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Testimony

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Committee on Public Works and Transportation,
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**NATIONAL HIGHWAY
SYSTEM**

**Refinements Would
Strengthen the System**

Statement of
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Mr. Chairman and Members of the Subcommittee:

We are pleased to have this opportunity to testify on the National Highway System (NHS), which we have been reviewing at the request of this subcommittee. This system will influence the framework for surface transportation for decades to come. Just as construction of the Interstate Highway System has been the centerpiece of the federal-aid highway program, the NHS is expected to assume this role in the future as the most important roads in the nation are placed within this network. The NHS will form a cornerstone of premier highways with links established to major travel destinations, including ports, airports, rail terminals, and public transportation facilities. These linkages are intended to complement a subsequent effort to create a National Transportation System, which will lead to a seamless transportation system that unifies all transportation modes.

The Department of Transportation (DOT), working cooperatively with state and local officials as well as the private sector, has made great strides in identifying the most important roads in the nation that should form the basis of the NHS. The development of the proposed NHS was certainly a formidable task. Nevertheless, the results clearly reflect the spirit of cooperation and unity displayed by countless transportation officials throughout the country in identifying, under DOT's leadership, an interconnected system that will serve a majority of interstate and interregional travel and commerce. The proposal is for an NHS network of about 159,000 miles, which is about 4 percent of the approximately 4 million miles of public roads. However, this system would handle about 40 percent of all vehicle miles traveled, and accommodate over 70 percent of all commercial truck traffic.

Our testimony today will address (1) the expectations for the NHS, (2) states' rationales for requested adjustments to the NHS mileage the Federal Highway Administration (FHWA) had allocated to

them, (3) problems in establishing NHS linkages to other modes of transportation, and (4) future adjustments to the NHS. To address these issues, we discussed the NHS designation process with 10 states¹ and DOT officials in Washington, D.C. and analyzed NHS data. In summary:

- Performance expectations for preservation and maintenance and other important NHS goals need to be established. A well-maintained system should form the necessary foundation for pursuing the myriad of goals for the system, which include economic development, enhanced mobility, improved air quality, and the promotion of travel and tourism. Without such a foundation, system enhancements such as alleviating congestion and improving the efficient movement of goods may not be fully realized. Moreover, FHWA has not coupled the wide range of goals with specific expectations and ways to measure how the system would perform to meet those goals. For example, one possible expectation relates to pavement condition. FHWA data shows only 46 percent of the pavement is considered in good condition for a major component of the NHS--principal non-Interstate highways in urban areas. Yet, whether this is considered an acceptable level cannot presently be answered with any certainty, because expectations have not been established for NHS pavement condition.

¹ We chose a sample of ten states that obtained from FHWA varying adjustments to NHS mileage targets originally allocated to them. The ten states selected were California, Florida, Missouri, Montana, Nevada, Ohio, Oregon, Rhode Island, Texas, and West Virginia. These ten states account for 45,000 miles of the proposed 159,000 NHS network, or 29 percent.

- All 10 states we contacted requested adjustments to the NHS miles originally allocated to them by FHWA. Eight of 10 states we contacted assumed more NHS miles will translate into more federal funding in the future, thus these states generally requested additional NHS miles. However, DOT has stressed its intent not to link NHS designation with funding. The remaining two states assume there will not be a correlation between federal funds received in the future and NHS miles, and these states requested fewer miles than allocated to them by FHWA.

- The accomplishment of one of the major purposes of the NHS--connecting NHS roads with ports, airports, transit service, Amtrak stations, and highway/rail transfer facilities--is not expected to be completed until 1997. Although symbols for these facilities are on the NHS map provided to the Congress, they are meant for illustrative purposes only and are not intended to reflect actual or proposed NHS connections with other modes of transportation. For example, NHS road access to all 321 Amtrak stations on the map have not been identified. One problem is that DOT has not clearly defined appropriate NHS access to a facility. However, DOT is aware of such problems and plans to develop criteria to identify facilities and determine appropriate access within 2 years after NHS approval. This delay could result in congressional approval of the NHS without knowing what connections will be established to other modes of transportation, unless provision is made now for later review of these connections by the Congress.

