Beyond Traffic 2045

National Freight Strategy Framework

Section I. Introduction

In October of 2015, the United States Department of Transportation (DOT) published a draft National Freight Strategic Plan (the "draft Plan"). The draft Plan was developed to prepare for the projected growth in freight demand over the next several decades, and also responded to a requirement in the Moving Ahead for Progress in the 21st Century Act (MAP-21). The draft Plan represented a current and comprehensive assessment of the trends and challenges facing America's freight transportation system and outlined potential strategies to improve the system to support a strong economy for the nation's future.

Since the release of the draft Plan, President Obama signed into law the first surface transportation bill to provide significant multi-year, dedicated funding for freight planning and projects, and revised and expanded key statutory freight provisions first introduced in MAP-21. This new law, the Fixing America's Surface Transportation (FAST) Act, addressed several key challenges identified in the draft Plan and in the Administration's earlier proposed reauthorization legislation, Generating Renewal, Opportunity, and Work with Accelerated Mobility, Efficiency, and Rebuilding of Infrastructure and Communities throughout America Act (GROW AMERICA). Significantly, the FAST Act requires DOT to produce a National Freight Strategic Plan ("Final Plan") by December 2017 that addresses future challenges for transportation that were identified in both the FAST Act and GROW AMERICA. Because of the near-term delivery requirement for the next Plan, DOT opted not to finalize the October 2015 draft Plan under the provisions of MAP-21 (now expired) but rather to devote its resources to completing the next Plan under the provisions of the FAST Act, which will also build off of the draft Plan.

The following material is intended to reflect on the progress made to address freight challenges over the last eight years and to provide thoughts on the future of freight and the role of the Federal Government as the next Administration prepares to take office. It will be the responsibility of the next Administration to continue to implement the provisions of the FAST Act and to advocate for multimodal freight policies and programs that improve the safety, efficiency, and condition of our freight system. In particular, the next Administration will be responsible for the development of the Final National Freight Strategic Plan, as required under 49 U.S.C. 70102. This document is intended as a reflection on the lessons learned by this Administration with regard to freight policy over the last eight years as well as suggestions about the future direction of freight policies that this Administration believes should be considered during the development of the Final Plan next year.

It is our view that the next Plan required by the FAST Act should offer a shared vision for a future freight economy that is robust, flexible, efficient, resilient, sustainable and above all, safe. The framework of the draft Plan remains relevant and can solidly support the structure of the next Plan--one that we think should continue to reflect the needs and priorities of the public, freight industry and the multimodal nature of goods movement in the United States, as well as address new criteria from the FAST Act.

In addition, we suggest that the next Plan should expand on certain critical aspects of transportation identified in the draft Plan and in this Future Directions document. In particular, core subjects described in the draft Plan, such as safety, the environment, advanced vehicles and the future of the transportation network ought to be given even greater emphasis in the next Plan. This document also highlights critical themes from the DOT's Beyond Traffic framework released in 2017, the extensive public engagement across the country as part of the "Beyond Traffic" Freight Economy roundtables, a focus on future urban needs fostered by the Smart Cities challenge grant competition of 2016, and outreach areas such as Every Day Counts (EDC) and Ladders of Opportunity that facilitate greater efficiency and a more human face to freight transportation to improve the impact of freight transportation projects and programs.

The following excerpt from the Executive Summary of the draft Plan framed the current context of freight transportation in America:

> "Our nation's freight transportation system is a vast, complex network of almost seven million miles of highways, local roads, railways, navigable waterways, airports, and pipelines. The components of this network are linked to each other through thousands of seaports, airports, and intermodal facilities. This system accommodates the movement of raw materials and finished products from the entire spectrum of the agricultural, industrial, retail, and service sectors of our economy. More than 3.1 million Americans are employed in operating and supporting the millions of trucks, trains, aircraft, ships, and barges that traverse this network, as well as in businesses that coordinate the logistics of these operations. Collectively, this multimodal network directly supports 44 million jobs and affects the quality of life that every American has come to rely on today. It is a critical force in the world's largest economy, with United States (U.S.) gross domestic product (GDP) estimated to be $17.4 trillion in 2015. Each day, the system moves 55 million tons of goods, worth more than $49 billion; over the course of a year, that amounts to 63 tons per person

Moving local, regional, national and global products safely, efficiently, reliably, and in an environmentally-sustainable manner is critical to the continued growth and success of our nation's economy. Historically, we have been well served to meet these challenges by one of the world's best transportation systems. Freight is moved by private sector entities on infrastructure built and operated by a mix of Federal, State, and local governmental agencies and private sector companies. The United States has one of the lowest costs of transportation and logistics as a percent of Gross Domestic Product in the world, providing the Nation with a competitive advantage in world commerce.

In the FAST Act, Congress identified ten goals pertaining to the National Multimodal Freight Policy, many of which relate to support for the National Multimodal Freight Network and U.S. economic competitiveness, including jobs and domestic industries. The multimodal policy of the FAST Act is very similar to the National Freight Policy of MAP-21, although it is now explicitly multimodal and has some additional provisions. The FAST Act specifies goals associated with this national policy related to the condition, safety, security, efficiency, productivity, resiliency, and reliability of multimodal freight transportation; improved flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to address multimodal freight connectivity; and

also to reduce the adverse environmental impacts of freight movement on the Network. These goals are to be pursued in a manner that is not burdensome to State and local governments.

