

An Overview of National Transportation Research

**Education and Training Task Group
AASHTO Research Advisory Committee**

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**Adapted from
Transportation Research: Value to the Nation—Value to the States
NCHRP 20-80(1)
prepared by CTC & Associates LLC**

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Foreword

This document presents high-level summaries of many major transportation research programs, agencies and initiatives in the United States. This information is adapted from a lengthier National Cooperative Highway Research Program (NCHRP) report titled *Transportation Research: Value to the Nation—Value to the States*, which includes an analysis of a detailed survey of state department of transportation research directors. Technical communications firm CTC & Associates LLC conducted this research under NCHRP project 20-80(1) and wrote the report.

The NCHRP 20-80(1) project panel included the following members of the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Research (SCOR) Reauthorization Task Force.

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This Overview was prepared under the auspices of the AASHTO Research Advisory Committee (RAC) Task Group on Education and Training. The mission of this Task Group is to evaluate, document and disseminate educational and training methods and practices to advance transportation research management.

State and Regional Research

State Planning and Research Program (SPR)

<http://www.tfhrc.gov/sprguide/>

Research carried out directly by state DOTs, whether funded by them or using federal funds, is highly valued by state research directors. They strongly support the State Planning and Research Program, created by the Highway Planning and Research program in the Federal-Aid Highway Act of 1944—the first federal legislation to allow aid for transportation research. Currently SPR funding to each state equals 2% of its federal funds in six core highway programs, with at least 25% of this total required to be spent on research (SPR, Part II). Total dollars available to the states for SPR, Part II, are approximately \$150 million per year, although the amount for an individual state varies dramatically, from a low of \$575,000 to a high of \$13 million.

Transportation Pooled Fund Program (TPF)

<http://www.pooledfund.org/>

The Transportation Pooled Fund Program is an important vehicle for state DOTs to join together, using 100% federal funds if they wish, to collaborate on research addressing common needs. More than 187 pooled fund projects are currently active, valued at more than \$130 million of pooled investment.

National Cooperative Programs

Airport Cooperative Research Program (ACRP)

<http://www.trb.org/CRP/ACRP/ACRP.asp>

The Airport Cooperative Research Program carries out applied research on problems that are shared by airport operating agencies and are not being adequately addressed by existing federal research programs. The Vision 100-Century of Aviation Reauthorization Act authorized \$10 million per year for the ACRP in FY 2004 through 2007. ACRP has yet to undertake or complete many of its research objectives. Currently, 13 new FY 2008 ACRP research projects have been selected. ACRP products will be a series of research reports that airport operators, FAA, consultants and other interested parties can consult in addressing airport issues.

Hazardous Materials Cooperative Research Program (HMCRP)

<http://www.trb.org/CRP/HMCRP/HMCRP.asp>

The shared goals of preventing and responding to hazardous materials incidents spurred the creation of the Hazardous Materials Cooperative Research Program. Government agencies at all levels along with the private sector are responsible for controlling the transport of hazardous materials and for ensuring that hazardous cargo moves without incident. Still in its pilot stage, HMCRP will carry out applied research projects to improve the information used in managing risk associated with the transportation of hazardous materials. Authorized at approximately \$1.25 million per year, HMCRP research will help advance critical knowledge and practice related to hazardous materials transportation. The program is poised to make major impacts to advance public safety.

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National Cooperative Freight Research Program (NCFRP)

<http://www.trb.org/CRP/NCFRP/NCFRP.asp>

The National Cooperative Freight Research Program will carry out applied research on problems facing the freight industry that are not being adequately addressed by existing research programs. SAFETEA-LU, in authorizing NCFRP, called for development of a national research agenda addressing freight transportation and for implementation of a multiyear strategic plan to achieve it. Authorized at approximately \$3.75 million per year, NCFRP will produce a series of research reports and other products to the intended end-users of the research: freight shippers and carriers, service providers, suppliers, and public sector officials.

National Cooperative Highway Research Program (NCHRP)

<http://www.trb.org/CRP/NCHRP/NCHRP.asp>

The National Cooperative Highway Research Program, founded in 1962, is a unique contract research effort that responds directly to the needs of the states. NCHRP is voluntarily funded by the states, usually using SPR funds, and project selection is carried out by AASHTO and its member departments to meet common state DOT needs. NCHRP research, funded at approximately \$30 million each year, often produces results of direct and immediate interest to AASHTO committees, and results can have a significant impact on practice or become an AASHTO publication or standard.

Surface Transportation Environment and Planning Cooperative Research Program (STEP)

<http://www.fhwa.dot.gov/HEP/STEP/>

The objective of the Surface Transportation Environment and Planning Cooperative Research Program is to improve understanding of the complex relationship between surface transportation, planning and the environment. FHWA will conduct a needs-driven research program within STEP that builds on past and future outreach to the research and user communities as well as on documented research needs assessments. STEP is funded at approximately \$16 million per year.

