It was really an eloquent statement in its way. You said, "Let's not focus on the prescriptive way to get there." What do you mean by that? Are you suggesting we do nothing?

Mr. JEFFERIES. No, I am saying let's talk about the goal we want to get to, and let's set benchmarks for getting to that goal. But let's not set one way and one way only for how to get there.

Mr. MALINOWSKI. So, basically, no way. You want us to basically tell you—have safer railways, but allow the industry to figure out how we do it.

Mr. JEFFERIES. I think that——

Mr. MALINOWSKI. And no regulation.

Mr. JEFFERIES [continuing]. When you prescribe one and only one way to get to a desired outcome, you miss opportunities.

I think we have a shared interest. I mean this conversation shows we have a shared interest in maximizing safety. And so we can agree on that. Like I said, we may disagree on data interpretation, but I think we can agree on shared goals of safety. So something I am certainly happy to have more conversations with to see where we can——

Mr. MALINOWSKI. Sir, you know, a couple weeks ago the CEO of Boeing was sitting right in that chair. And right over there we had families of people who lost their lives because the airline industry lobbied us for 20 years for less and less regulation. And he had to look them in the eye and apologize. I really hope that you don't find yourself in that position at some point in the future.

There has to be a prescriptive way to get there, and we have to work together to find it. Thank you. I yield back.

Ms. NORTON. Mr. LaMalfa?

Mr. LAMALFA. Thank you, Madam Chair, I appreciate it.

Mr. Mathers, EDF is known for its attempt to use market-based policies—its claims on taxing—or increasing costs, fines, whatever, on things it doesn't favor, while decreasing costs on environmentally friendly vehicles or other energy-consuming means.

So do you support the repeal—for heavy-duty trucks we are talking about—of Federal excise tax that has been around since World War I—I am carrying a bill on this—that adds to the cost of heavy-duty trucks—$10,000, $12,000, $15,000—as a means of getting cleaner, more environmentally friendly, cleaner running diesel engines onto our roads?

Mr. MATHERS. Thank you for the question, Congressman. I think it would be great to target that tax break for zero-emission vehicles, zero-emission trucks, and that the focus should be on incentivizing a move to the cleanest technology we have available.

Mr. LAMALFA. The diesel engines produced these days are much cleaner than the ones that are 10 years old or more.

Mr. MATHERS. And yet there is still significant room for improvement, particularly in the low-speed, high-idle duty cycles. And that is why the EPA and the California Air Resources Board are currently both working on regulations to further reduce NOx emissions. And we are happy to see that, and it is desperately needed.

Mr. LAMALFA. Well, there is a time period between now and when this technology becomes available, whether you are talking all-electric vehicles, or lower NOx, or what have you, that people still need to buy and purchase trucks.

Mr. MATHERS. Sure.

Mr. LAMALFA. And utilize, upgrade the fleet, California would see CARB coming down on people right now by January 1. Many trucks are going to be unavailable to folks, so they got to replace them with something. So shouldn't they replace them with the best available technology today? Or do you just want to make them have nothing until then?

Mr. MATHERS. I think that there are programs that exist, such as the Diesel Emissions Reduction Act, through the EPA, that help get dirty diesel trucks off the road, and we fully support that. And I think there are lots of opportunities.

I think the question is, where should we target taxpayer money. And I think that is to move forward with really——

Mr. LAMALFA. You made a good point there.

Mr. MATHERS [continuing]. Cutting-edge technology——

Mr. LAMALFA. This is taxpayer money. These truckers are paying these additional taxes on a vehicle they are trying to replace older vehicles with that are achieving 99 percent cleaner emissions than one that is 10 or 15 years old.

So it is, indeed, their money. So why aren't they allowed to keep more of their money so they can replace a truck sooner?

Mr. MATHERS. Well, I mean, again, I think it is great to incentivize the advanced technology such as zero-emission trucks.

Mr. LAMALFA. We are not talking zero emission. We are talking extremely low-emission trucks available right now.

Mr. MATHERS. Mm-hmm.

Mr. TYMON. Mr. LaMalfa, do you mind if I weigh in on this?

Mr. LAMALFA. Quickly, please.

Mr. TYMON. I think you are referring to the Federal excise tax on—are you referring to the Federal excise tax on the purchase of new trucks and trailers?

Mr. LAMALFA. Yes, sir.

Mr. TYMON. I see, absolutely, the merits of your argument in saying that if you eliminate that tax, that there is less of a barrier for trucking companies to purchase new equipment.

I would say that is a great argument there. I think the concern for a lot of us in the transportation community is the loss of revenue associated with that tax. So I don't think that a lot of folks in the transportation community are opposed to the elimination of it. It is the fact that it would leave a pretty large gaping hole in Highway Trust Fund revenue for a——

Mr. LAMALFA. It is a pretty small percentage of the overall Highway Trust Fund, but it is a big barrier for somebody, especially owner-operators, trying to replace a truck.

Mr. TYMON. Absolutely, and——

Mr. LAMALFA. It is only several billion dollars of a giant fund.

Mr. TYMON. It is——

Mr. LAMALFA. So you would rather keep that in place to keep a barrier for small operators, especially, to buy these trucks?

Mr. TYMON. No, I am not saying that. I am just saying that we need to be cognizant of making sure that, whatever hole that leaves, that it is replaced by some other revenue source.

We are already spending about $15 billion a year more from the Highway Trust Fund than we are bringing in revenue. So a change like that, if that increases that delta, which—I am not saying that folks are opposed to it, I just think that that revenue needs to be replaced in some way, shape, or form.

Mr. LAMALFA. There is a lot of ways to replace revenue. But certainly sacking the small—or any of these folks.

If you all want to talk about wanting to have cleaner running trucks on the road immediately, especially with CARB coming down on California truckers on January 1, just days away from now, and you make it a much higher bar by having this World War I-era tax still in place, then you are not achieving cleaner air, you don't have the electric vehicles that are available in any kind of volume these days, or even seen as viable. You know, maybe in short hauls, short-term use, and things like that, but over-the-road

trucks still need to have available the current technology that is improved to 99 percent cleanliness.

And that is what nobody acknowledges around here, is that they have achieved much, much cleaner tailpipe, whether we are talking trucks or cars, and still we go down this path where people are going to have much fewer choices. Instead, you have the club of Government saying you have to use this kind of vehicle. And that is not going to work for a lot of folks.

Ms. NORTON. The gentleman's time——

Mr. LAMALFA. I yield back.

Ms. NORTON [continuing]. Has expired.

Ms. Finkenauer?

Ms. FINKENAUER. Thank you, Chairwoman. I appreciate you all being here today, too, and taking all of your time to come and testify. It is an important topic. And my first question happens to be for Mr. Jefferies.

In your testimony I know you mentioned how the ongoing trade war with China is hurting two industries that are heavily served by railroads, both agriculture and manufacturing, which we feel pretty strongly in Iowa 1 right now.

As a result, the demand for rail service has gone down. I heard this firsthand when I was visiting Iowa Northern Railway in August—one of our short line railroads in Iowa—and learned about the problems that the trade war has created very specifically for their business.

With Brazil now having taken over most of our market share of soybean imports to China, the railway is moving less grain and facing more competition from larger railways for shipments to local processors.

John Deere, one of their customers, a large employer in my district, has seen their sales drop because of this ongoing trade war with China. When our farmers are not doing well, they are not buying new machinery, meaning that Iowa Northern Railway is moving less of their freight.

Mr. Jefferies, how are railroads responding to the reduced demand for freight services?

Mr. JEFFERIES. Thank you, Congresswoman. You know, you hit the nail on the head, just about trade uncertainty in general, whether it is China, whether it is north-south trade uncertainty right now with the USMCA——

Ms. FINKENAUER. But very specifically, China right now——

Mr. JEFFERIES. Absolutely.

Ms. FINKENAUER [continuing]. Specifically when it comes to steel, when it comes to——

Mr. JEFFERIES. When it comes to grain exports.

Ms. FINKENAUER [continuing]. Specifically our agriculture products.

Mr. JEFFERIES. Absolutely.

Ms. FINKENAUER. It is devastating our State right now.

Mr. JEFFERIES. Absolutely.

Ms. FINKENAUER. Yes.

Mr. JEFFERIES. And, you know, when your customers and your farmers aren't moving stuff, the railroads aren't moving stuff. So it is a chain reaction.

We feel strongly and have advocated that we need to address the tariff situation with China, and we need a positive outcome.

No one says there aren't issues that need to be dealt with.

Ms. FINKENAUER. Yes.

Mr. JEFFERIES. But that uncertainty is having a dramatic effect. We went from exporting colossal amounts of grain out through the Pacific Northwest to virtually nothing now. And, like you said, other markets are moving in to substitute U.S. grain shippers.

Ms. FINKENAUER. Yes.

Mr. JEFFERIES. And it is incumbent upon us to get a deal in place to allow those shippers to thrive again. And railroads are there.

I think 42 percent of our overarching traffic is direct import-export-related. So——

Ms. FINKENAUER. Yes.

Mr. JEFFERIES. It is grain, it is all products. It is intermodal. So we——

Ms. FINKENAUER. Well, and——

Mr. JEFFERIES. We are with you on that.

Ms. FINKENAUER. Thank you.

And, Mr. Baker, I know specifically for our short lines, one of the things, again, that I heard, you know, they are struggling right now because the bigger competitors are coming in to markets that they typically aren't in, because of lacking, you know, their own markets right now that they would typically have. And it has been harder and harder and harder for them to be able to continue to compete.

Are you seeing this in other areas in the country? I know, again, in Iowa it is—we are getting hit on all sides of it, whether it is the ongoing trade war with China, or whether it is the refinery waivers that we saw that have hurt our corn growers, our ethanol plants that are struggling right now, as well. It is just, again, getting hit on all sides.

But are you seeing this through the rest of the country, as well?

Mr. BAKER. No question, the huge percentage of the U.S. economy and then, of course, a huge percentage of rail business is dependent on trade—China, Canada, Mexico, all over the globe.

Just to put it as simply as possible, we believe in free and fair trade. We desperately need Congress and the administration to get to a resolution on the China tariffs problem and USMCA.

And if you wouldn't mind me riffing for 10 seconds on my other favorite topic, the 45G tax credit, I have to bring it up only because I know that you have been extremely vocal on the biodiesel tax credit, which would be part of the same tax extenders package. So I just wanted to thank you for your leadership on that for Iowa, for the whole country. And you are doing the Lord's work, so thank you.

Ms. FINKENAUER. No, it is important for the future of my State, which is my home, and I care a lot about it. And I am really concerned, as this trade war continues, about how this is going to impact our short line railroads, in particular, about making those investments that they typically do.

I understand that short lines invest an average of 25 to 33 percent of their revenue into their infrastructure. And this is some-

thing that, again, is hitting my State on all sides. And I continue to just listen to folks and make sure that I hope the administration is hearing us, as well.

So thank you for being here, and uplifting the need to get a resolution sooner than later, and not after the 2020 election, when it comes to China. So thank you.

Ms. NORTON. Mr. Babin?

Dr. BABIN. Yes, ma'am. Thank you, Madam Chair. And thank you, witnesses, for being here. We really appreciate all this valuable information.

My question is for Mr. Tymon. As this committee prepares for the reauthorization of the FAST Act, the growing use of technology throughout the entire transportation sector will play a huge role in our deliberations and our considerations. What are the most critical issues that this committee should be focusing on at the Federal level when it comes to the use of technology? And how can Congress be helpful, rather than getting in the way of innovation in private industry?

Mr. TYMON. Thank you for that question, Congressman. I think you have highlighted, really, the crux of my answer, which would be to get out of the way——

Dr. BABIN. Absolutely.

Mr. TYMON [continuing]. As much as possible, and let States be those incubators for innovation that they always have. You are seeing more and more States incorporate technology into their transportation solutions.

Again, I think the issue of the day is the 5.9 gigahertz spectrum, and making sure that that stays reserved for transportation safety. I appreciate that several members of this committee have come out extremely strong in pushing back against the FCC to make sure that the FCC knows that State DOTs and transportation stakeholders in general want to see the 5.9 gigahertz spectrum reserved for transportation safety.

Dr. BABIN. Right.

Mr. TYMON. I think that is—as I said before, safety is our number-one priority. Our goal is to get to zero highway fatalities. The only way we are able to get to zero highway fatalities is to incorporate more and more technology into our transportation network. A key part of that is utilization of the 5.9 gigahertz spectrum.

Dr. BABIN. Yes, sir. Excellent, excellent.

Also, I represent nine counties—Texas counties, that is—from Houston over to the Louisiana line. And that includes the Port of Houston.

As you know, the entire Nation depends on the efficient movement of freight and goods out of southeast Texas, which is a huge center for transportation, and lots of modes of transportation. Could you share with this committee what technological innovations State DOTs—you mentioned that a little bit in a previous answer, but maybe a little more specifically, and what these State DOTs are utilizing to address the increasing movement of goods across the country, across towns, and in our neighborhoods.

And if there is any time left, I would like to ask someone else, too.

Mr. TYMON. Sure, so I will be quick in saying that, you know, it really varies from State to State.

But one area that I think you are seeing States utilize more often is data. They are analyzing the data that they have to be able to better target the limited amount of dollars that they have to invest in infrastructure.

I would say that is absolutely true on the freight side, as well. You are able now to be able to take the data on where freight is moving, from point A to point B——

Dr. BABIN. Right.

Mr. TYMON [continuing]. Be able to look at it on a map, and be able to tell which facilities need improvement. And I think that the utilization of data, and how State DOTs are being able to analyze that and then target investments based on that data, is really having an impact on how we move freight and people, and I think that is only going to improve as we move forward in the future.

Dr. BABIN. Absolutely. Thank you so much.

And Mr. Jefferies, could you add to that?

Mr. JEFFERIES. Yes. Certainly, to echo Mr. Tymon's comments, on the freight rail side, whether it is in the port, en route to destination, that data is driving visibility into the system. It is allowing for optimization and how things are moved in the port to increase throughput, decrease dwell time, increase customer visibility as to where their products are en route—not quite to the level of maybe an Amazon yet, but working towards that end goal.

Dr. BABIN. Absolutely. And Mr. Baker?

Mr. BAKER. The use of technology in rail is huge, a huge focus of the owners and operators of the system.

I would agree that the data and, essentially, the freight transparency, the customers knowing where is my stuff, when is it going to get there, when are the empties going to arrive is crucial.

And there is—since the environmental aspect of this has also been a big topic, I would also add on the locomotive side, TR4 locomotives are the—are sort of the hot, new thing in rail rolling stock, and it is a massive improvement over previous locomotives. And railroads are implementing them as fast as they can. And some railroads, particularly smaller railroads, do get some help from the Federal Government through programs like DERA, and that is much appreciated in a big way to help reduce emissions.

Dr. BABIN. Absolutely. Thank you all for that great information. Information is very valuable as we deliberate over this important issue.

So I will yield back. Thank you very much, Madam Chair.

Ms. NORTON. Thank you, Mr. Babin.

Mr. Stanton?

Mr. STANTON. Thank you very much, Madam Chair. Thank you to the witnesses. Outstanding testimony here today.

The movement of freight and goods plays a critical role in our daily lives by providing us the things we need or want. But it is also key to our country's economic future and maintaining our global competitiveness.

Growth over the last 20 years, improvements in the manufacturing process, and new technology are placing ever-greater strain on the capacity to move goods. And this growth is only expected to

continue increasing. In fact, the U.S. Department of Transportation estimates by 2040 freight volumes across all modes of transportation will increase by 42 percent.

Expanding freight transportation capabilities and working towards creative solutions is something we here in Congress must focus on.

In my State of Arizona the Maricopa Association of Governments has been working on a regional transportation strategy that looks closely at how we prioritize freight-driven investments to ensure goods are transported safely and efficiently. The effort has brought together a number of stakeholders to find ways to expand commerce, strengthen our economy as it relates to freight.

My first questions are for Ms. Aleman. Arizona is a significant link in the national freight network. Large volumes of freight move by rail from the Ports of Los Angeles and Long Beach to Chicago through Arizona. In fact, more than 74 percent of all freight entering Arizona, measured by value, is moving through my State, meaning that many markets outside of Arizona are dependent upon the health of the infrastructure within Arizona.

In my district, residents feel the pinch of this nationally significant movement when they are stuck in traffic congestion or at rail crossings.

Likewise, I recognize that Chicago's role as a national rail hub means that your residents face many of the same challenges. Can you talk a bit about the need for the Federal investment in regions like ours that are critical to our Nation's economy?

Ms. ALEMAN. Thank you, Congressman, for the question. You know, freight is a commodity that we need to look at, nationally. I think the burden, again, for paying for these nationally significant projects can't be shouldered by the States that are dealing with sort of the near-term local impacts, because they aren't seeing the benefits. This really is a global marketplace here.

And so this is why, from the perspective that we have been looking at, the $12 in unique requests for every $1 of INFRA available, and it would advocate for a $12 billion program of competitive funds.

Like I said, in the Chicago region our CREATE program is an example of how that brings stakeholders together who wouldn't otherwise be focused on these issues.

Mr. STANTON. As we have discussed before, but worth repeating, you have called for removal of the 10-percent cap on nonhighway funding under the freight formula program, as well as a cap under the INFRA program—grant program. Can you explain why removal of this cap is important, once again, for the national goods movement goals?

Ms. ALEMAN. Absolutely. Our freight across this country doesn't move on our highways alone. And that is really why we need to employ strategies like removing the cap on the multimodal dollars given to States. Really, because we need States to be able to work together to address their most pressing freight needs.

Mr. STANTON. Thank you so much. In our urban centers, last-mile deliveries face regular delays, due to traffic congestion.

Dr. Goodchild, in your curb allocation change project, you suggest that reforming curb space allocation such as adding drop-off and

loading zones, could improve things. Could you discuss this a little bit more, and what else could lessen the economic and environmental impact from urban road congestion caused by freight?

Ms. GOODCHILD. Yes, thank you. So the status quo of how we manage curbs is we put yellow paint on it, or white paint, and sometimes some red paint. And we haven't updated that approach. So there is a lot that we could do, use it differently at different times of day, more dynamically allocate that curb, and price that curb in a more responsive way. We certainly need to do that, and many cities are interested in doing that at this time, including Seattle.

