

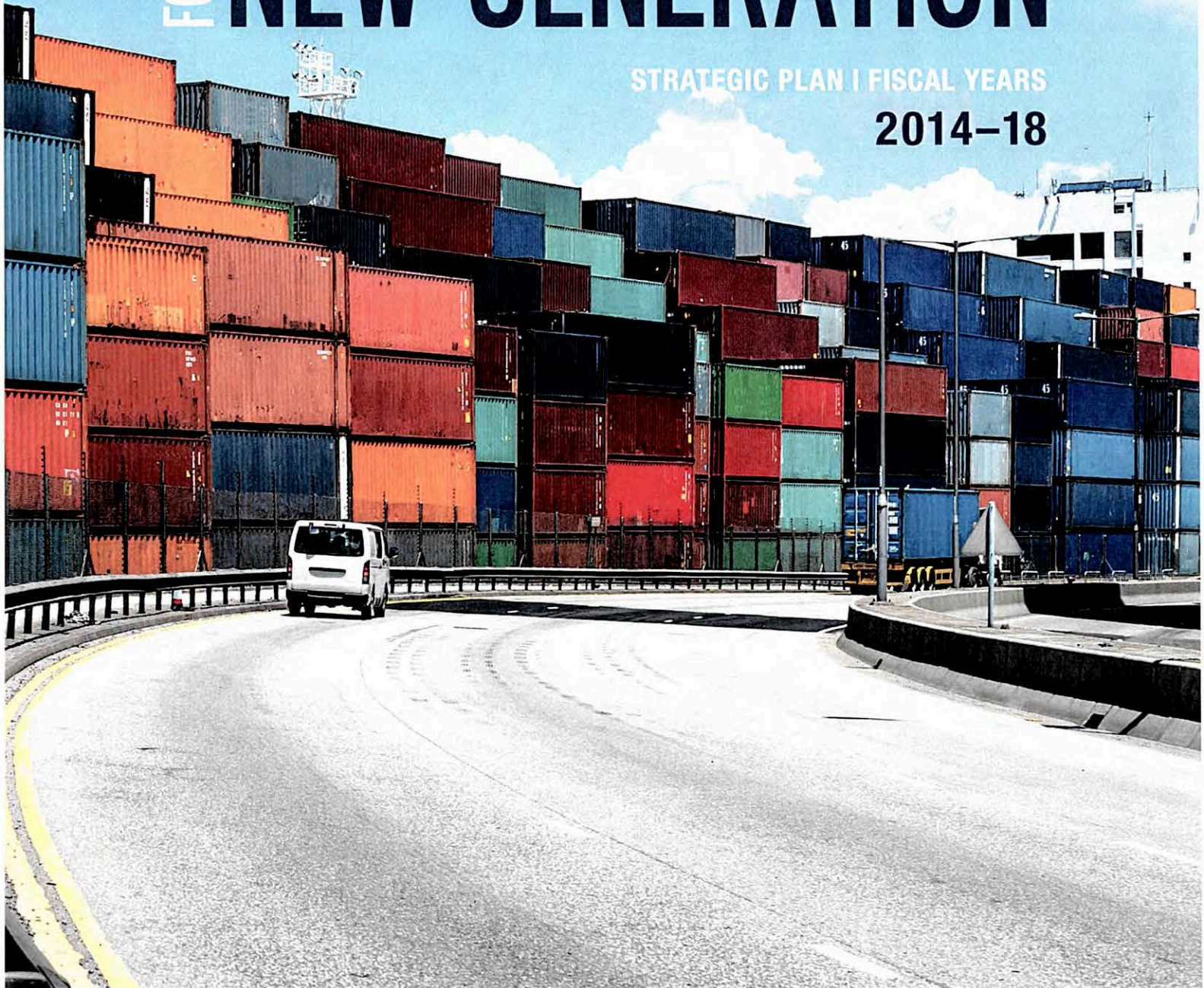


U.S. Department of Transportation



# TRANSPORTATION FOR A NEW GENERATION

STRATEGIC PLAN | FISCAL YEARS  
2014–18



## MESSAGE FROM SECRETARY ANTHONY FOXX

Nearly 50 years ago, when President Lyndon Johnson signed the bill creating the U.S. Department of Transportation, he spoke about the mission of the new Agency.

“A day will come in America when people and freight will move through this land of ours speedily, efficiently, safely, dependably, and cheaply,” he said. “That will be a good day and a great day in America.”

Over the past half century, we have pursued that vision of a safe, dependable transportation system. And for years, our roads, rails, subways, ports, and airports were the envy of the world. The challenge today is: How do we keep them that way? Especially when we know that our Nation will grow by an estimated 100 million people by 2050 and that freight volume will more than double over that time period.

I am proud to present the U.S. Department of Transportation’s Strategic Plan for 2014–2018. The plan outlines a number of goals that will help us work towards the priorities I’ve laid out as Secretary:

### **1. Building on DOT's Legacy of Safety**

- Consistently improving our safety mission across the Department
- Continuing the push to eliminate distracted driving
- Improving pedestrian and bicycle safety

### **2. Closing the Infrastructure Deficit**

- Passing long-term reauthorization legislation for surface transportation and aviation
- Increasing public-private partnerships through a Build America Transportation Investment Center
- Creating Ladders of Opportunity through transportation programs

### **3. Modernizing the United States Transportation System Using Technology and Process Innovation**

- Accelerating NextGen
- Increasing the use of data and analytics to improve performance management
- Leading the conversation on vehicle-to-vehicle technology

These priorities reflect the simple truth that transportation in this country should not just be about getting us to places better, it should make places better, too. And that’s what this plan will do by helping us to prioritize our efforts.

This plan comes at a crucial moment.

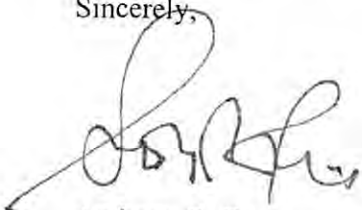
In the short term, President Obama announced a bold \$302-billion surface transportation proposal to put us on a path towards addressing our infrastructure deficit. Through pro-growth business tax reform, the President’s proposal will close the gap in our Highway Trust Fund,

increase surface transportation funding for four years, and encourage us to tackle projects more efficiently.

In the long term, I have directed the Department of Transportation to develop a 30-year “Framework for the Future” to help the nation prepare for the challenges of the next three decades. We face a number of compelling trends—a more diverse and aging population, increased migration to new and emerging economic regions, crumbling infrastructure, continually disruptive technological change, shifting energy production, and climate change. All of these challenges point to the need for new thinking and an intellectual reset of how we approach transportation policy development and implementation.

The Framework for the Future will help us get a clearer picture of these challenges, our options, and the policy choices we will need to make to meet them. It is being developed with input from the public and private sectors, innovators, and importantly, the citizens who depend on the transportation network every day. When the framework is complete, it may signal the need to further revise the 2014–2018 strategic plan.

Sincerely,

A handwritten signature in black ink, appearing to read 'Anthony R. Foxx', with a large, sweeping flourish extending from the end of the signature.

Anthony R. Foxx

# EXECUTIVE SUMMARY

## “TRANSPORTATION FOR A NEW GENERATION”

Our Nation needs, and our citizens deserve, a transportation system that is safe, efficient, accessible, and convenient. The U.S. Department of Transportation (DOT) is the primary agency in the Federal Government responsible for ensuring the movement of people and goods throughout the United States. This includes the movement of people and goods to international destinations across our land borders with Canada and Mexico and through our air and sea ports. Working closely with other federal and international agencies, the States, private industry, and non-profit stakeholders, we seek to meet the Nation’s vital national interests and enhance the quality of life for all its citizens.

Under former Secretary LaHood, DOT adopted the following strategic goals during the first term of President Obama’s Administration:

- Safety - Improve public health and safety by reducing transportation-related fatalities, injuries, crashes, and injuries;
- State of Good Repair - Ensure the U.S. proactively maintains critical transportation infrastructure in a state of good repair;
- Economic Competitiveness - Promote transportation policies and investments that bring lasting and equitable economic benefits to the Nation and its citizens;
- Quality of Life in Communities - Foster quality of life in communities by integrating transportation policies, plans, and investments with coordinated housing and economic development policies to increase transportation choices and access to transportation services for all; and
- Environmental Sustainability - Advance environmentally sustainable policies and investments that reduce carbon and other harmful emissions from transportation sources.

Under Secretary Foxx, we have reaffirmed these goals for President Obama’s second term. This edition of the DOT strategic plan, *Transportation for a New Generation*, outlines the approach that we are undertaking to achieve our strategic goals and implement the President’s priorities for Fiscal Years (FY) 2014-2018. The plan meets Congressional intent by addressing the requirements in the *FAA Modernization and Reform Act of 2012* and *Moving Ahead for Progress in the 21st Century Act of 2012 (MAP-21)*.

We have adopted strategic objectives that provide a clear direction and accountability for the resources we use. Our mission-oriented priorities during the next four years are summarized below:

- We will use our safety programs and regulations for roads, aviation, railroads, trucks, motorcoaches, pipelines, maritime, and hazardous materials as effectively as possible to reduce crashes, fatalities, and injuries for all users of the transportation system, and will expand safety oversight to public transit. We will continue to direct federal resources to address the most serious safety risks and implement program reforms that will advance our safety mission. In addition, we will continue to develop and encourage the use of safety tools - such as improved data collection, risk management

practices, and incident response planning - to prevent, mitigate, and respond to hazardous material transportation accidents. Our ultimate goal is to achieve the safest possible outcomes for all users of the system, moving toward a transportation system with no casualties.

- We will influence the condition of Federally-funded roadway, transit and airport infrastructure through program guidance and technical assistance provided to State departments of transportation, transit agencies, and airport sponsors, utilizing our research and development to produce the knowledge, guidance, and innovations needed to more effectively address the Nation's infrastructure challenges. We will encourage our partners to adopt and use asset management practices as required by MAP-21 through training and technical assistance, and research and demonstration projects. We will facilitate a more transparent and accountable system by adopting common performance measures and reporting systems.
- Our Nation must invest strategically to enable the movement of people and goods more efficiently while fully utilizing existing capacity across all transportation modes. Transportation enables economic activity, quality of life, connected communities, and access to education, opportunities, and services. In order to support the lives and economies of neighborhoods, regions, and the Nation, we must invest wisely in transportation. The cornerstones of our strategy are: investments in public transportation, high-performance passenger rail, the development of a national freight strategy, mitigating traffic congestion on our roadways, and implementing NextGen to make air transportation more efficient and environmentally sound. We will continue our efforts to create a more competitive air transportation system and protect the rights of traveling consumers. We will advance U.S. economic interests in targeted markets abroad in order to create additional transportation-related jobs. Through the development of a National Freight Strategic Plan pursuant to MAP-21, we will focus transportation investments on projects that will particularly benefit U.S. exports.
- Transportation research has little value if its technological outcomes are not transferred to those that might apply them. We will facilitate the exchange of knowledge and technologies by streamlining processes for partnership agreements and increasing awareness of commercialization and technology transfer opportunities. Additionally, we will pursue innovations through international dialogues such as the International Transportation Forum, cooperation agreements with global partners, and international research initiatives.
- The operation of the Nation's transportation system depends on a highly skilled and qualified workforce, our most valuable asset. We will collaborate with our partners in government agencies, private and public employers, educational institutions, and workforce and labor organizations to identify and advance career and technical education pathways to transportation jobs; advance the education programs of the U.S. Merchant Marine Academy and State Maritime Academies; support science, technology, engineering and mathematics (STEM) and transportation-related academic and certification programs for K-12 students; and improve pathways into various levels of transportation occupations for all segments of the population.
- We will enhance the economic and social well-being of all Americans by creating and maintaining a reliable, integrated, and accessible transportation network that enhances choices for all transportation users, provides easy access to educational and employment opportunities, healthcare, and other destinations, and promotes positive effects on the surrounding community. Both rural and urban centers require reliable multimodal transportation systems to create thriving, healthy, and environmentally sustainable communities; promote centers of economic activity; support efficient goods movement and strong financial benefits; and opportunities to attract a strong workforce.

- We will provide guidance and assistance to encourage compliance with the *Americans with Disabilities Act of 1990* (ADA) in existing facilities. Also, we will integrate environmental justice principles into all Department planning and programming, rulemaking, and policy formulation.
- We will continue to work across all modes to improve the energy and environmental performance of the transportation sector. We will continue to promote the deployment of advanced vehicle technologies, alternative fuels and alternative fuels infrastructure where feasible to reduce energy consumption and greenhouse gas emissions of transportation systems, including roadway vehicles, transit systems, ships and port equipment, and airport support vehicles.
- The Nation's investments in transportation systems and infrastructure will only be sustainable if we more broadly consider and address the secondary effects of construction and land use. Although transportation projects comply with all applicable resource protection laws and federal funds are available for mitigation and restoration activities, more must be done to meet the challenge of reducing their negative environmental impacts. We must accomplish this while achieving faster project delivery time, which is often affected by the environmental permitting process.
- We will work to improve internal project delivery processes and identify opportunities for enhanced interagency harmonization, through continued DOT initiatives such as the Everyday Counts Initiative, the Green Highways project, improved permitting of infrastructure projects, and other related efforts.
- We will establish the Infrastructure Permitting Improvement Center to help deliver the process and policy reforms identified by the Infrastructure Steering Committee, providing interagency leadership in modernizing the Federal permitting and review process, creating a system that is faster and more efficient while providing measurably better outcomes.
- Recent weather events such as Superstorm Sandy, which disrupted major portions of air, roadway, transit, port, and rail line service in the New Jersey-New York metropolitan region, have prompted us to consider more carefully how we plan, design, and build transportation infrastructure. We will encourage DOT funding recipients to perform climate change vulnerability assessments for their transportation infrastructure and integrate the results into planning their decision-making.

We have expanded our internal management objectives to address our human capital needs; more efficiently manage agency information technology and finances, and address other supporting objectives that support federal government-wide goals. Our management-oriented priorities during the next four years are summarized below:

- We must build a workforce that can meet the challenges of this decade, especially in light of the pending retirement of many of our eligible employees. We will: implement workforce planning, competency-based hiring, and training to ensure DOT has a diverse and capable workforce with the right leadership, technical, and functional skills; promote selfless leadership that focuses on performance and thrives on collaboration, while leveraging employee inclusion and engagement; and foster a culture of continuous learning and improvement among our employees.
- We will provide secure, customer-focused information systems and technology platforms that support the innovative, effective, and efficient use of information and data for the management of all DOT business processes. We will leverage new technologies and ensure contingency plans are in place for our employees to function as a mobile workforce in all situations. We will continue to emphasize the importance of improving our financial management practices by focusing on increased oversight and proper recording of undelivered orders, which are budget obligations that have not yet been fully liquidated by making a final payment.

- We will proactively prepare to use our internal authorities for the safety, security, and resilience of the U.S. transportation systems and support the transportation mission of the Department of Homeland Security (DHS) and other federal departments and agencies to improve the security of domestic and intermodal transportation sectors. We will ensure continuity of operations by maintaining emergency preparedness and response capabilities to effectively provide leadership and response to incidents and fulfill all of our commitments.
- DOT has responsibility for a number of modal emergency preparedness programs that provide the Department of Defense (DOD) and civilian agencies with assured access to commercial transportation and sealift during times of national emergency. We will continue to maintain government-owned transportation assets, and provide access to commercial transportation assets for critical support for defense mobility and emergency response.
- In compliance with the *Small Business Act*, we will continue to ensure that small businesses have an opportunity to compete and be selected for Agency contract dollars. We provide various types of assistance to ensure that small businesses have access to transportation-related projects. Through outreach events, we demonstrate a commitment to growing the small business supplier base and increasing their awareness of procurement opportunities.

We have sought vast public input in developing this strategic plan. More than 300 ideas and suggestions were submitted during an online dialogue. We made revisions to an earlier draft based on the suggestions.

Finally, we outline our current approach to using performance data and evidence to make wiser decisions as we proceed to implement this plan in the coming years.

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# THE U.S. DEPARTMENT OF TRANSPORTATION

## MISSION

Our mission is to,

Serve the United States by ensuring a safe, efficient, accessible, and convenient transportation system that meets our vital national interests and enhances the quality of life of the American people, today and into the future.<sup>1</sup>

## DOT ORGANIZATION

Established in 1967 by Congress, DOT consolidated more than 30 transportation agencies and functions, including the U.S. Coast Guard, Bureau of Public Roads, and Federal Aviation Agency, under the first Secretary of Transportation Alan S. Boyd.<sup>2</sup> Today, over 57,000 DOT employees work in the Offices of the Secretary of Transportation, the Office of the Inspector General, ten Operating Administrations, and the Surface Transportation Board.<sup>3</sup>

The Operating Administrations are listed below. More information about DOT is available at <http://www.dot.gov/about> and at the Web sites of each Operating Administration.

Federal Aviation Administration (FAA)

Federal Highway Administration (FHWA)

Federal Motor Carrier Safety Administration (FMCSA)

Federal Railroad Administration (FRA)

Federal Transit Administration (FTA)

Maritime Administration (MARAD)

National Highway Traffic Safety Administration (NHTSA)

Pipeline and Hazardous Materials Safety Administration (PHMSA)

Office of the Assistant Secretary for Research and Technology (OST-R)

Saint Lawrence Seaway Development Corporation (SLSDC)

<sup>1</sup> This is the current revised version of DOT's original mission statement, which is in Section 101 of Title 49, U.S.C. as "The national objectives of general welfare, economic growth and stability, and the security of the United States require the development of transportation policies and programs that contribute to providing fast, safe, efficient, and convenient transportation at the lowest cost, consistent with those and other national objectives, including the efficient use and conservation of the resources of the United States."

<sup>2</sup> For more information, see *U.S. DOT: A Brief History*, available at <http://ntl.bts.gov/historian/history.htm> accessed April 24, 2013.

<sup>3</sup> With passage of the Interstate Commerce Commission Termination Act of 1995, Congress established the Surface Transportation Board within DOT, effective January 1, 1996. While formally part of DOT, the Board decisions are independent of DOT and by law, "...shall not be responsible to or subject to the supervision or direction...of any other part of the Department of Transportation." (49 U.S.C. 703(c)).

## KEY LEGISLATION

Congress passed several important pieces of transportation legislation in the 112<sup>th</sup> session that provided new authorities and funding for DOT programs. The key pieces of legislation referenced in this strategic plan include:

- *Moving Ahead for Progress in the 21st Century Act of 2012, P.L. 112-141 (MAP-21)*, which continues authorization of funding for Federal-aid highways, highway safety programs, and transit programs, and places a new emphasis on setting national surface transportation performance goals and improving transportation decision-making through a performance-based approach; and
- *FAA Modernization and Reform Act of 2012, P.L. 112-95*, which continues authorization of funding for critical FAA programs and provides the continuity needed to maintain National Airspace System (NAS) operations and to implement the Next Generation Air Transportation System (NextGen). This legislation was preceded by the *NextGen Air Transportation System and Air Traffic Control Modernization Act* and the *Airport and Airway Extension Act*.

Current authorizing legislation, as well as provisions in earlier legislation that remain in force, is codified in Titles 14, 23, and 49 of the United States Code.<sup>4</sup>

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<sup>4</sup> U.S. Code Titles are available at <http://www.ecfr.gov/cgi-bin/ECFR>

# INTRODUCTION

## OVERVIEW

In 2017, U.S. DOT will celebrate its 50<sup>th</sup> anniversary. While much has changed in our society during the past half-century, the mission of the DOT remains as relevant today as it was when the Department was created.

The U.S. population is projected to increase to 332 million by 2017, a 70 percent increase since 1967.<sup>5</sup> The national economy is on the rebound and personal travel continues to increase, albeit at a somewhat slower pace than prior to the 2007-2009 recession. Industries and consumers depend increasingly on the reliable and timely flow of goods and services within and across our Nation's borders. Population growth in cities and mega-regions is placing a strain on existing transportation systems and creating demand for more transportation choices. As people continue to increase their demand for vibrant communities, creating quality of life in communities with safe, reliable, and affordable transportation choices for all users is essential to ensuring economic vitality and growth. The increasing amount and availability of information, as well as more rapid emergence and adoption of new technologies, is transforming all aspects of our daily life including how we travel to work and spend our leisure time. Utilizing emerging technology, maintaining and improving existing transportation infrastructure, and ensuring multimodal options for the movement of goods and people ensures reliable performance of the transportation system; a system critical to attracting the strong workforce that makes a community thrive.

In response to these trends, this second edition of the DOT strategic plan, *Transportation for a New Generation*, outlines the approach that we are undertaking to achieve our strategic goals and implement the President's priorities for Fiscal Year (FY) 2014-2018. We are acting under the authorities that the Congress and the President have provided the Secretary of Transportation.

## STRATEGIC GOALS

Our strategic goals are presented below:

- Safety - Improve public health and safety by reducing transportation-related fatalities and injuries for all users, working toward no fatalities across all modes of travel;
- State of Good Repair - Ensure the U.S. proactively maintains critical transportation infrastructure in a state of good repair;
- Economic Competitiveness - Promote transportation policies and investments that create ladders of opportunity, support strong communities, and bring lasting and equitable economic benefits to the Nation and its citizens;
- Quality of Life in Communities - Foster quality of life in communities by integrating transportation policies, plans, and investments with coordinated housing and economic development policies to increase transportation choices and access to transportation services for all; and
- Environmental Sustainability - Advance environmentally sustainable policies and investments that reduce carbon and other harmful emissions from transportation sources, reduce our nation's dependence on foreign oil, improve air quality, and promote public health.

<sup>5</sup> U.S. Department of Commerce, Census Bureau (2012). *The 2012 Statistical Abstract*, National Estimates and Projections, Tables 1 and 2, available at <http://www.census.gov/compendia/statab/cats/population.html>, accessed April 24, 2013.

In reaffirming these five strategic goals, we continue to reimagine what the transportation system can be in this decade while fulfilling the Department's long-standing mission, providing support for critical federal interagency goals including preparedness and defense readiness, and setting priorities for our most important management objectives. A brief description of each strategic goal is provided in the following paragraphs.

## SAFETY

Improving transportation safety remains DOT's top priority. Our goal is to bring a department-wide focus to reducing transportation-related fatalities and injuries. In this plan, we highlight the need to promote roadway safety for all users; combat distracted driving and other dangerous behaviors; implement a new Federal role in transit safety; and carry out strategies for addressing the most serious safety risks in aviation and other transportation modes.

## STATE OF GOOD REPAIR

Recent reports on the condition of important facilities—highways, bridges, transit systems, passenger rail, ports and waterways, and airports—reveal that many fall short of a state of good repair and thus compromise the safety, capacity, and efficiency of the U.S. transportation system.<sup>6</sup> In this plan, we will bring a strong programmatic emphasis and new resources to improving and sustaining the condition of our infrastructure. We will encourage our State government, airport sponsors, and industry partners to make optimal use of existing capacity, minimize life-cycle costs, and apply sound asset management principles throughout the system.

## ECONOMIC COMPETITIVENESS

Our goal is to support the U.S. economy by fostering strategic investments that will serve the traveling public and facilitate freight movement now, and in the future. Transportation enables economic activity, quality of life, connected communities, and ladders of opportunity to education, opportunities, and services. In order to support the lives and economies of neighborhoods, regions, and the Nation, we must invest wisely in transportation. Our central strategies for achieving maximum economic returns on our policies and investments include leading the development of high-speed and intercity passenger rail and a competitive air transportation system; increasing travel time reliability in freight-significant highway corridors; improving the performance of freight rail and maritime networks; advancing transportation interests in targeted markets around the world; encouraging the adoption of new technologies; creating communities that foster quality of life with transportation choices for all users to attract a strong workforce and economic activity, and creating a dynamic workforce.

## QUALITY OF LIFE IN COMMUNITIES

Over the past 50 years, transportation spending has often been poorly coordinated with other infrastructure investments, resulting in residential communities where access to job opportunities and amenities is inadequate and expensive. In this plan, we describe how we will pursue coordinated, locally focused policies and investments that increase transportation choices and access to transportation services for all Americans.

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<sup>6</sup> An early definition of State of Good Repair was provided by then Secretary Mary Peters to Congress in 2008, as when "existing physical assets, both individually and as a system, are functioning as designed within their useful lives and sustained through regular maintenance and replacement programs."

## ENVIRONMENTAL SUSTAINABILITY

Transportation is crucial to our economy and our quality of life, but building, operating, and maintaining transportation systems clearly has significant environmental impacts on air, water, and natural ecosystems. The transportation sector is a significant source of greenhouse gases (GHG), accounting for about 27 percent of total U.S. GHG emissions in 2011. Our environmental sustainability chapter describes how we will address these challenges through strategies such as promulgating fuel economy standards for cars and trucks, promoting more environmentally sound construction and operational practices, and expanding opportunities for shifting freight from less fuel-efficient modes to more fuel-efficient modes.

## FY 2014-2018 STRATEGIC GOAL FRAMEWORK

This second edition of *Transportation for a New Generation* includes strategic objectives, or sub-goals, that clarify how we will link the outcomes we seek to the programs and functions we perform every day. In addition, we have adopted strategic objectives for important interagency responsibilities that DOT contributes to in the areas of emergency preparedness and national defense, as well as small business assistance. Our goal for organizational excellence is redefined to address the highest-priority management objectives of the Department.

Together with the strategic goals, the strategic objectives make up the organizing framework for the FY 2014-2018 Strategic Plan as shown in Figure 1. The framework includes 5 mission-aligned strategic goals, an organizational excellence goal, and other supporting strategic objectives. Associated with these goals are 17 strategic objectives (e.g., Sustain Assets).

## HOW THIS PLAN IS ORGANIZED

The next seven chapters highlight the five mission-oriented strategic goals, the organizational excellence strategic goal and objectives, and supporting strategic objectives in the framework. Within each chapter, the challenges facing the Nation and DOT are briefly described, followed by the goal and associated strategic objectives. Each challenge is followed by the cross-modal strategies we will adopt to combat it. The relationships between the strategies and the strategic objectives are depicted in Table A. The performance goal(s) and indicator(s) that are associated with each strategic objective are listed in tables, and the External Risk Factors that we believe influence our ability to meet the strategic objectives, performance goals and indicators during the next four years are also discussed. In this context, risk factors are discussed as opportunities that have positive benefits or threats that have negative consequences.<sup>7</sup>

## WHY IS THIS REVISION NECESSARY

The *GPR Modernization Act* requires federal agencies to update their strategic plans at the start of a Presidential term. The law places an increased emphasis on the use of strategic plans as a driver of the annual performance plans and budgets, and performance and financial accountability reports that we prepare and submit to Congress each year.

Beginning with the FY 2015 budget cycle, annual performance plans, budgets, and reports will demonstrate how DOT and its partners will achieve these strategic goals and objectives at the level of funding authorized and appro-

<sup>7</sup> Risk is defined as the effect of uncertainty on objectives. See International Organization for Standardization (ISO) 31000 at <http://www.iso.org/iso/home/standards/iso31000.htm> accessed September 30, 2013.

priated by the Congress. In addition, the Offices of the Secretary and the Operating Administrations will base their internal operating decisions, in part, on the more immediate results they will realize for the strategic objectives and their associated performance goals and indicators. Overall, this plan demonstrates our movement as a department towards outcome-based decision making.

## HOW WE ADDRESSED PUBLIC COMMENT

A draft version of the DOT strategic plan was released for comment between August 27, 2013 and September 10, 2013. An online dialogue about the draft plan was hosted at <http://dotstrategicplan.ideascale.com>. More than 3,400 people visited the dialogue website and a total of 298 ideas were posted. More than 900 registered users submitted 185 additional comments on these ideas. In addition, over 70 comments were submitted directly via e-mail. After internal review of these ideas and comments, the draft strategic plan was revised to reflect some of them.

FIGURE 1. STRATEGIC GOAL FRAMEWORK FOR FY 2014-2018.

STRATEGIC GOALS	STRATEGIC OBJECTIVES
<b>Safety</b>	Improve safety of system
<b>State of Good Repair</b>	Maintain or improve operating conditions Sustain assets
<b>Economic Competitiveness</b>	Enhance productivity and growth Increase access to foreign markets Improve system efficiency Create dynamic workforce
<b>Quality of Life in Communities</b>	Enhance quality of life Expand access and choice
<b>Environmental Sustainability</b>	Promote energy efficiency Mitigate environmental impacts Adapt to climate change
<b>Organizational Excellence</b>	Develop human capital Improve information systems and financial management
<b>Security, Preparedness, and Other Supporting Objectives</b>	Ensure effective response Meet national security needs Expand small business opportunities

TABLE A. RELATIONSHIPS BETWEEN STRATEGIES AND STRATEGIC OBJECTIVES BY GOAL.

STRATEGIC OBJECTIVE	STRATEGIES
<p><b>IMPROVE SAFETY OF SYSTEM</b> - Improve the safety of the transportation system across all modes of travel by addressing behavioral, vehicular, and infrastructure safety issues through prevention, mitigation, data sharing and analysis, and response using innovative and effective partnerships, programs, and resources.</p>	<p>Reduce roadway fatalities and injuries for all users of the system</p> <p>Reduce fatalities and injuries in aviation.</p> <p>Reduce railroad fatalities and injuries.</p> <p>Reduce transit fatalities and injuries.</p> <p>Provide expert support to agencies to reduce maritime-related fatalities and injuries.</p> <p>Reduce fatalities and injuries in hazardous materials transportation.</p> <p>Reduce pipeline fatalities and injuries.</p> <p>Reduce fatalities and injuries from illegal drug use and alcohol misuse.</p>
<p><b>MAINTAIN OR IMPROVE OPERATING CONDITIONS</b> - Maintain or improve the availability, reliability, and performance of the Nation's transportation infrastructure, equipment, and facilities by ensuring that they are functioning as designed within their useful lives.</p>	<p>Improve the condition of highway infrastructure through strategic investment.</p> <p>Improve the condition of airport runways.</p> <p>Improve the condition of transit systems.</p> <p>Facilitate improvements in the condition of ports and waterways.</p> <p>Reduce AMTRAK's State of Good Repair backlog.</p>
<p><b>SUSTAIN ASSETS</b> - Reduce the costs of sustaining the Nation's transportation infrastructure, equipment, facilities, and technology by instilling proven asset management practices through partnerships with other governmental agencies and infrastructure owners.</p>	<p>Foster and maintain partnership with governmental agencies and infrastructure owners.</p>
<p><b>ENHANCE PRODUCTIVITY AND GROWTH</b> - Improve the contribution of the transportation system to the Nation's productivity and economic growth by supporting strategic, multi-modal investment decisions and policies that reduce costs, increase reliability and competition, satisfy consumer preferences more efficiently, and advance U.S. transportation interests worldwide.</p>	<p>Improve the contribution of the transportation system to the Nation's economic growth.</p> <p>Foster a competitive air transportation system that is responsive to consumer needs.</p>
<p><b>INCREASE ACCESS TO FOREIGN MARKETS</b> - Increase access to foreign markets by eliminating transportation-related barriers to international trade through Federal investments in transportation infrastructure, international trade and investment negotiations, and global transportation initiatives and cooperative research thereby providing additional opportunities for American business and creating export-related jobs.</p>	<p>Advance U.S. transportation-related economic and related safety and environmental interests in targeted markets around the world.</p>
<p><b>IMPROVE SYSTEM EFFICIENCY</b> - Improve the efficiency of the Nation's transportation system through transportation-related research, knowledge sharing, and technology transfer.</p>	<p>Improve research, knowledge sharing, and technology transfer business processes.</p>



STRATEGIC OBJECTIVE	STRATEGIES
<p><b>FOSTER DYNAMIC WORKFORCE</b> - Foster the development of a dynamic and diverse transportation workforce through partnerships with the public sector, private industry, and educational institutions.</p>	<p>Build a dynamic national transportation workforce.</p>
<p><b>ENHANCE QUALITY OF LIFE</b> - Enhance quality of life in all communities by directing federal investments in infrastructure improvements towards integrated planning approaches that more efficiently meet transportation, land use, and economic development needs.</p>	<p>Increase access to convenient and affordable transportation choices.</p> <p>Support programs to integrate planning between transportation and related elements, including economic development, land use, and health.</p>
<p><b>EXPAND ACCESS AND CHOICE</b> - Expand convenient, safe, and affordable transportation choices for all by emphasizing greater public engagement, fairness, equity, and accessibility in transportation investment plans, policy guidance, and programs.</p>	<p>Improve coordination of human services centered transportation.</p> <p>Increase access for persons with disabilities.</p>
<p><b>PROMOTE ENERGY EFFICIENCY</b> - Reduce oil-dependence and carbon emissions through research and deployment of new technologies including alternative fuels, and by promoting more energy-efficient modes of transportation.</p>	<p>Reduce carbon emissions, improve energy efficiency, and reduce dependence on oil.</p>
<p><b>MITIGATE ENVIRONMENTAL IMPACTS</b> - Avoid and mitigate transportation-related impacts to climate, ecosystems, and communities by helping partners make informed project planning decisions through an analysis of acceptable alternatives, balancing the need to obtain sound environmental outcomes with demands to accelerate project delivery.</p>	<p>Reduce transportation-related air, water, and noise pollution and impacts on ecosystems.</p>
<p><b>ADAPT TO CLIMATE CHANGE</b> - Promote sustainable internal operations, infrastructure resilience and adaptation to extreme weather events and climate change through research, guidance, technical assistance, and federal investment.</p>	<p>Increase the use of environmentally sustainable practices in the transportation sector.</p> <p>Ensure infrastructure resilience.</p> <p>Ensure sustainable internal operations and facilities.</p>
<p><b>DEVELOP HUMAN CAPITAL</b> - Build a capable, diverse, and collaborative workforce of highly-skilled, innovative, and motivated employees by making DOT a workplace of choice through employee empowerment and engagement, learning and development, succession planning, workplace flexibilities, and a healthy and safe workforce.</p>	<p>Enable human capital solutions.</p>
<p><b>IMPROVE INFORMATION TECHNOLOGY (IT) AND FINANCIAL MANAGEMENT</b> - Advance secure and innovative information systems and technology platforms that protect against cyber threats and support the efficient use of information and data for financial management.</p>	<p>Enable innovative information technology and cyber security solutions.</p> <p>Improve financial performance.</p>

STRATEGIC OBJECTIVE	STRATEGIES
ENSURE EFFECTIVE RESPONSE - Mitigate the impacts to transportation due to all hazards by developing effective response planning and training for leaders and responders.	Enable emergency preparedness.
MEET NATIONAL SECURITY NEEDS- Meet transportation needs for national security through interagency cooperation with the Departments of Defense, State, Homeland Security, and State and local agencies	Enable national security.
EXPAND SMALL BUSINESS OPPORTUNITIES - Expand opportunities for small and disadvantaged businesses in the transportation sector.	Encourage strategies to promote small business development through transportation planning.