As required by the FAST Act, the next Plan will address the conditions and performance of the national multimodal freight network. It will also address requirements specified in MAP-21 for the draft Plan, as well as the additional requirements established by the FAST Act. These include the identification of corridors providing access to major areas for manufacturing, agriculture, or natural resources and an identification of best practices for improving the performance of the National Multimodal Freight Network, including critical commerce corridors and rural and urban access to critical freight corridors.

Section II: Beyond Traffic Freight Economy Roundtable Stories and Themes

Since the release of the draft Plan, DOT leaders from Federal Motor Carrier Safety Administration, Federal Railroad Administration, Maritime Administration, and the Saint Lawrence Seaway Development Corporation joined FHWA Administrator Gregory Nadeau throughout a series of 25 roundtable conversations with the business community, public and private sector transportation professionals, and several State and Metropolitan Planning Organization (MPO) officials to discuss freight issues and best practices in their respective States and regions affecting the local, regional and national economy. These discussions were designed to amplify the messages of the Beyond Traffic framework, collect input to inform the National Freight Strategic Plan, and share updates on new FAST Act programs including funding opportunities.

Roundtable in Atlanta, GA

From these engaging meetings, a series of stories emerged, encapsulating the following recurring themes:

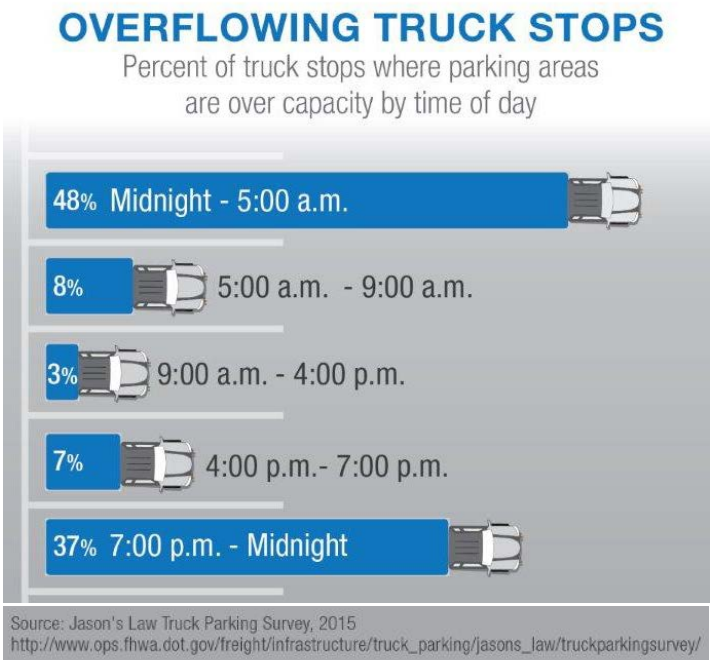
1. Efficiency of Freight Movement
   For both the public and private sector participants, efficiency was not only critical to their operation but was always a top priority. Three top challenges emerged:
   1. The System – Infrastructure in need of repair;
   2. Capacity – Stretched now and continues to be tested; and
   3. Congestion – At an all-time peak in some locations and modes of transportation.

   Each challenge, whether at a port of entry, at-grade rail crossings, or the movement of a truck in and out of a facility, impacts efficiency and the overall economy.

2. Modal Connectivity and Coordinated Planning
   The discussions highlighted how critical it was to have industry represented at the decision making table to help provide operational expertise and perspective on the needs and investment

in freight at the state, local, and regional levels. Greater data-sharing is necessary for improved transportation and community planning.

3. Community Impacts
   Freight movement is critical to the economic health of communities, but can also pose also pose great challenges to the quality of life, safety and the overall efficiency of the nation's highways and local roads. The growth of e-commerce and overall increase in freight have made it more pressing for communities to find solutions to mitigate the impacts of truck movements, improve safety at highway rail grade crossings, address first-and-last-mile delivery, and handle local concentrations of freight activity. Among community impacts, truck parking is a prevalent safety concern relating both to the safety of the driver and of the public.



4. Innovative Solutions and Emerging Technologies
   The use of technology and innovation to move the freight economy into the 21st Century will be a game changer. Some of the innovative ideas raised at the meetings highlighted how the use of technology can help ease the delay at international border crossings; about the benefits and challenges of switching to of off-peak hours of operation at port terminals, and the use of GIS mapping for capturing and sharing truck parking information. Autonomous vehicles and facilities offer great potential to improve the efficiency, cost-effectiveness, and safety of freight movement in the coming decades.

5. Workforce Challenges and Job Opportunities
   It is necessary for the public and private sector to continue to collaborate to ensure the development and retention of the freight workforce to keep pace with the growth in freight movement.

