



U.S. House of Representatives
Committee on Transportation and Infrastructure

Washington, DC 20515

James L. Oberstar
Chairman

John L. Mica
Ranking Republican Member

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

James W. Coon II, Republican Chief of Staff

June 4, 2008

SUMMARY OF SUBJECT MATTER

TO: Members of the Subcommittee on Highways and Transit

FROM: Subcommittee on Highways and Transit Staff

SUBJECT: Hearing on "Maintaining our Nation's Highway and Transit Infrastructure"

PURPOSE OF HEARING

The Subcommittee on Highways and Transit is scheduled to meet on Thursday, June 5, 2008, at 10:00 a.m., in Room 2167 of the Rayburn House Office Building to receive testimony regarding the investment levels and federal policies necessary to maintain the nation's existing highway and transit infrastructure to a state of good repair. This hearing is part of the Subcommittee's effort to prepare for the reauthorization of federal surface transportation programs under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which will expire in September 2009. The Subcommittee will hear from state departments of transportation, public transit agencies, and other public entities responsible for maintaining transportation infrastructure to discuss investment needs and the strategies employed in meeting those needs.

BACKGROUND

Surface transportation infrastructure provides the backbone of our economy by moving people and goods. In 2002, according to U.S. Department of Transportation (U.S. DOT) statistics, over 19 billion tons of freight, valued at \$13 trillion, traveled over 4.4 trillion ton-miles over our transportation network. This means that approximately 53 million tons of goods, valued at about \$36 billion, moved 12 billion ton-miles per day. In addition, transportation generates a significant share of our nation's total economic output. In 2004, transportation-related goods and services

contributed \$1.232 trillion, or 10.5 percent, to the U.S. Gross Domestic Product (GDP) of \$11.7 trillion.

Investment in surface transportation infrastructure has far-reaching benefits, not only for our nation's economy and its global competitiveness but also for the quality of life of nearly all Americans. Private individuals traveled almost 3.8 trillion person-miles in 2001, or 40.25 person-miles each day. Transportation expenses represent 18 percent of the average household's total expenditures, the second largest spending category after housing. As our country's population and economy grows, these numbers will continue to increase.

To accommodate this freight and passenger traffic, our nation has constructed an extensive road system and public transportation network. There are 4 million miles of public roads in the United States. Only about 980,000 miles of these roads are part of the Federal-aid Highway System. Among the roads that are part of this system, about 162,000 miles are in the National Highway System (NHS), which includes the Interstate System. The Interstate highways—totaling 46,873 miles—comprise only 1.2 percent of all public road mileage, yet carry 24.4 percent of the total traffic on all public roads. Transit systems around the U.S. provided 10.3 billion trips in 2007. The infrastructure required to support these riders is extensive. There are more than 11,000 miles of transit system fixed guideway track, 3,000 transit rail stations, and more than 171,000 transit vehicles (buses, rail cars, and vans) in service.

Surface transportation assets have limited life spans. Currently, many segments of the nation's transportation infrastructure are reaching—or exceeding—their useful design life. Addressing this situation will require significant investment, as well as innovative management and preservation techniques. The National Surface Transportation Policy and Revenue Study Commission's ("Commission") report, *Transportation for Tomorrow*, identified the deterioration from aging and use as "one of the greatest threats to the Nation's surface transportation network." In addition to heavy usage and age, the report highlighted weather, air pollution, and the corrosive impact of road salt as having caused decay to various components of the transportation network.

Maintaining the nation's surface transportation infrastructure is critical to ensuring that these assets will remain safe and reliable in the future. The limited resources available to maintain and improve the condition and performance of the system have forced the agencies responsible for constructing, operating and maintaining the network to make difficult choices between greatly needed system expansions and ongoing maintenance costs.

Recently, several high profile situations highlighted problems with our nation's aging infrastructure. The collapse of the I-35W bridge in Minneapolis, Minnesota on August 1, 2007 focused the nation's attention on the number of highway bridges that are classified as structurally deficient or functionally obsolete. Similarly, the closing of a two-mile stretch of Interstate 95 in Pennsylvania after a large crack was found in a support pillar in the viaduct carrying the interstate illustrates the tremendous unmet surface transportation infrastructure needs.