In terms of reducing the impact on communities, there is certainly a need to use some low-emissions solutions. So e-bikes—some of that is actually very simple. There is walking deliveries that happen from—you know, we bring five people to a delivery truck, and they can walk with hand trucks from there. It is actually a very cost-effective, fast solution in dense, urban areas. So using less fuel-intensive modes in that last mile reduces the impact on those communities.

Mr. STANTON. All right. Thank you for your outstanding answers. I am just about out of time, so I will yield back.

Ms. NORTON. I thank the gentleman. Mr. Balderson?

Mr. BALDERSON. Thank you, Madam Chair. Thank you, panel, for being here. And I have got a couple questions. My first question is for Mr. Tymon.

Thank you very much for being here today. In your testimony you mentioned the need for Congress to increase flexibility, reduce regulatory burdens, and improve project delivery in our surface transportation system. AASHTO believes Congress should modernize the Clean Water Act, Clean Air Act, and the Endangered Species Act to reduce infrastructure and construction delays.

I would like to hear your thoughts on specific ways Congress should change these laws. Can you please provide examples of how these changes would benefit our infrastructure system and help our State departments of transportation?

Mr. TYMON. Thank you for that question. What I would like to request is that I could provide specific recommendations for the record. But if you allow me the opportunity to provide more of an overview, I can say that the changes that we are looking to make to those laws are really updating them. Many of them have not been touched in 20 or 30 years.

And it is not that we are looking to not continue to safeguard the environment, far from it. We think that we can make improvements and changes to those laws, but still make sure we are doing right by the environment. It is the fact that many of them have not been changed at all, or changed very little in the last 20 or 30 years that we think that it is time for Congress to at least take a look at those laws to see if there are some improvements or modernizations that can be made.

Mr. BALDERSON. OK, thank you very much. The next question is for Mr. Jefferies.

Mr. Jefferies, thank you for being here. In your testimony you note that the operations and capital investment of America's

freight railroads support over 1 million jobs, $219 billion in economic output, and $71 billion in wages.

Additionally, railroads generated nearly $26 billion in tax revenues in 2017. I know a couple other of my colleagues have mentioned and talked about the USMCA, and that is kind of the path that I want to go down. But international trade accounts for about 35 percent of the U.S. rail revenue, 27 percent of the U.S. rail tonnage, and 42 percent of the carloads and intermodal units U.S. railroads carry.

Can you discuss the needs for Congress to ratify the USMCA, and what impact the trade agreement would have on the railroad and freight industry and their workers?

Mr. JEFFERIES. Thank you, Congressman. That is a fantastic question.

You know, I cannot reiterate more the need to move forward on USMCA. North-south trade with the U.S., obviously, our largest trading partners, and the amount of goods that flow out of the country via rail to both the north and the south—grain, for example, into Mexico, is our largest export product—it is staggering, quite honestly. It is a job creator, it is an economic uplifter for our customers.

And not only that. When you look at the supply chain that has been built up over the past several decades, it is an international supply chain. So on a lot of products—automotive, for example—you will see parts move back and forth across the border multiple times. So it is not something that can just be ripped up and air-dropped in in another fashion.

So, 50,000 rail jobs rely directly on international trade. A lot of those are north-south movements, again. And so I cannot state enough our support for getting USMCA done as soon as possible.

Mr. BALDERSON. All right. Thank you very much.

Madam Chair, I yield back my remaining time.

Thank you, panel.

Ms. NORTON. I thank the gentleman. Mr. Johnson?

Mr. JOHNSON OF GEORGIA. Thank you, Madam Chair.

Passing the USMCA will increase trade. But what direct impact will it have on the ability of the Nation to sustain the need for increased spending to repair and replace our crumbling infrastructure?

Mr. JEFFERIES. Well, from the rail perspective——

Mr. JOHNSON OF GEORGIA. Mr. Jefferies or anybody. Anybody.

Mr. JEFFERIES. OK, I will start, and someone else can take it from me.

But from the rail perspective, we are making long-term investments year in, year out, because these are 50-year investments. Certainly the same could be said on the highway system.

So it is the certainty that trade deals put in place. So you can plan——

Mr. JOHNSON OF GEORGIA. Well, I understand that.

Mr. JEFFERIES [continuing]. To make these investments.

Mr. JOHNSON OF GEORGIA. I understand we want to increase trade, and we are projected to do that as the years move forward. But my question is in terms of repairing and creating new infrastructure upon which freight can move.

We need Federal revenues in place to do that. Does everybody agree with that?

Mr. JEFFERIES. Certainly on the highway side.

Mr. TYMON. Yes——

Mr. JOHNSON OF GEORGIA. And would you——

Mr. TYMON. Thank you, Mr. Jefferies.

Mr. JOHNSON OF GEORGIA. Would anyone disagree with me that it has been Federal revenues that have enabled the growth of our transportation network up to this point?

Mr. TYMON. Mr. Johnson, absolutely, I agree with you on that. We need a robust Federal program in order to be able to fund our transportation network. If we are going to make sure that we are providing for interstate commerce, both from a freight standpoint, but also from a passenger standpoint, we need a robust Federal program.

Right now the program is not meeting the existing state-of-good-repair needs that we have, as—the crumbling infrastructure reference that you had mentioned. We need something to be done to fix the Highway Trust Fund, to provide additional revenue, and to increase the size of these programs.

Mr. JOHNSON OF GEORGIA. Now, you know, we have been cutting revenue, Federal revenues, for decades. We have recently cut taxes again. And while we have been cutting taxes for decades, the needs for funding have continued to grow.

And at the same time, my friends on the other side of the aisle have signed on to the Grover Norquist no new tax pledge, which is one reason why the gas tax has not been raised since 1993. What impact does this have on our ability to grow our infrastructure to accommodate the increased trade that we all agree that we want the Nation to experience?

What impact are our policies of cutting taxes and failing to raise revenues with increasing needs having on this Nation's ability to sustain our prosperity into the future?

Ms. ALEMAN. If I may, Congressman, you know, one of the points that I made was that private-sector industries are spending approximately $27 billion annually, due to the cost of congestion. And that is a cost that I don't imagine that they are just taking on and not passing on to the consumer. And the consumers, in return, you know, could be getting so much more value if we were to put revenues forward to address the congestion problems at the forefront, as opposed to seeing those fees, those dysfunction taxes, being passed along on the back end to consumers.

Mr. JOHNSON OF GEORGIA. Yes. So when the recent $5.8 trillion tax cut passed, 83 percent of which went to the top 1 percent, then that means that, in addition to consumers paying higher taxes, or paying a greater proportion of the remaining tax burden that is in place, they are also getting hit with increased prices for goods that are incurred by the businesses that have to build the infrastructure to move the goods that the consumers pay for. So the bottom 99 percent are catching a double whammy in this kind of a situation, as our multinational corporate friends are able to escape their fair share of the tax burden.

And so, as we talk about these subjects, I think we need to look at our policies, the policies that we put into place here in Congress,

and stop avoiding the fact that we need to deal with a revenue shortfall from the Federal Government in order to sustain the kind of economic growth that we are going to need for our future.

And with that I will yield back.

Ms. NORTON. Thank you, Mr. Johnson.

Mr. Perry?

Mr. PERRY. Thanks, Madam Chair. I thank the panel members for their attendance today.

Mr. Mathers, in your testimony you stated zero-emission heavy-duty vehicles are increasingly viable. But this statement, in my opinion, is not completely based in reality. If they were economically viable and provided a lower total cost of ownership, as you claim, then the industry would be embracing them due to the market incentives, alone.

However, the high cost of current battery technology, combined with its limited energy density level makes EV trucks infeasible for long-haul operations, currently, and an expensive alternative for shorter operation.

It is also vital to remind everyone that the phrase "zero-emission vehicle" is a deceptive and misleading labeling practice, as it fails to account for the emissions related to energy-intensive battery manufacturing processes, and the very power generation necessary to recharge the battery. This reality not only limits the net emissions reductions offered by a transition to these vehicles, but it requires significant amounts of the rare earth minerals necessary for the production of the batteries themselves.

As you know, China has a stranglehold over the component mineral supply chains in the battery manufacturing industry. Also, China is projected to supply around two-thirds of global battery demand in 2020. Not coming from America, they are coming from China.

The extremely energy-intensive manufacturing process will be powered largely by coal well into the future in China. Today 70 percent of China's power is generated at coal-fired plants, and they will continue to generate over half of the nation's power through 2040, which, according to Mark Mills at the Manhattan Institute, quote, "means that, over the life span of the batteries, there would be more carbon-dioxide emissions associated with manufacturing them than would be offset by using those batteries to, say, replace internal combustion engines."

It is important to note that these projections likely underestimate the emissions in question, as they were published prior to China's recently announced plans to massively expand coal-generating capacity while simultaneously cutting funding for renewables by 40 percent.

The threat posed by Chinese influence over our critical infrastructure has been acknowledged by this very House and this committee, as we prohibited FTA funding of projects using Chinese railcars and buses.

I was going to ask you about your justification for the EDF support of the significant threat to our national security, just by using the vehicles, but also the significantly higher consumer cost, the net increase in greenhouse gas emissions, and the economic harm that it does to the workers in the United States. But maybe I will

just ask if the EDF would consider including the emissions that are commensurate with the production of the batteries, and everything else that goes into the production and the use of the batteries into their assessment of the economic viability. Maybe that is a better question.

Mr. MATHERS. Thank you, Mr. Perry, for the question. And we do, right?

I am not familiar with the Manhattan Institute study, but I am very familiar with work that the U.S. Government is sponsoring through Argonne National Labs that has looked at the life-cycle impact of electrification in electric vehicles, and found that the fuel consumption, right, is still, by far, the most significant source of emissions, and that the creation of the battery is on par with the creation of the vehicle.

So it is, I think, on the order of about 20 percent of the life cycle. I don't have the numbers off the top of my head, but would be more than happy to follow up and put those on the record.

I think the questions around China and the life-cycle cost all kind of come together in the fact that the direction of this industry is clear. You are seeing Daimler putting in $1 billion to build these vehicles. You are seeing Cummins invest half a billion dollars. These manufacturers are doing this because they see that is where the future is. And right now, China has a head start on us.

And so I think we, as a country, have a choice to make. Do we want to out-compete China and make those vehicles here? And I think we are better off if we do. And that is better for the environment, that is better for our economy, and that is better for our national security.

Mr. PERRY. But the point is we are not making them here yet. So the policy that you are advocating for is kind of—the cart is before the horse, as opposed to backwards. And I don't necessarily disagree that it would be great if that weren't the case, but that is not the case now, and I would——

Mr. MATHERS. Let's let——

Mr. PERRY [continuing]. Just like your estimates——

Mr. MATHERS. Let's just let——

Mr. PERRY [continuing]. To include all these other things, and don't paint such a rosy picture which isn't commensurate with reality. And that is what I am saying.

Ms. NORTON. The gentleman's time has expired.

Mr. Lamb?

Mr. LAMB. Thank you, Madam Chairwoman.

Ms. Aleman, I represent an area outside of Pittsburgh, Pennsylvania, which shares some things in common, economically and culturally, with the Chicagoland area. I am just curious. Your review of the CREATE model since it has been built, it looked to me like you said about 40 percent of the revenue was Federal, and then, I guess, the 60 percent comes from the other partners that you have enlisted.

So do you think that an area like mine has much to learn from CREATE? How would you describe the breakthroughs that you have made using that model, or the efficiencies that you have gained? Because it must not be just more Federal funding. There

must also be some efficiencies that you have established with that model.

Ms. ALEMAN. Yes, thank you for the question, Congressman.

You know, the CREATE model, while we have seen some very significant successes, in terms of getting a Federal match, and also substantial matches from our private-sector partners, I think some of the benefits that we have seen are being able to have a list of projects that we have prioritized and are lining up to move forward at any point that funding opportunities arise.

For the projects that have been completed, there are about 70 projects in the entire program, about 35 of which have been completed. We have seen that those projects have come in on time, under budget, and I think that that is exemplary of the public-private partnership that we have with our railroad partners, and leveraging their expertise on some of these projects, where, you know, inherently, the State side, and the Federal side, and then the private sector are coming together. So that is what I would say would be one of the primary benefits.

Mr. LAMB. And at the start of it, who was kind of the driver of CREATE in the beginning? Was it more of a public project in which you recruited the private partners? Or was it the railroads coming to you and asking for it? Or vice versa? Or how did it go?

Ms. ALEMAN. Yes, I would say that there was leadership between the city of Chicago and Cook County, which is the county that the city of Chicago sits in, and through that strong partnership we were able to get on board the State, the railroads, and other partners because it is a mutually beneficial program, overall.

Mr. LAMB. OK, thank you.

Ms. ALEMAN. Thank you.

[Ms. Aleman submitted the following post-hearing correction to her preceding remark:]

Post-hearing Correction of Remarks Submitted for the Record by Erin Aleman, Executive Director, Chicago Metropolitan Agency for Planning, and Board Member, Coalition for America's Gateways and Trade Corridors

At approximately 2 hours and 20 minutes into the hearing, in response to a question from Representative Lamb, I misspoke about the history of the CREATE Program. I stated that the city of Chicago and Cook County initially spurred the program. In fact, it was leadership from the city of Chicago, the State of Illinois, and railroad partners that in 2003 spurred the program. Cook County became an official partner in 2018.

Mr. LAMB. Ms. Goodchild, I was wondering if you could talk a little bit more about the University Transportation Centers. We have one back in Pittsburgh, as well, at Carnegie Mellon University that is doing some really strong work. How would you evaluate that program so far? Has it worked well at Washington? Are there challenges? Are there things we could do better with it?

Ms. GOODCHILD. The University Transportation Center has sponsored a center at the University of Washington for, I think, since the beginning of the program. And, in terms of our ability to train transportation professionals, it is essential. Without that program,

we would have—you know, at a public university, the rest of our sort of resources have really been stripped away.

And so, to provide students with opportunities to hear additional lectures, to travel to TRB, to participate in any kind of professional development is really supported through that program. So, in terms of developing the next generation of transportation professionals, it is essential, and we wouldn't be able to do that without the program.

Research-wise——

Mr. LAMB. So, sorry, just to interrupt for a—so would you say, then, that the main benefit you are concentrating on is the teaching benefit to students, as opposed to, like, external work product that it is——

Ms. GOODCHILD. Right. No, I was going to speak to the——

Mr. LAMB. OK.

Ms. GOODCHILD [continuing]. To the research outcomes. I think also having—you know, really, as a source of complementary Federal funding—so those grants, you know, if you have a grant from a UTC that has to be matched by some kind of non-Federal, local money—so I think that structure of matching locally driven and locally motivated projects by Federal grant money is also a really essential way to develop regional with national benefit work.

And we don't—there is no substitute. We don't have the NCFRP program, we—so it is essential, as well.

Mr. LAMB. OK. Thank you, Madam Chair, I yield back.

Ms. NORTON. Thank you, Mr. Lamb.

Mrs. Miller?

Mrs. MILLER. Thank you, Chairwoman Norton, and thank you all for being here today.

Transportation infrastructure is the lifeline that connects my home State of West Virginia to the rest of the country. Our highways and rail lines are essential for moving products from West Virginia, and connecting the country.

Our inland waterways also ship over 80 million tons of natural resources every year. And shipping via waterways will continue to play an important role to meeting the growing demand for goods well into the future.

I think that shipping should be a central part of these discussions, moving forward. West Virginia is a transportation State, and we are proud to work hard to deliver the goods that America and the world needs.

We are all gathered here today because we realize the importance of our Nation's infrastructure development, and I thank you all for appearing before this subcommittee today to help us make some of these tough decisions.

Ms. Aleman, my district of southern West Virginia was one of the hardest hit by the recession, and it is still recovering from the war on coal, which caused so many to lose their jobs. With the dramatic growth of long-haul freight traffic in the United States, how does the freight industry plan to recruit new drivers to meet this increased demand?

Ms. ALEMAN. I am going to defer to my partner here.

Mrs. MILLER. Fine.

Mr. BAKER. And I would love also for Ian to weigh in, but I would say we in the rail industry, we actually are not finding a problem recruiting conductors and engineers for the trains. It is a well-paying job with railroad retirement benefits, and it is typically pretty attractive. We have lots of infrastructure challenges, but I would say at the moment finding folks to operate freight trains is not one of our challenges.

Mr. JEFFERIES. Just to add onto that, absolutely, the freight rail industry is blessed with folks who are multigenerational and 45-year veterans.

And while there is no shortage because they are very, very well-compensated jobs, one area where we are facing challenges, quite honestly, is the opioid issue. That continues to challenge us, along with every other manufacturing industry, as far as—we have a strict drug testing program, and areas that are most hit by the opioid epidemic, certainly that impacts the number of possible candidates out there, and has certainly diminished the potential job pool in certain situations. So that is an area where we continue to want to work with Congress to address.

Mrs. MILLER. That is a very good point.

Mr. JEFFERIES. But as far as the—I don't know, the trucking side, I don't know if you have any comments there.

Mr. TYMON. You know, I would just say that I think workforce development issues continue to be a top priority for State DOTs across the country, and that includes maintenance workers and operators of vehicles. It is becoming harder and harder, I think, for State DOTs or, I am sure, trucking companies to be able to recruit new entrants into the business.

You know, I think that there are a lot of other opportunities for folks right now, with the economy doing so well, and employment rates so low. It is hard, I think, to attract people into some of those jobs that aren't easy jobs, you know, for truck drivers. You are on the road a lot of days out of the year. If there are a lot of other choices to make, I can see why it is hard to be competitive in this job market.

Mrs. MILLER. Well, and my point is, in the coal fields, for those people who have had good-paying jobs who are now unemployed, are you doing anything to recruit them?

Mr. TYMON. I can tell you that, from a State DOT standpoint, recruitment and retention is a top priority. I can't speak specifically to what is going on in West Virginia, but I will tell you that what I hear more from our members is a shortage of workers, as opposed to, you know, trying to—or—yes, a shortage is the bigger issue.

Mrs. MILLER. So that could go through some of the community college or career teaching that needs to happen.