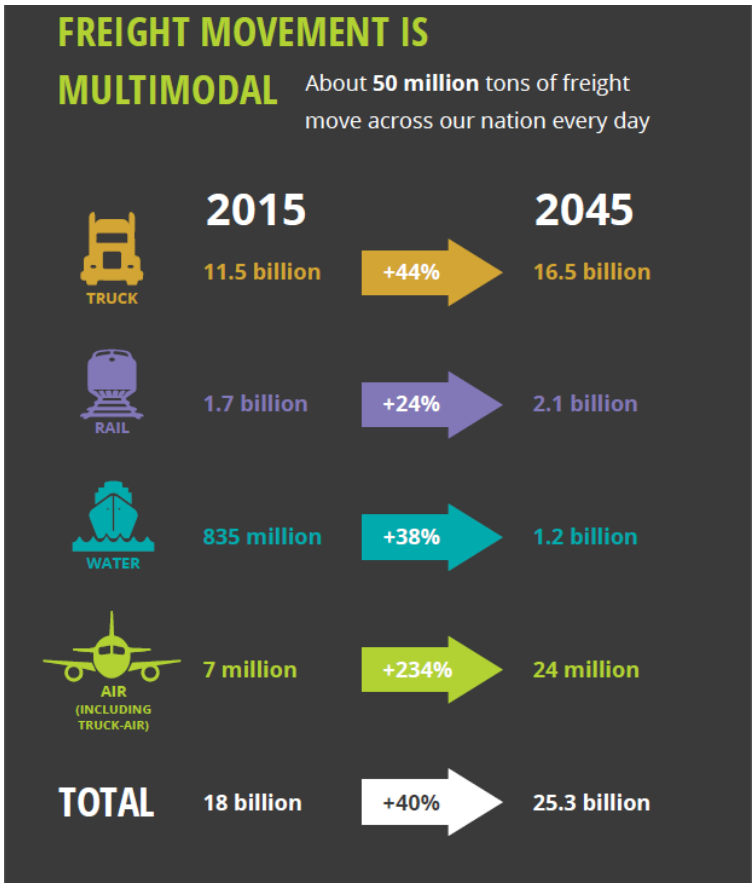
6. Federal Involvement
   Communities, states and the private sector all expressed the desire to hear more from the federal government on freight issues.

The final Beyond Traffic Freight Economy Roundtable listening session, held in Washington, DC in October of 2016, utilized all multimedia tools on hand to reach the largest possible audience. Over 500 participated in person, on line, by sending email, contributing to the online message forum, or dialing in by phone. Participants watched and directed the content fielded by a panel of top officials from the key freight modes, who debated the issues of freight today and addressed questions posed

from across the country. This capstone event marked a high point in public engagement, bookending U.S. Department of Transportation Secretary Anthony Foxx's Freight Summit that launched the feedback dialogue on the draft Plan in February of 2016 to frame the opportunities ahead as a result of the passage of the FAST Act and his vision for freight in America. For more information, visit the Freight Economy website (www.fhwa.dot.gov/freighteconomy).

Section III. Trends and Challenges

Many of the themes heard from the Freight Economy roundtables match up with the trends and challenges identified by DOT in the draft Plan. The draft Plan identified six key trends and challenges affecting goods movement and our Nation's freight system that were identified based on a review of state freight plans that States have prepared in recent years, including plans prepared after MAP-21 was enacted in2012, public listening sessions on freight conducted in 2013 and 2014 by DOT modal Administrators and Deputy Administrators, and through a series of public meetings of the National Freight Advisory Committee (NFAC), a 47-member federal advisory committee chartered in 2013 by DOT Secretary Ray LaHood and continued under Secretary Anthony Foxx. The NFAC provided feedback on several DOT initiatives, including the provision of "Proposed Recommendations to U.S. Department of Transportation for the Development of the National Freight Strategic Plan" and specification of draft freight networks, beginning with the draft Primary Freight Network. The Primary Freight Network was a MAP-21 initiative intended to identify where freight moves; however, because it was limited to highway miles, it failed to address the multimodal and interdependent nature of freight movement in the U.S., of which highway-based goods movement is only one component. This feedback was instrumental in the development of the draft Plan and helped shape the DOT's formulation of a more comprehensive preliminary multimodal freight network which was published as part of the draft Plan.



The following Trends and Challenges from the draft Plan remain relevant today and, in our minds, should inform the development of the National Freight Strategic Plan under the FAST Act. As noted in the draft Plan, "The NFSP discusses six major trends affecting freight transportation and the challenges they present. If our freight transportation system is to continue to enable our way of life and serve as a competitive advantage for the U.S. economy, we must confront these

challenges and seize on the resulting opportunities." An updated discussion of these six trends and challenges is provided here:

1. Expected Growth in Freight Tonnage. The U.S. economy is expected to double in size over the next 30 years. By 2045, the nation's population is projected to increase to 390 million people, compared to 320 million in 2015. Americans will increasingly live in congested urban and suburban areas (megaregions), with fewer than 10 percent living in rural areas by 2040 (compared to 16 percent in 2010 and 23 percent in 1980). To support our projected population and economic growth, freight movements across all modes are expected to grow by roughly 42 percent by the year 2040. For example, container traffic at ports will likely increase steadily as the volumes of imports and exports transported by our freight system more than double over this period. Air freight is expected to triple in response to demand for the rapid movement of high-value merchandise, while multimodal shipments are predicted to more than double.

   The freight tonnage numbers cited in future reports will change as more current models and data are applied. Although fuel supply, fuel prices, automation, post-Panamax vessels, trade policies and other factors may alter production levels, trading partners, and shipping patterns, the United States can expect to continue to see a strong and growing need for intermodal and multimodal shipping services. As growth occurs in the various modes of transportation, communities will feel some aspects of this growth in negative ways unless sufficient planning is done to put operational, infrastructure, safety, and environmental improvements in place ahead of time.