While these are extreme examples, major portions of the interstate system are 40 to 50 years old. These segments can no longer be maintained with routine resurfacing and rehabilitation, and will require reconstruction. Similarly, numerous segments of the nation's public transportation infrastructure are in need of major repairs. Some rail transit systems have been in service for 75 to

100 years, and need total rehabilitation. Other newer transit systems have been growing at record levels and are facing a critical first phase of modernization needs.

Faced with growing demand on these systems due to increased freight movements and population growth, state departments of transportation and public transportation agencies must balance the need to expand their systems while maintaining current conditions and reconstructing segments that have outlived their useful design life. Given the limited resources available to carry out these responsibilities, these agencies utilize and implement a variety of innovative approaches and techniques—such as preventative maintenance and asset management—and management systems to manage and extend the useful service life of facilities. These steps allow the agencies to spread out the need—and cost—of reconstruction.

Highway and Bridge Conditions

Highway and Pavement Conditions

The U.S. highway system includes nearly 4 million miles of public roads, including 46,873 miles of Interstate and 115,319 miles of other NHS routes. About 76 percent of these roads are locally owned, while 20 percent are state owned, and three percent are federal.

Many aspects of the nation's highway infrastructure were constructed in the 1960's and 1970's, and are reaching the end of their useful design life and will require significant rehabilitation and reconstruction. In addition to their age, many segments of the network handle much greater volume of traffic than originally projected—including the explosive growth in freight truck traffic. As pavement structures reach 40 to 50 years of life, rehabilitation and resurfacing will no longer be sufficient and major portions of the nation's roadway network will require complete pavement and foundation reconstruction.

According to the U.S. DOT's 2006 Condition and Performance Report (C&P report), between 2002 and 2004, the percentage of vehicle miles traveled (VMT) on pavements with good ride quality has increased from 43.8 percent to 44.2 percent. Over this same period, there has been a decrease in the percentage of VMT on pavements with acceptable ride quality from 85.3 percent to 84.9 percent. However, between 1995 and 2004, the percentage of VMT on pavements that are found to not be acceptable has increased from 13.4 percent to 15.1 percent.

According to the C&P report, the percentage of VMT on pavements with good ride quality varied greatly among rural areas, small urban areas, and urbanized areas. The data for rural areas shows that 58.3 percent of VMT were on pavements with good quality rides while the figure for small urban areas is 41.2 percent, and 36.1 percent for urbanized areas. The data for percent of VMT on pavements with acceptable ratings shows that rural areas totaled 94.5 percent while small urban areas totaled 84.3 percent and urbanized areas totaled 79.2 percent.

Bridge Conditions

State highway departments face similar challenges in managing aging bridge inventories. According to U.S. DOT, one of every eight bridges in the nation is structurally deficient. Of the 597,340 bridges in the United States, 154,101 bridges are deficient, including 73,784 structurally deficient bridges and 80,317 functionally obsolete bridges. The National Bridge Investment Analysis System (NBIAS) model analyzes rehabilitation and replacement investment for all bridges, including

those on the NHS. The current NHS bridge investment backlog is estimated to be at least \$32.1 billion (in 2004 dollars).

The high percentage of deficient bridges and the large existing backlog are, in part, due to the age of the network. The peak periods of bridge construction occurred mainly before World War II and during the Interstate construction era. One-half of all bridges in the United States were built before 1964. The 55,315 bridges on the Interstate System pose a special challenge because a large percentage of these bridges are in the same period of their service lives (e.g., 44 percent of these bridges were constructed in the 1960s). Concrete and steel superstructures on the Interstate Highway System are, on average, 35 to 40 years old.

Aging infrastructure combined with overwhelming traffic volume has placed particular strain on the bridges on the NHS. NHS bridges carry more than 70 percent of all bridge traffic. Of the 116,172 bridges on the NHS (including more than 55,000 Interstate System bridges), 6,175 NHS bridges are structurally deficient.

Federal Programs for Highway and Bridge Maintenance Activities

Highway maintenance of public roads and bridges traditionally was the responsibility of the state and local governments, who operate the system. Initially, the Federal Government role was limited to construction and management of highways, particularly with the building of the Interstate Highway System.