Mr. Baker, what role do short line and regional railroads play in connecting parts of rural America with the greater transportation network?

And what role can Congress play in making sure that these railroads are not left behind?

Mr. BAKER. Thank you. Short lines largely exist as the first-mile/last-mile of the freight rail network, and particularly in smalltown and rural America. West Virginia is a huge State for short lines.

My written testimony goes into somewhat excruciating detail on some of the policy recommendations I have, but just in a few seconds here there are programs that the Transportation and Infrastructure Committee has supported and championed that are key for short lines: the CRISI grant program; the issue that has been referenced here multiple times, the idea of taking off the multimodal caps on the INFRA program and the State freight program would be really effective; our favorite topic, the 45G tax credit, would be effective.

And there is more, too, but those would be great, great places to start. And I think you have been champions of all of those, so thank you.

Mrs. MILLER. Thank you. I yield back my time.

Ms. NORTON. I thank the gentlewoman. Her time has expired.

Mr. Lowenthal?

Mr. LOWENTHAL. Thank you, Madam Chair.

Ms. Aleman, you know as well as anyone here that freight movement depends upon a complex, interconnected system of transportation infrastructures. Deficiencies in any one link of the supply chain affect the efficient movement of goods for everyone. That is why I appreciate in your testimony and that of other witnesses—and you have mentioned it again today, both in written and in oral—the need to remove barriers like the cap on nonhighway projects under the Federal freight program.

I am also very appreciative that, especially in your written testimony, you mention the coalition support for my proposal to establish a multimodal freight infrastructure trust fund that would help make these critical intermodal improvements.

But your testimony also mentions a potential improvement to the national freight strategic plan, including the addition of a comprehensive freight needs analysis. Why is that so important, to have a comprehensive freight needs analysis?

Ms. ALEMAN. Thank you for the question, Congressman. A comprehensive look at our national freight infrastructure is really going to help us be more coordinated in Congress' effort to provide oversight and guidance to U.S. DOT. It will also help Members of Congress shape future programs in future Federal reauthorization bills, and make sure that, really, the goals and objectives that you set forth in the policies are being achieved through a transparent, performance-based framework.

Mr. LOWENTHAL. I want to follow up on that. And while I personally strongly support the INFRA program and agree with you that a competitive grant program is better positioned to fund large-scale infrastructure projects that improve freight movement, I am concerned about the lack of transparency in the selection of projects for these funds.

Would a freight needs analysis allow Congress and stakeholders to better evaluate if the Department is directing these funds to the most important and urgent projects?

Ms. ALEMAN. Yes. So I will reference the recent GAO report that stated that merit-based project selection is necessary, and also there is room for improvement in the way that projects are selected today.

And I think our region has seen that, and come a long way. For instance, the competitive freight program that Illinois DOT put together laid out in a transparent way the goals and objectives, and how the measures that they were going to use to evaluate projects were going to achieve those goals. And essentially, we created a tool that said to potential applicants, "You can fill this tool out yourself and evaluate your project."

I think one of the fears is that it is going to open the door to a floodgate of projects coming through and people gaming the system. What we found, instead, was that the projects that were submitted were better and more oriented toward the goals of the program and the program dollars.

And at the regional level, too, the programming of our funds, we make those data, criteria, the scoring transparent so that all can see. And while you may not get the project you wanted, or the funding you requested, you at least respect the process, and you understand where your project could have had room for improvement.

Mr. LOWENTHAL. Thank you. I want to follow that up and—you may have answered it—do you have any additional suggestions to increase the transparency in the INFRA evaluation process?

Ms. ALEMAN. Yes. Specifically, it is tying those metrics that you are going to use to the goals and objectives that you are trying to achieve, and then I would say making those projects and the scoring publicly available.

Again, you know, that, in and of itself, making that transparent, allowing people to see where their projects fell short, is a critical tool to making sure that you are achieving your goals.

Mr. LOWENTHAL. Thank you. And in my minute left, does anyone else want to comment on the transparency, how we can improve the INFRA project?

Mr. Baker?

Mr. BAKER. Well, I was largely just going to agree with you, that the importance of increasing the transparency, I will say we have quite a few short line railroads that partner with State agencies to apply for these grants, and they do find it extraordinarily frustrating, how opaque the process is. And it is difficult to understand what was selected, or what the reasons for the selection were. So I think the transparency would help everybody.

Mr. LOWENTHAL. Thank you. I concur. As one who represents the port areas of Long Beach, Los Angeles, that transparency would be great for the process.

With that I yield back.

Ms. NORTON. Thank you, Mr. Lowenthal.

Mr. Pence?

Mr. PENCE. Thank you, Madam Chair, and thank you all for being here today.

I hail from Indiana, which is the crossroads of America. I have always emphasized the necessity of reliable and safe freight in transport options in my home State. I am a businessman by background, and I came to Congress to address the challenges facing our critical infrastructure.

We need to face both the short term and the long term and put Hoosiers back in the driving seat, as well as all those across the United States.

The 29,600 miles of highway and 4,500 miles of rail track in our State contribute to the prosperity of not only Hoosiers, but all Americans.

We are a national leader in intrastates, home to the second largest FedEx hub worldwide, and have the third most freight railroads, with 41 lines, including 6 short line regional railroads in my district, the Sixth Congressional District of Indiana.

We are also very proud that Cummins engine company, headquartered just 1½ miles from my house in Columbus, Indiana, is developing world-class, innovative solutions to advance cleaner technology. In October of this year, Cummins unveiled cutting-edge technology that would use hydrogen fuel cell solutions to create a Class 8 heavy-duty truck with zero emissions.

With our Nation's truck and rail freight transport system accounting for 74 percent of all movement of goods, it is in the best interest of companies like Cummins to embrace fuel-efficient alternatives to be profitable and, most importantly, reduce the impact on the environment. The American Transportation Research Institute cites greater congestion as a source of excessive idling and resulting in higher emissions.

With companies like Cummins modernizing our vehicles, we should also consider more solutions for reliable freight infrastructure such as increased rail investment and truck-only lanes, or critical commerce corridors.

In 2017, truckers alone lost 1.2 billion hours of productivity from nationwide congestion. I firmly believe that economic growth in both the trucking and rail industries will lead to greater economic, environmental, and societal impact.

Mr. Tymon, in your testimony you mentioned addressing freight corridors in the next surface transportation bill. I wish more of the industry would join you to highlight the benefit of these corridors, or truck lanes, to physically separate cars and trucks in the congested areas. Even though truckers already pay more than any other entity in our Nation's highways, the industry is coming to the table with creative ways to affect these projects.

At the beginning of November, Indiana broke ground on a similar project called the Heavy Haul Transportation Corridor, which will pull semi-trucks off the highway with new rail connections, providing easier access to State roads and improve multimodal shipping. Solutions like these are not only tackling congestion, but also create a safer and more fuel-efficient freight system for Hoosiers.

Mr. Tymon, I know AASHTO has done studies in the past detailing how truck-only corridors can alleviate congestion and promote safety. How would reducing restrictions on State multimodal freight network funding to allow, for example, more miles for railroad coordination and CCCs help propel our economy?

Mr. TYMON. Well, thank you for that question, Congressman. I think the easiest and the best way to promote those types of projects is——

Ms. NORTON. Is your mic on?

Mr. TYMON. It is. Is that better?

I think the easiest and best way to provide opportunities for those types of projects is to continue to provide flexibility to the States and to provide funding to them by the formula programs. These core formula programs that have been the foundation of the Federal highway program for over 50 years provide States the predictability to know year in and year out how much money they are going to get. And that will enable them to take on innovative approaches as you are describing in Indiana.

So I think removing some of the redtape and the barriers, and providing States the flexibility to be creative and innovative, as they are in Indiana, is the easiest, and it is the best thing that we can do to promote those types of projects.

Mr. PENCE. Thank you, Madam Chair. I yield back.

Ms. NORTON. Thank you, Mr. Pence.

Ms. Plaskett?

Ms. PLASKETT. Thank you very much, Madam Chair.

Mr. Tymon, I agree with you that the formula is very, very important. And, as a Member of the Territories, we were taken out of the formulas in the late 1990s. And so it is our hope to go back in them, because we believe that that is the best way for us to plan how we are going to use our infrastructure and support. So I am glad to hear you agree that that is a really important thing to do.

I have been harassing the chair of our committee. The last time the Territories was on it was the last time a Member of the Territories was on this committee. So I am hoping that me being on this committee will get us back in there.

But I wanted to go back to something that one of my colleagues, Mr. Lowenthal, was talking with you all about, about transparency and the INFRA program as an example, and in others, some of the other application and programs that DOT has in other agencies.

We talked about how transparency would be more important, and support in predictability for those that are applying. Do any of you have any specific examples where—the types of guidelines or additional support that would be helpful to jurisdictions and municipalities and others that are applying for some of these grants?

Mr. TYMON. You know, one thing that I guess—one thing that I would add is sometimes having consistency across years would help, I think, the applicants, because I think we are seeing, year to year, that the notice of funding availability will change kind of what they are trying to emphasize. And I think that causes project sponsors to then have to kind of retool, year to year, if they are not selected in that 1 year.

So having, I think, some consistency across the years—the great thing about the FAST Act was that, for those discretionary programs that were created there, they spelled out, I think, specific criteria that provided at least a little bit of predictability for the applicant——

Ms. PLASKETT. Right.

Mr. TYMON [continuing]. So that they could come back to the table if they weren't successful in the first year.

I do think that the administration is doing a good job of following up with project sponsors if their application does not go through, and then letting them know where the application fell short. But

having that level of transparency, so that everybody knows which projects have been successful, and why they have been successful or unsuccessful, I think, would help all project sponsors.

Ms. PLASKETT. I know that the Virgin Islands, along with some of our private partners, did have that meeting at DOT. And I am really grateful that the Department was willing to sit down with them and explain what was needed, where they fell short.

Of course, having that on the front end is a better way, because then you have to wait another year or so to put in what is missing, so that you can have a better application and meet the needs of what it is you are trying to grow.

Does anyone else have anything else that they thought might be helpful in there?

Mr. JEFFERIES. Just at a very high level, in a prior life I worked at GAO, and I think they have been on record, just talking about the need for very objective, articulated criteria that are then evaluated in a fully transparent manner. So, hopefully, you do get that information on the front end, and don't have to wait until it is too late to get the feedback that——

Ms. PLASKETT. Right.

Mr. JEFFERIES [continuing]. That would be helpful.

Ms. PLASKETT. So several months ago—I am also the chair of the New Democrat Coalition Infrastructure Task Force, and I have had the pleasure of going around the country to some of my colleagues' districts to see what is working, what is not working. And Mr. Colin Allred invited me to Dallas. I was really excited to see the rail that is going on there between Dallas and Houston, and the types of goods and services that can be moved in that.

Dr. Goodchild, I wanted to ask you, you know, that is a public-private partnership. It is really being driven by the private sector. What is the role that you believe that the P3s can play in helping to meet freight infrastructure needs throughout the country?

Ms. GOODCHILD. Yes, thank you. I think it is essential that the private sector be consulted and engaged and participate as we build infrastructure.

If you think about building big infrastructure projects with no insight as to how it is going to be used, or what benefit it might bring, or why it might bring that benefit, you can really make huge mistakes, and invest a lot of money in projects that don't bring the benefit that you thought they were going to to the ones who are using it.

So I think, as we move forward and we believe that we are building infrastructure to serve industries, we must understand those industries, and they must be engaged in some of that decisionmaking. So I think it is a really important principle, particularly in the freight space, to good decisionmaking and efficient, cost-effective use of public money.

Ms. PLASKETT. Thank you. And, the Virgin Islands, although we don't have freight, we recognize that all of our goods are imported, and that, unless the end—those individuals who are manufacturing are doing it at a port city, that all of the goods that are coming to us are coming through freight. So bottlenecks in that system affect those of us who don't necessarily have freight going through our districts. And we all need to be part of the solution in making

sure that this is done efficiently, and the best it can get to the end users.

So thank you all.

Ms. NORTON. Thank you, Ms. Plaskett.

Are there any further questions from members of the subcommittees?

Seeing none, I would like to thank our colleagues, but especially each of our witnesses for your testimony today. It has been very helpful to me.

I have listened very carefully to see how your testimony might improve our upcoming bill. I found your testimony to be informative and helpful in that regard.

I now ask unanimous consent that the record of today's hearing remain open until such time as our witnesses have provided answers to any questions that may be submitted to them in writing. And I invite Members who have such questions to do so.

And I also ask unanimous consent that the record remain open for 15 days for any additional comments and information submitted by Members or witnesses to be included in the record of today's hearing.

Without objection, so ordered.

If no other Members have anything to add, the subcommittees now stand adjourned.

[Whereupon, at 12:45 p.m., the subcommittees were adjourned.]

SUBMISSIONS FOR THE RECORD

Prepared Statement of Hon. Eddie Bernice Johnson, a Representative in Congress from the State of Texas

Madam and Mr. Chairman, I appreciate the joint subcommittees holding this hearing today. The purpose is to explore the importance of freight transportation, investments needed to support freight transportation, and the ways in which demand for the timely movement of goods are growing and changing.

IMPORTANCE OF FREIGHT TRANSPORTATION

It is without question that freight transportation is critical to our economy in the US. I understand that the nation's freight system transports, on average, 51 million tons of freight, valued at approximately $55 billion, on a daily basis, which amounts to approximately 17.7 billion tons of freight, valued at approximately $16.8 trillion, annually. Additionally, this demand is increasing each year.

INVESTMENTS NEEDED

Continuous increases in freight transportation demand across the United States requires us to make the necessary investments today. Most investments are done at the state and local levels. We know that our national highway congestion negatively affects the freight delivery system because it impedes trucking's ability to deliver goods on time. Reliable and precise scheduling is essential to the freight rail and trucking systems.

In Dallas, we have worked to battle, and are continuing to battle, congestion issues. It is reported that more than two out of every five miles of America's urban interstates are congested. Congestion costs the trucking industry $74.5 billion in 2017, $66.1 billion of which occurred in dense urban areas like Dallas.

WAYS IN WHICH DEMAND FOR GOODS MOVEMENT IS GROWING AND CHANGING

Investments in new technology are important to the growth and development of our national freight delivery systems. As we look to grow our markets internationally, we also have to ensure that our domestic systems do not impede the international growth of products that we sell abroad. As we continue to expand our markets, the need for new and improved domestic and international freight delivery systems will only increase.

We cannot stop the development and use of new technology. We need it for continued growth and advancement. However, I am concerned with the use of new technology displacing our workers. We must provide opportunities for retraining and new jobs for people who may lose their jobs.

In Texas, I am also concerned with the shortage of drivers for freight trucks. With rising gas prices and increasing congestion on our highways, it is clear that we need long term transportation infrastructure solutions that meet the current demand for the movement of goods, while also allowing for future growth. To help alleviate the shortage of truck drivers, I am looking at how we can allow more young people to drive trucks and enter into the trucking industry.

ENVIRONMENTAL IMPACT OF FREIGHT RAILROADS

We must seek viable environmentally sensitive solutions to expand our nation's freight rail capacity, as we make the necessary freight rail investments. Advancements have been made, such as in the freight railroads' use of technology systems to help monitor and gain maximum fuel efficiency. However, we still have a long way to go.

Madam and Mr. Chairman, I am excited about the many possibilities in helping to improve our nation's freight transportation infrastructure. I look forward to work-

ing with the committee to strengthen our nation's capacity to move goods efficiently and in a timely manner.

Prepared Statement of Hon. Steve Cohen, a Representative in Congress from the State of Tennessee

Thank you, Chairwoman Norton and Ranking Member Davis and Chairman Lipinski and Ranking Member Crawford for holding this important hearing.

I appreciate the opportunity to examine the challenges and opportunities of freight transportation, especially since my district is the transportation hub of the United States.

In Memphis, we've got five Class 1 railroads, seven primary highways, two interstates, the 4th largest inland port in the nation, and Fed Ex's super hub.

As for trucking, we have more than 400 companies that operate from Memphis.

It's no wonder that we have been dubbed America's Distribution Center.

While it's true that no one moves like Memphis, it doesn't come without its challenges.

As the demand for freight continues to increase, it's important we look at how it affects all our road users.

Statement of Erin Aleman, Executive Director, Chicago Metropolitan Agency for Planning, and Board Member, Coalition for America's Gateways and Trade Corridors, Submitted for the Record by Hon. Peter A. DeFazio

During the hearing, several Members of Congress asked questions pertaining to the Nationally Significant Freight and Highway Projects Program (INFRA). Questions addressed funding levels, award selection transparency, and the difference between formula and competitive grant distribution approaches.

While I answered each of these questions during the hearing and also addressed these questions in my written testimony, I am taking this opportunity to restate the following:

- The INFRA program is underfunded. CAGTC calls for an annual investment of $12 billion in multimodal freight investment through a competitive grant program.
- To ensure the best and highest use of federal dollars, the award selection process must be transparent and employ merit-based criteria that identify and prioritize projects with a demonstrable contribution to *national* freight efficiency. Goals should include increasing national and regional economic competitiveness, improving connectivity between freight modes, reducing congestion and bottlenecks, and improving the safety, efficiency, and reliability of the movement of freight and people. Likewise, a national freight strategic plan that identifies key freight gateways and trade corridors should guide investment decisions.
- Competitive grant programs, such as INFRA, are critical to large-scale infrastructure projects, which often span modes and jurisdictional borders and are difficult, if not impossible, to fund through traditional distribution methods such as formula programs. Likewise, formula programs play an important role—but there is no "one size fits all" approach to funding freight projects and formula dollars cannot supplant the role of a competitive grant program that awards projects through the use of merit-based criteria. A federally administered competitive grant program is necessary to advance nationally significant freight projects in a timely and efficient manner.

Letter of December 4, 2019, from Catherine Chase, President, Advocates for Highway and Auto Safety et al., Submitted for the Record by Hon. Eleanor Holmes Norton

DECEMBER 4, 2019.

Hon. PETER A. DEFAZIO,
Chairman,
Hon. SAM GRAVES,
Ranking Member,
Committee on Transportation and Infrastructure, U.S. House of Representatives, Washington, DC.