   Whether a community uses Global Positioning System (GPS) probe data to identify critical areas of highway congestion affecting or caused by freight activity, or applies rail car data provided by rail carriers to develop public/private investment strategies for new grade separation projects, or works with the State DOT to implement a delivery optimization system to reduce empty truck movements and idling at ports and intermodal facilities, there are tools and data ready for use that will help the public sector anticipate and plan for this growth. Some of these innovative approaches were included in applications for the Smart City Challenge of 2016 – the winning proposal included a freight component focused on reliable routing and traffic condition information to enable Smart Logistics.

   The emphasis by DOT in recent years on the President's Ladders of Opportunity initiative has also helped identify impediments as well as opportunities where ways to use transportation can provide for improvements and investment to improve the quality of life; increase access to jobs, schools, healthcare; and meet other needs of citizens in communities across the United States

   Projects to cap highways and provide pedestrian and bike linkages across busy

Port of Newark Container Terminal, NJ

freight corridors, or to recess train tracks through active business districts, such as the well-regarded Alameda Corridor in California, are making a difference today. Projects to identify truck parking needs generated by port activity might require operational adjustments and facility improvements, such as the expanding hours of port operations or improving infrastructure to allow staging of trucks in a freight-appropriate area away from residential streets and highway ramps. Regardless of the type of solution, more strategic planning, partnership with the private sector, and continued strategic investment will help prepare for the future.

2. Underinvestment in the Freight System. Numerous studies have identified the need for more and better-directed investment in freight infrastructure. Freight projects can be costly to undertake. There are seldom public-sector funds dedicated to them and they do not compete well with non-freight projects for general funding because of the manner in which public investments are evaluated, but these projects can provide significant public benefits. As noted below, they often involve multiple transportation modes, jurisdictions, and stakeholders, each of which may have different objectives or operate under different investment timeframes. There may be adequate private sector financing to invest in privately owned freight railroad and pipeline infrastructure which could help to reduce some of the financial burden necessary for the public to incur. However, these privately-funded investments may not include features that specifically generate public benefits unless the private sector can pay for these features through higher freight rates or the public sector directs funding to pay for them. Further, there is growing recognition that the workforce needed to build, maintain, and operate the system—including truck drivers, railroad engineers, skilled planners, and others—will be insufficient unless further investment is made in education, recruitment, and training.

   The FAST Act authorized $10.8 billion over five years in new funding specifically for freight and freight-related infrastructure, operational improvements and planning. This amount includes $6.3 billion for the National Highway Freight Program (NHFP), which is distributed to States by formula, and $4.5 billion in funding for competitive discretionary grants under the new FASTLANE (Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies) program to support both highway and other modal freight needs, including for rail and port facilities, intermodal connectors, and railroad grade separations.

Grade Separation at Hopson Road in Morrisville, NC

   While these new funding programs are unprecedented in their scope and eligibility, indications from just the first round of FASTLANE grant awards demonstrate widespread need for funding that far exceeds the budgeted capacity of the new programs. More than 212 applications totaling

$9.8 billion competed for just $757 million in available FASTLANE grant funds after the application of necessary obligation limitations for the 2016 round of awards. A long-standing backlog of transportation infrastructure improvements exists today and is likely to continue to generate aggressive competition for discretionary funding. Surveys conducted by transportation stakeholder organizations have also identified tens of billions of dollars in additional freight-beneficial investment that could be made over the next 10 years.

The FAST Act requires States to produce State Freight Plans that include Freight Investment Plans by December 4, 2017 if they are to continue to qualify for NFSP funds. Once States complete their qualifying State Freight Plans/Freight Investment Plans it will be better understood how these funds are intended to be used by individual States and what constraints influence those funding decisions (e.g., program requirements, amount of funding, States' ability to match the funds, multimodal needs). DOT anticipates, however, that even the predictable, guaranteed formula funding authorized for States in the new NHFP can support only a limited number of the total needed freight and freight-related projects over the five-year span of the FAST Act.

3. Difficulty in Planning and Implementing Freight Projects. Most of our publicly-owned freight system (apart from the waterway system) is planned and managed by State and local governments, as well as by metropolitan planning organizations (MPOs), port authorities, and other public entities. These agencies must work with each other and a broad array of Federal and private sector partners, including freight railroads, trucking companies, ocean carriers and terminals, and pipeline companies. This decentralized approach has many benefits, including greater flexibility to identify and react to local needs. But when it comes to freight projects, especially those with national-level impacts, this approach presents a number of challenges such as fragmented decision-making.

The MAP-21 and FAST Act requirements for State Freight Advisory Committees stopped short of making these Committees mandatory at the State DOT level, and instead directing the DOT to encourage the development of these bodies. The leadership and staff of DOT has done so, encouraging both the creation and active engagement of these Committees in numerous forums, publishing a "Guidance on State Freight Plans and State Freight Advisory Committees" in the Federal Register, holding webinars and establishing strategic implementation goals to track the existence and frequency of communication of these valuable stakeholder communication structures.

DOT expects that the quality of the State freight planning and investment decisions will be higher in States with active and diverse State Freight Advisory Committees. Those with active involvement from regional stakeholders and MPOs are generating innovative planning tools, using data to support their analyses and planning, prioritizing issues for action and projects for investment, leveraging private sector investment and engagement and generally raising the bar for public sector activities to support the needs of both freight system operators and the communities they serve.