The Federal Highway Administration (FHWA) Office of Infrastructure provides a history of the evolution of Federal involvement in roadway maintenance activities. The first effort to provide Federal funding for maintenance activities occurred with the passage of the Federal-Aid Highway Act of 1976, which authorized funding “for resurfacing, restoring, and rehabilitating those lanes on the Interstate System which have been in use for more than five years.” The 1976 Act also added “resurfacing, restoring, and rehabilitating” to the statutory definition of Federal-aid “construction.” According to FHWA: “As a result, activities that had been considered “heavy maintenance” and, therefore, ineligible for Federal-aid funding became eligible, whether on and off the Interstate System.” The Federal-Aid Highway Act of 1981 added a Fourth R, reconstruction, to cover all the work that was no longer eligible for Interstate Completion funding. Interstate Maintenance Program was established in the Intermodal Surface Transportation Equity Act of 1991, which incorporated the 3R’s. The National Highway System program funding was intended to address reconstruction.¹

The Highway Bridge Program provides funding to enable states to improve the condition of their highway bridges through replacement, rehabilitation, and systematic preventive maintenance. Federal assistance for the replacement of bridges was originally included in the Federal-Aid Highway Act of 1970, which contained the Special Bridge Replacement Program (“SBRP”). The Surface Transportation Assistance Act of 1978 renamed the program the Highway Bridge Replacement and Rehabilitation Program. This legislation also made bridge repair and rehabilitation eligible to receive Federal funding.

¹ “Origins Of The Interstate Maintenance Program,” Richard F. Weingroff, Federal Highway Administration. www.fhwa.dot.gov/infrastructure/intmaint.cfm

Highway Bridge Program funds can be used for replacement and rehabilitation of structurally deficient or functionally obsolete highway bridges on any public road. Bridge program funds can also be used for bridge painting, seismic retrofitting, systematic preventive maintenance, calcium magnesium acetate applications, sodium acetate/formate, or other environmentally acceptable, minimally corrosive anti-icing and de-icing compositions or installing scour countermeasures. Under the Highway Bridge Program, \$4.38 billion in funds were distributed to the states in fiscal year 2008.

Public Transportation Conditions

According to the C&P report, the average age of urban light rail cars is 14.8 years, commuter rail passenger coaches have an average age of 20.1 years, and 48 percent of urban bus maintenance facilities are more than 21 years old. Additionally, the average age of bus vehicles in urban areas was 6.1 years.

According to the Federal Transit Administration (FTA), nearly one-third of urban bus maintenance facilities are in an unacceptable condition. Fifty-one percent of urban rail passenger stations are rated as substandard, and eight percent of rail transit track was found to be in a substandard or poor condition. In 2004, there were 793 maintenance facilities for all transit modes in urban areas, including 38 light rail maintenance facilities, 55 heavy rail facilities, and 516 bus maintenance facilities.

At the same time that transit infrastructure is aging, the demand for transit services continues to rise. The American Public Transportation Association documented that Americans took 10.3 billion trips on public transportation in 2007, the highest level in 50 years. According to the American Society of Civil Engineers transit use has increased faster than any other mode of transportation.

Federal Transit Maintenance Programs

The Urban Mass Transportation Act of 1964 established the first permanent Federal transit program for “reconstruction and improvement” of public transit facilities. Over time, the Federal role in transit funding evolved to focus primarily on capital investments, though there still remain several FTA programs out of which various transit maintenance projects are funded. Currently, the principal federal programs for transit maintenance are the Fixed Guideway Modernization program, the Buses and Bus-Related Facilities program (both at 49 U.S.C. 5309), and the Formula programs (at 49 U.S.C. 5307 and 5311).

The Fixed Guideway Modernization Formula program (also known as the “Rail Mod” program) is distributed to eligible urbanized areas (“UZAs”) which have populations of at least 200,000 and fixed guideway systems that are at least seven years old. The UZAs must have more than one mile of fixed guideway to receive an apportionment. The funding structure for rail modernization is somewhat complicated in that all UZAs meeting the eligibility criteria are not treated uniformly. There are seven different tiers of apportionment factors codified at 49 U.S.C. 5337(a)(1-7). Some of the funding factors are based on actual route-miles and revenue vehicle-miles, while other funding factors are historical in nature. For FY 2009, \$1.67 billion, or roughly 16 percent of total FTA funding, is authorized by SAFETEA-LU for this program.