# SAFETY



# STRATEGIC GOAL

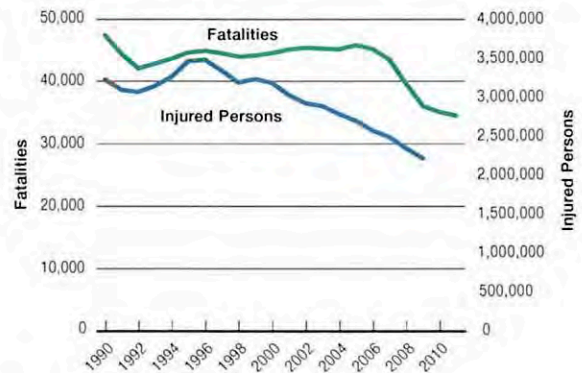
## IMPROVE PUBLIC HEALTH AND SAFETY BY REDUCING TRANSPORTATION-RELATED FATALITIES AND INJURIES.

### CHALLENGES AND STRATEGIES

Our top priority is to make the U.S. transportation system the safest in the world. As illustrated in Figure 2, we have made good progress in reducing overall transportation-related fatalities and injuries during the past two decades. This downward trend occurred while the U.S. population and travel increased significantly. However, we must continue to promote safer behaviors, vehicle designs, and infrastructure that will further reduce risks and minimize injury for all travelers.

We will work with our stakeholders - including transportation agencies, elected officials, law enforcement, industry representatives, bicycle and pedestrian groups, safety advocates, drivers, the disability and aging population, and the public - to keep the transportation system safe. We will use our safety regulatory authority over automobiles, aviation, rail, trucks, motorcoaches, pipelines, and hazardous materials as cost-effectively as possible to reduce crashes and injuries, and implement our expanded regulatory authority for public transit. We will continue to work with our partners to direct federal resources to the highest safety risks and bring program reforms that will advance our safety mission. We will address these challenges through multi-faceted strategies, and work to ensure that transportation systems including roads, bicycle and pedestrian facilities, ports, rail, and aviation, are safe for all users.

FIGURE 2. TRANSPORTATION-RELATED FATALITIES AND INJURIES, 1990 TO 2011.



Source: U.S. Department of Transportation, National Transportation Statistics

Our strategic objective is presented below:

#### FY 2014-2018 STRATEGIC OBJECTIVE

- Improve the safety of the transportation system for all users by addressing behavioral, vehicular, and infrastructure safety issues through prevention, minimization, mitigation, and response using innovative and effective partnerships, programs, and resources (SA1).

## DOT SAFETY COUNCIL

The U.S. DOT Safety Council provides a forum for information exchange, discussion and collaboration to enable coordinated, cross-modal approaches to advancing the safety goal. The Safety Council leverages the Departmental expertise and leadership of the Chief Safety Officers, Associate Administrators of Safety and other senior safety leaders to identify, prioritize, and coordinate cross-modal safety challenges and emerging issues with the operating administrations. The Safety Council provides both advice and technical support to the Secretary and Operating Administrations on the most important Departmental safety issues.

For aviation, rail, transit, pipeline safety, some effective prevention methods include voluntary reporting and risk management, e.g., minimizing pilot error and efforts to minimize drug use and alcohol misuse among safety-sensitive transportation workers are also addressed. Our motor-vehicle programs use a data driven approach to address risk in the system

## STRATEGIES FOR REDUCING ROADWAY FATALITIES AND INJURIES

Fatalities in motor vehicle traffic crashes accounted for 94 percent of a total of 34,362 transportation-related fatalities in 2011, as shown in Table B. In one study from 2000, the resulting costs of motor vehicle crashes drained more than \$230 billion, from the economy.<sup>8</sup>

TABLE B. TRANSPORTATION FATALITIES BY MODE, 2011.

(Source: National Transportation Statistics, Table 2-1, U.S. DOT, 2013)

TRANSPORTATION MODE	NUMBER OF FATALITIES	PERCENT OF TOTAL
Highway	32,367	94.2
Waterborne*	820	2.4
Railroad**	570	1.7
Air	485	1.4
Transit***	106	0.3
Pipeline	14	<0.1

\*All but 62 of these fatalities are associated with recreational boating. Waterborne travel safety is the responsibility of the U.S. Coast Guard. MARAD provides expertise to support Coast Guard safety initiatives and also supports the U.S. DOT Safety Council.

\*\* The number doesn't reflect fatalities due to crashes at highway rail grade crossings or fatalities as a result of incidents at rail stations.

\*\*\*The number of fatalities increases to 228 when transit-related fatalities from suicide are counted.

In 2011, 32,367 people lost their lives and an estimated 2.22 million people were injured in motor vehicle crashes<sup>9</sup>, even as roadway fatalities and injuries fell to their lowest rates ever. In 2011, the rate of fatalities was 1.10 per 100 million vehicle miles traveled (VMT). The declines in motor vehicle fatalities and injuries that we've seen during the past two decades are the result of successful efforts in these major areas:

<sup>8</sup> U.S. DOT, NHTSA (2002). *The Economic Impact of Motor Vehicle Crashes*. DOT HS 809 446 Available at <http://www-nrd.nhtsa.dot.gov/Pubs/809446.pdf>, accessed May 28, 2013.

<sup>9</sup> U.S. DOT, NHTSA (2013). *Traffic Safety Facts 2011*. DOT HS 811 754. Available at <http://www-nrd.nhtsa.dot.gov/Pubs/811754AR.pdf>, accessed December 16, 2013.

- Drivers are exhibiting safer behaviors, buckling their seatbelts at record rates, and choosing not to get behind the wheel after drinking due to high visibility enforcement efforts;<sup>10</sup> Use of child safety seats are also at record high levels.
- Vehicle designs are much safer, as crash avoidance technologies such as electronic stability control and crashworthiness technologies such as advanced air bags continue to improve and are more widely deployed in the fleet;
- Highway infrastructure designs are safer due to safer intersections, better signs and lighting, improved pavement technologies, and more effective crash barriers;
- States and municipalities significantly improved their ability to analyze data and more effectively target resources on their largest safety challenges as part of a coordinated Strategic Highway Safety planning process.

To continue this downward trend in motor vehicle fatalities and injuries, DOT will:

- Expand high-visibility enforcement efforts.
- Reinforce partnerships with Federal agencies, States, localities, and Tribal governments to address problems associated with alcohol-impaired driving, and continue to explore the potential for widespread use of in-vehicle technologies to prevent alcohol-impaired driving;<sup>11</sup>
- Improve the roadway infrastructure through system-wide implementation of proven safety countermeasures, traffic calming measures such as roundabouts and innovative intersection design;

- Promote upgrades in State and local data systems and analytical capacity to further advance performance-based investment decisions and grant allocations;

## BLUEPRINT FOR ENDING DISTRACTED DRIVING

**With the use of smart phones, navigation systems, and other mobile devices growing rapidly, distracted driving is now a serious safety issue. Distracted driving contributed to 3,331 fatalities in 2011, or 10 percent of all traffic fatalities during that year.**

**The DOT Blueprint for Ending Distracted Driving is a comprehensive strategy to address the growing and dangerous practice of using handheld cell phones behind the wheel. The plan outlines concrete steps that stakeholders around the country – from lawmakers and safety organizations to families and younger drivers – can take to reduce the risk posed by distracted driving. It also highlights the risk of drivers under the age of 25, who are two to three times more likely than older drivers to send text messages or emails while driving. MAP-21 includes authorization for a new distracted driving grant program to encourage States to enact and enforce laws banning texting by drivers.**

<sup>10</sup> There were 9,878 alcohol-impaired-driving fatalities in 2011, a 27-percent decrease from the 13,472 alcohol-impaired-driving fatalities reported in 2002. From 1975 through 2011, NHTSA estimates that seat belts saved the lives of 292,471 passenger vehicle occupants age 5 and older, including 11,949 lives saved in 2011. More information is available at: <http://www-nrd.nhtsa.dot.gov/Pubs/811753.pdf>

<sup>11</sup> In 2008, a five-year cooperative research agreement, titled Driver Alcohol Detection System for Safety (DADDS), was entered into with the Automotive Coalition for Traffic Safety to investigate and develop alcohol detection technologies that are non-invasive, reliable, accurate and precise that would prevent impaired drivers above the legal limit (.08+) from operating their vehicle. Due to the substantial progress being made through 2013, the Department expects to extend the agreement for an additional five years.

- Complete and implement NHTSA's Data Modernization, which will enhance the quality of crash data collection and improve the information technology systems supporting NHTSA's crash data bases, thereby ensuring that regulatory and safety program decisions continue to be based on sound data;
- Implement the performance-based safety programs in MAP-21;
- Implement the DOT Blueprint for Ending Distracted Driving by encouraging all States to enact and enforce distracted driving laws, encouraging the auto industry and manufacturers of hand-held electronic devices to adhere to guidelines for in-vehicle and nomadic technologies that reduce the potential for distraction, and educating novice drivers to the risks of driver distraction and its consequences.<sup>12</sup>
- Encourage the deployment of effective advanced vehicle automation technologies to enhance safety, including crash avoidance technologies such as advanced braking systems, warning systems relating to lane departure and blind spots, and pedestrian collision avoidance systems;
- Continue research and implementation of vehicle-to-vehicle and vehicle-to-infrastructure technologies that enable vehicles to communicate and potentially avoid collisions and offer additional mobility and environmental benefits;<sup>13</sup>
- Continue strong enforcement of vehicle safety laws to ensure defective and noncompliant vehicles and equipment are identified and remedied;
- Carry out research and demonstration projects in operator safety to reduce fatalities and injuries in rail and commercial vehicle operations;

<sup>12</sup> The Blueprint for Driver Distraction is designed to address the growing and dangerous practice of using hand held cell phones behind the wheel. More information is available at: [http://www.nhtsa.gov/About+NHTSA/Press+Releases/2012/DOT+Sec.+LaHood+Issues+Blueprint+for+Ending+Distracted+Driving,+Announces+\\$2.4+Million+for+California,+Delaware+Pilot+Projects](http://www.nhtsa.gov/About+NHTSA/Press+Releases/2012/DOT+Sec.+LaHood+Issues+Blueprint+for+Ending+Distracted+Driving,+Announces+$2.4+Million+for+California,+Delaware+Pilot+Projects)

<sup>13</sup> For more information, see *Transforming Transportation through Connectivity: ITS Strategic Research Plan, 2010–2014 - Progress Update, 2012* available at: <http://www.its.dot.gov/strategicplan/pdf/ITS%20Strategic%20Plan%20Update%202012.pdf>

- Provide national leadership in promoting and developing effective emergency medical services and Next Generation 911 systems to enhance survival of motor vehicle crash patients by improving post-crash care, including the triage of patients to the appropriate levels of medical care and reducing the elapsed time from the crash until the patient arrives at definitive care; and
- Collaborate with the U.S. Department of Justice, and with State and local law enforcement agencies to promote the adoption of integrated law enforcement and traffic safety strategies based on geographic analysis of crime and traffic safety data.

Although only 19 percent of the U.S. population lives in rural areas, rural crashes accounted for 55 percent of all traffic fatalities in 2011.<sup>14</sup> However, fatalities in rural areas have declined at twice the rate of fatalities in urban areas over the past decade. To further improve rural road safety, DOT will:

- Encourage State and local agencies to improve their data-driven, comprehensive safety strategies and collaborate with stakeholders such as Federal land management agencies, local law enforcement agencies, and local and Tribal governments, to improve safety levels; and
- Provide national leadership in delivering safety programs and products to Tribal communities, gateway communities, and local governments.

Older road users are also over-represented in vehicle crashes. In 2011, 13 percent of the total U.S. resident population, or 41.4 million people, were age 65 and older. But these older individuals made up 17 percent of all traffic fatalities. Older road users are also particularly vulnerable. They are more likely to suffer life-threatening injuries even in minor crashes compared with younger people. In 2011, more than 5,400 people age 65 and older were killed and 185,000 were injured in traffic crashes. With the rising number of Americans reaching retirement age over the next 10 to 20 years, strategies to address their transportation safety

<sup>14</sup> U.S. U.S.DOT, NHTSA (2013). *Rural/Urban Comparison*. DOT HS 811 821. Available at <http://www.nrd.nhtsa.dot.gov/Pubs/811821.pdf>. accessed December 16, 2013

need more attention. To reduce fatalities and injuries for aging road users, DOT will:

- Provide technical assistance and training to States and partners to improve aging road user safety;
- Promote knowledge sharing among DOT modes, states and partners on aging road user safety initiatives; and
- Conduct a demonstration project to enhance state driver licensing medical review processes and policies.

### PEDESTRIANS AND BICYCLISTS

While we have achieved many safety gains through traditional roadway safety design practices, there are too many roadways, especially in highly populated areas, that inconsistently provide adequate safety for pedestrians and bicyclists. While the ten-year trend in pedestrian and bicycle fatalities is consistent with the downward trend in overall fatalities, pedestrian fatalities increased 3 percent and bicycle fatalities were up by 9 percent, respectively, between 2010 and 2011. When this increase is looked at in conjunction with a greater demand for pedestrian and bicycling options and an increased emphasis in many urban areas for a more diversified transportation network that accommodates that demand, more attention needs to be placed on how pedestrian and bicycling options can be more effectively and safely integrated into existing transportation networks.

Roadway designs that accommodate all users, referred to as complete streets, help to reduce fatalities and injuries. These roadway designs include features such as sidewalks, raised medians, turning access controls, better bus stop placement, better lighting, traffic calming measures, accessible sidewalks, curb cuts, accessible signage for sensory and cognitive disabilities, and other advances for travelers with disabilities. A safety review found that designing streets with these users in mind improves pedestrian, bicyclist, and motorist safety.<sup>15</sup> Instituting policies that accommodate all roadway users ensures that every transportation project becomes a



comprehensive safety project. These policies have the added benefit of making walking and biking more attractive options and of enhancing the aesthetic quality and commercial activity on local streets.

To reduce fatalities and injuries for pedestrians and bicyclists, DOT will:

- Encourage States to adopt policies and programs that improve pedestrian, and bicyclist safety, including Safe Routes to School, walking school buses, pedestrian crossing medians, sidewalks, walkable road shoulders, roundabouts, and bike lanes<sup>16</sup>;
- Work with State, local, and Tribal governments to provide more technical assistance such as Pedestrian Safety Audits and Bicycle Safety Audits to ensure that transportation systems are designed for optimum safety for all;
- Develop training programs for motorists, children, pedestrians and bicyclists and promote the use of these programs in schools and other venues;
- Provide national leadership and increase the technical capability of safety professionals in the assessment and treatment of pedestrian crashes and their contributing factors;

<sup>15</sup> B.J. Campbell, C. Zegeer, H. Huang, and M. Cynecki (2004). *A Review of Pedestrian Safety Research in the United States and Abroad*. Federal Highway Administration. Publication Number FHWA-RD-03-042.

<sup>16</sup> These policies include Safe Routes to School, walking school buses, pedestrian crossing medians, sidewalks, walkable road shoulders, roundabouts, and bike lanes. A walking school bus is a group of children walking to school with one or more adults.



- Work with stakeholders to increase the number of states and localities utilizing road diets, pedestrian hybrid beacons, and medians to improve pedestrian safety;
- Work with stakeholders to increase accessible sidewalks, curb cuts and signals, to increase safety for people with disabilities and other road users;
- Distribute community-oriented material, including material in multiple languages, and in culturally competent and accessible formats for persons with disabilities, that offers guidance on improving pedestrian and bicycle safety through engineering, outreach and enforcement activities;
- Consider adopting vehicle standards to reduce pedestrian deaths by making vehicles less likely to harm the pedestrian and by providing driver warnings or automatic braking to prevent a pedestrian crash; and
- Work with states and stakeholders to improve data collection regarding numbers of pedestrians and bicyclists relative to crash rates, road designs, and drivers, to improve our understanding of risk factors and mitigation.

#### MOTORCYCLISTS

There were 4,612 motorcycle fatalities in 2011. When compared to 2,897 fatalities in 2000, this represents an increase of 60 percent over this period. Since the late 1990s, the number of registered motorcyclists



has doubled. As a result, we are seeing an increase in motorcycle crash fatalities, which has partially offset an overall reduction in highway fatalities.<sup>17</sup> However another factor has been the decline in motorcycle helmet use coupled with a decline in the number of States that require universal helmet use for all riders. In 2011, only 60 percent of motorcyclists nationwide were wearing motorcycle helmets, a decline from 2000 when 71 percent were helmeted.

We strongly support and encourage all riders to wear DOT-certified motorcycle helmets on every trip. Additionally, we must increase awareness of motorcycle safety risks and identify best practices to improve the safety of motorcycle riding. In order to accomplish this, we need to identify factors that contribute to motorcycle crashes and identify strategies for reducing crash frequency and severity. To improve motorcycle safety, we will:

- Develop a set of voluntary national education standards for entry-level motorcycle rider training programs to promote more comprehensive and consistent programs nationwide, and best practices for States in implementing these programs;<sup>18</sup>
- Evaluate the benefits of improved motorcycle safety law enforcement and raising the number of licensed motorcyclists because unlicensed motorcyclists are overrepresented in crashes;
- Continue to encourage motorcyclists to use only DOT-certified helmets through educational and possibly regulatory actions;
- Work with States to implement new programs to reduce alcohol and drug impairment levels among motorcyclists, and explore new technologies that could make motorcycles safer to operate; and
- Conclude the FHWA Motorcycle Crash Causation Study to identify contributing factors for

<sup>17</sup> Twenty States and the District of Columbia have motorcycle helmet laws that require all riders to wear helmets.

<sup>18</sup> The standards will establish baseline content that all entry-level riders should be taught, including pre-ride skills, vehicle-control skills, street strategies and roadway management, and skills for group riding.

motorcycle crashes and identify effective countermeasures based on evaluation and analysis of the study data.

### COMMERCIAL MOTOR VEHICLES

In 2011, commercial motor vehicles (CMV), or large trucks and buses, represented 4.3 percent of all registered vehicles and 9.5 percent of total Vehicle Miles Traveled (VMT) on the Nation's roadways. In 2011, about 12 percent, or 3,568, of all motor vehicle fatalities in the U.S. involved crashes with CMVs. The fatality rate declined from 0.205 to 0.136 fatalities per hundred million VMT between 2000 and 2011.

We attribute some portion of the overall improvement to the steady implementation of the FMCSA Compliance, Safety, Accountability enforcement model, which is modernizing the effectiveness and efficiency of motor carrier enforcement activities through early contact with a greater number of motor carriers.<sup>19</sup> Targeted enforcement interventions, increased oversight of Commercial Driver's License programs, safety audits, and inspections of motor carriers and operators have contributed to reducing the fatality rate. The primary challenge in continuing to improve truck and bus safety is to make certain that a safety culture exists across the industry. To improve motor vehicle safety, we will:

- Implement a three-pronged strategy that raises the bar to enter the motor carrier industry, requires carriers to maintain high safety standards to remain in the industry, and removes high-risk carriers, drivers, and service providers from operation;
- Promote safe operations and best practices through partnerships and education;
- Improve operator medical qualifications, credentialing, and licensing systems;
- Improve safety information, data models and methodologies, research, and analysis to advance

<sup>19</sup> More information about Compliance, Safety, Accountability program is available at <http://csa.fmcsa.dot.gov/>

innovation, technical solutions, and operational effectiveness;

- Implement the DOT motorcoach safety action plan to address driver fatigue, driver behavior, vehicle maintenance, operator oversight, crash avoidance measures, and occupant protection;<sup>20</sup> and
- Promote safety accountability and a holistic safety culture throughout the transportation life-cycle, including, for example, by promulgating a regulation to ensure that CMV operators are not coerced by motor carrier, shippers, receivers or transportation intermediaries to violate safety regulations.

### STRATEGIC HIGHWAY RESEARCH PROGRAM SAFETY DATA

Researchers estimate that driver behavior causes or contributes to 90 percent of crashes. Yet, comparatively little is known about how drivers respond to the driving environment inside and outside their vehicles. To address this critical gap in our understanding of driver behavior, the second Strategic Highway Research Program (SHRP2) safety program is developing the most comprehensive naturalistic driving study database in the world.

The study will capture a broad range of data on the behavior of approximately 3,100 volunteer drivers in real-world driving conditions at six sites in the continental United States. A complementary roadway information database will make it possible to relate driver behavior to roadway characteristics. These foundational databases along with improved data sets and analysis support tools are expected to be used by public, private, and academic researchers to improve safety for the next 30 years.

To improve our ability to use safety data to understand driver behavior and its contribution to crashes, we will:

- Establish policies and procedures for long-term stewardship of the SHRP2 safety data, including

<sup>20</sup> The 2012 DOT Motorcoach Safety Action Plan is available at [www.fmcsa.dot.gov/safety-security/pcs/Motorcoach-Safety-Action-Plan.aspx](http://www.fmcsa.dot.gov/safety-security/pcs/Motorcoach-Safety-Action-Plan.aspx) accessed September 30, 2013.

broad policies for data access, privacy, and information security;

- Ensure that the research community and transportation agency has broad access to the data in a useful, convenient, timely and affordable manner, while providing data and system security that meets all relevant standards;
- Provide technical assistance to users of secure data in the form of training, analysis support, and development of analytical tools;
- Promote the use of the data to study the inter-relationship between the driver, vehicle, roadway, and the environment to further develop safety improvements; and
- Continue to work with stakeholders and partners to identify high-priority research needs that can be addressed using the data.

#### STRATEGIES TO REDUCE FATALITIES AND INJURIES IN AVIATION

There were 465 aviation-related fatalities in 2011, which represents about 1.4 percent of all transportation-related fatalities, as shown in Table A. Most of these fatalities were in general aviation. NTSB fatal accident reports indicate that aviation fatal accidents are largely related directly to some form or combination of human factors.

FAA has an imperative to be smarter about how it ensures aviation safety because the aviation industry is growing more complex. We have more safety data than we have ever had before. This provides us with the opportunity to be more proactive about safety and use Safety Management System (SMS) principles to make smarter, risk-based decisions. We constantly need to raise the bar on safety, and this approach will help do that.

Several government and industry initiatives are underway to shift from forensic, accident-based safety analysis with targeted mitigations to a more robust, integrated safety data and information driven environment with systemic safety solutions... We are working with domestic and international stakeholders to stimulate cooperation for, and protection of, a culture of safety reporting.

In our safety oversight capacity, FAA staff work with stakeholders to incorporate SMS principles throughout their operations.

We will continue to develop and deploy technologies to use U.S. airspace in safer, more efficient, and more environmentally sound ways. The Next Generation Air Transportation System (NextGen) is a transformation of the National Airspace System, including our national system of airports, using 21st Century technologies to ensure future safety, capacity, and environmental needs are met.<sup>21</sup> NextGen will provide airspace users, controllers, and traffic managers with new tools to identify and mitigate flight hazards such as adverse weather and aircraft-to-aircraft conflicts. It will enable us to ensure that travelers benefit from the highest levels of safety better meet our national security needs.

To meet this challenge, we will:

- Leverage aircraft communication, navigation, and surveillance capabilities to improve air traffic operational efficiencies while sustaining the highest levels of safety;
- Revise and update the criteria related to pilot qualification, training, testing, and hiring; and
- Work to increase level of international civil aviation safety in conjunction with international organizations, civil aviation authorities, industry and other international partners.
- Improve safety data quality and analytics internally, with industry; and internationally
- Support the implementation of risk-based decision making internally and externally by designing and implementing targeted changes to FAA's SMS governance model to accommodate the changing roles and responsibilities of decision makers.
- Continue vital partnership initiatives with key aviation stakeholders to encourage the implementation of voluntary safety reporting programs in a protected environment;<sup>22</sup> and

<sup>21</sup> NextGen Implementation Plan at [http://www.faa.gov/nextgen/implementation/media/NextGen\\_Implementation\\_Plan\\_2013.pdf](http://www.faa.gov/nextgen/implementation/media/NextGen_Implementation_Plan_2013.pdf)

<sup>22</sup> These programs include the Air Safety Action Program, the Flight Operations Quality Assurance, and Line Operation Safety Audit.



- Continue general aviation partnership efforts, such as the Industry/FAA team - General Aviation Joint Steering Committee, to develop safety strategies that will mitigate the root causes of accidents.

### STRATEGIES TO REDUCE RAILROAD FATALITIES AND INJURIES

During FY 2012, rail-related accidents and incidents resulted in 684 fatalities and 7,481 injuries. The total rail-related accident and incident rate, which includes train accidents, highway rail grade crossing incidents, and other accidents and incidents, fell from 19.0 in FY 2004 accidents and incidents per million train-miles to 14.9 in FY 2012, which is the lowest since data collection began in the 1970s. The past 10 years were the safest ever for the railroad industry. From FY 2003 through FY 2012, the number of reportable rail-related events declined 23 percent to 11,068. Train accidents fell 39 percent to 1,815, highway rail grade crossing incidents decreased 31 percent to 2,037, and other accidents and injuries decreased 14 percent to 7,216.

To ensure the safety of the Nation's rail operations and infrastructure, we enforce safety regulations, administer financial assistance programs, and conduct rail safety research and development. Field inspectors and specialists use data-driven, risk-based targeting

to focus their activities, with particular attention on human error and track flaws, which are the two leading causes of train accidents. Moreover, we are committed to helping resolve technical and spectrum availability issues that could hinder implementation of positive train control systems.<sup>23</sup> To achieve higher levels of safety performance, railroads must adopt system safety and risk reduction programs, as well as new technologies such as positive train control systems.

To promote further increases in rail safety, we will:

- Continue working with the freight and passenger railroads to overcome technical and programmatic obstacles to implementation of positive train control systems;
- Oversee initiatives to discourage employee distraction while performing safety critical duties; and work with the Railroad Safety Advisory Committee to develop recommendations in conjunction with the Department's effort to combat distracted driving across all modes; and
- Work with railroad management, labor and other stakeholders to implement the Risk Reduction Program, including the Confidential Close Call reporting system, an FRA-led, industry wide initiative to build strong safety cultures by using predictive data to identify individual and systemic safety risks and developing innovative methods, processes, and technologies to correct problems and mitigate risks.

There are about 250 fatalities each year at approximately 216,000 public and private at-grade railroad-highway crossings in the U.S. About 94 percent of collisions and 87 percent of grade crossing fatalities are the result of risky motor vehicle driver behavior or poor judgment. To improve safety at these crossings, we will:

<sup>23</sup> Positive train control is a communication-based or processor-based technology that reliably and functionally prevents train-to-train collisions and over speed derailments. Technical obstacles to implementation include availability of communications spectrum, radios, design specifications, back office server and dispatch systems, track database verification, installation engineering, and reliability and availability. Programmatic obstacles include budgeting, contracting, and stakeholder availability.

- Ensure that corridor plans for high-speed and intercity passenger rail operations address grade crossing safety;
- Use public awareness programs to help motor vehicle drivers learn to navigate grade crossings safely;
- Promote consistent enforcement of State and local traffic safety laws and sustained use of penalties on violators to deter motorists from making poor decisions at grade crossings; and
- Encourage installation of flashing lights and gates and traffic lane dividers that deter motorists from violating grade crossings and driving around lowered gates.

#### STRATEGIES TO REDUCE TRANSIT FATALITIES AND INJURIES

Transit, which provides more than 10 billion passenger trips each year, is one of the safest modes of travel. In 2011, 228 fatalities, of which only 36 were transit patrons, were associated with transit systems not regulated by the FRA. Despite this safe record, several significant transit accidents in recent years have raised important concerns about the safety practices at some of our Nation's largest transit agencies. The challenge confronting the transit sector is how to improve on the current transit safety record, even as the number of people using transit increases and as infrastructure and equipment age.

MAP-21 authorizes FTA to establish and enforce a new comprehensive safety oversight framework for all modes of public transportation, including heavy rail, light rail, buses, ferries, and streetcars. Among other activities, we will work with the DOT Transit Rail Advisory Committee to update and enhance the State safety oversight program for rail transit systems to ensure that these systems are meeting basic, common-sense safety requirements. The law also includes important new safety provisions for transit bus operators. To improve public transportation safety, we will:

- Establish requirements to approve and certify each State safety oversight agency to ensure that it assumes responsibility for safety oversight of rail

transit systems and enforces federal law for rail transit safety;

- Develop safety performance criteria for all modes of public transportation;
- Develop minimum safety performance standards for transit vehicles not regulated by the FRA, FMCSA, or the U.S. Coast Guard;
- Establish requirements for these safety performance criteria to be integrated into the metropolitan planning process and the statewide (i.e., non-metropolitan) planning process; and
- Develop a public transportation safety certification program that applies to all modes of public transportation.

#### STRATEGIES TO REDUCE FATALITIES AND INJURIES IN HAZARDOUS MATERIALS TRANSPORTATION

We must also address the safety and economic impacts that hazardous materials transportation-related disruptions, such as the release of hazardous materials or pipeline spills, have on communities. Hazmat transportation fatalities across all modes of transportation occur at the rate of one for every 21 billion ton-miles moved, which represents an average of 13 fatalities per year between 2001 and 2010. Some of the most serious risks from hazardous materials are due to infrequent accidents that have significant consequences, such as a freight car derailment that releases chemicals listed as hazardous materials into the surrounding environment.

