IV. STATE OF GOOD REPAIR

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, 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, 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 from mode to mode. We can influence the condition of Federally-funded highway, transit and airport infrastructure through program guidance and technical assistance provided to State 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 programs. While we have some influence on state of good repair through our safety regulations in other modes like railroads, seaports, and pipelines, we lack the extensive infrastructure programs that would allow us to more directly influence their performance.

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 in 2010. The portion of total highway capital spending funded with federal monies was 44.2 percent, while federal spending on system rehabilitation amounted to 59.9 percent of the total. The latter represents an increase of 9 percent from 2000, which is primarily due to federal investment related to the implementation of the American Recovery and Reinvestment Act (Recovery Act). Estimates of the total investment 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.[32]

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.[33] We estimate that the current backlog in rail and bus facilities and rolling stock is $77.7 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. [34]

FAA funds initial infrastructure development at all airports. However, funding for maintenance is limited to those airports that generally do not have sufficient revenue sources for periodic repairs, which usually means smaller 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. If current revenue sources for pavement maintenance were to diminish, maintenance at some runways could suffer and maintaining conditions would become more difficult.

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 factors 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 necessitate maintenance of nationally significant rail assets to ensure that they will provide safe and reliable service for future generations of rail travelers.

DOT will work with Congress and stakeholders to enact an immediate $40 billion in *Fix It First* investments and $10 billion to help spur State and local innovation in infrastructure development. These funds, when combined with State, local, tribal, and private funds, will spur job growth and allow States to initiate sound multi-year investments. The return on investment for Federal taxpayers will benefit from historically low interest rates and construction costs.

FY'14 President's Budget to Congress, April 2013.

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.

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).

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.[35] 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. [36] 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.[37] 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. Going forward, the percentage of deck area on structurally deficient bridges on the NHS in each State must be at or below 10 percent. [38] 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;
- Use the system performance information to drive programmatic and legislative linkages between system performance and Federal funding;

- 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;
- 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 service 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; [39] and
- Work with State and local agency partners to evaluate where transportation and community needs have changed over time and, recommend when appropriate, decommissioning a bridge structure as an alternative to rehabilitation or replacement.

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.

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. 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 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 and 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 largest 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. [40]

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 ensure the safety and reliability of these services, as well as improve trip times and the overall passenger experience.[41] 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 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;[42]
- 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;
- 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 percentage of pavements on the NHS and Interstate in good condition to 56 percent or higher by 2018.	Percentage of lane-miles of pavement on the NHS and Interstate in good condition	FHWA
Decrease the percentage of deck area of structurally deficient bridges on the NHS to XX 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	Percentage of NPIAS airports with runway pavement in	FAA

percent of the open, paved runways in the NPIAS.	excellent, good, or fair condition.	
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 XX 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.	TBD	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, airport, 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 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 asphalt prices, which have been rising steadily since 2009 and are driven by the price of 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 are now increasing more modestly than before the 2008 recession. Concrete prices are relatively flat after peaking in 2009.[43]

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 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 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.