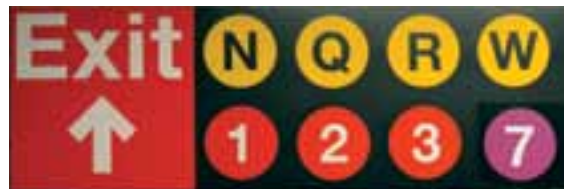
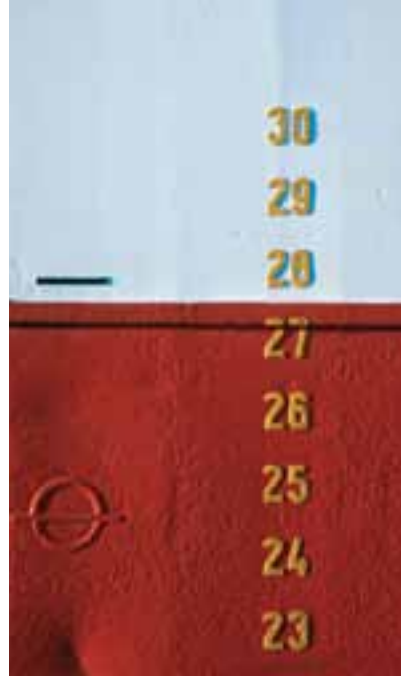




Transportation Research Board 2010 Annual Report



The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied activities annually engage about 7,000 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.

The Transportation Research Board was organized in 1920 and is one of six major divisions of the National Research Council, which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance. The National Research Council is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

Dear Supporter of TRB

TRB DOES VIRTUALLY EVERYTHING BY committee. This is part of TRB’s institutional DNA, as it is for the other units of the National Academies. Standing technical committees organize Annual Meeting sessions, and special committees conduct our policy studies. Committees oversee each of our research programs, and panels guide individual research projects. Whatever the task, all TRB committees and panels have one thing in common—each is composed of experts who are volunteering their time and talents. To each assignment, these participants bring a range of disciplinary expertise and perspectives that no single individual, no matter how bright and well-traveled, could provide.

TRB could not function without volunteers—thousands of volunteers. In 2005, approximately 5,800 individuals served on TRB committees. Since then, TRB has added the Airport Cooperative Research Program (ACRP), the second Strategic Highway Research Program (SHRP 2), and other activities that have required yet more committees and have increased the need for volunteers. Today, approximately 6,800 individuals serve on TRB committees; the average of 1.5 committee assignments per person indicates the level of individual involvement and dedication.

As the scope of TRB activities has expanded, the pool of potential volunteers has increased, and the disciplinary diversity of our volunteers has grown as well. Demographic diversity also has steadily increased. Currently, approximately 22 percent of TRB’s volunteers are women, 15 percent are minorities, and 7 percent are 35 years of age or younger. Although these percentages do not reflect the diversity of the U.S. population and are not where TRB aims to be, they represent a substantial improvement from the past. To maintain a strong, efficient, and resilient transportation system, our nation will need to attract a more diverse transportation workforce. TRB aims to lead in the development of a more diverse workforce and to draw increasingly on a diverse workforce for volunteers.

Whatever their background, individuals do



Speaking at the TRB 2010 Chairman’s Luncheon, U.S. Transportation Secretary Ray LaHood discussed job creation, new rail investments, and other U.S. Department of Transportation (DOT) initiatives. An impromptu press conference followed up with questions (*above*).

not offer their time unless they find the activity meaningful and—in the case of professional organizations such as TRB—supportive of their career objectives. Through service on TRB committees, volunteers have the opportunity to engage in important work in collaborative environments with a cross section of transportation researchers and practitioners from around the world. For the past 90 years, this formula has been remarkably successful in attracting talented transportation professionals to support TRB’s growing missions.

Michael R. Morris, Executive Committee Chair (*left*); Robert E. Skinner, Jr., TRB Executive Director; and Neil J. Pedersen, Executive Committee Vice Chair.





By attracting volunteers of all ages and backgrounds to its committees, TRB aids in the development of a diverse transportation workforce.

The highlights of TRB activities below, and the more detailed descriptions contained in the Annual Report, are a testament to the achievements of TRB volunteers.

ANNUAL MEETING AND CONFERENCES

The spotlight theme of the 2010 Annual Meeting was “Investing in Our Transportation Future—Bold Ideas to Meet Big Challenges.” The meeting included more than 650 sessions, about 3,500 presentations and papers, hundreds of committee meetings, and a sold-out exhibit showcasing the services and products of TRB sponsors and of commercial organizations. Meeting highlights included the Chairman’s Luncheon address by Ray LaHood, the U.S. Secretary of Transportation; the Thomas B. Deen Distinguished Lecture by Martin Wachs, Director, Transportation, Space, and Technology, RAND Corporation; and a session with overflowing attendance introducing the new leadership team at the U.S. Department of Transportation.

Attendance was 10,100, down slightly from the all-time high of 10,500 in 2007. Attendance by officials from state departments of transportation (DOTs) and other public agencies, however, continued to decline as a result of the financial crises affecting many state and local governments. Anticipating this situation, TRB took measures to make Annual Meeting activities more accessible to individuals who could not attend—for example, by posting on the TRB website visual presentations, posters, and enhanced recordings of more than 40 sessions. Access to these resources was free of charge to all sponsors and available to others for a fee. In 2011, all Annual Meeting registrants will be able to take advantage of these services.

During the course of 2010, TRB sponsored another 20 conferences and cosponsored 26 more. The Joint Summer Meeting in Minneapolis, organized by more than 40 TRB standing committees, attracted approximately 400 participants.

WEB-BASED SEMINARS

During 2010, TRB’s webinar series reached full stride, with approximately 40 webinars conducted on such topics as pedestrian and bicycle safety, travel time reliability, transportation performance and accountability, variable road pricing, seismic design, pavement preservation, and airport terminal planning. On average, 250 people attend each webinar broadcast, and the average satisfaction rate for each webinar approached 90 percent. In addition to TRB’s webinar series, SHRP 2 and the Technical Activities Division conducted approximately 15 webinars in 2010 to educate and inform specific audiences about activities within the divisions.



A session showcasing the new leadership at the U.S. DOT drew a large crowd at the TRB 2010 Annual Meeting.



A screen from the webinar, “Mitigating the Impacts of Weather on Surface Transportation.” TRB’s webinars have an average attendee list of 250 and a satisfaction rating of approximately 90 percent.

STANDING COMMITTEES

TRB’s 200-plus standing committees are the foundation that supports the Annual Meeting and other technical activities; standing committees serve as an important resource for special studies and for the research programs that TRB administers. We all have a big stake in keeping these committees strong and vibrant. This year, TRB increased from two to four the number of positions designated on each committee for members age 35 or younger; young participants also were eligible for newly lowered Annual Meeting registration fees. These measures make participation in TRB more attractive and affordable for young professionals, at the same time enhancing our ability to attract a more diverse volunteer base.

Also this year, TRB staff members have worked with the newly appointed communication coordinators for each standing committee to increase the number of TRB committees with websites, to enhance the use of telecommunications tools in conducting committee business, and to incorporate social networking into the committees’ communications portfolios.

Standing committees solicit and review papers for the Annual Meeting and the *Transportation Research Record* series. In 2010, TRB introduced webinar training for prospective authors and paper reviewers.

RESEARCH MANAGEMENT

Cooperative Research Programs

The Passenger Rail Investment and Improvement Act of 2008 authorized a new rail cooperative research program. The program became a reality in 2010. Congress appropriated \$5 million of funding for 2010, and the Federal Railroad Administration and the National Academy of Sciences completed a memorandum of agreement and a grant agreement for TRB to administer the National Cooperative Rail Research Program (NCRRP). An oversight committee, appointed by the Secretary of Transportation, will select the research projects and will program the funds. NCRRP will provide applied, problem-solving research for operators of freight rail, intercity passenger rail—including high-speed rail, and commuter rail.

The new program joins five other TRB cooperative research programs—the National Cooperative Highway Research Program (NCHRP), the Transit Cooperative Research Program (TCRP), the Airport Cooperative Research Program (ACRP), the National Cooperative Freight Research Program (NCFRP), and the Hazardous Materials Cooperative Research Program (HMCRRP). Together, these programs receive annual funding of approximately \$75 million and have become a major source for stakeholder-driven, competitive, merit-based transportation research in the United States.

Collectively, the cooperative research programs published more than 130 research reports



Half-scale reinforced concrete bridge columns for Phase II testing described in NCHRP Report 645 are cast with a concrete pump truck and consolidated with a hand vibrator at the Southwest Research Institute test site in Yancey, Texas.



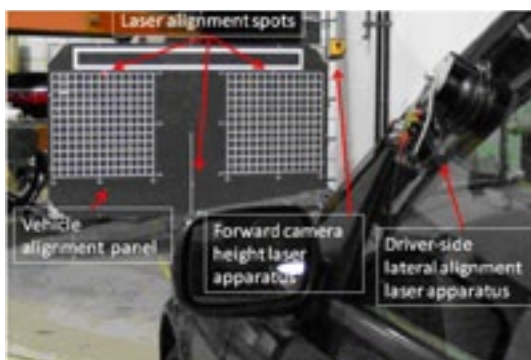
TRB standing committees and NCHRP played key roles in the development of the landmark *Highway Safety Manual*, published by AASHTO this year.

in 2010. Most are available in hard copy, and nearly all are available on TRB's website. Two of the newest programs—ACRP and NCFRP—produced a significant portion of the 2010 reports. The 27 ACRP publications addressed such topics as passenger terminal planning and design, offsite airport terminals, automated people movers at airports, roadway and terminal curbside operations, management of common use facilities, contracting, airport performance measurement, and a variety of environmental and safety-related topics.

NCFRP produced seven reports. Topics included commercial motor vehicle-only lanes, the North American marine highway, public policy impacts on the freight transportation system, low-cost methods to address freight mobility constraints, and freight demand and environmental impact models.

Individual research products of NCHRP often lay the foundation for standards, specifications, and guidance materials that are adopted and published by others, principally by the American Association of State Highway and Transportation Officials (AASHTO). This year, AASHTO released a landmark publication, the first *Highway Safety Manual*. Not only was the development of the manual supported by NCHRP, but TRB standing committees promoted the concept and were instrumental in its development.

Second Strategic Highway Research Program For SHRP 2, 2010 marked transitions. Nearly all of the research projects specified in the 2007 plan have been awarded, and the SHRP 2 naturalistic driving study, after years of prepara-



Alignment panel and driver-side lateral alignment laser apparatus with left-right-center laser spots, part of the SHRP 2 naturalistic driving study data acquisition system prototype. (Photo: Virginia Tech Transportation Institute)

tion, has begun to recruit drivers, instrument vehicles, and collect data. Staff work has shifted from awarding research contracts and guiding research to guiding research and disseminating completed research results. This year, five research reports were published, along with 23 case studies conducted for the program's capacity focus area.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorized SHRP 2 for four years of funding, and the program was scheduled to conclude by March 2013. Expectations were that the new authorization of federal-aid surface transportation programs would provide funding to U.S. DOT for an extensive implementation effort for SHRP 2 products, including maintenance and analysis of the mammoth database that is being created as part of the naturalistic driving study. A special congressionally mandated TRB report, released in 2009, recommended such an effort. SAFETEA-LU expired at the end of September 2009, and Congress has not yet enacted a comprehensive surface transportation act. Instead, SAFETEA-LU was extended through the end of 2010, providing substantial additional funding to SHRP 2. As a result, the Federal Highway Administration has revised the SHRP 2 cooperative agreement, extending the program for two years, until March 2015; providing \$59 million of additional funding; and adjusting the work statement to expand the dissemination and preimplementation activities.

ADVICE TO POLICY MAKERS

TRB had 17 policy studies under way during 2010; two were completed and released during the year.

- *Achieving Traffic Safety Goals in the United States: Lessons from Other Nations* (TRB Special Report 300) explores safety practices and strategies in high-income countries around the world, makes comparisons with those in the United States, and draws conclusions about strategies that could be adapted for the United States.
- *Air Traffic Controller Staffing in the En Route Domain: A Review of the Federal Aviation Administration's Task Load Model* (TRB Special Report 301) examines the structure,



Donald C. Winter, Secretary of the Navy (ret.), leads the Committee on the Analysis of Causes of the Deepwater Horizon Fire and Oil Spill to Identify Measures to Prevent Similar Accidents in the Future, September 10 at the Keck Center.

empirical basis, and validation methods of an FAA model that informs decisions about workforce planning by estimating the time that controllers need to perform tasks when handling en route traffic.

This year, TRB began two studies with unusually high public profiles. The first is a study for the National Highway Traffic Safety Administration (NHTSA), examining the potential causes of unintended acceleration in motor vehicles and the steps that NHTSA could take to test, monitor, or regulate critical electronic components. The second study, sponsored by the U.S. Department of the Interior, is examining the potential causes and contributing fac-

tors of the Deepwater Horizon blowout and oil spill. Several units of the National Academies are involved in the conduct of the study, with TRB and its Marine Board taking the lead. The Deepwater Horizon study committee issued an interim report in November.

TRB expects to complete and release several important studies in the first half of 2011, including an examination of transportation options to save energy and reduce greenhouse gas emissions.

INTERNATIONAL ACTIVITIES

The Annual Meeting is increasingly an international event and an important component of



TRB International Secretary Sandra Rosenbloom and International Activities Committee Chair Jorge A. Prozzi (center, in front of podium) and a leadership group from the Annual Meeting's 1,500 non-U.S. attendees at a reception for international participants.



Visiting professional Ralph Hessian (left) and consultant Andy Horosko (center), from Canada, and visiting professional Hans Van Saan (right), from the Netherlands, are some of the international staff working on the SHRP 2 program.

TRB's international outreach. The 2010 meeting attracted more than 1,500 registrants from other countries, an increase of 50 percent from 2009. The meeting program included sessions

and presentations focused on transportation activities outside the United States. A session organized by our International Secretary, Sandra Rosenbloom, explored transportation research collaborations between state departments of transportation in the United States and research organizations from other countries.

A new international research collaboration is under way. NCHRP has programmed Fiscal Year 2011 funds for a collaborative effort with the European Road Association's ERA-Net Road Research Program. NCHRP and participating European countries will pool funds to conduct research of common interest.

TRB has been working with International Transport Research Documentation (ITRD) to enhance the collection and dissemination of transportation research bibliographic information worldwide. This year, TRB reached an agreement with ITRD to host on the TRB website a combined database of TRIS and ITRD records, to be available to users at no charge.

Almost from its beginning, SHRP 2 has ben-

STAFF NEWS

Several valued and longtime staff retired this past year:

Jack Chen retired in April as Transportation Research Information Services (TRIS) Database Administrator; he worked in the TRB Information Services group for more than 23 years, providing hardware and software support.

Norman Solomon, Senior Editor in the Executive Office—Publications, retired in May after 20 years of careful and knowledgeable contributions to the editorial quality of TRB publications in the Special Reports, *Transportation Research Record*, and Conference Proceedings series, as well as the *Highway Capacity Manual*.

Barbara Post retired in August as Manager, Information Services, after nearly 30 years at TRB; she was instrumental in the establishment, development, and expansion of TRB's online Publications Index, TRIS, Research in Progress, and other key databases. She received a career professional achievement award from the Special Libraries Association's Transportation Division in 2007 and

was honored this year with an award from Catholic University's School of Library and Information Science.

Peter L. Shaw retired in July as Public Transportation Specialist in the Technical Activities division; during his 18 years at TRB, he served as staff representative for TRB's transit standing committees and to two sponsor organizations, the Federal Transit Administration and the American Public Transportation Association. He also coordinated many international conferences on light rail transit, bus rapid transit, and rural transit.

Elaine King retired in November after 25 years of service in the Technical Activities division as Rail and Freight Transport Specialist. She served as staff representative for TRB's rail, trucking, and freight standing committees and to three sponsor organizations—the Federal Railroad Administration, the Association of American Railroads, and the American Transportation Research Institute. She also staffed the Committee for Review of the Federal Railroad Administration Research and Development Program.



While the National Academies building on Constitution Avenue is being renovated, some TRB staff have relocated from the Keck Center to accommodate personnel from the headquarters building. (Photo: Tamara Luzecky, Olin Conservation, Inc.)

edited from staff on loan from transportation agencies outside the United States. This year, a staff member from France's Laboratoire Central des Ponts et Chaussées joined staff on loan from the Canadian Council of Deputy Ministers of Transportation and the Netherlands' Rijkswaterstaat.

NATIONAL ACADEMIES UPDATE

A 22-month project to rehabilitate the historic National Academy of Sciences building on Constitution Avenue began in June 2010. Finding temporary locations for the 200-plus staff members assigned to the headquarters building has had an effect on TRB—the SHRP 2 staff and the

staff of TRB's Synthesis and Innovations Deserving Exploratory Analysis units were relocated from the Keck Center to the Arnold & Porter Building on 12th Street, NW, near Metro Center.

Michael R. Morris
Chair, Executive Committee

Robert E. Skinner, Jr.
Executive Director

Transportation Research Board 2010 Executive Committee*

Chair: Michael R. Morris, Director of Transportation, North Central Texas Council of Governments, Arlington
Vice Chair: Neil J. Pedersen, Administrator, Maryland State Highway Administration, Baltimore
Executive Director: Robert E. Skinner, Jr., Transportation Research Board

J. Barry Barker, Executive Director, Transit Authority of River City, Louisville, Kentucky
Allen D. Biehler, Secretary, Pennsylvania Department of Transportation, Harrisburg
Larry L. Brown, Sr., Executive Director, Mississippi Department of Transportation, Jackson
Deborah H. Butler, Executive Vice President, Planning, and CIO, Norfolk Southern Corporation, Norfolk, Virginia
William A. V. Clark, Professor, Department of Geography, University of California, Los Angeles
Eugene A. Conti, Jr., Secretary of Transportation, North Carolina Department of Transportation, Raleigh
Nicholas J. Garber, Henry L. Kinnier Professor, Department of Civil Engineering, and Director, Center for Transportation Studies, University of Virginia, Charlottesville
Jeffrey W. Hamiel, Executive Director, Metropolitan Airports Commission, Minneapolis, Minnesota
Paula J. Hammond, Secretary, Washington State Department of Transportation, Olympia
Edward A. (Ned) Helme, President, Center for Clean Air Policy, Washington, D.C.
Adib K. Kanafani, Cahill Professor of Civil Engineering, University of California, Berkeley (Past Chair, 2009)
Susan Martinovich, Director, Nevada Department of Transportation, Carson City
Debra L. Miller, Secretary, Kansas Department of Transportation, Topeka (Past Chair, 2008)
Sandra Rosenbloom, Professor of Planning, University of Arizona, Tucson
Tracy L. Rosser, Vice President, Corporate Traffic, Wal-Mart Stores, Inc., Mandeville, Louisiana
Steven T. Scalzo, Chief Operating Officer, Marine Resources Group, Seattle, Washington
Henry G. (Gerry) Schwartz, Jr., Chairman (retired), Jacobs/Sverdrup Civil, Inc., St. Louis, Missouri
Beverly A. Scott, General Manager and Chief Executive Officer, Metropolitan Atlanta Rapid Transit Authority, Atlanta, Georgia
David Seltzer, Principal, Mercator Advisors LLC, Philadelphia, Pennsylvania
Daniel Sperling, Professor of Civil Engineering and Environmental Science and Policy; Director, Institute of Transportation Studies; and Interim Director, Energy Efficiency Center, University of California, Davis
Kirk T. Steudle, Director, Michigan Department of Transportation, Lansing
Douglas W. Stotlar, President and Chief Executive Officer, Con-Way, Inc., Ann Arbor, Michigan
C. Michael Walton, Ernest H. Cockrell Centennial Chair in Engineering, University of Texas, Austin (Past Chair, 1991)



Morris



Pedersen



Skinner



Barker



Biehler



Brown



Butler



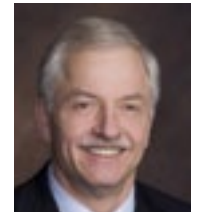
Clark



Conti



Garber



Hamiel



Hammond



Helme



Kanafani



Martinovich



Miller



Rosenbloom



Rosser



Scalzo



Schwartz



Scott



Seltzer



Sperling



Steudle



Stotlar



Walton



Appel



Babbitt



Brewster



Bugliarello



Ferro



Gishi



Hamberger



Horsley



Matsuda



Mendez



Millar



O'Toole



Papp



Quarterman



Rogoff



Strickland



Szabo



Trottenberg



Van Antwerp

Peter H. Appel, Administrator, Research and Innovative Technology Administration, U.S. Department of Transportation (ex officio)

J. Randolph Babbitt, Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)

Rebecca M. Brewster, President and COO, American Transportation Research Institute, Smyrna, Georgia (ex officio)

George Bugliarello, President Emeritus and University Professor, Polytechnic Institute of New York University, Brooklyn; Foreign Secretary, National Academy of Engineering, Washington, D.C. (ex officio)

Anne S. Ferro, Administrator, Federal Motor Carrier Safety Administration, U.S. Department of Transportation (ex officio)

LeRoy Gishi, Chief, Division of Transportation, Bureau of Indian Affairs, U.S. Department of the Interior, Washington, D.C. (ex officio)

Edward R. Hamberger, President and CEO, Association of American Railroads, Washington, D.C. (ex officio)

John C. Horsley, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)

David T. Matsuda, Deputy Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)

Victor M. Mendez, Administrator, Federal Highway Administration, U.S. Department of Transportation (ex officio)

William W. Millar, President, American Public Transportation Association, Washington, D.C. (ex officio) (Past Chair, 1992)

Tara O'Toole, Under Secretary for Science and Technology, U.S. Department of Homeland Security (ex officio)

Robert J. Papp (Adm., U.S. Coast Guard), Commandant, U.S. Coast Guard, U.S. Department of Homeland Security (ex officio)

Cynthia L. Quarterman, Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation (ex officio)

Peter M. Rogoff, Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)

David L. Strickland, Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)

Joseph C. Szabo, Administrator, Federal Railroad Administration, U.S. Department of Transportation (ex officio)

Polly Trottenberg, Assistant Secretary for Transportation Policy, U.S. Department of Transportation (ex officio)

Robert L. Van Antwerp (Lt. General, U.S. Army), Chief of Engineers and Commanding General, U.S. Army Corps of Engineers, Washington, D.C. (ex officio)

* Membership as of December 2010.

