2006 Annual Report

Strategic Highway Research Program 2
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Vice Chair: Debra L. Miller, Secretary, Kansas Department of Transportation, Topeka
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Deborah H. Butler, Vice President, Customer Service, Norfolk Southern Corporation and Subsidiaries, Atlanta, Georgia
Anne P. Canby, President, Surface Transportation Policy Partnership, Washington, D.C.
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Angela Gittens, Vice President, Airport Business Services, HNTB Corporation, Miami, Florida
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Michael D. Meyer, Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta (Past Chair, 2006)
Michael R. Morris, Director of Transportation, North Central Texas Council of Governments, Arlington
John R. Njord, Executive Director, Utah Department of Transportation, Salt Lake City (Past Chair, 2005)
Peter K. Rahn, Director, Missouri Department of Transportation, Jefferson City

Sandra Rosenbloom, Professor of Planning, University of Arizona, Tucson
Tracy L. Rosser, Vice President, Corporate Traffic, Wal-Mart Stores, Inc., Bentonville, Arkansas
Rosa Clausell Rountree, Executive Director, Georgia State Road and Tollway Authority, Atlanta
Henry G. (Gerry) Schwartz, Jr., Senior Professor, Washington University, St. Louis, Missouri
C. Michael Walton, Ernest H. Cockrell Centennial Chair in Engineering, University of Texas, Austin (Past Chair, 1991)
Steve Williams, Chairman and CEO, Maverick Transportation, Inc., Little Rock, Arkansas

Thad Allen (Adm., U.S. Coast Guard), Commandant, U.S. Coast Guard, Washington, D.C. (ex officio)
Thomas J. Barrett (Vice Adm., U.S. Coast Guard, ret.), Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation (ex officio)
Marion C. Blakey, Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)
Joseph H. Boardman, Administrator, Federal Railroad Administration, U.S. Department of Transportation (ex officio)
John A. Bobo, Jr., Acting Administrator, Research and Innovative Technology Administration, U.S. Department of Transportation (ex officio)
Rebecca M. Brewster, President and COO, American Transportation Research Institute, Smyrna, Georgia (ex officio)
George Bugliarello, Chancellor, Polytechnic University of New York, Brooklyn; Foreign Secretary, National Academy of Engineering, Washington, D.C. (ex officio)
J. Richard Capka, Administrator, Federal Highway Administration, U.S. Department of Transportation (ex officio)
Sean T. Connaughton, Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)
Edward R. Hamberger, President and CEO, Association of American Railroads, Washington, D.C. (ex officio)
John H. Hill, Administrator, Federal Motor Carrier Safety Administration, U.S. Department of Transportation (ex officio)
John C. Horsley, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)
J. Edward Johnson, Director, Applied Science Directorate, National Aeronautics and Space Administration, John C. Stennis Space Center, Mississippi (ex officio)
William W. Millar, President, American Public Transportation Association, Washington, D.C. (ex officio) (Past Chair, 1992)
Nicole R. Nason, Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)
Jeffrey N. Shane, Under Secretary for Policy, U.S. Department of Transportation (ex officio)
James S. Simpson, Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)

* Membership as of March 2007.
TRB Oversight Committee for the Strategic Highway Research Program 2

Chair
Allen D. Biehler, Secretary of Transportation, Penn DOT

Members
H. Norman Abramson, Executive Vice President (retired) Southwest Research Institute
Anne P. Canby, President, Surface Transportation Policy Partnership
Frank L. Danchetz, Vice President, ARCADIS G&M, Inc.
Nicholas J. Garber, Henry L. Kinnier Professor, University of Virginia
Ronald F. Kirby, Director, Transportation Planning, Metropolitan Washington Council of Governments
Harold Linnenkohl, Commissioner, Georgia DOT
Susan Martinovich, Director, Nevada DOT
John R. Njord, Executive Director, Utah DOT
Ananth K. Prasad, Chief Engineer, Florida DOT
Pete K. Rahn, Director, Missouri DOT
James D. Staley, President and CEO, YRC Regional Transportation
Kirk T. Steudle, Director, Michigan DOT
Richard E. Wagman, Chairman and CEO, G.A. & F.C. Wagman, Inc.
Paul T. Wells, retired

Ex Officio
J. Richard Capka, Administrator, FHWA
Nicole Nason, Administrator, National Highway Traffic Safety Administration
Andrew T. Horosko, Deputy Minister of Transportation, Manitoba Transportation and Government Services
John C. Horsley, Executive Director, AASHTO

Liaison
John Pearson, Program Director, Council of Deputy Ministers Responsible for Transportation and Highway Safety
The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. On the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Ralph J. Cicerone is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, on its own initiative, to identify issues of medical care, research, and education. Dr. Harvey V. Fineberg is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy’s purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both the Academies and the Institute of Medicine. Dr. Ralph J. Cicerone and Dr. William A. Wulf are chair and vice chair, respectively, of the National Research Council.