During the past decade, there were 94 hazmat incidents in the U.S. involving one or more fatalities. At least three-fourths of these involved a truck rollover or crash. Key targeted areas of risk include fire aboard aircraft, release of bulk quantities of materials that are toxic-by-inhalation, and tank truck rollovers. To increase hazmat safety, we will:

- Enhance and streamline special permit and approval applicant reviews to ensure that they are fit to perform the required functions and adhere to the provisions of their permit or approval and to integrate more special permits into the hazardous materials regulations;

- Develop and publish uniform standards for training hazmat inspectors and investigators;
- Develop a risk management framework and improve hazmat data collection (e.g., incident, inspection, and investigation) to identify risk concentrations and target use of resources to manage the most serious risks;
- Advance research to develop technologies and procedures to more safely and securely transport hazardous materials shipments and assess the risks of future hazmat events; and
- Evaluate and respond to emerging risks associated with bulk transportation of energy products by highway and rail to keep pace with the changing energy environment in the U.S.<sup>24</sup>

### STRATEGIES TO REDUCE PIPELINE FATALITIES AND INJURIES

Pipelines carry two-thirds of the Nation's energy supplies. Over the past twenty years, pipeline incidents involving fatalities or major injuries have declined by 50 percent. Improvements in risk management, such as integrity management programs for each pipeline



system and damage prevention programs in the States, have markedly reduced accidents due to corrosion and excavation damage. Advances in pipeline materials and technology have reduced the risks from material failure, but the consequences of failure can be significant to people and the surrounding environment. In addition to safety impacts, communities can be economically impacted when people are evacuated from their homes, business activity is curtailed, and transportation services interrupted.

Any pipeline failure has the potential to harm people and the environment, so our focus is on preventing incidents and reducing the consequences of failures when they occur.

To address pipeline safety issues, we will:

- Encourage States to make provisions through their rate setting authority to address needs of high risk pipe (e.g. cast iron or bare steel) replacement programs;
- Investigate new technologies for improving the assessment, detection and control of pipeline risks;
- Enhance the *811-Call Before You Dig* program at the State and local levels to prevent pipeline damage from excavation;<sup>25</sup>
- Promote awareness and use of recommended practices for land use planning and development near transmission pipelines;<sup>26</sup>
- Integrate, target, and expand safety inspections based on the most serious risks;
- Increase our focus on safety beyond compliance with standards, with particular attention to developing a strong safety culture in the companies that we regulate; and

<sup>24</sup> The Bakken Region includes a 200,000 square mile formation covering parts of Montana, North Dakota, and Saskatchewan. According to the U.S. Energy Information Administration, Bakken shale crude oil production grew nearly five-fold to 820,000 barrels per day between 2008 and 2012. In 2012, 58 percent of the total production of Bakken shale oil, or 234,000 carloads, were transported by rail according to the Association of American Railroads.

<sup>25</sup> We want everyone to think automatically about calling 811 whenever they think about digging, and we want the process to be so quick and easy that it becomes second nature. Our efforts will focus on increased visibility and public awareness, supporting states and the Common Ground Alliance through state grants, targeted promotion, and participation in committees to broaden awareness of 811.

<sup>26</sup> Working with local governments, real estate and development interests, insurers, pipeline operators, other Federal and state agencies and others, the Pipeline and Informed Planning Alliance has developed standards and best practices. Our efforts over the next several years will focus on engaging others to help implement the recommended practices.

- Improve leak detection and the use of product control systems such as excess flow valves, remote control valves, and automatic shutoff valves on gas and liquid pipelines.

### STRATEGIES TO REDUCE FATALITIES AND INJURIES FROM ILLEGAL DRUG USE AND ALCOHOL MISUSE

For more than two decades, DOT has been the world leader in regulated drug and alcohol testing and our program is the largest of its kind worldwide. Our mission is to ensure the safety and security of the traveling public by requiring drug and alcohol testing of transportation industry employees. Employees who violate drug and alcohol testing rules are removed from performing safety-sensitive duties immediately. They must submit to an evaluation and successfully comply with treatment recommendations before returning to duty. We require employers subject to these regulations to report drug and alcohol data annually and laboratories to report drug positive test results on a semi-annual basis. DOT operating administrations - FAA, FMCSA, FRA, FTA, and PHMSA - as well as the U.S. Coast Guard collaborate with the DOT Office of Drug and Alcohol Policy and Compliance to ensure that regulations and enforcement efforts are carried out consistently and effectively. Additionally, they work together to educate and inform employers, service agents, and employees in the transportation industry of the regulations that cover more than 8 million safety-sensitive employees in the U.S. To continue this work, we will:

- Collaborate internally and with the U.S. Coast Guard to detect and deter illicit drug use and alcohol misuse with respect to safety-sensitive transportation industry employees;<sup>27</sup>

<sup>27</sup> This group of employees includes pilots, truck drivers, school bus drivers, subway operators, ship captains, pipeline controllers, airline mechanics, flight attendants, locomotive engineers, public bus drivers, and armed security personnel.

- Ensure that DOT regulations are applied uniformly across the transportation modes to reduce the risks of fatalities and injuries;
- Work through high-level meetings and close coordination with the Office of National Drug Control Policy, the U.S. Department of Justice, and other Federal partners to ensure that our regulations and policies are efficient and effective in both drug interdiction work and reducing the demand for illegal drugs through prevention, education, and rehabilitation; and
- Work with NHTSA on issues related to drunk and drugged driving.
- Work with FMCSA to establish the National Clearinghouse for Controlled Substances and Alcohol Test Results to improve compliance with DOT's alcohol and controlled substances testing program and to reduce accidents and injuries from misuse of alcohol or use of controlled substances.

### STRATEGIC OBJECTIVES, PERFORMANCE GOALS, AND INDICATORS

We will monitor our progress in achieving the Strategic Objectives for the Safety goal using the Performance Goals and Indicators in Table C.

TABLE C. PERFORMANCE GOALS, INDICATORS, AND LEAD BY SAFETY STRATEGIC OBJECTIVE.

PERFORMANCE GOAL	PERFORMANCE INDICATORS	LEAD OFFICE(S)
Strategic Objective: Improve the safety of the transportation system by addressing behavioral, vehicular, and infrastructure safety issues through the innovative and effective use of partnerships, programs, and resources (SA1).		
Reduce the rate of roadway fatalities to 1.02 per hundred million VMT by FY 2016 (APG)	Indicator: Roadway fatalities per 100 million VMT Sub-Indicators: <ul style="list-style-type: none"> <li>• Passenger vehicle occupant fatalities per 100 million passenger vehicle VMT.</li> <li>• Motorcycle rider fatalities per 100,000 motorcycle registrations.</li> <li>• Non-occupant (pedestrian and bicycle) fatalities per 100,000 population.</li> <li>• Roadway fatalities involving large trucks and buses per 100 million VMT.</li> </ul>	NHTSA FMCSA FHWA
Reduce the commercial air carrier fatalities per 100 million persons on board to no more than 6.2 in 2018 (APG).	Commercial air carrier fatality rate.	FAA
Reduce the general aviation fatal accident rate to no more than 1.0 fatal accident per 100,000 flight hours by 2018 (APG).	General aviation fatal accident rate.	FAA
Reduce Category A & B (i.e., most serious) runway incursions to a rate of no more than 0.395 per million operations and maintain or improve the rate through FY 2018 (APG).	Rate of runway incursions (category A&B).	FAA
Implement 80 percent of approved interventions to mitigate the top 5 hazards associated with airborne losses of separation (APG).	Percentage of risk interventions implemented.	FAA
Reduce total transit fatalities to 0.491 per 100 million passenger miles traveled by 2018.	Total transit fatalities per 100 million passenger miles traveled.	FTA
Reduce total rail-related accidents and incidents to no more than 15.3 per million train miles in FY 2018.	Total rail-related accident and incident rate. <sup>28</sup>	FRA
Reduce natural gas and hazardous liquid pipeline incidents involving death or major injury to no more than 33 by FY 2018.	Number of natural gas and hazardous liquid pipeline incidents involving death or major injury.	PHMSA
Reduce hazmat transportation incidents involving death or major injury to no more than 32 by FY 2018.	Number of hazmat transportation incidents involving death or major injury.	PHMSA

<sup>28</sup> Total rail-related accidents and incidents include train accidents, highway rail grade crossing incidents, and other rail-related events that cause physical harm to persons.



## EXTERNAL RISK FACTORS

Traffic fatalities on the Nation's roadways declined 25 percent between 2006 and 2011 to a historically low record. During this same period, vehicle miles of travel also declined by 2 percent after peaking in 2007. The decline in travel is likely associated with the downturn in economic activity following the 2008 recession. Since the U.S. economy has entered a period of stable growth that is forecast to continue for the next few years, there could also be an uptick in fatalities, based on the patterns of previous economic cycles. Discretionary and recreational travel, which tends to increase in an economic rebound, can be riskier than other types of travel. In fact, fatalities in 2012 increased by 3.3 percent to 33,561.<sup>29</sup>

Changes in the patterns of energy production and transport can have substantial impacts on safety, as we have seen in the rapid growth of bulk transportation of crude oil by rail over the past few years. Changes in energy storage technology—such as lithium batteries and fuel cells—that drive the use of electronics and even vehicle propulsion might also create new risks.

The troubling increase in fatalities among motorcyclists during the past few years may be due in part to increased exposure, but the risks are increased by the lack of universal helmet laws in a number of states. If all motorcyclists involved in crashes were to wear helmets, an estimated additional 700 lives could be saved each year.<sup>30</sup>

Prescription and over-the-counter drug use is on the rise. From 2005 to 2009, the proportion of fatally injured drivers who tested positive for drugs (i.e., illicit, prescription, and over-the-counter) rose from 13 to 18 percent.<sup>31</sup> There is significant evidence that illegal drugs, over-the-counter and prescription medications are playing a greater role in crashes. But the effects of drug use on driving are not as well understood as

alcohol, particularly when drugs may interact with each other.

While we do not yet have long term trend safety data, there were 3,331 fatalities in 2011 in which driver distraction was a contributing factor. This figure represents 10 percent of all fatalities during that year and indicates a growing traffic safety problem. More widespread adoption and use of mobile devices while driving by Americans is a likely cause. By 2011, 87 percent of the U.S. population subscribed to mobile phone service and 23 percent had used a mobile device to obtain traffic directions.<sup>32</sup> In a recent survey of drivers, 35 percent reported reading a text message or e-mail while driving, and 26 percent stated that they sent a text message.<sup>33</sup>

But there are other forms of new advanced technology that could have a positive impact. More widespread commercial deployment of driver assistance technologies, such as adaptive cruise control and lane departure warning systems, as well as crash avoidance and crash notification systems, could help reduce human error as a cause of crashes. Future growth in vehicle-to-vehicle communications could yield safety benefits if, for example, drivers receive timely warnings about other vehicles stopped in or crossing their path. Likewise, vehicle-to-infrastructure communications may enable drivers to get warnings of road conditions or speed restrictions. All of these trends are likely to reduce the probability of a crash occurring and spare more lives in the event of a crash. Continuing automated vehicle research addresses issues such as how to ensure an effective driver-vehicle interface to enhance the likelihood that warnings are heeded, how to develop useful performance standards for highly automated systems, and how to ensure that automated control systems are fail safe. Active research is underway now to determine effective security and credential management systems that support the trust of all the vehicles, people, and

<sup>29</sup> U.S. DOT, NHTSA. (2013). *2012 Motor Vehicle Crashes: Overview*. DOT HS 811 856. Available at <http://www-nrd.nhtsa.dot.gov/Pubs/811856.pdf>, accessed December 16, 2013.

<sup>30</sup> U.S. DOT, NHTSA. *2010 Traffic Safety Facts: Motorcycles*. DOT HS 811 639. Available at <http://www-nrd.nhtsa.dot.gov/Pubs/811639.pdf> accessed April 26, 2013.

<sup>31</sup> U.S. DOT, NHTSA (2010). *Drug Involvement of Fatally Injured Drivers*, Report No. DOT HS 811 415. Washington, DC. Available at <http://www-nrd.nhtsa.dot.gov/Pubs/811415.pdf> Accessed July 29, 2013.

<sup>32</sup> Rainie, L. *Privacy in the Digital Age*. Pew Internet Project. Presentation at the 2012 Transportation Research Board annual meeting, Washington, D.C. Available at <http://www.pewinternet.org/Presentations/2012/Jan/Transportation-Research-Board.aspx> accessed April 30, 2013.

<sup>33</sup> AAA Foundation for Traffic Safety (January 2013). *Distracted and Risk-Prone Drivers: Selected Findings from the 2012 Traffic Safety Culture Index*. Available at: <https://www.aaafoundation.org/distracted-and-risk-prone-drivers> accessed April 30, 2013.

systems in a connected vehicle environment. The successful adoption of connected vehicles will also depend on a number of factors including availability of wireless broadband services, costs associated with those services, and new rules and regulations adopted by the Federal Communications Commission that impact those services. The Department is actively involved in much of this work, providing information and perspective on safety, mobility, and environmental aspects so that informed decisions can be made.

Demographic trends will also affect roadway safety over the coming decade including the increasing age of the general population and greater prevalence of older drivers with age-related medical conditions that affect safe driving. Although older drivers are generally involved in fewer crashes per mile traveled, those crashes are more likely to be fatal. In addition, older Americans seeking alternatives to driving are at greater risk if they cannot walk to crosswalks, are unable to cross broad street intersections in short periods of time, or cannot easily board public transit buses.

According to the 2009 National Household Travel Survey, about 11.9 percent of all reported trips were made by walking or bicycling, which is an increase in reported trips by about 25 percent since 2001.<sup>34</sup> But approximately one-third of Americans live in communities without sidewalks or bike lanes.<sup>35</sup> <sup>36</sup> About one-third of Americans do not drive - including young people, elderly people, people with mobility disabilities, people who cannot afford to drive and people who choose not to drive. Poor provision for pedestrian and bicycle traffic will continue to impact their safety.

Air travel is also expected to increase as the economy rebounds. The implementation of NextGen will provide airspace users, controllers, and traffic managers with new tools to increase situational awareness

and proactively identify and mitigate hazards. Risks of runway incursions can be offset if the aviation industry continues to endorse training and outreach. A risk-based prevention approach that comes with more widespread adoption of SMS should also yield benefits, particularly for the General Aviation sector. Approximately 80 percent of fatal General Aviation accidents are related to one or more human factors, including skill-based errors, judgment errors, and personnel factors such as self-imposed stress. Widespread adoption by aircraft owners and operators of an open reporting culture and voluntary safety reporting processes will help reduce aviation-related risks.

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<sup>34</sup> U.S.DOT, FHWA (2010). *The National Bicycling and Walking Study: 15-Year Status Report*. Pedestrian and Bicycle Information Center. Available at [http://www.walkinginfo.org/15\\_year\\_report/](http://www.walkinginfo.org/15_year_report/) accessed May 8, 2013.

<sup>35</sup> U.S. DOT, Bureau of Transportation Statistics (2004). *Sidewalks Promote Walking*. Issue Brief 12. Available at [http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/special\\_reports\\_and\\_issue\\_briefs/issue\\_briefs/number\\_12/html/entire.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/special_reports_and_issue_briefs/issue_briefs/number_12/html/entire.html) accessed April 30, 2013.

<sup>36</sup> National Complete Streets Coalition (2009). *Fact Sheets: Complete Streets Change Travel Patterns*. Available at: <http://www.completestreets.org/complete-streets-fundamentals/factsheets/change-travel-patterns/> accessed April 30, 2013.

# STATE OF GOOD REPAIR





## STRATEGIC GOAL

**ENSURE THE U.S. PROACTIVELY MAINTAINS CRITICAL TRANSPORTATION INFRASTRUCTURE IN A STATE OF GOOD REPAIR.**

### CHALLENGES AND STRATEGIES

Recent reports on the condition of our highways, bridges, transit assets, ports and waterways, and passenger rail facilities reveal that many fall short of state of good repair, and as a result, they compromise the safety, capacity, and efficiency of the U.S. transportation network. As a Nation, we have not adequately maintained our major highway, transit, marine, and rail systems. At a time when transportation programs face unprecedented fiscal challenges, we believe that stewardship of transportation infrastructure rises to the level of a strategic goal. We are committed to making state of good repair a top priority in the Department's ongoing programmatic and legislative proposals.

However, our role in achieving state of good repair varies by transportation mode. We can influence the condition of Federally-funded highway, transit and airport infrastructure through program guidance and technical assistance provided to State and local departments of transportation, transit agencies, and airport authorities, and through research and development to produce the knowledge, guidance and innovations needed to more effectively address the Nation's infrastructure challenges. We also help protect and preserve commercial service airports through safety regulations for airport safety certification, oversight and safety data programs, and supporting financial assistance pro-

grams. While we have some influence on state of good repair through our safety regulations, in other modes like railroads and ports, we have fewer levers to affect the level of investment in state of good repair because much of the infrastructure is funded and maintained by the private sector.

The Nation's road network includes more than 4 million miles of public roadways and approximately 605,000 bridges. In 2010, this network carried nearly 3 trillion vehicle miles of travel. All levels of government spent a combined \$205.3 billion for highway-related purposes including maintenance, highway police patrols, and other non-capital expenditures. Of this expenditure, the federal government contributed \$47.1 billion, or approximately 23 percent of the total. Of the total spending, \$100.2 billion was for capital outlays. The federally-funded portion of capital outlays was \$44.3 billion, or approximately 44 percent of the total. All government spending on system rehabilitation amounted to \$60.0 billion, or approximately 60 percent of capital outlays. This figure represents a sharp increase from 2008, when spending on system rehabilitation totaled \$46.2 billion, or approximately 51 percent of capital outlays in that year. This shift is primarily due to federal investment related to the implementation of the *American Recovery and Reinvestment Act (Recovery Act)*. Estimates of the total invest-

ment needed to address the remaining deficiencies in all existing highway and bridge assets ranges from \$72.9 billion to \$78.3 billion annually through 2030.<sup>37</sup>

Public transportation systems provide service to tens of millions of Americans daily, especially in our Nation's largest metropolitan areas. These major transit systems, some of which are over one hundred years old, suffer from chronic under-investment and less than optimal application of asset management practices. As a Nation, we need to meet an increasing demand for public transportation and bring transit infrastructure into a state of good repair. More than one-quarter of the Nation's bus and rail assets are in marginal or poor condition. The proportion of assets in marginal or poor condition jumps to one-third in the largest and oldest rail transit agencies.<sup>38</sup> We estimate that the current backlog in rail and bus facilities and rolling stock is \$86 billion, and that an annual expenditure of \$14.4 billion from all Federal and non-federal sources is needed to replace aging assets in poor condition. An additional \$3.9 billion per year from all sources, Federal and non-Federal, would be needed to eliminate this backlog over 20 years.<sup>39</sup>

FAA funds infrastructure development at eligible public-use airports. Funding for routine maintenance is limited to those airports that generally do not have sufficient revenue sources for periodic repairs, which usually means smaller non-hub primary and non-primary airports. In addition, airports can use non-federal passenger facility charges, landing fees, and other sources of revenue to fund maintenance. Proper maintenance of runways can delay the need for major runway rehabilitation. FAA's goal is to maintain at least 93 percent of the Nation's runways in excellent, good, or fair condition.

We can influence the condition of rail infrastructure through safety regulations for railroads that are owned

by private railroads, Amtrak, and certain transit agencies. The DOT *2008 National Rail Safety Action Plan* focused on reducing the two leading causes of train accidents—human and track flaws—and the latter is clearly related to a state of good repair. Additionally, significant new Federal investments in high-speed and intercity passenger rail programs will require coordinated effort with the private sector to maintain nationally significant rail assets to ensure that they will provide safe and reliable service for future generations of rail travelers.

We can influence the condition of marine infrastructure by awards to ports of Transportation Investment Generating Economic Recovery (TIGER) grants, as well as grants and loans to improve highway and rail connections to ports. Ports and their clients are generally responsible for maintenance of their facilities. Waterway maintenance is handled by the U.S. Army Corps of Engineers and port partners.

We can also influence the condition of pipeline infrastructure, which is owned and operated by private entities, through safety and environmental regulations. We set and enforce standards for the design, construction, operations and maintenance of pipelines carrying natural gas or hazardous liquids. We have also engaged the pipeline industry to accelerate the repair, replacement, or rehabilitation of aging and obsolete infrastructure.

Our strategic objectives are presented below.

#### FY 2014-2018 STRATEGIC OBJECTIVES

- Maintain or improve the availability, reliability, and performance of the Nation's transportation infrastructure, equipment, and facilities by ensuring that they are functioning as designed within their useful lives (GR1).
- Reduce the costs of sustaining the Nation's transportation infrastructure, equipment, facilities, and technology by instilling proven asset management practices through partnerships with other governmental agencies and infrastructure owners (GR2).

<sup>37</sup> These estimates are for the State of Good Repair Benchmark, the subset of the Improve Conditions and Performance scenario that deals solely with the physical conditions of existing assets. See the U.S. DOT, FHWA, *2013 Conditions and Performance Report*. (Unpublished).

<sup>38</sup> U.S. DOT, FTA (2009). *Rail Modernization Study*. Available at [http://www.fta.dot.gov/documents/Rail\\_Mod\\_Final\\_Report\\_4-27-09.pdf](http://www.fta.dot.gov/documents/Rail_Mod_Final_Report_4-27-09.pdf) accessed May 2, 2013.

<sup>39</sup> U.S. DOT, FTA (2010). *National State of Good Repair Assessment*. Available at [http://www.fta.dot.gov/documents/National\\_SGR\\_Study\\_072010%282%29.pdf](http://www.fta.dot.gov/documents/National_SGR_Study_072010%282%29.pdf) accessed May 2, 2013.

In the following paragraphs, we describe the condition of our highways, bridges, transit assets, and airport runways in more detail. We recognize the important role our partners will play in meeting these challenges, particularly as we attempt to more widely deploy an asset management approach as best practice.

### STRATEGIES TO IMPROVE THE CONDITION OF HIGHWAY INFRASTRUCTURE THROUGH STRATEGIC INVESTMENTS

Improving the safety and operating condition of our Nation's highways, which include many bridges and other structures particularly on the National Highway System (NHS), is critical to the structural integrity, functionality, and cost-effectiveness of the Nation's transportation network.<sup>40</sup> Working with the States, we monitor and report the condition of pavement on the NHS through measures of ride quality; and the condition of bridges across the Nation by tracking the percentage of deck area on deficient bridges. Ride quality condition affects the wear-and-tear on vehicles, the comfort of travelers, fuel consumption, and traffic congestion. In the last decade, the percentage of VMT on NHS roads classified as having good ride quality increased from 46 percent in 2000 to 58 percent in 2012.<sup>41</sup> Deficient bridge conditions can impact the movement of people and goods through reduced load carrying capacity and geometric constraints. During the past decade, the percentage of deck area on all publicly-owned deficient bridges was reduced from 30.9 percent in 2002 to 28.3 percent in 2012.<sup>42</sup> As noted earlier, these

improvements are likely due, in part, to an increase in Federal spending for rehabilitation due to the Recovery Act.

Bridges located on the more heavily-traveled NHS are generally in better condition. In MAP-21, a specific standard was established for bridges on the NHS.

### EVERY DAY COUNTS

Led by FHWA in partnership with State transportation agencies and other stakeholders, Every Day Counts (EDC) initiatives are designed to shorten project delivery time, enhance the safety and effectiveness of our roadways, and improve environmental sustainability. EDC provides States and local transportation agencies with the information they need about the effectiveness of demonstrated strategies and technologies, so that they can decide which works best for them. Twenty eight separate initiatives have been deployed since October 2010. For example, Accelerated Bridge Construction promotes a number of technologies and practices that can significantly reduce bridge construction time, in some cases from months to days. More than 2,000 bridges were built in the past two years using these methods, and the EDC initiative will expand these bridge construction strategies significantly to states and municipalities across the country.

<sup>40</sup> The National Highway System Designation Act of 1995 (P.L. 104-59) designated the NHS, which includes the Interstate system, other principal arterials, the STRAHNET, and major intermodal connectors. See <http://www.fhwa.dot.gov/planning/nhs/index.html>.

<sup>41</sup> The results reported herein are for the NHS as defined prior to the passage of MAP-21, which established an enhanced NHS composed of the Interstate Highway System, all principal arterial routes, intermodal connectors, and the STRAHNET. Based on the redefined NHS, the percent of VMT having good ride quality increased from 55 percent in 2010 to 56.2 percent in 2012. MAP-21 requires the U.S. DOT to develop performance measures before May 2014 for Interstate and NHS pavement condition, NHS bridge condition, and Interstate and NHS performance, in consultation with States, MPOs, and other partner agencies.

<sup>42</sup> A deficient bridge is classified as either structurally deficient or functionally obsolete. Bridges are considered structurally deficient if significant load carrying elements are in poor condition or worse due to deterioration and/or damage, or if the adequacy of the waterway opening provided by the bridge is insufficient to the point of causing intolerable traffic interruptions. Functional obsolescence is a function of the geometrics, waterway adequacy, and load-carrying capacity of the bridge in relation to the requirements of current design standards. While structural deficiencies are generally the result of deterioration of the conditions of the bridge components, functional obsolescence results from changing traffic and waterway demands on the structure. If a bridge is classified as deficient, it does not imply that it is likely to collapse or that it is unsafe.



Going forward, the percentage of deck area on structurally deficient bridges on the NHS in each State must be at or below 10 percent.<sup>43</sup> Nationally, the percentage of deck area on structurally deficient bridges on the NHS prior to MAP-21 decreased from 8.3 percent in 2010 to 7.1 percent in 2012.

To build on these accomplishments and bring our highways and bridges into a state of good repair, we will:

- Develop and use a nationally recognized, credible, and balanced set of system performance indicators that focus on the NHS, the Strategic Highway Network (STRAHNET), and other major arterials and intermodal connectors;
- Advance a performance-based federal-aid program to increase transparency and improve decision-making;
- Develop and implement a national research agenda to identify opportunities to manage and preserve surface transportation infrastructure through the use of improved and longer-lasting materials, construction techniques, preservation and management practices, and other methods;

<sup>43</sup> If this percentage exceeds 10 percent for three consecutive years, States are penalized through directed use of funds under the National Highway Performance Program. In 2014, FHWA will determine the first data point to be used in assessing the three year penalty.

- Make improvements to critical aspects of the highway system by developing a comprehensive process to regularly document infrastructure condition on the NHS, identify critical gaps that are jeopardizing the system, and direct resources to ensure safety and extending infrastructure useful life;
- Establish and maintain robust inspection standards for bridges and tunnels to ensure that structural deficiencies are identified and acted upon to preserve safe operating conditions;
- Gather data during regular inspections that support performance based decision-making and strategic investment of resources;
- Implement the Long Term Bridge Performance Program to ensure a comprehensive examination of the Nation's highway bridges.<sup>44</sup>

#### STRATEGIES TO IMPROVE THE CONDITION OF AIRPORT RUNWAYS

We face a number of challenges as FAA takes steps to ensure that runway conditions at our airports are maintained in a state of good repair. We fund infrastructure development at eligible public-use airports. Funding for routine maintenance is limited to those airports that do not have sufficient revenue sources for periodic repairs, usually the smaller non-hub primary and non-primary airports. Eligible airports of all sizes rely on our financial assistance for significant rehabilitation, resurfacing, and reconstruction of runways and major taxiways.

Periodic maintenance of runways, particularly resurfacing, is a cost effective way to delay the need for major runway rehabilitation. We fund a broad range of capital infrastructure development at most airports in the National Plan of Integrated Airports System (NPIAS). However, airports are generally responsible for funding periodic and ongoing maintenance. More significant

<sup>44</sup> The Long Term Bridge Performance program, initiated in 2008, is a research program that aims at collecting scientific quality data from a large number of our Nation's highway bridges, representing the most common bridges in the National Bridge Inventory, to help bridge owners make the best decisions possible in managing and maintaining their bridge inventory. This is the first time that quantitative bridge-performance data is collected uniformly across the United States.

rehabilitation, resurfacing or reconstruction projects may be funded through a variety of funding sources, including Airport Improvement Program (AIP) grants, passenger facility charge revenues, airport revenues and other funding sources. Deferred or delayed maintenance creates an increased risk of damage to aircraft, is a safety concern for the travelling public, and increases both the scope and cost of eventual rehabilitation or reconstruction. Our goal is to maintain at least 93 percent of the Nation's runways in excellent, good, or fair condition. This level is important because it is intended to limit the number of runways undergoing significant reconstruction at the same time. To continue maintaining airport runways, we will:

- Update priorities for infrastructure investments including runway capabilities, in order to maintain and enhance existing airport capacity across all types of airports; and
- Update standards and action plans through the Airport Obstruction Standards Committee for runway infrastructure and procedures such as end-around taxiways.

### STRATEGIES TO IMPROVE THE CONDITION OF TRANSIT SYSTEMS

We propose a strong programmatic focus and significant new investments in improving the state of good repair of our Nation's transit systems. FTA will work in partnership with States, local transit agencies, and other grant recipients to administer Federal transit programs. We will provide financial assistance, policy direction, technical expertise, and grant compliance oversight aimed at improving transit assets. Disability-related transit elements that ensure accessibility, such as elevators, escalators, lifts, boarding, and communications technology, are integral to a well maintained system. To bring our transit systems into a state of good repair, we will:

- Establish a definition of state of good repair through rulemaking, including objective standards for measuring the condition of transit assets, and establish a framework for transit agencies to set individual targets for their systems;
- Require our grant recipients, especially the larg-



est systems, to develop transit asset management plans, including an asset inventory with condition assessments and investment prioritization;

- Conduct outreach to the transit industry through roundtable meetings and training sessions to encourage knowledge-sharing of best practices in transit asset management; and
- Administer the State of Good Repair Formula Grants program to fund capital projects to maintain transit systems, and to also support projects funded from our remaining grants programs.<sup>45</sup>

### STRATEGIES TO REDUCE AMTRAK STATE OF GOOD REPAIR BACKLOG ON THE NORTHEAST CORRIDOR

The Amtrak Northeast Corridor from Boston, Massachusetts to Washington, D.C., is the backbone of the rail transportation network in the Northeastern U.S. It provides high-speed passenger rail service that links four of the ten largest metropolitan areas in the country. When combined with connecting regional corridors and commuter services, the Northeast Corridor region serves nearly 50 million people. Amtrak is faced with an approximately \$5.8 billion backlog of state of good repair projects that must be addressed to

<sup>45</sup> These programs include Urbanized Area Formula Grants, Rural Area Formula Grants, Enhanced Mobility of Seniors and Person with Disabilities Formula Grants, and Bus and Bus Facilities Formula Grants.



ensure the safety and reliability of these services, as well as improve trip times and the overall passenger experience.<sup>46</sup> To bring the Northeast Corridor into a state of good repair, we will:

- Assist Amtrak in updating the *Northeast Corridor State of Good Repair Spend Plan* to reflect recent investments in the Corridor;
- Work with Congress to pass a long-term reauthorization bill that provides financial assistance to eliminate the backlog of state of good repair projects by FY 2022; and
- Oversee federally funded projects to ensure that they are delivered on time and within budget.

### STRATEGIES TO FOSTER AND MAINTAIN PARTNERSHIPS

MAP-21 requires States to develop and implement asset management plans and performance plans specifically for highways and bridge infrastructure. Because States have broad flexibility in deciding how to use their funds, which projects to select, and how to implement them, we must develop improved tools and techniques to help States allocate scarce resources more efficiently and to provide effective oversight of Federal investments through the use of data management systems and performance measures. In addition to States and local departments of transportation, the American Association of State Highway and Transportation Officials, the Transportation Research Board, and universities will be key partners in this effort.

MAP-21 also established a new National Transit Asset Management System, requiring a strategic approach to asset management by FTA grantees and prioritizing state of good repair in investment discussions. The legislation created the first stand-alone initiative that is dedicated to repairing and rebuilding the Nation's transit systems. These funds will help public transit operate safely, efficiently, reliably, and sustainably. In addition to transit agencies, other key partners include State and



local governments, transit industry associations, and metropolitan planning organizations (MPOs).