Executive Office

THE TRB EXECUTIVE OFFICE PROVIDES POLICY and operational guidance for programs and activities; oversees committee and panel appointments and report review; provides support and direction for human resource issues and staffing needs; develops and directs the Board’s communications and outreach efforts; provides staff support to the Executive Committee and its Subcommittee for National Research Council (NRC) Oversight; and maintains liaison with the executive offices of the National Academies, the Board’s parent institution. The Executive Office also manages the editing, production, design, and publication of many TRB reports, including its journal series, magazine, and other titles.

OVERSIGHT ACTIVITIES

The Executive Office supports the work of the TRB Executive Committee, which provides policy direction to TRB programs and activities within the overall policies of the National Acad-



Subcommittee for NRC Oversight (SNO) members (left to right:) Michael R. Morris, Executive Committee Chair; Henry G. (Gerry) Schwartz, Jr., SNO Vice Chair; Suzanne B. Schneider, TRB Associate Executive Director; C. Michael Walton, SNO Chair; Adib K. Kanafani, past chair of the Executive Committee; William A. V. Clark; and Neil J. Pedersen, Executive Committee Vice Chair.



Mentors and fellows at the TRB 2010 Annual Meeting Minority Student Fellows reception (left to right): Giovanni Migliaccio and Rebecca Martinez, University of New Mexico; Richard Willson and Jesus Barajas, California State Polytechnic University–Pomona; and Kofi Obeng and Brittany Hicks, North Carolina Agricultural and Technical State University. Not pictured are fellows Kadajah Hall, Texas Southern University, and Khalid Romain, Howard University.

mies. Oversight of committee and panel appointments and of report review is the responsibility of the Executive Committee’s Subcommittee for NRC Oversight (SNO), which ensures that TRB meets institutional standards and that its activities are appropriate for the National Academies. As part of its oversight function, the subcommittee monitors the Board’s progress in expanding the representation of minorities and women on TRB committees and panels. C. Michael Walton, TRB Division Chair for NRC Oversight, heads this subcommittee and represents TRB as an ex officio member on the NRC Governing Board. Henry G. (Gerry) Schwartz, Jr., serves as the SNO Vice Chair, with oversight responsibilities for the second Strategic Highway Research Program (SHRP 2).

The Executive Office processes the Board’s large volume of committee and panel appointments and maintains committee membership records. It also manages the institutional review process—a hallmark of the National Academies—designed to ensure the independent, rigorous review of reports. In maintaining these high standards, TRB follows NRC-approved

guidelines that carefully match the review criteria and procedures to the type of report.

PUBLICATIONS

To fulfill one of its oldest missions, TRB disseminates transportation research results and technology information through an extensive array of timely publications. The Board has gained national and international prominence for its books and reports assessing the state of the practice in specific areas of transportation, presenting the results of transportation research, addressing major national transportation policy issues, and identifying research needs. TRB continues to expand its publishing effort by releasing a growing number of titles electronically, some exclusively in electronic format.

TRB books and reports span the range of transportation functions, disciplines, and modes. The TRB Publications Office produces titles in the following series:

- *Transportation Research Record: Journal of the Transportation Research Board* gathers technical papers that have been accepted for publication through a rigorous peer review process refereed by TRB technical committees. In 2010, the Board published 60 volumes of the journal, containing 918 papers grouped by subject. TRR Online, inaugurated in 2007, is an online subscription and pay-per-view service for the *Transportation Research Record* series. Record papers are posted simultaneously with the release of each printed volume to a searchable, password-protected section of the TRB website, which includes all journal



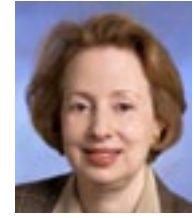
C. Michael Walton
Chair
Subcommittee for
NRC Oversight



H. Gerard (Gerry) Schwartz, Jr.
Vice Chair
Subcommittee for
NRC Oversight



Robert E. Skinner, Jr.
Executive Director



Suzanne B. Schneider
Associate Executive
Director

papers published since 1996. The TRR Online system now provides access to approximately 11,000 papers in the TRR series.¹ The service allows all visitors to identify papers of interest and review abstracts of those papers. Access to the full papers is available to service subscribers and employees of TRB sponsors. Papers also may be purchased individually.

- The bimonthly magazine *TR News* features timely articles on innovative and state-of-the-art research and practice in all modes of transportation. News items of interest to the transportation community, profiles of transportation professionals, book and journal summaries, meeting announcements, and highlights of TRB activities also are included. Special features this year included articles on expanding international transportation research collaboration, the evolution of baseball and America's streetcars in the 19th century, the Federal Highway Administration's Vanguard Technologies initiative, the work and accomplishments of the Research and Innovative Technology Administration, the use of Web 2.0 social networks by state transportation agencies to communicate with customers, and assessments of TRB and its prospects at its 90th anniversary. The May–June 2010 theme issue focused on “Climate Change: Curbing Transportation’s Contributions”; the July–August issue highlighted “Globalization and Transportation”; and “Asset Management for a Durable Infrastructure” was the theme of the September–October issue. Selected features of *TR News* are posted on the TRB website, and the full issue is made accessible on the web on a four-month



Publications released by TRB in 2010 addressed timely and essential research topics.

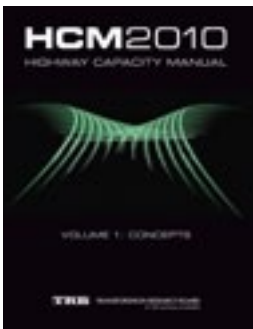
¹ www.trb.org/Finance/Public/TRRJournalOnline1.aspx.



Bill Colglazier, Executive Officer, National Academy of Sciences, and Chief Operating Officer, National Research Council, thanks U.S. Transportation Secretary Ray LaHood for attending the U.S.A. Science and Engineering Festival, Sunday, October 24, in Washington, D.C. TRB's exhibit featured the National Advanced Driving Simulator to show the dangers of distracted driving. (Photo: Joe Marflak)

delay.² In 2010, the web postings incorporated full-color photographs and graphics on the inside pages.

- *Special Reports* contain the results of TRB policy studies on issues of national importance in transportation. These studies—many conducted at the request of federal agencies or of Congress—focus on a variety of complex, often controversial, topics. Special reports published in 2010 included *Air Traffic Controller Staffing in the En Route Domain: A Review of the Federal Aviation Administration's Task Load Model* and *Achieving Traffic Safety Goals in the United States: Lessons from Other Nations*. All current and selected out-of-print special reports are posted on the Board's website.³
- *Conference Proceedings* assemble formal papers, presentations, and summaries of discussions from TRB conferences and workshops. *Research on the Transmission of Disease in Airports and on Aircraft: Summary of a Symposium* and *Women's Issues in Transportation:*



The completely revised and updated *Highway Capacity Manual 2010* comprises four volumes.

² www.trb.org/Publications/Public/PubsTRNewsMagazine.aspx.

³ www.trb.org/Publications/Public/PubsPolicyStudiesSpecialReports.aspx.

Summary of Fourth International Conference, Volume 1—Conference Overview and Plenary Papers, were published this year and posted on the web.⁴

- *Transportation Research E-Circulars* collect research problem statements, reports, and technical information from the work of TRB technical activities committees. Topics of Circulars published this year included greenhouse gas and energy issues for the transportation industry, research needs statements on climate change and transportation, papers from the Joint International Light Rail Conference, a methodology for developing crash modification factors for the first edition of the *Highway Safety Manual*, and a comprehensive introduction to research issues for the trucking industry. Circulars are available exclusively in electronic format on the TRB website.⁵
- *Miscellaneous Reports* include special publications like the *Highway Capacity Manual 2010* and the *Access Management Manual*. Release of the completely revised and expanded *Highway Capacity Manual 2010*—three volumes, plus an online fourth volume of ongoing supplemental research, is imminent.

In addition, the Cooperative Research Programs and SHRP 2 produce an array of titles in several publications series. (For a list of all TRB publications, see pages 65–68.)

COMMUNICATIONS

TRB is committed to improving the communication and public awareness of transportation issues and to enhancing the dissemination of research findings worldwide and has undertaken a variety of initiatives intended to achieve these goals.

One of the Board's most successful communications initiatives is the weekly *Transportation Research E-Newsletter*,⁶ which reports on transportation research and research-related events within TRB and beyond. Circulation of the free

⁴ www.trb.org/Publications/Public/PubsConferencesandWorkshopsConferenceProceedings.aspx.

⁵ www.trb.org/Publications/Public/PubsTransportationResearchCirculars.aspx.

⁶ www.trb.org/Publications/Public/PubsTRBENewsletter.aspx. To subscribe, send an e-mail to RHouston@nas.edu with "Subscribe TRB E-Newsletter" in the subject field.



TRB's Twitter feed, launched in late 2009, shares transportation research updates with more than 1,000 followers.

newsletter is currently more than 39,000 and growing. Approximately one-fifth of the readership is from countries outside the United States.

TRB's website is designed to help users readily find research news, announcements, and publications in more than 35 subject areas. The site also highlights selected transportation research-related products developed at the federal and state levels and within the academic and international transportation communities. Website functions—such as RSS (really simple syndication), Facebook, e-mail to a friend, and Twitter—allow users to keep up with and to share the latest developments in transportation research. In addition, postings for TRB's programs offer an array of links to content.

Through TRB's web briefing or "webinar" series, transportation professionals share and receive information online in a conference-like atmosphere, but in their own offices. The webinars disseminate information on new TRB reports, TRB Annual Meeting sessions, and topics requested by TRB committees. Approximately four webinars are conducted each month,

averaging 250 participants per session. In addition, TRB program divisions increasingly rely on web briefings to train volunteers and to provide updates on research projects in progress.

TRB entered the social networking arena with the launch of its Twitter feed, TRBofNA, in December 2009. Tweets highlight TRB and National Academies products and meetings, as well as other transportation-related news. Since its launch, TRBofNA has attracted more than 1,000 followers.

Other communications activities include outreach to local government groups, organizations, and individuals outside traditional TRB constituencies, and targeting new audiences for specific reports and activities.

STAFF NEWS

Janet M. McNaughton joined the staff of the TRB Executive Office—Publications as Senior Editor, succeeding Norman Solomon, who retired in May.

Technical Activities

THE TRB TECHNICAL ACTIVITIES DIVISION implemented new measures this year to enhance the ability of transportation organizations and volunteers to participate actively in—and benefit from—TRB activities. The measures focused on overcoming the economic barriers to travel encountered by participants from the public sector, seeking solutions that would benefit the entire TRB community.

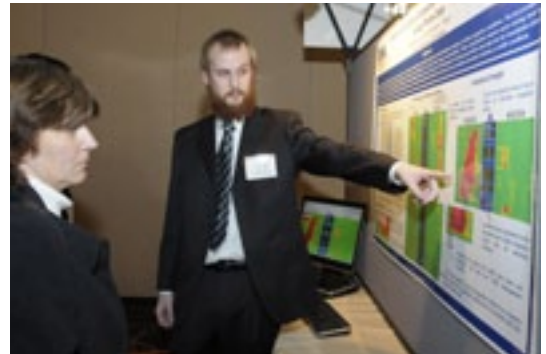
OVERCOMING BARRIERS

The barriers are not erected which can say to aspiring talents and industry: “Thus far and no farther.”

—LUDWIG VAN BEETHOVEN

New measures to stimulate and expand participation in TRB included the following:

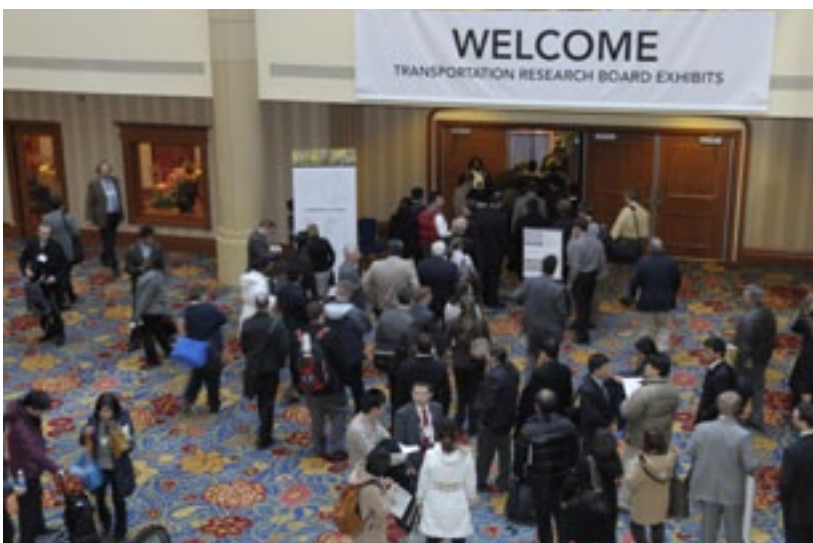
- Collecting visual aids and poster session presentations from speakers; enhancing the recordings of more than 40 e-sessions at the TRB 2010 Annual Meeting; and making these available at no additional charge to TRB federal and state agency sponsors. This service will



Online versions of visual aids and poster session presentations from the Annual Meeting will be available to all meeting registrants in 2011.

be extended to all Annual Meeting registrants in 2011.

- Working with the newly appointed communications coordinators from the TRB standing committees to increase significantly the number of TRB committees with websites; to enhance and expand the use of telecommunications for conducting committee business; and to incorporate social networking into committees’ communications portfolios.
- Increasing from two to four the number of young member appointees—35 years old or younger—on a committee, and reducing the Annual Meeting registration fee for young attendees. New formal mechanisms were piloted to encourage more input from younger members of standing committees to the TRB leadership. These initiatives make involvement in TRB more attractive and affordable for young professionals; at the same time, they assist in meeting the organization’s diversity goals.
- Implementing webinar training for authors and reviewers to improve the quality of papers published in the *Transportation Research Record* (TRR). These and other efforts have helped to increase the TRR citation impact factor from .206 in 2007 to .298 in 2009.
- Increasing international outreach—for example, with the launch of a webinar series



Attendees had the opportunity to browse a sold-out exhibit hall at the 2010 TRB Annual Meeting in January.



Robert C. Johns
Council Chair
Technical Activities



Cynthia J. Burbank
Chair
Policy and
Organization Group



Katherine F. Turnbull
Chair
Planning and
Environment Group



Mary Lou Ralls
Chair
Design and
Construction Group



Daniel S. Turner
Chair
Operations and
Preservation Group



Edward V. A. Kussy
Chair
Legal Resources
Group



Ronald R. Knipling
Chair
System Users Group



Steven Silkunas
Chair
Public
Transportation
Group



Daniel L. Roth
Chair
Rail Group



Peter F. Swan
Chair
Freight Systems
Group



Peter B. Mandle
Chair
Aviation Group



Jeannie G. Beckett
Chair
Marine Group
(Marine Board)



Mark R. Norman
Director
TRB Technical
Activities Division

on international scans conducted under the National Cooperative Highway Research Program (NCHRP), and with cosponsorship of a dozen international conferences. More than 1,500 registrants from 65 countries outside of the United States attended the TRB 2010 Annual Meeting—almost a 50 percent increase from 2009 totals.

Setting the Tone

The TRB Annual Meeting in January set the tone for 2010. The attendance total of 10,100 was down only slightly from the all-time high of 10,500 in 2007. Turnout at TRB-sponsored conferences also remained strong throughout the year. Attendance by state DOT employees, however, continued below the levels reached before the economic downturn.

Highlights of the 2010 Annual Meeting included the keynote address by U.S. Secretary of Transportation Ray LaHood at the Chairman's Luncheon and the Thomas B. Deen Distinguished Lecture, "Transportation Policy, Poverty, and Sustainability: History and Future," presented by past Executive Committee Chair Martin Wachs of the RAND Corporation.

Planning for the TRB 2011 Annual Meeting kicked into high gear in fall 2010. "Transportation, Livability, and Economic Development in a

Changing World" is the theme for the milestone 90th TRB Annual Meeting. At the close of the August 1 deadline, TRB had received a record number of 3,900 papers for peer review for presentation at the meeting and publication in the TRR.

Technical Activities Overview

The TRB Technical Activities Division provides a forum for transportation professionals to iden-

Martin Wachs, RAND Corporation, delivers the Thomas B. Deen Distinguished Lecture, "Transportation Policy, Poverty, and Sustainability: History and Future," to a large audience at the Annual Meeting.





Robert Johns, Director, Volpe Center, is Chair of the Technical Activities Council.

tify research needs and to share information on research and issues of interest. The Division's staff of specialists in each mode and discipline works with thousands of volunteers to carry out activities on behalf of TRB sponsors and the transportation community. This community includes thousands of members and friends of more than 200 standing committees.

The TRB Technical Activities Council oversees the organization and activities of these committees. Robert C. Johns, Director of the Volpe Center of the U.S. Department of Transportation, chairs the Technical Activities Council. TRB representatives in each state, in more than 150 universities, and in 25 transit agencies serve as liaisons to the transportation community.

Highlights for 2010 from the Technical Activities Division's portfolio span the range of transportation disciplines and modes and are detailed in the following sections.

POLICY AND ORGANIZATION

Transportation Policy

In May, TRB sponsored the 4th International Conference on Financing Surface Transportation in the United States: Forging a Sustainable Future Now. Two preconference workshops presented cost-benefit analyses and innovative finance tools, followed by a two-day program, which included keynote addresses by Sherri LeBas, Secretary of the Louisiana Department of Transportation and Development; Victor Mendez, FHWA Administrator; and Jane Garvey, chairman of Meridian North America.



Sherri LeBas, Secretary, Louisiana Department of Transportation and Development, presented a keynote address at the Fourth International Conference on Financing Surface Transportation in New Orleans, Louisiana, in May. (Photo: Louisiana DOTD)

The program featured more than 100 speakers and poster session presenters, who explored approaches to financing during times of fiscal constraints.

The Joint Midyear Meeting convened approximately 40 standing committees and subcommittees in Minneapolis, Minnesota, in July. Committees in the Policy and Organization Group sponsored four workshops. The workshop, *Economic Recovery Is a Game Changer: Strategies for Staying in the Game*, coordinated by the Strategic Management, the Management and Productivity, and the Performance Measures Committees, provided tools and tips for transportation agencies to thrive in a changing environment with reduced resources. The Taxation and Finance and the Congestion Pricing Committees offered workshops addressing performance management, resource allocation, and finance, as well as the lessons learned from pricing projects around the world. The Data Section sponsored a session on *Making Sense of Census Data*.

In August, working with Easter Seals, TRB cosponsored a webinar series examining research and findings to facilitate access to transportation vehicles and services by travelers with disabilities. Members of the Accessible Transportation Committee contributed as presenters, discussants, and participants.

Security

The nation's transportation system faces a host of safety and security concerns. The Deepwater Horizon explosion and oil spill exemplifies the safety and security challenges for the transportation sector. As the 10th anniversary of the September 11 attacks approaches, TRB has begun preparation for a 2011 *TR News* theme issue on security; security was among the topics covered in the magazine's July–August 2010 theme issue on globalization.¹

The 2010 Annual Meeting included a full-day workshop on transportation, security, and planning for large and special events, plus the third annual workshop on bridge and tunnel safety and security. Other Annual Meeting sessions covered cybersecurity and the need to protect transportation information systems and technology infrastructure; the transportation

¹ <http://onlinepubs.trb.org/onlinepubs/trnews/trnews269.pdf>.

implications of expanding U.S. nuclear power generation; cloud computing for transportation agencies; transit security; and climate change and natural disasters. Two meet-the-author poster sessions focused on emergency evacuation research and on critical transportation infrastructure protection.