DEAR CHAIRMAN DEFAZIO AND RANKING MEMBER GRAVES:

As you prepare for tomorrow's hearing, "Where's My Stuff? Examining the Economic, Environmental, and Societal Impacts of Freight Transportation," we urge you to prioritize safety in considering America's freight transportation system. Each day on average, over 100 people are killed and nearly 7,500 more are injured in motor vehicle crashes. This preventable toll also comes with a serious financial burden. Annually, crashes impose comprehensive costs of over $800 billion on society, $242 billion of which are economic costs—amounting to a "crash tax" of $784 per person each year. Yet, available solutions to the problems that perpetuate crashes continue to languish. Moreover, year after year proposals are considered to weaken or repeal the minimal safety protections that do exist. We encourage you to take action preventing deaths and injuries as part of any legislative package advanced by your Committee and respectfully request your consideration of our positions during the hearing.

Truck crashes deaths continue to rise; immediate action is needed. In 2018, 4,951 people were killed in crashes involving a large truck—a staggering 46 percent increase since a low in 2009. Additionally, 151,000 people were injured in crashes involving a large truck that same year. Commercial motor vehicle (CMV) crashes amounted to $134 billion in costs in 2016, the latest year for which data is available. These grim statistics are unacceptable and more must be done to prevent this needless carnage.

Proven countermeasures that would bring about safer conditions for both truck drivers and those with whom they share the road must be implemented. Technologies including speed limiting devices, automatic emergency braking (AEB), and comprehensive underride guards could be saving lives now if they were fully deployed. Similarly, a required minimum number of behind the wheel hours should be established as part of entry level driver training. We call on Congress to take swift action on legislation requiring these crucial upgrades.

Oppose efforts to weaken or repeal existing truck safety rules. In the last few years, special interests have been relentless in their attempts to increase truck driver hours of service and evade compliance with the electronic logging device (ELD) rule, despite the known dangers associated with "tired truckers." It is also alarming that efforts have been underway to allow for "teen truckers" by lowering the age to obtain an interstate commercial driver's license (CDL) from 21 to 18. This ill-conceived concept is especially egregious because truck drivers under the age of 21 are anywhere from 4 to 6 times more likely to be in a fatal crash, according to studies of intrastate truck drivers. These dangerous proposals pose a direct threat to the safety of all road users and should be resoundingly rejected.

Bigger, heavier trucks would endanger all motorists and our infrastructure. Congress should oppose all attempts to further degrade safety by increasing truck size and weight limits. According to the 2017 Infrastructure Report Card from the American Society of Civil Engineers, America's roads receive a grade of "D" and our bridges were given a "C+". Nearly 40 percent of our 615,000 bridges in the National Bridge Inventory are 50 years or older and one out of 11 is structurally deficient. The U.S. Department of Transportation (DOT) Comprehensive Truck Size and Weight Study found that introducing double 33-foot trailer trucks[1], would be projected to result in 2,478 bridges requiring strengthening or replacement at an estimated one-time cost of $1.1 billion. This figure does not even account for the additional, subsequent maintenance costs which will result from longer, heavier trucks. In fact, increasing the weight of a heavy truck by only 10 percent increases bridge damage by 33 percent. The Federal Highway Administration (FHWA) estimates that the investment backlog for bridges, to address all cost-beneficial bridge needs, is

[1] "Double 33" is a configuration of a tractor pulling two 33-foot trailers, amounting to an eight-story office building on its side. Despite being aggressively pushed by certain segments of the shipping and trucking industry, this proposal has been rejected on a bipartisan basis.

$123.1 billion. The U.S. would need to increase annual funding for bridges by 20 percent over current spending levels to eliminate the bridge backlog by 2032.

Longer trucks also come with operational difficulties such as requiring more time to pass, having larger blind spots, crossing into adjacent lanes, swinging into opposing lanes on curves and turns, and taking a longer distance to adequately brake. And, not surprisingly, trucks heavier than 80,000 pounds have a greater number of brake violations, which are a major reason for out-of-service violations. According to a North Carolina study by the Insurance Institute for Highway Safety (IIHS), trucks with out-of-service violations are 362 percent more likely to be involved in a crash. This is also troubling considering that tractor-trailers moving at 60 mph are required to stop in 310 feet—the length of a football field—once the brakes are applied. Actual stopping distances are often much longer due to driver response time before braking and the common problem that truck brakes are often not in adequate working condition.

Increasing truck size and weight will exacerbate safety and infrastructure problems, negate potential benefits from investments in roads and bridges, and divert rail traffic from privately owned freight railroads to our already overburdened public highways. Also, despite claims to the contrary, bigger trucks will not result in fewer trucks. Following every past increase to federal truck size and weight, the number of trucks are on our roads has gone up. Since 1982, when Congress last increased the gross vehicle weight limit, truck registrations have more than doubled. The U.S. DOT study also addressed this meritless assertion and found that any potential mileage efficiencies from the use of heavier trucks would be offset in just one year.

Progress to reduce motor vehicle crash deaths has stagnated despite available, proven technology. Tremendous focus has been placed on the future potential of autonomous vehicles (AVs), also known as driverless cars, to eliminate crashes. While it is claimed that AVs may someday make meaningful reductions in deaths and injuries, this promise is still likely decades away. Further, at least four people have already been killed in crashes involving vehicles in the relatively small fleet of cars equipped with self-driving technologies. The real risks posed by experimental driverless cars must be addressed through strong federal regulation—including safety standards and oversight—before AVs are deployed on a large scale.

As AVs are being developed and deployed, advanced vehicle technologies, which prevent and lessen the severity of crashes, should be required as standard equipment in all new vehicles. In fact, the National Transportation Safety Board (NTSB) has included increasing implementation of collision avoidance technologies in its Most Wanted Lists of Transportation Safety Improvements since 2016. Proven technologies such as automatic emergency braking, lane departure warning and blind spot detection should be made standard equipment on all new vehicles now. We urge Congress to require the U.S. DOT to establish minimum performance requirements for these lifesaving technologies and require that all new vehicles be equipped with them.

Infrastructure upgrades will be critical as driverless cars are deployed. As AVs are tested and eventually commercialized on our Nation's roads, it will be vital that infrastructure improvements be made to ensure their safe operation. For example, research shows that driverless vehicles can easily be confused by poor infrastructure conditions leading to dangerous errors. In one experiment a standard stop sign with only a few alterations was interpreted by a driverless car as a 45 mph speed limit sign. The potential consequences of these types of mistakes could be catastrophic. Substantial investments in our infrastructure that benefit human drivers now and help to prepare our roads for self-driving cars must occur before driverless vehicles are ubiquitous on our streets. Additionally, despite claims that driverless technology will improve our congested roads, transportation experts have already found that the proliferation of mobility services like Lyft and Uber (precursors for mass deployment of driverless vehicles) have instead increased congestion and reduced mass transit use. In addition, a recent study predicted that AVs could exacerbate clogged arteries by constantly traveling at low speeds instead of parking while waiting for their next trip. These, and numerous other, issues must be comprehensively addressed before driverless vehicles are deployed on a large scale. In order to realize the full potential of AVs to be a catalyst for positive change, protections must be put in place to ensure the safety of all road users.

As you consider important issues surrounding freight movement, we urge you to prioritize efforts that will reverse the high number of crash fatalities, injuries and costs from large truck crashes. Effective solutions are readily available to save lives now.

Sincerely,

Catherine Chase, President, Advocates for Highway and Auto Safety

Harry Adler, Executive Director, Truck Safety Coalition

Joan Claybrook, Chair, Citizens for Reliable and Safe Highways (CRASH) and Former Administrator, National Highway Traffic Safety Administration

Steve Owings, Co-Founder and President, Road Safe America

Janette Fennell, Founder and President KidsAndCars.org

Dawn King, Davisburg, MI, President, Truck Safety Coalition (TSC), Board Member, Citizens for Reliable and Safe Highways (CRASH), Daughter of Bill Badger, Killed in truck crash 12/23/04

Larry Liberatore, Severn, MD, Board Member, PATT, Father of Nick Liberatore, Killed in a truck crash 6/9/97

Tami Friedrich Trakh, Corona, CA, Board Member, CRASH, Sister of Kris Mercurio, Sister-in-Law of Alan Mercurio, Aunt of Brandie Rooker & Anthony Mercurio, Killed in a truck crash 12/27/89

Rosemary Shahan, President, Consumers for Auto Reliability and Safety

Jane Mathis, St. Augustine, FL, Vice President, TSC, Board Member, PATT, Mother of David Mathis, Mother-in-Law of Mary Kathryn Mathis, Killed in a truck crash 3/25/04

Ron Wood, Washington, D.C., Volunteer, Truck Safety Coalition, Son of Betsy Wood, Brother of Lisa Wood Martin, Uncle of Chance, Brock, and Reid Martin, Killed in a truck crash 9/20/04

Christina Mahaney, Jackman, ME, Volunteer, Truck Safety Coalition Injured in a truck crash 7/19/11, Mother of Liam Mahaney, Killed in a truck crash 7/19/11

Debra Cruz, Harlingen, TX, Volunteer, Truck Safety Coalition, Injured in a truck crash 8/8/08

Kate Brown, Gurnee, IL, Volunteer, Truck Safety Coalition, Mother of Graham Brown, Injured in a truck crash 5/2/05

Monica Malarczyk, Hastings-on-Hudson, NY, Volunteer, Truck Safety Coalition, Injured in a truck crash 12/29/15, Son of Ryszard and Anita Malarczyk, Killed in a truck crash 12/29/15

Alan Dana, Plattsburgh, NY, Volunteer, Truck Safety Coalition, Son of Janet Dana, Uncle of Caitlyn & Lauryn Dana, Brother-in-law of Laurie Dana, Killed in a truck crash 7/19/12

Cindy Southern, Cleveland, TN, Volunteer, Truck Safety Coalition, Wife of James Whitaker, sister-in-law Anthony Hixon and aunt of Amber Hixon, Killed in a truck crash 9/18/09

Amy Fletcher, Perrysburg, OH, Volunteer, Truck Safety Coalition, Wife of John Fletcher, Killed in a truck crash 1/24/12

Sandra Lance, Chesterfield, VA, Volunteer, Truck Safety Coalition, Mother of Kristen Belair, Killed in a truck crash 8/26/09

Bruce King, Davisburg, MI, Volunteer, Truck Safety Coalition, Son-in-law of Bill Badger, Killed in truck crash 12/23/04

Georges C. Benjamin, MD, Executive Director, American Public Health Association

Jason Levine, Executive Director, Center for Auto Safety

Jack Gillis, Executive Director, Consumer Federation of America

Stephen W. Hargarten, M.D., MPH, Society for the Advancement of Violence and Injury Research

Daphne Izer, Lisbon, ME, Founder, Parents Against Tired Truckers (PATT), Mother of Jeff Izer, Killed in a truck crash 10/10/93

Linda Wilburn, Weatherford, OK, Board Member, PATT, Mother of Orbie Wilburn, Killed in a truck crash 9/2/02

Beth Badger, Columbus, GA, Volunteer, Truck Safety Coalition, Daughter of Bill Badger, Killed in truck crash 12/23/04

Sally Greenberg, Executive Director, National Consumers League

Andrew McGuire, Executive Director, Trauma Foundation

Ed Slattery, Lutherville, MD, Board Member, PATT, Volunteer, Truck Safety Coalition, Husband of Susan Slattery, Killed in a truck crash 8/16/10, Sons Matthew & Peter Slattery critically injured in a truck crash 8/16/10

Gary Wilburn, Weatherford, OK, Volunteer, Truck Safety Coalition, Father of Orbie Wilburn, Killed in a truck crash 9/2/02

Nancy Meuleners Bloomington, MN, Volunteer, Truck Safety Coalition, Injured in a truck crash 12/19/89

Laurie Higginbotham, Memphis, TN, Volunteer, Truck Safety Coalition, Mother of Michael Higginbotham, Killed in a truck crash 11/18/14

Peter Malarczyk, Hastings-on-Hudson, NY, Volunteer, Truck Safety Coalition, Injured in a truck crash 12/29/15, Son of Ryszard and Anita Malarczyk, Killed in a truck crash 12/29/15

Randall Higginbotham, Memphis, TN, Volunteer, Truck Safety Coalition, Father of Michael Higginbotham, Killed in a truck crash 11/18/14

Julie Branon Magnan, South Burlington, VT, Volunteer, Truck Safety Coalition, Injured in a truck crash 01/31/02, Wife of David Magnan, Killed in a truck crash 01/31/02

Jennifer Tierney, Kernersville, NC, Board Member, CRASH, Daughter of James Mooney, Killed in a truck crash 9/20/83

Steve Izer, Lisbon, ME, Board Member, PATT, Father of Jeff Izer, Killed in a truck crash 10/10/93

Tina Silva, Ontario, CA, Volunteer, Truck Safety Coalition, Sister of Kris Mercurio, Sister-in-Law of Alan Mercurio, Aunt of Brandie Rooker & Anthony Mercurio, Killed in a truck crash 12/27/89

Melissa Gouge, Washington, D.C., Volunteer, Truck Safety Coalition, Cousin of Amy Corbin, Killed in a truck crash 8/18/97

Kim Telep, Harrisburg, PA, Volunteer, Truck Safety Coalition, Wife of Bradley Telep, Killed in a truck crash 8/29/12

Ashley McMillan, Memphis, TN, Volunteer, Truck Safety Coalition, Girlfriend of Michael Higginbotham, Killed in a truck crash 11/18/14

Warren Huffman, Odessa, MI, Volunteer, Truck Safety Coalition, Brother of Tim Huffman, Killed in a truck crash 5/6/13

Frank Wood, Falls Church, VA, Volunteer, Truck Safety Coalition, Father of Dana Wood, Killed in a truck crash 10/15/02

Santiago Calderon, Arcata, CA, Volunteer, Truck Safety Coalition, Injured in a truck crash 4/10/14

Marchelle Wood, Falls Church, VA, Volunteer, Truck Safety Coalition, Mother of Dana Wood, Killed in a truck crash 10/15/02

Bernadette Fox, Davis, CA, Volunteer, Truck Safety Coalition, Best friend of Daniel McGuire, Killed in a truck crash 7/10/14

Paul Badger, Davidson, NC, Volunteer, Truck Safety Coalition, Son of Bill Badger, Killed in truck crash 12/23/04

Morgan Lake, Sunderland, MD, Volunteer, Truck Safety Coalition, Injured in a truck crash 7/19/13

cc: Members of the U.S. House Committee on Transportation and Infrastructure

Statement of Chris Spear, President and Chief Executive Officer, American Trucking Associations, Submitted for the Record by Hon. Eleanor Holmes Norton

Chair Norton, Chairman Lipinski, Ranking Members Davis and Crawford, and members of the subcommittees, thank you for holding this important hearing and for providing the American Trucking Associations (ATA)[1] with the opportunity to submit testimony for the record. ATA is an 86-year old federation that represents every sector of the trucking industry, with affiliates in all 50 states. Our federation has members in every Congressional district and every community. More than 80 percent of U.S. communities rely exclusively on trucks for their freight transportation needs. Trucking is the glue that connects all modes in support of the American economy.

The trucking industry has made great strides over the last several decades to reduce its environmental footprint, and trucking companies continually work with their suppliers, customers and other partners to improve fuel efficiency. Not only is this beneficial to public health and the future of the planet, but it makes good business sense. Depending on market conditions, fuel is the highest or second highest line item cost for motor carriers.[2] Therefore it is incumbent on trucking companies to do all they can to reduce their fuel consumption. Congress can assist in this regard by making the investments in highway infrastructure necessary to reduce congestion, which caused the trucking industry to consume an additional 6.87 billion gallons of fuel in 2016. This represented approximately 13 percent of the industry's fuel consumption, resulting in 67.3 million metric tons of excess carbon dioxide (CO2) emissions.[3] Congress can also eliminate a major disincentive for carriers who want to buy newer, cleaner trucks by eliminating the 12% excise tax on new trucks.

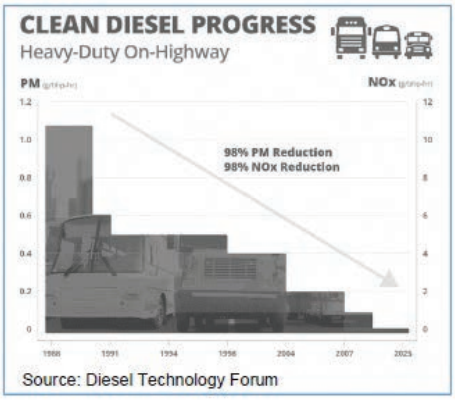
Trucking was the first freight industry to widely use advanced diesel engine emissions control systems. In 2002, the industry began buying new trucks which incorporated exhaust gas recirculation (EGR) combined with other emission control technologies to reduce tailpipe emissions of nitrogen oxides (NOx) by half. The additional cost of purchasing this new engine technology has been estimated to be as much as $250 million annually.

Beginning in 2007, the new diesel trucks purchased by the industry began incorporating diesel particulate filters (DPFs) to reduce tailpipe emissions of particulate matter (PM) by at least 90 percent. These trucks also achieved the first half of a 90 percent reduction in NOx emissions which was fully implemented in 2010. In other words, every 10 new trucks purchased today equal the NOx and PM emissions produced by a single truck purchased thirteen years ago.

[1] American Trucking Associations is the largest national trade association for the trucking industry. Through a federation of 50 affiliated state trucking associations and industry-related conferences and councils, ATA is the voice of the industry America depends on most to move our nation's freight. Follow ATA on Twitter or on Facebook. Trucking Moves America Forward.