Under the Bus and Bus-Related Equipment and Facilities program (also known as the “bus program”) funds are allocated on a discretionary basis, either by the Federal Transit Administration or through earmarks in authorizing or appropriations legislation. Grants made available under the bus program for maintenance purposes may be used for replacement and rehabilitation of buses and related equipment. For FY 2009, \$984 million is authorized by SAFETEA-LU for these grants, which make up 9.5 percent of total FTA funding.

Transit maintenance projects may also be completed with the federal funds allocated to UZAs and states under the Urbanized Area Formula program and the Other Than Urbanized Area Formula program (also known as the “rural transit” program). The Urbanized Area program, covering all areas with a population of over 50,000, is the largest of the FTA programs, with an authorization of \$4.56 billion for FY 2009, or 44 percent of total FTA funding. The rural transit program, covering only those areas with less than 50,000 in population, is authorized at \$465 million for FY 2009.

Funds are distributed and may be used under these two formula programs based on several factors. In UZAs with 200,000 population and over, funds are apportioned and flow directly to a designated recipient selected locally to apply for and receive Federal funds. For urbanized areas between 200,000 and 50,000 in population, the funds are generally apportioned to the State for sub-allocation to the urbanized areas. For rural and small urban areas with less than 50,000 population, transit formula funds are based in part on land area in addition to population, and all funds are apportioned directly to the state with no sub-allocation to the areas.

In the Urbanized Area program, UZAs that are more than 200,000 in population must use funds for capital projects, while UZAs under 200,000 in population can use some of their funds for operating expenses. Since the passage of TEA-21 in 1998, the definition of transit capital projects has included explicit eligibility for preventive maintenance. FTA defines preventive maintenance as “activities, supplies, materials, labor, services, and associated costs required to preserve or extend the functionality and serviceability of a transit vehicle, facility, or other asset in a cost effective manner.” Many project activities that support the preservation of transit infrastructure fall under the term “preventive maintenance” thereby allowing both large and small urbanized areas to use their formula funds for transit maintenance projects.

Surface Transportation Investment Gap

The C&P report lays out the annual investment levels required to achieve the goal of either maintaining current system conditions or of significantly improving these conditions in the future. The Cost to Maintain Highways and Bridges (“Cost to Maintain”) scenario represents the annual investment necessary to maintain the current level of highway system performance. The Cost to Improve Highways and Bridges (“Cost to Improve”) scenario identifies the level of investment that would allow system performance to be significantly improved in an economically justifiable manner.

According to the C&P report, the average annual investment needed to cover the “Cost to Maintain” scenario is projected to be \$78.8 billion per year from all sources from 2005 to 2024, an increase of 2.3 percent over the projections made in DOT’s 2004 C&P report. The average annual level of investment required under the “Cost to Improve” scenario is projected to be \$131.7 billion per year for 2005 to 2024, 6.2 percent higher than the estimate in the 2004 C&P report for 2003 to

2022. The costs related to System Rehabilitation, which the report defines as capital investment focused on preserving the condition of the pavement and bridge infrastructure (including the costs of resurfacing and reconstructing highways and repairing and replacing bridges), is estimated to be \$40.7 billion under the “Cost to Maintain” scenario and \$61.0 billion under the “Cost to Improve” scenario. These totals constitute 51.6 and 46.3 percent, respectively, of the totals for each scenario.

The majority of the \$78.8 billion required under the “Cost to Maintain” scenario is needed to maintain urban arterials and collectors at a cost of \$49.7 billion. Investment on rural arterials and collectors under this scenario totals \$17.6 billion, while the rural and local roads and streets component totals \$11.5 billion.

Of the projected \$131.7 billion in needed investments to meet the “Cost to Improve” scenario, investment on urban arterials and collectors total \$84.5 billion, or 64.5 percent of the total. Meanwhile, investment on rural arterials and collectors under this investment scenario totals \$28.2 billion, while the rural and urban local roads and streets component totals \$19.0 billion.

