

GAO

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TRANSPORTATION
INFRASTRUCTURE

Issues For Congressional Consideration
During Reauthorization of Surface
Transportation Programs

Statement of
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Before the
Subcommittee on Water Resources, Transportation and
Infrastructure
Committee on Environment and Public Works
United States Senate



Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to discuss highway and highway safety reauthorization issues and the results of our past and on-going work at the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA).¹ We have previously presented testimony before this Subcommittee, as well as in the House, on reauthorization issues and the Administration's proposed bill--the Surface Transportation Assistance Act of 1991. While we have not completed our analysis of S.965, the Surface Transportation Efficiency Act of 1991, we have several key points for you to consider as you continue the reauthorization process.

Our testimony focuses on reauthorization issues relating to future federal spending, bridge deficiency determinations, intermodal funding for highways and mass transit, intelligent vehicle and highway systems, motorcycle helmet and automobile safety belt laws, and other highway safety matters.

In summary:

-- The proposed funding in S.965 would increase overall purchasing power for surface transportation over that of the past 5 years. However, backloading the bulk of the proposed increased authorizations in the later years raises questions

¹Listing of our recent reports and testimonies are in Attachment I.

about whether the funding increases will actually be realized given anticipated competition between transportation and all other federal discretionary spending.

- S.965's proposed federal/state matching ratios ease our concern that a number of states may not be able to readily absorb a significant reduction in the federal share for most highway projects. If, however, this Subcommittee were to decide on a lower federal share, we believe that it should be phased in over time.

- S.965 draws attention to Interstate preservation by setting a higher federal share for preservation versus capacity enhancement activities, and requiring development of Interstate preservation standards. We believe goals should also be established for improving the condition of the Interstate, as well as all other highways. Additionally, we urge the Subcommittee to consider allowing the use of federal funds for certain cost-effective, preventive maintenance activities that can save or defer more costly federal expenditures on highway preservation activities, such as rehabilitation and resurfacing.

- The use of tolls on federal-aid highways can help states increase the total amount of state funds available for highway construction and maintenance. However, we believe the federal

share for toll projects should be set significantly lower than that set for non-toll federal-aid projects. A high federal share could lead to an excessive use of tolls on federal-aid highways and rejection of tolls by the traveling public. We also believe states should be encouraged to use advanced vehicle identification equipment, which can significantly reduce the congestion and resulting pollution at toll plazas.

- S.965 proposes that the Department of Transportation (DOT) adopt a level-of-service methodology (LOS) for identifying deficient bridges eligible for federal-aid. However, DOT's proposed LOS methodology will not be used to gauge the magnitude of each bridge's deficiency. Consequently, all bridges determined eligible for replacement and rehabilitation will be considered equally deficient. We suggest that DOT also use the LOS to develop information that the Congress can use to ensure that federal bridge funds are directed to highway systems with the most critically deficient bridges.

- We support an intermodal investment strategy to address the nation's congestion relief and clean air goals. However, we urge the Subcommittee to move with caution in immediately shifting significant responsibility for programming nearly one-half of federal highway funds to Metropolitan Planning Organizations (MPO). MPOs experience in programming highway

funds varies significantly, as does their organizational structures and levels of public support.

-- S.965 and S.999 authorize support for Intelligent Vehicle and Highway Systems (IVHS). We have found that IVHS could reduce traffic congestion and provide safety, fuel, and environmental benefits. However, an aggressive research and testing program is needed to address significant uncertainties about IVHS's overall contribution. First, IVHS should achieve a range of policy goals such as congestion reduction and environmental quality improvement. Second, DOT must develop a strategic approach to IVHS field testing and take an active role in selecting and evaluating high-priority field tests. Third, there should be legislative guidance for analyzing IVHS funding options.