Maintaining runway pavement conditions requires careful coordination with individual airports, as projects must be timed carefully whether it is phased reconstruction of a single-runway airport or the sequential resurfacing of more than one runway over several years. Some of the nation's largest airports resurface their runways on an established revolving basis. In addition to individual airport owners, key partners include State aeronautical agencies, aviation industry associations, commercial airline carriers, and other user groups.

To encourage partner agencies to adopt and use asset management practices, we will

- Provide national leadership to encourage greater use of asset management practices in State departments of transportation through the delivery of training, workshops, peer exchanges, and technical assistance;<sup>47</sup>
- Work to convince State departments of transportation and other partners to adopt a common performance reporting system by raising awareness and understanding of the performance information available in the Highway Performance Monitoring System and National Bridge Inventory through a series of webinars, workshops and technical assistance;

<sup>46</sup> Amtrak (2012). *2011 Engineering State of Good Repair*, p. 10. Washington, D.C.; unpublished report.

<sup>47</sup> Topics to include improved highway design and construction procedures, innovative quality assurance practices, materials, tools and techniques that advance asset management principles.

- Deliver research and technical assistance on capital asset management, and develop methods, tools, and guidance to improve transit asset management systems;
- Carry out research and demonstration projects in infrastructure and equipment resiliency; and emergency response methods to ensure that transit capital investments have a longer useful life; and
- Carry out research and demonstration efforts to improve asset management data collection and decision-making.

## STRATEGIC OBJECTIVES, PERFORMANCE GOALS, AND INDICATORS

We will monitor our progress in achieving the Strategic Objectives for the State of Good Repair goal using the Performance Goals and Indicators in Table D.

TABLE D. PERFORMANCE GOALS, INDICATORS, AND LEAD BY STATE OF GOOD REPAIR STRATEGIC OBJECTIVE.

PERFORMANCE GOAL	PERFORMANCE INDICATOR(S)	LEAD OFFICE
Strategic Objective: Maintain or improve the availability, reliability, and performance of the Nation's transportation infrastructure, equipment, and facilities by ensuring that they are functioning as designed within their useful lives (GR1).		
Increase the percent of travel on the National Highway System (NHS) meeting pavement performance standards for good rated ride quality to 64.1 percent or higher by 2018.	Percent of travel on the National Highway System (NHS) meeting pavement performance standards for good rated ride quality.	FHWA
Decrease the percentage of deck area of structurally deficient bridges on the NHS to 6.0 percent or lower by 2018.	Percent of deck area of NHS structurally deficient bridges.	FHWA
Maintain runway pavement in excellent, good, or fair condition for at least 93 percent of the open, paved runways in the NPIAS.	Percentage of NPIAS airports with runway pavement in excellent, good, or fair condition.	FAA
Keep the nation's state of good repair transit system backlog to less than \$100 billion (current-year dollars) in 2018.	Current-year dollar amount of backlog.	FTA
Eliminate Amtrak state of good repair backlog by obligating at least 25 percent of funds needed for the Northeast Corridor State of Good Repair Plan by 2018.	Cumulative percentage of funds obligated to complete the Northeast Corridor State of Good Repair Plan.	FRA
Strategic Objective: Reduce the costs of sustaining the Nation's transportation infrastructure, equipment, facilities, and technology by instilling proven asset management practices through partnerships with other governmental agencies and infrastructure owners (GR2).		
Complete a Final Rule to establish a process for development of a Transportation Asset Management Plan by 2016; and all States in compliance by the end of FY 2018.	Publish Final Rule by December 31, 2015. Number of States in compliance with Final Rule.	FHWA
Complete a Final Rule establishing a National Transit Asset Management System by 2016.	Publish Final Rule by December 31, 2015.	FTA
Amtrak develops a comprehensive capital planning process that aligns planning and budgeting with implementation by 2018.	The Northeast Corridor Commission issues a consensus 5-year capital plan for 2015 to 2019.	FRA



## EXTERNAL RISK FACTORS

In general, under-investment in the Nation's infrastructure assets by Federal and State governments over the past decades has created a situation where many of our highway, transit, and other facilities are only in fair or poor condition. According to recent surveys, the public continues to be unwilling to pay for all of the needed improvements to surface transportation through an increase in taxes; and legislators in some states reflect these views by passing short-term measures to keep systems operating while avoiding needed capital investments. In general, State departments of transportation and other infrastructure owners must make trade-offs between spending on maintenance and investments that would alternatively expand capacity, increase the life of facilities, or reduce a system backlog. The effectiveness of their investments can also be undermined by decisions that must meet multiple interests and concerns and are not based solely on engineering judgments or economic analysis.

During the 2008 recession, States and local governments were also placed under tighter financial constraints that limited their funding options and held up planned projects. An offsetting trend is the increased authorities for innovative financing such as public-private partnerships

provided by legislatures in some States and increasing interest among Federal, State and local governments in using credit support mechanisms to attract more private funding for improvement projects.

Increasing construction materials costs, which peaked in the mid-2000s, can also hinder efforts to meet all of the needed improvements. Between 2011 and 2012, highway construction costs increased by 3 percent but were still below the peak that was observed during 2008. The trend in costs is largely driven by labor and asphalt binder prices, which have risen since 2009 and are driven by the price of crude oil and the costs for aggregates used in all types of construction. Between 2011 and 2012, rail transit construction costs increased by 1.6 percent excluding the costs for rolling stock. Prices for steel, which is the most volatile commodity, peaked in 2008, then subsequently declined, but prices are now increasing more modestly than before the 2008 recession. Concrete prices remain relatively flat after peaking in 2009.<sup>48</sup>

DOT has limited ability to systematically improve pavement quality and bridge condition, since State and local highway agencies and airport authorities prioritize investments in projects. The extent to which our partners and grantees can or will adopt asset management approaches to realize more optimal decisions will be an important determinant of conditions over the next few years. This situation should improve for highways and bridges as States recognize and meet the requirements associated with MAP-21, including the requirements for using National Highway Performance Program funds on projects. In addition, we are making greater efforts

<sup>48</sup> Parsons Brinckerhoff (December 2012). "Trends in Highway and Rail Transit Construction Costs," *EFR*, Vol. 6, Issue 2, pp. 35-39, Gunasekera, G. and B. Ship. Available at <http://www.pbworld.com/news/publications.aspx#efr> accessed April 30, 2013.

to apply a risk-based approach to oversight of roadway projects using Federal funds, as well as to improve compliance with National Bridge Inspection Standards, and assist our State partners in their asset management and decision-making processes. In the aviation sector, recent Congressional budget actions may defer maintenance for runways and undermine plans for future investments by diverting Federal funds towards other important uses such as operating expenses for air traffic operations.

Despite the establishment of a new State of Good Repair Formula Grants Program, the Nation's transit state of good repair backlog did not develop quickly, and no single funding initiative will be sufficient to tackle it. Implementing transit asset management systems nationwide will only succeed to extent that it causes individual transit systems to prioritize asset rehabilitation and replacement over other competing priorities in a fiscally-constrained environment. Ultimately, tackling that state of good repair backlog will require leveraging existing Federal, State, and local funding sources to support bringing the Nation's transit systems into a state of good repair.

# ECONOMIC COMPETITIVENESS



## STRATEGIC GOAL

PROMOTE TRANSPORTATION POLICIES AND INVESTMENTS THAT BRING LASTING AND EQUITABLE ECONOMIC BENEFITS TO THE NATION AND ITS CITIZENS.

### CHALLENGES AND STRATEGIES

By 2018, the U.S. population is expected to increase to 335 million from 310 million in 2010, and U.S. Gross Domestic Product (GDP) is forecast to increase to \$21.3 Trillion.<sup>49</sup> By 2050, the U.S. population is projected to increase to 439 million and GDP is expected to almost triple from \$14 trillion in 2010 to \$41 trillion.<sup>50</sup> Based on these forecasts, it is clear that the movement of people and goods both within the United States and to and from the United States will continue to increase. The transportation sector needs to continue to enable economic growth and job creation in the face of this growth. The transportation sector contributed approximately \$1.466 trillion, or 9.7 percent, to GDP in 2011.<sup>51</sup> To thrive, individual communities require reliable transportation to move their goods and people. Without it, communities cannot attract a strong workforce and provide economic

opportunity. Investing in multimodal transportation infrastructure benefits both urban employment centers and rural communities.

Travel, in passenger miles, by transport mode is illustrated in Table E. As noted earlier, highway travel by passenger vehicle and light truck is by far the dominant mode of travel in the United States, representing about 87 percent of all passenger miles.

TABLE E. TRAVEL IN PASSENGER MILES BY MODE, 2010.

(Source: National Transportation Statistics, Table 1-40, U.S. DOT)

TRAVEL MODE	PASSENGER MILES (MILLIONS)	PERCENT OF TOTAL
Highways (Passenger vehicle, light truck)	4,244,157	87.2
Air Carrier, Domestic All Services	564,790	11.6
Transit (Motor Bus, Light/Heavy Rail, Ferry)	52,627	1.1
Rail, Intercity	6,420	<0.2

<sup>49</sup> U.S. Office of Management and Budget (2013). *Analytical Perspectives, Budget of the U.S. Government, FY 2014*. Available at [http://www.whitehouse.gov/sites/default/files/omb/budget/fy2014/assets/econ\\_analyses.pdf](http://www.whitehouse.gov/sites/default/files/omb/budget/fy2014/assets/econ_analyses.pdf) accessed April 18, 2013.

<sup>50</sup> U.S. Commerce Department, Census Bureau (2012). *Statistical Abstract of the U.S., National Estimates and Projections, Table 3. Resident Population Projections, 2010 to 2030*. Available at <http://www.census.gov/compendia/statab/cats/population.html> accessed April 18, 2013.

<sup>51</sup> U.S. Department of Transportation (2013). *National Transportation Statistics, Gross Domestic Production by Major Function, Table 3-9*. Available at [http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_statistics/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_statistics/index.html) accessed April 18, 2013.



Highway travel peaked at approximately 3.05 trillion miles in 2007 and then declined for the first time during the 2008 recession. Approximately two-thirds of travel is in urban areas. However, the decline in travel in urban areas represents only 1.3 percent of the total decline in VMT of 4.2 percent between 2007 and 2011. The remaining 2.9 percent of the decline was in rural areas. A decline in heavy truck travel occurred in both cases; the decline represented 74 percent of the total in urban areas and 30 percent in rural areas.<sup>52</sup> As the economy continues to rebound, it is anticipated that heavy truck travel will increase even though extra truck capacity is limited. VMT was nearly 3 trillion miles in 2011 and is forecast to grow annually at an average of 1.5 percent between 2014 and 2018.<sup>53</sup>

The impact of commuting patterns between home and work are of particular interest because of the implications for employee productivity and economic growth, especially in larger metropolitan areas. Among drivers of personal vehicles, work trips account for 27 percent of VMT and 22 percent of all trips. For public transportation, which includes local transit bus, commuter

bus, commuter rail, subway/elevated rail, and streetcar/trolley, 35 percent of all trips and 49 percent of passenger miles of travel are for trips to and from work.<sup>54</sup> In 2011, 86 percent of workers used automobiles, of which approximately 10 percent were in carpools, to commute to work. About 5 percent of workers commuted principally by public transportation, including bus, streetcar, subway and rail; while 2.8 and 0.6 percent of workers commuted by walking and bicycling, respectively. Another 4.3 percent worked at home.<sup>55</sup> These statistics demonstrate the importance of transportation options for creating economically vibrant communities, especially in urban areas.

Transit ridership will reach 12.5 billion trips by 2020, if ridership continues to grow at the same rate of 2 percent annually as it did during the past decade.<sup>56</sup> According to one study of regional economic competitiveness of U.S. metropolitan areas, the availability of better transit service may lead to greater competitiveness.<sup>57</sup> Better transit can lead to lower costs of trips for users and contribute to economic growth by increasing the pool of workers and consumers available to businesses that choose to locate near transit stations. For example, in the Washington D.C. metropolitan area, 6.4 percent of new households and 13.8 percent of new jobs created between 2004 and 2010 were located within a quarter-mile of urban metro stations and a half-mile of suburban stations.<sup>58</sup>

Ferry operators across the Nation provided service on nearly 350 different route segments to an estimated 106 million passengers in 37 States and 3 U.S. Territories. The largest concentration of routes is in major metropolitan areas on both coasts where ferries provide

<sup>52</sup> Polson, Steve. "What We Do and Don't Know about VMT Travel Trends," September 19, 2013. <http://www.cutr.usf.edu/2013/09/vehicle-miles-of-travel-trends/>

<sup>53</sup> U.S. DOT, FHWA, Office of Highway Policy Information. Personal communication. May 1, 2013.

<sup>54</sup> Transportation Research Board (2013). *Commuting in America – The Third National Report on Commuting Patterns and Trends*, pp. 3-4. Washington, D.C., Alan E. Pisarski.

<sup>55</sup> U.S. DOT (2013). *National Transportation Statistics*, Principal Means of Transportation to Work, Table 1-41. Available at [http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_statistics/html/table\\_01\\_41.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_statistics/html/table_01_41.html) accessed September 19, 2013.

<sup>56</sup> U.S. DOT, Federal Transit Administration, Office of Policy. Personal Communication. May 2, 2013.

<sup>57</sup> Beacon Hill Institute (2007). *Metro Area Competitiveness Report*. <http://www.beaconhill.org/Compete07/Compete2007MetroBHI.pdf> accessed September 30, 2013.

<sup>58</sup> Washington Metropolitan Area Transit Authority (2013). *Momentum: Strategic Plan 2013-2025*, p. 17. Available at: <http://wmata.com/momentum/momentum-full.pdf> accessed September 30, 2013.

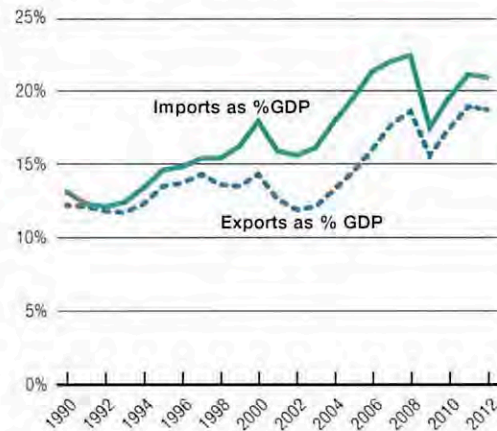
an alternative access mode to the central city from outlying areas. The New York, Boston/Southern New England, San Francisco, and Seattle areas all have a significant number of ferry routes as part of the local transit infrastructure.<sup>59</sup>

The number of U.S. commercial air and air taxi/com-muter flights, and passengers, also peaked in 2007; and the number of flights has fluctuated annually at just below the peak level since then. Though passenger levels fell 8 percent between the peak level and 2009, passenger levels have since been steadily increasing, as have load factors. The growth in the number of passengers on commercial air flights is projected to increase over the next twenty years at an annual average rate of 2.2 percent. The long-term outlook for business aviation also remains favorable.<sup>60</sup>

The economic vitality of a particular community, especially in rural states, is increasingly dependent on the ability of businesses to access markets throughout the U.S. and globally. Access to markets and customers is provided primarily by the National Highway System. In 2011, nearly 72 percent of all freight was shipped solely by truck over the Nation's highways. In some states, the percentage was even higher. Freight tonnage is forecast to increase by 1.7 percent annually to 28.25 billion tons by 2040, with the bulk of exports and imports moving through intermodal transport. The value of freight moved is expected to increase faster than the weight, or tonnage, increasing by 3 percent annually to \$39.3 trillion dollars in 2040. The majority of these goods, particularly high-value, small packages, will move by air and truck. Multi-modal shipments are projected to account for 36 percent of the total value of goods shipped, which represents a significant increase from 18 percent of the total in 2011.<sup>61</sup>

The impact of globalization on the U.S. economy is seen in Figure 3. Figure 3 shows that U.S. exports of goods and services increased from 12.2 percent of GDP in 1990 to approximately 19 percent of GDP in 2012.<sup>62</sup> During the same period, U.S. imports of goods and services increased from 13.1 percent to 21 percent of GDP.

FIGURE 3. EXPORTS AND IMPORTS OF GOODS AND SERVICES AS A PERCENT OF GDP, 1990 TO 2012.



Source: U.S. Commerce Department, Bureau of Economic Analysis, NIPA Table 1.1.5, April 2013

The recent trend towards more international movement of people and goods and globalization of markets is expected to continue. For example, total passenger air traffic between the U.S. and other countries, at 172 million passengers in 2012, is forecast to grow at an average rate of 4.1 percent annually to 402.9 million by 2033.<sup>63</sup> U.S. markets continue to shift from local or regional to national and international. The new drivers of economic growth are services, information, and innovation. Manufacturers in the U.S. are increasingly shifting their production to high-value, high-tech products whose manufacture integrates transportation into a just-in-time supply chain based on efficient performance and consistent reliability.<sup>64</sup> This means

<sup>59</sup> U.S. DOT, Bureau of Transportation Statistics (2010). *Highlights of the 2008 National Census of Ferry Operators*. Available at: [http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/special\\_reports\\_and\\_issue\\_briefs/special-report/2010\\_12\\_01/html/entire.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/special_reports_and_issue_briefs/special-report/2010_12_01/html/entire.html) accessed September 30, 2013.

<sup>60</sup> U.S. DOT, FAA (2013). *FAA Aerospace Forecast, 2013-2033*. Available at: [http://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/aviation\\_forecasts/aerospace\\_forecasts/2013-2033/media/2013\\_forecast.pdf](http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2013-2033/media/2013_forecast.pdf) accessed April 19, 2013.

<sup>61</sup> U.S. DOT, FHWA (2010). *Freight Facts and Figures – 2012*. Tables 2-1 and 2-2. Publication No. FHWA-HOP-13-001. Available at: [http://www.ops.fhwa.dot.gov/freight/freight\\_analysis/nat\\_freight\\_stats/docs/12factsfigures/index.htm](http://www.ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/12factsfigures/index.htm) accessed September 30, 2013.

<sup>62</sup> U.S. Department of Commerce, Bureau of Economic Analysis. *National Economic Accounts, 2012*. Available at [www.bea.gov/national](http://www.bea.gov/national) accessed April 18, 2013.

<sup>63</sup> U.S. DOT, FAA (2013). *FAA Aerospace Forecast, 2013-2033*, p. 51.

<sup>64</sup> U.S. Chamber of Commerce, National Chamber Foundation (2008). *The Transportation Challenge: Moving the U.S. Economy*. Washington, D.C., Cambridge Systematics, Inc.





that there will overall be more goods and services transported from within the country to air and sea ports and across national borders by land. The shift in production toward high-value, high-tech products should translate into continued growth in international air cargo traffic.

To retain our economic competitiveness, the Nation must make strategic investments that enable the movement of people and goods more efficiently with full utilization of the existing capacity across all transportation modes. In addition, we must focus on creating new opportunities in foreign markets for U.S. transportation-related goods and services. In 2010, President Obama issued Executive Order (E.O.) 13534, which creates an Export Promotion Cabinet to develop a National Export Initiative to meet the goal of doubling U.S. exports in five years.<sup>65</sup> Currently exports account for 32 percent of jobs in the transportation equipment sector and this percentage is expected to increase as a result of this Initiative.

Transportation services and equipment are among the Nation's most important exports. The U.S. is a net exporter of travel services, aircraft, ships and ship repair services, vessels for sport and pleasure, and railroad equipment and technology. U.S. trade and investment negotiations seek to open foreign markets to U.S. exports of goods and services and U.S. investment. DOT participates in these negotiations to increase opportunities for American business and the creation of export-related jobs.

<sup>65</sup> E.O. 13534, *National Export Initiative*, Available at <http://www.whitehouse.gov/the-press-office/executive-order-national-export-initiative> accessed April 29, 2013.

Our strategic objectives are presented below.

#### FY 2014-2018 STRATEGIC OBJECTIVES

- Improve the contribution of the transportation system to the Nation's productivity and economic growth by supporting strategic, multi-modal investment decisions and policies that reduce costs, increase reliability and competition, satisfy consumer preferences more efficiently, and advance U.S. transportation interests worldwide (EC1).
- Increase access to foreign markets by eliminating transportation-related barriers to international trade through federal investments in transportation infrastructure, international trade and investment negotiations, and global transportation initiatives and cooperative research thereby providing additional opportunities for American business and creating export-related jobs (EC2).
- Improve the efficiency of the Nation's transportation system through transportation-related research, knowledge sharing, and technology transfer (EC3).
- Foster the development of a dynamic and diverse transportation workforce through partnerships with the public sector, private industry, and educational institutions (EC4).

In the following paragraphs, we describe several dimensions of our approach to supporting U.S. economic competitiveness. The cornerstones of this strategy are investments in high-performance passenger rail, the development of a national freight strategy for land, water, and air transportation, investments in public transportation, mitigating traffic congestion on our

highways, and implementing NextGen capabilities to make air transportation more efficient and environmentally sound. To achieve, we are providing credit assistance through an enhanced Transportation Infrastructure Finance and Innovation Act (TIFIA) program, which leverages infrastructure investment and supports public private partnerships. We are also continuing our effort to create a more competitive air transportation system and protect the rights of traveling consumers. To ensure that our Nation remains at the cutting edge of transportation, we will encourage the commercialization of research and development and promote technology transfer as a means to accelerate deployment of innovations and knowledge. Finally, we will also place a renewed focus on developing the transportation workforce of the future.

#### **STRATEGIES TO IMPROVE THE CONTRIBUTION OF THE TRANSPORTATION SYSTEM TO THE NATION'S ECONOMIC GROWTH**

DOT supports investing new resources in the full range of transportation infrastructure—highway, transit, rail, aviation, space, and port and waterway facilities—and drawing upon a wider range of sources of finance to address infrastructure investment. The Nation needs a flexible transportation financing system that can meet the needs of each mode, and that can provide intermodal connections, including to ports and railroads. Our goal is to create strong, connected communities with multimodal systems of transportation for people and goods.

#### **HIGH-PERFORMANCE PASSENGER RAIL**

*The Recovery Act* provided an unprecedented \$8 billion investment in high-speed and intercity passenger rail. This initial funding, and \$2.1 billion in additional FY 2010 appropriations, generated an extraordinary amount of interest across the country. We received nearly 500 applications from 39 states, the District of Columbia, and Amtrak, requesting more than \$75 billion, an amount that far exceeds what was available. The resulting investments are expected to move us closer to the goal of providing 80 percent of Americans with convenient access to high-speed rail within 25 years. The investments will also spur economic growth,

## **FREIGHT ADVISORY COMMITTEE**

To help oversee a multimodal implementation of MAP-21 freight provisions, the Department established the Freight Policy Council, chaired by the Deputy Secretary. To further the Department's commitment to public input and the role experts can provide, a National Freight Advisory Committee (NFAC) was also created. The NFAC consists of a diverse public and private sector membership, including State DOT Secretaries, elected officials from across the country, representatives of freight modes, shippers, researchers, as well as safety, labor, and environmental advocates. The Committee is led by Chair and Vice Chair, Illinois Transportation Secretary Ann Schneider and former Deputy DOT Secretary Mort Downey, respectively. Over the next two years, the NFAC will provide specific, implementable recommendations for the Department to consider as we implement MAP-21 freight provisions. Both the Freight Policy Council and the NFAC will be working together to implement MAP-21 freight provisions and specifically one of the most important provisions, the development of a National Freight Strategic Plan due October 1, 2015.

revitalize domestic rail manufacturing and supply industries, and establish an economic base of highly skilled, well-paying American jobs.

Over 30 rail manufacturers, both domestic and foreign, agreed to establish or expand their U.S. bases of operations if they are hired to build America's next generation high-performance rail lines and equipment. This is a commitment the Administration secured to ensure that new jobs are created here at home. In addition, Amtrak and the States are using nearly \$1.7 billion in *Recovery Act* funds, other appropriations and loans to purchase over 100 American-made locomotives and 250 railcars.

To advance high-performance rail services, DOT will work with Congress to develop and fund a multi-tiered passenger rail network that accounts for different markets and geographic contexts throughout the U.S. This vision includes: Core Express Corridors that form the backbone of the national high-performance passenger rail system, operating in and between large, dense metropolitan regions;

- Regional Corridors to connect mid-sized urban areas with convenient, frequent service on a mix of dedicated and shared track; and
- Emerging Corridors that will connect regional urban areas on shared track.

Efficient, multi-modal connections are critical to the ultimate success of high-performance and intercity passenger rail. We will continue to work with Amtrak, States, freight railroads and other key stakeholders in transit, airports and other transportation modes to ensure intercity passenger rail is effectively integrated into the national transportation system.

#### **MORE EFFICIENT FREIGHT MOVEMENT**

An efficient freight transportation system that connects population centers, economic activity, production, and consumption is critical to maintaining the competitiveness of our economy. Freight movements in the U.S. range from the shipment of farm products across town to the shipment of electronic components across the world. These goods move via the Nation's highways,

railroads, waterways, airplanes, and pipelines, sometimes using a combination of modes to complete the trip.

Nearly 52 million tons of freight worth more than \$46 billion currently moves through the U.S. transportation system each day. This system includes nearly 11 million single-unit and combination trucks, nearly 1.4 million locomotives and rail cars, and more than 38,000 marine vessels operating on over 450,000 miles of arterial highways, nearly 140,000 miles of railroads, 11,000 miles of inland waterways and the Great Lakes-St. Lawrence Seaway system, and 1.7 million miles of petroleum and natural gas pipelines. In addition, 136 ports handle more than 1 million tons each of freight per year.<sup>66</sup>

In the past, the highly developed U.S. transportation system played a key role in allowing GDP per capita to grow faster in the U.S. than abroad. But other countries have increased their investments in transportation infrastructure and closed the gap with the U.S. The efficiency of freight movement in the U.S. is challenged by growth in global and domestic demands that are outpacing existing capacity. Additional transportation infrastructure investment is needed, and the investment needs to be carefully targeted where it will have the greatest economic payoff and achieve our other strategic goals. We are committed to providing sufficient resources and programmatic focus to a comprehensive national freight transportation strategy that bolsters our Nation's economic competitiveness.

We are developing a roadmap for moving the U.S. towards a comprehensive and effective strategy for improving freight transportation. With input from our stakeholders, we will develop a National Freight Strategic Plan; develop a set of metrics that will enable an assessment of the condition and performance of the national freight system; and define a National Freight Network. We will take particular note of the need for intermodal connectors between highways and rail or port terminals, and consider the need for transport of energy products from energy-producing regions to consumers. Both of these factors will play a role in the development of the National Freight Strategic Plan.

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<sup>66</sup> 2013 Conditions and Performance Report

Freight moves across jurisdictional boundaries, complicating responsibility for maintenance of efficient freight corridors. Freight railroad facilities and services are almost entirely private, while privately-owned trucks operate over public highways. Privately-owned air cargo services operate in public airways and mostly at public airports. Ships in the private sector operate on public waterways and at both public and private port facilities. As a consequence of this mixed ownership and management, most solutions to freight problems require joint action by multiple public authorities and private companies. Financial, planning, and other institutional mechanisms for joint efforts by public agencies and private firms traditionally have been very limited, inhibiting effective measures to improve performance and reduce the public costs of the freight transportation system.

Domestic maritime transportation has the potential to reduce highway, bridge, and rail maintenance costs by diverting freight from congested landside modes to underutilized water transportation services. However, for these services to be competitive, one requirement is that the ports where intermodal transfers occur need to be well integrated into the surface transportation system. Currently, many port owners are unfamiliar with the local and state-level transportation planning processes. Since there are no dedicated federal funding sources for land side port infrastructure and Marine Highway development, integration of these elements into state transportation plans is now vital to ensure the future prosperity of the U.S. maritime sector.

The flow of freight, particularly long-haul freight, can have a significant impact on many of our communities, especially those located near our ports or major rail and highway corridors. All too often, communities throughout the Nation have struggled with the noise, congestion, and negative environmental and public health impacts that have been the unfortunate side effects of freight transportation. To improve the efficiency of freight movement and reduce its detrimental effects, we will:

- Promote new technologies and operating procedures that reduce air emissions and noise from freight movements, while increasing the efficiency

## FREIGHT TRANSPORTATION DATA

**Major gaps in freight data such as freight flows hinder our ability to analyze the benefits of freight transportation projects. There are numerous public and private entities that provide international freight shipment data with varying degrees of timeliness, coverage, and reliability. However, inland movements of imports are difficult, if not impossible, to track. Data are limited or non-existent on truck movements within metropolitan areas. Records of freight moved by rail in intermodal service often do not publicly include data detailed enough to identify specific commodities. MAP-21 requires us to develop improved models and data sources for freight planning purposes. We are undertaking the development of cross-modal measures of freight system conditions and performance; and implementation of these measures will likely require the development of new data. The existing Freight Analysis Framework, the principal DOT freight planning tool, will need to be enhanced to meet the needs of MAP-21.**

and operational speed of the system to improve freight services to small- and medium-size cities and towns;

- Work across jurisdictional boundaries to establish new partnerships between the public and private

sectors to improve the overall efficiency of the freight transportation system;

- Make targeted investments in capacity expansion of our national freight highway corridors to address bottlenecks that cannot be adequately addressed by operational improvements;
- Establish a National Freight Network that focuses resources on critical highway portions of the Nation's multi-modal freight transportation system needed to improve goods movement across America, and considers the reduction of the impact of freight transportation on neighboring communities; as part of this effort, designate the Primary Freight Network and work with States to identify Critical Rural Freight Corridors portions of the National Freight Network.
- Work with other Federal agencies to ensure that all regulations on the marine and surface transportation systems facilitate the flow of commerce in a safe and secure environment;
- Identify and implement solutions to the inefficient movement of freight through major metropolitan regions using a variety of technologies and operational approaches such as real time information on the performance of the system for passengers and freight, tools to optimize systems operations and seamlessly link the freight supply chain;
- Work with Federal, State, and local stakeholders to ensure the adequacy, efficiency, and reliability of our land, sea and air international gateways; and
- Prioritize timely operations and maintenance projects for the Great Lakes and the St. Lawrence Seaway, and modernize the U.S. infrastructure assets of the St. Lawrence Seaway as part of a decade-long Seaway Asset Renewal Program.

## PUBLIC TRANSPORTATION

Every day tens of millions of people use public transportation to get to the places they need to go, including commuting to work, attending a class, visiting a doctor, going shopping, or making a trip for social



visits and recreation. In many large metropolitan areas, public transportation provides an essential transportation alternative to crowded rush-hour streets and highways. In almost every city, public transportation also provides the only transportation to many of the people in our economy who need it the most. Commuters including the 5 percent of U.S. households that do not own a vehicle rely on carpools, transit, bus travel, bicycling, walking, ferries, and taxis to get to work.<sup>67</sup> We will continue to support our Nation's investment in public transportation services for all through:

- Grants for operating assistance, preventive maintenance, and scheduled replacement and renewal of bus fleets and other transit assets; and
- Support for existing public transportation investments through formula program grants.<sup>68</sup>

## HIGHWAY CONGESTION

While automobile and truck congestion currently imposes a relatively small cost on the overall economy

<sup>67</sup> Transportation Research Board (2013). *Commuting in America – The Third National Report on Commuting Patterns and Trends*, pp. 72-73. Washington, D.C., Alan E. Pisarski.

<sup>68</sup> Includes the Urbanized Area Formula Program, Rural Area Formula Program, Enhanced Mobility for Seniors and Persons with Disabilities Formula Program, and Bus and Bus Facilities Formula Program.

of about 0.6 percent, the cost of congestion is growing faster than GDP. If current trends continue, congestion is expected to impose a larger proportionate cost in the future. The cost of congestion has risen at a rate of almost 7 percent per year over the past 25 years, which is a rate more than double the historical growth rate of GDP.