According to the C&P report, total highways expenditures by all levels of government grew by roughly 45 percent from \$102 billion in 1997 to \$147.5 billion in 2004. Government spending for maintenance and traffic services totaled \$36.3 billion in 2004, an increase of 35 percent from the \$26.8 billion spent in 1997. Over the same span of time, capital outlay expenditures increased 45.2 percent from \$48.4 billion in 1997 to \$70.3 billion in 2004. Maintenance and services spending as a share of total highway expenditures decreased in this time from 26 percent in 1997 to 24.6 percent in 2004. Capital outlay expenditures as a share of overall highway expenditures remained roughly the same in this time.

According to the C&P report, the majority of maintenance expenditures occurred at the local government level: \$17.4 billion out of the total \$27.3 billion of expenditures, representing 63.5 percent of overall maintenance spending.

Similarly, the National Surface Transportation Policy and Revenue Study Commission’s report identifies a significant surface transportation investment gap, and calls for an annual investment level of between \$225 and \$340 billion—by all levels of government and the private sector—over the next 50 years to upgrade all modes of surface transportation (highways, bridges, public transit, freight rail and intercity passenger rail) to a state of good repair. The current annual capital investment from all sources in all modes of transportation is \$85 billion.

Currently, \$68 billion is invested annually in capital improvements to Federal-aid highways and bridges. According to the analysis in the report’s base case scenario, sustaining this rate of investment (in constant 2006 dollars) over an extended period of time would lead to significant deterioration in system operational performance and physical condition. The Commission’s highways base case analysis found that:

- Delays experienced by travelers on principle arterial highways will increase by one-fifth by 2020, by one-half by 2035, and double by 2050.
- The situation will be more acute in urban areas where delays are projected to grow by over one-half by 2020, more than double by 2035, and quadruple by 2055.

- The percentage of vehicle miles traveled on National Highway System roadways that meet U.S. DOT's standard for "acceptable" ride quality would decline from approximately 85 percent in 2005 to just below 60 percent in 2055.

According to the Commission's report, the cost of eliminating all existing bridge deficiencies and addressing all such deficiencies as they arise over the next 50 years is estimated to be \$850 billion in 2006 dollars, equating to an average annual investment level of \$17 billion dollars.

The C&P report identified an existing transit infrastructure backlog of \$27.66 billion: \$13.7 billion for vehicles, \$2.3 billion for stations, \$6.9 billion for systems, \$3.5 billion for facilities, and \$1.3 billion for guideways. The report shows that in 2004, transit capital investment nationally was \$12.6 billion, some \$9.2 billion short of U.S. DOT's 2006 "cost to improve" estimate for transit of \$21.8 billion.

Using economic and engineering concepts to estimate future transit capital investment needs, the FTA estimates \$14.8 billion is needed annually to maintain conditions and performance of the nation's transit systems at the 2000 level. In order to improve transit systems to "good" by 2020, \$20.6 billion is necessary. Recent data from 2002 showed that actual spending from all sources was \$12.3 billion.

PRIOR COMMITTEE ACTION

The Committee on Transportation and Infrastructure held a hearing on the National Surface Transportation Policy and Revenue Study Commission's report, "Transportation for Tomorrow," on January 17, 2008.

The Subcommittee on Highway and Transit held a on the minority views to the Commission's report on February 13, 2008.

In response to the collapse of the I-35W bridge in Minneapolis, Minnesota, the Committee on Transportation and Infrastructure held a hearing on the topic of "Structurally Deficient Bridges in the United States" on September 5, 2007.

On January 24, 2007 the Subcommittee held a hearing to assess the overall needs of the federal highway system.

WITNESS LIST

The Honorable Pete K. Rahn
Director
Missouri Department of Transportation
Jefferson City, MO

The Honorable Allen D. Biehler, P.E.
Secretary of Transportation
Commonwealth of Pennsylvania
Harrisburg, PA

The Honorable Leo Bowman
Commissioner
Benton County
Prosser, WA

Mr. Stephen E. Schlickman
Executive Director
Regional Transportation Authority
Chicago, IL

Mr. Michael Allegra
Assistant General Manager and Chief Capital Development Officer
Utah Transit Authority
Salt Lake City, UT

Ms. Linda Watson
Chief Executive Officer
Central Florida Regional Transportation Authority LYNX Central Station
Orlando, FL