

Research and Development

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Executive Summary

Transportation Research has contributed significantly to improvements in transportation safety, infrastructure quality and longevity, and operational performance; it has helped minimize the impact of transportation systems on the environment and improve transportation planning models; and it continues to address the needs and challenges of the changing demographics and economies, climate change, and management needs.

Current research programs focus largely on applied research. While it is important for research to help transportation professionals address near term needs, adequate funding and direction should also be provided for longer-range research that helps us forecast change and to shape the future of our transportation system.

The National Surface Transportation Policy and Revenue Study Commission recommends a strong and strategic research program with core federal funding. The American Association of State Highway and Transportation Officials (AASHTO) [Standing Committee on Research](#) based their recommendations on the those of the Commission, as well as a review of current research program value [Transportation Research: Value to the Nation – Value to the States](#). In summary the recommendations:

- Maintain the State Planning and Research program, with its 25% minimum for Research and Development activities, in order to support individual and collective state priorities.
- Provide adequate funding to FHWA to carry out its core program in support of national research and development, separate from designated and earmarked research programs.
- Continue to fund strategic national research programs such as the National Cooperative Freight Research Program, the Transit Cooperative Research Program, and the Strategic Highway Research Program 2 (SHRP2).
- Continue support for the University Transportation Centers program at the current funding level and modify program elements to reduce the burden of uneven matching requirements, increase competition, and conduct an independent evaluation of the program.
- Support ongoing training, data, and knowledge-related activities, including the Bureau of Transportation Statistics, Local Technical Assistance Program, National Transportation Library, and others, in support of the overall effectiveness of core research and development activities.

Washington supports the AASHTO recommendations for transportation research.

Background

Transportation research and development funding is disseminated through USDOT administrations, state DOTs, the Transportation Research Board, and over 70 academic programs. Since 1962, a portion of federal transportation funds has been designated for planning and research programs at state DOTs. Since 1987, the University of Washington has received federal funding for transportation research and education through the University Transportation Center program, and Washington State University and Western Washington University have received federal earmarks for transportation research activities.

Washington has used this funding to improve our transportation systemⁱ by:

- Synthesizing state of the practice information on emergent topics such as climate change activities in DOTs, tolling, fuel price elasticity, sobriety checkpoints, and more.ⁱⁱ
- Developing strategies to retrofit existing bridges so that they are better able to withstand earthquakes.
- Improving the safety, longevity, constructability, and performance of our state's transportation infrastructure while reducing costs and construction delays.
- Improving analysis of the impact to natural resources from transportation activities and mitigation of those impacts.

- Improving operation and management of our transportation system through understanding factors affecting congestion, remote monitoring and data collection.
- Research has also improved understanding and performance of the multimodal freight system, multimodal/multi-jurisdictional transportation system, emergent technology, and many other topics.

Washington is nationally recognized for its transportation research and innovation. Policy makers, researchers and technical specialists are frequently invited to chair or participate in national and regional research panels and committees and peer exchanges. We are successful in national research programs; having our state's research needs selected for investigation and winning research contracts through our researchers. We also leverage significant funding through multi-state, multi-organization collaborative research.

Collectively, these research activities have provided significant benefit to Washington by allowing us to facilitate continued improvement and address emergent issues in transportation. Future research topics will build on many of those identified above as well as focus on new areas such as sustainability and climate change. It is important that funding for transportation research programs continue.

Recommendations

Support the AASHTO recommendations for transportation research (See Appendix B).

Issues to Watch

Research funding provided to state DOTs is through formula funding. If programs are reorganized as the Commission report recommends, research funding for state DOTs will be affected. This also affects funding for the National Cooperative Highway Research Program.

Over two billion dollars was provided for transportation research through SAFETEA-LU. To both document the value and optimize the conduct of transportation research, direction and funding are needed to support collaboration and coordination activities and to nurture continued development of a transportation knowledge network and dissemination of research results. These efforts are consistent with successful programs in other fields, notably medicine and agriculture.

It is important to use a portion of the transportation research program to anticipate long-range changes in the field of transportation. The Advanced Experimental Research program established under SAFETEA-LU begins to address this need. Funding for this program should continue. As well, match requirements should be discretionary to encourage participation, and funding from the program should be eligible as match for UTC funding to capitalize on the capabilities of university researchers in long-range research.

The funded research programs should continue to support research and disseminate results on transportation policy issues. In addition, research funding should be identified for transportation education that supports continued development of an effective workforce in the face of industry changes.

Options with Pros and Cons of each option - include benefits and/or costs to the state in your analysis

This recommendation sustains a strong inter-organizational and multi-disciplinary research and development program that allows Washington to leverage knowledge throughout the country and build expertise in the state. This recommendation maintains the strength of the current program while requesting modest increases that target critical issues for Washington, including: expanded environmental research, expedited deployment of national research results, increased technology transfer to local and tribal governments, and strategically developing a disseminated transportation knowledge network that builds on existing information resources.

Loss of funding to these programs slows innovation and the ability to anticipate and address on-going and emergent challenges.

APPENDIX A

AASHTO Recommendations for Research

It is recommended that the next surface transportation act include the following in support of research and development:

1. Continue the State Planning and Research Program in its current, formula-based configuration: 2% formula drawdown for SPR; 25% minimum for research.
2. Provide flexible funding for FHWA Research and Technology Program. Make the match requirements for the Exploratory Advanced Research Program discretionary. Allow this program as an eligible match for the University Transportation Center program.
3. Restore and fund key elements of SHRP 2 research using contract authority provided for the federal-aid program in Title 1. Provide funding for SHRP 2 Implementation for Renewal, Reliability, and Capacity Research
4. Continue and increase support for the Transit Cooperative Research Program, National Cooperative Freight Research Program, and Hazardous Materials Cooperative Research Program to meet their respective research needs and maintain their purchasing power.
5. Establish an Environment and Planning Cooperative Research Program (EPCRP) to be managed by the Transportation Research Board.
6. Establish a National Pavement Performance Database to Implement the Results of the Long Term Pavement Performance Program
7. Continue the University Transportation Center Program at the current funding level with program modifications including: reduce the match requirement from 50% to 20%; allow match from other federal-aid program sources including non-DOT federal funds; select all UTCs competitively; conduct a study to evaluate the effectiveness of the UTC program.
8. Continue support for training and education programs, including National Highway Institute, Garrett Morgan, Eisenhower Fellowships, and other capacity building programs.
9. Increase the Local Technical Assistance Program/Tribal Technical Assistance Program funding from the current \$11.0 million to \$20.0 million annually; reduce the required match from 50% to 25%.
10. Establish a Transportation Knowledge Network to more efficiently and effectively share information within the transportation industry and with the public.
11. Fund efforts to improve Research Coordination and Collaboration

ⁱ Washington's research results can be found through the following websites:
<http://www.wsdot.wa.gov/Research/Reports/>; <http://depts.washington.edu/trac/researchreports/index.html>;
<http://www.transnow.org/publication/final-reports/>; <http://www.wvu.edu/bpri/>

ⁱⁱ Synthesis Reports can be found at: <http://www.wsdot.wa.gov/Research/Synthesis/>