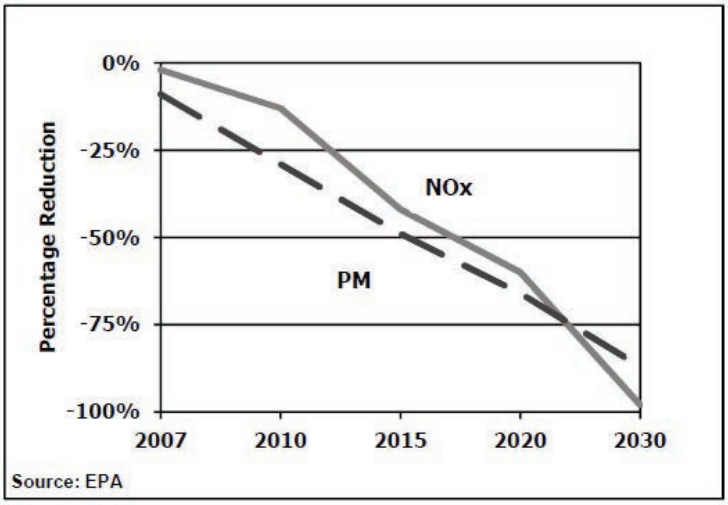
[2] *An Analysis of the Operational Costs of Trucking: 2019 Update*. American Transportation Research Institute, Nov. 2019.

[3] *Fixing the 12% Case Study: Atlanta, GA*. American Transportation Research Institute, Feb. 2019.



To enable the use of these new emission reduction technologies, the trucking industry began transitioning to ultra-low sulfur diesel fuel (ULSD) in 2006. By late 2010, all of the highway diesel fuel sold in the United States contained near-zero levels of sulfur (<15 parts/million). The additional cost of purchasing this new low-emission engine technology and fuel has been estimated to be as much as $4 billion annually.

Today, 43 percent of large commercial trucks registered in the United States meet the most stringent NOx and PM emissions standards. And with each new truck purchase further expanding the use of NOx and PM controls, emissions from heavy-duty diesel engines are projected to significantly decrease over the next decade. According to the Environmental Protection Agency, these stringent emissions standards cut nationwide NOx and PM emissions from heavy-duty diesel trucks in half between 2007 and 2015. By 2030, these emissions will be reduced by roughly 90 percent.



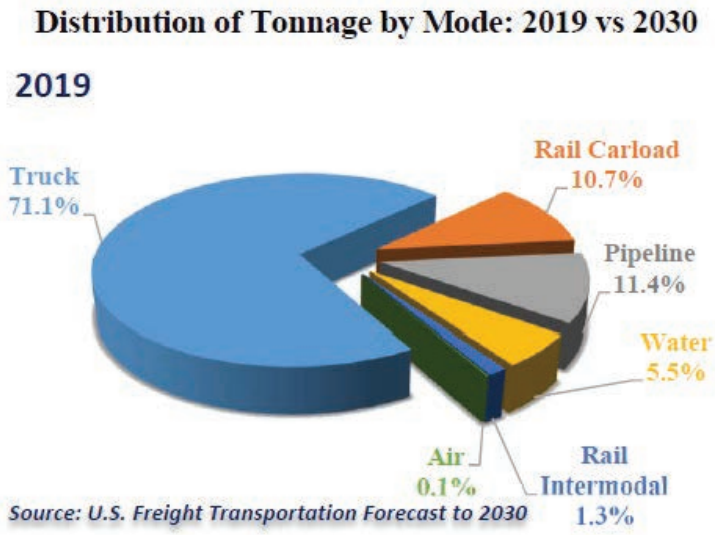
ACHIEVING REDUCTIONS: U.S. HEAVY-DUTY DIESEL ENGINE EMISSIONS TRENDS

Beginning in 2014, new diesel trucks began to incorporate enhanced aerodynamics, low rolling resistance tires and other innovative technologies to improve fuel efficiency and reduce carbon dioxide (CO2) emissions. By 2018, these first-ever standards will reduce fuel consumption and CO2 emissions by as much as 23 percent over a baseline 2010 truck. The additional cost of purchasing this new technology has been estimated to be as much $8 billion which is expected to be offset

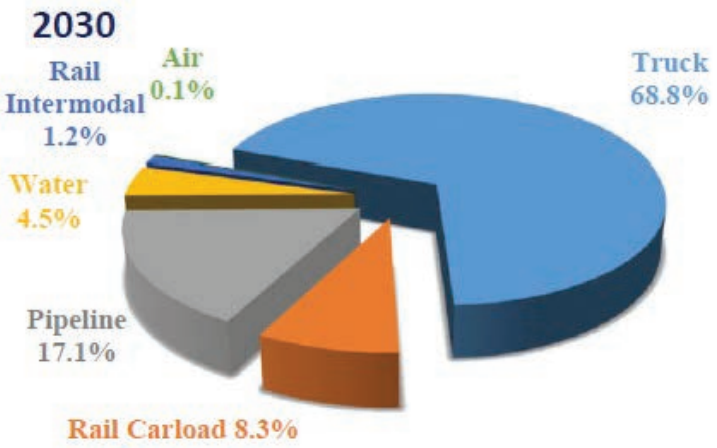
through savings in fuel purchases. A second phase of fuel efficiency and CO2 standards has been adopted that will achieve an additional 34 percent reduction from trucks and the trailers they pull by 2027. The estimated cost of the innovative technologies which will be used to achieve these additional reductions is estimated to be $20–$30 billion.

According to the Federal Highway Administration, trucks transport more than two-thirds of U.S. freight tonnage. By 2020, while trucking's share of U.S. freight tonnage is projected to increase, less than 40 percent of U.S. freight-related NOx and PM emissions are expected to be produced by trucks. These achievements in sustainability and cleaner air are primarily the result of the trucking industry's investment in new trucks with advanced diesel engine emissions control systems, the purchase of ultra-low sulfur diesel fuel to power these engines and advancements in vehicle design.

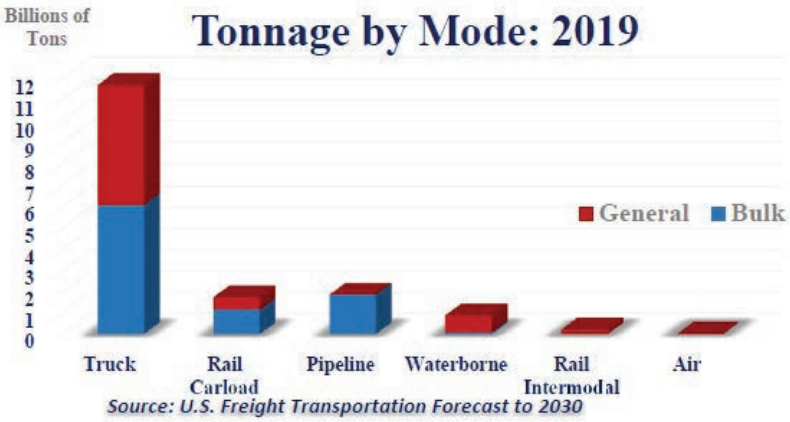
This year, the trucking industry will move 70 percent of the nation's freight tonnage, and over the next decade will be tasked with moving three billion more tons of freight than it does today while continuing to deliver the vast majority of goods.[4] Some claim that large shifts in freight from trucks to an alternative mode—primarily rail—would reduce emissions and congestion. This is no doubt true. However, it is also highly unrealistic to assume that the 40-year trend-line toward the more nimble, reliable and flexible freight transportation provided by trucks will suddenly reverse course. Indeed, over the past 20 years rail market share has fallen by 42 percent, while the trucking industry's market share has increased by nine percent.[5] While pipelines are projected to grow their market shares as capacity continues to expand and energy production increases, rail carload traffic is expected to continue to stagnate—both in terms of market share and amount of volume—and rail intermodal shares will remain flat. In fact, the annual growth in truck volumes over the next decade is nearly equal to the total amount of freight moved by intermodal rail each year. While rail may have a price advantage over trucks, shippers show no sign that they are ready to abandon the higher quality, more reliable service that only trucks can provide. In fact, as e-commerce grows, the trend toward trucking is likely to accelerate. Therefore, it would be unwise to redirect money designated for highways—particularly funds currently going toward the two freight programs created by the FAST Act, to non-highway freight projects when it is clear that for the foreseeable future the vast majority of freight will continue to move on the highway system.



[4] *Freight Transportation Forecast 2018 to 2029*. American Trucking Associations, 2018.
[5] *Commodity Flow Survey* 1997 and 2017 Preliminary tables, U.S. Department of the Census.



Source: U.S. Freight Transportation Forecast to 2030



Source: U.S. Freight Transportation Forecast to 2030

The federal government has a critical role to play in the supply chain. Freight knows no borders, and the constraints of trying to improve the movement of freight without federal funding and coordination will create a drag on all freight providers' ability to serve national and international needs. The critical role that only the federal government can play is to look at investment decisions in the context of national impacts and determine which investments can produce the greatest economic benefits regardless of jurisdictional considerations. Only the federal government can break down the artificial constraints of geographic boundaries that hamper sound investment in our nation's freight networks. Only the federal government can provide the resources necessary to fund projects whose benefits extend beyond state lines, but are too expensive for state or local governments to justify investments at the expense of local priorities. This is why devolution of funding highway projects to state and local governments cannot and will not address our most important national needs.

A well-maintained, reliable and efficient network of highways is crucial to the delivery of the nation's freight and vital to our country's economic and social well-being. However, the road system is rapidly deteriorating, and costs the average mo-

torist nearly $1,600 a year in higher maintenance and congestion expenses.[6] Highway congestion also adds nearly $75 billion to the cost of freight transportation each year.[7] In 2016, truck drivers sat in traffic for nearly 1.2 billion hours, equivalent to more than 425,000 drivers sitting idle for a year.[8]

Most troubling is the impact of underinvestment on highway safety. In nearly 53 percent of highway fatalities, the condition of the roadway is a contributing factor.[9] In 2011, nearly 17,000 people died in roadway departure crashes, over 50 percent of the total.[10] Many of these fatalities result from collisions with roadside objects, such as trees or poles located close to the roadway.

The Highway Trust Fund (HTF), the primary source of federal revenue for highway projects, safety programs and transit investments, is projected to run short of the funds necessary to maintain current spending levels by FY2021.[11] While an average of approximately $42 billion per year is expected to be collected from highway users over the next decade, nearly $60 billion will be required annually to prevent significant reductions in federal aid for critical projects and programs.[12] It should be noted that a $60 billion annual average federal investment still falls well short of the resources necessary to provide the federal share of the expenditure needed to address the nation's surface transportation safety, maintenance and capacity needs.[13] According to the American Society of Civil Engineers, the U.S. spends less than half of what is necessary to address these needs. As the investment gap continues to grow, so too will the number of deficient bridges, miles of roads in poor condition, number of highway bottlenecks and, most critically, the number of crashes and fatalities attributable to inadequate roadways.

While the cost and scale of addressing highway improvement needs is daunting, it is important to note that much of the congestion is focused at a relatively small number of locations. Just 17% of National Highway System (NHS) miles represents 87% of total truck congestion costs nationwide.[14] Many of these locations are at highway bottlenecks that are identified annually by the American Transportation Research Institute. ATRI recently released its annual freight bottleneck report, which identifies the top 100 truck bottlenecks around the country.[15] The Washington, DC area had two major bottlenecks, while Illinois had four. While most of the bottlenecks were in large metropolitan areas, the report found trouble spots even in smaller cities like Baton Rouge, LA, San Bernardino, CA, Birmingham, AL, Chattanooga, TN, and Greenville, SC. ATA's highway funding proposal, described below, would adopt a strategy for funding improvements at these costly choke points.

A recently released report[16] by the Transportation Research Board (TRB) requested by Congress focused specifically on the current state and future needs of the Interstate Highway System. This critical network binds our nation together and reaps immeasurable economic and national security benefits for the United States. Most importantly, because interstates are far safer than surface roads, since 1967 its construction has prevented nearly a quarter million people from losing their lives in vehicular crashes.[17] The Interstate Highway System accounts for about one-quarter of all miles traveled by light-duty vehicles and 40 percent of miles traveled by trucks.[18] The TRB report estimates that conservatively, the state and federal investment necessary to address the Interstate system's maintenance and capacity needs will have to double or triple over today's expenditures in the next 20 years.[19]

ATA's proposed solution to the highway funding crisis is the Build America Fund. The BAF would be supported with a new 20 cent per gallon fee built into the price

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[6] *Bumpy Road Ahead: America's Roughest Rides and Strategies to make our Roads Smoother*, The Road Information Program, Oct. 2018; *2015 Urban Mobility Scorecard*. Texas Transportation Institute, Aug. 2015.

[7] *Cost of Congestion to the Trucking Industry: 2018 Update*. American Transportation Research Institute, Oct. 2018.

[8] *Ibid*.

[9] *Roadway Safety Guide*. Roadway Safety Foundation, 2014.

[10] *Ibid*.

[11] The Budget and Economic Outlook 2019–2029, *January 2019* Congressional Budget Office.

[12] *Ibid*.

[13] *2015 Status of the Nation's Highways, Bridges, and Transit: Conditions & Performance*. USDOT, Dec. 2016; see also *2017 Infrastructure Report Card*. American Society of Civil Engineers, 2017.

[14] *Ibid*.

[15] https://truckingresearch.org/2019/02/06/atri-2019-truck-bottlenecks/

[16] *Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future (2018)*. Transportation Research Board, National Academy of Sciences.

[17] *Ibid*, p. 2–18

[18] *Ibid*, p. 2–10.

[19] *Ibid*, p. S–5

of transportation fuels collected at the terminal rack, to be phased in over four years. The fee will be indexed to both inflation and improvements in fuel efficiency, with a five percent annual cap. We estimate that the fee will generate nearly $340 billion over the first 10 years. It will cost the average passenger vehicle driver just over $100 per year once fully phased in.[20] While much of the money under the BAF would fund existing programs, we recommend that $5 billion annually should be dedicated to addressing major highway freight bottlenecks.

We also support a new fee on hybrid and electric vehicles, which underpay for their use of the highway system or do not contribute at all. We look forward to working with the committee to identify the best approach to achieve that goal.

The fuel tax is the most immediate, cost-efficient and conservative mechanism currently available for funding surface transportation projects and programs. Collection costs are less than one percent of revenue.[21] Our proposal will not add to the federal debt or force states to resort to detrimental financing options that could jeopardize their bond ratings. Unlike other approaches that simply pass the buck to state and local governments by giving them additional "tools" to debt-finance their infrastructure funding shortfalls for the few projects that qualify, the BAF will generate *real* money that can be utilized for *any* federal-aid project.

Beyond infrastructure needs, Congress can assist in addressing a major safety and efficiency challenge facing the trucking industry. Research and feedback from carriers and drivers suggest there is a significant shortage of available parking for truck drivers in certain parts of the country. Given the projected growth in demand for trucking services, this problem will likely worsen. There are significant safety benefits from investing in truck parking to ensure that trucks are not parking in unsafe areas due to lack of space. In addition, locating truck parking in strategic areas can help to alleviate congestion by allowing trucks to stage their deliveries and get to their destinations before peak congestion periods begin.

Funding for truck parking is available to states under the current federal-aid highway program, but truck parking has not been a priority given a shortage of funds for essential highway projects. Therefore, we support the creation of a new discretionary grant program with dedicated funding from the federal-aid highway program for truck parking capital projects.

Once again, thank you for holding this hearing and giving ATA the opportunity to submit testimony. The safe, efficient and sustainable movement of freight is both critical and attainable. While trucking companies work hard every day to achieve these goals, some things are beyond their control. The trucking industry cannot determine how much money is invested in highways, or which projects are selected. We all rely on our elected representatives to make these decisions. ATA's members have offered to help pay for improvements to the highway system, and we hope you make the right decision by accepting that assistance and by investing the money where it is needed most—in highway bottlenecks and the expansion of truck parking capacity where shortages exist.

Statement of the Association of Equipment Manufacturers, Submitted for the Record by Hon. Eleanor Holmes Norton

Dear Chairwoman Holmes Norton, Chairman Lipinski, Ranking Member Davis, and Ranking Member Crawford:

The Association of Equipment Manufacturers (AEM) appreciates the opportunity to submit a statement for the record on the hearing entitled "Where's My Stuff? Examining the Economic, Environmental, and Societal Impacts of Freight Transportation." AEM represents more than 1,000 members in the construction, agriculture, forestry, utility and mining sectors and advocates for an industry that employs more than 1.3 million U.S. men and women and contributes $159 billion a year to our national economy. AEM's membership is dependent on a well-maintained and reliable freight network to ensure that raw materials, goods, and components are transported efficiently and cost effectively. As such, we continue to urge policymakers to pursue sensible legislative solutions that target intermodal network bottlenecks.

Many of our members manufacture products in rural areas, acting as important employers for these communities; however, operation in rural communities presents unique shipping challenges. For instance, rural facilities frequently operate along two-lane highways that are ill-equipped to accommodate significant freight traffic,

[20] Federal Highway Administration, *Highway Statistics 2016*, Table VM–1. Average light-duty vehicle consumed 522 gallons of fuel.

[21] *Ibid.*

yet raw materials need to make their way to the facilities to allow products to be manufactured and finished goods and components need to get to customers. Poorly maintained roads and those that are unable to accommodate freight traffic as well as freight rail congestion increases shipment transportation time.

Likewise, significant freight delays at our nation's ports have created additional challenges for our membership. In some cases, significant delays and freight congestion have even forced our members to divert shipments to non-domestic ports. Infrastructure capacity and reliability challenges raise logistics costs which are ultimately passed onto customers in the form of higher prices. Transportation funding directed towards freight capacity will help alleviate these challenges and ensure that equipment manufacturers can retain competitive pricing models. AEM supports proposals that would help mitigate the challenges that our members face with regard to our nation's freight network. We support legislative proposals that would establish grant programs dedicated to freight focused projects and those that would create a dedicated revenue stream for freight projects funded by user fees.

We appreciate the leadership of the Subcommittee on Highways & Transit and the Subcommittee on Railroads, Pipelines, & Hazardous Materials on this important topic. We look forward to working with you as you develop innovative solutions to our nation's freight challenges.

Letter of December 3, 2019, from Allen R. Schaeffer, Executive Director, Diesel Technology Forum, Submitted for the Record by Hon. Eleanor Holmes Norton

DECEMBER 3, 2019.

Rep. ELEANOR HOLMES NORTON,
Chairman,
Subcommittee on Highways & Transit, Committee on Transportation & Infrastructure, U.S. House of Representatives, Rayburn House Office Building, Washington, DC.