-- Changing demographic, economic, and other patterns will require future adjustments to the NHS, but a strategy to guide these future changes must still be developed. FHWA recognizes that the NHS cannot be a static system and has proposed that the system be allowed to expand by up to approximately 6,000 additional miles in the future. However, it is not clear how these additional miles would be allocated, what rationale will be required to trigger and/or support size adjustments, and how frequently adjustments could be made. Questions like these need to be answered prior to allocating the additional 6,000 miles so that states have a framework for how the allocation decisions will be made.

Based on our work, we have developed recommendations that address the need for expectations and performance measures and a framework to guide future changes. But, before addressing the individual issues in greater detail, I would like to provide a brief background.

BACKGROUND

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) imposed an NHS mileage limitation of 155,000 miles, which the Secretary of Transportation has the authority to adjust by plus or minus 15 percent. A preliminary map detailing a 150,000-mile system that the Department of Transportation provided to the Congress in February 1991 was the basis for the mileage targets that DOT allocated to the states.

FHWA told the states these mileage targets were a starting point for developing the proposed NHS, and that they could exceed their allocated mileage by up to 15 percent. In granting additional mileage, FHWA compared states with similar

characteristics and considered such things as the (1) amount of commercial vehicle travel, (2) relationship of the route(s) to states' long-range transportation plans, (3) importance of the route(s) to regional or interstate travel, and (4) relationship of the route(s) to routes in adjacent states to form multistate corridors. Any adjustments to the original targets have now largely been agreed to by DOT and the states, and DOT submitted a revised map to the Congress in December 1993.

The revised map proposes a system of nearly 159,000 miles-- about 119,000 miles in rural areas and about 40,000 miles in urban areas. DOT estimates that these roads are expected to serve 42 percent of total vehicle miles of travel in rural areas and 40 percent of such urban travel. FHWA estimates that about 98 percent of the system will be formed from the existing road network, as only about 2 percent of the highways are yet to be constructed. About 42 percent of the system is nondiscretionary and is divided into four components. First, the 45,000-mile Interstate system; second, 4,500 miles specifically selected by the Congress as high-priority corridors; third, 15,700 miles of non-Interstate highways needed for national defense, which together with the Interstate is referred to as the Strategic Highway Corridor Network; and, fourth 1,900 miles of connectors to military bases.

The remaining 91,000 miles of the system are discretionary, and thus were the focus of discussion and adjustment between the states and FHWA. This discretionary mileage is intended to encompass other important highways for serving interstate and interregional travel and to provide connections to major ports, airports, public transportation facilities, and other intermodal facilities.

Under ISTEA, the Congress has until September 30, 1995, to approve the NHS designation by law. If the system is not congressionally approved by the beginning of fiscal year 1996, then

ISTEA cuts off all NHS and Interstate maintenance apportionments. These two programs account for \$38 billion of ISTEA's total \$121 billion highway authorization for the period fiscal year 1992 through 1997.

Although an NHS has not been approved, NHS program funds are now available for 207,000 miles of major highways. However, the amount of NHS funds a state gets is now totally independent of NHS miles. Instead, NHS funds are presently based on each state's fiscal year 1987 through 1991 share of total federal funding with certain adjustments being made for Interstate maintenance and bridge apportionments, since these programs have a different basis for fund allocation.

NHS EXPECTATIONS AND METHODS OF ASSESSMENT NEED TO BE ESTABLISHED

A host of goals are associated with the NHS, but the goals may remain barren ones unless system performance expectations related to the goals are established. FHWA has articulated many goals for the NHS, including economic development, enhanced mobility, reduced congestion, improved air quality, and the promotion of travel and tourism. However, these goals may not be attained unless preserving and maintaining the system is recognized as the foundation for the NHS. Furthermore, FHWA has not coupled the diverse goals for the system with system performance expectations and ways to measure how the system is performing to meet those expectations. Performance expectations could be set that would include measures related to the condition and performance of the system such as ratings of the pavement condition, number of bridge deficiencies, level of safety achieved, and extent of congestion. Unless such measures are established, the success of the system cannot be effectively evaluated.