Highway congestion adversely affects our economy, our communities, and our quality of life. Traffic congestion in 2011 worsened in American cities of all sizes, creating a \$121 billion annual drain on the U.S. economy in the form of 5.5 billion lost hours resulting from travel delay and 2.9 billion gallons of wasted fuel. Congestion caused the average peak-period traveler to spend an extra 38 hours of travel time and consume an additional 19 gallons of fuel annually, amounting to a cost of \$818 per traveler.<sup>69</sup>

To address traffic congestion, we will:

- Make targeted investments in additional highway capacity where other strategies are ineffective in enhancing economic competitiveness;
- Promote operational strategies that reduce the impact of congestion-causing incidents and bottlenecks including the use of effective traffic incident management, traveler and traffic information systems, and arterial and corridor management systems;
- Provide support for better and a wider variety of transit services and increased transit capacity;
- Advocate adoption of demand management strategies which improve the efficiency of existing capacity such as ridesharing, car- and van-pooling, flextime, parking demand management, road pricing, car sharing, and bike sharing;
- Promote research, development and deployment of advanced vehicle-to-vehicle and vehicle-to-infrastructure communication technologies; and
- Foster investment in high-performance, intercity

passenger rail to balance demand across modes and relieve traffic on roads and in the airspace.

#### AVIATION AND SPACE

Our nation's economy depends on aviation. Air transportation plays a key role in the growing tourism and hospitality sector of the economy and also serves business travelers who make the key connections that allow economic activity to grow and expand.

In order to continue to support the national airspace system, timely delivery of prioritized NextGen capabilities will provide benefits to the users of the system, such as reduced fuel costs, reduced delays, and reduced environmental impact. We also need to safely integrate new types of user technologies, such as unmanned aircraft systems and commercial space vehicles, into the airspace. Finally, we will rationalize and rebalance existing services and sustain and modernize our infrastructure, which will enable us to reduce our costs and become more efficient in the long run.

Aviation is also a global industry and millions of Americans travel overseas every year. We have to continue our heritage as world leaders in aviation and setting the safety standard for others to measure against. We need to be at the table to shape international standards to improve aviation safety and efficiency, and competitiveness around the world.

To advance the aviation system, we will work with the aviation industry to:

- Meet the new and growing demands for air transportation services through 2025 with ongoing, incremental implementation of NextGen capabilities;
- Increase airport and airway capacity through more efficient operations on the airport surface and in terminal and en-route airspace;
- Complete the transition of surveillance from ground-based radar to satellite-based positioning data transmitted directly by aircraft;
- Shift pilot-controller communications from voice to data, simplifying the workload of each pilot,

<sup>69</sup> Texas Transportation Institute (2012). *Urban Mobility Report*. Available at <http://d2dt5nnp1fr0r.cloudfront.net/tti.tamu.edu/documents/mobility-report-2012.pdf> accessed April 29, 2013.

reducing the likelihood of error or misunderstanding, and relieving radio frequency congestion;

- Replace current systems that distribute information to controllers, pilots, operations centers, airports and other stakeholders with a single, integrated, system-wide data network that delivers information simultaneously to all who need it;
- Set investment and infrastructure priorities and policies that enhance capacity where economically justified;
- Implement procedures with supporting infrastructure to increase the efficiency of flights and increase airport and airspace throughput, particularly in low-visibility conditions;
- Implement modified separation standards to increase capacity and safely allow more efficient use of congested airspace;
- Direct Airport Improvement Program funding to provide greater safety, capacity, and efficiency at airports, including greater access to regional airports in congested metropolitan areas, in order to improve system-wide performance;
- Safely integrate unmanned aircraft systems into the NAS;
- Establish process and procedures to safely integrate commercial space launches with NAS operations, and;

- Advocate internationally for the adoption of United States Government commercial safety regulations, standards, and licensing measures to enhance global interoperability and safety of international commercial space transportation activities.<sup>70</sup>

## MARITIME

Ports serve as gateways for the import and export of goods in the global economy. Just as DOT is the steward for ensuring that the interstate highway system is in a state of good repair, DOT has a role in ensuring that access into and out of our ports and marine facilities can meet both our security needs and the needs of the economy.

There are 400 ports owned and operated by State and local governments, private corporations, or a combination of those entities in the U.S. Historically, our role in financing port infrastructure has been limited to highway and rail access, while U.S. Army Corps of Engineers have the role of maintaining harbors and navigation channels. Through federal investments in port infrastructure using TIGER grants and America's Marine Highway Program, we incentivize improvements in operations, facilities, and equipment that will make our Nations' ports more efficient and productive.

The maritime system is a shared responsibility. Federal, State, local, and private sector entities provide input to the condition and operation of existing facilities. To remain competitive in a global economy, the maritime network will require both technical assistance and incentives to improve efficiency and maximize the use of existing facilities—and the associated costs are not insignificant. For example, U.S. public ports spent nearly \$9 billion on capital improvement projects from 2004 to 2008.<sup>71</sup> Additional public investment is needed. By one estimate, the costs attributed to delays in the nation's inland waterways system were \$33 billion in 2010, and it is expected to increase to nearly \$49 billion by 2020. The American Society of



<sup>70</sup> Quoted from page 5 of the National Space Transportation Policy, signed by the President on November 21, 2013

<sup>71</sup> American Association of Port Authorities Fact Sheet (2008). *U.S. Public Port Facts*. Available at <http://aapa-ports.org/> accessed May 31, 2013.

Civil Engineers estimates that an additional, cumulative investment in ports and waterways of \$15.8 billion between 2012 and 2020 would protect a total of \$697 billion in GDP during that period and, as of 2020, 738,000 jobs.<sup>72</sup>

The U.S. will need sufficient maritime port capacity to meet the requirements of current and projected import and export trade. Transportation planners must be prepared to respond to changing trade patterns necessitated by the expansion of the Panama Canal and the potential for the development of an Arctic transportation corridor, which could accommodate cargoes between the Far East to the U.S. East Coast.

Commercial and government access to privately-owned U.S.-flag commercial ships serving international markets is augmented through the Maritime Security Program (MSP). MSP provides an annual stipend payment to 60 modern and efficient U.S.-flag vessels that also participate in the U.S. Voluntary Intermodal Sealift Agreement (VISA) program. The VISA program provides for a time-phased activation of state-of-the-art commercial intermodal equipment to coincide with DOD requirements while minimizing disruption to U.S. commercial operations. The MSP and VISA programs help to ensure that the United States will have U.S.-flag commercial companies, vessels, and crews operating in U.S. foreign trade, along with the intermodal assets of the companies—providing reliable and efficient commercial and military access to critical foreign markets in the event of disruptions to global supply chains.

To advance the maritime system, we will work with the maritime industry to:

- Identify and plan for growing demands for water transportation infrastructure, including investments in ports and their water and land side connections to accommodate larger vessels and marine highway services;
- Work with industry stakeholders and the U.S.



Army Corps of Engineers to maintain and improve the capability of the inland lock and waterway system.

- Facilitate the training and retention of seafarers and other personnel to operate the maritime system; and
- Assure commercial and government access to U.S.-flag commercial ships and crews by administration of the MSP and support of the Jones Act, cargo preference laws, and other statutory programs to support the U.S. maritime sector.

#### **EXPAND CREDIT ASSISTANCE PROGRAMS**

Providing broader access to flexible and favorable financing options will make it easier for State and local governments, and the private sector, to invest in our Nation's infrastructure. Increasingly, public officials are dedicating long-term sources of revenue to transportation projects. Among other sources, the revenue comes from tolling, pricing, and other user fees, as well as new sales taxes and other state or local sources or revenue. DOT credit assistance programs were created and expanded by Congress to provide better access to financing for these investments, so we can accelerate project delivery and reduce costs by fully funding the

<sup>72</sup> American Society of Civil Engineers (2012). *Failure to Act: The Economic Impact of Current Investment Trends in Airports, Inland Waterways, and Marine Ports Infrastructure*. pp. 6-8. Available at <http://www.asce.org/Infrastructure/Failure-to-Act/Airports,-Inland-Waterways,-and-Marine-Ports/>



projects upfront. In addition, many State and local governments are turning to innovative public-private partnerships to better integrate private sector involvement in the delivery and financing of transportation projects. DOT credit assistance programs are of critical importance to Federal efforts to promote these new arrangements.

Providing better access to DOT credit assistance programs will help ensure that new and improved transportation facilities are delivered more quickly and at reduced cost, which enhances the ability of our transportation system to contribute to economic growth and other strategic goals. Of particular note, accelerating these investments through innovative financing approaches helps address the growing backlog of capital investments, which is a primary element of DOT's focus on the state of good repair of our Nation's infrastructure. Broader use of flexible financing programs also encourages co-investment of public and private funds, stretching the value achieved through Federal credit assistance programs.

To advance credit support programs, we will:

- Fully implement the *Transportation Infrastructure Finance and Innovation Act (TIFIA)* program as expanded by MAP-21, by lending \$15 to \$20 billion to eligible surface transportation projects, leveraging substantial public and private sector co-investment and supporting innovative public-private partnerships;
- Allocate remaining Private Activity Bonds authority to project sponsors that are developing eligible surface transportation or freight transfer facilities, increasing private investment in transportation infrastructure;
- Facilitate and encourage the use of the Railroad Rehabilitation and Improvement Financing (RRIF) program's financing capacity to support upfront and accelerated investments in freight and commuter rail facilities; and
- Administer the Title XI loan guarantee program to support investment in the U.S. shipbuilding industry.

## STRATEGIES TO FOSTER A COMPETITIVE AIR TRANSPORTATION SYSTEM THAT IS RESPONSIVE TO CONSUMER NEEDS

One of our key missions is to negotiate liberalized international aviation agreements that result in opportunities for increased air service, lower fares for consumers, and demand for additional aircraft. These negotiations require DOT, in cooperation with the Department of State, to conduct formal international meetings with foreign government counterparts with the goal of achieving less restrictive agreements and, ultimately, Open Skies agreements. In addition, DOT must promote competition in the aviation industry by monitoring industry developments in foreign and domestic markets. This includes maintaining vigilance against unfair competitive practices that may impair airlines' ability to make full use of U.S. rights. To foster a competitive air transportation system, we will:

- Work with our trading partners to seek further liberalization of international transportation markets through negotiations and other means;
- Judiciously review and efficiently issue decisions on air carrier requests for economic authority as well as other matters affecting competition in the airline industry; and
- Exercise our regulatory powers to redress unfair or discriminatory practices by foreign governments or carriers against U.S. airlines to ensure that the traveling and shipping public enjoys the benefits of a competitive marketplace.

Long-term increases in the number of people traveling by air each year and other changes in the airline industry underscore the need for DOT to remain vigilant in protecting the rights of air travel consumers. Accordingly, we will:

- Vigorously enforce Federal law protecting air travelers;
- Provide information and guidance for consumers to make knowledgeable decisions about air travel;
- Ensure greater accessibility of air travel for passengers with disabilities and older adults;

- Investigate and resolve civil rights-related complaints made by air travelers in a timely manner; and
- Continue to strengthen consumer protections for air travelers when appropriate.

### STRATEGIES TO ADVANCE U.S. TRANSPORTATION-RELATED ECONOMIC INTERESTS IN TARGETED MARKETS AROUND THE WORLD

U.S. transportation interests do not stop at our borders. Our international activities—economic, strategic, and foreign assistance—have burgeoned over the past decade. In the economic arena, import and export activity is a vital part of U.S. economic health, and access to efficient transportation systems strengthens international trade and helps make our products and services competitive.

To address these challenges, DOT will:

- Ensure that our efforts support the President's National Export Initiative to improve the private sector's ability to export;
- Advance a vital and viable U.S. maritime transportation system, including vessels, port infrastructure, and intermodal assets, to meet the nation's economic and security needs;
- Determine how the expansion of the Panama Canal will impact U.S. and global trade as well as U.S. ports, waterways, and intermodal freight systems;
- Focus Federal investments to improve the linkages between our ports and the rail and highways systems, particularly on-dock, rail, and intermodal connectors immediately outside our ports;
- Work with Metropolitan Planning Organizations (MPO) and State departments of transportation to better incorporate their maritime assets into their freight movement plans, as well as promote the expansion of the Marine Highway System, when economically viable, to meet current and projected movements of freight and passengers;
- Work with our Mexican and Canadian partners to develop and deploy interoperable technology

## INTERNATIONAL TRANSPORTATION STANDARDS RELATED ISSUES

Transportation standards-related measures is a collective term for transportation product standards and technical regulations, and testing, certification, and other procedures involved in determining whether products conform to those standards and technical regulations. The overall U.S. legal framework for standards-related measures is based in part on the Administrative Procedure Act of 1946, the Trade Agreements Act of 1979, and the National Technology Transfer and Advancement Act. The United States seeks to ensure that its standards-related measures meet legitimate objectives, are stated in objective terms, and are based on good science.

Outdated, overly burdensome, discriminatory, or otherwise inappropriate standards-related measures that reduce competition, stifle innovation, and create unnecessary barriers to international trade are known in international trade parlance as technical barriers to trade. In the international realm, institutions exist that seek to ensure the amendment or elimination of technical barriers to trade, which have become relatively more important as traditional barriers to trade, such as tariffs on products, have decreased.

In line with U.S. policy, DOT seeks to ensure that U.S. transportation standards-related measures meet legitimate objectives, are stated in objective terms and are based on good science. Other countries' transportation standards-related measures may, however, serve to reduce U.S. access to their markets and constitute technical barriers to trade. DOT works through the Office of the United States Trade Representative and engages directly with foreign governments to anticipate and prevent transportation technical barriers to trade from arising and resolve the issues involved when transportation technical barriers to trade do develop

architecture at our land ports of entry that is integrated with ITS initiatives outside ports of entry; and

- Conduct outreach and forums with industry stakeholders to seek effective solutions to our maritime system challenges without significantly impacting private sector costs.

American transport manufacturers and service providers rely on access to foreign markets through liberalized entry or operational rules and compatible technical standards (DOT sets standards for both the manufacture and operation of transportation products).

To advance U.S. transportation-related economic interests, we will:

- Participate in all transportation-related aspects of the U.S. international trade agenda, including the negotiation of free trade agreements and supporting the worldwide adoption of harmonized standards and global technical regulations through participation in bilateral and regional forums or international organizations at the ministerial and working levels;
- Provide technical assistance and implement technology exchange, encourage collaboration and capacity building, and identify opportunities to share resources among key international partners;
- Fulfill our commitments to international partners and agreements, such as the Asia-Pacific Economic Cooperation forum, and the North Atlantic Treaty Organization; and
- Continue to improve our existing transportation dialogue with China and establish transportation dialogues with Brazil and India.

## STRATEGIES TO IMPROVE RESEARCH, KNOWLEDGE SHARING, AND TECHNOLOGY TRANSFER BUSINESS PROCESSES

Transportation research has little value if its technological outcomes are not transferred to those that might apply them. The application of research outcomes can be as simple as knowing what does not work or can be as complex as implementing highly advanced, revolutionary technologies. Research implementation should not be based on the sophistication of a new technology alone. All outcomes must be considered and compared with other research outcomes to determine a best solution or most effective technology, i.e., product or service, for any given situation. The DOT Technology Transfer (T2) program is designed to:

- Increase the number of T2 partnerships with commercial, non-profit, government and non-government organizations;
- Increase the commercialization activity within the DOT; and
- Improve the efficiency of T2- related business processes within the DOT.

We provide leadership and expertise to facilitate the exchange of knowledge and technologies for the development and advancement of products and methodologies that will improve transportation safety and efficiency.<sup>73</sup> To meet these challenges, we will:

- Evaluate and improve processes for executing partnership agreements including grants, contracts, Cooperative Research and Development Agreements, and collaborative agreements;
- Streamline partnership processes to maximize and provide for efficient technology transfer;
- Initiate collaborative agreements with local and regional transportation safety focused entities including DOT regional offices; and
- Increase awareness of commercialization and tech-

<sup>73</sup> A Presidential memorandum directing the acceleration of technology transfer and commercialization of federal research in support of high-growth entrepreneurship was issued by President Obama in October 2011. See <http://www.whitehouse.gov/the-press-office/2011/10/28/presidential-memorandum-accelerating-technology-transfer-and-commerciali>

nology transfer opportunities within the Agency by collecting and disseminating within DOT best practices for commercialization and by searching for opportunities to apply DOT commercialized technologies.

In keeping with the Open Government concept, we are developing an open access policy for data and publications resulting from all DOT-funded research.<sup>74</sup> We will make data, reports, and publications available to the public, as well as researchers and entrepreneurs across the country that might benefit and have the potential to create and commercialize new technologies, thereby leveraging federally funded research and benefitting the economy through technological development.

The economic competitiveness of the U.S. can also be improved through international dialogues such as the International Transportation Forum, cooperative agreements with global partners, and international research initiatives. Such exchanges will result in additional innovation and improvements in technology, governance, and regulatory best practices. Targeting emerging technologies and collaborating with international partners at the early stages of the regulatory development process provides a critical foundation for future regulatory compatibility efforts and facilitate innovation in the transportation sector.

### STRATEGIES TO BUILD A DYNAMIC NATIONAL TRANSPORTATION WORKFORCE

The operation of the Nation's transportation system depends on a highly skilled and qualified workforce, now and for the future. Whether contributing to the important goal of sustainable transportation or in simply responding to the growing demand for services, there are numerous opportunities in the transportation industry to address the urgent national priority of creating new jobs. To be successful in addressing unmet infrastructure needs, we will need a broad spectrum of skilled workers. As demand for transportation services increase, both public and private sector transporta-



tion organizations face the ever increasing difficulty of finding qualified workers and managers to fill priority occupations.<sup>75</sup> At the same time, increasing competition for workers from other industries and difficulties in reaching women and under-represented population groups compounds the challenge.

To retain and develop workers, we need to work with our public and private sector partners to provide transportation employees with the opportunity to develop skills in all areas of transportation including safety, engineering, planning, construction, financing, project management, system sustainability, systems management, quality of life in communities, and public engagement. These skills go beyond traditional engineering disciplines, which are themselves expanding to reflect new materials and technologies. The growing number of baby boomers eligible to retire accelerates the need to transfer resident knowledge to the next generation, and thereby avoid a shortfall of experience and skills that will be difficult to replace. As transportation demand continues to increase faster than available resources, a skilled, technically competent workforce is the single best investment we can make to assure the efficient implementing new technologies and processes necessary to provide for a safe, efficient and effective US transportation system.

Shifts in the types and priorities of transportation occupations demonstrate the critical need for public and private sector transportation organizations, training providers, academic institutions and other strategic

<sup>74</sup> U.S. DOT (2012). *DOT Open Government Plan*. Available at <http://www.dot.gov/mission/open/open-government> accessed April 29, 2013.

<sup>75</sup> *Why No One Wants to Drive a Truck Anymore*, <http://www.businessweek.com/articles/2013-11-14/2014-outlook-truck-driver-shortage>; *Railroad Industry Modal Profile: An Outline of the Railroad Industry Workforce Trends, Challenges, and Opportunities*, <http://www.fra.dot.gov/eLib/details/L01294>; *NCHRP Report 693: Attracting, Recruiting, and Retaining Skilled Staff for Transportation System Operations and Management*, Transportation Research Board of the National Academies, Washington, DC, 2012

partners to focus attention on the challenges facing transportation workforce development. We can successfully address these issues by collaborating with our partners in government agencies, private and public employers, educational institutions, and workforce and labor organizations. These partnerships must also address current and future transportation workers.

To meet these challenges, we will work with our partners to undertake the following strategies:

- Partner with the Department of Education, Department of Labor, State departments of transportation, other federal agencies, education systems, community colleges, universities, private and public transportation employers, and labor unions to advance transportation workforce development including career and technical education pathways to transportation jobs;
- Engage with national, state, and local education interests to enhance transportation career awareness and preparation for K-12 students including a focus on science, technology, engineering and mathematics (STEM) through transportation-related academic and certification programs;

- Work to improve pathways into various levels of transportation occupations for all, with a special focus on women and under-represented populations in partnership with Minority-Serving Institutions and organizations;
- Engage with key public and private sector transportation organizations to ensure that the current transportation workforce has the ability to lead, anticipate, and apply innovation;
- Expand the pool of qualified transportation workers to meet the current and future challenges of a multimodal transportation system; and
- Encourage investments in data collection, research, and analysis of the transportation workforce and disseminate notable practices in workforce development.

## STRATEGIC OBJECTIVES, PERFORMANCE GOALS, AND INDICATORS

We will monitor our progress in achieving the Strategic Objectives for the Economic Competitiveness goal using the Performance Goals and Indicators in Table F.

TABLE F. PERFORMANCE GOALS, INDICATORS, AND LEAD BY ECONOMIC COMPETITIVENESS STRATEGIC OBJECTIVE.

PERFORMANCE GOAL	PERFORMANCE INDICATOR(S)	LEAD OFFICE
Strategic Objective: Improve the contribution of the transportation system to the Nation's productivity and economic growth by supporting strategic, multi-modal investment decisions and policies that reduce costs, increase reliability, satisfy consumer preferences more efficiently, and advance U.S. transportation interests worldwide (EC1).		
Achieve operational readiness date (ORD) for the En Route Automation Modernization (ERAM) program on all 20 Air Route Traffic Control Centers (ARTCCs) in the Continental United States by the end of FY 2015 (APG).	Operational readiness date (ORD) for the En Route Automation Modernization (ERAM) program on all 20 Air Route Traffic Control Centers (ARTCCs) in the Continental United States.	FAA
Maintain an average daily capacity for core airports of 58,166, or higher, arrivals and departures through FY 2018.	Average daily capacity for core airports.	FAA
Sustain adjusted operational availability at 99.70 percent for the reportable facilities that support the Core Airports through FY 2018.	Adjusted operational availability at Core-30 airports.	FAA

PERFORMANCE GOAL	PERFORMANCE INDICATOR(S)	LEAD OFFICE
Maintain a NAS on-time arrival rate at core airports of 88 percent or higher through FY 2018.	Percentage of on-time arrivals at Core airports.	FAA
Maintain U.S. presence in foreign maritime commerce through ships enrolled in the Maritime Security Program (MSP) at 19,200 vessel operating days a year while ensuring availability of sealift capacity for the Department of Defense.	Vessel operating days per year.	MARAD
By September 30, 2015, initiate construction on 65 passenger rail construction projects (APG).	Number of construction projects initiated.	FRA
By September 30, 2015, substantially complete 74 planning, preliminary engineering/environmental analysis, and construction passenger rail projects (APG).	Number of planning, preliminary engineering/ environmental analysis, and construction passenger rail projects initiated.	FRA
Maintain travel time reliability in urban areas as measured by a reduction in the travel time index to no more than 1.21 in 2018.	Travel time index.	FHWA
Maintain travel time reliability in Top 25 domestic freight corridors at or below 17.0 through FY 2018.	Freight buffer index.	FHWA
Increase the total number of urban and rural transit boardings from 10.4 billion in 2012 to 11.2 billion in 2018.	Number of urban and rural transit boardings.	FTA
Increase the transit market share among commuters to work in at least 10 of the top 50 urbanized areas by population, when compared to a 2010 baseline.	Transit market share among commuters to work in top 50 urbanized areas.	FTA
Congestion management strategies that could manage demand, reduce single occupant vehicle travel, improve transportation system management and operations, and enhance integration across modes are identified and evaluated.	All MPOs serving a Transportation Management Area (TMA) develop and utilize a congestion management process (CMP) in making programming and project decisions within five years.	FHWA
Maintain the U.S. Saint Lawrence Seaway system and lock availability at 99 percent through 2018.	System and lock availability.	SLSDC
Strategic Objective: Increase access to foreign markets by eliminating transportation-related barriers to international trade through Federal investments in transportation infrastructure, international trade and investment negotiations, and global transportation initiatives and cooperative research thereby providing additional opportunities for American business and creating export-related jobs (EC2).		
Establish or participate in at least 14 technology transfer and capacity building programs to improve training opportunities for international transport ministries.	DOT participation in technology transfer and capacity building programs.	OST
Reach [3 or more] new bilateral or multilateral agreements to remove market distorting barriers to trade in transportation.	Number of bilateral or multilateral agreements.	OST

PERFORMANCE GOAL	PERFORMANCE INDICATOR(S)	LEAD OFFICE
Strategic Objective: Improve the efficiency of the Nation's transportation system through transportation-related research, knowledge sharing, and technology transfer (EC3).		
Improve the efficiency of USDOT technology transfer (T2) business process.	Number of T2 processes revised and modified.	FMCSA, FAA, FHWA, FTA, FRA, MARAD and OST
Strategic Objective: Foster the development of a dynamic and diverse transportation workforce through partnerships with the public sector, private industry, and educational institutions (EC4).		
Facilitate transition from military occupational specialties to civilian certification and licensing in transportation related careers.	Number of veterans trained through CDL training grants.	FMCSA
Attract university students to transportation career pathways by providing fellowships and research opportunities.	Number of university students involved in transportation research projects funded by DOT's University Transportation Centers Program.	FHWA OST-R
Expose K-12 students to transportation career pathways.	Number of students participating annually in Aviation Career Education. Number of K-12 students reached annually through FAA's Aviation and Space Education (AVSED Program).	FAA
Advance maritime education programs to ensure a consistent supply of capable, highly-trained U.S. Merchant Mariners available to crew U.S.-flag vessels to support the Nation's economic needs and respond to national emergencies that require sealift resources.	Number of annual graduates with U.S. Coast Guard Credentials from the State Maritime Academies available to crew US.-flag vessels.	MARAD

## EXTERNAL RISK FACTORS

Most economists are predicting annual growth rates for GDP of two to three percent over the next few years.<sup>76</sup> Cyclical and long-term changes in economic activity have a strong impact on discretionary personal travel and shipment of goods, driving demand for transportation infrastructure and services. For-hire transportation activity, including both freight ton miles and passenger miles, are highly correlated with stages of the business cycle.<sup>77</sup> Recent reports of stronger housing starts are a positive sign for the economy, but could also have a negative effect as prices for construction materials increase with competition from other industries.

Foreign trade is projected to grow at a faster rate than the U.S. economy. Exports currently account for 32 percent of jobs in the transportation equipment sector. While growth in exports has increased during the past two decades, disruptions in the economic environment such as an increase or decrease in the price of oil and other energy supplies, the enactment of policies in other countries or regions that positively or negatively impact the free flow of trade, or the contraction of slow growing economies particular in Europe could alter the current dynamic. In technology-based industries, we are already seeing a shift towards resourcing of manufacturing in the U.S. due to increased transportation and logistics costs in overseas operations, more favorable energy prices in the U.S., and a more productive and competitive U.S. workforce.<sup>78</sup>

A highly skilled and capable workforce is needed to meet the planning, design, and operational requirements of future transportation systems. In the next decade, as much as fifty percent of all transportation workers are expected to retire, taking much of their

institutional knowledge with them.<sup>79</sup> For example, the expansion of high-performance passenger rail service will depend on the availability of highly skilled engineers and managers to help design, build, and operate this service. Moreover, many public transportation agencies have dealt with fiscal constraints by downsizing and limiting hiring. Consulting and engineering firms have also downsized due to reductions in development projects and a slowdown in transportation design and operations projects.

<sup>76</sup> Using a weighted average of International Monetary Fund, Congressional Budget Office, and Moody's, U.S. GDP growth is expected to remain unchanged between 2012 and 2013 staying around 2.6 percent. Growth is expected to pick up beginning in 2014, peaking in 2015 at around 4.5 percent, and then falling back to 3.5 percent in 2017 settling into a long-term growth rate of approximately 3.2 percent starting around 2019. This forecast according to Parsons Brinckerhoff (December 2012), "Economic Review and Outlook: Implications for the U.S." *EFR*, Vol. 6, Issue 2, p. 28, Rodriguez, M., Romani, H. and I. Hirschman. Available at <http://www.pbworld.com/news/publications.aspx#efr> accessed April 30, 2013.

<sup>77</sup> U.S. DOT (2007). *Transportation Services Index and the Economy*, Publication No. BTS TR-002.

<sup>78</sup> Regaladao, A. (January 11, 2013). "Made in America, Again." *MIT Technology Review*. Available at <http://www.technologyreview.com/news/509326/made-in-america-again/> accessed May 1, 2013.

<sup>79</sup> Council of University Transportation Centers (2012). *National Transportation Workforce Summit – Summary*. Available at <http://www.artba.org/mediafiles/pdfhdntwssummary.pdf>, accessed April 25, 2013.



# QUALITY OF LIFE IN COMMUNITIES





## STRATEGIC GOAL

**FOSTER IMPROVED QUALITY OF LIFE IN COMMUNITIES BY INTEGRATING TRANSPORTATION POLICIES, PLANS, AND INVESTMENTS WITH COORDINATED HOUSING AND ECONOMIC DEVELOPMENT POLICIES TO INCREASE TRANSPORTATION CHOICES AND ACCESS TO TRANSPORTATION SERVICES FOR ALL.**

### CHALLENGES AND STRATEGIES

President Obama has made place-based policy a key component of his domestic agenda and has challenged all Federal agencies to coordinate and innovate around this idea in an unprecedented way. Fostering and maintaining communities with high quality of life, or places where transportation, housing, and commercial development investments are coordinated so that people have access to adequate, affordable, and environmentally sustainable travel options, represents a transformational policy shift for DOT. The benefits that we will work to achieve under our quality of life in communities goal include improvements in the public transit user experience, provision of additional pedestrian and bicycle networks, and improved access to transportation for people with disabilities, older adults, and lower income populations. With these improvements, we expect to maintain or lower household expenditures for transportation and offer more affordable connections to jobs and other necessities.

U.S. transportation investments over the last 50 years have often been poorly coordinated with other investments such as land use planning, housing, and commercial development. This has contributed to a prevalence of low-density, scattered, auto-dependent and inaccessible communities, and disinvestment in many of our core urban centers and first suburbs. These

development patterns have been amplified by single-use zoning that separated housing from shopping, work, and schools. Such zoning emphasizes wide streets, ample off-street parking, and large front and side yard setbacks. Federal programs for roadway construction promoted wide, high-speed roadways ill-suited to pedestrian and bicycle use even in quiet residential communities.

In the United States, the heavy reliance on car-dependent, dispersed development is not without costs.<sup>80</sup> For example, the average American adult between the ages of 25 and 54 drives over 12,700 miles per year, spending the equivalent of approximately one month each year in the car,<sup>81</sup> and the average American household has to spend \$7,658 annually to buy, maintain, and operate personal automobiles.<sup>82</sup> Alternatives to auto travel are lacking in many communities. Fewer than 1

<sup>80</sup> Transportation Research Board (2002). *The Costs of Sprawl-2000*. TCRP Report 74, National Academy Press, Washington D.C., Available at [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_rpt\\_74-a.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_74-a.pdf) accessed May 1, 2013.

<sup>81</sup> U.S. DOT, Bureau of Transportation Statistics (2003). *Highlights of the 2001 National Household Travel Survey*. Publication No. BTS03-05, Washington, D.C. Available at: [http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/highlights\\_of\\_the\\_2001\\_national\\_household\\_travel\\_survey/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/highlights_of_the_2001_national_household_travel_survey/index.html) accessed April 30, 2013.

<sup>82</sup> U.S. Department of Commerce (2013). *Statistical Abstract of the U.S.*, National Estimates and Projections, Table 684, Average Annual Expenditures of All Consumer Units by Type of Expenditure in 2009. Available at: [http://www.census.gov/compendia/statab/cats/income\\_expenditures\\_poverty\\_wealth.html](http://www.census.gov/compendia/statab/cats/income_expenditures_poverty_wealth.html) accessed April 30, 2013.

in 20 households are located within a half-mile of rail transit, and only 53 percent of Americans have access to any form of public transportation service.<sup>83 84</sup>

Health experts believe that auto-dependent development patterns contribute to a host of health problems.<sup>85 86 87</sup> Nearly one-third of Americans live in neighborhoods without sidewalks.<sup>88</sup> An increase in the number of communities built without sidewalks has been correlated with a decline in the percentage of American children who walk or bike to school. In 1969, 42 percent of children 5 to 18 years of age walked or bicycled to school. In 2001, only 16 percent walked or bicycled to school, which is one of the causes of rising childhood obesity.<sup>89 90 91 92 93 94</sup>

A study of the health effects of sprawl found that people living in more compact, walkable counties are likely to walk more, weigh less, and are less likely to suffer from hypertension than people living in more

sprawling counties.<sup>95</sup> Another study, which was the first to examine the relationship between sprawl and a wider spectrum of chronic illnesses, suggests that the physical attributes of where a person lives can encourage or discourage active living and, therefore, have an impact on health.<sup>96</sup> Roughly 40 percent of all trips in metropolitan areas are 2 miles or less in length. These are trips that could be taken on foot or bicycle, but are still taken primarily by car due at least in part to disjointed land use patterns, poor infrastructure design, and limited connectivity.