-- We support S.965's emphasis on the use and enforcement of motorcycle helmet and automobile safety belt laws, given the safety and economic benefits of universal helmet usage. Studies have shown that helmeted riders experienced fatality rates that were 28 to 73 percent lower than for nonhelmeted riders. Universal helmet laws increase helmet use to 92 percent or better compared to about 50 percent where limited or no helmet law exists. Also, belted occupants of automobiles survive crashes 50 to 75 percent more frequently than unbelted occupants.

-- Existing NHTSA state highway safety programs and FHWA's Motor Carrier Safety Assistance Program should continue as the cornerstones for the nation's highway safety efforts. However, more aggressive FHWA enforcement of motor carrier safety is needed to ensure safe operation of commercial vehicles.

FUTURE FEDERAL SPENDING

Both S.965 and the Administration's bill would authorize about \$105 billion--about \$89 billion for highway and highway safety programs and about \$16 billion for mass transit programs. Both bills would result in increased highway purchasing power, when inflation is considered, over the next 5 years when compared with the funding provided by the Congress for the last 5 years.

We have previously testified that pressures for budget deficit reductions are likely to dim the prospects of obtaining large increases in highway program funding levels. Most of the increases in both S.965 and the Administration's bill will come in the later years. In 1994 and 1995, the highway program will have to compete with all other federal discretionary programs, including defense, for the limited funds available. Backloading the bulk of the proposed increases into the later years raises questions about whether the increased spending levels will actually be realized.

We previously expressed concern that the Administration's proposal would significantly reduce the federal matching share for most highway projects and may result in some states not being able to raise the necessary matching funds. S.965 addresses this concern by providing an 80-percent federal matching ratio for most highway programs for preserving and maintaining existing facilities. If, in deliberating the appropriate federal/state matching ratios, the Subcommittee decides to adopt large reductions in the federal share, we believe the reductions should be phased in over time.

In 1989, DOT reported that over 40 percent of all Interstate pavement is rated in fair to poor condition. DOT's projections show that the condition of the Interstate is not expected to improve, even with a substantial increase in federal funding for preservation activities. Both S.965 and the Administration's bill recognize the importance of Interstate preservation by establishing a higher federal share for this activity and a lower federal share for capacity enhancement.

DOT has not established goals for what constitutes minimum acceptable pavement conditions or a strategy for achieving them. S.965 proposes establishing a Bureau of Transportation Statistics, to collect, analyze, and disseminate data on transportation systems, including the condition of the nation's highways. We

believe this data base would be an important step to establishing pavement condition goals, not only for the Interstate, but for all other highways.

Unlike S.965, the Administration's bill would allow states to use federal funding for preventive maintenance activities--traditionally a state-financed responsibility. Our ongoing work supports federal funding for certain preventive maintenance activities, such as pavement crack and joint sealing. We have found that such maintenance can save or defer more costly federal expenditures on highway preservation activities, such as rehabilitation, resurfacing and restoration. We would, therefore, urge this Subcommittee to consider allowing the use of federal funds for certain preventive maintenance activities. This would provide states with the flexibility to select from among a range of preservation options and choose the most cost-effective treatments for their highways.

S.965 also requires DOT to develop criteria for determining what constitutes adequate preservation of the Interstate. We believe that standards are also needed for assessing adequate preventive maintenance of the Interstate. We believe DOT should work cooperatively with the states to develop them.

Federal Funding for Tolls

Both S.965 and the Administration's bill would permit the use of tolls on the federal-aid highway system. In our December 1990 report on the Toll Facilities Pilot Program we concluded that tolls can provide states additional funds for highway construction and maintenance. The Administration's bill would provide a 35-percent federal funding share on toll projects. S.965, on the other hand, provides a 35-percent federal share on new toll roads and an 80-percent federal share to convert existing, non-toll highways to toll roads. Our work shows that keeping the federal financial share on toll projects significantly lower than that set for non-toll, federal-aid highway construction is important. A high federal funding share for toll projects could lead to an overuse of tolls and cause the public to reject tolls on federal-aid highways. Therefore, as this Subcommittee deliberates on the appropriateness of tolls on federal-aid highways and considers the impact of the federal share on states' decisions to use tolls, we urge you to consider establishing a federal share substantially lower than that set for non-toll federal-aid highway projects.