Rep. RODNEY DAVIS,
Ranking Member,
Subcommittee on Highways & Transit, Committee on Transportation & Infrastructure, U.S. House of Representatives, Rayburn House Office Building, Washington, DC.

DEAR CHAIRMAN NORTON AND RANKING MEMBER DAVIS,

On behalf of the Diesel Technology Forum, we would like to submit the comment concerning the hearing before the subcommittee titled *Where's My Stuff? Examining the Economic, Environmental, and Societal Impacts of Freight Transportation*. Diesel is the prime technology that moves many freight conveyances including commercial vehicles, locomotives, marine vessels and the wide variety of off-road cargo handling equipment. Diesel technology has undergone a significant transformation over the past decade and half and the latest generation diesel technologies that power heavy duty trucks and off-road equipment are now near-zero in emissions. The leaders in diesel technology are engaged to refine the technology to further drive these emissions closer to zero in the near term while generating significant fuel savings and greenhouse gas emission reductions. While emerging zero-emission heavy-duty technologies are on the drawing board today, and a few are available currently, introducing the latest diesel technology will do the most to deliver immediate term benefits to the communities where these vehicles and equipment operate. Diesel is also a U.S. economic success story as 13 states are home heavy-duty diesel manufacturing facilities.

By way of background, the Diesel Technology Forum represents the leaders in diesel technology including engine, vehicle, equipment and component manufacturers and biofuel producers. The Diesel Technology Forum is a not-for-profit organization that conducts research and educational outreach about the economic importance, energy efficiency and clean air and climate benefits of diesel technology of all kinds. Diesel vehicles and equipment play a key role in 15 sectors of the US economy, from agriculture to goods movement and warehousing and mass transit.

1. Diesel is the Prime Mover of the U.S. Economy & Supports 12 Percent of Private Sector Economic Activity

Diesel engines power the overwhelming majority of vehicles and equipment responsible for moving freight in the U.S. Three out of every four commercial vehicles is powered by diesel with the remainder comprised of gasoline and just 2 percent

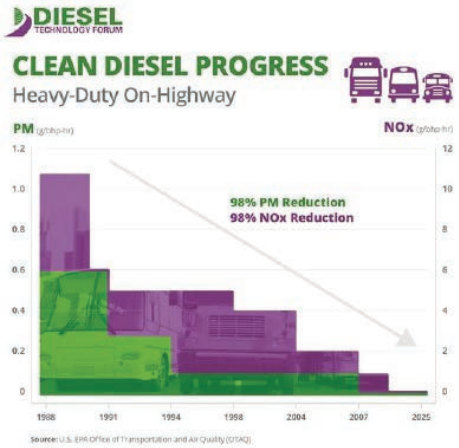
are natural gas. 98 percent of the larger Class 8 trucks are powered by diesel while nearly the entirety of locomotives and larger marine workboats are also powered by diesel. While alternative fuels and all-electric technologies power some of the wide variety of off-road cargo handling and warehouse equipment, including forklifts and gantry cranes, diesel is still the prime technology among off-road equipment.

Much of these heavy-duty diesel engines and the vehicles and equipment they power are manufactured in the U.S., supporting private sector economic activity and employment. Over 1 million heavy-duty diesel engines were manufactured in 13 states in the U.S. These engines, and the vehicles and equipment they power are critical to the warehousing and logistics, agricultural and construction industries that generated $4 trillion in economic activity in the first quarter of 2019, or 12 percent of all private sector activity.

According to the Bureau of labor Statistics, over 265,000 Americans are employed as diesel technicians across the country and job prospects show signs of continual improvement [1]. The leaders in diesel technology sponsor technical programs around the country to help guarantee a skilled workforce to keep diesel technology working for America.[2]

2. Significant Transformation to Near Zero Emissions in the Diesel Platform

Over the last decade-and-a-half, diesel technology has undergone a significant transformation to near-zero emissions. Cleaner fuel along with modern engine designs and aftertreatment technologies yield near-zero levels of fine particles and oxide of nitrogen. 43 percent of the diesel commercial vehicle fleet come with these near-zero emissions technologies and generate significant emission reduction benefits to the communities where they operate. A single near-zero emissions Class 8 truck, for example, generates 2.3 tons less oxides of nitrogen than an older generation truck. U.S. Environmental Protection Agency finds that a new Class 8 diesel truck and an all-electric truck can reduce about the same amount of fine particle emissions as most emissions are generated by brake and tire wear and not from tailpipe emissions.[3]



Source: U.S. EPA Office of Transportation and Air Quality (OTAQ)

3. Clean Commercial Vehicles Reduce Greenhouse Gas Emissions

Transportation sources of greenhouse gas emissions are now the leading source of emissions in the U.S. While passenger cars contribute the most to transportation emissions, commercial vehicles rank as the second leading contributor while rail and marine vessels represent 4 percent collectively.

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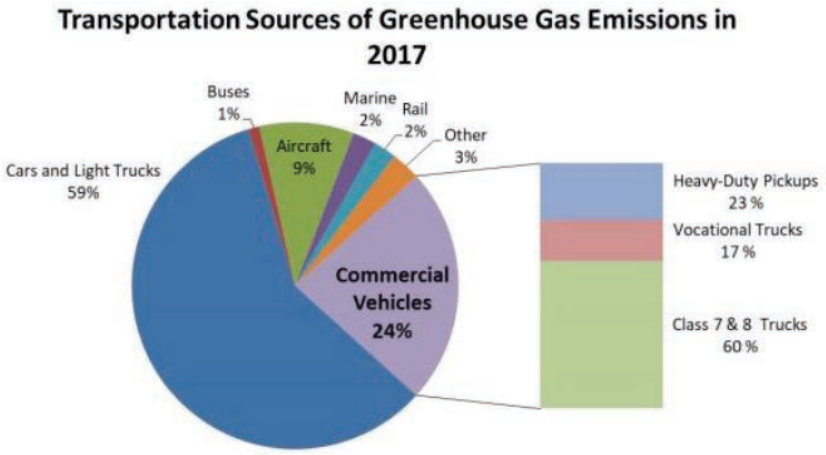
[1] Occupational Employment and Wages—Bus, Trucks and Diesel Engine Specialists. Bureau of Labor Statistics. https://www.bls.gov/oes/current/oes493031.htm

[2] "MANUFACTURING PROGRESS: 1 MILLION HEAVY-DUTY DIESEL ENGINES ARE GOOD FOR THE ENVIRONMENT AND ECONOMY". Diesel Technology Forum, September 2019. https://www.dieselforum.org/policyinsider/manufacturing-progress-1-million-heavy-duty-diesel-engines-are-good-for-the-environment-and-economy

[3] https://www.epa.gov/ports-initiative/national-port-strategy-assessment-reducing-air-pollution-and-greenhouse-gases-us



Within the large population of commercial vehicles, the larger Class 7 and 8 trucks are responsible for the majority of emissions. Efforts to encourage the replacement of older Class 7 and 8 vehicles with new cleaner technologies will do the most to reduce commercial vehicle greenhouse gas emissions.

4. Continued Improvements in Diesel Technology Provides Greenhouse Gas Reductions

One of the benefits of the diesel platform is its impressive track record for continual improvement. While the current generation of diesel commercial vehicles deliver near-zero emissions, truck and engine manufacturers are hard at work developing much more fuel efficient diesel trucks that will deliver significant fuel savings. Fuel economy rules are now required of the large variety of commercial vehicles from larger pickups to the largest Class 8 trucks. More efficient diesel trucks are expected to save *130 billion gallons* of fuel and reduce *1.3 billion tons of greenhouse gas emissions* between 2010 and 2030, according to research commissioned by the Diesel Technology Forum. These are significant benefits that are equivalent to removing all cars on U.S. roads for a year or eliminating the emissions generated from electricity used by 22 million homes.[4]

5. Reducing Transportation Emissions Requires a Variety of Clean Technologies Including Diesel

As emerging technologies will be the focus of much attention to reduce heavy-duty transportation emissions, significant and near-term benefits can be realized by replacing older trucks with newer diesel options to help contribute to achieve climate goals.

While zero-emission technologies are available today in some commercial vehicle and bus types, and others are on the drawing board, diesel technology is expected to continue to dominate the larger commercial vehicle fleet through 2030, particularly Class 8 trucks that are responsible for most of the greenhouse gas emissions from the entire commercial vehicle sector. As these emerging zero-emissions technologies will make in-roads into the fleet, so too will more efficient diesel commercial vehicles and their benefits are substantial as noted above. IHS Markit estimates that 75% of commercial vehicle truck sales will include a diesel engine by 2030.[5] Meanwhile, the work truck industry and the National American Council for Freight Efficiency estimate that all-electric technologies may not prove out for larger commercial vehicles until at least the 2030 time frame.[6] This outlook is shared by the Truck and Engine Manufacturers. As these technologies become available in the future, a recent analysis conducted by the National Academies of Science concludes that the relatively longer turn-over of older vehicles in favor of new trucks results

[4] https://www.dieselforum.org/policy/climate-change-and-diesel-technology
[5] https://ihsmarkit.com/products/reinventing-the-truck.html
[6] https://nacfe.org/future-technology/electric-trucks/

in a further timeframe for these technologies to enter the fleet in any sizeable number to generate benefits.[7]

6. More Efficient Off-Road Technologies

Replacing older engines that power marine vessels and locomotives may provide greenhouse gas emission reductions. Unlike commercial vehicles, off-road equipment including rail and marine that is responsible for about 4 percent of transportation greenhouse gas emissions, are not subject to fuel economy standards. Engines that power these applications must meet stringent emissions standards for criteria pollutants including fine particles and oxides of nitrogen. New technology diesel engines developed to meet the most recent standard required by the U.S. Environmental Protection Agency reduce these emission by upwards of 90 percent. While fuel economy is not required, replacing these much older and longer lived engines with new more modern designs frequently results in fuel economy benefits that translate directly to greenhouse gas emission reduction.

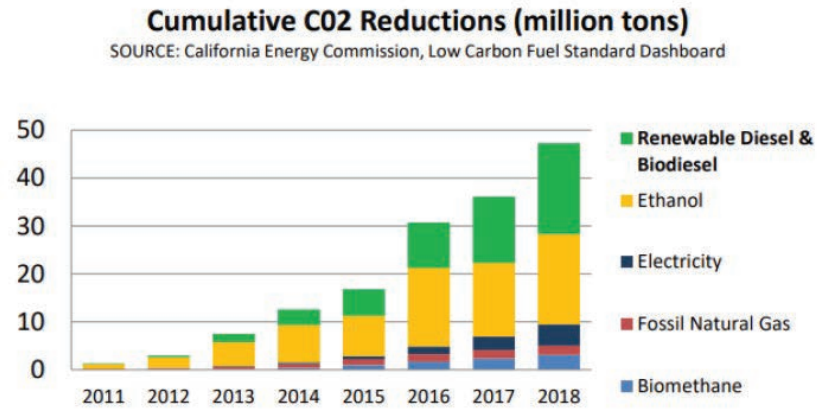
For example, one rail operator in the New York City region replaced an old switch locomotive manufactured before emission controls were required with the new diesel technology and saved 26,000 gallons of fuel per year.[8] Similarly, a tug boat operator in the Puget Sound region replaced an old uncontrolled propulsion engines with new diesel models to realize 1,000 tons of greenhouse gas emissions.[9] These are benefits generated by a single project and are equivalent to converting thousands of automobiles to zero-emissions technologies.

7. Significant Benefits From Advanced Biofuels

Significant additional and immediate term greenhouse gas reduction benefits can be realized through the use of advanced biofuels including biodiesel and renewable diesel fuel. These two fuels are considered advanced biofuels capable of reducing greenhouse gas emissions by at least fifty percent and in the case of renewable diesel fuel, greenhouse gas emissions can be eliminated by more than 80 percent.

Unlike other alternatives, the use of biodiesel and renewable diesel fuel can be used in existing diesel engines and does not require the purchase of a new engine, vehicle or equipment. The use of these fuels also does not require additional and expensive investments in refueling or recharging infrastructure.

These fuels have provided the most greenhouse gas reductions in the transportation sector in California, according to the California Air Resources Board.[10] As a result of California's requirement to reduce the carbon content of transportation fuels sold in the state, biodiesel and renewable diesel fuel have eliminated the most greenhouse gas emissions even exceeding the benefits generated by all-electric cars and trucks by almost 4:1.



[7] https://www.nap.edu/catalog/25542/reducing-fuel-consumption-and-greenhouse-gas-emissions-of-medium-and-heavy-duty-vehicles-phase-two

[8] https://www.epa.gov/ports-initiative/new-york-city-locomotive-repowers-collaborative-efforts-improve-air-quality?fbclid=IwAR2wUx2848cmG__PDQcrY9IlclL__Q2pTcgXvpfDcO-Q__J5V1y0-FNPYpzU5U#outcomes

[9] https://www.epa.gov/sites/production/files/2019-05/documents/diesel-tech-forum-large-engine-research-2019-mcdi-mtg-12pp.pdf

[10] https://ww3.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm

Interest in these fuels is growing outside of California. The City of New York, with its fleet of 13,000 heavy-duty vehicles and equipment announced it efforts to replace 17 million gallons of diesel fuel with renewable diesel fuel that is expected to be the leading contributor to the City's greenhouse gas reduction strategy.[11] The Port Authority of New York-New Jersey announced its partnership with Neste, the global leader in the supply of renewable diesel fuel, to use this advanced biofuel in the Port's fleet of heavy-duty vehicles and equipment.[12]

CONCLUSION

Diesel technology is the prime technology that moves freight in the U.S. Much of this technology and fuel is produced in the U.S. helping to provides jobs to communities across the country. Thanks to continued investment by the leaders in diesel technology, the latest near-zero emissions innovations are ready and able to move freight while reducing emissions. The leaders in diesel technologies are hard at work developing the next generation of solutions to drive emissions closer to zero.

Please feel free to contact me with any questions or concerns.

Sincerely yours,

ALLEN R. SCHAEFFER,
Executive Director.

Letter of December 16, 2019, from David French, Senior Vice President, Government Relations, National Retail Federation, Submitted for the Record by Hon. Eleanor Holmes Norton

DECEMBER 16, 2019.

Hon. ELEANOR HOLMES NORTON,
Chairman,
U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit, Washington, DC.

Hon. RODNEY DAVIS,
Ranking Member,
U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit, Washington, DC.

DEAR CHAIRMAN HOLMES NORTON AND RANKING MEMBER DAVIS:

I am writing on behalf of the National Retail Federation to provide our views for the record of your December 5, 2019 hearing entitled "Where's My Stuff? Examining the Economic, Environmental, and Societal Impacts of Freight Transportation."

The members of the National Retail Federation are among the country's largest shippers, moving hundreds of billions of dollars in merchandise through their supply chains, using America's transportation infrastructure—its seaports, airports, rail lines, and highways. The condition of the U.S. freight transportation system is vital to American competitiveness, and especially the retail industry, which must be able to deliver goods to the consumer at brick-and-mortar stores, or through direct to consumer options. The freight transportation system is of critical importance to the entire U.S. economy.

The National Retail Federation, the world's largest retail trade association, passionately advocates for the people, brands, policies and ideas that help retail thrive. From its headquarters in Washington, D.C., NRF empowers the industry that powers the economy. Retail is the nation's largest private-sector employer, contributing $2.6 trillion to annual GDP and supporting one in four U.S. jobs—42 million working Americans. For over a century, NRF has been a voice for every retailer and every retail job, educating, inspiring and communicating the powerful impact retail has on local communities and global economies.

The U.S. freight infrastructure—particularly those segments such as the nation's highways that rely on public-sector funding—has suffered from decades of underinvestment, leading retailers to fear that future growth in global commerce will be stalled because of a lack of infrastructure to support it. Your subcommittee's focus on these issues is welcomed, and we provide these views on freight issues that we

[11] https://www1.nyc.gov/assets/dcas/downloads/pdf/fleet/Press-Release-DCAS-to-Expand-Use-of-Renewable-Diesel-in-City-Fleet-Vehicles.pdf

[12] https://bioenergyinternational.com/biofuels-oils/neste-and-the-port-authority-of-new-york-new-jersey-collaborate-to-facilitate-the-use-of-sustainable-transportation-fuels

see as priorities that need to be addressed when Congress takes up surface transportation reauthorization in the next year.

SUSTAINABLE FEDERAL FUNDING FOR THE HIGHWAY COMPONENT OF FREIGHT INFRASTRUCTURE

Much of the nation's freight infrastructure is privately financed. Marine Terminals and U.S. port authorities self-finance water-side infrastructure. Similarly, freight rail pays for on-dock and near dock facilities and invests billions of dollars to maintain and expand its national network. Significant portions of the air freight system are also privately financed. However, the nation's highways, which are the main intermodal connections between seaports, airports, railheads, farms, factories, distribution centers, stores, and consumers are publicly financed.

The federal portion of highway funds is supported through fuel taxes, which are a proxy for user-fees. Unfortunately, there has been no significant increase in the federal gasoline tax in decades. In addition, fuel efficient automobiles have decreased revenues over time.

In the upcoming reauthorization of the Fixing America's Surface Transportation (FAST) Act, we urge Congress to:

RECOMMIT TO PUBLIC FUNDING FOR THE NATION'S HIGHWAYS AND INTERMODAL CONNECTORS

- *Find a long-term, sustainable source of revenue for the federal Highway Trust Fund* that preserves the concept that the users of the system—trucks, automobiles, and busses—should pay for it.
- *Limit Highway Trust Fund spending to those projects that will improve performance on the nation's key transportation corridors*. The Federal Highway Administration has developed performance metrics, and we strongly believe they should be used as a basis for directing federal highway dollars.
- *Establish a special freight account within the Highway Trust Fund* that should be devoted exclusively to projects identified as part of the National Strategic Freight Plan. In particular, federal dollars should be reserved for key freight infrastructure including:
  - *"Last mile projects,"* which are the highways that connect seaports and railheads to the interstate system.
  - *The highway portion of grade crossings* that will separate motor vehicles from trains. Grade crossings are a good example of public private partnerships, because freight rail will pay a portion of the cost.
  - *Projects identified by the Department of Transportation as being of national or regional significance*. Freight projects are very often multi-state or regional in nature, requiring a federal presence.

