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TRANSPORTATION INFRASTRUCTURE

Limited Improvement in Bridge Conditions over the Past Decade, but Financial Challenges Remain

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Physical Infrastructure

June 13, 2013

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Limited Improvement in Bridge Conditions over the Past Decade, but Financial Challenges Remain

Highlights of GAO-13-713T, testimony before the Subcommittee on Transportation, Housing, and Urban Development, and Related Agencies, Committee on Appropriations, U.S. Senate

Why GAO Did This Study

The May 23, 2013 collapse of a section of the Interstate 5 bridge over the Skagit River, north of Seattle, Washington, underscores the importance of maintaining the nation's infrastructure and the economic impact that a bridge failure can have on a region. This testimony addresses (1) what is known about the current condition of the nation's bridges and impact of federal funding for bridges and (2) a preliminary look at recent changes to the surface transportation and bridge program made by MAP-21. The Act consolidated a number of highway programs, including the former Highway Bridge Program. This testimony is based on prior GAO reports, updated with publicly available bridge data and information.

What GAO Recommends

GAO is not making any new recommendations. In 2008, GAO recommended that the Secretary of Transportation work with Congress to identify and define national goals for the federal bridge program, develop and implement performance measures, identify and evaluate best tools and practices, and review and evaluate funding mechanisms to align funding with performance. GAO closed this recommendation as implemented based on the provisions contained in MAP-21.

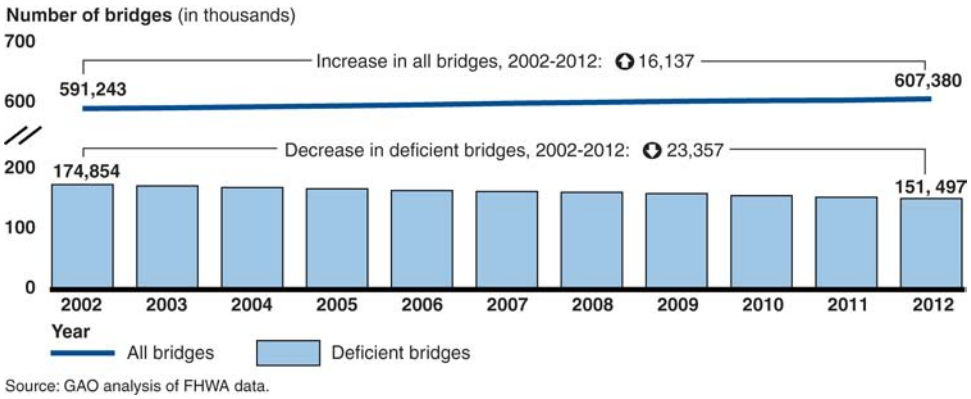
View GAO-13-713T for key components. For more information, contact Phillip R. Herr at (202) 512-2834 or herrp@gao.gov.

What GAO Found

There has been limited improvement in bridge conditions in the past decade, but a substantial number of bridges remain in poor condition. Of the 607,380 bridges on the nation's roadways in 2012, 1 in 4 was classified as deficient. Some are structurally deficient and have one or more components in poor condition and others are functionally obsolete and may no longer be adequate for the traffic they serve. Data indicate that the number of deficient bridges has decreased since 2002 even as the number of bridges has increased. The impact of the federal investment in bridges is difficult to measure. For example, while Department of Transportation (DOT) tracks a portion of bridge spending on a state-by-state basis, the data do not include state and local spending, thus making it difficult to determine the federal contribution to overall expenditures. Understanding the impact of federal investment in bridges is important in determining how to invest future federal resources.

There has been progress in clarifying federal goals and linking federal surface transportation programs—including bridges—to performance. DOT worked with Congress which adopted provisions in Moving Ahead for Progress in the 21st Century Act (MAP-21), including provisions that move toward a more performance-based highway program. MAP-21 specified that National Highway Performance Program funds may only support eligible projects—including bridge projects—on the National Highway System. The Act also required the Secretary of Transportation, in consultation with states and others, to establish performance measures for bridge conditions. However, although there has been progress in these areas, Congress and the administration need to agree on a long-term plan for funding surface transportation. As we noted in our 2013 High Risk Update, continuing to fund a Highway Trust Fund shortfall through general revenues may not be sustainable without balancing revenues and spending from the fund.

Trends in Number and Condition of Bridges, 2002 through 2012



Source: GAO analysis of FHWA data.

Note: Deficient bridges include both structurally deficient and functionally obsolete bridges.