BRIDGE DEFICIENCY DETERMINATION

S.965 and the Administration's bill both require FHWA to adopt a level-of-service (LOS) methodology to identify deficient bridges that are eligible for federal funding. Our ongoing work for the

Senate Committee on Environment and Public Works suggests that LOS is significantly more effective in identifying deficient bridges than FHWA's current methodology--the sufficiency rating. LOS not only establishes adequacy standards for bridges on different classes of highways, but also gives more adequate consideration to traffic volume and detour length. However, FHWA's proposal to implement LOS does not take full advantage of the benefits that LOS can provide.

Under its proposed LOS methodology, FHWA does not plan to gauge the magnitude of problems with each bridge by assigning a numerical score based on its deficiencies. Consequently, all deficient bridges that FHWA identifies as being eligible for rehabilitation or replacement will be considered equally deficient regardless of the extent of their deficiencies. By assigning each bridge a deficiency rating and ranking the bridges from most to least deficient, FHWA could use the ranked list as a basis for ensuring that federal bridge dollars are spent on the most critically deficient bridges.

S.965 and the Administration's bill differ on how to target federal bridge dollars to the most critically deficient bridges. The Administration's bill would require the states to spend 10 to 25 percent of bridge funds on local (generally off-system) bridges. S.965 would eliminate existing requirements that states must spend at least 15 percent of their bridge allocation on off-system

bridges and at least 65 percent on on-system bridges. Our LOS analysis indicates that the Interstate, primary, and urban systems have the highest percentage of critically deficient bridges. Our work also indicates that over 90 percent of the Administration's proposed \$9 billion funding level for bridges would be needed to improve or replace these bridges. In contrast, bridges located on secondary and off-system roads contained relatively few critically deficient bridges and would need less than 10 percent of the proposed funding. Accordingly, this Subcommittee may wish to consider targeting the largest share of bridge dollars to the Interstate, and bridges that are now located on the current primary and urban systems.

HIGHWAY AND MASS TRANSIT INTERMODAL FUNDING

S.965 and the Administration's bill both support more flexibility in the use of highway funds across traditional program lines. Our work has shown that consolidating highway program categories into a more flexible system would allow states to customize their spending of federal funds. Our June 1990 report on the Combined Road Plan (CRP) demonstration program authorized in 1987 showed that allowing five participating states to pool money from the urban, secondary, and bridge programs provided them with

the flexibility to target federal funds where the need was greatest.²

S.965 and the Administration's bill also support the concept of intermodal investments--that is, the use of funds between transportation modes--to address the nation's surface transportation infrastructure needs and congestion. We support this concept and believe it will become even more important as states and localities address requirements to improve air quality under the Clean Air Act Amendments of 1990. It should be noted that S.965 recognizes the important relationship between transportation and air quality by requiring DOT to establish and fund a Congestion Mitigation and Air Quality Improvement Program. Eligible projects will be programmed by MPOs.

S.965 addresses the use of funds between transportation modes by allow states and local jurisdictions to use a portion of their federal-aid allocations for either highways or mass transit. While the Administration's bill generally restricts use of highway funds for mass transit to the Urban/Rural Program, S.965's Surface Transportation Program significantly increases funding flexibility options by allowing Surface Transportation Program funds to be used

²Transportation Infrastructure: States Benefit From Block Grant Flexibility (GAO/RCED-90-126, June 8, 1990).

for mass transit operating and capital needs.³ Under S.965, MPOs will also assume a critical role in making intermodal funding decisions. MPOs will not only be required to develop transportation improvement plans, but they will also be responsible for programming highway and mass transit funds within urban areas.