The Transportation Research Board is a division of the National Research Council, which serves the National Academy of Sciences and the National Academy of Engineering. The Board's mission is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, the Board facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation. The Board's varied activities annually engage more than 4,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. www.TRB.org

www.national-academies.org
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Introduction

The U.S. Congress authorized the second Strategic Highway Research Program (SHRP 2) in August 2005 to address complex transportation goals that require integrated and innovative approaches to four focus areas: reducing crashes, renewing highway infrastructure, increasing highway capacity, and providing reliable travel times. These focus areas reflect both the role of the highway system in meeting the nation’s economic and mobility needs and the aim of transportation departments to provide outstanding service to their customers.

SHRP 2 is being conducted under a Memorandum of Understanding among the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), and the National Research Council, which is the parent organization of the Transportation Research Board (TRB). Figure 1 shows the participants in the signing ceremony.

In January 2006, J. Richard Capka of the FHWA, John C. Horsley of AASHTO, and Ralph J. Cicerone of the National Academy of Sciences (left to right) signed the Memorandum of Understanding that officially established SHRP 2. Witnessing the event are (standing, left to right:) Brian McLaughlin, Federal Motor Carrier Safety Administration; Stephen Godwin, TRB; TRB Executive Director Robert E. Skinner, Jr.; Dennis Judycki, FHWA; Anne Canby, Surface Transportation Policy Partnership; Allen Biehler, Pennsylvania DOT; Nicholas Garber, University of Virginia; Ann M. Brach, TRB; C. Michael Walton, University of Texas, Austin; Neil Pedersen,
In late March 2006, first-year funding for SHRP 2 became available through an agreement with FHWA, initiating an ambitious schedule of activities to staff the program, establish committees, refine research plans, and issue the first requests for research proposals. The timeline in Figure 2 outlines the activities of 2006.

Figure 2
2006 Program Timeline

<table>
<thead>
<tr>
<th>January</th>
<th>1st Oversight Committee meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>SHRP 2 Program Funding available</td>
</tr>
<tr>
<td>May &amp; June</td>
<td>4 TCC meetings to revise research plans to match funding</td>
</tr>
<tr>
<td>July</td>
<td>Oversight Committee approves revised plans</td>
</tr>
<tr>
<td>August</td>
<td>11 ETG Meetings 12 RFPs written and reviewed</td>
</tr>
<tr>
<td>September</td>
<td>12 RFPs advertised</td>
</tr>
<tr>
<td>October</td>
<td>49 proposals received</td>
</tr>
<tr>
<td>November</td>
<td>11 ETGs review &amp; recommend proposals</td>
</tr>
<tr>
<td>December</td>
<td>Oversight Committee approves 15 proposals; contracting begins</td>
</tr>
</tbody>
</table>

Program Management and Oversight

TRB manages SHRP 2 in close cooperation with FHWA and AASHTO. The SHRP 2 Oversight Committee, chaired by Allen D. Biehler, Secretary of Transportation for Pennsylvania, (shown above) has responsibility for all aspects of the program’s research activities. A technical coordinating committee (TCC) in each of the four focus areas is responsible for recommending the research plan and for monitoring the conduct of the research. Small expert task groups (ETGs) are convened as necessary to draft requests for proposals (RFPs), review proposals, and provide additional expertise to the technical coordinating committees and staff. Members of these committees and groups are knowledgeable and experienced professionals in transportation and related fields, recruited from around the nation, and serve without compensation. While these volunteers are selected for their personal expertise, every effort is made to include a range of perspectives in each committee and ETG.

Maryland State Highway Administration; Rebecca Brewster, American Transportation Research Institute; John Njord, Utah DOT; Neil F. Hawks, TRB; and Henry G. (Gerry) Schwartz, Jr., Washington University in St. Louis.
Figure 3 shows the affiliations of committee members and of ETG members who served in 2006.

![Figure 3 Committee and ETG Members by Affiliation](image)

The Administrators of FHWA and the National Highway Traffic Safety Administration (NHTSA) serve as *ex officio* members of the Oversight Committee. Two FHWA staff serve as liaisons on each TCC; the Safety TCC also includes NHTSA and Federal Motor Carrier Safety Administration liaisons.