In August, with support from the Transportation Security Administration, TRB and the American Association of State Highway and Transportation Officials (AASHTO) hosted the Transportation Hazards and Security Summit and Workshop 2010: Focus on Implementation, at the National Academies' Beckman Center in Irvine, California. Participants provided input to a 3-year security and emergency management research implementation plan in development under a National Cooperative Highway Research Program (NCHRP) project.²

Data and Information Systems

A Special Task Force on Data for Decisions and Performance Measures gained approval in April and is drawing up a strategic plan and research road map for TRB's performance-based data program. The task force also will coordinate related activities across TRB standing committees and with other organizations. A national conference addressing critical data for decision making is planned for 2011.

² <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=633>.



Reginald Souleyrette, Iowa State University, confers with Data and Information Systems Section Chair Simon Washington, University of California, Berkeley, at the Annual Meeting.

The North American Travel Monitoring Exposition and Conference examined Improving Traffic Data Collection, Analysis, and Use. Participants from more than 30 states and many metropolitan planning organizations (MPOs) shared information with technology vendors, consultants, academics, and federal officials. Although improved technologies and innovative approaches have helped agencies meet expanding requirements for traffic data—such as bicycle, pedestrian, and motorcycle data—tightened economic resources remain a concern. Many conversations explored partnerships among public agencies and between public



Attendees of the North American Travel Monitoring Exposition and Conference focused on ways to make the most of traffic data. (Photo: Linda Karson)

and private organizations to increase efficiencies. An FHWA-hosted workshop on a Cooperative National Traffic Speed Data System allowed states to provide feedback for making national speed data available.

A peer exchange on geographic information systems (GIS) for asset management revisited the state of the practice explored in a 2005 peer exchange. The meeting focused on three major areas for improving spatial technology applications: managing change, integrating data, and communication. GIS and asset management professionals from seven states reviewed the issues and developed and prioritized research needs statements for improving the use of GIS technology in transportation organizations.

At the workshop, *Toward Better Freight Transportation Data: A Research Road Map*, freight transportation data producers and users identified priorities for research into cost-effective and sustainable freight data programs. Deliberations focused on sharing freight transportation data, using Global Positioning System data to forecast freight flows, developing origin–destination matrices, linking data sets to improve freight information, and using freight data to measure system performance.

Research and Education

How transportation planning agencies are addressing the critical problem of workforce development and retention was the subject of a 2010 TRB Annual Meeting workshop, *Building the 21st Century Workforce: Focus on MPOs and Local and Regional Transportation Agencies*. Another workshop—*So You Want to Be a Transportation Professional?*—provided young participants an opportunity to interact with transportation professionals from the public, private, and academic sectors.

The Conduct of Research, the Technology Transfer, and the Library and Information Science for Transportation Committees cosponsored an Annual Meeting workshop covering *Everything You Need to Know About Web 2.0: Using Communication and Collaboration to Improve Transportation*. The program offered overviews of many Web 2.0 applications, including social networks, podcasts, blogs, wikis, RSS feeds, and virtual worlds. Efforts to improve transportation research through Web 2.0 were highlighted, and participants received instruc-

tions for getting started with the technologies.

At the combined meeting of the AASHTO Research Advisory Committee and the TRB State Representatives in July, the Conduct of Research Committee cosponsored a session on Web 2.0 technologies for collaboration and for the communication of transportation-related research.

PLANNING AND ENVIRONMENT

Transportation System Planning

The Multimodal Statewide Planning Committee held its summer peer exchange in Minneapolis on using performance measures in the statewide planning process. Many of the participants joined an expert panel from the Government Accountability Office to examine federal actions to encourage the use of performance measures in the planning process.

The Public Involvement Committee sponsored the third annual TRB Communicating Concepts to John and Jane Q. Public Competition and announced the winners at the 2010 TRB Annual Meeting. The focus this year was on the communication of public transit concepts. Sound Transit of Seattle, Washington, took first place for the entry, *Five High Schools, Five Films, One Story to Save Lives*.

At the third Innovations in Travel Demand Forecasting Conference, held in Tempe, Ari-



With the entry, “Five High Schools. Five Films. One Story to Save Lives,” Carol Doering, Sound Transit Seattle, won the 2010 TRB Communicating Concepts to John and Jane Q. Public Competition, sponsored by the Public Involvement Committee.



A TRB Energy and Environment Research Conference attendee comments at a plenary session on future roles and responsibilities of transportation agencies. (Photo: Center for Transportation and the Environment, North Carolina State University)

zona, with Arizona State University, more than 200 participants learned about advanced travel demand forecasting models in the United States and other nations. Session topics ranged from recent advances in choice modeling to modeling freight movement.

The 10th National Conference on Transportation Planning for Small and Medium-Sized Communities: Tools of the Trade, meeting in Williamsburg, Virginia, in September, explored the planning, development, programming, and implementation of multimodal transportation facilities for small and medium-sized communities. Participants also addressed needs for research and implementation.

Social, Economic, and Environment

In June, 12 committees participated in the Environment and Energy Research Conference: Better Delivery of Better Transportation Solutions, in Raleigh, North Carolina. The program served as a platform for integrating diverse environmental and transportation perspectives. More than 500 transportation experts and professionals in environmental planning, community and economic analysis, environmental justice, land use, sustainability, and climate change shared experiences and perspectives, examined major and complex issues, and developed common-sense approaches to environmental and transportation challenges.

The Transportation-Related Noise and Vibration Committee met in Denver, Colorado, for a workshop on multimodal noise issues and on new technologies for reducing transportation noise and vibration.

Energy and Climate Change

At the Environment and Energy Research Conference, the Transportation Energy Committee organized seven sessions ranging across topics, including vehicle electrification and legislative updates on climate, energy, and fuel policies.

The TRB Special Task Force on Climate Change and Energy, working with the TRB committees on energy, alternative fuels, and sustainability, delivered several products and tools to address transportation and climate change:

- Transportation Research Circular E-C144, *Research Needs Statements for Climate Change and Transportation*, is designed as a resource for universities, students, research organizations, government agencies, and others for planning and funding research.³ More than 50 research needs statements on climate change were added to the TRB Research Needs Statements database.
- TRB Transportation Research Circular E-C143, *Modal Primer on Greenhouse Gas and Energy Issues for the Transportation Industry*, provides transportation decision makers with an inclusive, educated, and objective overview.⁴



³ <http://onlinepubs.trb.org/onlinepubs/circulars/ec144.pdf>.

⁴ <http://onlinepubs.trb.org/onlinepubs/circulars/ec143.pdf>.

- The May–June 2010 *TR News* focused on developing technologies, policies, and strategies to mitigate transportation’s contributions to climate change.⁵
- A new TRB web page gathers information about TRB events, research projects, and publications on topics related to climate change.⁶
- Webinars have presented findings from the two National Academies series of studies, America’s Energy Future⁷ and America’s Climate Choices.⁸

DESIGN AND CONSTRUCTION

Design

Committees in the three design sections conducted an array of meetings, sessions, and workshops at the 2010 TRB Annual Meeting:

- The Geometric Design and the Operational Effects of Geometric Design Committees sponsored a workshop on the Future of Highway Geometric Design.
- The Pavement Management Systems Committee and committees in the Pavement Management Section sponsored a workshop on *Mechanistic–Empirical Pavement Design Guide* Implementation Practices.
- The General Structures Committee sponsored

⁵ <http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>.

⁶ www.trb.org/main/SpecialtyPageClimateChange.aspx.

⁷ <http://sites.nationalacademies.org/energy/>.

⁸ www.americasclimatechoices.org/index.shtml.

a workshop on Bridge Aesthetics: Practical Ideas for Short- and Medium-Span Bridges.

The Roadside Safety Design committee held a summer meeting on Managing the Risk of Roadway Safety Departures, in Yountville, California, in May with Task Force 13, a joint subcommittee of AASHTO, the Associated General Contractors of America, and the American Road and Transportation Builders Association.

The Rigid Pavement Design Committee sponsored a TRB webinar on Precast Pavement Technology: Current and Future Directions, in July. Other Pavement Management Section committees cosponsored the Pavement Evaluation 2010 conference in Roanoke, Virginia, in October.

TRB sponsored the 7th International Bridge Engineering Conference: Improving Reliability and Safety—Restoration, Renewal, and Replacement, in San Antonio, Texas, in December. The two-and-a-half day program featured more than 90 podium, plenary, and poster presentations.

Construction and Materials

The Construction Section committees continued to discuss innovations in project delivery and in expediting construction projects. Annual Meeting workshops presented the latest developments in public–private partnerships and in the intelligent compaction of soils, subbase, stabilized base, and asphalt pavements.

The Bituminous Materials Section committees sponsored a workshop presenting research in asphalt materials and mixtures by young

A welcome session at the Annual Meeting encouraged new and young attendees to join TRB standing committees. Approximately 7 percent of TRB’s volunteers are 35 or younger.





A slide from the webinar, “Overview of Warm-Mix Asphalt Technologies for Virgin and Reclaimed Asphalt Pavement Mixes.”

doctoral students, encouraging the early-career involvement of researchers in TRB. The Characteristics of Bituminous Materials Committee sponsored two TRB webinars—the first, in May, provided an overview of warm-mix asphalt technologies for virgin and reclaimed asphalt pavement mixes; and the second, in August, focused on asphalt emulsions for surface treatments, cold in-place recycling, and full-depth reclamation.

With assistance from the committees in the Concrete Materials Section, the Task Force on Nanotechnology-Based Concrete Materials sponsored the First International Conference in North America on Nanotechnology in Cement and Concrete, May 5–7, at the Beckman Center. The program explored the science and engineering of modifying and monitoring the behavior and performance of cement and concrete at the nanoscale. FHWA, the U.S. Army Corps of Engineers, Sweden’s Royal Institute of Technology, and the Center for Nanotechnology in Cementitious Systems at Iowa State University helped fund the conference, which registered more than 100 people from 17 countries. The peer-reviewed papers were published in two TRR volumes, Nos. 2141 and 2142.⁹

Soils, Geology and Foundations

Geotechnical engineering committees sponsored the following workshops at the 2010 TRB Annual Meeting: Geophysics: Help Us to Help You, sponsored by the Exploration and Classification of Earth Materials Committee with

the Soils and Rock Instrumentation Committee; Visualization Technology for Transportation Design and Construction, sponsored by the Application of Emerging Technologies to Design and Construction Committee, with committees in the Design, Construction, and Data and Information Systems Sections and the Operations Group; Performance Specifications for Geosynthetics in Highway Projects, sponsored by the Geosynthetics Committee; and Rural Road Financing in the United States and Developing Countries, sponsored by the Low-Volume Roads Committee, with the Transportation in Developing Countries Committee.

Committees also contributed to the programs of several geotechnical engineering conferences:

- GeoShanghai 2010 International Conference, in Shanghai, China, June 3–5, 2010, cosponsored by committees in the Geology and Properties of Earth Materials and the Soil Mechanics Sections;
- Asset Management in a World of Dirt, Oklahoma City, Oklahoma, August 23, 2010, sponsored by the Engineering Geology and the Exploration and Classification of Earth Materials Committees; and
- Symposium on Mineral Aggregates in Transportation, Charleston, South Carolina, September 22–24, 2010, sponsored by the Mineral Aggregates Committee.



Maile Rogers, Brigham Young University, presents a paper on variability in the construction of cement-treated base layers in an Annual Meeting session on advances in stabilization technology.

⁹ For these and other TRR volumes cited, see www.trb.org/Publications/Public/PubsTRRJournalOnline.aspx.

OPERATIONS

The National Road Pricing Conference, held in June in Houston, Texas, brought together leaders in transportation pricing and policy to share information and practical advice in panel discussions, breakout groups, and workshops on implementing pricing projects. The High-Occupancy Vehicle, High-Occupancy Toll, and Managed Lanes Committee and the Congestion Pricing Committee organized the conference.

Also in June, the 4th International Symposium on Highway Geometric Design, in Valencia, Spain, assembled more than 300 participants from 28 countries to share views, knowledge, and experience on the latest highway geometric design research, policies, and innovative practices—and their effects on safety and operations. The Geometric Design and the Operational Effects of Geometrics Committees sponsored the symposium, which was hosted by the Universidad Politécnica de Valencia.

In September, the Workshop on Research Needs for IntelliDrive Applications for the Public Sector was held in Irvine, part of a series sponsored by the Intelligent Transportation Systems (ITS) and the Vehicle–Highway Automation Committees. The workshop focused on the public-sector research needs associated with the U.S. DOT’s IntelliDrive program and brought together a range of public- and private-sector stakeholders in ITS and IntelliDrive to discuss the safety, operational, financial, and staffing impacts of IntelliDrive. The workshop’s framing presentations and panel discussions were followed by working groups that identified topics for research.

MAINTENANCE AND PRESERVATION

Maintenance and Preservation Committees sponsored a variety of sessions during the 2010 TRB Annual Meeting on management, personnel, pavements, structures, signing and pavement marking, winter maintenance, and work zone topics. These included sessions on Management of Maintenance Contracts, Quality Assurance, and ITS Devices; Organizational Changes to Meet the Challenges of an Emerging Transportation Workforce; Pavement Preservation Cost Studies; Performance Assessment of Pavement Preservation Treatments; Field



A highway dips into floodwaters caused by the aftereffects of a tropical storm in Caddo County, Oklahoma. Impacts of weather on surface transportation were explored in a September webinar. (Photo: Patricia Brach, Federal Emergency Management Agency)

and Laboratory Assessments of Crack Sealants; Assessment Methodologies for Bridge Conditions; Bridge Management Analysis Techniques; Measurement and Analysis of Pavement Marking Retroreflectivity; Using Weather Information to Improve Traffic Management; Impacts of Winter Weather on Traffic; Work-Zone Speed and Merge Control Strategies; and Work-Zone Mobility and Safety Analyses.

The committees sponsored two workshops at the 2010 Annual Meeting: Advancing Road Weather Management with *Clarus* Data and Status of FHWA’s Long-Term Bridge Performance Program. The Winter Maintenance and Surface Transportation Weather Committees sponsored a webinar on Mitigating the Impacts of Weather on Surface Transportation: New Techniques and a Case Study. Many committees have increased the use of conference calls and web meetings to keep members and friends involved and informed about topics of interest.

SAFETY

AASHTO has approved and published the first edition of the *Highway Safety Manual* (HSM), and several state DOTs have begun implementation.¹⁰ The TRB Task Force on Development of the Highway Safety Manual, which spent 10 years producing the 1,000-plus page document,

¹⁰ www.trb.org/Main/Blurbs/163701.aspx.

has taken on new responsibilities as the Highway Safety Performance Committee and is commencing work on the second edition of the HSM.

The Task Force on Safety Workforce Development has defined the core competencies for highway safety professionals (see NCHRP Research Results Digest 302¹¹), along with a modular training program. NCHRP is preparing a report, *Model Curriculum for Highway Safety Core Competencies*, with an accompanying DVD on *Road Safety Fundamentals*.

With sponsorship from the Federal Motor Carrier Safety Administration and in partnership with the National Institute of Occupational Safety and Health, TRB organized a conference on commercial driver health and wellness in Baltimore, Maryland, in November. The program focused on the improved safety performance and cost-benefit from drivers' physical and mental wellness.

TRB committees planned and participated in several international conferences. In particular, Road Safety on Four Continents, in Abu Dhabi, United Arab Emirates, and Safety of Vulnerable Road Users: Pedestrians, Bicyclists, and Motorcyclists, in Jerusalem, Israel, attracted researchers and practitioners from around the world to deal with the global epidemic of highway crashes.

Safety activities continue to expand with the formation of new subcommittees for such subject topics as Rollover Crashworthiness; Rural Road Safety Research, Policy, Programming, and Implementation; and Bicycle and Pedestrian Crash Relationships.

LEGAL RESOURCES

The Transportation Law Committee continued to focus on legal issues of concern to state DOTs. New topics this year included an update to the Americans with Disabilities Act involving compliance in new and old infrastructure, as well as public accessibility to buildings, roads, and sidewalks; state-imposed furloughs and voluntary vacations; and the legal implications of increased spending on railroads, including the interface between railroads and highways and railroad insurance requirements.

¹¹ http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rrd_302.pdf.



In early 2010, R. J. Corman Railroad Group received a Transportation Investment Generating Economic Recovery (TIGER) grant of \$17.5 million for its Appalachian Regional Shortline Project rehabilitating railroads in Kentucky, Tennessee, and West Virginia. The Transportation Law Committee examined the legal implications of increased spending on railroads and other legal issues in transportation this year. (Photo: R. J. Corman Railroad Group)

The committees of the Legal Resources Group offered a forum for discussion of unresolved legal issues and developed problem statements for NCHRP Project 20-6, Legal Problems Arising out of Highway Programs. The group's primary activity, the 49th Annual Workshop on Transportation Law, held in Newport, Rhode Island, July 11–14, 2010, was well attended—drawing approximately 150 participants—despite travel limitations for legal staff at state DOTs.

The Environmental Issues in Transportation Law Committee focused on crosscutting issues and on cooperation with other TRB committees, providing legal perspectives to the TRB Special Task Force on Climate Change and Energy, the Environmental Analysis Committee, the Waste Management and Resource Efficiency Committee, and others. A quarterly newsletter, *The Natural Lawyer*, addresses environmental issues in transportation through summaries of legal cases.¹²

AVIATION

The Intergovernmental Relations in Aviation and the Aviation System Planning Committees held midyear meetings in June in Washington, D.C., and planned for the 2011 TRB Annual

¹² www.itre.ncsu.edu/ADC10/natural_lawyer.htm.



Richard Golaszewski, GRA Inc. (left), addresses a meeting of the Aviation Group Executive Board.

Meeting. Also meeting were subcommittees of the Light Commercial and General Aviation Committee on regional and commuter airlines and on business aviation, for discussions on economic and activity forecasts.

The Environmental Impacts of Aviation Committee organized several sessions for the Environment and Energy Research Conference. Committee members also updated the TRB e-circular, *Critical Issues in Aviation and the Environment*, with publication expected in early 2011.



The Multimodal Freight and Waterways track of the 2010 Joint Summer Meeting in Minneapolis, Minnesota, included a tour of the University of Minnesota's St. Anthony Falls Laboratory and Upper St. Anthony Falls Lock and Dam. (Photo courtesy of Joedy Cambridge)

FREIGHT SYSTEMS

The four-part Freight Day program was a highlight of the 2010 Annual Meeting, addressing the question, What Lessons Has the Freight Transportation Sector Learned from the Global Economic Crisis? The sessions focused on the impacts of the economic crisis—on production,



David Miller, Con-Way Inc., asks a question at the four-part session, "What Lessons Has the Freight Transportation Sector Learned from the Global Economic Crisis?" at the Annual Meeting.

consumption, and demand for freight transportation; on carriers; on freight planning at the national, multistate, state, and metropolitan levels; and on funding options for the nation's freight system.

Other freight-related sessions at the Annual Meeting examined the economics of transportation safety through an analysis of market failures and regulatory solutions; multistate freight coalitions; modeling in freight transportation and logistics; intermodal sustainability and resiliency; strategic mobility; terminal operations; and cross-border issues in North America. The volume of freight-related research papers continues to increase, with Annual Meeting podium and poster sessions on a range of topics and publication of two TRR volumes—Freight Systems: Intermodal Transportation, Hazardous Materials, and International Trade (No. 2162) and Freight Modeling, Planning, and Logistics (No. 2168).

Several Freight Systems committees held midyear meetings at the TRB Joint Summer Meeting in Minneapolis; others convened in Irvine, California, and Washington, D.C. Attracting more than 300 participants, the Joint Summer Meeting addressed the theme of Planning and Performance Measurement for All Modes and offered a special track of sessions on Integrating Multimodal Freight Corridors and Waterways into Planning.

MARINE

Another busy year of activities related to ports, inland waterways, and marine transportation began with the 2010 Annual Meeting, which included sessions on the impact of Panama Canal expansion, inland barge transportation, improving efficiency and sustainability in the marine transportation system, strategies for competing internationally, lessons learned from the global economic crisis, maritime simulator training and operational safety, and ferry transportation planning and pricing. Peer-reviewed papers were published in TRR No. 2166, *Marine Transportation and Port Operations 2010*.

At the TRB Joint Summer Meeting, a special track of sessions highlighted water and multi-modal freight transportation, addressing such topics as the Great Lakes–St. Lawrence Seaway, inland waterway operations, freight corridors, and integrating waterways and freight into state and regional planning.

In March, the Marine Board hosted a workshop on offshore wind energy, the subject of a TRB policy study. The Marine Board's Spring Meeting in Norfolk, Virginia, in May focused on the Deepwater Horizon explosion and oil spill. A study to review the offshore platform safety program of the Minerals Management Service was under way before the incident. A study focusing specifically on the causes of the explosion, fire, and oil spill started up in July, under TRB, the National Academy of Engineering, and the Division on Earth and Life Studies of the National Research Council.