States and MPOs must work together to make the difficult choices between highway and mass transit project selection. Therefore, we urge that this Subcommittee move with caution in any implementation of a broad scale shift in responsibility to MPOs as required by S.965. Our concerns include (1) the ability of some MPOs to immediately assume the added responsibility of programming intermodal funds, (2) uncertainty over what mechanisms will be used to ensure that MPO plans are consistent with national and inter-jurisdictional goals, and (3) the need for DOT guidance to states and MPOs for conducting analyses for making highway and mass transit project selections.

We believe some MPOs may not be able to readily implement S.965's proposed intermodal funding provisions. While MPOs have historically played an important role in urban transportation planning, our work to date indicates that most MPOs traditionally have not been responsible for programming federal highway funds, with the exception of federal-aid urban highway funds. In

³Under the Administration's bill 15 percent of National Highway Program funds may also be transferred to the Urban/Rural Program and subsequently for mass transit use.

addition, differences in organizational structure and levels of local support may create problems for some MPOs in assuming greater responsibilities for programming decisions as called for by S.965.

We also believe MPO-developed transportation improvement plans must be consistent with (1) the national goals of congestion relief and air quality, and (2) inter-jurisdictional transportation goals. We are uncertain about what mechanisms S.965 will use to ensure this consistency when planning and programming decisions are focused at the MPO level.

Finally, preliminary results of our ongoing review for the Senate Environment and Public Works Committee suggests that the criteria used to assess highway and transit projects may not easily facilitate choices between the two modes. Transit projects' primary objective is to move people out of their cars, while highway projects' primary goal is to build roads to accommodate more cars. It is generally easier to demonstrate the benefits of increased highway capacity over increased transit capacity because constructing new highways or additional lanes are more visible and tangible than acquiring additional buses. In our final report to the Committee we plan to assess the need for DOT guidance to states and MPOs for making analyses between highway and mass transit projects.

INTELLIGENT VEHICLE AND HIGHWAY SYSTEMS

Both the Administration's bill and S.965 authorize federal support for an Intelligent Vehicle and Highway Systems (IVHS) research program. A third bill, S.999, also authorizes a federal IVHS program and has been referred to the Senate Committee on Environment and Public Works. We recently reported on IVHS's potential to reduce traffic congestion.⁴ We studied three clusters of IVHS technologies: advanced traffic management systems (ATMS), which involve computerized programs to coordinate traffic lights and ramp meters; advanced traveler information systems (ATIS), which rely on display screens in vehicles to provide congestion and other travel information to commuters; and advanced vehicle control systems (AVCS), which include various devices to assist in controlling the vehicle (e.g., collision warning detectors), and could potentially result in automated freeway systems. To assess these IVHS technologies we synthesized major research studies, observed federally sponsored field demonstrations, and solicited and analyzed expert opinions on potential barriers that could impact IVHS effectiveness.

In summary, we found that IVHS could reduce traffic congestion and provide positive benefits in safety, fuel savings, and environmental quality. However, we noted that significant

⁴Smart Highways: An Assessment of Their Potential to Improve Travel, (GAO/PEMD-91-18, May 1, 1991).

uncertainties exist that need to be addressed through an aggressive research and testing program. Therefore, we believe three issues deserve priority attention in authorizing a federal IVHS program.

First, we recommended that authorizing legislation recognize the need for IVHS to achieve a range of policy goals, and that DOT be required to examine the extent to which IVHS could contribute to congestion-reduction while simultaneously contributing to the achievement of other goals, such as energy conservation and environmental quality. While the evidence we reviewed suggests that IVHS can have positive effects in several areas, a firmer understanding is needed to ensure that IVHS does reduce congestion while also contributing to the achievement of cleaner air and a safer driving environment.

Second, we noted that field tests play a key role in obtaining needed empirical information on IVHS effects. Consequently, we think authorizing legislation should require DOT to develop a strategic approach to IVHS field testing and evaluation. We recommended that this legislation require evaluations be conducted for any federally sponsored IVHS field test undertaken, and that DOT take an active role in selecting and evaluating high-priority field tests.