Creating quality of life in communities is just as important to residents of rural areas as it is for residents of urban and suburban areas. Rural town centers have experienced disinvestment in much the same way as urban core areas. Indeed, many rural areas are fighting to attract local commercial development through the revitalization of their town centers. Rural residents generally must travel greater distances to jobs and services than their urban counterparts and can suffer from greater isolation, especially if they cannot drive.

<sup>83</sup> Center for Transit Oriented Development and Federal Transit Administration (2010). *National Transit Oriented Development GIS Database*.

<sup>84</sup> Center for Urban Transportation Research (2007). *Public Transit in America: Analysis of Access Using the 2001 National Household Travel Survey*.

<sup>85</sup> Pucher, John, and Lewis Dijkstra (2003). "Promoting Safe Walking and Cycling to Improve Public Health: Lessons from The Netherlands and Germany." *American Journal of Public Health* (93):9.

<sup>86</sup> Goldberg, David, Lawrence Frank, Barbara McCann, Jim Chapman, and Sarah Kavage (2007). *NEW DATA FOR A NEW ERA: A Summary of the SMARTRAQ Findings Linking Land Use, Transportation, Air Quality and Health in the Atlanta Region*.

<sup>87</sup> Ewing, R., Schmid, T. L. et al. (2003). "Relationship between urban sprawl and physical activity, obesity and morbidity." *American Journal of Health Promotion* 18(1): 47-57.

<sup>88</sup> U.S. DOT, Bureau of Transportation Statistics (2004). *Sidewalks Promote Walking*. Issue Brief 12, Washington, D.C.

<sup>89</sup> U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (2008). *Kids Walk-to-School: Then and Now-Barrier and Solutions*. Available at [http://www.cdc.gov/nccdphp/dnpa/kidswalk/then\\_and\\_now.htm](http://www.cdc.gov/nccdphp/dnpa/kidswalk/then_and_now.htm) accessed April 30, 2013.

<sup>90</sup> Cooper, Ashley, Angie Page, Lucy Foster, and Dina Qahwaji (2003). "Commuting to school: Are children who walk more physically active?" *American Journal of Preventive Medicine* (25)4, 273-276.

<sup>91</sup> Future of Children (2006), "Childhood Obesity: Trends and Potential Causes," 16(1), Patricia M. Anderson and Kristin F. Butcher. Available at [http://www.futureofchildren.org/futureofchildren/publications/docs/16\\_01\\_02.pdf](http://www.futureofchildren.org/futureofchildren/publications/docs/16_01_02.pdf) accessed May 3, 2013.

<sup>92</sup> Future of Children (2006). *The Role of Built Environments in Physical Activity, Eating, and Obesity in Childhood*. Vol. 16(1), Sallis, J. and K. Glanz. Available at [http://www.futureofchildren.org/futureofchildren/publications/docs/16\\_01\\_05.pdf](http://www.futureofchildren.org/futureofchildren/publications/docs/16_01_05.pdf) accessed April 30, 2013.

<sup>93</sup> Ewing, R., Schmid, T. L. et al. (2003). "Relationship between urban sprawl and physical activity, obesity and morbidity." *American Journal of Health Promotion* 18(1): 47-57.

<sup>94</sup> <http://www.saferoutesinfo.org/program-tools/NHTS-school-travel-1969-2009>

## QUALITY OF LIFE IN COMMUNITIES

Building quality of life in communities involves a whole government approach, and DOT is collaborating across lines of authority to leverage related Federal investments. With the Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA), we formed the *Partnership for Sustainable Communities* to promote more sustainable and economically resilient communities. The Partnership is working to address barriers to coordinating transportation, housing, and environmental programs and investments. For instance, integrating transportation planning with housing and community development planning not only improves connectivity and influences how people choose to travel, but also enables communities to consider transportation

<sup>95</sup> Smart Growth America, Surface Transportation Policy Project (2003). *Measuring the Health Effects of Sprawl: A National Analysis of Physical Activity, Obesity and Chronic Disease*. Available at: <http://www.smartgrowthamerica.org/report/HealthSprawl8.03.pdf> accessed April 30, 2013.

<sup>96</sup> Ewing, Reid, Tom Schmid, Richard Killingsworth, Amy Zlot, and Stephen Raudenbush (2008). "Relationship Between Urban Sprawl and Physical Activity, Obesity, and Morbidity." *Urban Ecology*.

and land use planning simultaneously and, ultimately, make the best use of limited funds. If these barriers are based on Federal administrative rules or regulations, we are proposing modifications to lift them. Where they are statutory, we are working with Congress to address them. Through the Partnership, we coordinate related federal programs and technical assistance opportunities among all three agencies. For example, DOT and HUD provide staff and resources to support the EPA Smart Growth Technical Assistance Program. DOT and EPA collaborate with HUD in its administration of affordable housing and planning programs. In addition, HUD and EPA serve on review panels for the DOT TIGER Discretionary Grant applications, for which quality of life and sustainability are two key criteria.<sup>97</sup> To achieve our Quality of Life in Communities agenda, we will:

- Provide best practices in financing and implementing quality of life in communities strategies;
- Encourage coordination of land use planning with the current MPO transportation planning process, including preparation of plans and programs that support local economic development, multi-modal networks, and land use and recreation plans;
- Develop, pilot, and link tools that can help communities evaluate the trade-offs among various street space allocations and scenarios;
- Develop national and local performance measures that can be used to track quality of life across the Nation;
- Advocate for more robust State and local planning efforts, create incentives for investments that demonstrate the greatest enhancement of community quality of life based on performance measures, and focus transportation spending to support complementary infrastructure investments, both public and private;
- Support strategies to promote the flexible use of

programs that benefit quality of life in communities, including scenic and historic transportation resources, access to recreation, vegetation management in transportation corridors, and mitigation of existing transportation impacts on stormwater and wildlife;

- Encourage practices that support transit oriented development in proximity to rail stations, bus corridors, or multi-modal transportation centers, in order to maximize the value of capital investments in transit and support the infrastructure, land availability, housing, services, and amenities needed to support viable mixed use, mixed income, pedestrian-friendly, and walkable communities; and
- Continue collaboration with other federal agencies to facilitate coordination of federal investments in housing, transportation, infrastructure, and community development, as well as an on-going commitment to the previously-adopted livability principles.

Our strategic objectives for the Quality of Life in Communities goal are presented below.

#### FY 2014-2018 STRATEGIC OBJECTIVES

- Expand convenient, safe, and affordable transportation choices for all users by directing federal investments in infrastructure towards projects that more efficiently meet transportation, land use, goods movement, and economic development goals developed through integrated planning approaches (LC1).
- Ensure federal transportation investments benefit all users by emphasizing greater public engagement, fairness, equity, and accessibility in transportation investment plans, policy guidance, and programs (LC2).

<sup>97</sup> *The American Recovery and Reinvestment Act of 2009* appropriated \$1.5 billion of discretionary grant funds for capital investments in surface transportation infrastructure to be awarded by the U.S. Department of Transportation. These TIGER Discretionary Grants were awarded on a competitive basis to projects that have a significant impact on the Nation, a metropolitan area, or a region.



Our strategies for addressing each objective are discussed in the following paragraphs.

### STRATEGIES TO INCREASE ACCESS TO CONVENIENT AND AFFORDABLE TRANSPORTATION CHOICES

We will enhance the quality of life for all Americans by creating and maintaining a safe, reliable, integrated, and accessible transportation network that enhances choices for transportation users, provides easy access to employment opportunities and other destinations, and promotes positive effects on the surrounding community. We will build on innovative ways of doing business that promote mobility and enhance the unique characteristics of our neighborhoods, communities and regions. To increase access to transportation choices, we will:

- Continue to encourage States and MPOs to consider the impact of transportation investments on local land use, affordable housing, scenic and historic resources, access to recreation, people, and goods movement;
- Continue to invest in high-speed and intercity passenger rail to complement highway, transit, and aviation networks and encourage projects that improve transit connectivity to intercity and high-speed rail, airports, roadways, and walkways;
- Increase the capacity and reach of public transpor-

tation, improve the quality of service, and improve travel time reliability through deployment of advanced technologies and significant gains in the state of good repair of transit infrastructure; and

- Advocate for transportation investments that strategically improve community design and function by providing an array of safe transportation options such as vanpools, smart paratransit, car sharing, bike sharing, and pricing strategies that, in conjunction with transit services, reduce single-occupancy driving.

As noted earlier in the safety goal discussion, hundreds of communities and many states across the U.S. have established Complete Streets policies. These policies are consistent with the Department's *Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations* that supports the development of fully integrated active transportation networks.<sup>98</sup> The purpose of these policies is to foster the development of connected systems of transportation, rather than isolated projects without the support of a multimodal network.

To further this effort, the DOT will develop performance measures and indicators to track progress in the development of seamless walking and bicycling networks over time. FHWA will work with partners and stakeholders, including communities, states, and others, to identify indicators of performance appropriate to the local context; while also providing information on available data, collection methods and analysis techniques, and other resources and program support. There is a range of ways to track progress in the creation of seamless multimodal networks. Progress can be measured by the development of pedestrian and bicycle facilities as well as in the use of them, for example by the number of total trips and commuting trips made by walking and bicycling. Other measures could include the number of cities, states, and transit agencies that publish goals for increasing both walking and bicycling and the number of cities, states, businesses, and schools that are designated as walk and bike-friendly.

<sup>98</sup> View the DOT policy statement at: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/overview/policy\\_accom.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm) accessed September 27, 2013.

The selection of these measures will depend on local context and data availability. In an effort to support these measures and promote a better understanding of bicycle and pedestrian mode share overall, FHWA is currently working to implement more thorough guidance and tools for collection of bicycle and pedestrian specific data throughout the states. Efforts currently underway to enhance the FHWA Traffic Monitoring Analysis system and related tools will establish a national database for reporting local bicycle and pedestrian counts, and methods for analyzing the data. As consistent, reliable data is collected, and analyzed, additional guidance on appropriate measures will be developed.

To encourage and support bicycling and walking, often referred to as active transport, we will:

- Promote the use of bicycling and walking for daily activities through investment in on- and off-street bike and pedestrian infrastructure, bicycle accommodation on buses, trains, transit, and ferries, and safety enhancements;
- Develop planning data and analytic techniques to support planning for non-motorized travel, including Geographic Information System-based methods to estimate non-motorized travel, standardized methods for non-motorized travel data collection, data collection and analysis of trends in non-motorized travel, data analysis of related travel trends such as VMT per capita and travel time reliability, and analytic tools to study the relationship between non-motorized travel and greenhouse gas (GHG) emissions;
- Promote the development and maintenance of recreational trails and trail-related facilities for both non-motorized and motorized recreational use;
- Encourage rural areas to plan for opportunities to walk and ride bicycles as well as provide reliable means of high-quality, accessible public transportation services to connect them to vital destinations now accessible only by automobile;
- Encourage Federal Land Management agencies, States and Tribal governments to inventory their

walking and bicycling facilities; and

- Maintain a web-based clearinghouse on walking and bicycling to provide best practices on walking and bicycling planning, design, construction, maintenance, safety, ways to encourage using these modes for trips, and continue to develop methods to evaluate the walkability and bikeability of a community.

### STRATEGIES FOR IMPROVED COORDINATION OF HUMAN SERVICES TRANSPORTATION

The Transportation Secretary leads the Federal Coordinating Council on Access and Mobility (CCAM) in support of the United We Ride (UWR) initiative. UWR is a Federal inter-agency initiative to coordinate over 60 federally-assisted transportation programs aimed at improving the availability, quality, and efficient delivery of transportation services for older adults, people with disabilities, and individuals with lower incomes. UWR works through FTA staff, other Federal agencies, State and local organizations, and non-profits to provide assistance in obtaining Federal grants in support of the transportation-disadvantaged. To increase access to transportation for these persons, we will continue to support the CCAM mandates and also:

- Support locally-coordinated human service transportation planning processes and advocate for a single point of access that links human services with transportation providers to address mobility needs of persons with disabilities, older adults, low-income persons and others without cars or who are unable to access the fixed route system and trains;
- Conduct research to develop transportation management center capabilities for automated scheduling, mapping, routing, and dispatching to link human services transportation providers for easier access, and more efficient and cost-beneficial services; and
- Enhance technical assistance and training activities to improve the operations of local public and non-profit community transportation providers.

## STRATEGIES TO INCREASE ACCESS FOR PERSONS WITH DISABILITIES

The *Americans with Disabilities Act of 1990* (ADA) prohibits discrimination against persons with disabilities in all aspects of life, and applies to all entities, i.e., public or private regardless of funding source. Title II of the ADA applies to all programs, services and activities provided or made available by public entities including State and local governments or any of their instrumentalities or agencies. The scope of Title II coverage extends to the entire operations of a public entity, and includes all stations in transit systems, airports facilities, intercity rail transportation system, and roadway facilities including sidewalks or pedestrian crosswalks. We can provide guidance, assistance, and funding in a limited number of cases, to encourage ADA compliance in existing facilities. While many entities have developed ADA transition plans, implementation has been slowed by competing priorities for limited funds.

We consider how environmental justice principles will be integrated into all DOT planning and programming, rulemaking, and policy formulation as well as enforcement actions.<sup>99</sup> We seek to promote accessible transportation systems through the rigorous enforcement of the ADA, Title VI analyses, and environmental justice analyses conducted as part of federal transportation planning and environmental review and permitting provisions.

To increase access for persons with disabilities, we will:

- Engage with stakeholders from the disability community to identify transportation policies and programs that adversely impact accessibility to the Nation's transportation systems that are funded by DOT;
- Conduct educational outreach with members of the public and stakeholders regarding the accessibility requirements of the ADA as it pertains to transportation; and,
- Enforce the ADA through rigorous compliance reviews, ADA Transition Plans, and regular



engagement with federally-funded transportation recipients to address transportation policies and programs that adversely impact the accessibility of transportation systems for individuals with disabilities

- Increase access to transportation for special needs populations and individuals with disabilities;
- Ensure full compliance and accountability for ADA requirements including the prompt resolution of claims; and
- Increase the number of State and local government ADA transition plans that provide schedules for including curb ramps or other sloped areas at pedestrian crosswalks, identify physical obstacles that limit accessibility, describe the methods that will be used to make facilities accessible, and specify a schedule for achieving compliance for pedestrian accessibility in public rights-of-way

<sup>99</sup> The DOT Environmental Justice Order is available at [http://www.fhwa.dot.gov/environment/environmental\\_justice/](http://www.fhwa.dot.gov/environment/environmental_justice/) accessed May 1, 2013.

## STRATEGIC OBJECTIVES, PERFORMANCE GOALS, AND INDICATORS

We will monitor our progress in achieving the Strategic Objectives for the Quality of Life in Communities goal using the Performance Goals and Indicators in Table G.

TABLE G. PERFORMANCE GOALS, INDICATORS, AND LEAD BY QUALITY OF LIFE IN COMMUNITIES STRATEGIC OBJECTIVE.

PERFORMANCE GOAL	PERFORMANCE INDICATOR(S)	LEAD OFFICE
Strategic Objective: Expand convenient, safe, and affordable transportation choices for all users by directing federal investments in infrastructure towards projects that more efficiently meet transportation, land use, and economic development goals developed through integrated planning approaches (LC1).		
Increase the number of created and/or significantly improved pedestrian and bicycle transportation networks in communities (i.e., local, regional, and state) that provide functional connections and enhance transportation choice to 65 networks by FY 2018. <sup>100</sup>	Number created and/or substantially improved pedestrian and bicycle transportation networks.	FHWA
Increase intercity passenger rail ridership to at least 7.5 billion miles traveled by 2018.	Total number of intercity rail passenger-miles traveled.	FRA
Strategic Objective: Ensure federal transportation investments benefit all users by emphasizing greater public engagement, fairness, equity, and accessibility in transportation investment plans, policy guidance, and programs (LC2).		
Improve accessibility on public rights of way by increasing the number of State DOTs with ADA transition plans that include the public rights of way to 48 by FY 2018.	Number of State DOTs with ADA transition plans that include the public rights of way.	FHWA
Increase the percentage of the Veterans Transportation Community Living Initiative (VTCLI) partner community sites using social media strategies to at least 25 percent, or 22 out of 86, by 2018.	Percentage of VTCLI partner communities using social media strategies.	FTA
Improve access to transportation for people with disabilities and older adults by ensuring that at least 20 percent of intercity passenger rail stations comply with the requirements of ADA by the end of 2018.	Cumulative percentage of intercity passenger rail stations that comply with ADA requirements, where AMTRAK is responsible.	FRA

<sup>100</sup> While over 500 cities currently have complete street policies, it does not necessarily mean the communities have pedestrian and bicycle networks and/or plans. We do not have a baseline number of the total number of communities that have constructed improved pedestrian and bicycle networks. Performance reporting will determine if over the reporting period a community has made new or significantly improved networks. Information on the scale of a network, facility types, functional connectivity, and other improvements will determine if the community has met the performance measurement.



## EXTERNAL RISK FACTORS

Current laws and associated DOT guidance provide States and MPOs with great flexibility; they neither give priority to nor require the expenditure of funds by grant recipients on projects that are explicitly intended to improve quality of life.

Transportation infrastructure and housing have long useable lives, which can provide or limit options for generations. For example, if a bridge is built without accommodations for bicycles and pedestrians or without the structure to support passenger or freight rail,

then these modes are not likely to receive consideration until that bridge is replaced. Further, the design and location of neighborhoods can be even more lasting. As a consequence, changes to the organization and density of the national housing stock and the transportation that supports the stock will take decades to unfold, and will largely be constrained by the extent of new community or infill growth. Retrofits of existing communities therefore require strong direction and leadership as well as the involvement of all stakeholders throughout the planning process.

Federal-aid roadway design standards do not apply to local streets. DOT can give guidance and publish best practices, but cannot require that transportation infrastructure include walking and bicycling facilities. Typically, sidewalks and bike paths are optional in road construction. Where sidewalks do exist, they are often not well-connected, accessible, or safely designed. Other barriers to improved quality of life in communities include the lack of crosswalks, traffic signals with insufficient time for crossing, wide roads without medians, fast-moving traffic, long blocks, lack of gridded streets, sidewalk obstructions, and narrow sidewalks.

Community and institutional resistance to changes in business practices, planning procedures, and transportation norms that will be needed to quality of life in communities can be strong and pervasive. Obstacles to change include lack of information about the benefits of change, lack of knowledge about how the change would affect individuals or the community, lack of community pressure to change, and lack of sustained leadership in the direction of change. The costs of change are often immediate, while the benefits are long-range. This cost-benefit disparity reduces the political appeal of change.

Important demographic trends could have a profound effect on the demand for transit and walking and alter current resistance to change. The demographic groups that are growing most quickly in the U.S. are older Americans, non-traditional families, and non-white households. Historically, these groups have used alternatives to personal vehicles such as transit in higher



numbers.<sup>101</sup> Nationwide, the use of private vehicles for commuting to work is just below 88 percent. But, usage is closer to 80 percent in the largest metropolitan areas with the difference being made up mostly by increases in transit and walking.<sup>102</sup>

Preferences and attitudes among younger Americans could also be a driving force for change. In one survey, half of the population age 18 to 34, often referred to as Millennials, agreed that an easy walk to stores was an extremely important determinant in their choice of housing and neighborhood. In the same survey, over two-thirds felt that living in a walkable community was important.<sup>103</sup> Among this same group, a more recent survey revealed that the loss of a personal vehicle is of less consequence than the loss of their mobile devices. The survey results suggest that the availability of car sharing and ride sharing services make it easier for Millennials to live without owning a car.<sup>104</sup>

Among older Americans, preferences could be changing too. Another survey of older households reported that 71 percent of respondents want to live within walking distance of transit.<sup>105</sup> In more walkable communities, older Americans will have more opportunity to age in place if transportation is available to them. Even if they have to curtail their driving, they will still have access to medical services, shopping, family, friends, and social amenities.

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<sup>101</sup> Reconnecting America and Center for Transit Oriented Development (2008). *TOD 101-Why Transit Oriented Development and Why Now*. Available at <http://www.reconnectingamerica.org/resource-center/browse-research/2007/tod-101-why-transit-oriented-development-and-why-now/> accessed April 30, 2013.

<sup>102</sup> Transportation Research Board (2013).

<sup>103</sup> Center for Transit Oriented Development (2004). *HIDDEN IN PLAIN SIGHT: Capturing the Demand for Housing Near Transit*. Washington, D.C. Available at <http://reconnectingamerica.org/resource-center/books-and-reports/2004/hidden-in-plain-sight-capturing-the-demand-for-housing-near-transit/> accessed April 30, 2013.

<sup>104</sup> ZipCar (February 2013). *Driving Deeper: Millennials and Technology*. Available at [http://www.slideshare.net/Zipcar\\_Inc/millennial-slide-share-final-16812323](http://www.slideshare.net/Zipcar_Inc/millennial-slide-share-final-16812323) accessed April 29, 2013.

<sup>105</sup> American Association of Retired Persons (2011). *More Older Americans Use Public Transportation And More Drivers are 65+*. Available at <http://www.aarp.org/about-aarp/press-center/info-05-2011/more-older-americans-use-public-transportation-and-more-drivers-are-sixty-five-plus-says-aarp-report.html>

# ENVIRONMENTAL SUSTAINABILITY



## STRATEGIC GOAL

ADVANCE ENVIRONMENTALLY SUSTAINABLE POLICIES AND INVESTMENTS THAT REDUCE CARBON AND OTHER HARMFUL EMISSIONS FROM TRANSPORTATION SOURCES.

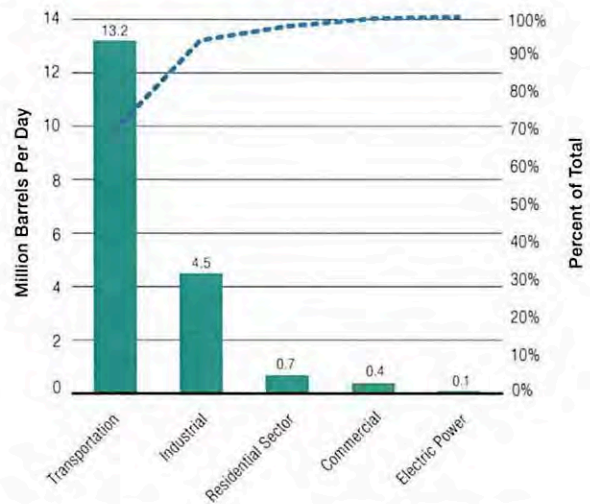
### CHALLENGES AND STRATEGIES

Transportation is crucial to our economy and our quality of life, but there are environmental consequences to building, operating, and maintaining transportation systems. Today we face a new set of transportation challenges, which include limiting transportation's environmental footprint, reducing noise and harmful air emissions, promoting energy independence, addressing global climate change, and improving the resiliency of transportation systems. Our goal is to foster more sustainable approaches to transportation so that future generations will be able to enjoy even higher standards of living and mobility.

While energy use has declined since its peak in 2007, the transportation sector still accounted for about 28 percent of total U.S. energy consumption in 2011 (in BTUs). About 93 percent of the energy consumed was in the form of petroleum.<sup>106</sup> Consumption in the transportation sector was 13.2 million barrels per day, which represents 70 percent of all petroleum usage in the U.S. as illustrated in Figure 4. Of all petroleum

consumed for transportation, use for motor gasoline represents 46 percent (in BTUs).<sup>107</sup>

FIGURE 4. U.S. PETROLEUM CONSUMPTION BY SECTOR, IN MILLION BARRELS PER DAY, 2011.



Source: Energy Information Administration, Annual Energy Review, Figure 5-13A

<sup>106</sup> U.S. DOT, Bureau of Transportation Statistics (2013). *National Transportation Statistics*, Table 4-4: U.S. Energy Consumption by the Transportation Sector (Quadrillion Btu). Available at [http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_statistics/index.html#chapter\\_4](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_statistics/index.html#chapter_4) accessed April 23, 2013.

<sup>107</sup> U.S. Department of Energy, Energy Information Administration (2011). *Annual Energy Review, 2011*, Petroleum Consumption Estimates by Sector, Figure 5-13A. Available at <http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf> accessed April 23, 2013.

About 84 percent of total greenhouse gas (GHG) emissions in the U.S. is carbon dioxide (CO<sub>2</sub>) and the largest source of CO<sub>2</sub> is fossil fuel combustion. Since most transportation activity is petroleum-based fuel consumption, the transportation sector is a significant contributor to total U.S. GHG emissions. In 2011, about 27 percent of U.S. GHG emissions were due to transportation activities. Passenger cars, heavy and medium duty trucks, and light duty trucks were collectively responsible for nearly 83 percent of transportation-related GHG emissions as shown in Table H.

TABLE H. TRANSPORTATION-RELATED GREENHOUSE GAS EMISSIONS BY MODE, 2011.

(Source: U.S. EPA *Inventory of U.S. GHGs Emissions and Sinks, 1990-2011*, Table 2-15.)

TRANSPORTATION MODE	GHG EMISSIONS (TERAGRAMS OF CO <sub>2</sub> EQUIV.)	PERCENT OF TOTAL EMISSIONS
Passenger Cars	787.4	42.9
Heavy and Medium Duty Trucks	401.1	21.9
Light Duty Trucks	331.4	18.1
Commercial and Other Aircraft	149.9	8.2
Ships and Boats	48.2	2.6
Rail	48.0	2.6
Pipelines	37.7	2.1
Other (Buses, Motorcycles and Lubricants)	30.1	1.6

Total GHG emissions in the U.S. increased by 21 percent from 1990 to 2011, with over 60 percent of the total increase attributed to the transportation sector.<sup>108</sup> However, transportation-related GHG emissions declined four percent from 2008 to 2009, largely due to a decline in economic activity and personal vehicle travel. Between 2009 and 2011, GHG emissions declined further by 0.6 percent, even as the level of economic activity recovered.<sup>109</sup> During the same period, the Freight Services Index showed a 13 percent increase and VMT increased about 1 percent, suggesting that this small reduction in emissions was accomplished through some combination of improved light duty vehicle efficiency and improvements in overall freight system efficiency.<sup>110</sup>

Over the past three decades, significant reductions in emissions of criteria air pollutants have been achieved in the transportation sector, largely by progressively strengthening the regulation of vehicle emissions and fuel quality under provisions of the *Clean Air Act*. Since 1990, national transportation emissions (defined as the sum of highway and off-highway vehicle emissions) of nitrogen oxides have been reduced 52 percent, volatile organic compounds by 70 percent, and primary PM<sub>2.5</sub> by 56 percent. Nonetheless significant challenges remain, particularly as EPA increases the stringency of new National Ambient Air Quality Standards (NAAQS) to protect public health. As of 2010, some 123.8 million Americans lived in counties or regions that exceeded health-based NAAQS for at least one regulated air pollutant.<sup>111</sup>

President Obama has recognized the vital role that the transportation sector can play in reducing greenhouse gas emissions, improving energy efficiency, and combating climate change. The President has challenged DOT to transform the way transportation serves the

<sup>108</sup> U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2011*, p. 2-5, April 2013. Available at <http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Main-Text.pdf> accessed May 28, 2013.

<sup>109</sup> U.S. EPA (2013), p. 2-25.

<sup>110</sup> For VMT, see FHWA *Traffic Volume Trends*, December 2009 and December 2011, Available at: [http://www.fhwa.dot.gov/policyinformation/travel\\_monitoring/rvt.cfm](http://www.fhwa.dot.gov/policyinformation/travel_monitoring/rvt.cfm) The Transportation Services Index is available at: [https://1bts.rita.dot.gov/xml/tsi/src/datadisp\\_table.xml](https://1bts.rita.dot.gov/xml/tsi/src/datadisp_table.xml)

<sup>111</sup> U.S. EPA (2012), *Our Nation's Air: Status and Trends Through 2010*, EPA-454/R-12-001, p. 1. Available at <http://www.epa.gov/airtrends/2011/report/highlights.pdf> accessed May 30, 2013

American people by encouraging transportation that is less carbon-intensive such as transit, car- and van-pooling, intercity passenger buses, rail, as well as active transportation like biking and walking that produces zero emissions. Advances in Internet and mobile communications technologies can facilitate expanded and more efficient use of services such as carsharing, bike-sharing, transit systems, ridesharing, and taxi networks. According to a recent report, each carsharing vehicle replaces 9 to 13 privately-owned vehicles, and the car-sharing participants significantly reduced the number of miles they would have driven as a result.<sup>112</sup>

Our recent emphasis on ecosystem approaches to determining the environmental impact of transportation projects has promoted broader mitigation and conservation strategies. For example, wetland acreage has been replaced at a rate exceeding losses from transportation projects. However, the Nation's investments in transportation systems and infrastructure will only be sustainable if we more broadly consider the secondary effects of construction and land use. Although transportation projects comply with requirements for management of stormwater runoff, and federal funds are available for restoration activities, more must be done to meet the challenge of reducing transportation's contribution to water quality problems.

Recent weather events such as Superstorm Sandy, which disrupted major portions of air, highway, transit, port, and rail line service in the New Jersey-New York metropolitan region, has prompted us to consider more carefully how we plan, design, and build transportation infrastructure. Superstorm Sandy was the largest tropical storm to impact the Northeast U.S. in recent history. Climate change research predicts that storms will become stronger, so we need to consider climate change impacts and the incorporation of adaptation strategies into DOT planning, operations, policies, and programs to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services, and operations remain resilient under extreme climate

conditions. In anticipation of more extreme weather events, it is imperative that we create a more resilient transportation system, especially when rebuilding or replacing storm damaged infrastructure.

Our strategic objectives are presented below:

#### FY 2014-2018 STRATEGIC OBJECTIVES

- Reduce oil-dependence and carbon emissions through research and deployment of new technologies including alternative fuels, and by promoting more energy-efficient modes of transportation. (ES1).
- Avoid and mitigate transportation-related impacts to climate, ecosystems, and communities by helping partners make informed project planning decisions through an analysis of acceptable alternatives, balancing the need to obtain sound environmental outcomes with demands to accelerate project delivery (ES2).
- Promote infrastructure resilience and adaptation to extreme weather events and climate change through research, guidance, technical assistance, and direct federal investment (ES3).

Our strategies for addressing each objective are discussed in the following paragraphs.

#### STRATEGIES TO REDUCE CARBON EMISSIONS, IMPROVE ENERGY EFFICIENCY AND REDUCE DEPENDENCE ON OIL

We are working across all modes to improve the energy and environmental performance of the transportation sector. The aviation industry has made significant gains in fuel efficiency. Modern aircraft are up to 70 percent more fuel efficient than early commercial jet aircraft.<sup>113</sup> Notwithstanding this success, there is

<sup>112</sup> U.S. Public Interest Research Group Education Fund (2013). *A New Way to Go: The Transportation Apps and Vehicle Sharing Tools that Are Giving More Americans the Freedom to Drive Less*. Washington, D.C. Available at: [http://www.uspirg.org/sites/pirg/files/reports/A-Better-Way-to-Go-vUSPIRG\\_2.pdf](http://www.uspirg.org/sites/pirg/files/reports/A-Better-Way-to-Go-vUSPIRG_2.pdf) accessed September 30, 2013.

<sup>113</sup> According to the Aerospace Industries Association, technological improvements have resulted in increased efficiency of aircraft. See [http://www.aia-aerospace.org/issues\\_policies/civil\\_aviation/aviation\\_and\\_the\\_environment/frequently\\_asked\\_questions/](http://www.aia-aerospace.org/issues_policies/civil_aviation/aviation_and_the_environment/frequently_asked_questions/) accessed May 30, 2013.

renewed emphasis on improving the fuel efficiency of the NAS. Fuel currently represents the largest operating cost for U.S. airlines, and this cost category has grown dramatically in recent years. We are continuing to carry-out the Continuous Lower Energy, Emissions, and Noise (CLEEN) program that accelerates the development of new engine and airframe technologies and advances alternative jet fuels to reduce noise, emissions, and energy consumption. We are co-sponsoring the Commercial Aviation Alternative Fuels Initiatives (CAAFI) focused on developing and deploying drop-in sustainable alternative jet fuels for commercial aircraft. And, we are continuing to support the conversion of airport ground vehicles to alternative fuels through the Voluntary Airport Low Emissions (VALE) Program.