(Left to right:) Capt. John Veentjer, Capt. Bill Diehl, Capt. Manny Aschemeyer, Ed Kelly, and Lisa Himber gather at the National Harbor Safety and Security Conference in Jersey City, New Jersey, in June. (Photo courtesy of Joedy Cambridge)

The U.S. Coast Guard and the TRB Marine Board cosponsored the first joint conference of harbor safety and area maritime security committees in Jersey City, New Jersey. In June, the Marine Board hosted a program on Transforming the Marine Transportation System: A Vision for Research and Development, at the Beckman Center. The Marine Board held its fall meeting in New Orleans, Louisiana, in November, exploring the Deepwater Horizon explosion and the Gulf of Mexico oil spill, along with the response and the recovery.

PUBLIC TRANSPORTATION

Committees in the Public Transportation Group conducted a major conference, held five mid-year meetings, and published several research



The Marine Board conference, "Transforming the Marine Transportation System: A Vision for Research and Development" featured panel discussions and a boat tour.



Attendees tour bus displays from across the country at the 2010 American Public Transportation Association Bus Transportation Conference in Cleveland, Ohio. (Photo: Sam Adamo)

documents. The Bus Transit Systems committee held a midyear meeting at the American Public Transportation Association (APTA) Bus Transportation Conference. The Commuter Rail Transportation Committee and the Joint Subcommittee on Self-Powered Units met in conjunction with the APTA Rail Conference in Vancouver, British Columbia. The TRB Rural Public and Intercity Bus Transportation Committee met during the Rural Transportation Conference. The transit committees published four TRR volumes and an e-circular of papers from the April 2009 light rail transit conference.

The Rural Public and Intercity Bus Transportation Committee conducted the 19th National

The Central Phoenix–East Valley light rail starter line is studied in Transportation Research Circular E-C145, *Joint International Light Rail Conference: Growth and Renewal*.



Rural Public and Intercity Bus Transportation Conference in Burlington, Vermont, October 24–27, 2010. Conference cosponsors included the Federal Transit Administration, the Vermont Agency of Transportation, and the University of Vermont Transportation Research Center. Cooperating organizations were APTA, the American Bus Association, AASHTO, the Community Transit Association, and the Rural Transit Assistance Program.

Transportation Research Circular E-C145, *Joint International Light Rail Conference: Growth and Renewal*, was published in August.¹³ The e-circular includes 24 peer-reviewed research papers presented at the April 2009 conference and provides up-to-date information on planning, design, construction, maintenance, and operations for light rail systems.

RAIL

In April, TRB cosponsored the 2010 Joint Rail Conference at the University of Illinois at Urbana–Champaign with the American Society of Civil Engineers, the American Society of Mechanical Engineers, the Institute of Electrical and Electronic Engineers, and the American Railway Engineering and Maintenance-of-Way Association. With a theme of High-Speed and Intercity Passenger Rail, the conference drew more than 450 rail transportation professionals, academics, and students, including participants from China, Canada, Spain, Taiwan, South Korea, and other nations. Representatives from TRB’s rail committees organized several of the program tracks and sessions, reviewed and wrote papers, and made presentations.

Rail-related Annual Meeting highlights included industry and government speakers in sessions on Freight Rail Sustainability and on New Passenger Rail Development. A workshop on Shared-Use Rail Corridors assembled a critical convergence of private- and public-sector perspectives on rail network capacity issues.

The committee on Intercity Passenger Rail published an issue of the online newsletter, *Intercity Rail Passenger Systems Update*, in November.

Rail committees held midyear meetings in conjunction with the Annual Research Review

¹³ <http://onlinepubs.trb.org/onlinepubs/circulars/ec145.pdf>.

of the Association of American Railroads and the Transportation Technology Center, Inc., in Pueblo, Colorado, in March; the Joint Rail Conference in April; and APTA events in April and June. The Railroad Operational Safety Committee met at Woods Hole, Massachusetts, in June to develop a strategic plan. In July, the Local and Regional Rail Freight Transport Committee met in cooperation with North Carolina DOT and concluded with a tour of the Lancaster & Chester Railroad in South Carolina.



Locomotive 3821 in the Lancaster & Chester Railway Company workshop in South Carolina. The Rail and Freight Transport Committee toured the railway's facilities this year. (Photo: Bob Willetts)



A spotlight session on “New Departures in U.S. Passenger Rail Development” drew an overflow crowd at the Annual Meeting.

STAFF NEWS

Senior Program Officer—Soils, Geology, and Foundations, **G. P. (Jay) Jayaprakash**, received a National Academies Distinguished Service Award.

Jennifer A. Rosales joined the staff as Senior Program Officer—Public Transportation Engineer, succeeding **Peter Shaw**, who retired in July.

Ann R. Purdue replaced **Elaine King** as Senior Program Officer—Rail and Freight. King retired in November.

Jaclyn Hubersberger joined the staff as a Meeting Assistant.

Major Awards Presented in 2010



■ **Michael S. Townes** (above), former President and CEO, Hampton Roads Transit, received the Sharon D. Banks Award for Innovative Leadership in Transportation. This biennial award recognizes outstanding leadership in people-oriented transportation initiatives, sustained over an extended period of time. Townes was cited for his customer- and service-oriented approach to addressing the mobility needs of the community, his contributions to the development of future transit professionals, and his persistent efforts to promote diversity and minority advancement. Townes, who has had a 30-year career managing public transportation systems, was the 2004 TRB Executive Committee Chair and has served as chair and member of many TRB committees and panels. He is currently National Transit Services Leader for Wilbur Smith Associates.

■ The W. N. Carey, Jr., Distinguished Service Award was presented to **David L. Huft** (below), Research Program Manager and Intelligent Transportation Systems Coordinator, South Dakota Department of Transportation (DOT). For more than two decades, Huft has made key contributions to TRB's strong partnership with states, both in his roles as South Dakota's state representative to TRB and in his leadership positions as vice chair of the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Research and the AASHTO Research Advisory Committee. Huft chaired TRB's Highway Traffic Monitoring Committee and has served on many other standing committees and on National Cooperative Highway Research Program (NCHRP) project panels.



■ **Kumares C. Sinha** (above, left, with TRB Executive Committee Chair Michael R. Morris), Edgar B. and Hedwig M. Olson Distinguished Professor of Civil Engineering, Purdue University, was honored with the Roy W. Crum Distinguished Service Award. Sinha has headed a vibrant civil engineering education and research program at Purdue and is director of Purdue's Joint Transportation Research Program with Indiana DOT. His research contributions in highway infrastructure performance, rehabilitation, finance, and safety have influenced infrastructure management systems and practices worldwide. For TRB, Sinha has served on many standing committees and NCHRP project panels, served on the Technical Activities Council, and chaired the International Activities Committee. He is an emeritus member of two TRB standing committees and a member of the National Academy of Engineering.

Poverty, and Sustainability: History and Future" to a capacity audience at the TRB Annual Meeting, highlighting the equity implications of sustainability issues in transportation. The lectureship recognizes career contributions and achievements in areas covered by TRB's Technical Activities Division. Wachs previously served as Director of the Institute of Transportation Studies at the University of California, Berkeley. Active in TRB for more than 35 years, he was chair of the TRB Executive Committee in 2000 and the 2002 recipient of the W. N. Carey, Jr., Distinguished Service Award.



■ **Martin Wachs** (right), Director of Transportation, Space, and Technology, RAND Corporation, was awarded the 2010 Thomas B. Deen Distinguished Lectureship. He presented a lecture on "Transportation Policy,

Studies and Special Programs



THE STUDIES AND SPECIAL PROGRAMS DIVISION

conducts policy studies at the request of the U.S. Congress, the executive branch agencies, states, and other sponsors; develops and operates bibliographic databases of ongoing and completed research and provides library reference services; produces syntheses of current practices in highway, transit, airport operations, and commercial truck and bus safety; and manages Innovations Deserving Exploratory Analysis (IDEA) programs in highway, transit, rail and truck safety, and high-speed rail applications.

POLICY STUDIES

With the guidance of committees drawn from the nation's leading experts, the Policy Studies group produces reports examining complex and controversial transportation issues. Studies cover all modes of transportation and a variety of safety, economic, environmental, and research policy issues. The study committees, which are balanced in terms of expertise and perspective, are appointed by TRB's parent organization, the National Research Council (NRC). The U.S. Congress and the executive branch have adopted many recommendations from TRB policy reports, attesting to the substantive value of the findings.

The TRB Executive Committee's Subcommittee on Planning and Policy Review provides oversight for TRB's policy work, under the leadership of former Executive Committee Chair Adib K. Kanafani, University of California, Berkeley. Since 1998, all completed policy study reports are posted on the TRB website.¹ *Informing Transportation Policy Choices*, a web document that provides an overview of TRB policy studies, is also posted on the Policy Studies page of the website.²

As 2010 was drawing to a close, the Policy Studies group was completing several signifi-



Subcommittee on Planning and Policy Review Chair Adib K. Kanafani (left); Malcolm MacKinnon III, MacKinnon-Searle Consortium LLC; TRB Executive Director Robert E. Skinner, Jr.; and Studies and Special Programs Director Stephen Godwin meet May 3 at the National Academies' Keck Center in Washington, D.C.

cant projects, carrying out high-profile studies begun in mid-2010, pursuing other important topics, and continuing to provide peer reviews of major federal research programs and projects.

Executive Committee Initiatives

In 2009 the Executive Committee updated *Critical Issues in Transportation*, which informs TRB's strategic plan and—by identifying knowledge gaps—influences the Executive Committee's choices of projects to initiate.³ An Executive Committee-initiated study completed in late 2010, Special Report 300, *Achieving Traffic Safety Goals in the United States: Lessons from Other Nations*, analyzes the reasons that many other industrialized nations have better traffic safety records than the United States and develops recommendations to strengthen U.S. traffic safety laws and programs.⁴ Clinton V. Oster, Jr., Indiana University, chaired the committee; the GM Foundation and TRB funded the study.

Other projects initiated by the Executive



Adib K. Kanafani
Chair
Subcommittee on
Planning and Policy
Review



Stephen R. Godwin
Director
Studies and Special
Programs

¹ www.trb.org/Publications/Public/PubsPolicyStudiesSpecialReports.aspx.

² www.trb.org/Publications/Public/PubsPolicyStudiesInformingTransportationPolicyChoi.aspx.

³ www.trb.org/Publications/PubsCriticalIssuesinTransportation.aspx.

⁴ <http://onlinepubs.trb.org/Onlinepubs/sr/sr300.pdf>.

Committee were nearing completion as the year ended and are expected for release in early 2011:

- **Equity Implications of Evolving Transportation Finance Mechanisms** addresses concerns about the fairness—especially for lower-income and disadvantaged groups—of transportation pricing and other measures to supplement motor fuel taxes and other user fees. Joseph L. Schofer, Northwestern University, chairs the committee, which is funded by TRB.
- **Potential Energy Savings and Greenhouse Gas Reductions from Transportation** is reviewing and identifying effective policies for reducing transportation energy consumption and greenhouse gas emissions. The committee is chaired by Emil H. Frankel, Bipartisan Policy Center, and funded by TRB.
- **Strategies for Improved Passenger and Freight Travel Data** is identifying critical data gaps in information needed by policy makers and will recommend an achievable and sustainable program for travel data collection. The committee is chaired by Joseph L. Schofer, Northwestern University. The Federal Highway Administration (FHWA), the Research and Innovative Technology Administration (RITA), the National Cooperative Highway Research Program (NCHRP), and TRB are funding the study.

These study reports will be useful to Congress in reauthorizing transportation programs and in revising national environmental and energy legislation.



The Committee on Strategies for Improved Passenger and Freight Travel Data, shown here in an August meeting, examines travel data to provide guidance for a system of estimating personal and freight travel to support transportation planning and decision making.



Richard Boyd, National Highway Traffic Safety Administration, concludes a presentation to members of the Electronic Vehicle Controls and Unintended Acceleration Committee, October 12 at the Keck Center.

High-Profile Studies

Allegations that Toyota automobiles had accelerated uncontrollably raised concerns nationwide about the unintended acceleration of motor vehicles. Secretary of Transportation Ray LaHood therefore initiated two major efforts through the National Highway Traffic Safety Administration (NHTSA). NHTSA convened NASA experts in electronic control systems to study Toyota control systems and identify possible causes of unintended acceleration. NHTSA also asked NRC to convene an independent committee of experts to review efforts by the agency and by the automobile industry to address the problem of unintended acceleration. The committee also will advise NHTSA on the resources needed to regulate motor vehicle safety as electronic control systems gain prevalence. TRB's Policy Studies group is leading this project in collaboration with two NRC units—the Computer Science and Telecommunications Board and the Board on Energy and Environmental Systems. Louis J. Lanzerotti (NAE), New Jersey Institute of Technology, chairs the committee. The final report is scheduled for release in mid-2011.

After the blowout and explosion on the Deepwater Horizon offshore oil platform in the Gulf of Mexico, the Department of the Interior contacted the National Academy of Engineering (NAE) and the NRC to conduct an independent examination of the causes. TRB is managing the NAE-NRC study through the Marine Board, which has served as the locus of the NRC's work on offshore oil production and spill response.

The NRC Board on Environmental Studies and Toxicology is assisting with the project. Donald C. Winter (NAE), Secretary of the Navy (ret.), is chairing the study committee, which released an interim report in November 2010; the final report is slated for mid-2011.

Other Major Studies

The Policy Studies group's portfolio for 2010 includes several other important projects:

- Congress has asked for an independent assessment of the transportation impacts of the Base Realignment and Closing (BRAC) Commission recommendations adopted in 2005. Joseph M. Sussman, Massachusetts Institute of Technology (MIT), chairs the study committee. The Defense Department is funding the project, which will be completed in early 2011.
- The economic benefits of funding transportation projects to stimulate recovery from economic recessions has become a topic of national debates; NCHRP and TRB are funding an analysis of the issue. Therese J. McGuire, Northwestern University, chairs the study committee.
- Building on an international scan of research programs in 2008, NCHRP is funding a follow-up study to determine if processes used abroad for strategic multimodal research planning and technology transfer could be applied in the United States. Sue McNeil, University of



George M. Hagerman, Jr. (right), Virginia Tech, participates in discussion at a meeting of the Committee on Offshore Wind Energy Turbine Structural and Operating Safety, August 11 at the Keck Center. The committee is providing guidance to the Bureau of Ocean Energy Management, Regulation, and Enforcement on offshore wind turbine regulation.

Delaware, chairs the study committee.

- As a follow-up to a 1990 Marine Board study of the offshore platform inspection programs under the former Minerals Management Service, a new study for the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEM) is reviewing the current inspection regime and making recommendations for improvement. Kenneth E. Arnold (NAE), WorleyParsons, is chairing the study committee, which will complete its work in 2011.
- BOEM also has requested Marine Board assistance in developing regulations for the safe operation of offshore wind turbines. Keith Michel, Herbert Engineering, chairs the study, projected for completion in early 2011.

Peer Reviews

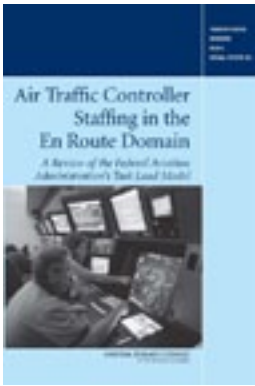
Independent peer reviews on the conduct of research programs and major research projects are a mainstay of the policy work of TRB. The committees for these projects typically report to the sponsor through letter reports or other brief documents.⁵

- The Long-Term Pavement Performance (LTPP) program, the largest and most sophisticated experiment on pavement perfor-



Randall Yim (center) discusses transportation considerations in the Base Realignment and Closure (BRAC) process, which will move 14,000–19,000 Department of Defense jobs to southern Fairfax County, Virginia, by late 2011. The Committee for a Study on Federal Funding of Transportation Improvements in BRAC Cases met April 8 at the Keck Center.

⁵ www.trb.org/Publications/Public/PubsPolicyStudiesLetterReports.aspx.



Special Report 301, *Air Traffic Controller Staffing in the En Route Domain*, is the result of a study requested by the Federal Aviation Administration.

mance, has reached its 20th year. In addition to providing regular advice on the program,⁶ the TRB committee hosted a forum in 2010 to develop research proposals for the analysis of LTPP data. William H. Temple, a consultant, chairs the committee; the committee's work is sponsored by FHWA.

- The Office of Naval Research has requested a Marine Board evaluation of a special initiative for basic research in naval engineering. Martha R. Grabowski, Lemoyne College and Rensselaer Polytechnic Institute, chairs the study committee, which will complete its report in early 2011.
- In early 2010, the Pavement Technology Review and Evaluation Committee completed its third and final review of FHWA's pavement research and technology transfer initiatives.⁷ The committee's final report confirms the direction taken by FHWA but encourages stronger stakeholder involvement in the development of priorities. Carlos M. Braceras, Utah Department of Transportation, chaired the committee.
- The Research and Technology Coordinating Committee (RTCC) advises FHWA on research and development programs. The committee's 2010 letter report examines strategies for developing a nationally coordinated program of highway research and for encouraging adoption of innovative proprietary products.⁸ E. Dean Carlson (NAE), Carlson and Associates, chaired the committee through September 2010; Michael D. Meyer, Georgia Institute of Technology, is the new chair. FHWA funds the work of RTCC.
- The Federal Railroad Administration (FRA) supports an independent peer review by TRB of FRA's research and development program. The committee's 2010 letter report urges FRA to emphasize research on enabling technologies for intercity passenger rail.⁹ Robert E. Gallamore, Gallamore Group LLC, chairs the committee.
- The Federal Aviation Administration (FAA)

⁶ http://onlinepubs.trb.org/onlinepubs/sp/ltppletter_26.pdf.

⁷ http://onlinepubs.trb.org/onlinepubs/reports/PavTecComm_jan_2010.pdf.

⁸ http://onlinepubs.trb.org/onlinepubs/reports/rtcc_october_2010.pdf.

⁹ http://onlinepubs.trb.org/onlinepubs/reports/frar&d_Feb_2010.pdf.

asked for a one-time review of models developed for en route air traffic control complexity and workload. The committee's assessment, published as Special Report 301, *Air Traffic Controller Staffing in the En Route Domain: A Review of the Federal Aviation Administration's Task Load Model*, supported the general direction pursued in the model and encouraged FAA to base its workload measures on observations of controller behavior, not on values derived from other sources.¹⁰ John R. Hansman, Jr., MIT, chaired the study committee.

- TRB assisted the NRC Aeronautics and Space Engineering Board in a congressionally requested review of NASA's aviation safety-related research. The committee recommended that NASA should establish a more systematic and data-driven process for identifying aviation safety issues that require research and for determining which agency program is best suited for each project. H. Norman Abramson (NAE), Southwest Research Institute (ret.), chaired the committee.
- FHWA and the Federal Transit Administration (FTA) have supported review of a series of congressionally mandated reports on implementing changes to the Section 4(f) process in accordance with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU allowed the Secretary of Transportation to forgo regulatory procedures for analyzing projects involving 4(f) resources—such as publicly owned parks, wildlife refuges, and historic properties—when the impacts are minor, or de minimis. The work of the committee, chaired by Michael D. Meyer, Georgia Institute of Technology, was in abeyance during 2010 while FHWA and FTA prepared the final report for the committee's review.
- The Transportation Research Analysis Committee (TRAC) advises FTA on its research and development program. The committee's 2010 letter report prioritizes safety research topics.¹¹ J. Barry Barker, Transit Authority of River City, Louisville, Kentucky, chairs TRAC, and FTA supports the committee's work.

¹⁰ <http://onlinepubs.trb.org/Onlinepubs/sr/sr301.pdf>.

¹¹ http://onlinepubs.trb.org/onlinepubs/reports/trac_October_2010.pdf.

INFORMATION SERVICES

Transportation Research Information Services
The Transportation Research Information Services (TRIS) database is the world's most comprehensive online bibliographic database of transportation research. TRIS contains more than 760,000 records of published and ongoing research in all modes and disciplines of transportation, with approximately 20,000 new records added in 2010. TRIS includes transportation theses and dissertations collected from graduate schools by the transportation libraries at Northwestern University and the University of California, Berkeley.

TRB produces and maintains TRIS, and most of the database is freely available on the Internet. In January 2010 TRIS moved from the website of the Bureau of Transportation Statistics' National Transportation Library to TRB's website.¹² TRIS is also available on the Internet for a fee through Dialog, Inc., and as part of the TRANSPORT database. A cooperative effort of TRB and International Transport Research Documentation (ITRD), part of the Organisation for Economic Co-operation and Development (OECD), TRANSPORT is produced and distributed by Ovid.

Several enhancements to TRIS have improved the accessing and sharing of indexed documents. TRIS provides simple and advanced searching and allows users to print, export, and e-mail results in a variety of formats. Users can subscribe to an RSS feed, can bookmark search results, and can share results via Twitter, Facebook, and other social media. More than 52,000 records have direct links to full-text documents. Other links allow TRIS users to locate libraries that own an item of interest.

TRISWorld, a product for TRB sponsors, supplements the TRIS database with more than 115,000 English language records from ITRD.¹³ Among the many features requested by TRB sponsors, TRISWorld provides simple and advanced searching and allows users to print, export, and e-mail results in a variety of formats.