As part of the Highway Performance Monitoring System, FHWA uses data from the states that classify pavement into broad categories--poor, mediocre, fair and good--based on the roughness of the ride and surface defects. While the data has limitations on an individual state basis, FHWA uses it as an indicator of overall system performance, and is in the process of making system improvements. The data shows pavement condition improved throughout the 1980's and continues to do so into the 1990's. More specifically, in 1991 (the most recent year for which data is available) the indicator shows that the percent of principal highways classified in good condition ranges from a high of 61 percent for rural Interstate highways to 46 percent for principal non-Interstate highways in urban areas. Consequently, the balance of the nation's major highways are at most in fair condition, which according to FHWA represents noticeably inferior pavements compared to new ones, and pavements that may be barely tolerable for high-speed traffic. (Appendix I displays this data in more detail). Similarly, FHWA reports that as of 1992, 25 percent of the bridges on the Interstate highway system are deficient.

Enhancing the preservation and maintenance of the nation's premier roads was mentioned as the most common expectation for the NHS by 6 of the 10 states we contacted. Other expectations mentioned included (1) sustaining mobility by recognizing the need to widen high-volume traffic roads on the NHS, (2) enhancing economic development, (3) increasing trade by serving all major international border crossings, and (4) providing a focus for the overall federal-aid highway program now that Interstate construction is nearly complete.

This wide range of system expectations may be realized to various degrees over time. However, certain expectations compete with one another while others are complementary. For instance, increased trade and tourism and decreased congestion are at times competing goals, while decreased congestion and improved air

quality can be complementary. The fact that NHS goals at times compete makes it more imperative that performance measures be established to assess the system's accomplishments or lack thereof. FHWA has not identified such performance measures; rather its efforts have essentially been focused on considering the use of existing data collection tools that could provide some indicators of the system's performance. In fact, FHWA is proposing that upon designation of the NHS, consultation would continue with interested groups to develop or refine existing policies and goals related to the performance, operation, and maintenance of the NHS routes. We agree that such refinements can and should continue after NHS designation. However, without basic expectations being set, such as those related to pavement condition and bridge deficiencies, no basis for assessing system accomplishments will exist.

Potential performance measures that could be used to track the performance of the system include ratings of the pavement condition, the number of bridge deficiencies, the number of fatalities, the extent of congestion, and the percentage of lane miles devoted to high-occupancy vehicles. For example, a performance expectation could be established that at least 75 percent of the Interstate highways be considered in good condition and at least 65 percent of other NHS highways be rated in good condition. These expectations could be strengthened over time and further refined to reflect needed urban and rural distinctions.

In some cases, the use of existing data sources to support NHS performance measures would need to be modified to more precisely capture NHS data. For instance, tools, like the Highway Performance Monitoring System, used to assess pavement condition, are not now aligned with the proposed 159,000-mile NHS network; data are now collected on a larger network of 207,000 miles. To collect data for the NHS, tools would have to be modified to capture pavement condition and form a benchmark for evaluating subsequent performance.

ASSUMPTIONS ABOUT FUTURE FEDERAL FUNDING LED
MOST STATES SURVEYED TO SEEK MILEAGE ADJUSTMENTS

The allocation of federal NHS funds to states is not currently tied to their mileage allocation on the NHS, but a number of states assume there will be changes to the allocation process in the future. Most of the 10 states we talked to sought increases or decreases in their NHS mileage allocations on the basis of these assumptions.

The current allocation of federal funds to states is based on each state's fiscal year 1987 through 1991 share of total national highway funding, with certain adjustments being made for Interstate Maintenance and Bridge apportionments. However, 8 of the 10 states surveyed assumed there will be changes to the allocation process,² and more NHS miles may mean in their view more federal dollars in the future. Thus, these states generally sought to obtain additional NHS mileage. Their assumption that more NHS mileage will mean more federal funds in the future prevails despite FHWA's statement that they do not intend to propose using NHS miles as a basis for allocating NHS program funds in the future.