Third, our review noted that significant concerns exist regarding the overall costs of IVHS, and the ability of the various

parties (federal, state, and local) and private participants to support the program. Consequently, we recommended that authorizing legislation require an analysis of optimal funding options for achieving desired IVHS benefits. Such analysis should include consideration of alternative federal, local, and private arrangements.

These recommendations are not meant to comprise an exhaustive list of issues that need to be addressed in an IVHS research and testing program but, rather, to highlight priority issues that arose from our review. Both S.965 and the Administration's bill authorize federal support for IVHS, but S.999, provides the most comprehensive legislative guidance for IVHS, and includes several provisions related to our concerns, such as requiring (1) a strategic testing plan for IVHS, (2) written evaluations of field tests conducted pursuant to the strategic plan, and (3) an analysis of nontechnical constraints to a domestic IVHS program.

MOTORCYCLE HELMETS AND AUTOMOBILE SAFETY BELTS

We support the emphasis S. 965 places on the use and enforcement of motorcycle helmet and automobile safety belt laws. As you know, on May 10, 1991, we issued to this Subcommittee an interim report on the effectiveness of motorcycle helmets and

safety belts⁵. In the report we analyzed numerous studies relative to motorcycle helmet and safety belt laws. The motorcycle studies consistently demonstrated safety and economic benefits from universal helmet usage laws (laws applying to all riders). We reported that (1) helmeted riders experienced fatality rates that were 28 to 73 percent lower than for nonhelmeted riders, (2) helmeted riders' incidence of "severe" or worse head injuries was 46 to 85 percent lower than for nonhelmeted riders, (3) universal helmet laws increase helmet use to 92 percent or better compared with about 50 percent where limited or no helmet law exists, and (4) helmet nonuse increases the cost to society of caring for injured riders. We also reported that safety belt studies showed that belted occupants tended to survive crashes 50 to 75 percent more frequently than unbelted occupants. Seat belt use also reduces serious injury and the resulting hospital admissions. We are currently analyzing studies dealing with the effectiveness of mandatory belt use laws and the societal costs associated with the nonuse of belts. Our final reports on helmet laws and automobile safety belt laws will provide greater detail on these issues.

KEY HIGHWAY AND VEHICLE SAFETY PROGRAMS SHOULD CONTINUE

Existing NHTSA state highway safety programs and FHWA's Motor Carrier Safety Assistance Program should continue to be the

⁵Highway Safety: Interim Report on Safety Belt and Motorcycle Helmet Effectiveness, (GAO/RCED-91-158, May 10, 1991)

cornerstones for the nation's highway safety efforts. The Administration's bill continues these programs while S.965 makes no mention of the programs. We assume that the Senate will introduce separate legislation to reauthorize these programs. Our work has shown that more aggressive FHWA enforcement of motor carrier safety is needed to ensure safe operation of commercial vehicles. For example, we have found that FHWA's strategy for bringing carriers into compliance with federal safety regulations focuses on educating states and carriers rather than on follow-up and enforcement measures after safety deficiencies are found. In January 1991, we reported that about 70 percent of the motor carriers FHWA had rated were assigned a safety fitness rating of less than satisfactory. However, FHWA had not adequately implemented its follow-up enforcement procedures to ensure that carriers corrected deficiencies in safety management controls⁶.

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This concludes my prepared statement. I will be pleased to answer any questions you or other Members of the Subcommittee may have.

⁶Truck Safety: Improvements Needed in FHWA's Motor Carrier Safety Program, (GAO/RCED-91-30, Jan. 9, 1991).

RECENTLY ISSUED GAO REPORTS AND TESTIMONIES ON
HIGHWAYS, MASS TRANSIT, AND HIGHWAY SAFETY

Highway Safety: Interim Report on Safety Belt and Motorcycle
Helmet Effectiveness (GAO/RCED-91-158, May 10, 1991).

Smart Highways: An Assessment of Their Potential to Improve Travel
(GAO/PEMD-91-18, May 1, 1991).

Truck Safety: Improvements Needed in FHWA's Motor Carrier Safety
Program (GAO/RCED-91-30, Jan. 9, 1991).