During 2010, the Information Services group developed a strategic plan to examine options for TRIS and the Research in Progress (RiP)

database in the changing information environment. A draft of the strategic plan has been revised to inform TRB management decisions.

Publications Index

The TRB Publications Index, a searchable database on TRB's website, includes all TRB, Highway Research Board (HRB), Strategic Highway Research Program (SHRP), and Marine Board publications since 1923.¹⁴ The TRB Publications Index offers simple and advanced searching and allows users to view, download, and e-mail the results in a variety of formats. The index provides links to available full-text documents and to ordering information.

Research Needs Statements Database

The Research Needs Statements (RNS) Database is a dynamic collection developed by TRB technical standing committees and reflects highest-priority topics.¹⁵ The RNS Database serves as a tool for reviewing transportation research needs, setting research priorities, and identifying gaps in current research. More than 950 statements of research needs are posted.

Research in Progress Database

Research in Progress (RiP) is a searchable database of more than 12,800 records of active or recently completed research projects.¹⁶ The RiP Database serves University Transportation Centers (UTCs) as a clearinghouse for research,



The strategic plan for the Research in Progress database is undergoing revision.

¹² <http://tris.trb.org/>.

¹³ <http://trismworld.trb.org/>.

¹⁴ www.trb.org/InformationServices/Public/TRBPublications/Index.aspx.

¹⁵ <http://rns.trb.org>.

¹⁶ <http://rip.trb.org/>.

fulfilling a requirement in SAFETEA-LU. RITA funded the software enhancements to facilitate this application.

Users at state DOTs and UTCs can add, modify, or delete records of research through a web-based data entry system. A current awareness service notifies users automatically about new and updated project records in specified subject areas. The RiP Database contains international project records from ITRD's Transport Research in Progress, or TRIP, database. The RiP website received more than 110,000 visits from users worldwide in 2010.

TRB Library

The TRB Library is a small, specialized library that provides reference and information services to TRB sponsors, committee members, and staff. Many state DOTs regularly request the library's services. The library subscribes to more than 435 serial titles and contains a complete collection of TRB, HRB, SHRP, and Marine Board publications.

The TRB Library is included in the Transportation Library Catalog through the National Transportation Library and the Online Computer Library Center's WorldCat. The TRB Library also participates in the Eastern Transportation Knowledge Network.

SYNTHESIS PROGRAMS

Cooperative Research Programs Syntheses

Under the sponsorship of the Cooperative Research Programs administered by TRB, the Synthesis Studies unit prepares reports on cur-



With a specialized collection of transportation research publications, TRB's library staff can provide assistance to TRB staff, sponsors, and committee members seeking reference material.



The Synthesis program released many publications in 2010, on topics that ranged from airport revenue to travel forecasting.

rent practice and knowledge for a range of key highway, transit, and airport topics. Practitioners and researchers make extensive use of the reports.

A highway panel, a transit panel, and an airport panel of the Cooperative Research Programs select the study topics each year. In 2010, the panels selected 12 new highway, 7 new transit, and 9 new airport studies. A consultant experienced in the topic area researches and writes each Synthesis report, with guidance from an expert panel.

A list of reports published in the past 12 months appears on pages 66–68. Approximately 3,500 copies of each report are published in hard copy, and 3,000 of these are distributed to state DOTs, transit agencies, airport operators, and TRB topic-area subscribers. The reports also are posted on the TRB website.¹⁷

TRB maintains an inventory of hard-copy Synthesis reports for sale.¹⁸ Following are summaries of illustrative airport, highway, and transit reports published in 2010.

¹⁷ Airport syntheses: www.trb.org/Publications/Public/PubsACRPSynthesisReports.aspx; highway syntheses: www.trb.org/Publications/Public/PubsNCHRPSynthesisReports.aspx; transit syntheses: www.trb.org/Publications/Public/PubsTCRPSynthesisReports.aspx.

¹⁸ Synthesis reports may be ordered from the TRB Online Bookstore, www.trb.org/Finance/Public/Bookstore.aspx, or by calling 202-334-3213.

Airport Cooperative Research Program Synthesis Reports

ACRP Synthesis 19, *Airport Revenue Diversification*, explores the different sources of revenue for airports, separating core aeronautical revenue from ancillary revenues. The report examines ways that airports have diversified their activities and describes the challenges that arise when a nonaeronautical activity is proposed on land that is subject to FAA grants obligations and assurances.

ACRP Synthesis 20, *Airport Terminal Facility Activation Techniques*, presents lessons learned from terminal activations at 13 domestic and international airport facilities. The report identifies activation practices that avoid negative publicity and that emphasize coordination, systems testing, and communication with employees in preparation for the ribbon cutting.

National Cooperative Highway Research Program Synthesis Reports

NCHRP Synthesis 406, *Advanced Practices in Travel Forecasting*, explores advanced travel forecasting models used by metropolitan planning organizations (MPOs) and by states to provide reliable information for multimodal investment analyses, operational analyses, environmental assessments, estimates of GHG emissions, evaluations of policy alternatives, toll-facility revenue forecasts, freight forecasts, and federal and state regulatory requirements. The report presents current practice with activity-based, dynamic network, land use, freight, and statewide travel models.

NCHRP Synthesis 408, *Pavement Marking Warranty Specifications*, reviews pavement marking warranties and specifications employed by U.S. and Canadian transportation agencies; European experience also is presented. Markings are important for traffic mobility and safety, and the demand for improved performance and greater cost-effectiveness is generating interest in marking warranties.

MPOs, state DOTs, and port authorities contributed to the information presented in NCHRP Synthesis 410, *Freight Transportation Surveys*, which outlines procedures for collecting data on freight movements and for using the data in practice. The report identifies and discusses 12 types of surveys.

NCHRP Synthesis 411, *Microsurfacing*,

describes the use of highway microsurfacing treatments by U.S. and Canadian transportation agencies. A polymer-modified, cold-mix paving system, microsurfacing can remedy a range of problems on highways. The synthesis identifies and reviews practices that agencies have found effective in microsurfacing project selection, design, contracting, equipment, construction, and performance measures.

Transit Cooperative Research Program Synthesis Reports

Transit Cooperative Research Program (TCRP) Synthesis 84, *Current Practices in Greenhouse Gas Emissions Savings from Transit*, explores the role of transit agencies in reducing GHG emissions and examines the current practices of sample agencies. The synthesis offers insights into what transit agencies are doing and can do to mitigate transportation's contributions to climate change.

TCRP Synthesis 83, *Bus and Rail Transit Preferential Treatments in Mixed Traffic*, examines the process for determining which preferential treatment would be most applicable in a particular location.



A bidirectional bus-only lane on a bus rapid transit line in Eugene-Springfield, Oregon, from TCRP Synthesis 83, *Bus and Rail Transit Preferential Treatments in Mixed Traffic*.



CTBSSP Synthesis 17 offers practical insights into *Special Safety Concerns of the School Bus Industry*. (Photo: AAA Foundation for Traffic Safety)

Commercial Truck and Bus Safety Synthesis Program

The Commercial Truck and Bus Safety Synthesis Program (CTBSSP) is a cooperative research program sponsored by the Federal Motor Carrier Safety Administration (FMCSA) and administered by TRB. The program was authorized in 2001 to support FMCSA's safety research programs. In 2007, FMCSA reauthorized CTBSSP through a cooperative agreement, providing \$200,000 annually through 2012. The funding supports two new studies each year.

The studies summarize current practice in a specific technical area in commercial truck and bus safety, usually through a literature search and a survey of organizations such as state DOTs, enforcement agencies, commercial truck and bus companies, or other appropriate groups. The program is modeled on the synthesis programs of NCHRP and TCRP. The primary users of the synthesis final reports are practitioners who are facing the issues or problems addressed, in a variety of settings.

A program oversight committee monitors CTBSSP and the program procedures; selects topics annually, after periodic, industrywide solicitations; refines scopes; selects researchers to prepare each synthesis; reviews products; and makes publication recommendations. For each new topic, an expert panel is appointed to review the scope and the consultant reports. The CTBSSP oversight panel has authorized 25 topics. Two CTBSSP reports, listed on page

68, were published in 2010 and are available on the TRB website.¹⁹ Two new topics started up in 2010.

INNOVATIONS DESERVING EXPLORATORY ANALYSIS PROGRAMS

IDEA programs fund early-stage investigations of potential breakthroughs in transportation technology. Through small projects, researchers investigate the feasibility of innovative concepts that could advance transportation practice. IDEA programs sponsor high-risk research that is independent of the immediate mission concerns of public agencies and of the short-term financial imperatives of the private sector.

Four IDEA programs were operating in 2010. The state DOTs collectively fund highway-related research through the NCHRP IDEA program. Research on innovations applicable to transit practice is carried out under the Transit IDEA program, funded by FTA through TCRP. FRA and FMCSA cosponsor the Safety IDEA program, which supports projects to improve the safety of truck, intercity bus, and rail operations. The Reliability IDEA program, funded by SHRP 2, supports projects to increase the consistency and dependability of travel times, improve the prediction of travel time, and provide information to travelers and other highway system users about dealing with unexpected delays.

In 2009, the High-Speed Rail (HSR) IDEA program, sponsored by FRA to advance the safety and performance of the U.S. rail system,



Bruce Williams, PEMCCO, Inc., presents results of Transit IDEA Project 58—a Google data tool for small transit agencies—to members of a Transit IDEA program panel.

¹⁹ www.trb.org/Publications/Public/PubsCTBSSPSynthesis-Reports.aspx.



Xuecheng Bian, Zhejiang University; Bin Zhang, China University of Geoscience; and Xiong “Bill” Yu, Case Western Reserve University, explore the IDEA display at the Annual Meeting.

ceased operation after the U.S. Congress discontinued funding for the national HSR program. A renewed national high-speed rail program has been proposed, however, offering an opportunity to renew HSR IDEA.

Each IDEA program follows a similar administrative model, adapted for sponsorship arrangements and target audiences. Each program operates through a committee or panel of volunteer transportation experts who solicit, review, and select proposals that merit research contracts. Because IDEA projects are high-risk investigations of unproven concepts, funds awarded for any one project are usually less than \$100,000. Frequently, however, IDEA funds are augmented through cost-share arrangements, nearly doubling the amount of research that can be supported through the IDEA programs.

At the 2010 TRB Annual Meeting, the transit, highway, safety, and HSR IDEA programs conducted a joint poster session, TRB’s IDEA Programs: Sponsoring Innovation in Transportation. The session highlighted 20 of the most promising current projects and received a constant stream of interested visitors, who were able to interact directly with the inventors.

An annual report that includes summaries of completed and current projects is published for each of the IDEA programs and is distributed at the TRB Annual Meeting. These summaries also are available on the IDEA page of the TRB website, along with the IDEA Program Announcement, which contains forms and guidelines for submitting proposals.²⁰ A less formal publication, *Ignition*, features interviews with IDEA investigators and transportation leaders, plus articles that highlight promising projects.²¹ Issues of *Ignition* are archived on the IDEA website.

Contractor final reports for completed IDEA projects are publicly available through the TRB website.²²

²⁰ www.trb.org/IDEAProgram/Public/IDEAProgram.aspx.

²¹ www.trb.org/Publications/Public/PubsIDEAIgnitionMagazines.aspx.

²² www.trb.org/IDEAProgram/Public/IDEAProgram.aspx.



Ignition presents news about IDEA programs.

STAFF NEWS

Don C. Tippman was promoted to Senior Editor for Synthesis Studies.

Lisa L. Loyo is the new Manager for Information Services, succeeding **Barbara Post**, who retired in August but continues to consult with the Information Services group part-time.

Mark S. Hutchins and **Claudia Sauls** joined the Studies and Special Programs Division as Senior Program Assistants in July and August, respectively.

Gail R. Staba returned to Synthesis Studies as a Senior Program Officer after serving as an off-site consultant for two years.

Jo Allen Gause joined Synthesis Studies as a Senior Program Officer; her time is divided between NCHRP Syntheses and SHRP 2.

Cooperative Research Programs

TRB ADMINISTERS SIX COOPERATIVE research programs:

- The National Cooperative Highway Research Program (NCHRP), sponsored by the American Association of State Highway and Transportation Officials (AASHTO) in cooperation with the Federal Highway Administration (FHWA);
- The Transit Cooperative Research Program (TCRP), sponsored by the Federal Transit Administration (FTA);
- The Airport Cooperative Research Program (ACRP), sponsored by the Federal Aviation Administration (FAA);
- The National Cooperative Freight Research Program (NCFRP), sponsored by the Research and Innovative Technology Administration (RITA);
- The Hazardous Materials Cooperative Research Program (HMCRP), sponsored by the Pipeline and Hazardous Materials Safety Administration (PHMSA); and
- The National Cooperative Rail Research Program (NCRRP), initiated in late 2010 and sponsored by the Federal Railroad Administration (FRA).

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP is an applied research program that responds to the needs of state highway and transportation departments by solving press-

ing operational problems. Although NCHRP accounts for a small percentage of the nation's annual investment in highway research, its close association with AASHTO and its position within the National Academies have enabled the program to carry out important research resulting in practical products.

Since 1962, NCHRP has administered 2,668 research projects. More than 1,075 publications have appeared in the *NCHRP Report* and *NCHRP Synthesis of Highway Practice* series, in addition to 347 volumes of *Research Results Digest* and 53 volumes of *Legal Research Digest*, as well as 200 other documents published electronically.

NCHRP projects for federal fiscal year (FY) 2010 were placed under contract as funds became available. Proposal solicitations for 40 research projects in federal FY 2011 (October 1, 2010, through September 30, 2011) were released starting in August 2010; depending on the availability of the funding authorized in federal legislation, contracts should be executed in the first three months of 2011.

Under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and various resolutions continuing the legislation, Federal-Aid Highway State Planning and Research Funds have been increasing slightly, affecting NCHRP funding proportionally. Funding available for NCHRP in FY 2005 totaled \$33 million; in FY 2006, \$32.7 million; in FY 2007, \$36.5 million; in FY 2008,



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Christopher W. Jenks
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Cooperative
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Crawford F. Jencks
Deputy Director
Cooperative
Research Programs

\$36.7 million; in FY 2009, \$37.5 million; in FY 2010, \$40.3 million; and in FY 2011, \$40.3 million again is anticipated.

AASHTO considered 116 new problem statements submitted by states, AASHTO committees, and FHWA for the FY 2011 program. The quantity and quality of the requests ensure optimal use of the authorized funds. In September, AASHTO began to formulate the FY 2012 program and will determine the program content in March 2011. NCHRP reports published during the past 12 months are listed on pages 66–67. A total of 234 projects were under contract as of September 1, 2010, with 112 additional projects under development or awaiting contract.

Each NCHRP study follows an approved research plan under the guidance of a panel of technical specialists and experienced practitioners. The panel defines the scope of work, selects the contractor under a competitive proposal process, and monitors the research from beginning to end. The panel's participation ensures the credibility of the research findings, facilitating adoption by AASHTO, state departments of transportation (DOTs), and other organizations.

NCHRP panels convened for more than 114 project meetings in 2010; panel members contribute many days of volunteer time to attend meetings and review materials. NCHRP benefits from more than 1,880 volunteers who expend time and energy primarily for the challenges and the satisfaction of making significant contributions to the field.

Many NCHRP research projects have had a direct impact on practice through products such as recommended specifications, manuals, and guidelines. NCHRP emphasizes working with practitioners who will use the research results. Impacts on Practice, a new series of web postings, highlights successful applications of NCHRP research results and encourages use by others.¹

The program's close relationship with AASHTO committees is important in achieving the goal of improving practice—approximately 72 percent of the research funds for new projects in FY 2011 are allocated to 27 projects requested by 14 AASHTO committees. Experience has shown that AASHTO committees are more likely to adopt NCHRP research results



Members of the panel for National Cooperative Highway Research Program (NCHRP) Project 25-35, “Guidebook for Designing and Managing Rights-of-Way for Carbon Sequestration and Biomass Generation,” begin work at their first panel meeting, September 30 at the National Academies’ Keck Center in Washington, D.C.

when (a) the committee identifies and requests the research, (b) committee members serve on the NCHRP project panel guiding the research, and (c) findings and recommendations are presented to the committee at the conclusion of the study. NCHRP projects frequently incorporate these three steps. The NCHRP web page includes a tally of products of direct interest to various AASHTO committees.²

Many NCHRP projects develop and recommend revisions to AASHTO publications at the request of committees. When AASHTO adopts an NCHRP project's recommendations as a guide or specification, practitioners who may not be able to stay abreast of research results benefit from having the best information avail-



Successful applications of NCHRP research results are featured on TRB's new Impacts on Practice web page.

¹ www.trb.org/NCHRP/NCHRPImpactsonPractice.aspx.

² www.trb.org/NCHRP/NCHRP.aspx.



Karen K. Dixon, Oregon State University, leads a workshop in the use of the American Association of State Highway and Transportation Officials' new *Highway Safety Manual* at the TRB 2010 Annual Meeting in January.

able through the AASHTO documents. General information on all projects is available in *NCHRP Summary of Progress, December 31, 2010* and on the web.²

NCHRP projects completed during the past year that were of particular importance to AASHTO are summarized in the following sections. All reports are available on the web.³

Administration and Management

NCHRP Report 643, *Implementing Transportation Knowledge Networks*, explores a business plan for the development of regional networks of transportation libraries and information resources in the United States. The business plan defines 10 key products and services for transportation practitioners and describes the role of national coordination.

NCHRP Report 671, *Review of Canadian Experience with the Regulation of Large Commercial Motor Vehicles*, summarizes the most current information on the changes in truck size and weight limits in Canada and evaluates the applicability of the measures in the United States.

NCHRP Legal Research Digest 51, *Major Legal Issues for Highway Public-Private Partnerships*, explores legal issues likely to arise from public-private partnerships in the U.S. highway sector.

NCHRP Legal Research Digest 52, *Record*

² www.trb.org/NCHRP/NCHRP.aspx.

³ www.trb.org/Publications/PubsNCHRPPublications.aspx.

Keeping Requirements for State Departments of Transportation, examines laws and regulations about keeping, releasing, and destroying records in transportation agencies.

Planning and Environment

NCHRP and NCFRP jointly released *NCHRP Report 649-NCFRP Report 3: Separation of Vehicles—CMV-Only Lanes*. The report examines issues and concepts for developing lanes exclusively for commercial motor vehicles (CMVs), to ease congestion and to reduce the number of traffic accidents on highways.

NCHRP Report 657, *Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors*, assists states in developing partnerships with private freight railroads to operate passenger services on shared-use rail corridors.

NCHRP Report 661, *A Guidebook for Corridor-Based Statewide Transportation Planning*, presents a template for corridor planning to help states understand the implications of transportation decisions on mobility, communities, economic development, and environmental stewardship.

NCHRP Report 664, *Measuring Transportation Network Performance*, serves as a reference for transportation agencies implementing network performance measures across modes and jurisdictions to improve system management, planning, and investment decisions.

NCHRP Report 677, *Development of Levels*



Amtrak's *Southwest Chief* shares the Burlington Northern Santa Fe Railway right-of-way with a freight train in rural Illinois. Shared-use freight corridors are the subject of NCHRP Report 657. (Photo courtesy of Amtrak)

of Service for the Interstate Highway System, assesses the state of practice in the service-level measurement of Interstate assets by transportation agencies.

Selected Studies in Transportation Law, Volume 3, Environmental Law and Transportation, includes updates on environmental case law affecting the planning, delivery, and maintenance of transportation facilities.

Project Development and Design

NCHRP Report 625, *Procedures Guide for Right-of-Way Cost Estimation and Cost Management*, presents approaches for estimating, tracking, and managing right-of-way costs throughout a project, from planning and programming to preliminary and final design.

NCHRP Report 642 explores guidelines for *Quantifying the Benefits of Context-Sensitive Solutions* for transportation projects. Another publication, NCHRP Report 644, offers *Guidelines for Conducting a Disparity and Availability Study for the Federal DBE Program* to ensure effective and legally defensible disparity and availability studies that meet the requirements of the Disadvantaged Business Enterprise (DBE) program for federally funded projects.

NCHRP Report 658, *Guidebook on Risk Analysis Tools and Management Practices to Control Transportation Project Costs*, offers specific, practical, and risk-related approaches to manage and control the costs of transportation projects. Examples and other guidance on best practices for *Accelerating Transportation Project and Program Delivery: Conception to Completion*, presented in NCHRP Report 662, emphasize measures to maintain quality.

NCHRP Legal Research Digest 53, *Liability Aspects of Bikeways*, examines the liability of public entities for bicycle accidents on bikeways, as well as on streets and highways. The report reviews the federal laws that encourage the designation and use of bikeways; the elements of a tort claim against a public entity for a bicycle accident; the applicable defenses; immunity under some state recreational use statutes; and laws and policies on accommodating bicycles on streets and highways and on designating bikeways.