The remaining two states surveyed--California and Florida--assumed there would be no link between NHS miles and federal funds received in the future. These two states requested fewer NHS miles than allocated to them by FHWA. A senior Florida transportation official noted that the state elected to limit its NHS miles because of the costly highway needs facing the state, and its reluctance to dilute future funding by attempting to spread the funds over a larger network. A senior California official stated

²The eight states were Missouri, Montana, Nevada, Ohio, Oregon, Rhode Island, Texas, and West Virginia. Except for Rhode Island, these states requested additional NHS miles above their original NHS mileage allocations.

that a primary reason leading the state to limit its NHS mileage was the assumption that federal funds other than funds for the NHS may be returned directly to the states in the future. Returning funds directly to the states has been proposed in the past, and while it could take several forms, it generally means that federal gasoline tax revenues collected by the state, excluding those revenues supporting the NHS program, would be returned to the state. If these tax revenues were returned directly to the states, this could give the states more control over the funds with less federal restrictions. Under these conditions, states may seek to limit miles on the NHS.

From an overall perspective, most states elected to seek adjustments to the NHS mileage targets provided to them by FHWA. Specifically,

- 43 states increased their targeted miles, ranging from 5 miles in New York to 1,059 miles in Montana.
- 10 of the 43 states received mileage increases over the 15 percent limit.
- 7 states, the District of Columbia and Puerto Rico decreased their target miles, ranging from a 2 mile decrease to approximately a 1,500 mile decrease.

The original NHS rural mileage targets were increased from 105,262 miles to 118,822 miles--an increase of 13,560 miles. The initial urban mileage allocation totaled 44,625 miles, and while certain states increased their urban miles, overall there was a net decrease in urban miles to 39,840 miles--a reduction of 4,785 miles. After factoring in these state adjustments, the proposed system represents approximately 75 percent rural miles and 25 percent urban miles, which is roughly proportional to the Interstate highway system split between urban and rural miles.

Appendix II shows mileage adjustments for individual states approved by FHWA for the proposed NHS.

NHS LINKAGES TO OTHER MODES NEED TO BE FINALIZED

One of the major purposes of the NHS--establishing connections with other transportation modes, such as major ports, airports, and public transit--may not be completed until 1997 or the establishment of the National Transportation System. DOT is proposing that Congress approve the NHS with the understanding that the connections would be made after such approval. In the interim, the NHS map indicates, for illustrative purposes, possible connections that may be made.

DOT has stated that the illustrative connections on the map are not intended to imply that the NHS connects with every facility identified, or that such connections will necessarily be made in the future. Instead, DOT is proposing that within 2 years of NHS approval, the states, in cooperation with the metropolitan planning organizations and other officials, identify major intermodal facilities and appropriate access on the basis of criteria to be established by DOT within the next several months.

FHWA's initial intention to establish the NHS' connection with other transportation modes as part of the NHS designation process proved unsuccessful. One of the reasons was that FHWA's NHS instructions to the states on the NHS designation process in June 1992 did not define what a major intermodal facility was. Instead, FHWA stated that states and the metropolitan planning organizations were in the best position to make these determinations. However, when the states submitted their proposed NHS roads and other modal facilities to FHWA, they were inconsistent. Some states and metropolitan planning organizations gave considerable attention to identifying major intermodal facilities, such as ports and

airports, and providing access where appropriate. Others gave less attention to this subject.

As a result, FHWA believed it needed to rethink the state effort. FHWA subsequently worked with DOT modal administrators and the private sector to identify the connections with other modes illustrated on the map. As appendix III shows, the list of connections include 104 ports, 143 airports, 321 amtrak stations, 191 rail/truck facilities, and 319 public transit systems.