Transit Cooperative Research Program (TCRP)

<http://www.tcrponline.org/>

The Transit Cooperative Research Program, established in 1992, is the principal means by which the transit industry can develop innovative near-term solutions to meet demands placed on it. The funding level of approximately \$9 million per year has been nearly flat since the program's inception.

NCHRP and TCRP research programs also include:

- **NCHRP/TCRP Synthesis Programs**

<http://www.trb.org/Studies/Synthesis/Syntheses.asp>

Under the sponsorship of NCHRP and TCRP, TRB prepares syntheses of current practice in the highway, transit and airport fields, usually based on surveys of the state DOTs and others. These synthesis reports are an effective means of assembling and disseminating information on current practice.

- **NCHRP and Transit Innovations Deserving Exploratory Analysis Programs (IDEA)**

<http://www.trb.org/Studies/Programs/IDEA.asp>

NCHRP Highway IDEA and Transit IDEA programs fund research into promising but unproven innovations for highways, transportation safety and transit. The IDEA programs fund basic research that may be somewhat risky but offers the possibility of more than just incremental improvements.

Other Major Programs

Long-Term Pavement Performance Program (LTPP)

<http://www.fhwa.dot.gov/pavement/ltppl/>

The Long-Term Pavement Performance Program, initiated in 1987 as part of the Strategic Highway Research Program, collects and analyzes information on pavement performance and the elements that may influence pavement performance. Pavement types include both asphalt and Portland cement concrete pavements, with and without various types of overlays and surface treatments. Funded at approximately \$7 million per year, LTPP has assisted states in standardizing and improving pavement engineering methods and practices. LTPP's value extends beyond state DOTs to help improve engineering practices at all levels of government and for private road owners.

Strategic Highway Research Program 2 (SHRP 2)

<http://www.trb.org/shrp2/>

The Strategic Highway Research Program 2 is funded at a total of \$205 million for 2006–2009. The program focus areas of SHRP 2—Safety, Renewal, Reliability and Capacity—are all of vital concern for the national transportation system, and SHRP 2 provides means for discovering novel ways of addressing issues in these areas. Research results and implementation successes will yield benefits for all states dealing with these common concerns.

Transportation Research Board (TRB)

<http://www.trb.org/>

The Transportation Research Board of the National Academies provides leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. More than 4,000 administrators, operators, engineers, attorneys, researchers, educators, and others concerned with transportation serve on 200 Standing Committees and task forces without compensation. TRB manages the following research programs in cooperation with USDOT agencies: National Cooperative Highway Research Program (NCHRP); The Transit Cooperative Research Program (TCRP); Commercial Truck and Bus Safety Synthesis Program (CTBSSP); Airport Cooperative Research Program (ACRP); Hazardous Materials Cooperative Research Program (HMCRRP); National Cooperative Freight Research Program (NCFRP); Strategic Highway Research Program 2; and Innovations Deserving Exploratory Analysis (IDEA).

U.S. Department of Transportation Agency Research

Federal Highway Administration (FHWA)

<http://www.fhwa.dot.gov/>

The Federal Highway Administration is one of 13 U.S. Department of Transportation agencies. FHWA works cooperatively with governmental agencies, industry and research community partners to research, develop, test and implement the latest proven technological advancements in highway transportation. FHWA has a division office in each U.S. state, Washington D.C., and Puerto Rico.

- **Exploratory Advanced Research Program (EARP)**

http://www.trb.org/news/blurb_detail.asp?id=7256

Budgeted at approximately \$20 million over three years, FHWA's Exploratory Advanced Research Program is intended to spur innovation and focus on high-risk and high-payoff research and development projects. EARP is seeking R&D projects that could lead to transformational changes and truly revolutionary advances in highway engineering and intermodal surface transportation in the United States.

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- **International Technology Scanning Program**

<http://international.fhwa.dot.gov/scan/>

The International Technology Scanning Program serves as a means to access innovative technologies and practices in other countries that could significantly improve highways and highway transportation services in the United States. Seventy scans have been conducted since 1990. This program allows the U.S. transportation community to learn from the successes, as well as the failures, of other countries in order to avoid duplicative research and development and to accelerate improvements to U.S. transportation facilities.

- **Turner-Fairbank Highway Research Center (TFHRC)**

<http://www.tfhrc.gov/>

TFHRC is the home of FHWA's Office of Research, Development and Technology. The Turner-Fairbank Highway Research Center provides FHWA and the world highway community with the most advanced research and development related to new highway technologies. TFHRC plays an essential role in transportation research at the national level.

Federal Motor Carrier Safety Administration (FMCSA)

<http://www.fmcsa.dot.gov/facts-research/research-technology/mission/ra.htm>

Established in 2000, the Federal Motor Carrier Safety Administration's primary mission is to reduce crashes, injuries and fatalities involving large trucks and buses. FMCSA's work has yielded significant results in improved highway safety. By expanding the knowledge and portfolio of deployable technology, FMCSA's research and technology program will help FMCSA reduce crashes, injuries and fatalities and will deliver a program that contributes to a safe and secure commercial transportation system.