A bicyclist navigates downtown Charlotte, North Carolina. Liability aspects of bikeways are investigated in NCHRP Legal Research Digest 53. (Photo: Laura Sandt)

Materials

NCHRP Report 626, *NDT Technology for Quality Assurance of HMA Pavement Construction*, explores nondestructive testing to assure the quality of hot-mix asphalt (HMA) pavement construction. NCHRP Report 639, *Adhesive Anchors in Concrete Under Sustained Loading Conditions*, presents a test method to determine the ability of an adhesive anchor to resist sustained tensile loads.

NCHRP Research Results Digest 347, *A National Database of Subgrade Soil-Water Characteristic Curves and Selected Soil Properties for*



A trailer-mounted falling weight deflectometer was one of the nondestructive testing (NDT) devices assessed in NCHRP Report 626, *NDT Technology for Quality Assurance of Hot-Mix Asphalt Pavement Construction*.



NCHRP Report 653 examines the effects of debris on bridge scour. At this bridge, a fully formed mass of debris creates significant scour potential.

Use with the Mechanistic–Empirical Pavement Design Guide, describes the national database of unbound material properties for agricultural and geotechnical engineering, developed by the U.S. Department of Agriculture’s Natural Resources Conservation Service. The data were downloaded, manipulated in tabular and spatial files, and organized into 814 searchable maps of the United States and Puerto Rico that can be used with the *Mechanistic–Empirical Pavement Design Guide*.

Bridges and Other Structures

NCHRP Report 645, *Blast-Resistant Highway Bridges: Design and Detailing Guidelines*, explores code-ready, general design guidance and a simplified design procedure for blast-resistant, reinforced concrete bridge columns. The report examines the results of experimental blast tests and analytical research to investigate the effectiveness of different design techniques.

NCHRP Report 653, *Effects of Debris on Bridge Pier Scour*, provides guidelines for esti-

imating the quantity of accumulated, flow event debris from the density and type of woody vegetation and upstream river bank conditions, along with analytical procedures to quantify the effects of debris-induced scour on bridge piers.

NCHRP Report 654, *Evaluation and Repair Procedures for Precast–Prestressed Concrete Girders with Longitudinal Cracking in the Web*, covers the acceptance, repair, or rejection of precast–prestressed concrete girders with longitudinal web cracking.

Construction and Maintenance

NCHRP Report 652 examines best practices for *Time-Related Incentive and Disincentive Provisions in Highway Construction Contracts* and their effect on staffing, productivity, project cost, quality, contract administration, and the contractor’s operations and innovations. The report includes a guide for crafting incentive and disincentive provisions.

NCHRP Report 656, *Criteria for Restoration of Longitudinal Barriers*, explores the levels at which the damage and deterioration of longitudinal barriers require repairs.

NCHRP Report 676 examines the reliability of *Intelligent Solid Compaction Systems* and recommends construction specifications for applications in soils and aggregate base materials.

Traffic Operations and Safety

NCHRP Report 641 offers *Guidance for the Design and Application of Shoulder and Centerline Rumble Strips* as a crash reduction measure, minimizing the adverse effects for motorcyclists, bicyclists, and nearby residents.

Roundabouts: An Informational Guide, Second Edition, NCHRP Report 672, presents the development and operation of roundabouts based on FHWA’s publication, *Roundabouts: An Informational Guide* (FHWA-RD-00-067).



Barrier crash performance was evaluated in NCHRP Report 656, *Criteria for Restoration of Longitudinal Barriers*.



NCHRP Report 672 presents a guide to roundabouts, drawing on an earlier Federal Highway Administration report. (Photo: Dan Burden)

NCHRP Report 659, *Guide for the Geometric Design of Driveways*, includes driveway-related terms and definitions, an examination of basic geometric controls, a summary of access spacing principles, and detailed discussions of geometric design elements.

NCHRP Report 600C is the most recent collection of chapters for *Human Factors Guidelines for Road Systems*, which provides human factors principles and findings for consideration by highway designers and traffic engineers. The report assists in the design and operation of highway facilities that accommodate roadway users' capabilities and limitations.

Continuing Projects

NCHRP supports several continuing projects:

- Project 20-5, Synthesis of Information Related to Highway Problems, produces state-of-the-practice reports (see Studies and Special Programs Division section, page 34).
- Project 20-6, Legal Problems Arising out of Highway Programs, conducts reviews of case law and publishes the results in the NCHRP Legal Research Digest series.
- Project 20-30, NCHRP IDEA (Innovations Deserving Exploratory Analysis), funds projects to explore innovative concepts and to initiate product development (see Studies and Special Programs Division section, page 36).
- Project 20-36, Highway Research and Technology—International Information Sharing, provides financial support for state DOT representatives to participate in foreign meetings and to host foreign experts in the United

States. The project also shares expenses with FHWA for international scanning tours.

- Project 20-68, U.S. Domestic Scan Program, was adopted after a successful pilot test. Three to four domestic scans are conducted annually.
- Project 20-83, Long-Range Strategic Issues Facing the Transportation Industry, comprises a series of projects to develop scenarios for 30 to 50 years into the future. Research will produce guidance for tracking the phenomena shaping these scenarios and for adjusting to the projected changes.
- NCHRP Projects 20-07 for Highways, 8-36 for Planning, 25-25 for the Environment, and 20-65 for Public Transportation directly support the work of several AASHTO standing committees, and Project 20-24, Administration of Highway and Transportation Agencies, assists the AASHTO Board of Directors.

TRANSIT COOPERATIVE RESEARCH PROGRAM

Authorized by the Intermodal Surface Transportation Efficiency Act and initiated under TRB management in July 1992, TCRP is supported by annual grants from FTA. The TCRP Oversight and Project Selection (TOPS) Committee chooses research for the program; the committee also serves as the board of directors of the Transit Development Corporation (TDC), a nonprofit educational and research affiliate of APTA. A three-way memorandum of agreement by FTA, TDC, and TRB outlines the program's



The Transit Cooperative Research Program Oversight and Project Selection Committee discusses proposals during a meeting on October 21 at the Keck Center.



Members of the TCRP Project Panel on State of Good Repair: Evaluating the Implications for Transit discuss the scope of their project at a meeting in April at the Keck Center.

operating procedures. In its 18 years, TCRP has undertaken 592 studies; of these, 507 have been completed and 85 are in progress.

TCRP receives submissions of research problem statements throughout the year and has considered approximately 2,500 since 1992. In early 2010, TCRP issued a call for FY 2011 problem statements to more than 4,000 individuals and organizations in the transit community, emphasizing research consistent with FTA's Strategic Research Goals and the TCRP Strategic Plan. TCRP received and processed 97 problem statements for FY 2011.

TRB submits quarterly progress reports on TCRP to FTA, describing the work accomplished during the quarter and anticipated for the next period. Details on the program's progress since 1992 can be found in the 2010 TCRP Annual Report.

TCRP project oversight panels develop requests for proposals, select contractors, and monitor the research. In 2010, TCRP panels held a total of 60 meetings: 23 panel meetings to prepare research problem statements and to select research agencies; 31 interim project meetings to review project status at midcourse; and 6 meetings on special projects. These meetings involved approximately 500 professionals and represented more than 600 days of volunteer time. The TOPS Committee also met twice during the year.

TCRP published 26 project reports in 2010, bringing the total to 529 publications: 184 Reports, 86 Syntheses of Transit Practice, 96 Research Results Digests, 34 Legal Research

Digests, 51 IDEA reports, 50 web-only documents, and 28 CD-ROMs.

Research Dissemination

Dissemination of TCRP research results is a concerted activity. APTA administers TCRP Project J-1, Dissemination and Implementation of TCRP Research Findings, to distribute research materials to targeted audiences. This outreach includes various forms of promotion, as well as the Internet. APTA also disseminates TCRP information through *Passenger Transport*, as well as through announcements, press releases, and news reports.

APTA solicits research problem statements; conducts surveys; arranges for workshops, field visits, and training; and oversees other activities to ensure that public transportation industry practitioners receive and implement TCRP research results. The Conference of Minority Transportation Officials also distributes TCRP materials through the TCRP Ambassador Program, which maintains a roster of transit professionals who promote project findings to practitioners.

The J-1 Program has developed a TCRP dissemination website maintained by APTA; has distributed catalogs of publications on general and rural topics; has coordinated industry mailings and surveys to ascertain use and awareness of the program's products; and has produced informational CDs. TCRP reports are available online through APTA's TCRP dissemination website⁴ and through TRB's TCRP web page.⁵

The following TCRP activities of particular interest were in progress or were completed during the year.

Transit Vehicles and Maintenance

TCRP Synthesis 81, *Preventive Maintenance Intervals for Transit Buses*, provides information on preventive maintenance measures taken by transit agencies to ensure that buses are on time, to protect taxpayer investments, and to promote passenger satisfaction and public safety. Case studies include an automated onboard bus monitoring system, a technician certification program, and a transit agency with a diverse fleet mix.

⁴ <http://www.tcrponline.org/index.cgi>.

⁵ www.trb.org/Publications/PubsTCRPPublications.aspx.

Operations and Safety

TCRP Report 137, *Improving Pedestrian and Motorist Safety Along Light Rail Alignments*, addresses pedestrian and motorist behaviors near light rail transit (LRT) and describes mitigating measures to improve safety along LRT alignments. The report includes recommendations for coordinating the compilation of accident data by LRT systems, as well as a catalog of innovative safety devices, safety treatments, and practices along LRT alignments.

TCRP Web-Only Document 48 proposes criteria for acceptable levels of *Ground-Borne Noise and Vibration in Buildings Caused by Rail Transit*.

Human Resources

TCRP Report 139, *Guidebook for Recruiting, Developing, and Retaining Transit Managers for Fixed-Route Bus and Paratransit Systems*, presents strategies that have been effective in transit agencies and other types of organizations. An accompanying CD-ROM contains model job descriptions for 32 manager positions.

TCRP Report 142 provides guidance on the relationships that influence and enhance *Vehicle Operator Recruitment, Retention, and Performance in ADA Complementary Paratransit Operations*, along with examples of programs, efforts, and industry best practices. The information is formulated to help public transit agencies increase productivity, manage costs, and offer improved ADA paratransit service quality.



A MetroAccess driver assists a rider into a vehicle. Transit Cooperative Research Program (TCRP) Report 142 explores recruitment and retention of paratransit vehicle operators. (Photo: Larry Levine, Washington Metropolitan Area Transit Authority)

Performance Measurement

TCRP Report 141, *A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry*, is a resource for using performance measurement and benchmarking to identify organizational strengths and weaknesses, set performance targets, and identify best practices to improve performance. A free, online software tool, the Florida Transit Information System, has incorporated the methodology and provides access to the National Transit Database, enabling users to identify peer agencies, retrieve standardized performance data, and perform comparisons. Under this approach, peer grouping and performance measurement serve as a starting point for a transit agency to evaluate performance, identify areas for improvement, and contact top-performing peers.

Planning and Project Delivery

TCRP Report 95, *Traveler Response to Transportation System Changes*, Chapter 19: *Employer and Institutional TDM Strategies*, evaluates the travel effects of transportation demand management (TDM) strategies—for example, support versus incentives—as well as of particular strategies, such as offering a transit subsidy or a parking discount for carpools.

TCRP Report 138, *Estimating Soft Costs for Major Public Transportation Fixed Guideway Projects*, addresses the costs of professional services for major transit investments. A resource for project managers and cost estimators at transit agencies planning a major fixed guideway public transportation project, the report provides a methodology for estimating soft costs with data from past projects.

TCRP Report 140, *A Guide for Planning and Operating Flexible Public Transportation Services*, describes the types of service strategies appropriate for urban and rural transit agencies and reviews financial and political realities, operational issues, and institutional mechanisms for implementing and sustaining flexible transportation services.

TCRP Synthesis 84, *Current Practices in Greenhouse Gas Emissions Savings from Transit*, describes the role of transit agencies in



TCRP Report 137 examines ways to improve pedestrian and motorist safety near light rail tracks.





TCRP Synthesis 86, *Relationships Between Streetcars and the Built Environment*, studies various streetcar and trolley systems to analyze their impact on buildings and infrastructure around them.

reducing greenhouse gas (GHG) emissions, catalogues current practice, and explains how transit services and operations affect GHG emissions.

TCRP Synthesis 85 describes the state of the practice for *Effective Use of Citizen Advisory Committees for Transit Planning and Operations*, exploring the experiences of a few agencies in detail and offering guidance on involving and structuring advisory committees.

TCRP Synthesis 86, *Relationships Between Streetcars and the Built Environment*, documents the experience of selected projects, tracing their evolution and identifying common approaches in interacting successfully with the built environment. The synthesis presents an overview of the literature; a summary of a telephone survey of 13 of the 14 U.S. streetcar systems; and case studies of five systems.

Specialized Transportation

TCRP Report 143, *Resource Guide for Commingling ADA and Non-ADA Paratransit Riders*, provides a roadmap for the planning and development of operating policies and procedures. The resource guide features decision-making processes for planning and operations and presents lessons from agencies that have decided for and against commingling.

TCRP Report 144, *Sharing the Costs of Human Services Transportation*, examines cost-sharing agreements and develops a tool-

kit for recording, reporting, and sharing transportation costs and services. The methodology assists in understanding transportation costs, improving management decisions about the operation of transportation services, and creating a framework for communitywide discussions about cost-effective services for the widest range of residents and visitors.

Rural Public Transportation

TCRP Web-Only Document 49, *Methods for Forecasting Demand and Quantifying Need for Rural Passenger Transportation*, assists planners in assessing the need for public transit services within a geographic area, as well as the expected annual ridership. The workbook presents practical methodologies to evaluate areawide need or demand at a planning level of analysis.

Legal Research for Public Transportation Systems

TCRP Project J-5, *Legal Aspects of Transit and Intermodal Transportation Programs*, provides authoritatively researched, specific, limited-scope studies of legal issues and problems that have national significance and application to transit agencies. Five publications were released in 2010:

- TCRP Legal Research Digest 30, *Legal Handbook for the New Starts Process*, provides information for transit attorneys assisting in locally planned, implemented, and operated transit guideway capital investments.



- TCRP Legal Research Digest 31, *Guide to Federal Buy America Requirements—2009 Supplement*, provides an easy-to-use guide to the Buy America requirements that apply to rolling stock. This digest updates Legal Research Digest 17, published in 2001.
- TCRP Legal Research Digest 32, *Reconciling Security, Disclosure, and Record-Retention Requirements in Transit Procurements*, provides an overview of federal and state requirements, as well as of practices among transit agencies. The report includes examples of how public transit agencies manage information in the procurement process, balancing obligations for the disclosure of public records, and presents issues to consider.
- TCRP Legal Research Digest 33, *Developing and Implementing a Transit Advertising Policy*, provides detailed, practical advice on implementing advertising content policies that advance the system's reasonable interests and protect free speech.
- TCRP Legal Research Digest 34, *Application of Physical Ability Testing to Current Workforce of Transit Employees*, discusses the differences in the types of tests and the bases for different degrees of permissible intrusions into individual privacy of transit employees.

Transit Lessons from Abroad

Since 1994, TCRP Project J-3, International Transit Studies Program, has sponsored 33 leadership development missions to expand the horizons of U.S. transit managers, and more than 425 professionals have participated in missions to Europe, Asia, Canada, South America, New Zealand, Africa, and Australia. The findings and observations of the participants are published in the TCRP Research Results Digest Series.⁶

AIRPORT COOPERATIVE RESEARCH PROGRAM

The Vision 100—Century of Aviation Reauthorization Act established ACRP, which undertakes research and other technical activities in response to the needs of airport operators on issues involving administration, environment, laws, policy, planning, safety, security, human resources, design, construction, maintenance,



The Airport Cooperative Research Program Oversight Committee hears updates on project proposals at its meeting in January.

and operations at airports. ACRP is sponsored by FAA and is managed by the National Academies through TRB, under a memorandum of agreement signed in October 2005. TRB manages the program in coordination with Airports Council International—North America, Airport Consultants Council, American Association of Airport Executives, National Association of State Aviation Officials, and Air Transport Association of America; representatives of airport operating agencies provide oversight and governance.

ACRP carries out applied research on problems shared by airport operating agencies but not adequately addressed in other research programs. A 2003 study sponsored by FAA and published as TRB Special Report 272, *Airport Research Needs: Cooperative Solutions*, identified the need for ACRP.

The Vision 100 Act authorized \$10 million per year for ACRP through FY 2008, and funding has increased to \$15 million since FY 2009. To date, federal appropriations have included \$3 million in FY 2005; \$10 million in FY 2006, FY 2007, and FY 2008; and \$15 million in FY 2009 and 2010. Although funding for FY 2011 is subject to congressional reauthorization, the expectation is that \$15 million will be authorized and appropriated for the coming program year.

The ACRP Oversight Committee (AOC), appointed by the U.S. Secretary of Transportation, met twice in 2010 and selected 24 research projects for the FY 2011 program. To date, the AOC has authorized more than 200 projects, totaling \$58.8 million, in a variety of subject

⁶ TCRP Research Results Digests 20, 22, 27, 31, 33, 36, 42, 47, 49, 53, 54, 58, 62, 64, 66, 68, 70, 71, 77, 81, 85, 88, 89, 92, 95, and 96.



Panels define the direction and scope of ACRP projects, choose contractors, and review products and research.

areas of interest to the airport community. The AOC will meet in early 2011 to review progress.

In 2010, ACRP issued 27 publications (16 Reports, 4 Syntheses, 4 Research Results Digests, 2 Legal Research Digests, and 1 Web-Only Document).⁷

More than 600 individuals from the airport community participate on ACRP project panels, which held approximately 70 meetings and 40 conference calls during 2010 to develop scopes of work, select research contractors, and review interim products. This volunteer assistance from project panel members ensures that the research and products are oriented to airport practitioners.

The following ACRP activities were in progress or were completed during the year.

Airport Planning and Design

ACRP Report 25, *Airport Passenger Terminal Planning and Design, Volume 1: Guidebook and Volume 2: Spreadsheet Models and User's Guide*, focuses on the planning and development of airport passenger terminals and assists in analyzing issues related to design. Volume 1 describes the passenger terminal planning process, addresses emerging trends, and reviews solutions involving the airside, terminal building, and landside components of a terminal complex. Volume 2 consists of a CD-ROM and a user's guide. The CD-ROM contains 11 spreadsheet models, including practical learning exercises and sample data sets. The user's guide describes the application of each model.

ACRP Report 31, *Innovative Approaches to*

Addressing Aviation Capacity Issues in Coastal Megaregions, examines aviation capacity issues in the high-density areas of the East and West Coasts of the United States. The report explores integrated strategic actions to address capacity constraints and travel demand in these multi-jurisdictional, multimodal megaregions.

ACRP Report 35, *Planning for Offsite Airport Terminals*, provides information for airports about serving urban or suburban passengers through remote terminal facilities. The report assists airport decision makers in determining if the concept merits consideration and then identifying potential customers and geographic market areas. A planning guide serves as a roadmap for the process.

ACRP Report 37, *Guidebook for Planning and Implementing Automated People Mover Systems at Airports*, encompasses a range of topics, including planning and decision making, alternative system infrastructure and technologies, evaluation techniques and strategies, operation and maintenance requirements, and coordination and procurement requirements.

ACRP Report 40, *Airport Curbside and Terminal Area Roadway Operations*, presents a cohesive approach to analyzing traffic operations, including operational performance measures. Packaged with the guide is an analysis tool for curbside operations and low-speed roadway weaving areas. Techniques for estimating traffic volumes are presented, along with common ways to address operational problems.

ACRP Legal Research Digest 9, *Case Studies on Community Challenges to Airport Development*, examines judicial decisions on challenges to airport expansion and development, including the defense strategies and the outcomes.

Information Technology

ACRP Report 30, *Reference Guide on Understanding Common Use at Airports*, assists in exploring and evaluating the appropriateness of integrating common use in airport and airline operations. An accompanying CD-ROM includes a virtual tour, as well as spreadsheet models associated with evaluating common use facilities.

Airport Safety

ACRP Report 29, *Developing Improved Civil Aircraft Arresting Systems*, evaluates alternative

⁷ www.trb.org/Publications/PubsACRPPublications.aspx.

materials for an engineered material arresting system, as well as potential active arrestor designs for civil aircraft. The report evaluates cellular glass foam, aggregate foam, engineered aggregate, and a main-gear engagement active arrestor system and offers cost information, performance considerations and characteristics, options for runway dimensions, and land requirements.

ACRP Report 38, *Understanding Airspace, Objects, and Their Effects on Airports*, provides a comprehensive description of the regulations, standards, evaluation criteria, and processes to protect the airspace surrounding airports. The goal is to apply appropriate airspace design and evaluation criteria to ensure a safe operating environment for aircraft and to maintain airport operational flexibility and reliability without unduly restricting development and economic growth in the community.

ACRP Research Results Digest 10, *Light Detection and Ranging (LIDAR) Deployment for Airport Obstruction Surveys*, explores LIDAR technology as a cost-effective alternative to traditional methods for collecting data for airport obstruction surveys to meet government requirements. The report offers a sample specification for procuring LIDAR-based aerial survey services.