It is clear that facilities such as major airports generally have access provided by an Interstate highway, thus such facilities would be connected to the proposed NHS. Nevertheless, DOT acknowledges that a number of mistakes were made in developing the illustrative list of connections to the NHS. For instance, neither FHWA nor the Federal Railroad Administration could identify the NHS road access provided to the 321 Amtrak stations on the map. In addition, DOT has not defined what it means by appropriate NHS access to a modal facility, such as a facility that is within one mile of an NHS route. Similarly, neither FHWA nor the Federal Transit Administration could provide us with any details on what type of NHS connections had been established with the 319 public transit systems. Also, intercity bus terminals were inadvertently omitted from the illustrative listing of NHS connections. It is important that such connections be provided for; a representative of Greyhound Lines, Inc., noted that intercity buses may be the only means of intercity transportation for many rural residents and the elderly. Lastly, as shown in Appendix III, FHWA did base selection of the illustrative facilities on criteria. However, they are reassessing it as part of their ongoing efforts to develop criteria over the next few months to guide selection of intermodal facilities. This may result in additions or deletions of illustrative facilities in various categories.

In the near term, the proposed NHS represents a highway system of important roads, but the connections shown on the map remain illustrative ones. Furthermore, the establishment of consistent, broader NHS linkages to other transportation modes may be postponed possibly until 2 years after NHS enactment, or be accomplished as part of the development of the National Transportation System. Acceptance of such a delay could mean that the Congress may not have the opportunity to weigh in on the criteria established and the resulting outcomes of NHS connections to other modes of transportation and major travel destinations. Alternatively, the NHS could be approved conditionally based on subsequent Congressional approval of the connections established to other modes of transportation and major travel destinations.

A FRAMEWORK IS NEEDED TO GUIDE FUTURE CHANGES TO THE NHS

DOT wants a certain degree of flexibility to allow for adjustments to the NHS and is proposing that the Secretary of Transportation be given the authority to increase the 159,000 mile system by about 6,000 miles, bringing the total to 165,000 miles. However, DOT has not decided how these additional miles would be allocated, what rationale will be required to trigger and/or support size adjustments, or how frequently adjustments could be made.

DOT plans to accommodate future NHS changes, which could arise because of factors such as population shifts, changes in defense logistics, and increased or decreased transportation demands arising from other modes. Also, statewide intermodal transportation plans that are due January 1, 1995, may identify needed changes to the NHS. Since no criteria have been established for identifying connections to other modes, it is not possible to reliably estimate the total additional miles that may be needed to complete these major linkages. After the NHS is designated, adjustments to these connections will have to be made.

Moreover, while we agree that flexibility is important, the only proposed governing framework for NHS size adjustments could be improved. DOT proposed that any changes would be (1) suggested to the Secretary of Transportation by the states, and (2) states would have to identify the modifications cooperatively with local officials through the statewide and metropolitan planning processes. We agree it is critical to continue to work with states and local officials through their planning processes as DOT suggests. However, additional information, such as rationale for size adjustments and frequency with which adjustments could be made, is needed prior to any allocation of additional mileage above the proposed base system of 159,000 miles. Moreover, it would provide Congress with a clearer understanding of how this system may grow in the future.

CONCLUSIONS

The proposed NHS map not only illustrates premier highways, but also reflects positively on the hard work and cooperative efforts displayed by the federal, state and local transportation community and the private sector. This process can be even further strengthened through the accomplishment of several important elements. These elements include establishing (1) system expectations and performance measures, (2) connections with other modes of transportation, and (3) a procedural framework for future adjustments.

While these elements could be postponed and dealt with after the NHS is approved because the system will be flexible and changes can be incorporated later, we believe system enhancement will be well served by addressing these elements. First, developing expectations would provide a means to clearly identify what the NHS is to accomplish, and coupling expectations with performance measures would provide baseline data to measure progress in meeting

expectations. Second, the Congress may not have the opportunity to evaluate the resulting outcomes of criteria used to identify connections to other modes, because identification and use of this criteria would occur after the Congress approves the NHS. Identifying these connections would enable the Congress to approve one of the cornerstones of the NHS as envisioned by ISTEA, particularly since there is presently no provision for the Congress to buy in to future changes after it approves the NHS. Alternatively, the Congress could consider approving the NHS conditionally with final approval subject to later review of the connections established to other modes of transportation and travel destinations. Finally, uncertainty over how the additional 6,000 miles will be allocated could cause confusion at the state level. This could occur in the short term as state transportation plans that may result in changes to the NHS are due January 1, 1995.