The role of SHRP 2 State Coordinator was created as a point of contact for SHRP 2 communication and eventually for implementation activities. Named by 48 state DOTs at the request of AASHTO, the State Coordinators, as such, are not an appointed committee but are a source of nominations for committees and ETGs.

**Research Focus Areas**

**Safety**  
*TCC Chair: Forrest M. Council, University of North Carolina*

SHRP 2 safety research will take advantage of unprecedented opportunities to improve highway safety through advanced technologies. Most highway safety research has focused on crashes and how changes in vehicles and roads could improve safety. SHRP 2 safety research will focus on collecting data on driver behavior in pre-crash and non-crash circumstances. The research will quantify the interactions of drivers, roads, vehicles, and environmental conditions and develop objective measures of crash risk. An ambitious effort will use on-board recorders to capture data on 2,000 to 3,000 volunteer drivers, their vehicles, the environment, and the
By December 2006, contracts for the first three Safety projects were being negotiated. These projects will initiate the design of the major safety studies to follow. For Project S01, five separate contracts were awarded to develop or identify approaches to analyzing driving behavior and crash risk data and to demonstrate the methods on recently collected data sets from in-vehicle studies. Project S05 will develop and demonstrate the in-vehicle data collection system as well as design a management plan for the full-scale study of in-vehicle driving behavior and crash risk. The goal of Project S09 is to develop a site-based video system that captures surrogate measures of collision risk and demonstrates in a field study the correlation of the surrogate measures to actual crash frequencies.

Renewal  TCC Chair: Randell H. Iwasaki, California DOT

The U.S. highway system is aging and must be rebuilt while we are driving on it and living next to it. Research in the renewal focus area therefore addresses the need to complete highway projects quickly, with minimal disruption to the community, and to produce facilities that are long-lasting. Identifying new technologies for locating underground utilities; developing procedures to speed the evaluation of designs and the inspection of construction; and applying new methods and materials for preserving, rehabilitating, and reconstructing roadways and bridges are among the goals for this focus area. Alternative strategies for contracting, financing and managing projects, and mitigating institutional barriers also are part of the emphasis on rapid renewal.

Contractors for the first four Renewal contracts were selected in 2006. These projects aim to develop long-needed products. Project R01, in its first phase, will develop a research plan to identify technologies that accurately locate and characterize underground utilities and facilitate their development. Project R06 will identify technologies for rapid nondestructive testing and inspection and identify tests that need such technologies. The goal of Project R07 is to produce and validate performance specifications that ensure proper facility performance, reduce project completion time; balance the relative risk among owners, contractors, and subcontractors; and encourage innovation. Project R15 will recommend an approach to finding strategies that integrate the priorities of utility companies and transportation agencies in highway renewal projects.

Reliability  TCC Chair: John F. Conrad, Washington State DOT

Improving the reliability of travel times can reduce the costs and frustrations of traffic delays and can help address the problems of roadway congestion. Research in the reliability focus area will identify and analyze congestion mitigation measures and practices at agencies that have improved travel time
reliability; develop analytical procedures for estimating the benefits and effectiveness of countermeasures; assess the institutional architectures necessary for successful operations programs; and develop local and national programs to monitor reliability.

Contractors for two Reliability projects were selected in 2006. Project L03 ultimately will establish statistical relationships between measures taken to improve travel time reliability and actual travel times, so that the effectiveness of strategies to improve reliability can be measured. The goal of Project L06 is to provide guidance on reconfiguring institutional components to support operations activities organically.

Capacity  
TCC Co-Chairs: Neil J. Pedersen, Maryland SHA and Mary Lynn Tischer, Commonwealth of Virginia

The objective of the capacity focus area is to develop a consistent framework for reaching balanced, collaborative decisions on enhancing transportation capacity and to provide the tools for applying the framework. The research will develop a project evaluation process that will help stakeholders balance the need to reduce delays caused by conflicting demands with the need to produce transportation solutions that support community, economic, and environmental goals.

The research also will develop a structure for a project’s many contributors to share data and knowledge. This will require identifying critical points for decision making in various processes, the data and knowledge required for these decisions, and successful methods of sharing information. Two Capacity projects were selected in 2006; both address the way decisions about highway capacity are made. Project C01 will frame a system that helps stakeholders collaborate to reach decisions about transportation capacity enhancements. Project C02 will develop performance measures that support this collaborative decision-making process.

Table 1 lists the 2006 research program for each focus area, the research agencies whose contracts had been signed when this document was printed, and the budget for each project.