Airport Efficiency and Effectiveness

ACRP Report 19 provides guidance on *Developing an Airport Performance-Measurement System*. An electronic workbook on an accompanying CD-ROM presents tools for completing the step-by-step process.

ACRP Report 39 offers *Recommended Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management*.

ACRP Report 33, *Guidebook for Developing and Managing Airport Contracts*, assembles into a single resource the best practices for developing, soliciting, and managing a range of airport agreements and contracts—with airlines, for communication and utility services, and for common use, ground transportation, concessions, and a variety of passenger services. An accompanying CD-ROM contains sample agreements in each area.

ACRP Report 34, *Handbook to Assess the Impacts of Constrained Parking at Airports*,



ACRP Synthesis 18 findings revealed that development of the aviation workforce must begin long before a future professional applies for his or her first job—elementary school tours (above) can be influential.

presents strategies to deal with parking and provides a predictive modeling tool on an accompanying CD-ROM for determining each strategy's effects on finances, traffic, emissions, and customer service.

ACRP Report 36, *Airport–Airline Agreements: Practices and Characteristics*, offers an objective resource for airport operators and airlines in negotiating and understanding business relationships and presents examples to clarify the procedures and perspectives of each party during negotiations.

ACRP Synthesis 18, *Aviation Workforce Development Practices*, explores the jobs and related skill sets at airport operating entities, identifies ways to gain training to qualify for airport-related jobs, and notes several gaps between skill sets and educational and advancement opportunities.

ACRP Research Results Digest 9, *Alternative Aircraft and Pavement Deicers and Anti-Icing Formulations with Improved Environmental Characteristics*, explores the aquatic toxicity and biological oxygen demand, state of the art, components, and promising alternative formulations of deicing and anti-icing products. The report examines the performance, efficiency, material compatibility, and the environmental, operational, and safety impacts of alternative formulations and components. Related information is available in ACRP Web-Only Document 8, *Alternative Aircraft Anti-Icing Formulations with Reduced Aquatic Toxicity and Biochemical Oxygen Demand*.

ACRP Research Results Digest 11, *Helping Airports Understand Payment Card Industry Data Security Standard*, explores the standard and determines the airport systems that may be affected—for example, common use systems that handle airline-related transactions, parking revenue systems, and point-of-sale systems. This guide describes the responsibilities associated with the commercial standard, reviews the issues to consider, and identifies the resources available to aid and fund compliance.

ACRP Synthesis 21, *Airport Energy Efficiency and Cost Reduction*, presents successful practices to increase energy efficiency and reduce operating costs at airports. The report focuses on no-cost, low-cost, and moderate-cost improvements and on implementable actions to reduce energy-consuming costs in terminals.

ACRP Legal Research Digest 10, *Analysis of Federal Laws, Regulations, and Case Law Regarding Airport Proprietary Rights*, examines such topics as the regulation of noise and other environmental matters, safety restrictions, leasing practices, congestion management, and airport access limitations. The analysis includes a compilation of statutes, regulations, and case decisions determining the scope of airport proprietary rights.

Small Airports

ACRP Report 28, *Marketing Guidebook for Small Airports*, assists airport managers at general aviation or commercial service airports with small or minimal budgets to develop a marketing program. The guidebook presents the basics of marketing, the process of developing and implementing a plan, and approaches to marketing and public relations. Worksheets and instructive case studies offer tips on communicating with tenants and the community, positioning the airport in the region, and creating and sustaining a positive identity and message for the airport.

ACRP Report 32, *Guidebook for Addressing Aircraft–Wildlife Hazards at General Aviation Airports*, describes the different species that can be found at airports and presents information about controlling incursions, removing attractants, and applying best practices to minimize wildlife activity through appropriate control strategies and techniques.

ACRP Report 43, *Guidebook of Practices for*



ACRP Report 32 presents guidance on safe ways that general aviation airports can address wildlife hazards to aircraft.

Improving Environmental Performance at Small Airports, promotes environmental awareness, reviews federal environmental compliance requirements, outlines best management practices to enhance environmental stewardship, and identifies resources and tools.

NATIONAL COOPERATIVE FREIGHT RESEARCH PROGRAM

NCFRP was authorized in 2005 under the SAFETEA-LU legislation. NCFRP is sponsored by RITA and managed by TRB, with program guidance provided by an oversight committee comprising a representative cross-section of freight stakeholders. The total available funds in FY 2006 were \$2.65 million; in FY 2007, \$2.9 million; in FY 2008, \$2.93 million; in FY 2009, \$3.9 million; in FY 2010, \$3.4 million; and in FY 2011, another \$3.4 million is anticipated.

NCFRP conducts applied research on freight industry problems that are not being adequately addressed by other research programs. The NCFRP strategic plan has five objectives:

1. Analyze the business of freight transportation. Trends in the global and national movement of freight and business logistics are likely to place greater demands on the nation's freight transportation system. NCFRP research will improve information and provide clearer insight into the market-driven factors that lead and respond to current and future freight demand.

2. Develop reliable data and tools for the analysis of freight transportation. Successful decision making depends on credible and reliable analysis, which requires high-quality data. NCFRP research will identify improvements in collecting, analyzing, and using data and will develop tools for analyzing and managing the economic, safety, security, environmental, health, energy, and community impacts of freight transportation decisions.

3. Explore operational improvements for freight transportation. Enhancing the system performance should not focus only on providing new infrastructure but should include operational strategies and more efficient management of capacity. NCFRP research will provide guidance on implementing improvements in operational and system management.

4. Evaluate investment decisions for adding physical capacity to the freight transportation system. Quantifying benefits—including the return on investment—is a key input for decision making. NCFRP research will provide information and guidance on making sound decisions for adding capacity when the investment makes economic sense.

5. Identify ways to strengthen the institutional framework for the freight transportation system. Institutional capacity is often a prerequisite for successful planning and implementation of freight-oriented strategies. NCFRP research will identify institutional barriers, organizational capacity issues, and innovative solutions to freight transportation challenges. Of particular interest is the evolving concept of public-private partnerships that often does not conform to jurisdictional boundaries or to the traditional dividing line between government and business.

The Freight Research Oversight Committee met in October 2009 and selected 9 projects for the FY 2010 program; work is under way. The Oversight Committee will meet again in January 2011 to select the FY 2011 program. Projects selected will be initiated in 2011.

The following seven reports were published in 2010:⁸

- NCFRP Report 3, *Separation of Vehicles—CMV-Only Lanes*. (See description under NCHRP



Integrated tug-barge units, widely used in Gulf of Mexico and East Coast offshore trade, are examined in National Cooperative Freight Research Program Report 5, *North American Marine Highways*.

section on Planning and Environment.)

- NCFRP Report 4, *Representing Freight in Air Quality and Greenhouse Gas Models*, explores the methods for generating information about air emissions from freight transportation activities and the suitability of the information for health and climate risk assessments, prioritization of emission reduction activities, and public education.
- NCFRP Report 5, *North American Marine Highways*, reviews the potential for moving intermodal containers on chassis, noncontainerized trailers, or rail cars on marine highways in North America. The report assesses the feasibility of the transfer; analyzes the economic, technical, regulatory, and logistical barriers; and examines ways to eliminate the barriers.
- NCFRP Report 6, *Impacts of Public Policy on the Freight Transportation System*, identifies intended and unintended impacts of an array

⁸ www.trb.org/Publications/PubsNCFRPPublications.aspx.

of public policies on the freight system.

- NCFRP Report 7 develops a methodology for private- and public-sector decision makers in *Identifying and Using Low-Cost and Quickly Implementable Ways to Address Freight Mobility Constraints*.
- NCFRP Report 8, *Freight-Demand Modeling to Support Public-Sector Decision Making*, provides guidance on the use of freight-demand models and other analysis tools for the planning, engineering, and construction of infrastructure and for consideration of financial, environmental mitigation, systems operation, and economic impacts.
- NCFRP Report 9, *Guidance for Developing a Freight Transportation Data Architecture* recommends specifications for the content and structure of a freight data architecture to serve the needs of public and private decision makers at the national, state, and local levels.

HAZARDOUS MATERIALS COOPERATIVE RESEARCH PROGRAM

SAFETEA-LU authorized a pilot cooperative research program on hazardous materials transportation. HMCRP was initiated in September 2006 under the sponsorship of PHMSA, to complement other U.S. DOT research programs as a stakeholder-driven, problem-solving program, funding research on real-world, day-to-day operational issues with near-term to midterm time frames. The total available funding in FY 2006 was \$0.88 million; in FY 2007, \$0.97 million; in FY 2008, \$0.98 million; in FY 2009, \$1.28 million; in FY 2010, \$1.2 million; and in FY 2011, \$1.2 million is anticipated.

The Hazardous Materials Technical Oversight Panel met in October 2009 and chose four projects, now under way, for the FY 2010 program. The Oversight Panel met again in late 2010 to select the FY 2011 program of projects.

One report has been published—HMCRP Report 1, *Hazardous Materials Transportation Incident Data for Root Cause Analysis*.⁹ The report reviews potential technical improvements to the hazardous materials accident databases that are collected and managed by various agencies. The report explores gaps and redundancies in reporting requirements and attempts

⁹ www.trb.org/Publications/PubsHMCRPPublications.aspx.



Firefighters and city employees work to contain oil and fuel spilled at the North Little Rock Airport in Arkansas after a 2008 tornado damaged aircraft and buildings. Upcoming HMCRP reports present practical approaches to emergency response preparedness, release containment, and more. (Photo: Charles S. Powell, FEMA)

to estimate the extent of the underreporting of serious incidents.

Several other HMCRP projects are nearing completion and will be published in early 2011:

- Project HM-01, Hazardous Materials Commodity Flow Data and Analysis, will produce an updated, user-friendly guidebook for conducting hazardous materials commodity flow surveys for local risk assessments, emergency response preparedness, and resource allocations.
- Project HM-03 will develop a Guide for Assessing Emergency Response Needs and Capabilities for Hazardous Materials Releases.
- Project HM-04, Emerging Technologies Applicable to Hazardous Materials Transportation Safety and Security, will identify current and emerging technologies that can enhance the safety and security of hazardous materials transportation by shippers, carriers, emergency responders, or government regulatory and enforcement agencies.
- Project HM-05, Evaluation of the Use of Electronic Shipping Papers for Hazardous Materials Shipments, will produce a roadmap for the use of electronic shipping papers as an alternative to the current paper-based hazardous materials communication system. The roadmap will address the electronic transfer of safety, operational, regulatory compliance,

and emergency response data and documentation, for and among all transport modes.

- Project HM-06, Soil and Groundwater Impacts of Chemical Mixture Releases from Hazardous Materials Transportation Incidents, will develop a tool to assess, classify, predict, and communicate the fate, the transport characteristics, and the environmental hazards of chemical mixtures released into the soil and groundwater from transportation incidents.

NATIONAL COOPERATIVE RAIL RESEARCH PROGRAM

Authorized by the Passenger Rail Investment and Improvement Act and initiated under TRB management in late 2010, NCRRP is sponsored by FRA. NCRRP will carry out applied research on problems that (a) address intercity rail passenger and freight rail services, including rail passenger and freight technologies and speeds, incrementally enhanced rail systems and infrastructure, and new high-speed wheel-on-rail systems; (b) address ways to expand the transportation of international trade by rail, enhance the efficiency of intermodal interchange at ports and other intermodal terminals, and increase capacity and availability of rail service for seasonal freight needs; (c) consider research on the interconnectedness of commuter rail, passenger rail, freight rail, and other rail networks; and (d) consider regional concerns about rail passenger and freight transportation, including research

needs common to designated high-speed corridors, long-distance rail services, and regional intercity rail corridors, projects, and entities.

The NCRRP Oversight Committee (ROC), appointed by the Secretary of Transportation, will select research projects. A memorandum of agreement between FRA and TRB outlines the program's operating procedures. At its first meeting, scheduled for early 2011, the ROC will select initial research projects, likely to focus on high-speed intercity passenger rail issues.

STAFF

NEWS

CRP Deputy Director **Crawford F. Jencks** received a National Academies Distinguished Service Award.

Administrative Coordinator **Adrienne C. Blackwell**, Senior Program Assistant **Thu N. Le**, Program Assistant **Stephanie L. Campbell**, and Information Technology Specialist **Roy N. Mesler** received a National Academies Group Distinguished Service Award as part of the TRB Cooperative Research Program-Level Administrative Support Team, which included TRB Administration and Finance staff.

Scott E. Hitchcock joined the CRP staff as an Editor in June.

Joining CRP as Senior Program Assistants were **Sagar Gurung**, in October, and **Andrea Harrell**, in December.

Strategic Highway Research Program

SHRP 2



Kirk T. Steudle
Chair
SHRP 2 Oversight
Committee



Neil F. Hawks
Director
SHRP 2



Ann M. Brach
Deputy Director
SHRP 2

CONGRESS AUTHORIZED THE SECOND Strategic Highway Research Program (SHRP 2) in August 2005 to investigate the underlying causes of high traffic fatality rates and of intensified congestion and to find methods for rapidly renewing the nation's aging transportation infrastructure while reducing congestion and disruptions to communities. To meet this charge, SHRP 2 has developed research plans in four integrated focus areas to

- Reduce crash risk through understanding driver behavior,
- Identify and develop innovative methods for rapid highway renewal,
- Improve highway and transportation planning through collaborative decision making, and
- Address the causes of congestion and delay.

With more than 90 percent of expected projects under way, answers are beginning to emerge to some of the fundamental questions investigated in SHRP 2 research. Five reports and several web-based products are available



At the Annual Meeting, SHRP 2 Implementation Coordinator Jerry DiMaggio acquaints attendees with TRB Special Report 296, *Implementing the Results of the Second Strategic Highway Research Program: Saving Lives, Reducing Congestion, Improving Quality of Life*.



Janet D'Ignazio, ICF International, and Ann Hartell, North Carolina State University, interact with the Collaborative Decision-Making Framework web tool at a 2010 TRB Annual Meeting session demonstrating its use. The web tool incorporates the findings for the first three SHRP 2 Capacity focus area projects.

on the SHRP 2 website.¹ The program awarded 15 new research contracts this year, raising the total of active contracts to 86.

In 2010, the U.S. Congress passed continuing resolutions to extend the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, resulting in additional funds to support a 2-year extension of SHRP 2. The SHRP 2 Oversight Committee had developed a flexible long-term plan for adapting to different funding levels. The extensions of time and funding will enable the start of preimplementation activities, systematically preparing research results for application. Pilot tests, workshops, and demonstrations are planned to strengthen the results and to make refinements in response to feedback from users. A dozen or more state departments of transportation (DOTs) and other federal, state, and local agencies are participating in these activities. The Federal Highway

¹ www.trb.org/StrategicHighwayResearchProgram2SHRP2/Public/Blank2.aspx.

Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA) are partnering with SHRP 2 on the preimplementation efforts; when the research phase of SHRP 2 ends, FHWA and NHTSA will take on the primary responsibility for implementation.

Several international entities are participating in aspects of SHRP 2. The Finnish Road Administration has provided test sites for a SHRP 2 renewal project on the nondestructive testing of tunnel linings. The Forum of European Highway Research Laboratories is partnering in two workshops on the design and maintenance of long-lived structures. Both the European Union and Canada are planning safety studies that will apply techniques from the SHRP 2 naturalistic driving study.

This wide-ranging collaboration is a hallmark of the strategic emphasis of SHRP 2. As research results emerge, collaborative efforts are identifying opportunities to enrich the products and expand their utility. Examples are given in the following focus area updates. Detailed project information is available on the TRB-SHRP 2 website.

FOCUS AREAS

Safety

Safety research in SHRP 2 will apply advanced technologies to understand how drivers interact with and adapt to a variety of factors—the vehicle, the traffic, the roadway characteristics, the traffic control devices, and the environment—and to assess the changes in collision risk associated with each factor.



Promoting Real-Life Observations for Gaining Understanding of Road User Behaviour in Europe (PROLOGUE), a project under the Seventh Framework Programme and cofunded by the European Commission, includes a Europe-based naturalistic driving study (NDS). An informational video explains the project and value of the NDS. (Image: www.prologue-eu.eu)



Omar Smadi, Iowa State University, updates attendees on the progress of the SHRP 2 Roadway Information Database, a project in the SHRP 2 Safety focus area, at the SHRP 2 Safety Symposium at the National Academies' Keck Center in Washington, D.C., in July.

Continuous collection of a vast array of data will support a study of the entire driving process, including near-collisions, critical incidents, traffic conflicts, and event-free driving. The goal is to measure crash risk factors and to develop surrogate measures for specific traffic maneuvers.

The naturalistic study of driving behavior will gather data through a sophisticated instrumentation package installed in the vehicles of approximately 3,000 volunteer drivers over a 2-year period. Sites were selected for the \$26 million study in Florida, Indiana, New York, North Carolina, Pennsylvania, and Washington State. At these sites, volunteers will complete a series of baseline assessments, and their cars will be equipped with data acquisition systems.

The fifth SHRP 2 Safety Symposium was held in July in Washington, D.C. The symposium keeps researchers and the safety community informed about developments in the groundbreaking naturalistic driving study.

Renewal

SHRP 2 renewal research aims at developing advanced approaches to renew highways and to ensure highway durability with rapid and minimally disruptive techniques. The task involves identifying and developing materials and methods for design, construction, and inspection that reduce life-cycle costs, extend useful life, improve constructability, and decrease the time





SHRP 2 researchers constructed experimental composite pavement sections at the MnROAD Cold Weather Road Research Facility in cooperation with the Minnesota Department of Transportation. Looking ahead to implementation of SHRP 2 research results, demonstration projects and field tests are vital in the development of products transportation agencies can use.

spent onsite during construction.

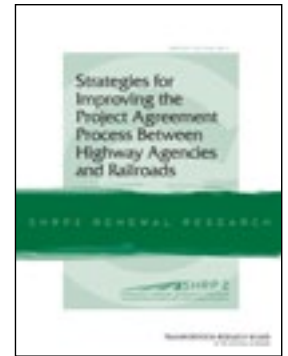
The renewal research plan supports the goal of “get in, get out, and stay out” by addressing such strategies as prefabrication, modular construction, standardized components, and roll-in technologies for bridges and pavements. Teams investigating pavement topics have been encouraged to discuss and share their research with each other, as have those conducting bridge-related research. Two-day workshops were held to promote the exchange of ideas and information to inform the research and strengthen the outcomes.

In the past year, a new type of composite pavement was constructed on a section of the MnRoad test site in Minnesota. Other research identified tools and techniques for system-



A construction worker guides a bridge section into place. SHRP 2 renewal research adopts a noninvasive approach, favoring prefabrication and other expedient technologies for bridges and pavements. (Photo: David Gonzales, Minnesota DOT)

atic accelerated bridge construction. SHRP 2 Report R16, *Strategies for Improving the Project Agreement Process Between Highway Agencies and Railroads*, developed model agreements to ease coordination between railroads and transportation agencies.



Reliability

Travelers and shippers value reliable travel times, which can be compromised by unexpected, non-recurring congestion. SHRP 2 reliability research seeks to reduce the uncertainty of travel times and improve highway system operations through a focus on the root causes of nonrecurring congestion. By reducing non-recurring congestion, transportation agencies can make significant gains in assuring reliability, even as travel demand grows.



Reliability research projects will identify effective operations strategies; will improve the means of integrating operations activities into planning, modeling, and decision making; and will assist in implementing operations strategies. Nearly all research teams in the reliability area have shared interim findings with each other, and several have shared findings with capacity research teams.

Trial workshops in 2010 presented a national training curriculum for incident responders, which was well received. Improving coordination among responding agencies should improve safety for drivers and responders and should reduce congestion that accumulates while an incident is cleared. Also completed this year was a project that yielded analytic procedures for determining the impact of several congestion-relief strategies on travel time reliability.

Two projects were selected for funding through the Reliability Innovations Deserving Exploratory Analysis (IDEA) program, which encourages innovation by funding untested concepts that have potential to advance reliable highway travel times. A second solicitation for new Reliability IDEA proposals was approved for 2011.



Members of emergency fire and medical services, law enforcement, public safety communications, towing and recovery, and transportation communities are all responders at traffic incident scenes. SHRP 2 Reliability project L12 is developing and testing a proposed curriculum to establish core competencies for each of these disciplines. Workshops have been held in Georgia (pictured) and Indiana; others are planned.

Capacity

Capacity research under SHRP 2 is developing approaches and tools for systematically integrating environmental, economic, and community requirements into the analysis, planning, and design of new highway capacity. At the core of the research program is Transportation for Communities—Advancing Projects Through Partnerships (TCAPP), a web-based framework for collaborative decision making to improve solutions to capacity problems. A beta version of TCAPP is available while refinements are being made and components are added, such as a guide for greenhouse gas analyses in highway planning.²



The SHRP 2 capacity web page features a growing collection of case studies on collaboration.³ The studies have been integrated into TCAPP to provide real-world best practices and

² www.transportationforcommunities.com.