Fortunately, the provision of discretionary funds and eligibilities for formula funding has engendered partnering on specific projects and the formation of multi-state coalitions for discrete freight planning and investment purposes. Hopefully, more States will join the 35 that have established State Freight Advisory Committees and learn to use them in constructive ways that go beyond the development of State Freight Plans and identification of network segments.

4. Continued Need to Address Safety, Security, and Resilience. Recent trends show impressive improvements in freight safety. There was a 27 percent increase in freight ton-miles for all surface modes between 1990 and 2011, but freight-related fatalities across all modes declined by 33 percent over that same period. However, more progress must be made. In 2013, 543 people died in incidents associated with freight rail, vessel, and pipeline operations. In 2013, 3,964 people were killed in crashes involving large trucks. Specific risks associated with our physical and cyber infrastructures—ranging from transport of crude oil by rail to climate change—create vulnerabilities that must be addressed and mitigated.

   Along with the widespread implementation of Positive Train Control for the railroad networks (required by statute), automated vehicles (including automated trucks, drones and other self-propelled and self-guided vehicles) are likely to prove someday to be a game-changer for safety, offering opportunities to greatly shrink the number of freight transportation-related fatalities and injuries even as vehicle miles traveled increases with freight growth. Truck parking needs may also change with the advent of automated vehicles. These technologies will also benefit the environment and the reliability and resiliency of the freight system. The DOT's recently released Beyond Traffic framework, offers a vision into some of these new frontiers, which hold exciting promise to address some of the issues and limitations that constrain our nation's success.

   In the meantime, the DOT continues to identify areas for improved technical assistance, investment, regulatory oversight, guidance and enforcement to protect people, assets and the environment from the negative impacts of goods movement. Truck parking capacity and information on spaces remains a major focus of DOT, which fostered the creation of a National Coalition on Truck Parking in 2015 and joined with key partner organizations including American Association of State Highway and Transportation Officials (AASHTO); American Trucking Associations (ATA); Owner-Operator/Independent Drivers Association (OOIDA); National Association of Truck Stop Operators (NATSO); and Commercial Vehicle Safety Alliance (CVSA) to host four regional meetings around the country and has plans for continued dialogue, solution-building and attention to the issues.

5. Increased Global Economic Competition. Our economy is increasingly reliant on international trade. Imported and exported goods carried are being transported by ever larger ships. Significant amounts of goods also move by air and by truck and train through land border crossings with Mexico and Canada. Ports must address congestion, dimensional, and equipment-shortage challenges generated by bigger, new-generation container ships as well as the larger bulk ships now able to transit the expanded Panama Canal with agricultural and energy exports. Port authorities are investing to modernize their facilities by dredging harbors, raising bridges, automating and expanding container yards, purchasing larger ship-to-shore cranes, and improving roads and rail connections to surface infrastructure. Where port congestion occurs, supply chains are increasingly able to react by changing supply sources, routes, and transportation modes. Even so, notable incidents of severe congestion (particularly at ports) have occurred over the last several years.

Land border crossings also face rising commercial traffic and congestion. From 1995 to 2012, surface trade between the United States and Mexico quadrupled from approximately $100 billion to $400 billion per year. Additionally, we have recently experienced a surge in domestic energy production and increased domestic manufacturing and assembly work. Ensuring that these products can efficiently reach both domestic and international markets is critical to the long-term success of these industries.

Whether the needs are driven by international trade or by near-shoring and increased domestic production, our ports, highways, rail lines, airports, pipelines and intermodal connectors will continue to need investment to carry agricultural produce, manufactured products and raw materials to their final destination. Supply chain networks continue to change and have experienced significant investment to meet demand rapidly in areas such as energy. Demands on our freight systems will continue to grow, and potential disruptions to the supply chain from natural and or manmade events require a transportation network that is flexible, robust and resilient. All components of our freight network will likely be needed at one time or another to and from any given geographic location, reflecting changing fuel prices and market destinations and providing resilience. DOT should continue to support initiatives to invest in infrastructure and human capital at our seaports and land ports of entry/international border crossings to ensure the ongoing safety, security, and efficiency of movement of our trade goods.

6. Application and Deployment of New Technologies. The freight industry is experiencing a technological revolution through many private sector initiatives as information and communications technologies are applied to optimize global supply chains. Better data collection,

management, and analysis capabilities will enable faster and more accurate analysis of demand patterns, freight routes, travel times, and infrastructure capacity. Advanced automation will increase productivity in the freight industry and change the skill sets needed to work in freight, requiring skilled workers to maintain and operate new technologies. Technology will also be used to automate and expedite inspection processes, improving safety and lowering costs. Growth in autonomous vehicle technologies may soon transform freight transportation, allowing for increased throughput and more reliable trips on existing capacity. Technologies such as positive train control and the Federal Aviation Administration's Next Generation air traffic control systems should also provide additional benefits. Additionally, improvements in global positioning systems (GPS) allow for increased potential use of GPS-based freight/goods delivery systems employed by the public and private sectors.

The Federal and State DOTs' capacity to understand, support, guide, and regulate where necessary any new technologies depends largely upon research and data. Changing vehicles and new operations technologies will require additional study, and the demand for data-driven solutions would greatly benefit from additional Federal investment in R&D. The FAST Act provided continued support for transportation research through the University Transportation Research Centers Program, but did not address all of the significant data and research needs for freight transportation. As new technologies come on line from an innovating private sector, DOT must be ready to understand and guide the impacts that will be felt by the rest of the system. With the end of programs like the NCFRP and SHRP2, there are few opportunities to fund and communicate with the academic and research community to anticipate and address both the beneficial and the undesirable impacts of emerging technologies.