- **Commercial Truck and Bus Safety Synthesis Program (CTBSSP)**

<http://www.trb.org/CRP/CTBSSP/CTBSSP.asp>

The Commercial Truck and Bus Safety Synthesis Program initiates several synthesis studies annually that address concerns in its program areas. This program extends the use of existing research on commercial truck and bus safety, synthesizing new information from existing work, uncovering trends and commonalities, and helping define direction for future research and implementation needs in this area.

Federal Transit Administration (FTA)

<http://www.fta.dot.gov/research.html>

The Federal Transit Administration administers federal funding to support a variety of locally planned, constructed and operated public transportation systems throughout the United States, including buses, subways, light rail, commuter rail, streetcars, monorail, passenger ferry boats, inclined railways and people movers. FTA engages in research to provide the transit industry and policy makers with the information and skills to make good business decisions about transit technology, operational and capital investments, to share research results that identify best practices, and to show a range of outcomes that help chart the course of future investments.

Research and Innovative Technology Administration (RITA)

<http://www.rita.dot.gov/>

The Research and Innovative Technology Administration coordinates U.S. DOT's research programs and is charged with advancing the deployment of cross-cutting technologies to improve the U.S. transportation system. RITA was established in 2004 as one of 13 U.S. DOT agencies.

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- **Intelligent Transportation Systems Joint Program Office (ITS JPO)**
<http://www.its.dot.gov/>
U.S. DOT's Intelligent Transportation Systems program launched a generation of initiatives aimed at improving transportation safety, relieving congestion and enhancing productivity through the use of advanced communications technologies. Established in 1991 and funded annually at \$110 million, ITS technologies have the potential to significantly enhance the operation of America's transportation systems. The ITS Joint Program Office is very beneficial as an ITS resource for state DOTs and also provides excellent training opportunities, including both classroom and teleconference/Web training sessions.
- **University Transportation Centers (UTCs)**
<http://utc.dot.gov/>
The University Transportation Center program, initiated in 1987, provides federal grant funding to establish and operate programs of transportation education, research and technology transfer. UTCs are intended to significantly advance the state-of-the-art in transportation research while training new transportation professionals. SAFETEA-LU expanded to 60 the 33 UTCs previously authorized, providing funding of approximately \$77 million per year.

AASHTO Programs

National Transportation Product Evaluation Program (NTPEP)

<http://www.ntpep.org/>

The National Transportation Product Evaluation Program, established in 1994, provides testing and evaluation of products, materials and devices that are commonly used by AASHTO member departments. Its coordinated product testing not only reduces duplication of effort by state DOTs and related industry stakeholders, but also facilitates product prequalification.

Technology Implementation Group (TIG)

<http://tig.transportation.org/>

Established in 1999, the purpose of the AASHTO Technology Implementation Group is to identify and champion the implementation or deployment of a select few "ready-to-use" technologies, products or processes. The TIG executive committee annually solicits AASHTO member agencies and others for nominations of new technologies that have recently been adopted by one or more AASHTO member states and found to be highly beneficial. Its assessments discuss the magnitude and types of benefits from implementation, and provide a "reality check" on how ready these technologies are for widespread implementation.

Technology Transfer

Local Technical Assistance Program/Tribal Technical Assistance Program (LTAP/TTAP)

<http://www.ltapt2.org/>

FHWA's Local and Tribal Technical Assistance Programs provide information and training to local governments and agencies responsible for over 3 million miles of roadway and 301,845 bridges in the United States. There are 58 LTAP and TTAP centers nationwide federally funded at \$11 million per year.

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National Highway Institute (NHI)

<http://www.nhi.fhwa.dot.gov/>

The National Highway Institute is the training and education arm of the Federal Highway Administration. In serving the national transportation community, NHI partners with many organizations. It provides training resources to customers, partners and learners in every state, as well as many local governments and private organizations. Established in 1970 and funded at \$9.6 million per year, NHI provides critical information in a wide variety of areas that are important to state DOTs.

National Transit Institute (NTI)

<http://www.ntionline.com/Courses.asp>

The National Transit Institute's mission is to provide training, education and clearinghouse services in support of public transportation and quality of life in the United States. Established in 1992, NTI is a key organization to deliver that information to those agencies that can make the best use of it. The courses and materials are an important implementation connection from FTA to the state DOTs and local transit operations.

National Transportation Library (NTL)

<http://ntl.bts.gov/>

Administered by the Bureau of Transportation Statistics, The National Transportation Library improves the availability of transportation-related information needed by federal, state and local decision makers. Established in 1998, NTL serves a vital need for the collection, preservation and dissemination of transportation-related research and information. Maintaining and improving a robust system for the ever-expanding transportation knowledge base is vital for both researchers and practitioners to leverage existing work, speed innovation and avoid duplication.

*AASHTO Research Advisory Committee
to the Standing Committee on Research*
<http://research.transportation.org/>