FULLY FUND FREIGHT-RELATED PROGRAMS IN THE DEPARTMENT OF TRANSPORTATION.

- *Fund Research Identified in the National Freight Strategic Plan*: As part of the Moving Ahead for Progress in the 21st Century (MAP–21) Act, Congress directed the Department of Transportation to develop a National Freight Strategic Plan (The Strategic Plan), a draft of which was published for comment in early 2016. The Strategic Plan identifies many areas in need of research, among them, better information about truck moves and truck safety. Congress and the administration should fully fund this research.
- *Fund the research needs recommended as part of the Bureau of Transportation's Port Performance Freight Statistics Program's first report to Congress*. Congress established the Port Performance Freight Statistics Program in the Fixing America's Surface Transportation (FAST) Act. The program was enacted in response to the 2015 West Coast port disruptions that significantly harmed the nation's exporters. The first report under the program outlined research needs. Congress has provided no funding for this program, which is the first to attempt to measure the productivity and performance of the nation's international gateways, which are so important to global commerce.
- *Reauthorize the National Freight Advisory Committee (NFAC)*. Created as part of MAP 21, The National Freight Advisory Committee (NFAC) was created to promote a safe, economically efficient, and environmentally sustainable freight transportation system. The committee is a resource within the Department of Transportation for collecting the views of the freight community. The Committee should be reauthorized to continue their work on freight policy. In our opinion, the failure to consult freight users is a continuing problem that needs to be addressed. Congress should require the federal government to seek out

and include the users of the freight transportation system as part of its policy-making process.

CREATE AN OFFICE OF MULTIMODAL FREIGHT TRANSPORTATION

Moving freight across the nation requires the use of many modes of transportation. The products that line the shelves at NRF-member stores came by truck, but they also may have come by rail, air, and water modes. Unfortunately, the U.S. Department of Transportation is organized by transportation mode, making it difficult to coordinate responses on important multimodal freight projects and issues. For this reason, we call on the administration and Congress to create an Office of Multimodal Freight Transportation within the U.S. Department of Transportation.

CREATE A SHIPPERS ADVISORY COMMITTEE AT THE FEDERAL MARITIME COMMISSION

In recent years, the Federal Maritime Commission (FMC) has gone out of its way to foster dialog between shippers and cargo interests and ocean carriers and marine terminals. While FMC issues are not under the Subcommittee's jurisdiction, we want to call attention to the work the FMC has been doing in reaching out to cargo interests to make important gains in port efficiency and congestion reduction. The Commission has recently suggested the creation of a permanent shippers advisory committee composed equally of importers and exporters, to help foster greater collaborative efforts that can improve business practices and reduce congestion. We urge Congress to facilitate this proposal and call your attention to it because it underscores the importance and efficacy of seeking out the views of cargo interests.

PURSUE COMMON SENSE TRUCK REGULATIONS

The nation's retailers support safe and efficient trucking, but we also believe that many of the regulations affecting commercial motor vehicles (CMVs) are not based on sound research with respect to the correlation between regulations and safety. For this reason, we call on the administration and Congress to undertake an overhaul of regulations affecting CMVs. Congress and the administration should:

- *Establish uniform truck Size limits that allows longer trailers*. At present, there is a patchwork of state and federal regulations affecting truck sizes that are inconsistent with a nationwide freight system. In the recent past, Congress has asked the Federal Highway Administration to undertake research that would determine the correlation between truck sizes and weights and truck safety, but such studies have been inconclusive because the government has no data with respect to truck accidents. As noted above, funding research on freight is a high priority, but in the absence of hard data, it's hard to justify truck and weight limits that vary by state. In addition, moving toward larger trailers or the use of twin-trailers nationwide will reduce the carbon footprint of the trucking industry.
- *Establish a commercial driver apprenticeship program*. The retail industry relies on a stable system of distribution for our supply chains. America's long-haul trucking industry provides the vital distribution networks that serve retail and so many other sectors of our economy. Even if a larger portion of freight moves via rail, there will continue to be a need for trucks and drivers. Right now, the industry is facing a critical shortage of talent. For this reason, we believe that proposals, such as the *"Developing Responsible Individuals for a Vibrant Economy (DRIVE-Safe) Act" (H.R. 1374), represent a sensible approach to this issue*.
- *Modernize the national twin trailer standard from 28 feet to 33 feet*. This modest increase in trailer length will improve truck safety, efficiency and sustainability. Modernizing the trucking equipment would lead reduced congestion with no cost to the taxpayer, increased safety, maximized efficiency and increased environmental gains.
- *Support performance-based goals for achieving lower-emission trucks, rail, and dock equipment*. NRF members support efforts to reduce carbon emissions. Many of its members participate in the SmartWay program and have made operational changes that have reduced truck emissions. We strongly believe that the best approach toward achieving lower carbon emissions, is to avoid prescriptive regulations, and focus on performance standards that would provide maximum flexibility to innovate and allow for collaborative efforts between technology providers, surface transportation providers, and cargo interests. Over the last few decades, NRF members have played a leadership role in public-private partnerships to reduce truck emissions in the ports of Los Angeles and Long Beach. We continue to believe that these efforts are valuable and sensible.

We thank you for the opportunity to provide these post-hearing comments. We look forward to working with Subcommittee members on these important issues. If you have any questions, please contact Jonathan Gold, NRF's Vice President for Supply Chain and Customs Policy.

Sincerely,

DAVID FRENCH,
Senior Vice President, Government Relations.

Article entitled "The Significance of Li-ion Batteries in Electric Vehicle Life-cycle Energy and Emissions and Recycling's Role in its Reduction," Submitted for the Record by Hon. Eleanor Holmes Norton

Energy Environ. Sci., 2015, 8, 158
J. B. Dunn, L. Gaines, J.C. Kelly, C. James and K.G. Gallagher

The article is retained in committee files and is available online at https://pubs.rsc.org/en/content/articlehtml/2015/ee/c4ee03029j

Statement of Stephen Gardner, Senior Executive Vice President, Chief Operating and Commercial Officer, National Railroad Passenger Corporation (Amtrak), Submitted for the Record by Hon. Daniel Lipinski

INTRODUCTION

Chairwoman Holmes Norton, Chairman Lipinski, Ranking Members Davis and Crawford, and all the members of both Subcommittees, thank you for this opportunity to submit written testimony on behalf of the millions of Americans who depend on Amtrak intercity passenger rail service to move them across this nation.

As you may recall, prior to Amtrak's creation in 1970, railroads provided both freight and passenger services. Then, because these railroads were losing money on their passenger trains, Congress bailed out the private railroads and created Amtrak to relieve them of their obligation to operate intercity passenger trains. In return, the freights agreed:

- To give Amtrak access to their lines in order to operate passenger trains; and
- To give Amtrak passenger trains preference over freight trains.

Unfortunately, as a result of some freight companies' practice of ignoring federal law, coupled with Amtrak's inability to enforce its statutory right for passenger trains to have priority over freight trains, your constituents are routinely and unlawfully delayed by freight trains. In addition, many freight railroads make it exceedingly difficult for Amtrak to add new service to meet the growing and shifting demand by many of your constituents for more trains.

This is an existential challenge to Amtrak as we own only 3% of the 21,200 route-miles that our 32.5 million riders traveled over in 2019. Most of the remaining 97% are owned by freight railroads. Therefore, Americans are largely beholden to the freights for reliable, trip time competitive service on the national network.

How does this impact society? Consider that in FY 2019, 6.5 million Amtrak passengers, many of whom are your constituents, were significantly late on trains largely delayed by host railroads.

Across the Amtrak long-distance network, customer on-time performance (OTP) in FY2019—the percentage of passengers who arrived at their destination on time—was only 42%. On one-third of our 15 long-distance routes, more than seven out of every ten passengers arrived significantly late. Customer OTP on some of our state-supported corridor routes was just as bad: 34% on the Chicago-to-Detroit/Pontiac *Wolverine* route and just 26% on the Chicago-to-Carbondale *Illini/Saluki* route.

The principal reason for this dismal on-time performance is freight train interference by host freight railroads. Freight train interference is caused by dispatching decisions to prioritize the operation of freight trains over passenger trains, either putting Amtrak trains behind slow-moving freight trains for miles or relegating the passenger train to wait in sidings for freight train to pass. These delays amounted to more than one million minutes in FY 2019—equivalent to two years of passengers waiting for freight.

Yet, the increase in freight train interference delays is occurring at a time when rail freight traffic is declining: more than 10% since 2006 and 4% in the last year alone. Interestingly, most of the major freight railroads have recently adopted new

operating practices, called Precision Scheduled Railroading, that they claim have made their operations more reliable. Freight railroads claim that they provide preference to Amtrak, but our customers can attest that this is often far from the case. Just ask the 240,000 passengers aboard the *Texas Eagle*, or the 211,000 passengers on the *Crescent*, who were all an average of two hours late to their destination.

Moreover, substantial public funds that have been invested in freight railroad infrastructure to improve passenger rail performance have not yielded returns for passengers or state funding partners. For example, after nearly $500 million was invested in the freight railroad line used by the State of North Carolina-supported *Piedmont* service, host railroad delays *increased* for the year following completion of the project, until delays were twice the level they were prior to the investment; host railroad delays have finally fallen, but there is still much room for improvement. On the route into Chicago used by three train services supported by the State of Michigan, as well as our *Capitol Limited* and *Lake Shore Limited* long-distance trains, $200 million of public funds were invested into the Englewood Flyover and Indiana Gateway projects. Today, however, passengers traveling on this line encounter severe—and eminently avoidable—host railroad delays on a daily basis. Taxpayers and passengers deserve a better return on investment.

SOME FREIGHT RAILROADS FOLLOW THE LAW AND PROVIDE PREFERENCE . . . AND SOME IGNORE IT.

There is absolutely no reason why this nation cannot have both a world class freight rail network and modern intercity passenger rail service. Amtrak wants both freight and passenger rail to succeed, and it appears that individual freight railroads agree with us to widely varying degrees depending on the railroad and sometimes on the individuals making decisions.

When freight leadership has decided to dispatch Amtrak trains according to the law, we have seen Amtrak's on time performance improve literally overnight. During these times, there was no evidence of negative impacts to the overall fluidity of America's rail network. In fact, it has been reported by some freight railroad leadership that efficient Amtrak service can be a proxy indicator that their own operations are running most efficiently.

The bottom line is that some railroads follow the law and provide preference to Amtrak trains and other freight railroads simply ignore the law and choose to delay your constituents. The attached Host Railroad Report Card illustrates this point well.

CONGRESS CAN HELP PREVENT FREIGHT RAILROADS FROM DELAYING YOUR CONSTITUENTS.

Currently, only the U.S. Department of Justice can bring a legal action to enforce Amtrak's preference rights, and it has done so only once, nearly four decades ago. Meanwhile, continued deterioration in on-time performance is driving away passengers and increasing operating losses and federal subsidies. The biggest threat to the future of this nation's rail network is our growing inability to offer reliable service on many routes.

Congress should also provide Amtrak with the right to bring legal action against a freight railroad when such freight violates federal law to provide Amtrak passenger trains with preference.

Legislation was recently introduced in the Senate and Amtrak urges the House of Representatives to do the same.

SOME FREIGHT RAILROADS ARE ALSO MAKING IT DIFFICULT TO ADD PASSENGER SERVICE.

When Amtrak and its state partners approach host railroads to negotiate the operation of additional trains, some freight railroads demand unreasonable capital investments to accommodate the Amtrak trains. Amtrak and its partners are willing to invest in the host railroad, consistent with the law, if we do, in fact, impair the freight railroad. However, what we have experienced is that Amtrak and its partners will identify the capital projects needed for the additional service and some freights will simply create an excessive list of capital projects needed, a list that appears to be aimed at preventing Amtrak's access to the railroad. The two parties then spend years trying to negotiate to little avail, while it is your constituents who suffer from a lack of meaningful transportation options.

Congress should provide a fair and expeditious manner for determining the cost of adding new and additional trains to host freight railroads.

INTERCITY PASSENGER RAIL CAN DO MORE FOR THIS NATION.

As you know, Amtrak's statutory mission given to us by Congress is to provide "high quality service that is trip-time competitive with other intercity travel options." (49 USC 24101(b)). The need for such has never been greater, especially in short-distance corridors between major cities that are too far to drive and too short to fly. All the trends suggest that demand for such service will only continue to grow. This provides a great opportunity and a way for the United States to accommodate increased intercity travel demand in a sustainable manner without exacerbating congestion in other modes.

As we have stated for the record in previous hearings, there are several key factors that we are considering as we plan for how Amtrak can better serve your constituents, including: the U.S. population is growing and becoming more densely populated in urban corridors; highway congestion is spreading and getting worse; air travel in short-distance markets is declining; and sustainability is a growing concern for travelers.

On most of the National Network, we have not even begun to realize the potential—and address the increasingly urgent need—for reliable, frequent, high-quality service that can attract passengers for whom rail could be a preferable alternative to driving or flying. Amtrak's growing ridership, strong financial results, and our proven success in certain short corridors where we have strong partnerships, demonstrate the potential of intercity passenger rail. We know what works well and we want to create more convenience and value for your constituents and this nation. Doing so will require enhanced tools and increased partnership regarding our relationship with host freight railroads and support from Congress.

CONCLUSION

Freight and passenger rail service can co-exist and provide far better service to all customers, both people and products. To do so, we believe there must be a stronger federal role in ensuring that the law is followed and not abused. This will help improve the overall fluidity of the rail network, provide much improved and needed passenger trains to underserved communities, and support this nation's economy from coast to coast.

On behalf of Amtrak, we thank you for your consideration of our remarks. We remain optimistic that Congress will find a way to create a modern and expanded intercity passenger rail system that thrives in partnership with a booming freight network—Amtrak is ready to do its part.

APPENDIX

QUESTION FROM HON. DANIEL LIPINSKI TO ERIN ALEMAN, EXECUTIVE DIRECTOR, CHICAGO METROPOLITAN AGENCY FOR PLANNING, AND BOARD MEMBER, COALITION FOR AMERICA'S GATEWAYS AND TRADE CORRIDORS

Question 1. The Fixing America's Surface Transportation Act or "FAST Act" established and authorized $6.3 billion in formula freight funding through the National Highway Freight Program and $4.5 billion in discretionary grant funding through the Nationally Significant Freight and Highway Projects or "INFRA" grant program.

As a former state transportation official and current head of a metropolitan planning organization, could you speak to the need for and benefits of providing national freight funding through both a formula and separate discretionary funding program?

ANSWER. Freight infrastructure projects vary a great deal in size and scope, rendering a "one-size-fits-all" approach suboptimal. Some freight projects—such as paving an intermodal connector—can be funded with relative ease using money provided by a freight formula. These projects are relatively smaller in scale and less complex. Freight formula dollars provide state departments of transportation a dependable and certain funding stream to address small and medium scale projects. To improve upon the existing freight formula program, I encourage Congress to eliminate the 10 percent cap on multimodal investment and increase the overall amount of funding provided.

Competitive grant programs, such as INFRA, are critical to large-scale freight infrastructure projects, which often span modes and jurisdictional borders and are difficult, if not impossible, to fund through traditional distribution methods such as formula programs. Competitive grant programs can incentivize these multijurisdictional projects while encouraging applicants to seek creative funding arrangements and bring forward the best possible arrangement for the Federal Government to consider. Further, competitive grants are available to a wide variety of applicants, including state departments of transportation, allowing the many types of organizations responsible for developing nationally significant freight infrastructure to access federal resources.

While a state department of transportation may, out of necessity, place emphasis on *intrastate* commerce, a federally administered approach places focus on *interstate* commerce. According to a 2019 study by the Congressional Research Service, "discretionary grants may be more effective in providing large amounts of federal funding for very costly freight-related projects, particularly those requiring interstate cooperation."[1] It should be noted that 77 percent of freight crosses state lines.[2]

For competitive grants to be effective, they must be developed and administered correctly. To improve upon the INFRA competitive grant awards, I recommend that Congress:

- Remove the cap on multimodal investment and increase the amount of funding to $12 billion annually, which aligns with needs revealed through previous INFRA funding rounds.
- Confine awards to freight projects only.
- Mandate that USDOT's award selection process is transparent and based upon merit-based criteria that identify and prioritize projects with a demonstrable contribution to *national* freight efficiency. As Congress included in the FAST Act INFRA program (23 USC 117), goals should include increasing national and

[1] Congressional Research Service, *Freight Issues in Surface Transportation Reauthorization*, January 2019. <https://crsreports.congress.gov/product/pdf/R/R45462>

[2] Tomer, Adie and Joseph Kane, Brookings and JP Morgan Chase Global Cities Initiative, *Mapping Freight: The Highly Concentrated Nature of Goods Trade in the United States*, November 2014. <https://www.brookings.edu/wp-content/uploads/2016/06/Srvy__GCIFreight Networks__Oct24.pdf>

regional economic competitiveness, improving connectivity between freight modes, reducing congestion and bottlenecks, and improving the safety, efficiency, and reliability of the movement of freight and people.

QUESTIONS FROM HON. EDDIE BERNICE JOHNSON TO CHUCK BAKER, PRESIDENT, AMERICAN SHORT LINE AND REGIONAL RAILROAD ASSOCIATION

Question 1. The Association of American Railroads filed comments with the USDOT last year urging the agency to extend a pro-innovation regulatory approach to the freight railroads. Much of the comments were related to the use of automated and autonomous technology in the freight rail industry. Such technologies could have major implications for workers who perform various crafts in this industry.

How do the railroads envision using autonomous technologies?

Question 2. How will this impact the jobs of those who work for the railroads?

ANSWER (1. & 2.). Short line railroads today operate safely and efficiently as we connect thousands of small customers in small towns and rural communities to the national freight rail network. However, we are always looking for every opportunity to be even safer and more efficient, so that we can move more freight more safely by rail, which is good for the economy, helps the environment, reduces congestion, lowers the need for highway infrastructure investment, and improves overall safety.

Short lines are not yet major users of autonomous technologies, but over the years we have made great strides in using other advanced technologies (e.g., ultrasonic rail inspection, big data for locomotive maintenance, advanced methods of treating wood ties, etc.) and will continue to look for ways to improve.