The many successful programs already in place to improve freight planning and investment rely on the provision of and modernization of the Freight Analysis Framework and the National Performance Management Research Data Set (NPMRDS or "probe" data). Additional new resources must be identified in the coming years to ensure that the federal role – that of safety and security, protections for the citizenry and the environment—can be sustained and ensured, and keep pace with innovation.

In addition, the public and private sectors would be well-served to coordinate with each other to facilitate improved freight data collection and analysis to address freight efficiency and safety issues as part of State Freight Plans as well as in more localized plans prepared by MPOs, port and airport authorities, and other intermodal freight facility operators. This is an important area that could be addressed in the next Plan.

Section IV: Strategies and Future Considerations

The draft Plan offered strategies to address the infrastructure, institutional, and financial bottlenecks impeding the safe and efficient movement of goods. The Strategies offered in the draft Plan ranged from the very large, such as creating large discretionary and formula funding programs dedicated to freight projects, to the more narrowly focused, such as to codify a multimodal National Freight Policy. All of these strategies are relevant to the FAST Act's National Multimodal Freight Policy goals, and

many of the strategies identified in the draft Plan were implemented in whole or part by the FAST Act. Whereas the draft Plan offered three broad categories of strategies organized around addressing infrastructure , institutional , and financial bottlenecks, we suggest that a new, fourth category be considered for the next Plan that would consolidate the elements of safety, community impacts, and the environment previously treated under infrastructure and institutional bottlenecks, giving these critical subjects more prominence. DOT received substantial public comment on the draft Plan and this proposed category of strategies was highlighted by many commenters as an area needing greater attention in the final Plan. While we again acknowledge that the responsibility for finalizing the National Freight Strategic Plan will fall to the next Administration, it is our hope that the ideas offered here can help guide Federal policymakers and their public and private partners in continuing to move freight policy forward.

Accordingly, the strategies in the new Plan could be organized into the following four categories:

1. **Strategies to Address Infrastructure Bottlenecks** -- reduce congestion to improve performance of the freight transportation system without adversely affecting the movement of people; facilitate intermodal connectivity; identify major trade gateways and multimodal national freight networks/corridors; support research and promote adoption of new technologies and best practices.
2. **Strategies to Address Institutional Bottlenecks** -- streamline project planning, review, permitting, and approvals; facilitate multijurisdictional, multimodal collaboration and solutions, including expanding State Freight Advisory Committee participation; improve coordination between public and private sectors; ensure availability of better data and freight transportation models; and develop the next generation freight transportation workforce.
3. **Strategies to Address Financial Bottlenecks --** enhance existing freight funding sources; develop new freight funding sources.
4. ***[NEW] Strategies to Improve Safety, Community, and Environmental Impacts --*** improve the safety, security, and resilience of the freight transportation system, including improving truck parking planning, capacity, enforcement and information; and mitigate impacts of freight projects/movements on communities and the environment.

As noted, of the strategies and initiatives outlined in the draft Plan, several were addressed in whole or in part by the FAST Act, including through the provision of funding, linkage of some committed formula funding to a State Freight Plan, and other programs. However, some are still unresolved and bear repeating to help our nation prepare for the challenges of an unknown future. In particular, strategies and initiatives that we feel should be expanded or developed more thoroughly are:

- Improve the safety, security, and resilience of the freight transportation system. Ensuring the safety, security, and resilience of freight transportation is of paramount concern to the DOT. In addition to the primary importance of ensuring the safety of human life, a safe, secure, and resilient freight transportation system is less prone to traffic disruptions caused by crashes or infrastructure failures resulting from natural and man-made disasters. Depending on their nature and extent, these disruptions could be short-term and local in scope, or have longer-term repercussions over a

regional or national scale. To support this need, DOT is implementing and enforcing safety regulations to address driver fatigue, vehicle stability systems, and transportation of hazardous liquids (including its recent final rule governing the transportation of flammable liquids by rail). DOT could also consider new regulations to replace and improve outdated freight vehicle operating safety rules. DOT will continue to work with the Departments of Homeland Security and Defense, and other Federal partners, to assure the security of the transportation system, including in the growing area of cybersecurity as systems become more automated. In addition, DOT is pursuing strategies to include infrastructure vulnerability and resilience assessments as part of long-range planning efforts.