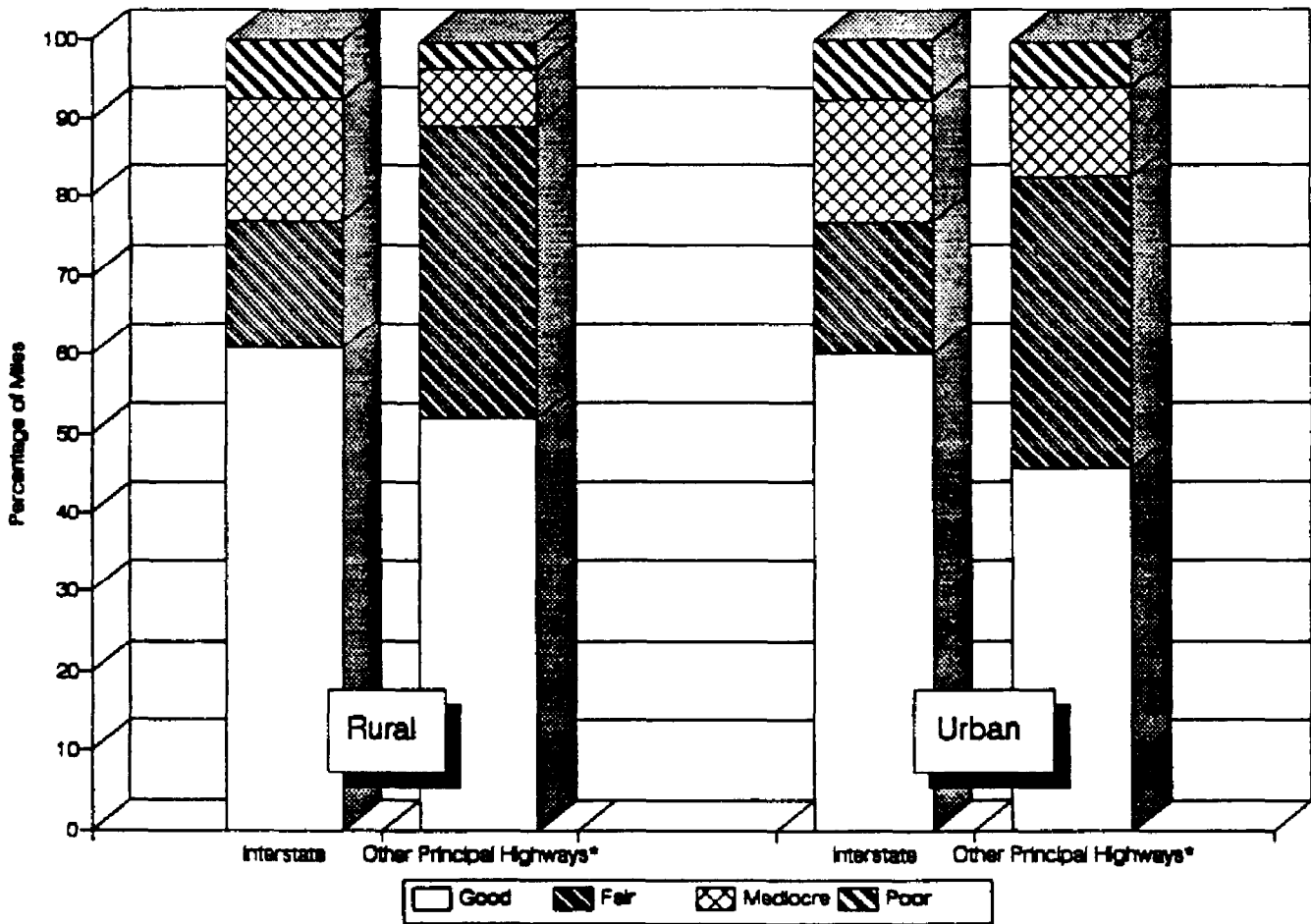
RECOMMENDATIONS

We recommend that the Secretary of Transportation direct the Administrator of the Federal Highway Administration to

- develop performance expectations and measures in conjunction with the major goals of the NHS to ensure that progress can be assessed, particularly in critical areas such as pavement condition and the extent of congestion; and,
- develop a procedural framework within which changes to the NHS can be considered. Such a framework could include, among other things, how any additional miles would be allocated, what rationale will be required to support size adjustments, and how frequently the adjustments could be made.