Technology can frequently help us do what we need to do to run a railroad safer. For instance, using drones when possible for bridge inspection improves both safety for workers and creates the ability to inspect bridges more frequently. Better track inspection (higher quality with less risk of worker injuries) can be done with autonomous and continuous test vehicles. In general, human factor incidents are a leading cause of injuries and fatalities in our industry. The future use of autonomous technologies will assist in the reduction of human factor incidents, improving safety for both employees and the public.

On the grade-crossing front, autonomous motor vehicles have the potential to substantially improve grade crossing safety by reducing human error by motor vehicle drivers.

The goal of technology is to get better and more efficient—if technology advances impact existing jobs, short lines as always will work with their employees and customers to adjust. We will employ as many people as needed to do the job of railroading safely, efficiently, and reliably so that we can continue to provide critical transportation services to our customers throughout the country. Overall, our goal is to grow, not shrink!

QUESTIONS FROM HON. PETER A. DEFAZIO TO ANNE GOODCHILD, PH.D., FOUNDING DIRECTOR, SUPPLY CHAIN TRANSPORTATION AND LOGISTICS CENTER, UNIVERSITY OF WASHINGTON

Question 1. Dr. Goodchild, your testimony discusses the potential of delivery services to reduce emissions by consolidating many packages into one vehicle. Mr. Mathers' testimony points out that we are using only 43 percent of the capacity of our freight truck fleets.

What policies or regulations will help encourage better capacity utilization to reduce carbon emissions?

ANSWER. While estimates of truck utilization vary, and observed values vary by time, place, and truck type, it is true that observed truck utilization is lower than desired. There are three main reasons for this; first, that product flows are one-directional, second, that truck sizes are limited and fixes, while product flows are uncertain and varying, and third, that quick, on-time delivery expectations are increasing.

Most product flows are one-directional:

Most trucks are either dropping off or picking up. This means that even a truck that starts its day full, is empty at the end of its route, and has a utilization rate of 50%. This is overwhelmingly the case for retail delivery.

Trucks are purchased to provide flexibility to fleet owners:

This often means they "buy-up" when making purchasing decisions. A larger truck can handle small loads, and big loads, but this is not true smaller vehicles. If you have a large load, it is much more cost effective to send it in a single large-truck, rather than 2 smaller ones.

Delivery expectations are increasing:

As customers, as we demand shorter times between purchase and delivery, vehicle loads decreased. Previously, if a delivery company offers 2 day delivery, and sends out 5 full trucks every 10 days, when they move to same day, they will need to send one half-full truck each day. So there are very significant reasons trucks are not fully utilized; even though trucking companies have a very strong profit incentive to fill them.

In order to alter these decisions in favor of fuller trucks, we need to make transportation more expensive, so that it plays a stronger role in the short and long-term decisions of carriers, as well as consumers of their services. This could be accomplished through increasing the cost of emissions, fuel taxes, per-mile charges, tolls, or congestion pricing, to name a few.

Question 2. Is greater consolidation of deliveries realistic in the age of hyper fast delivery speeds?

ANSWER. No, I don't see greater consolidation aligning with faster delivery speeds. Of course we will still see economics favoring consolidation farther upstream in the supply chain, but the last mile becomes less consolidated with hyper fast delivery.

QUESTIONS FROM HON. STEVE COHEN TO ANNE GOODCHILD, PH.D., FOUNDING DIRECTOR, SUPPLY CHAIN TRANSPORTATION AND LOGISTICS CENTER, UNIVERSITY OF WASHINGTON

Question 3. Dr. Goodchild, in your testimony, you mention that the freight system also includes city streets, local highways, sidewalks, bike lanes and people's front door steps. As the volume of freight increases, I have concerns about how last mile deliveries will contribute to increased congestion and traffic fatalities.

In your opinion, what can Congress do to support infrastructure investments that consider the entire freight system?

ANSWER. Adopt a gateway or network perspective. Typically infrastructure investments are made on a project basis; expansion of an individual port, or highway interchange. In reality, goods move through a system, passing through a port, onto a highway, for example. Individual projects can have close to zero benefit, if the next links in the chain are more constrained. To address this, Congress should consider developing connected corridors, where investments are not planned at the project level, but at the corridor level, allowing goods flows to really benefit.

Question 4. In your testimony, you also mention that cities lack freight planning capacity.

How can we best support cities to plan for the future of freight delivery?

ANSWER. Cities are unprepared for the future of delivery because there has been little investment in capturing data about goods movement at urban scales, and they have not historically included freight planning in the organizational objectives. They therefore need assistance in both of these areas.

The federal government can play a key role in 1) requiring, funding, and setting standards for data collection, 2) supporting cities as they develop this capability. This could be initiated through:

- a federal grant program for cities and researchers interested in collecting data and building knowledge
- federal support for peer exchange programs where leading cities and researchers can share their knowledge and practices with each other

QUESTIONS FROM HON. PETER A. DEFAZIO TO IAN J. JEFFERIES, PRESIDENT AND CHIEF EXECUTIVE OFFICER, ASSOCIATION OF AMERICAN RAILROADS

Question 1. Your written testimony stated that President Trump's ongoing trade war had created uncertainty for many commodity-related industries and manufacturers, impacting demand for rail service and highlighting that total U.S. rail carload and intermodal units were down 4.4 percent compared to last year. Additionally, U.S. originated carload and intermodal originations were down 8.1 percent compared to that same time the previous year. Since the hearing, the House passed the U.S.-Mexico-Canada Agreement (USMCA), and the Senate is expected to consider the measure shortly.

Assuming the Agreement takes effect, what are the industry's projections for rail volumes over the next year?

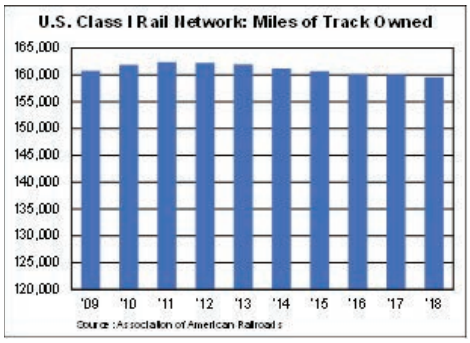
ANSWER. Railroads commend Congress for passing the USMCA and are hopeful that this agreement—along with the resolution of other trade disputes—will lead to reduced economic uncertainty, higher levels of business investment, a boost in U.S. exports, and a stronger U.S. economy.

Railroads also hope that the USMCA will lead to higher levels of rail traffic. At least 42 percent of the carloads and intermodal units that U.S. railroads carry, and more than 35 percent of rail revenue, are directly associated with international trade. Many of those international movements are cross-border shipments as well. While the USMCA can only serve to help railroads and the wider U.S. economy, U.S. rail volumes in 2020 will also depend on a wide range of additional factors. Changes in U.S. energy markets that have been underway for years will continue to impact rail volumes. Large amounts of rail traffic are tied to the U.S. manufacturing sector, the near-term future of which is cloudy right now. The grain market continues to face challenges in global markets and at home. Intermodal volumes in 2019 were the second highest ever, but growth in that market will depend largely on what happens to consumer spending and in the greater trade arena. Railroads are hopeful that the parts of the economy that generate the most rail freight—e.g., manufacturing, agriculture, consumption of goods, trade in goods, and resource extraction—will grow in 2020, and, consequently, demand for rail service in many commodity sectors will rise as well.

Question 2. An article published in the Washington Post on January 3, 2020 entitled, "Railroads are slashing workers, cheered on by Wall Street to stay profitable amid Trump's trade war" suggested that the Class I railroads implementing precision scheduled railroading (PSR) are turning away some business that isn't profitable enough, eliminating or downsizing some routes.

How has the size of the Class I rail network in the U.S. changed during the years of 2017–2019?

ANSWER. Data for 2019 for U.S. Class I rail mileage is not yet available, but there has been very little change in total Class I rail mileage over the past decade (see chart). Moreover, miles that Class I railroads no longer operate are typically operated by non-Class I railroads, as opposed to simply abandoned.



Source: Association of American Railroads

Of course, the U.S. and global economies are constantly evolving. Firms, even entire industries, can and do shift rapidly and unexpectedly, and railroads must be able to adapt with those changes. These broad, often unanticipated economic shifts are reflected in changes not only in rail volumes but also in the types and locations of the commodities railroads are asked to transport, as well as in the amounts and uses of railroad assets. To successfully adapt to these challenges, railroads must be flexible and innovative while improving the efficiency and productivity needed to maintain their long-term financial health.

Question 3. We know that demand for freight transportation is rising at a disproportionate rate to freight system capacity on the highways. Yet, you highlight in your testimony that rail traffic is down 4.4 percent over the same period last year.

What is the railroad industry doing to capture some of that demand?

ANSWER. The freight transportation market in the U.S. today is intensely competitive. When shippers move freight on railroads, they do so because the value railroads offer, in terms of cost and service, is superior to the alternatives. Railroads know that they must continue to work hard to earn this business, which is why they are constantly searching for ways to further increase productivity, reduce costs for their customers, and improve their service.

For railroads, these actions take many forms, including:

- Retaining a focus on safety. Recent years have been the safest in rail history, but railroads know the safety challenge never ends. That's why railroads, in cooperation with policymakers, employees, suppliers, and customers, are constantly looking for new technologies, operational enhancements, improved training, and other ways to better their safety record.
- Recognizing that capacity is key. Thanks to massive investments back into their networks in recent years, freight railroad infrastructure today is in the best overall condition ever. Railroads are working to ensure that the current high quality of rail infrastructure is maintained and that adequate freight rail capacity exists in order to meet our nation's current and future freight transportation needs.
- Focusing on customer service. Railroads know their customers face intensely competitive global markets and are increasingly demanding faster and more reliable, cost-effective service. In response, railroads are continually launching new customer service initiatives and alliances with fellow railroads, rail suppliers, trucking companies, and others to improve their service offerings.
- Advocating for appropriate public policies. For example, railroads have emphasized that the existing balanced regulatory structure covering rail rates and service be maintained; that outdated regulations that unnecessarily hinder rail innovation and progress be replaced in ways that continue to protect the public but do so without "locking in" existing technologies and processes; that modal inequities related to infrastructure financing be ameliorated; and that more public-private partnerships, in which public and private entities each devote resources to projects in proportion to the benefits that will accrue to them, be encouraged.

Question 4. Since 2016, there have been more than 4,340 collisions at highway-railroad at-grade crossings, resulting in more than 1,680 injuries and at least 530 deaths.

If more funds were made available for the Section 130 program, what projects—other than grade separation projects—should states undertake?

Question 5. What types of infrastructure or technologies should be pursued that are not eligible under the current program?

Question 6. Are the freight railroads willing to bring more funding to the table to support grade crossing closures or grade separation projects?

ANSWER (4.–6.). Reducing accidents and fatalities at highway-rail grade crossings is of paramount importance given that most collisions are preventable. Engineering solutions (such as closing unneeded crossings and upgrading warning devices), education, and enforcement are key. Thanks in part to the Section 130 program, grade crossing collisions are down 37 percent from 2000 to 2018; however, much work remains. Railroads believe the following steps would enhance safety at grade crossings:

- The Section 130 program, which provides funds to eliminate hazards at highway-rail grade crossings, should continue to receive dedicated, formula funding out of the Highway Safety Improvement Program.
- Funding for the Section 130 program should be maintained at current levels ($245 million in fiscal year 2020) or increased.
- The Section 130 program's incentive payments for grade crossing closures should be increased from the current cap of $7,500 to $100,000.
- Flexibility in the use of Section 130 funding should be expanded by eliminating the arbitrary 50% cap on spending for hazard elimination projects and by enabling replacement of certain protective warning devices.
- Costs incurred by public or private entities for preliminary engineering for grade crossing projects should be counted toward the non-federal share.
- States should be permitted or incentivized to bundle grade crossing projects into single grant applications under applicable discretionary grant programs, such as BUILD, INFRA or CRISI.
- Accelerated deployment of navigational warnings for grade crossings for motorists (e.g., smartphone apps) should be required or incentivized.
- Future fleets of automated vehicles should be required to provide grade crossing warnings and/or prevention of incursions into grade crossings where gates or other devices have been activated.
- The incorporation of grade crossing safety training into driver education curricula should be incentivized through NHTSA.
- Operation Lifesaver should be authorized at a minimum of $3 million per year through FHWA, FRA, and FTA.

Decisions on what types of traffic warning devices to put at particular grade crossings are made by state highway authorities, not by railroads. Trains often require

a mile or more to stop and cannot deviate from their course. That's why safety at grade crossings by its nature is primarily motorists' responsibility; the warning devices are present to protect motorists, not trains. Railroads generally approach grade crossing projects on a case-by-case basis and are always willing to discuss the individual circumstances of a particular crossing, including funding needs, with appropriate public officials.

QUESTIONS FROM HON. EDDIE BERNICE JOHNSON TO IAN J. JEFFERIES, PRESIDENT AND CHIEF EXECUTIVE OFFICER, ASSOCIATION OF AMERICAN RAILROADS

Question 7. The Association of American Railroads filed comments with the USDOT last year urging the agency to extend a pro-innovation regulatory approach to the freight railroads. Much of the comments were related to the use of automated and autonomous technology in the freight rail industry. Such technologies could have major implications for workers who perform various crafts in this industry.

How do the railroads envision using autonomous technologies?

ANSWER. America's freight railroads are safer today than ever before. A significant contribution to the industry's strong safety record are the annual investments to modernize and improve the freight rail network. Indeed, this improvement in safety has been accomplished with record levels of private spending on capital improvements and maintenance over the last five years—more than $25 billion annually on average. These investments have included meeting the Congressional mandate that positive train control systems (PTC) be fully operable by the end of 2020, and, as of January 2020, PTC is now in operation on 98.5% of Class I PTC route-miles network wide. In addition to these investments, freight railroads have also undertaken a holistic approach to rail safety that includes numerous other elements, such as infrastructure and equipment; training and operational improvement; technology; and community outreach and preparedness.

As a result, 2018 FRA safety data continues to show that recent years have been the safest on record for the rail sector. Based on FRA data per million train miles, since 2009, the train accident rate is down 10%, the equipment-caused accident rate is down 11%, the track-caused accident rate is down 26%, the derailment rate is down 9%, and the employee injury rate is down 16%. Additionally, in 2018, more than 99.999% of rail hazardous materials shipments reached their destination without a release caused by an accident, and, between 2000 and 2018, the grade crossing collision rate fell 37%.

However, railroads will always strive to be even safer. That's why they are constantly researching, developing, and implementing new safety-enhancing technologies and working cooperatively with employees, suppliers, customers, and policymakers to find new ways to improve their safety record.

Autonomous technologies are expected to play a critical role in rail safety improvement efforts. Autonomous motor vehicles have the potential to substantially improve grade crossing safety by reducing or eliminating human error by motor vehicle drivers, but automation promises to significantly enhance other areas of rail safety beyond grade crossings. Automated technologies can detect a wider range of defects, respond faster, and provide a larger window for action than a safety system that is subject to the limitations inherent in human eyes, minds, and hands. Automated track inspections can reduce track defects, leading to fewer accidents. Likewise, automated inspection of locomotives and freight cars has been shown to reduce the occurrence of broken wheels and other mechanical problems.

Question 8. How will this impact the jobs of those who work for the railroads?

ANSWER. Like firms in every industry, railroads must manage their resources, including their most important resources—their employees—based on business needs. The number of rail employees tends to ebb and flow based on current and expected future rail traffic levels, technological developments, and other factors. Railroads are hopeful that freight transportation demand will continue to grow, and they will ensure that their equipment, infrastructure, and employees will be sufficient to meet those transportation needs.

Over the years, railroads have adopted a long line of new technologies to improve the safety, efficiency, and reliability of their operations. Just as the industry transitioned from steam to diesel locomotives or from cabooses to end of train devices, technological innovation often brings with it the need to evolve operating procedures and models. Railroads must have the incentives and flexibility to invest and develop new technologies that improve safety, increase efficiencies, and allow the rail industry to remain competitive and help their customers thrive.

The implementation of positive train control and other technologies could potentially allow for a reduction in the number of crewmembers in the locomotive cab without jeopardizing safety. Railroads aren't seeking the ability to impose one-per-

son crews haphazardly or unilaterally, however. The subject of crew size has typically been addressed as part of the collective bargaining process with rail labor. As a result, railroads will continue to work with rail labor to come to an agreement and find solutions as they have for decades.

QUESTION FROM HON. PETER A. DEFAZIO TO JASON MATHERS, DIRECTOR, VEHICLE AND FREIGHT STRATEGY, ENVIRONMENTAL DEFENSE FUND

Question 1. Mr. Mathers, your testimony discussed policies that Congress should adopt to increase the demand for zero-emission heavy-duty vehicles and develop the necessary charging infrastructure to support it.

Without significant Federal investment and strategic planning in deploying charging infrastructure, do you think there is any chance of achieving a nationwide network of charging stations to support an electric heavy vehicle fleet?

ANSWER. Transforming our transportation sector, which is a climate change and public health imperative, presents a daunting challenge. It is also an urgent one.

Although some states are motivated and are taking their own steps to promote electric vehicles, the sheer scale of the needed transformation, and the relatively short time we have to make meaningful cuts in greenhouse gas emissions, mean that the federal government must play a leadership role in planning and implementing the build-out of nationwide networks of charging stations.

There is considerable good news. For example, the technology for transforming the heavy-duty fleet, including the growing availability of suitable vehicles, is rapidly evolving. And while additional investment is needed to achieve electric propulsion for the long-distance fleets, there is a lot of cost-effective, low-hanging fruit, such as in electric drayage trucks and in regional delivery and municipal fleets.

So, while innovation in truck electrification will continue, and costs will continue to decline across all truck classes, true transformation of the sector—especially if the goal is rapid progress—absolutely will depend on federal leadership. That means, as I said in my testimony, favorable tax and regulatory policies. It also includes incentives for owners of both private and publicly owned fleets to switch to electric trucks and buses. And it means federal support for state and interstate charging infrastructure planning and installation.

The result will be a more efficient, more sustainable transportation sector with far fewer impacts on public health and climate.

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