DOT and EPA have worked closely with auto manufacturers, the State of California, environmental groups and other stakeholders to develop a series of programs to increase fuel economy for the Nation's vehicle fleet. In, 2010, DOT and EPA jointly established new fuel economy and tailpipe carbon dioxide standards for light duty vehicles as well as medium and heavy trucks. Building on this accomplishment, the Administration announced an historic agreement in 2011 with thirteen major automakers to increase fuel economy to 54.5 miles per gallon for cars and light duty trucks by model year 2025. By building on the 2012 to 2016 model year agreements, the proposal would save American families \$1.7 trillion in fuel costs, and by 2025 result in an average fuel savings of over \$8,000 per vehicle over the lifetime of the vehicle. Additionally, these programs would dramatically cut the oil we consume, saving a total of 12 billion barrels of oil, and by 2025 reduce oil consumption by 2.2 million barrels a day. The proposed standards will also curb carbon pollution, cutting more than six billion metric tons of greenhouse gas over the life of the program. This is more than the amount of CO<sub>2</sub> emitted by the U.S. in 2010.<sup>114</sup>

In 2010, DOT and EPA announced the final rule for improving fuel efficiency in medium and heavy-duty trucks, which covers model years 2014 to 2018 for vehicles from three quarter-ton pickups and vans

<sup>114</sup> The oil savings, consumer, and environmental benefits of this comprehensive program are detailed in *Driving Efficiency: Cutting Costs for Families at the Pump and Slashing Dependence on Oil*. Available at [http://www.whitehouse.gov/sites/default/files/fuel\\_economy\\_report.pdf](http://www.whitehouse.gov/sites/default/files/fuel_economy_report.pdf)

to delivery and utility trucks to big-rig combination tractors. These new standards are expected to save a projected 530 million barrels of oil and reduce carbon pollution emissions by approximately 270 million metric tons over the lifetime of the vehicles built for model years 2014 to 2018.<sup>115</sup>

We will take the following additional actions to address the challenges of reducing carbon emissions, improving energy efficiency, and reducing the Nation's dependence on oil:

- Work with the International Civil Aviation Organization (ICAO) to advance international aircraft and engine emissions standards, and to recommend practices and guidance materials for solutions that are technologically feasible, economically reasonable, provide measurable benefits, do not adversely affect safety, and take interdependencies between emissions and noise into account;<sup>116</sup>
- Promote maturation of technologies that lower aircraft energy consumption, emissions, and noise through the CLEEN program;
- Work with CAAFI stakeholders to advance the use of drop-in alternative jet fuels for aviation;<sup>117</sup>
- Improve operational solutions in aviation that include more precise and efficient flight paths, such as Optimum Profile Descents, as well as airport surface movement, and en route and terminal area traffic optimization for energy efficiency and reduction in aircraft noise and emissions;
- Conduct research and promote development and deployment of advanced vehicle-to-vehicle and vehicle-to-infrastructure communication technolo-

<sup>115</sup> U.S. Environmental Protection Agency (August 2011). *EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium-and Heavy-Duty Vehicles*, Publication No. EPA-420-F-11-031. Available at: <http://www.epa.gov/otaq/climate/documents/420f11031.pdf>

<sup>116</sup> For example, FAA is conducting a study to identify and assess metrics for CO<sub>2</sub> emissions from aircraft which may potentially be used to set standards for the certification of new aircraft including the benchmarking of existing aircraft and to monitor the operational performance of the commercial aircraft fleet. The results of the study will be provided within the work program of ICAO's Committee on Aviation Environmental Protection for considering development of the aircraft CO<sub>2</sub> standard.

<sup>117</sup> Commercial Aviation Alternative Fuels Initiative (CAAFI) is a forum for the U.S. commercial aviation community to engage the emerging alternative fuels industry and to work together, share and collect needed data, and direct research on aviation alternative fuels.

gies that can significantly increase the capacity of existing highways, move people and goods to their destinations more efficiently and effectively, and reduce fuel consumption and generation of greenhouse gases;

- Continue to improve transit and non-motorized vehicle networks across the nation;
- Advance aviation climate change research to increase understanding of the impacts from aircraft emissions, and expand international engagement on reducing aviation emissions by working with ICAO in coordination with the Department of State and the U.S. EPA;
- Collaborate with the Department of Energy and continue research in advanced metals, plastics, and composites to ensure sustainable vehicle production for the world automotive market; and
- In cooperation with other federal and state agencies, promote the deployment of advanced vehicle technologies, alternatives fuels and alternatives fuels infrastructure where feasible to reduce energy consumption and greenhouse gas emissions of transportation systems, including highway vehicles, transit systems, ships and airport support vehicles.

#### **STRATEGIES TO REDUCE TRANSPORTATION-RELATED AIR, WATER AND NOISE POLLUTION AND IMPACTS ON ECOSYSTEMS**

Making transportation more sustainable requires reducing its impact on human health and ecosystems by reducing emissions of urban air pollutants, water and noise pollution, and waste from transportation sources. To accomplish these objectives, we will:

- Advance multi-jurisdictional and regional decision-making that enables States and local communities to take a broader view of how their transportation systems integrate into longer haul freight movements so that, potentially, they could collaboratively and more effectively use rail or maritime options in partnership with the private sector;

### **IMPROVING PERFORMANCE OF FEDERAL PERMITTING AND REVIEW OF TRANSPORTATION PROJECTS**

In 2012, President Obama signed E.O. 13604, which is intended to “significantly reduce the aggregate time required to make decisions in the permitting and review of infrastructure projects by the Federal government, while improving environmental and community outcomes.” This order expanded upon an earlier Presidential Memorandum signed in March 2011 directing federal agencies to speed up project delivery. Six of the 14 infrastructure projects selected as a high-priority for job creation were transportation projects. Following the selection of these projects, we identified 12 additional projects of national or regional significance. Progress reports and current schedules for each of these projects are tracked on the Federal Infrastructure Permitting Dashboard. As a member of the steering committee on Federal Infrastructure Permitting and Review, we work closely with other Federal agencies to implement process improvements that result in fast delivery and better outcomes.



- Work to ensure that transportation projects meet national environmental and economic objectives and that project decisions are made in a timely and collaborative manner. DOT will improve internal project delivery processes and identify opportunities for enhanced interagency harmonization, through continued DOT initiatives, implementing E.O. 13604 and other efforts.<sup>118</sup>
- Promote the smart use of ITS to decrease air pollution by maximizing the efficient movement of goods and people across the entire transportation network, using data to facilitate green transportation choices by transportation system users and operators;
- Promote effective use of winter maintenance materials, such as salt and sand, to minimize environmental impacts while achieving safe and efficient levels of service through the implementation of ITS solutions, technical assistance, and capacity building programs;
- Ensure through inspections that hazardous liquid pipeline systems and operators are following the sound integrity management practices, advance the safety of pipeline control room operations, and lead the national program for pipeline damage prevention;
- Conduct the ship recycling program for obsolete, federally-owned, merchant-type vessels in an environmentally responsible manner that further reduces the risk of environmental contamination; and
- Modernize the U.S. air transportation system through NextGen by setting investment and infrastructure priorities to support NextGen energy and environmental goals that will result in cleaner and quieter movement of aircraft in the air and on the ground;

<sup>118</sup> E.O. 13604, Available at <http://www.whitehouse.gov/the-press-office/2012/03/22/executive-order-improving-performance-federal-permitting-and-review-infr> accessed April 30, 2013. On May 17, 2013, the President issued an E.O. that follows this earlier E.O. and requires federal agencies to make additional process and policy improvements to accelerate environmental permitting for infrastructure projects, available at <http://www.whitehouse.gov/the-press-office/2013/05/17/presidential-memorandum-modernizing-federal-infrastructure-review-and-pe> accessed May 20, 2013.

## DOT SUSTAINABILITY PERFORMANCE PLAN

We strive to be a leader in the use of environmentally sustainable practices in Departmental operations. We are working to:

- Reduce petroleum consumption and increase alternative fuel use in DOT vehicles;
- Increase awareness and usage of renewable energy;
- Increase the number of buildings that meet the High Performance Sustainable Building criteria;
- Support programs for reductions in GHG emissions and energy use;
- Decrease potable water use; and
- Meet or exceed green purchasing requirements.

Our annual Strategic Sustainability Performance Plan outlines these initiatives in more detail. This effort also contributes to a federal, cross-agency priority goal. More information about federal agency efforts to achieve sustainability is available at: <http://sustainability.performance.gov/>



### STRATEGIES TO INCREASE THE USE OF ENVIRONMENTALLY SUSTAINABLE PRACTICES IN THE TRANSPORTATION SECTOR

Our goal is to make the design of U.S. transportation systems more sustainable and ensure their operation is more efficient, which will in turn reduce the negative environmental effects of transportation and also reduce the use of scarce resources. This goal is most effectively achieved by changing the way that our transportation systems are planned, designed, and operated. Specifically, we will:

- Encourage and support research toward more sustainable and durable transportation materials, construction, and infrastructure;
- Promote best practices that increase sustainability in transportation planning, construction, operation, maintenance, and economic sustainability;
- Advocate the use of Environmental Management Systems as tools to increase the sustainability of airports, highways, navigation aids, ports, transit systems, and other transportation facilities;
- Encourage industry to develop and implement innovative technologies that are more sustainable and apply lifecycle analysis to products and processes;

- Conduct exploratory advanced research that promotes a more environmentally friendly highway template that mitigates environmental impacts and reduces environmental pollution;<sup>119</sup> and
- Conduct maritime environment and compliance activities that address improving marine air emissions, energy efficiency and alternative energy usage, and conduct cooperative efforts to advance development of effective ballast water treatment systems and compliance monitoring methods.

### STRATEGIES TO ENSURE INFRASTRUCTURE RESILIENCE

We define sustainable internal operations as ensuring DOT's facilities operate in an energy efficient way while minimizing the impact to the natural environment. We define resilience as the capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.<sup>120</sup> Specifically, resilience as applied to infrastructure includes the following elements: Reducing the likelihood of failure through such options as hardening and relocation, maintenance, and support for natural barriers and ecosystem services;

- Reducing the consequences of failure through redundancy; and
- Improving recovery time in the event of a system impairment.

Resiliency projects may include hardening of existing facilities; relocation of facilities or elements of facilities to less vulnerable locations; maintaining existing facilities more frequently; supporting natural resources that provide ecosystem services to protect infrastructure; adding redundancy or redundant elements to facilities or systems; providing alternative power, fuel supply, or communications to facilities or systems; and acquisi-

<sup>119</sup> For example, DOT will work to make the highway infrastructure more environmentally friendly by expanding the research and use of recyclable techniques, renewable materials, permeable surfaces, innovative techniques to mitigate stormwater runoff, and the use of transportation rights-of-way to contribute to improvements in air quality and electricity generation.

<sup>120</sup> U.S. DOT (April 2013). *Draft Policy Statement on Climate Change Adaptation*.



tion of spares, supplies, repair materials, long lead-time items, auxiliary power, and lighting systems aimed at rapid repair or recovery of damaged systems.

Resiliency policies and programs should be informed by continual improvement, prioritization of assets, redundancy, and risk analysis and reduction. To guide decision making, DOT will use the best available science as identified by the Federal Emergency Management Agency (FEMA), which includes advisory data such as Advisory Base Flood Elevations, preliminary and final Flood Insurance Rate Maps, and Flood Insurance Studies plus considerations for sea level rise. If FEMA data is mutually determined by DOT and the recipient to be unavailable or insufficiently detailed, other Federal, State, or local data may be used as the best available information in accordance with E.O. 11988.<sup>121</sup>

DOT is also increasing the resiliency and sustainability of its own buildings and fleet by reducing carbon and

other harmful greenhouse gas emissions, promoting energy independence, conserving water, and acquiring environmentally preferable materials, products, and services in accordance with E.O. 13514. We are implementing a 10-year strategic sustainability plan (see inset on Page 74), which identifies the innovative programs and activities we are embracing to meet the requirements of E.O. 13514. Progress on these efforts will not only help the Department reduce its environmental footprint and resource consumption, but also help ensure that its buildings and fleet are performing efficiently with the best return on investment for the American people. Additionally, to advance DOT policies on resilience and sustainable internal operations, we will:

- Encourage DOT funding recipients to perform climate change vulnerability assessments for their transportation infrastructure and integrate the results into their decision-making, including in the areas of transportation planning, asset management, project design, emergency management, maintenance, and operations;
- Provide technical assistance and best practices information to DOT funding recipients;
- Coordinate the implementation of the President's Council on Environmental Quality climate adaptation planning initiatives and participate in the Global Change Research Program working groups;
- Work through the DOT Center for Climate Change to better coordinate climate-related activities, research, and products; and
- Ensure DOT owned or controlled facilities are operated in a sustainable and energy-efficient way by tracking performance and promoting sustainable practices.

## STRATEGIC OBJECTIVES, PERFORMANCE GOALS, AND INDICATORS

We will monitor our progress in achieving the Strategic Objectives for the Environmental Sustainability goal using the Performance Goals and Indicators in Table I.

<sup>121</sup> E.O. 11988, *Floodplain Management*, requires Federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The E.O. provides an eight-step process that agencies should carry out as part of their decision-making on projects that have potential impacts to or within the floodplain. Available at <http://www.fema.gov/environmental-planning-and-historic-preservation-program/executive-order-11988-floodplain-management> accessed April 30, 2013.

TABLE I. PERFORMANCE GOALS, INDICATORS, AND LEAD BY ENVIRONMENTAL SUSTAINABILITY STRATEGIC OBJECTIVE.

PERFORMANCE GOAL	PERFORMANCE INDICATOR(S)	LEAD OFFICE
Strategic Objective: Reduce foreign oil-dependence and carbon emissions through research and deployment of new technologies including alternative fuels, and by promoting more energy-efficient modes of transportation (ES1).		
Improve NAS energy efficiency by at least 26 percent by FY 2018, relative to the FY 2001 baseline.	Aviation fuel burned per revenue-ton-mile.	FAA
Increase post-2018 fuel efficiency for heavy-duty vehicles (i.e., medium and heavy-duty trucks, pick-up trucks, vans, vocational vehicles, and trucks).	Develop new post-2018 fuel efficiency standards for heavy-duty vehicles in partnership with EPA, industry leaders, and other key stakeholders.	NHTSA
Avoid and mitigate transportation-related impacts to climate, ecosystems, and communities by helping partners make informed project planning decisions through an analysis of acceptable alternatives, balancing the need to obtain sound environmental outcomes with demands to accelerate project delivery (ES2).		
Reduce environmental contamination risk from prolonged storage of federally-owned, non-retention vessels at DOT facilities by meeting an annual 1.0 rate for ship disposal. For every incoming vessel destined for storage and disposal at a DOT facility, dispose of at least one ship. <sup>122</sup>	Annual number of ships disposed per number of incoming vessels.	MARAD
Lead FHWA implementation of MAP-21 and future reauthorization environmental provisions through FY 2018.	Submit three reports to Congress annually regarding the status of environmental impact statement and environmental assessment processes (pursuant to 23 U.S.C. 139(h)(7)(B)).	FHWA
Reduce the number of people exposed to significant noise around U.S. airports to less than 300,000 people in FY 2018. <sup>123</sup>	Number of people exposed to significant noise (i.e., Day-Night Average Sound Level of 65dB or greater) around U.S. airports.	FAA
Strategic Objective: Promote infrastructure resilience and adaptation to extreme weather events and climate change through research, guidance, technical assistance, and direct federal investment (ES3).		
Encourage at least 69 State DOTs, MPOs serving a TMA, and Federal land management agencies to undertake an assessment of vulnerabilities of the highway system by FY 2018. <sup>124</sup>	Number of State DOTs, MPOs serving a TMA, and Federal land management agencies that have conducted vulnerability assessments of the highway system to climate change and/or extreme weather events.	FHWA
Advance energy and sustainability goals within DOT practices by FY 2018.	Yellow or better score for at least 85 percent of the DOT indicators on the public OMB Energy and Sustainability Scorecard.	OST/ALL

<sup>122</sup> This goal quantifies the annual and long-term progress made by the program to reduce the environmental risks posed by non-retention ships at the reserve fleet sites. A rate of at least 1.0 is the target for each year and indicates that the program removed at least one ship for every new ship that is designated obsolete and added to one of the fleet sites. An actual annual value that is less than 1.0 indicates the target was exceeded with the removal of more ships for disposal than have been designated for disposal on an average annual basis.

<sup>123</sup> The community noise exposure goal reflects the number of people who live in areas with significant aircraft noise, regardless of whether their houses or apartments have been sound-insulated. Significant aircraft noise levels are currently defined as values greater than or equal to Day-Night Average Sound Level (DNL) of 65 dB. The FAA noise mitigation grant program helps address this exposure through a combination of property acquisition and sound insulation. The area of the noise contour representing DNL 65 dB and above and the number of people exposed to these levels can change over time due to fluctuations in flight activity levels, operational procedures, aircraft fleet mix and weather (particular wind conditions). The FAA is continuing to examine trends and possible relationships between noise mitigation efforts and community noise exposure estimates. The FAA may revise or refine the performance goal at a later date to reflect its findings.

<sup>124</sup> This goal is cumulative and counts State DOTs and MPOs with activities that are well underway or completed. Assessments will be counted if they are: led by or substantially involve a State DOT or MPO; involve a systems level analysis, predominately at the statewide, MPO, corridor or sub-area level; and include the application of a systematic vulnerability assessment process such as the FHWA Vulnerability Assessment Framework.

## EXTERNAL RISK FACTORS

There is still a great deal of political and policy debate about the best way to address the environmental challenges posed by our transportation system, especially its effects on climate change, and the potential costs of migrating transportation from fossil-based energy to other alternatives. On a 20 to 40 year horizon, it is possible for the U.S. to undertake an orderly transition to a variety of fuels that include fuel cells and hybrid fuel cells, battery, electric, hydrogen, green diesels, and gasoline.

However, fuel cells, batteries, or hydrogen engines that can provide travel distances equal to a tank of fossil fuel are not yet available. Current passenger-vehicle battery technologies provide less than 100 miles on a

single charge, far below most consumers' expectations of a 250-300 mile range. While growing in use, hybrid electric vehicles continue to represent a small fraction of all vehicle sales. Some vehicle manufacturers are introducing all electric vehicles that have zero GHG emissions at the tailpipe, but consumer adoption will be slow until a nationwide infrastructure of charging stations is in place.

With the exception of 10 to 15 percent ethanol and 5 percent biodiesel, the requisite codes and standards are not in place that would allow the traveling public or commercial carriers to use alternative fuels. These codes and standards govern a wide variety of topics including safety, emergency response, and engine warranties.



Researchers are currently grappling with the technical challenges of adding alcohols and bio-oils to the petroleum infrastructure. High concentrations of these additives create corrosion and contamination issues that are solvable in the mid-term. There is a limited infrastructure for hydrogen fuels, which is primarily in California, and it will take decades to create a nationwide network. In addition, at present, only a limited number of natural gas pipelines can move hydrogen over long distances.

Natural gas production in the U.S. is forecast to increase by approximately 50 percent between 2011 and 2040; and almost all of this increase is due to projected growth in shale gas production, which is projected to more than double during this period.<sup>125</sup> Liquefied natural gas holds some promise for long-haul trucking because it can be supported by a centralized refueling infrastructure. However, its use will depend on the costs of natural gas relative to oil.

The price of crude oil and other liquid fuels will continue to fluctuate significantly in response to price shocks that affect the global market. While U.S. oil production is increasing, fuel prices are still subject to fluctuations in response to changes in global supply and demand. Oil prices are forecast to remain stable between \$90 and \$100 per barrel through 2015-2016, but then increase slowly to about \$180 per barrel in 2030.<sup>126</sup> Low or stable oil prices give consumers an impetus for additional spending including travel, but dampen prospects for wider acceptance of alternatives to petroleum. Higher oil prices over the longer term could cause the transportation industry and consumers to more readily accept alternatives.

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<sup>125</sup> U.S. Department of Energy, Energy Information Administration (December 5, 2012). *What is Shale Gas and Why Is It Important?* Available at [http://www.eia.gov/energy\\_in\\_brief/article/about\\_shale\\_gas.cfm](http://www.eia.gov/energy_in_brief/article/about_shale_gas.cfm) accessed May 1, 2013.

<sup>126</sup> U.S. Department of Energy, Energy Information Administration. *Annual Energy Outlook 2013*, Table 1. Total Energy Supply, Disposition, and Price Summary. Available at [http://www.eia.gov/forecasts/aco/IF\\_all.cfm#updated\\_nosunset](http://www.eia.gov/forecasts/aco/IF_all.cfm#updated_nosunset) accessed May 1, 2013.

# ORGANIZATIONAL EXCELLENCE



## STRATEGIC GOAL

**DEVELOP AN INNOVATIVE, WORLD-CLASS ORGANIZATION TO ADVANCE THE U.S. TRANSPORTATION SYSTEM AND SERVE THE NATION'S LONG-TERM SAFETY, SOCIAL, ECONOMIC, SECURITY, AND ENVIRONMENTAL NEEDS.**

### CHALLENGES AND STRATEGIES

We understand and recognize that our ability to provide transportation programs and services that meet the Nation's needs depends on excellent management of our organization and resources. The Organizational Excellence goal emphasizes how our people, property, and processes are central to achieving all of our strategic goals and objectives. In this chapter, we describe two important challenges from among the many that our leadership and managers identified through the strategic planning process. First, we must build a Departmental workforce that can meet the challenges of this decade, especially in light of the pending retirement of many of our eligible employees. Second, we must focus on improving our information technology (IT) and financial management business processes. In the case of IT, we are highlighting priorities such as cyber security that are described in more detail in the DOT IT Strategic Plan.<sup>127</sup>

Our strategic objectives are presented below:

#### FY 2014-2018 STRATEGIC OBJECTIVES

- Put people first. Build a capable, diverse, and collaborative workforce of highly-skilled, innovative, and motivated employees by making DOT a workplace of choice through employee empowerment and engagement, learning and development, succession planning, workplace flexibilities, and a healthy and safe workforce (OE1).
- Advance secure and innovative information systems and technology platforms that protect against cyber threats and support the efficient use of information and data for financial management (OE2).

These are our highest management priorities during the period of this strategic plan. The challenges and strategies associated with each are addressed in the following paragraphs.

<sup>127</sup> U.S. DOT (2013). *Information Resource Management Strategic Plan*, unpublished.



## STRATEGIES FOR ENABLING HUMAN CAPITAL SOLUTIONS

Retirement eligibility among the DOT workforce threatens our ability to achieve our strategic goals and objectives. Approximately 14 percent of all DOT employees were eligible to retire in 2012, with 36 percent of Senior Executive Service members being retirement eligible. Retirement eligibility among our employees will continue to increase over the next several years given current workforce demographics. Recruitment, retention and succession planning will be the key to successfully managing the retirement impact on mission.

Strengthening open channels of communication that enable DOT employees to collaborate brainstorm and share ideas, and to feel engaged to make DOT a better place to work will be necessary ingredients to success. Moreover, we will need to sustain and foster a culture of continuous learning that drives continuous improvement in performance through values-based leadership, training, effective performance feedback, coaching, mentoring and increasing opportunities for developmental assignments. Taken together, we will achieve the important objective of developing key competencies and skill sets needed in the future.

To ensure a workforce that is ready, capable, and willing to achieve our mission, we will:

- Implement workforce planning, competency-based hiring, and competency-based training to ensure DOT has a diverse and capable workforce with the right leadership, technical and functional skills;
- Promote selfless leadership that focuses on performance and thrives on collaboration, while leveraging employee inclusion and engagement; and
- Foster a culture of continuous learning and improvement among our employees.

## THE 3E (ECONOMY, EFFECTIVENESS, AND EFFICIENCY) INITIATIVE

In support of the President's Management Agenda, DOT is undertaking an aggressive initiative to deliver a smarter, more innovative, and more accountable government agency. The initiative is identifying opportunities throughout DOT to meet the following goals:

- **Economic Growth** – government that supports an ever-growing economy and job creation
- **Effectiveness** – government that works better
- **Efficiency** – a government that costs less

At the core of this initiative, DOT will generate significant, tangible, and positive differences in the lives of the citizens we serve. We will produce results that are measureable and drive lasting change in how government works and focus on continuous improvement in results. As a result of this effort, DOT will consider innovative and fundamental change to our policies and procedures, consolidation of offices and functions, smart purchasing agreements, and improve financial management. DOT will also work to use performance measures and departmental programs to spur economic development with the ultimate goal of delivering better services to the American people.

## STRATEGIES FOR ENABLING INNOVATIVE INFORMATION TECHNOLOGY AND CYBER SECURITY SOLUTIONS

In this increasingly connected, complex, and interdependent digital world, the demand for technology systems and infrastructure that are cost effective and support operations efficiently requires creative solutions and innovative approaches. This same digital infrastructure is increasingly being targeted for exploitation and disruption by a growing array of adversaries, with threats that have grown more sophisticated, targeted, and serious. We must ensure that both IT and cyber security enable the achievement of our strategic goals through innovative, pragmatic, and flexible approaches that address these risks.

We will provide secure, customer-focused information systems and technology platforms that support the innovative, effective, and efficient use of information and data for the management of all DOT business processes. We will leverage new technologies and ensure contingency plans are in place for our employees to function as a mobile workforce in all situations by encouraging telework, enabling work features on mobile devices, and providing broadband connectivity to our DOT workforce allowing them to securely work from anywhere. Our key strategies will be to:

- Increase the utility and accessibility of information and technology solutions across the Department;
- Leverage collaborative opportunities to drive innovation and cost reductions;
- Drive performance excellence and service delivery through effective IT governance and resource management; and
- Develop our IT workforce with mission critical and emerging technology competencies.

We will strengthen our cyber security posture through improved situational awareness, effective risk management practices, and pragmatic application of mission-aligned capabilities that will enhance the effectiveness of the Operating Administrations. To accomplish this, we will:

- Implement a cyber-risk management program that

continually adapts to changing threats, vulnerabilities, and assets;

- Enhance the DOT cyber security incident response program to provide interdependent, enterprise-wide coordination, collaboration, information-sharing and response; and
- Strengthen our security posture by focusing efforts on data and information entering and exiting our networks, the assets on our networks and changes to their security status, and knowing who is using our systems.

## STRATEGIES FOR IMPROVING FINANCIAL PERFORMANCE

We will continue to emphasize improving our financial management practices by focusing on increased oversight and proper recording of Undelivered Orders, which are budget obligations that have not yet been fully liquidated by making a final payment. With the large number and dollar value of DOT-funded grants and projects, identifying unused portions of this funding is constant and important work. By recovering these unused funds, we can make additional monies available to be used for eligible, higher priority projects.

Continued vigilance of improper payments is also an important safeguard in ensuring that the financial resources of the Department are used appropriately and effectively.<sup>128</sup> DOT currently has a rate of estimated improper payments at less than 1 percent.<sup>129</sup> However, with the large amounts of funding handled by the Department, we strive to avoid any improper payments. We will continue to emphasize internal controls aimed at reducing the percentage even further.

Improving financial management and oversight ensures our financial resources are used as efficiently and effectively as possible, which contributes to the achievement of our strategic goals and objectives. Through foster-

<sup>128</sup> For more background, see OMB Memorandum M11-16, Issuance of Revised Parts I and II to Appendix C of OMB Circular A-123. Available at <http://www.whitehouse.gov/sites/default/files/omb/memoranda/2011/m11-16.pdf> Accessed July 29, 2013.

<sup>129</sup> This figure is below the OMB's 2.5 percent criterion of what would constitute significant improper payments.

ing financial stewardship in DOT, we protect valuable taxpayer resources and ensure they are used in the most fiscally responsible manner possible. We strive to offer an example of how tax dollars should be effectively spent to achieve the benefits that we seek for the Nation. To improve financial management and provide quality customer service, we will:

- Reduce undelivered orders and improper payments;
- Develop budgets aligned to advance the mission-related DOT goals and objectives, based on meeting internal and external user needs;
- Provide oversight to ensure funds are not committed, obligated, or expended in excess of appropriation allotments and fiscal plans, and ensure no violations of the Anti-Deficiency Act or other fiscal law;

- Provide improved financial management service to Departmental programs, so we can meet and address current and emerging program and management requirements;
- Develop and provide access to accurate and timely financial information to leadership and programs to inform their decision-making as well as policy and program development; and
- Promote transparency of financial information to strengthen accountability.

### **STRATEGIC OBJECTIVES, PERFORMANCE GOALS, AND INDICATORS**

We will monitor our progress in achieving the Strategic Objectives for the Organizational Excellence goal using the Performance Goals and Indicators in Table J.

TABLE J. PERFORMANCE GOALS, INDICATORS, AND LEAD BY ORGANIZATIONAL EXCELLENCE STRATEGIC OBJECTIVE.

PERFORMANCE GOAL	PERFORMANCE INDICATOR(S)	LEAD OFFICE
<p>Strategic Objective: Build a capable, diverse, and collaborative workforce of highly-skilled, innovative, and motivated employees by making DOT a workplace of choice through employee empowerment and engagement, learning and development, succession planning, workplace flexibilities, and a healthy and safe workforce (OE1).</p>		
Increase DOT employee engagement index score to 70.5 percent positive responses by 2018.	Employee engagement index score (positive responses) on the OPM Federal Employee Viewpoint Survey.	OST/ALL
Increase the hiring of persons with targeted disabilities for eligible positions to 3 percent by 2018.	Percent in eligible positions of new hires with targeted disabilities.	OST/ALL
Achieve no greater than a 5 percent difference between the score of a demographic group and the DOT-wide average employee engagement index score by 2018.	Employee engagement index scores (various demographic groups).	OST/ALL
<p>Strategic Objective: Advance secure and innovative information systems and technology platforms that protect against cyber threats and support the efficient use of information and data for financial management (OE2).</p>		
Strengthen the Cyber security posture of the Department through holistic situational awareness and risk management capabilities.	<p>Indicator:</p> <p>An enterprise, risk-based, cyber program that continuously adapts to changing threats, vulnerabilities, and assets in near-real time.</p> <p>Sub-Indicators:</p> <ul style="list-style-type: none"> <li>• 100 percent of systems governed by Automated Continuous Monitoring capabilities within each Component by the end of FY 2018.</li> <li>• 100 percent of systems converted to an ongoing authorizations process by the end of FY 2018.</li> </ul>	OST-CIO
Maintain the percentage of improper payments to 1.5 percent or less of all payments.	Percent improper payments.	OST/ALL
Keep improper payments below the level of significant improper payments (i.e., greater than \$100 million, regardless of error rate) for all major programs.	Total dollar amount of improper payments.	OST/ALL

# SECURITY, PREPAREDNESS, AND OTHER SUPPORTING OBJECTIVES





## CHALLENGES AND STRATEGIES

In this second edition of *Transportation for a New Generation*, we include three important strategic objectives that will be achieved through Departmental activities that support Federal government-wide goals. The three objectives represent the Departmental role in emergency preparedness, national security, and small business assistance. As they are more cross-cutting and do not support any one strategic goal, they are designated as non-aligned objectives. This does not diminish their importance to the Nation or within the Department. Our strategic objectives are presented below:

### FY 2014-2018 STRATEGIC OBJECTIVES

- Mitigate the impacts to transportation due to all hazards by developing effective response planning and training for leaders and responders (OS1).
- Meet transportation needs for national security through interagency cooperation with the Departments of Defense, State, Homeland Security, and State and local agencies (OS2).
- Expand opportunities for small and disadvantaged businesses in the transportation sector (OS3).

The challenges and strategies associated with each are addressed in the following paragraphs.