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Chairman Murray, Ranking Member Collins, and Members of the Subcommittee:

Thank you for this opportunity to discuss GAO's work examining the nation's highways and bridges. The surface transportation system is critical to the U.S. economy and affects the daily lives of most Americans, moving both people and freight. The May 23, 2013, collapse of a section of the Interstate 5 bridge over the Skagit River, north of Seattle, Washington, underscores the importance of maintaining the nation's infrastructure and the economic impact that a bridge failure, such as this one, can have on a region. According to Federal Highway Administration (FHWA) information, the Skagit River Bridge is a major commercial route between the U.S. and Canada and serves an average of 71,000 vehicles per day. Commercial truck traffic comprises about 11 percent of these vehicles, transporting goods between the two countries. Overall, there are over 600,000 bridges in the U.S. surface transportation system. However, the system—including bridges—is under growing strain, and the cost to repair and upgrade it to meet current and future demands is estimated in the hundreds of billions.

My testimony today describes: (1) the current condition of the nation's bridges and effects of federal funding for bridges and (2) a preliminary look at the recent changes to the surface transportation and bridge program made by the Moving Ahead for Progress in the 21st Century Act (MAP-21), along with key financial challenges. This statement is drawn from prior work that we completed from 2008 through 2010 regarding surface transportation programs.[1] The reports and testimonies cited in this statement contain more detailed explanations of the methods used to conduct our work. We conducted our work on these products in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives.

[1] GAO, *Highway Bridge Program: Condition of Nation's Bridges Shows Limited Improvement, but Further Actions Could Enhance the Impact of Federal Investment,* GAO-10-930T (Washington, D.C.: July 21, 2010), and GAO, *Highway Bridge Program: Clearer Goals and Performance Measures Needed for a More Focused and Sustainable Program,* GAO-08-1043 (Washington, D.C.: Sept.10, 2008).

Background

Bridges vary substantially in their size and use, including daily traffic volumes. In 2012, there were 607,380 bridges in the United States, which carried the nation's passenger car, truck, bus transit, and commercial vehicle traffic over waterways, highways, railways, and other road obstructions. Bridge ownership is fairly evenly split between states (48 percent) and local government agencies (50 percent). State agencies are responsible for 77 percent of the nation's bridge deck area. The federal government owns less than 2 percent of the nation's bridges, primarily on federally-owned land.

Bridge safety emerged as a high-priority issue in the United States in the 1960s, following the collapse of the Silver Bridge between Ohio and West Virginia, which killed 46 people. That collapse prompted national concerns about bridge condition and safety and highlighted the need for timely repair and replacement of bridges. Congress responded by establishing the National Bridge Inspection Program (NBIP) to ensure periodic safety inspection of bridges and the Highway Bridge Program (HBP) was established to provide funding and assist states in replacing and rehabilitating bridges.

The NBIP established the National Bridge Inspection Standards, which detail how bridge inspections are to be completed and with what frequency.[2] After inspection, a bridge may be classified as deficient for one of two reasons: the bridge has one or more components in poor condition (classified as "structurally deficient") or the bridge has a poor configuration or design that may no longer be adequate for the traffic it serves (classified as "functionally obsolete").[3] Structurally deficient bridges often require maintenance and repair to remain in service. In contrast, functionally obsolete bridges do not necessarily require repair to remain in service and therefore are unlikely to be state transportation officials' top priority for rehabilitation or replacement.[4] Bridge sufficiency

[2] 23 C.F.R. part 650.

[3] During an inspection, bridge inspectors rate bridge components using a numerical system to describe the condition of the component. Using the data collected by state and local governments during bridge inspections, FHWA classifies bridges in two key ways, by determining whether bridges are not deficient or deficient and by calculating a sufficiency rating.

[4] Bridges are typically classified as functionally obsolete as a result of changing traffic demands or changes in design standards since construction and are not structurally unsound.

ratings are calculated using a formula that reflects structural adequacy, safety, serviceability, and relative importance. Based on an inspection, each bridge is assigned a sufficiency rating from a low of 0 to a high of 100.[5] For example, in the National Bridge Inventory, the Skagit River bridge was classified as functionally obsolete with a sufficiency rating of 46. According to the Federal Highway Administration (FHWA), classifying a bridge as deficient does not necessarily mean that it is likely to collapse or that it is unsafe. If proper vehicle weight restrictions are posted and enforced, deficient bridges can continue to serve most traffic conditions. If a bridge is determined to be unsafe, it must be closed to traffic.[6]

President Obama signed MAP-21[7] into law in July 2012, consolidating a number of existing highway programs, including the Highway Bridge Program. Bridge projects are now funded through the National Highway Performance Program (NHPP) or the Surface Transportation Program (STP). MAP-21 divides each state's total annual federal-aid apportionment principally between NHPP and STP.[8] Estimated funding authorized under MAP-21 in fiscal year 2013 are over $21 billion for NHPP and about $10 billion for STP.