Highway Financing: Participating States Benefit Under Toll
Facilities Pilot Program (GAO/RCED-91-46, Dec. 17, 1990).

Motor Vehicle Safety: Information on Accidental Fires in
Manufacturing Air Bag Propellant (GAO/RCED-90-230, Sept. 28, 1990).

Truck Safety: Need to Better Ensure Correction of Serious
Inspection Violations (GAO/RCED-90-202, Sept. 28, 1990).

Scenic Byways: A National Program, If Created, Should Be Small
Scale (GAO/RCED-90-241, Sept. 28, 1990).

Motor Vehicle Safety: Information on Recent Controversy Between
NHTSA and Consumer Group (GAO/RCED-90-221, Sept. 27, 1990).

Motor Vehicle Safety: NHTSA Should Resume Its Support of State
Periodic Inspection Programs (GAO/RCED-90-175, July 5, 1990).

Truck Transport: Little Is Known About Hauling Garbage and Food in
the Same Vehicles (GAO/RCED-90-161, June 28, 1990).

Transportation Infrastructure: A Comparison of Federal and State
Highway Laws (GAO/RCED-90-157, June 27, 1990).

Loma Prieta Earthquake: Collapse of the Bay Bridge and the Cypress
Viaduct (GAO/RCED-90-177, June 19, 1990).

Transportation Infrastructure: States Benefit From Block Grant
Flexibility (GAO/RCED-90-126, June 8, 1990).

Truck Safety: States' Progress in Testing and Licensing Commercial
Drivers (GAO/RCED-90-78, Mar. 12, 1990).

Transportation Infrastructure: Reshaping the Federal Role Poses Significant Challenge for Policy Makers (GAO/RCED-90-81A, Dec. 28, 1989).

Transportation Infrastructure: Panelists' Remarks at New Directions in Surface Transportation Seminar (GAO/RCED-90-81B, Dec. 28, 1989).

Mass Transit Grants: UMTA Needs to Increase Safety Focus at Local Transit Authority (GAO/RCED-90-41, Dec. 1, 1989).

Motor Vehicle Safety: Passive Restraints Needed to Make Light Trucks Safer (GAO/RCED-90-56, Dec. 30, 1989).

Highway Trust Fund: Condition and Outlook for the Highway Account (GAO/RCED-89-136, May 9, 1989).

Mass Transit Grants: UMTA Needs to Improve Procurement Monitoring at Local Transit Authority (GAO/RCED-89-94, Mar. 31, 1989).

Truck Safety: Implementation for the Single Driver's License and Notification Requirements (GAO/RCED-89-30, Feb. 13, 1989).

Highway Contracts: Federal-Aid Highway Contracts Awarded to Minority- and Women-Owned Businesses (GAO/RCED-89-78, Feb. 13, 1989).

Truck Safety: Information on Driver Training (GAO/RCED-89-163, Aug. 3, 1989).

Motor Vehicle Safety: Selected Rulemakings by the National Highway Traffic Safety Administration (GAO/RCED-89-11FS, Jan. 6, 1989).

Transition Series: Transportation Issues (GAO/OCG-89-25TR, Nov. 1988).

TESTIMONIES

Transportation Trust Funds (GAO/RCED-T-89-36, May 11, 1989).

UMTA Project Oversight and Mass Transit Issues (GAO/RCED-T-90-103, Aug. 7, 1990).

UMTA Project Oversight and Mass Transit Issues (GAO/RCED-T-102, Aug. 8, 1990).

Issues to Be Considered During Deliberations to Reauthorize the Federal-Aid Highway Program (GAO/RCED-T-90-50, Mar. 19, 1990).

Preserving the Interstate System (GAO/RCED-T-90-68, Apr. 25, 1990).

Operations of and Outlook for the Highway Trust Fund (GAO/RCED-T-90-78, May 8, 1990).

Operations of and Outlook for the Highway Trust Fund (GAO/RCED-T-90-79, May 9, 1990).