### STRATEGIES FOR EMERGENCY PREPAREDNESS

Preparedness is the key to carrying out our responsibilities. Preparedness is the process of identifying the personnel, training, and equipment needed for a wide range of potential incidents, and developing disaster-specific plans for delivering capabilities when needed for an incident. This involves a combination of planning, resources, training, exercising, and organizing to build, sustain, and improve operational capabilities.

We proactively prepare to use our internal authorities for the safety and resilience of the U.S. transportation systems including air cargo, passenger aviation, rail, transit, highways, maritime, and pipeline modes; and to support the transportation mission of the Department of Homeland Security (DHS) and other federal departments and agencies to improve the security of domestic and intermodal transportation.<sup>130</sup> We collaborate with DHS to strengthen the transportation network and effectively mitigate risk through an

<sup>130</sup> U.S. Department of Homeland Security (2010), *Quadrennial Homeland Security Review Report: A Strategic Framework for a Secure Homeland*. Available at [http://www.dhs.gov/xlibrary/assts/qhsr\\_report.pdf](http://www.dhs.gov/xlibrary/assts/qhsr_report.pdf) accessed May 28, 2013.

integrated systems approach. We also support the U.S. Department of State and U.S. Agency for International Development in preparedness and response to international incidents impacting transportation.

Under the provisions of multiple Executive Orders and Presidential policy directives, DOT is responsible for coordinating civil transportation during all hazards. In 2008, DHS released the National Response Framework, updated in 2013, a guide to how the Nation conducts all-hazards response. It is designed to capture specific authorities and best practices agencies should follow to manage incidents that range from the serious but purely local, to catastrophic natural or manmade disasters.<sup>131</sup>

During a response, trained DOT staff work to respond to incidents at various locations including the National Response Coordination Center, Regional Response Coordination Centers, and Joint Field Offices. Along with staff from other supporting agencies, we provide assistance in domestic incident management to regulate transportation, manage the Nation's airspace, and ensure the safety and security of the national transportation systems. The responsibilities include to:

- Monitor and report the status of, and damage to, the transportation system and infrastructure as a result of an incident;
- Identify temporary alternative transportation solutions that can be implemented by others when systems or infrastructure are damaged, unavailable, or overwhelmed;
- Perform activities conducted under DOT statutory authority to support aviation, maritime, surface, railroad, and pipeline transportation; and
- Coordinate the prevention, preparedness, response, restoration and recovery of the transportation systems and infrastructure.

<sup>131</sup> The National Response Framework was required by the Post-Katrina Emergency Management Reform Act and Presidential Policy Directive- 8. DOT supports E.O. 12656 and the National Response Framework through Emergency Support Function 1 – Transportation. The National Response Framework is available at <http://www.fema.gov/national-response-framework>. E.O. 12656, National Defense Resources Preparedness, see <http://www.whitehouse.gov/the-press-office/2012/03/16/executive-order-national-defense-resources-preparedness> accessed May 28, 2013.

Our strategies and competencies for emergency management include:

- Assist the Nation in recovering from emergencies by ensuring the availability of funding to restore transportation services after disasters.<sup>132</sup>
- Enhance a security preparedness policy to ensure personnel and facility safety, security and preparedness, so that we can mitigate the consequences of transportation sector emergencies;
- Ensure continuity of operations by maintaining emergency preparedness and response capabilities to effectively provide leadership and response to incidents to fulfill our commitments under Presidential Directives, Departmental Orders and the National Response Framework;
- Coordinate with FEMA, the U.S. State Department, Department of Defense (DOD), and other federal agencies to provide security and emergency management training, including technical assistance and information sharing to transit agencies;
- Collaborate with DHS to ensure that the design, restoration, and refurbishment of transportation infrastructure includes consideration of built-in protection and security measures;
- Provide guidance and technical assistance to localities, State DOTs and their first response partners to improve their ability to conduct emergency response;
- Improve aviation command, control and communications for service 24 hours a day and 7 days a week; during emergency operations strengthen operational coordination, communication, and command and control capabilities needed to prepare for, respond to, and recover from crises; and
- Improve the security of data and information using advanced cyber defense strategies;

<sup>132</sup> For example, in the aftermath of Superstorm Sandy, FTA provided \$2 billion to more than a dozen transit agencies and laid the groundwork to continue helping them rebuild stronger than before. These funds are part of the \$10.9 billion in Federal-aid funding made available by Congress through the *Disaster Relief Appropriations Act*, which was signed into law by President Obama on January 29, 2012. The FTA administers these funds through its Emergency Relief Program.

- Assist in timely, relevant, expert intelligence analysis that focuses on preparedness efforts, supports operational response; and international programs, and fulfills technical requests from the intelligence, defense, and law enforcement communities;
- Document and report on suspicious activity that may be indicative of intelligence gathering or pre-operational planning related to terrorist, counter-intelligence, criminal, or other illicit intention;
- Issue advisory messages as necessary to Federal, State, local, Tribal, and foreign governments, as well as the private sector, that provide immediate or urgent information on time-sensitive threats or situations that may affect local security environments and may require response;
- Implement the Controlled Unclassified Information Framework and monitor compliance with policy, standards, and markings;
- Coordinate with DHS to ensure that U.S. transportation assets are employed to maximum effectiveness during emergencies;
- Coordinate procedures through interagency agreements to safely and efficiently enable operation of needed emergency transportation resources;
- Insure against war risk loss or damage to maritime operators until commercial insurance can be obtained on reasonable terms and conditions;
- Fulfill DOT commitments to international partners and agreements including the Asia-Pacific Economic Cooperation forum and the North Atlantic Treaty Organization;
- Coordinate with the Department of State on preparedness and response measures within DOT authorities; and
- Develop and fulfill bilateral emergency preparedness cooperative arrangements with other nations including Canada and China to improved transportation disaster preparedness in both countries.

## STRATEGIES FOR NATIONAL SECURITY

DOT has responsibility for a number of modal emergency preparedness programs that provide the DOD and civilian agencies with assured access to commercial transportation during times of national emergency. One of our competencies is to maintain reserve sealift capacity in support of national defense. We maintain government-owned ships in the Ready Reserve Force (RRF), which is a part of the National Defense Reserve Force (NDRF). The RRF is comprised of 46 vessels that provide surge sealift capacity for DOD deployments and other emergencies. These RRF vessels are operated and maintained according to strict DOD readiness timelines, employing the expertise of commercial ship management companies and civilian crews to be mission ready within five days of activation. In response to Superstorm Sandy in late 2012, MARAD activated one RRF vessel and two NDRF training vessels to provide berthing and meals to for Federal-relief workers in the New York City area.

Our strategies for ensuring defense mobility include:

- Maintain government-owned transportation assets, and provide access to commercial transportation assets for critical support for defense mobility and emergency response;
- Maintain steadfast defense readiness across all operating administrations in their respective national security responsibilities through inter-agency cooperation and drills with the DOD, DHS and other Federal, State, and local agencies ;
- Coordinate with DOD to designate and maintain the STRAHNET and the Strategic Rail Corridor Network (STRACNET);<sup>133</sup> and
- Support DOD Civil Reserve Air Fleet operations needed to augment airlift requirements during

<sup>133</sup> STRAHNET is a system of public highways that is a key component in U.S. strategic policy. It provides defense access, continuity, and emergency capabilities for movements of personnel and equipment in both peace and war. It totals approximately 61,000 miles, including over 45,000 miles of Interstate System and nearly 16,000 miles of other important public highways. The DOD's Railroads for National Defense Program, in conjunction with FRA, has established the Strategic Rail Corridor Network (STRACNET), which allows for the mobilization and deployment of personnel, equipment, and supplies in the event of a national emergency or natural disaster. The STRACNET is owned and operated by individual rail operators, principally the Class 1 railroads, and it comprises 38,000 miles of rail track serving 170 defense installations.



times of crisis and protect national security interest of the U.S. air carrier industry.

### STRATEGIES TO EXPAND OPPORTUNITIES FOR SMALL AND DISADVANTAGED BUSINESSES IN THE TRANSPORTATION SECTOR

The federal government provides opportunities through its acquisitions to small businesses, which include small disadvantaged, women-owned, veteran-owned, service-disabled veteran-owned, and Historically Underutilized Business Zone small business concerns. These small businesses must also have the maximum practicable opportunity to participate in DOT contracts and sub-contracts. In compliance with the Small Business Act, we have the responsibility to ensure that small businesses have an opportunity to compete and be selected for a fair amount of the Agency's contract dollars. We provide various types of assistance to ensure that small businesses have access to transportation-related projects. Through outreach events, we demonstrate a commitment to growing the small business supplier base and increasing their awareness of procurement opportunities. To expand these opportunities, we will continue to:

- Participate in small business outreach events to include vendor outreach sessions to encourage small business participation in DOT procurements;
- Provide management and technical assistance for small businesses to work closely with state and local transportation agencies;
- Help small businesses gain the financing they need to participate in transportation-related contracts;
- Conduct bonding educational programs to help small businesses become bond ready;
- Increase awareness and participation in all stages of the DOT Small Business Innovation Research program;

- Implement a Final Rule that seeks improvements to the implementation of existing Disadvantaged Business Enterprise (DBE) regulations;<sup>134</sup>
- Develop regional certification program or reciprocity agreements with DOT recipients to assist small, women-owned, and minority-owned businesses to more easily become certified and possibly obtain federally-assisted highway, transit, and airport contracts for which they are eligible; and
- Increase compliance with Buy America and enhance the ability of the domestic manufacturers and suppliers to meet content requirements.

### STRATEGIC OBJECTIVES, PERFORMANCE GOALS, AND INDICATORS

We will monitor our progress in achieving the Strategic Objectives using the Performance Goals and Indicators in Table K.

<sup>134</sup> Among its provisions, the rulemaking will revise key forms in the program used by applicants and recipients; modify certification related provisions of the rule; and modify several other provisions concerning such subjects as good faith efforts, transit vehicle manufacturers and counting of trucking companies. The rule will assist the Department and its recipients in improving compliance with the regulations to ensure that the program benefit only eligible Disadvantaged Business Enterprises.

TABLE K. PERFORMANCE GOALS, INDICATORS, AND LEAD BY SUPPORTING STRATEGIC OBJECTIVE.

PERFORMANCE GOAL	PERFORMANCE INDICATOR(S)	LEAD OFFICE
Strategic Objective: Mitigate the impacts to efficient transportation due to emergencies by developing effective response planning and training for leaders and responders (OS1).		
DOT staff supporting Emergency Response Operations (ERO) meets or exceeds minimum training standards established by DOT and FEMA by 2015.	Emergency operations plans exist and are current. Standards are established and transmitted throughout the department.	OST/All
Strategic Objective: Meet transportation needs for defense readiness through interagency cooperation with the Departments of Defense, State, Homeland Security, and State and local agencies (OS2).		
Comply with all national security-related interagency agreements.	All responses to requests for support, assistance, and coordination are accomplished in accordance with standing agreements and procedures.	OST/ALL
Strategic Objective: Expand opportunities for small and disadvantaged businesses in the transportation sector (OS3).		
Maintain the percent of total dollar value of DOT direct contracts awarded to women-owned businesses at 5 percent through FY 2018.	Percent of total dollar value of DOT direct contracts awarded to women-owned businesses.	OST/ALL
Maintain percent of total dollar value of DOT direct contracts awarded to small disadvantaged businesses at 5 percent through FY 2018.	Percent of total dollar value of DOT direct contracts awarded to small disadvantaged businesses.	OST/ALL

# PROGRAM EVIDENCE

In this chapter, we describe the evidence used to assess the effectiveness of DOT programs and inform management actions, budget requests, and aspects of legislative proposals that are directed towards achieving results. In the context of the strategic plan, the results we seek are the FY 2014-2018 strategic goals and objectives. The evidence is derived from: 1) performance measurement, 2) evaluation studies, and 3) additional performance-related information including analyses of demographic and socio-economic trends. Some of the data and information are obtained from our partners, while other insights are gained from our own internal monitoring and analyses. This analysis is increasingly important because the estimates of need for transportation investment in the U.S. exceed the resources Congress makes available. Given the shortfalls, it is essential for us to make wise choices about how existing federal funds are used most effectively and efficiently. Our transportation partners, notably state and local governments, must do likewise.

## PERFORMANCE MEASUREMENT

Performance measurement provides a snapshot, most often on an annual basis, of progress we are making toward our strategic goals and objectives. The result is often compared against a preset target established by the Department that are mostly based on historical trends and are periodically reviewed and updated. Since 1994, the DOT Bureau of Transportation Statistics has published an annual Transportation Statistics report that describes the state of the transportation system and the state of transportation statistics including a range of topics covering the extent, use, condition, performance, and consequences of the transportation system.<sup>135</sup> The annual report is accompanied by the release of online National Transportation Statistics that are compiled from sources throughout the federal government. In 2000, the DOT began publishing an annual performance report that includes a minimum of five-year trend data for important performance measures in the DOT strategic plan. The performance data are derived from national transportation databases and reporting systems including the Highway Performance Monitoring System, National Bridge Inventory, National Transit Database, Fatal Accident Reporting System, and Hazardous Materials Information System.

The data in both reports are used by DOT, our partners, and the broader transportation community for a variety of purposes, and to varying degrees of detail. The performance data are reported to Congress in annual budgets and reports describing our progress.<sup>136</sup> Results for some performance

<sup>135</sup> The Transportation Statistics Annual Report is available at [http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/transportation\\_statistics\\_annual\\_report/2012/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/transportation_statistics_annual_report/2012/index.html) accessed September 4, 2013.

<sup>136</sup> See annual budgets, plans, and reports at <http://www.dot.gov/budget>

measures are publicly released elsewhere in a variety of formats. The *FAA Modernization and Reform Act* requires FAA to track a specific set of performance metrics, which include performance areas such as environment, safety, efficiency, capacity and cost effectiveness.<sup>137</sup> FAA maintains a Website that highlights qualitative and quantitative NextGen performance measures, focusing on locations where these capabilities enhance airspace performance, and emphasizes the link between investment and benefits. In addition to operational metrics, FAA posts a quarterly scorecard of agency wide performance measures.<sup>138</sup> Some Operating Administrations, such as FHWA, release the results for many of the same performance measures as found in the Department-level reports.<sup>139</sup> Other performance information, including DOT contributions towards achieving government-wide goals for sustainability and project delivery are reported at OMB-sponsored portals.<sup>140</sup>

Within the Department, Operating Administrations review progress on program and administrative goals based on performance measures and related performance information in management dashboard reports. In some cases, the reports cascade down to lower levels in the organization including field offices responsible for program delivery. Each Operating Administration also submits some of this information to a Department-wide Scorecard report, which is routinely discussed by the Deputy Secretary and OA Administrators in regularly scheduled review meetings. These discussions often serve to inform DOT leadership about recent developments, promote greater transparency in programs, and may lead to follow up actions that address barriers to implementation identified by DOT managers, such as lack of resources and assistance from other DOT offices.

MAP-21 provides DOT the authority to establish national performance measures through rulemaking to use to assess performance and to carry out several federal-aid programs for highway safety, infrastructure condition, system performance, freight movement, and transit state of good repair for States DOTs, MPOs, and public transportation providers.<sup>141</sup> These transportation providers are required to establish targets for the performance measures that are established by the Department. Several apportioned programs, such as the National Highway Performance Program, the Highway Safety Improvement Program, and the Congestion Mitigation and Air Quality Improvement Program, will support projects that will make progress toward the achievement of these targets. As a new requirement under MAP-21, the metropolitan and statewide planning process will need to utilize these targets to inform project selection and investment decision-making by linking program investments to specific targets of future performance. Several rulemakings are currently underway that will propose how the Department intends to implement these new requirements. FHWA has also compiled an inventory of evaluation and economic investment tools, such as the Highway Economic Requirements System and the National Bridge Investment Analysis System, to assist State decision-makers in making investment decisions.<sup>142</sup> As this effort unfolds, the performance goals and indicators in this strategic plan are likely to be replaced or complemented by the nationally-accepted measures developed under MAP-21.

<sup>137</sup> See FAA Operational Metrics at [http://www.faa.gov/about/plans\\_reports/operational\\_metrics/](http://www.faa.gov/about/plans_reports/operational_metrics/) accessed August 5, 2013.

<sup>138</sup> See NextGen performance metrics at <http://www.faa.gov/nextgen/snapshots> accessed August 5, 2013.

<sup>139</sup> See FHWA Measurement plan at <http://www.fhwa.dot.gov/policy/fhplan.htm#measurement>.

<sup>140</sup> See DOT Sustainability Scorecard at <http://sustainability.performance.gov/> and the Federal Infrastructure Projects Permitting Dashboard at <http://www.permits.performance.gov/>.

<sup>141</sup> See 23 U.S.C. Section 150, which is newly established by section 1203 of MAP-21.

<sup>142</sup> For more information, see <http://www.fhwa.dot.gov/infrastructure/asstmgmt/invest.cfm>

## EVALUATION STUDIES

Because the purpose and design of DOT programs varies considerably, the definition of evaluation is broad and inclusive of a variety of study designs for different audiences. Some evaluation studies are designed to look more comprehensively at the impact of a particular intervention on a desired outcome, such as an increase in seat belt use, or the benefits of far-reaching activities such as research and development or a credit support program. Outcome-type evaluation studies are designed to examine the effectiveness of a project or program intervention in a specific geographic area or among a targeted population. Program and process reviews involve a review and/or assessment of compliance with existing procedures and processes. Congress requests reports on progress in implementing specific legislative statute, including rulemakings and demonstration projects, which frequently involve a program or process review. Each Operating Administration determines its own priorities for evaluation studies, except for studies requested by Congress. This is due, in part, to the diverse program portfolio of each Operating Administration and the decentralized approach to funding such studies.

The previous five DOT strategic plans, which were written between FY 1997 and FY 2011, list more than 160 evaluation studies conducted under the auspices of the Government Performance and Results Act of 1993. Examples of previous studies include the FMCSA *Evaluation of the CVISN Model Deployment Initiative*, FAA *Evaluation of the Noise Set Aside Portion of the Airport Improvement Program*, and the NHTSA *Click It or Ticket* evaluation.<sup>143</sup> The list of program evaluation studies proposed for FY 2014-2018 is shown in Table L.

## ADDITIONAL PERFORMANCE-RELATED INFORMATION

In addition to the DOT-maintained databases and information systems mentioned earlier, other federal agencies house rich sources of data and information that we use to understand broader demographic, social, economic, and environmental trends in the U.S. These include Census Bureau's American Community Survey, Energy Information Administration's Annual Energy Review, Environmental Protection Agency's Inventory of U.S. Greenhouse Gas Emissions and Sinks, and Department of Energy's Federal Automotive Statistical Tool.

DOT conducts periodic surveys such as the Commodity Flow Survey, National Household Travel Survey, the National Roadside Survey of Alcohol and Drug Use by Drivers, and the Flight Operations and Destination Survey. The information generated from carefully designed surveys such as the National Household Travel Survey provides important insights into how travel patterns, use, and behaviors are changing.<sup>144</sup> More frequent access to such information would be helpful, but the costs of undertaking this and other such surveys have limited their practical usefulness.

Assessment and evaluation tools, such as the FHWA Traffic Incident Management assessment and the Infrastructure Voluntary Evaluation Sustainability Tool (INVEST) developed in partnership with States, are another potential source of performance information.<sup>145</sup>

<sup>143</sup> View the CVISN Evaluation report at <http://www.fmcsa.dot.gov/facts-research/research-technology/tech/CVISN-TechBrief.htm>, the Noise Set Aside Program evaluation at <http://www.faa.gov/search/?omni=MainSearch&q=noise+set+aside+evaluation>, or the Click It or Ticket evaluation at <http://www.nhtsa.gov/staticfiles/nti/pdf/811536.pdf>

<sup>144</sup> See the National Household Travel Survey at <http://nhts.ornl.gov/index.shtml> accessed August 1, 2013.

<sup>145</sup> For more information, see the Traffic Incident Management Self-Assessment tool at [http://ops.fhwa.dot.gov/eto\\_tim\\_pse/docs/timsa09/](http://ops.fhwa.dot.gov/eto_tim_pse/docs/timsa09/) or INVEST tool at [http://www.fhwa.dot.gov/environment/climate\\_change/sustainability/self-evaluation\\_tool/](http://www.fhwa.dot.gov/environment/climate_change/sustainability/self-evaluation_tool/)

DOT sponsors topic and industry-specific studies, often using DOT-supplied data, which produce additional information that can be used to inform program decision-making. An example of such a report is *Countermeasures that Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices*. This report, now in its 7th edition, is a compilation of all research conducted to examine the impacts of behavioral intervention strategies for improving traffic safety.<sup>146</sup> DOT also sponsors studies documenting lessons learned and best practices, such as *Active Transportation and Demand Management Program: Lessons Learned*, that aid transportation planners and other professionals.<sup>147</sup>

DOT uses other sources of performance data to develop and test econometric models that are the basis for forecasts of investment needs included in the FHWA/FTA *Conditions and Performance Report* to Congress and for travel forecasts included in the annual *FAA Aerospace Forecast*. Independent organizations, such as the Transportation Research Board and the American Society of Civil Engineers, sponsored studies cited in this strategic plan using DOT performance data as a source of information.

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<sup>146</sup> View the report at <http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf>

<sup>147</sup> View the report at <http://www.ops.fhwa.dot.gov/publications/fhwahop13018>

TABLE L PROPOSED EVALUATION STUDIES, FY 2014-FY 2018

STRATEGIC GOAL	EVALUATION TITLE	TYPE OF STUDY	STUDY DESCRIPTION	SPONSORING OFFICE OR ADMINISTRATION	ANTICIPATED COMPLETION DATE (FY)
Safety	Transportation Safety Planning	Program and/or Process Review	Clarify the strategic focus of the Transportation Safety Planning program and develop a plan for future action.	FHWA	2014
Safety	Click It or Ticket	Impact Evaluation	Evaluate the extent to which NHTSA national high visibility traffic safety enforcement campaigns increase the use of seat belts.	NHTSA	2014
Safety	High Visibility Enforcement	Impact Evaluation	Evaluate the effectiveness of combined alcohol and seat belt messaging, compared to single issue messages, using NHTSA high visibility enforcement model. Evaluate awareness of the new messages and self-reported behaviors among males ages 18-34, a high risk target group.	NHTSA	2014
Safety	Evaluation of Target Zero Teams Project	Outcome Evaluation	Evaluate the outcomes of a project in which teams of State troopers in three counties in Washington state focus on reducing nighttime impaired driving offenses. Investigate the impact of the teams on crashes, fatalities, arrests, Blood Alcohol Content (BAC) levels, as well as the cost-benefit analysis to the state as a result.	NHTSA	2014
Safety	Safety 1st- Quality Assurance Review of Compliance Review Assignment and Prioritization Process	Program and/or Process Review	Determine why all mandatory Compliance Reviews are not completed in a timely manner.	FMCSA	2014
Safety	Safety 1st Culture – New Entrant Safety Assurance Program	Program and/or Process Review	Evaluate the effectiveness of the program in light of sweeping regulatory changes initiated in 2010 that are designed to raise the bar to enter the industry.	FMCSA	2014
Safety	Enforcement Effectiveness	Outcome and process evaluation	Develop baseline measures of compliance as a basis for comparing the effects of different strategies or interventions.	PHMSA	2015
Safety	Inspection Targeting	Process review	Rebuild risk models in a more data-driven way.	PHMSA	2015
Safety	R&D Projects	Impact Evaluation	Six evaluations across a range of research projects as pilots in an effort to increase evaluation capacity.	FRA	2015
Safety	Air Carrier Evaluation Program	Program and/or Process Review	Review of the Air Carrier Evaluation Program.	FAA	2014-2018 (Annual)
Safety	Impaired Driving Enforcement	Impact Evaluation	Test the effectiveness of traditional (i.e., enforcement waves) and alternative (i.e., integrated enforcement) approaches to impaired driving enforcement. Assess whether the interventions have a differential effect on populations of drivers who drink (general deterrence) and those identified as most at risk of driving at higher BACs (0.08 and above).	NHTSA	2015

STRATEGIC GOAL	EVALUATION TITLE	TYPE OF STUDY	STUDY DESCRIPTION	SPONSORING OFFICE OR ADMINISTRATION	ANTICIPATED COMPLETION DATE (FY)
Safety	Nighttime Seat Belt Enforcement Program	Impact Evaluation	Evaluate the effectiveness of nighttime seat belt enforcement on belt use and other violations in one or two other States, in order to replicate the Washington state nighttime high visibility enforcement program.	NHTSA	2015
Safety	Effect of Entry-Level Motorcycle Rider Training on Motorcycle Crashes	Outcome Evaluation	Investigate the relationship between entry-level-rider training, safe riding behavior, and rider crashes.	NHTSA	2015
Safety	Safety 1st- Motor Carrier Safety Assistance Program	Outcome Evaluation	Evaluate the performance and effectiveness of FMCSA's largest grants. Assess State partner performance measures and identify best practices to improve their effect on strategic safety goals.	FMCSA	2015
Safety	R&D Projects	Impact Evaluation	Six evaluations across a range of research projects as pilots in an effort to increase evaluation capacity.	FRA	2015
Safety	One FMCSA – Grants Management Review	Process Review	Evaluate the effectiveness of FMCSA grants like the Commercial Vehicle Information Systems and Networks (CVISN) or the Safety Data Improvement Program on compliance with statute and performance measurement.	FMCSA	2016
Safety	Pedestrian Safety Demonstration Projects	Outcome Evaluation	Evaluate the effectiveness of interventions in selected focus cities. Up to 6 grants will be awarded to strengthen or expand comprehensive pedestrian safety programs to reduce pedestrian injuries and deaths.	NHTSA	2018
State of Good Repair	National Bridge Inspection Program	Program and/or Process Review	Examine the effectiveness of FHWA stewardship and oversight of the National Bridge Inspection program.	FHWA	2014
State of Good Repair	Truck Size & Weight Enforcement Program	Program and/or Process Review	Review of FHWA oversight of the States' enforcement of truck size and weight regulations.	FHWA	2014
State of Good Repair	Review the National Plan of Integrated Airport Systems	Program and/or Process Review	Evaluate the formulation of the National Plan of Integrated Airport Systems.	FAA	2015
Economic Competitiveness	Title XI Federal Ship Financing Program (Credit Support)	Impact Evaluation	Evaluate the impact of the Title XI program, examine comparable programs to identify methodologies or best practices, and identify possible alternative strategies or operating models.	MARAD	2014
Economic Competitiveness	Technical Assistance and Standards Deployment	Outcome Evaluation	Evaluate outcomes of technical assistance and standards activities conducted.	FTA	2014
Economic Competitiveness	Human Resources and Training	Outcome Evaluation	Evaluate the outcomes of the workforce development activities supported.	FTA	2014
Economic Competitiveness	NextGen Performance Snapshots	Outcome Evaluation	Quantify and/or assess operational results from integrating NextGen capabilities into the National Airspace System.	FAA	2014-2018 (Quarterly)



STRATEGIC GOAL	EVALUATION TITLE	TYPE OF STUDY	STUDY DESCRIPTION	SPONSORING OFFICE OR ADMINISTRATION	ANTICIPATED COMPLETION DATE (FY)
Economic Competitive-ness	Performance-Based Planning Processes for States and MPOs	Program and/or Process Review	Examine the effectiveness of the performance-based planning processes of States and metropolitan planning organizations (MPOs).	FHWA	2017
Environmental Sustainability	Review of FAA's Energy-Related and Environment-Related Research Programs	Program and/or Process Review	Independent external review of FAA energy-related and environment-related research programs.	FAA	2013
Environmental Sustainability	Pipeline Facility Response Plans	Program and process review	Audit the program review of operators' spill response plans	PHMSA	2014
Environmental Sustainability	Air Quality and Congestion Mitigation Measure Outcome Assessment Study	Outcome Evaluation	Assess the benefits to air quality and health impacts of projects funded under the Congestion Mitigation and Air Quality (CMAQ) Improvement program since the enactment of SAFETEA-LU.	FHWA	2014
Environmental Sustainability	Rail Transportation Efficiency and Emissions	Formative Evaluation	Evaluate the best applicable technologies to improve rail transportation efficiency and reduce emissions.	FRA	2015
Environmental Sustainability	Completion Times for Environmental Actions	Program and/or Process Review	Report the completion times and other required information for all categories of environmental action for projects initiated after January 1, 2005.	FHWA	2017
Organizational Excellence	Project Closeout & Inactive Funds – Phase II	Program and/or Process Review	Map current State DOT closeout and inactive funds management procedures, identified desired future state-of-practice, and perform gap analysis to increase efficiency and effectiveness in project closure.	FHWA	2014
Organizational Excellence	Grants Management	Process review	Financial review of internal controls.	PHMSA	2014

**Key:** Impact Evaluation refers to empirical studies based on a comparison of measurable program outcomes to what would have happened in the absence of the program. Outcome Evaluation refers to studies assessing the extent to which programs achieve outcome-oriented objectives. Program and/or Process Review refers to an assessment of the extent to which a program and/or process operates as intended.

# ACRONYMS

ADA	Americans with Disabilities Act of 1990	ICAO	International Civil Aviation Organization
AIP	Airport Improvement Program	IT	Information Technology
APG	Agency Performance Goals	ITS	Intelligent Transportation Systems
CAAFI	Commercial Aviation Alternative Fuels Initiative	MAP-21	Moving Ahead for Progress in the 21st Century
CAFE	Corporate Average Fuel Economy	MARAD	Maritime Administration
CCAM	Coordinating Council on Access and Mobility	MPO	Metropolitan Planning Organization
CLEEN	Continuous Lower Energy, Emissions, and Noise	MSP	Maritime Security Program
CMP	Congestion Management Process	NAAQS	National Ambient Air Quality Standards
CMV	Commercial Motor Vehicles	NAS	National Airspace System
CO <sub>2</sub>	Carbon Dioxide	NDRF	National Defense Reserve Force
DHS	Department of Homeland Security	NextGen	Next Generation Air Transportation System
DOD	Department of Defense	NFAC	National Freight Advisory Committee
DOT	Department of Transportation	NHS	National Highway System
EDC	Every Day Counts	NHTSA	National Highway Traffic Safety Administration
EO	Executive Order	NPIAS	National Plan of Integrated Airports System
EPA	Environmental Protection Agency	NTSB	National Transportation Safety Board
FAA	Federal Aviation Administration	OA	Operating Administration
FHWA	Federal Highway Administration	PHMSA	Pipeline and Hazardous Materials Safety Administration
FMCSA	Federal Motor Carrier Safety Administration	Recovery Act	American Recovery and Reinvestment Act of 2009
FRA	Federal Railroad Administration	OST-R	Office of the Assistant Secretary for Research and Technology
FTA	Federal Transit Administration	RRF	Ready Reserve Force
FY	Fiscal Year	RRIF	Railroad Rehabilitation and Improvement Financing
GDP	Gross Domestic Product	SLSDC	Saint Lawrence Seaway Development Corporation
GHG	Greenhouse Gas	SHRP2	Second Strategic Highway Research Program
GPS	Global Positioning System	SMS	Safety Management Systems
HAZMAT	Hazardous Materials		
HUD	Department of Housing and Urban Development		

STEM	Science, Technology, Engineering and Math	SMS	Safety Management Systems
STRAHNET	Strategic Highway Corridor Network	STEM	Science, Technology, Engineering and Math
STRACNET	Strategic Rail Corridor Network	STRAHNET	Strategic Highway Corridor Network
T2	Technology Transfer	STRACNET	Strategic Rail Corridor Network
TIFIA	Transportation Infrastructure Finance and Innovation Act	T2	Technology Transfer
TIGER	Transportation Investment Generating Economic Recovery	TIFIA	Transportation Infrastructure Finance and Innovation Act
UWR	United We Ride	TIGER	Transportation Investment Generating Economic Recovery
VALE	Voluntary Airport Lower Emissions	UWR	United We Ride
VTCLI	Veterans Transportation Community Living Initiative	VALE	Voluntary Airport Lower Emissions
VMT	Vehicle Miles Traveled	VTCLI	Veterans Transportation Community Living Initiative
SLSDC	Saint Lawrence Seaway Development Corporation	VMT	Vehicle Miles Traveled
SHRP2	Second Strategic Highway Research Program		