Bridge Conditions Show Limited Improvement, but the Impact of Federal Investment Is Difficult to Determine

There has been limited improvement in bridge conditions in the past decade, but substantial numbers of bridges remain in poor condition. Of the 607,380 bridges on the nation's roadways in 2012, 1 in 4 was classified as deficient. Data indicate that the total number of deficient bridges decreased since 2002, even as the total number of bridges increased. From 2002 to 2012, the number of bridges increased from 591,243 to 607,380. During that same time period, the total number of deficient bridges decreased by 23,357. (See fig. 1.) In our prior work, we found that the average sufficiency rating of all bridges—including both

[5] FHWA assigns each bridge in the national bridge inventory a rating between 0 and 100, indicating its sufficiency to remain in service. A rating of 100 represents an entirely sufficient bridge, while a rating of 0 represents an entirely insufficient bridge. FHWA documents state that sufficiency ratings are not intended to be an accurate representation of priority for bridge replacement or rehabilitation projects.

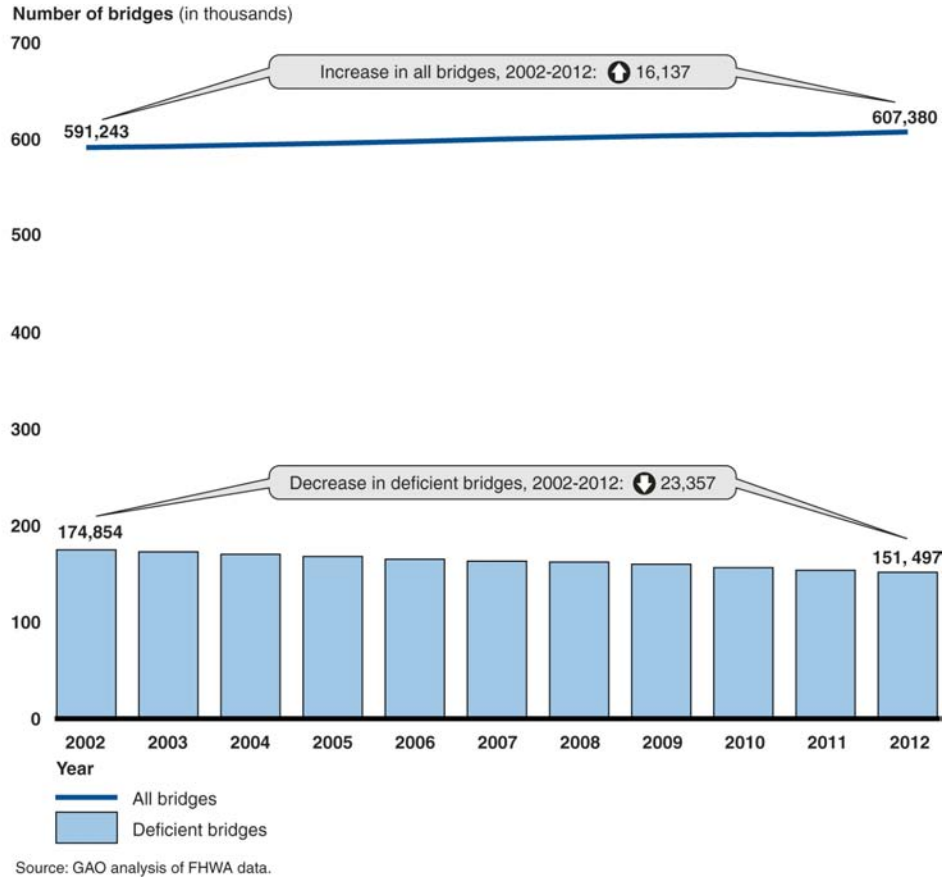
[6] DOT, *2006 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance* (Washington, D.C., Jan. 22, 2007).

[7] Pub. L No. 112-141. 126 Stat 405 (2012)

[8] Codified as positive law at 23 U.S.C. §§ 104(b), 119(d)(2).

deficient and non-deficient bridges—also improved slightly. Specifically, the average sufficiency rating for all bridges increased from 75 to 79 on the sufficiency rating's 100-point scale from 1998 to 2007.[9]

Figure 1: Trends in Number and Condition of Bridges, 2002 through 2012



Source: GAO analysis of FHWA data.

Note: Deficient bridges include both structurally deficient and functionally obsolete bridges.

Our prior work has found that the impact of the federal investment in bridges is difficult to measure.[10] For example, while FHWA tracks a portion of bridge spending on a state-by-state basis, the data do not

[9] However, in that same period, the amount of bridge deck that is deficient has increased by 39 million square feet, or 4 percent.