- Mitigate impacts of freight projects/movements on communities. Safe, secure, and environmentally friendly freight movement is vital to the well-being of communities across the nation and helps ensure the efficient movement of goods that support our economy. Unless properly mitigated, freight movements may impose adverse impacts such as air, water, and noise pollution, and diminished access to jobs, healthcare, and education that can reduce the quality of life for people living in communities adjacent to or isolated by these movements. Community opposition to the potential adverse effects of freight transportation can also impede implementation unless the needs of communities are carefully considered during freight transportation project planning, environmental review, and state permitting or approvals. DOT is working closely with numerous partners, including the U.S. Environmental Protection Agency (EPA), U.S. Department of Energy (DOE), and U.S. Army Corps of Engineers (USACE) to continue to reduce the adverse impacts of freight activities. Collaborative efforts include providing funds to reduce air pollution and traffic congestion caused by freight vehicles, supporting research on less impactful freight technologies and delivery systems, and efforts to facilitate freight project planning and implementation.
- Support research and promote adoption of new technologies and best practices. Identifying and applying technologies, as well as sharing best practices, are extremely important in ensuring the safe and efficient movement of goods. For example, FHWA's EDC program has been highly effective in identifying and deploying innovations aimed at shortening project delivery, enhancing the safety of roadways, and protecting the environment. Congress should re-establish the successful, multimodal National Cooperative Freight Research Program (NCFRP) as proposed in the draft Plan and other proposals. NCFRP focused on research to inform investment and operations decisions for improving the nation's freight transportation system performance. Additional resources should be provided to ensure comprehensive federal oversight of emerging technologies,

In addition to the Strategies provided above, we suggest that the next Plan and future legislation should strive to address the following:

- Reduce the confusion, constraints and workload burden on the private sector, States and MPOs relating to national freight mapping initiatives –Multiple stakeholders have noted that having two freight networks (the National Highway Freight Network required under 23 U.S.C. 167 and the National Multimodal Freight Network (NMFN) required under 49 U.S.C. 70103) are confusing and potentially contradictory. In order to reduce this confusion and provide clarity, one multimodal

map, sufficiently large to encompass the vast network of supply chains and last-mile/first-mile intermodal connectors that make up the interdependent U.S. freight transportation system, should be retained. This map would be used for planning purposes and all other freight maps and attendant eligibility requirements would be retired. DOT is in the process of issuing such a map in compliance with the FAST Act, which requires the development of a NMFN under 49 USC Section 70103. The NMFN replaces the Multimodal Freight Network map included with the draft Plan.

- Develop, foster, and implement environmental initiatives – One goal in the National Multimodal Freight Policy of the FAST Act is to reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network. In addition to the strategies in the draft Plan (including use of CMAQ funding for freight; low emission technologies for federally funded freight projects), the next Plan could propose programmatic adjustments and policy and legislative strategies to foster environmentally beneficial changes such as: implementing guidance to include greenhouse gas emissions in the National Environmental Policy Act (NEPA) so that new projects requiring NEPA review can perform a greenhouse gas impact analysis; and reducing pipeline leakage through regulatory actions, improved distribution practices, technology development, and evaluating methods to enhance public involvement in the NEPA process for proposed activities..

Other priorities could include supporting freight congestion mitigation through NHFP formula and CMAQ funding; reduce barriers to truck rest stop electrification; incentivize the use of hybrid and electric freight vehicles, especially in alt-fuel corridors and urban and dense suburban delivery areas; incentivize CNG use by locomotives; improve energy savings in freight facilities; optimize truck movements through expanded use of the Freight Advanced Traveler Information System (FRATIS)[1] and other algorithms incorporating multiple data sets for maximum efficiency and reduced fuel consumption or emissions; develop truck parking facilities closer to where truck parking is needed; develop better port, airport and intermodal rail facility plans to reduce congestion, modal repositioning, dwell times and delay.

The freight and environment nexus is one that DOT, working with EPA and other Federal partners, can more fully develop to reduce adverse impacts on our communities and natural environment. This area would benefit from a strong new emphasis at the Federal level, especially where it will

[1] FRATIS is a bundle of applications that provides freight-specific dynamic travel planning and performance information and optimizes drayage operations so that load movements are coordinated between freight facilities to reduce empty-load trips.

also yield reductions or elimination of road, rail, port and airport congestion, fuel consumption and emissions, unnecessary truck VMT, excessive idling, truck parking and staging on neighborhood streets, and dwell times for all modes.

- Prioritize public and private investment by applying a multimodal supply-chain, end-to-end analytical framework that will focus on reducing congestion and other challenges facing our nation – As part of an internationally connected system of systems, freight carriers move goods between the nation's regions and the world. The airports and airways, maritime and inland ports, and pipeline systems work with rail yards, distribution centers, and other multimodal hubs to transfer the goods between these systems. By taking an end-to-end supply chain approach to analyzing and funding the freight transportation network at a national and regional level, the Federal government can help to better integrate the freight system by creating operational incentives or funding infrastructure that is a low priority for individual systems but has a large impact on the efficiency of the overall system. These actions can include incentives to align operating hours for ports, truck, rail, and distribution centers;[2] funding for short-distance marine highway and rail services that can reduce congestion on crowded surface roadways; eliminating at-grade rail or highway crossings that present significant safety, efficiency, or Ladders of Opportunity impediments; and raising bridges to reduce air-draft restrictions for maritime operators.

Rail grade crossing in Florida

- Integrate multimodal infrastructure within the system and eliminate systemic bottlenecks at intermodal connection points -- Focus funding on the construction and maintenance of intermodal connectors and first- and last-mile road and rail lines that connect freight hubs (maritime ports, rail yards, freight airports and distribution centers) to the interstate highways, Class I railroads, and river/intracoastal maritime networks, as well as for the multimodal infrastructure (port and rail yard) that ties those systems together. In many cases, these connectors and the multimodal infrastructure are not funding priorities for their regions or have limited eligibility for Federal funding programs. This should also include priority funding for secondary infrastructure that is necessary for the smooth operations of these first and last mile networks and multimodal

[2] Maritime ports often have limited gate hours. Extending those hours can reduce wait times for trucks accessing the ports, but must be supported by corresponding shifts in the operating times for nearby distribution centers and rail facilities.

infrastructure, such as truck parking, truck staging, equipment pools, and barge fleeting areas. Integration of multimodal infrastructure must minimize or avoid having an adverse effect on the movement of people through the various transportation modes.