This concludes my testimony. We would be pleased to respond to any questions that you or any other member of the Subcommittee may have.

Pavement Conditions - 1991



*Other Principal Highways represents for rural other principal arterials and for urban other principal arterials, freeways and expressways.

Source: GAO's analysis of FHWA's data.

Difference Between NHS Mileage Target For States and FHWA Approved Adjustments

State	Mileage difference: Target versus FHWA approved miles	Percentage change: Target versus FHWA approved miles
Mileage increased by 16 to 53 percent		
Hawaii	97	45%
Montana	819	27%
Nebraska	483	19%
Nevada	334	18%
New Mexico	511	21%
Oregon	698	23%
South Dakota	1,027	53%
Vermont	114	20%
Virginia	466	16%
Wyoming	621	30%
Mileage increased by 6 to 15 percent		
Alabama	412	13%
Colorado	397	13%
Georgia	512	12%
Idaho	136	6%
Iowa	214	7%
Kentucky	335	14%
Louisiana	297	13%
Maine	111	11%
Massachusetts	126	7%
Minnesota	231	6%
Mississippi	293	12%
Missouri	590	15%
New Hampshire	89	13%
New Jersey	102	6%
North Dakota	323	14%

South Carolina	229	9%
Tennessee	358	12%
Utah	254	13%
West Virginia	163	11%
Wisconsin	495	14%
Mileage increased by less than 5 percent		
Alaska	16	1%
Arkansas	48	2%
Connecticut	7	1%
Delaware	14	5%
Illinois	24	.5%
Kansas	134	4%
Maryland	11	1%
Michigan	170	4%
North Carolina	146	4%
Ohio	192	4%
Oklahoma	35	1%
Texas	370	3%
Washington	19	1%
Mileage decreased		
Arizona	-13	-.5%
California	-1,134	-13%
D.C.	-2	-.3%
Florida	-1,496	-27%
Indiana	-320	-11%
New York	-210	-4%
Pennsylvania	-10	-.2%
Puerto Rico	-4	-.1%
Rhode Island	-59	-18%

Source: GAO's analysis of FHWA's data.

Proposed Intermodal Facility Connections On The NHS*

Type of Connection	Number	Potential Threshold
Ports	104	Includes all major container ports. Each port handles more than 750,000 short tons of cargo per year or more than 350,000 short tons of cargo in foreign trade. Also includes ports that meet national defense requirements. The 104 ports shown on the proposed NHS maps handle about 72 percent of total U.S. waterborne cargo tonnage. Does not include ports that are primarily dependent on rail and/or pipelines for the movement of cargo to and from the port area.
Airports	143	Each airport handles more than 250,000 annual enplanements, or about 96 percent of total annual domestic enplanements, as well as a similarly large amount of civilian airborne cargo.
Amtrak Stations	321	Each station handles a combined total of over 20,000 entrainments and detrainments over the most recent 3-year reporting period.
Rail/Truck Facilities	191	Each facility handles more than 5,000 annual origins and/or destinations of railroad cars and relies heavily on the rail/truck intermodal connection.
Public Transit Systems	319	Includes all of the public transit systems reporting to the Federal Transit Administration under its section 15 data collection system in FY 1992. Since the NHS connects to all urban areas with populations above 25,000, access is provided to public transit systems serving over 99 percent of all transit riders. The metropolitan area maps will contain information on fixed guideway public transit routes (light, rapid, and commuter rail routes and busways).

* NOTE: These connections are meant for illustrative purposes only and are not intended to reflect actual NHS Connections with other modes of transportation. Their purpose is essentially to illustrate connections that may be made in the future.

Source: GAO's analysis of FHWA's data.

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