Communications

The SHRP 2 Web site and the TRB e-newsletter have been the primary means of relating information about the program and the research plans during this first year. These will remain the basic communications tools, and the Web site will continue to be developed to provide features and resources that support collaboration across the focus areas. Four quarterly updates, presentations from the TRB annual meeting and the August SHRP 2 Safety Symposium, and 4-page program briefs for each focus area were all posted to the Web site this year. The program briefs were also printed for distribution at the TRB annual meeting. Plans are developing for further international and targeted outreach.
Table 1 Projects and Contractors Selected in 2006

<table>
<thead>
<tr>
<th>No.</th>
<th>Project Title</th>
<th>Recommended Contractors</th>
<th>$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01</td>
<td>Development of Analysis Methods Using Recent Data (multiple awards)</td>
<td>University of Minnesota University of Michigan University of North Carolina Iowa State University (5th award pending contract execution)</td>
<td>$1.5 (total)</td>
</tr>
<tr>
<td>S05</td>
<td>Design of the In-Vehicle Driving Behavior and Crash Risk Study (pending contract execution)</td>
<td></td>
<td>$3.0</td>
</tr>
<tr>
<td>S09</td>
<td>Site-Based Video System Design and Development</td>
<td>University of Michigan</td>
<td>$1.0</td>
</tr>
<tr>
<td>R01</td>
<td>Encouraging Innovation in Locating and Characterizing Underground Utilities</td>
<td>Louisiana Tech University</td>
<td>$0.3</td>
</tr>
<tr>
<td>R06</td>
<td>High-Speed, Nondestructive Testing Procedures for Both Design Evaluation and Construction Inspection (pending contract execution)</td>
<td></td>
<td>$0.35</td>
</tr>
<tr>
<td>R07</td>
<td>Performance Specifications for Rapid Highway Renewal</td>
<td>Trauner Consulting Services, Inc.</td>
<td>$3.0</td>
</tr>
<tr>
<td>R15</td>
<td>Strategies for Integrating Utility and Transportation Agency Priorities in Renewal Projects</td>
<td>ICF International</td>
<td>$0.25</td>
</tr>
<tr>
<td>L03</td>
<td>Analytic Procedures for Determining the Effects of Mitigation Measures</td>
<td>Cambridge Systematics, Inc.</td>
<td>$1.75</td>
</tr>
<tr>
<td>L06</td>
<td>Institutional Architectures for Advanced Operations Strategies</td>
<td>PB Consult, Inc.</td>
<td>$1.0</td>
</tr>
<tr>
<td>C01</td>
<td>A Framework for Collaborative Decision Making on Additions to Highway Capacity</td>
<td>ICF International</td>
<td>$2.6</td>
</tr>
<tr>
<td>C02</td>
<td>System-Based Performance Measurement Framework for Highway Capacity Decision Making</td>
<td>Cambridge Systematics, Inc.</td>
<td>$0.825</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td>$15.575</td>
</tr>
</tbody>
</table>

Staffing

The efforts to launch a fully operational SHRP 2 when funding became available in March 2006 were accomplished by a core staff that continues to grow to its full complement. Neil F. Hawks, a program manager in the first SHRP and a division director at TRB, was named SHRP 2 director. Ann M. Brach, study director for F-SHRP and other TRB policy studies and former research director at Maryland State Highway Administration, was appointed deputy director. By December 2006, five senior program officers, a communications officer, an administrative coordinator, and two program assistants were on staff. In addition, Derek Sweet, on loan from the Canadian Council of Deputy Ministers of Transport, joined the staff for a 1-year mission to establish international activities for SHRP 2. The staffing process will continue as projects get under way.
SHRP 2 Staff 2006

Neil F. Hawks, Director
Ann M. Brach, Deputy Director
Stephen J. Andrle, Senior Program Officer, Capacity
James Bryant, Senior Program Officer, Renewal
Kenneth Campbell, Senior Program Officer, Safety
Jo Ann Coleman, Senior Project Assistant
Walter Diewald, Senior Program Officer, Reliability
Charles Fay, Program Officer, Safety
William A. Hyman, Senior Program Officer, Reliability
Makeeya Hazelton, Senior Project Assistant
Linda S. Mason, Communications Officer
A. Robert Raab, Senior Program Officer, Renewal
Monica Starnes, Senior Program Officer, Renewal
Noreen Stevenson, Senior Project Assistant
Derek Sweet, International Coordinator
Chrstyne Talley, Financial Associate
Connie Woldu, Administrative Coordinator
Explore the SHRP 2 Web site at: www.TRB.org/SHRP2

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By mail: 500 Fifth Street NW, Washington, DC 20001

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