[10] GAO-08-1043.

include (1) states' spending on bridges located on local roads and (2) most local governments' spending on bridges, thus making it difficult to determine the federal contribution to overall bridge expenditures. This lack of comprehensive information on state and local spending makes it impossible to determine the impact of the federal investment in bridges. Understanding the impact of the federal investment is important not only to understand the outcomes of past spending but also to determine how to sensibly invest future federal resources.

Progress Has Been Made in Clarifying the Federal Government's Surface Transportation Focus and Linking Programs to Performance Measures, but Challenges Remain

There has been progress in clarifying federal goals and linking federal surface transportation programs to performance. In 2008, we reported that the federal bridge program needed clearer goals and performance measures to create a more focused and sustainable program. We recommended that the Department of Transportation (DOT) work with Congress to identify specific goals in the national interest. Subsequently, DOT worked with Congress which adopted provisions in MAP-21, including provisions that move toward a more performance-based highway and transit program. MAP-21 also specified that NHPP funds may only support eligible projects—including bridge projects—on the National Highway System.[11] However, for both NHPP and STP, funding for bridge construction, replacement, and rehabilitation projects is listed among a broader category of eligible highway projects and activities that must be identified in a state transportation plan. Our prior work had also recommended that DOT incorporate best tools and practices into the federal bridge program. MAP-21 described the importance of using performance-based bridge management systems to assist states in making timely investments; however, it does not require states to do so.[12]

MAP-21 also required the Secretary of Transportation, in consultation with states and others, to establish performance measures for bridge conditions, among other areas, and required states and others to

[11] The National Highway System is a 220,000-mile network of rural and urban roads serving major population centers, international border crossings, intermodal transportation facilities, and major travel destinations. It includes the Interstate System, the Strategic Highway Network, and others.

[12] A bridge management system is a system of formal procedures and methods for gathering and analyzing bridge data to predict future bridge conditions, estimate maintenance and improvement needs, determine optimal policies, and recommend projects and schedules within budget and policy constraints.

establish performance targets for those measures and to report their progress in achieving the targets.[13] In addition, MAP-21 links funding to performance by requiring states to take corrective action should progress toward their targets be insufficient and to spend a specified portion of their annual federal funding to improve bridge conditions should conditions fall below minimum standards set by the Secretary.

Although there has been progress in clarifying federal goals and linking federal surface transportation programs to performance, Congress and the administration need to agree on a long-term plan for funding surface transportation. As we noted in our 2013 High Risk Update related to financing the surface transportation system,[14] continuing to fund a Highway Trust Fund shortfall through general revenues may not be sustainable given competing demands and the federal government's fiscal challenges.[15] We believe a sustainable solution is based on balancing Highway Trust Fund revenues and spending. New revenues from users can come only from taxes and fees. Ultimately major changes in transportation spending, revenues, or both, will be needed to bring the two into balance.

Calls for increased investments come at a time when traditional transportation funding sources are eroding. Funding is further complicated by the federal government's financial condition and fiscal outlook. Meanwhile, the nation's inventory of bridges continues to age, including some considered to require costly, large-scale bridge projects. As many of the nation's bridges built in the 1960s and 1970s age, the number in need of repair or rehabilitation is expected to increase.[16] Additionally, in our previous work, some state officials explained that certain large-scale bridge projects—often the most traveled, urban bridges on interstate corridors—are too expensive to be implemented with

[13] Performance measures are also required for areas such as pavement conditions, injuries and fatalities, and congestion.

[14] GAO, *High-Risk Series: An Update,* GAO-13-283 (Washington, D.C.: February 2013).

[15] Most funding authorized under MAP-21 is drawn from the Highway Trust Fund.

[16] In our prior work, we reported that the average age of bridges in 2007 in the National Bridge Inventory was approximately 35 years, that the average age of bridges with a sufficiency rating of 80 or less was 39 years, and that the average age of bridges with a sufficiency rating less than 50 was 53 years. See GAO-08-1043.

bridge program funds alone.[17] For example, Washington state DOT officials explained that costly "mega projects"—those that have an estimated total cost greater than $500 million—that emerge as top priorities through their prioritization process may be delayed by a lack of funds. Transportation officials in Washington state and other states we visited acknowledged that existing bridge mega projects could easily exhaust a state's entire federal-aid apportionment for many years, potentially to the detriment of all other bridge needs in that state. Without agreement on a long-term plan for funding surface transportation, program fiscal sustainability remains a challenge.

Chairman Murray, Ranking Member Collins, and Members of the Subcommittee, this concludes my prepared statement. I would be happy to respond to any questions you may have.

Contacts and Acknowledgements

For further information on this statement, please contact Phillip R. Herr at (202) 512-2834 or herrp@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals making key contributions to this testimony were Heather MacLeod, Assistant Director; Brian Chung; Bert Japikse; Delwen Jones; Les Locke; SaraAnn Moessbauer; and Josh Ormond.

[17] GAO-08-1043.