- Incentivize multimodal infrastructure, corridor and system planning -- Congress could authorize new Federal grants for planning activities (perhaps at reduced non-federal matching levels) to generate more comprehensive freight planning that engages individual public sector agencies (such as ports and toll authorities), together with MPOs, States, and multi-state planning organizations seeking to plan their freight system of the future, including through State Freight Plans and National Freight Advisory Committees. Other Federal agencies outside of DOT should be encouraged to participate in these planning projects or help develop the incentive structure to do planning. Numerous agencies, such as the USACE or agencies in the DOE, as well as the EPA, undertake and provide funding for port and infrastructure planning and development, and without their participation, the goals of such a comprehensive multimodal program would not be fully achievable. With incentives for complex planning activities, there may be a beneficial shift in future planning projects away from responding to individual bottlenecks or choke points or undertaking single-mode fixes, toward regional or multimodal solutions. Such expanded approaches could address corridors that experience sustained systemic congestion, using a mix of infrastructure spending and operational solutions to help alter the flow of freight to reduce congestion, air emissions, and other impacts on the surrounding communities.

- Expand multimodal flexibility -- One of the greatest game-changing shifts in Federal funding for freight came with the ban on transportation project earmarks initiated by Congress in 2011 and the transportation funding teed up by the American Recovery and Reinvestment Act of 2009 (ARRA), including through the Transportation Investment Generating Economic Recovery (TIGER) discretionary grant program. Because ARRA and subsequent rounds of the TIGER program were funded with General Fund monies, they did not come with the modal stovepipes of previous funding sources. The competitive TIGER program has allowed the public and private sectors to team up on projects that with corridor-level multimodal impacts, such as rail/highway grade separations, intermodal facilities, and landside port improvements. The successes afforded by the TIGER program are evident across the country, and the public investment has leveraged billions of dollars in matching funds from other public and private sector contributions. The requirement that grant requests be accompanied by indicators of their impact on performance and overall net benefits rounded out this responsible new way of improving the transportation assets of this nation.

Such innovative project development, selection and award processes should be continued. Under FASTLANE, eligible applicants can submit cost-effective freight and highway projects for competitive selection to the Federal government. Under NHFP, States can target Federal formula monies to highway and freight projects included in their State Freight Plans and other required State planning documents, including projects within ports and rail facilities.

The major impediments to long term success of these programs are likely to be the limitations on freight investments, particularly on multimodal ones. Given the high demand for freight project funding (one State alone has identified more than $130 billion in unmet freight needs for all types, highway and non-highway, in its State Freight Plan), it would appear unlikely that the needs of the current multimodal network can be accommodated through these programs, even if limited to investments that generate only public benefits. Similarly, the additional limitations on funding eligible port and rail intermodal facilities under the FASTLANE and NHFP programs reduce our ability to make highly beneficial investments in those facilities. We believe that the efficacy of these programs would benefit from relief from their caps on non-highway investment, as well as higher overall funding authorizations for all freight projects.

For maximum public benefit, the investment amounts should be driven by multimodal State Freight Plans and their associated Freight Investment Plans, informed by engagement of a multimodal State Freight Advisory Committee. Adequate program funding will also be needed, above current levels, to address the daunting backlog of projects affecting the safety and efficiency of the nation's freight system.

- Encourage multimodal solutions to address performance issues -- Performance measures for freight were a requirement of MAP-21, albeit confined to consideration of the Interstate System. The rulemaking process for these measures has involved extensive input from States and transportation policy groups. In looking to the future, successful strategies in measuring freight performance should be flexibly defined to include identification and implementation of solutions on adjacent corridors or alternative modes of transportation to keep our nation's commercial corridors vibrant and allow them to evolve with the emerging technologies. Similarly, we suggest that future legislation should require the existence and active participation of a State Freight Advisory Committee to ensure public and private sector dialogue on multimodal issues, planning, and investment in solutions in a manner consistent with the role described in DOT's October 2016 guidance on State Freight Plans and State Freight Advisory Committees.

Section V. Closing

In our view, the final Plan should be a document that offers specific information to help further the activities of States, State Freight Advisory Committees, the private sector, MPOs, citizen groups and elected officials to understand and plan for a new era of freight. While this document is not a specific roadmap of projects and initiatives, it offers the perspective of the DOT as lessons learned in the evolution of our freight programs and technical assistance over the last eight years of this Administration. Critically, it also synthesizes the input gleaned from hundreds of hours and hundreds of engaged citizens, business leaders, practitioners, operators and planners, among others, as to what works, what doesn't work, and what future we should collectively work to achieve in the future Freight Economy. We acknowledge that the Final Plan will be the responsibility of the next Administration to produce and that the strategies and ideas proposed here are suggestions to inform the development of that document. Nonetheless, we believe that by building on the vision articulated here, the U.S. freight transportation system would be well-provisioned with research results, data, training, tools, technologies, best practices, guidelines and resources to make strategic investments that will elevate the efficiency, safety, environmental and economic benefits of goods movement for a strong and resilient future.