³ www.trb.org/StrategicHighwayResearchProgram2SHRP2/Public/Pages/Case_Studies_in_Collaboration_373.aspx.



Qian Wang, State University of New York at Buffalo, makes a presentation on her innovative tour-based urban freight demand model at a SHRP 2 symposium, Innovations in Freight Demand Modeling and Data. (Photo: David Plazak)

to identify pitfalls and lessons learned.

Supporting the framework are projects that focus on system-based performance measures, the regional economic impact of new highway capacity, ways to incorporate the capacity gains from highway management into the planning process, and the effects of congestion and pricing on the behavior of highway users. Results and insights from the early projects will contribute to the development of tools that target the most critical barriers to success.

STAFF NEWS

Andrew Horosko, former Deputy Minister of Transportation for Manitoba Transportation and Government Services, Canada, joined SHRP 2 as coordinator of the six data collection sites for the naturalistic driving study.

Jo Allen Gause, Senior Program Officer with TRB's Synthesis Studies, is adding her expertise to the capacity focus area of SHRP 2.

Carol A. Ford started as a Senior Program Assistant in June.

In July, **Elizabeth M. Forney** joined SHRP 2 as Assistant Editor.

Patrick B. Zelinski was promoted to Communications Associate in October.

Mark Bush, formerly of the Michigan Department of Transportation and AASHTO, assumed duties as Senior Program Officer in the renewal program area at the end of November.

James W. Bryant, Jr., was appointed lead Senior Program Officer for the renewal program area in November.

Gummada Murthy, recently with the Virginia Department of Transportation, came on board as Senior Program Officer in the SHRP 2 reliability area in late November.

Administration and Finance



Michael P. LaPlante
Director
Finance and
Business Operations

ADMINISTRATION AND FINANCE

The TRB Administration and Finance Division provides financial, technological, and administrative support for the work of TRB staff; financial oversight of the contracts and grants related to TRB activities; expenditure controls; administration of publications sales and distribution; maintenance of the benefits and services for sponsor and affiliate organizations; and liaison to the administrative and financial offices of the National Academies.



Melissa Pickett (*second from left*) conducts a weekly meeting of the CRP finance team (*left to right*): Daniel Somerset, Sharon Greaver-Stevens, Sophia Ramirez, Kwame Obeng, Anthony Bailey, and Eduardo Cusicanqui. The group received a 2010 Distinguished Service Award from the National Academies.

FINANCIAL MANAGEMENT

The division manages the contracts and grants that support TRB's work, prepares budgets for continuing operations and individual projects, and controls expenditures. TRB's total income and expenditures have increased consistently each year to more than \$110 million (see bar chart, below). A statement of income and expenditures appears on pages 60–61.

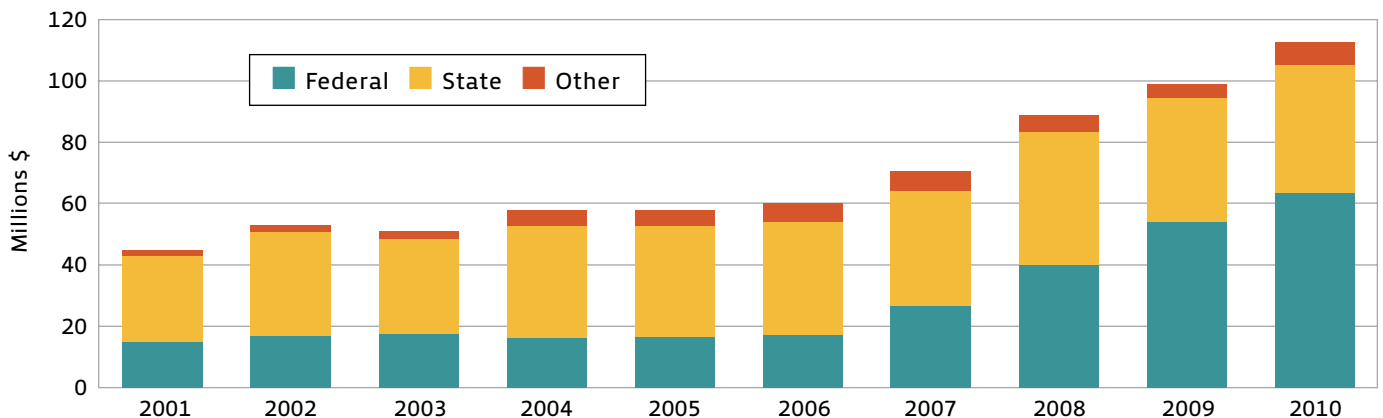
AFFILIATE AND SPONSOR SERVICES

TRB's Core Programs have five main levels of support: student affiliates, individual affiliates, organizational affiliates, sustaining affiliates, and

sponsors. All affiliates and sponsors contribute to the support of TRB activities through annual fees based on the level of services selected.

Individual and student affiliates' benefits include reduced registration fees for the TRB Annual Meeting; a complimentary subscription to *TR News*; discounts on most TRB books and reports—including access to TRR Online, the web posting of papers from TRB's journal; use of the TRB library; and assistance with the use

TRB Activity Level by Year



of TRB computer-based information services. Individual and student affiliates also may subscribe to publications at a substantially reduced rate through a selective distribution program.

Organizational affiliates include government agencies, academic organizations, private organizations, and consultants committed to the advancement of knowledge about the nature and performance of transportation systems and system components. In addition to the range of benefits provided to individual affiliates, organizational affiliates receive most publications at no cost, complimentary registrations for the TRB Annual Meeting, and marketing and exhibit opportunities at the Annual Meeting. Organizational affiliate contributions range from \$4,500 to \$11,000, depending on the level of benefits selected.

Sustaining affiliates are agencies and organizations—including individual corporations and businesses—that support TRB at a level considerably higher than the direct cost of all of the services and publications received. The minimum annual contribution is \$15,000.



The TRB Publications Sales booth at the Annual Meeting supplements the latest titles with special discounts.

FIGURE 1
Selective Publications Subscriptions form.

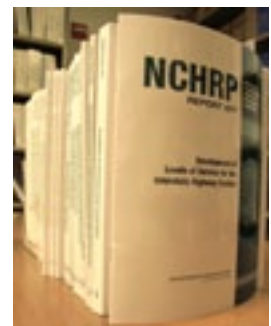
Sponsors are the major source of financial support for TRB’s core programs. Federal, state, and local government agencies and professional societies and organizations that represent industry groups are eligible to be TRB sponsors. Fees and services are negotiated to serve each sponsor’s needs and to provide fundamental support for the Board’s programs and activities of interest to the entire transportation community. The minimum annual sponsor fee is \$65,000. Sponsors are represented on the TRB Executive Committee. (See pages 69–70 for a list of TRB sponsors and sustaining affiliates.) In 2010, TRB welcomed a new federal sponsor for the core programs—the Science and Technology Directorate of the U.S. Department of Homeland Security.

PUBLICATIONS SALES AND DISTRIBUTION

TRB’s timely distribution of publications disseminates the results of transportation research and technology worldwide. TRB also releases many publications—some exclusively—in electronic format. A list of TRB publications issued from January 1 through December 31, 2010, appears on pages 65–68.

Early in 2010, TRB expanded its subscription categories to make the options more specific and more precise. Sponsors and subscribers now can select publications subscriptions that focus on the functions or transportation modes within their areas of interest (see Figure 1, above). At the same time, TRB began offering subscriptions to full annual publications series, such as National Cooperative Highway Research Pro-

(continued on page 62)



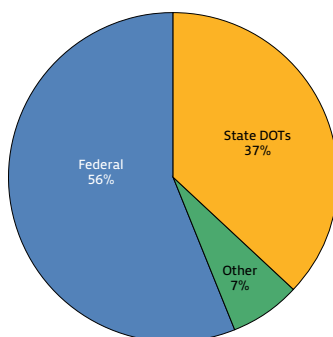
This year, TRB began offering subscriptions to each of the full annual series published by the Cooperative Research Programs and SHRP 2.

STATEMENT OF ACTIVITIES

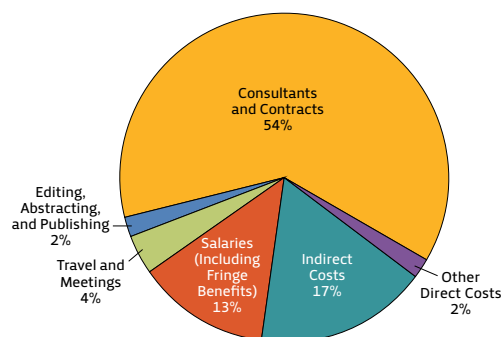
Funding Support by Program and Expenditures Calendar Years 2009 and 2010

	2009 (Actual)	2010 (Projected)*
Core Technical Activities		
State Highway and Transportation Departments (State DOTs)	\$7,400,000	\$7,340,000
Federal Government		
Federal Highway Administration (FHWA)	2,300,000	2,300,000
Research and Innovative Technology Administration (RITA)	300,000	300,000
Federal Transit Administration (FTA)	200,000	250,000
National Highway Traffic Safety Administration	198,000	202,000
Bureau of Indian Affairs	80,000	80,000
Federal Motor Carrier Safety Administration (FMCSA)	75,000	75,000
Army Corps of Engineers	65,000	65,000
Science and Technology Directorate, Department of Homeland Security	0	65,000
Federal Railroad Administration (FRA)	65,000	65,000
Federal Aviation Administration (FAA)	60,000	65,000
Subtotal, Federal Government	\$3,343,000	\$3,467,000
Other		
Association of American Railroads	65,000	65,000
American Transportation Research Institute	65,000	65,000
American Public Transportation Association	65,000	65,000
Fees and Sales	4,464,406	5,237,000
Subtotal, Other	\$4,659,406	\$5,432,000
Total, Core Technical Activities	\$15,402,406	\$16,239,000
Marine Board Core Program		
U.S. Coast Guard	100,000	100,000
U.S. Army Corps of Engineers	30,000	30,000
Maritime Administration	10,000	10,000
Bureau of Ocean Energy Management, Regulation, and Enforcement	30,000	30,000
U.S. Navy	0	25,000
National Oceanic and Atmospheric Administration	30,000	30,000
Total, Marine Board Core Program	\$200,000	\$225,000
Cooperative Research Programs		
National Cooperative Highway Research Program (State DOTs)	30,270,471	32,395,000
Transit Cooperative Research Program (FTA)	7,986,807	7,260,299
Airport Cooperative Research Program (FAA)	11,279,228	10,112,500
Hazardous Materials Cooperative Research Program (Pipeline and Hazardous Materials Safety Administration)	968,138	1,130,000
National Cooperative Freight Research Program (RITA)	3,143,322	3,650,000
Total, Cooperative Research Programs	\$53,647,967	\$54,547,799

TRB Funding Support



Distribution of TRB Expenditures



	2009 (Actual)	2010 (Projected)*
Strategic Highway Research Program 2	\$21,952,782	\$31,130,000
Continuing Programs		
Pavement Research Program Review (FHWA)	\$268,549	\$305,000
Research & Technology Coordinating Committee (FHWA)	\$105,796	\$165,000
Innovations Deserving Exploratory Analysis (IDEA)		
NCHRP IDEA (State DOTs)	1,087,170	1,108,600
Rail IDEA (FRA)	100,051	54,000
Transit IDEA (FTA)	552,036	702,800
Safety IDEA (FRA and FMCSA)	202,739	253,000
Subtotal, IDEA Program	\$1,941,996	\$2,118,400
Synthesis Programs		
NCHRP Synthesis (State DOTs)	1,207,005	1,125,000
TCRP Synthesis (FTA)	535,977	639,600
Commercial Truck and Bus Safety Synthesis (FMCSA)	231,963	145,000
ACRP Synthesis (FAA)	496,667	614,400
Subtotal, Synthesis Programs	\$2,471,613	\$2,524,000
Legal Programs		
NCHRP Legal (State DOTs)	146,259	201,200
TCRP Legal (FTA)	201,205	321,700
ACRP Legal (FAA)	245,903	315,900
Subtotal, Legal Programs	\$593,368	\$838,799
Total, Continuing Programs	\$5,381,322	\$5,951,199
Policy Studies	\$2,235,637	\$2,479,300
Conferences and Workshops	\$2,305,585	\$2,689,700
TRB TOTAL	\$101,125,699	\$113,261,999
Sources of Funds		
Federal	54,643,686	63,695,524
State DOTs	40,110,905	42,169,799
Other	6,371,109	7,396,676
	\$101,125,700	\$113,262,000
Expenditures by Major Cost Category		
Salaries (including fringe benefits)	13,461,661	13,830,000
Travel and Meetings	5,411,328	4,530,000
Editing, Abstracting, and Publishing	2,663,122	2,360,000
Consultants and Contracts	55,430,839	68,580,000
Other Direct Costs	2,432,566	2,600,000
Indirect Costs	19,917,600	18,300,000
Total Expenditures	\$99,317,117	\$110,200,000
TRB Reserve Fund		
Fund balance, end of previous fiscal year	\$8,410,305	\$10,218,888
Plus (minus) current fiscal year income over (under) expenditures	1,808,583	3,062,000
Balance, current fiscal year	\$10,218,888	\$13,280,887

In 1965, the TRB Executive Committee approved a reserve fund to provide for orderly adjustments in the event of a temporary shortfall in anticipated revenues for TRB Technical Activities. This fund, built up over the years from surplus income in excess of expenditures from nonfederal sources for any one fiscal year, is reserved for expenditures in excess of income for any later fiscal year under a fixed budget approved triennially by the TRB Executive Committee.

* Calendar Year 2010 data use actual data for the first three and an estimate for the fourth quarter.

(continued from page 59)

gram publications, the Second Strategic Highway Research Program publications, or the *Transportation Research Record: Journal of the Transportation Research Board*.

WEB AND STRATEGIC APPLICATIONS

The TRB Information Technology (IT) unit develops and supports many of the applications used by TRB's program divisions and serves as the liaison for computer network infrastructure to the Information Technology Services office of the National Academies.

In 2010 TRB enhanced its active website with a content management system to create a more user-friendly experience. The system has replaced static pages with dynamically driven content, ensuring that visitors to the TRB website always see the most up-to-date information; an example is the web page dedicated to Climate Change (see Figure 2, below).



FIGURE 2
TRB's Climate Change web page.

STAFF

NEWS

Financial and Contract Officer **Melissa N. Pickett**; Financial and Administrative Associate **Sharon J. C. Greaver-Stevens**; Financial Associate **Daniel R. B. Somerset**; and Senior Accounting–Financial Assistants **Anthony T. Bailey**, **Eduardo N. Cusicanqui**, and **Kwame A. Obeng** received a National Academies Group Distinguished Service Award as part of the TRB Cooperative Research Program–Level Administrative Support Team, which included staff from the TRB Cooperative Research Programs.

Cyndi A. Johnson was promoted to Supervisor, Customer Service.

Eduardo N. Cusicanqui was promoted to Senior Accounting–Financial Assistant.

Saro Azizian joined the TRB staff in August as Supervisor, Publications and Subscriptions Sales.

Shantia L. Douglas transferred to TRB from the National Academies' Office of the Chief Financial Officer as Accounting–Financial Assistant in August.

Sophia T. Ramirez started as Financial Assistant in September.

TRB Conferences and Workshops

JANUARY 1, 2010–DECEMBER 31, 2010

	JANUARY		JULY
10–14	TRB 89th Annual Meeting	11–13	TRB Joint Summer Meeting
	FEBRUARY	11–14	49th Annual Workshop on Transportation Law
16–17	Climate Change and Ships: Increasing Energy Efficiency*	11–15	5th International Conference on Bridge Maintenance, Safety, and Management*
	MARCH	13–14	5th SHRP 2 Safety Research Symposium
25–26	Offshore Wind Energy Projects		AUGUST
28–30	Road Safety on Four Continents Conference*	2	Online Conference on Accessible Transportation*
	APRIL	23	Asset Management in a World of Dirt
13–15	1st International Conference on Pavement Preservation*	25–26	Towards Zero Deaths: A National Strategy for Highway Safety*
27–29	High-Speed and Intercity Passenger Rail Systems and Strategies Joint Rail Conference*		SEPTEMBER
	MAY	4	Pavement Performance Data Analysis Forum
2–5	American Public Transportation Association Bus and Paratransit Conference*	14–15	SHRP 2 Symposium: Innovations in Freight Demand Modeling and Data
5–7	1st International Conference on Nanotechnology in Cement and Concrete	15–17	International Conference on Sustainable Concrete Pavement Technologies: Practice, Challenges, and Directions*
9–12	3rd Conference in Innovations in Travel Modeling	20–23	Workshop on Research Needs for IntelliDrive Applications for the Public Sector
13–14	Innovations in Pricing of Transportation Systems: Workshop and Conference*	22–24	12th National Conference on Transportation Planning for Small- and Medium-Sized Communities: Tools of the Trade
19–20	Toward Better Freight Transportation Data: A Research Road Map	22–24	Symposium on Mineral Aggregates in Transportation
19–21	Transportation Finance: Forging a Sustainable Future—Now	23	Workshop on Rail Network Capacity Issues*
30–	Safety and Mobility of Vulnerable Road Users: Pedestrians, Motorcyclists, and Bicyclists*		OCTOBER
June 2		10–13	9th National Conference on Access Management*
	JUNE	11–13	European Transport Conference*
2–4	TRANSED 2010: 12th International Conference on Mobility and Transport for Elderly and Disabled People*	18–19	Transportation Systems for Livable Communities Conference
2–4	National Road Pricing Conference*	24–28	19th National Rural Public and Intercity Bus Transportation Conference
2–5	4th International Symposium on Highway Geometric Design*	25–27	Pavement Evaluation 2010*
3–5	GeoShanghai 2010 International Conference*	25–27	Sustainable Transport and Quality of Life in the City*
6–9	Environment and Energy Research Conference*		NOVEMBER
8–10	Joint Conference of Harbor Safety Committees and Area Maritime Security Committees*	8–10	International Conference on Commercial Driver Health and Wellness
21–24	North American Travel Monitoring Exposition and Conference (NATMEC): Improving Traffic Data Collection, Analysis, and Use	16	Commodity Flow Survey Workshop
24–25	Workshop on Control and Electrification of Highway Vehicles: Integrating Concepts and Infrastructure Need	17–19	1st International Symposium on Advances in Transport Sustainability*
29–	Marine Transportation System Research and Technology		DECEMBER
July 1	Coordination Conference*	1–3	7th International Bridge Engineering Conference: Improving Reliability and Safety—Restoration, Renewal, and Replacement

*TRB was cosponsor of the meeting.

TRB Webinars 2010

JANUARY

- 27 Communicating the Value of Transportation Research

FEBRUARY

- 17 Load and Resistance Factor Design Analysis for Seismic Design of Slopes and Retaining Walls

MARCH

- 4 Practices for Roadway Tunnel Design, Construction, Safety and Inspection, and Rehabilitation
- 9 Nighttime Seat Belt Enforcement: Background and Recent Findings
- 17 A Master U.S. Catalog of Subgrade Soil–Water Characteristic Curve Default Input Values for the Mechanistic–Empirical Pavement Design Guide
- 25 Helping Airport and Air Carrier Employees Cope with Traumatic Events

APRIL

- 1 New Managed Lane Provisions in the 2009 Manual on Uniform Traffic Control Devices
- 6 Managing and Marketing Small Airports
- 19 Knowledge Is Power: How TRB's Databases Improve Access to Transportation Research
- 22 International Scan on Linking Transportation Performance and Accountability: Findings and Recommendations
- 26 Airport Terminal Planning and Innovative Facilities

MAY

- 6 Identifying Railroad–Highway Agency Institutional Mitigation Strategies
- 13 Pedestrian and Bicyclist Safety and Mobility in Europe Scan: Findings and Recommendations
- 19 Tests and Criteria to Measure the Effects of Mineral Filler on Hot-Mix Asphalt (HMA) Performance
- 24 Overview of Warm-Mix Asphalt Technologies for Virgin and Reclaimed Asphalt Pavement Mixes

JUNE

- 9 International Scan on Reducing Congestion and Funding Transportation Using Variable Road Pricing: Findings and Recommendations
- 17 State DOTs' Role in Implementing Transportation Demand Management Programs

JULY

- 8 A Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors
- 28 Precast Pavement Technology: Current and Future Directions



Lisa Berardi Marflak, Program Officer, Electronic Dissemination, conducts one of the more than 40 webinars offered by TRB in 2010.

AUGUST

- 5 New Nondestructive Testing Technologies for HMA Quality Assurance
- 10 Asphalt Emulsions, Part 2: Surface Treatments and Recycling
- 17 Predicting Travel-Time Reliability: Methods and Implications for Practice
- 23 Partnering for Success: Agricultural Emergency Response
- 31 America's Energy Future: A Transportation Perspective

SEPTEMBER

- 2 Enhancing Airport Land Use Compatibility
- 8 Pavement Preservation for High Traffic Volume Roadways
- 16 Highway–Rail Grade Crossing Safety 101: A Primer on Grade Crossing Safety
- 21 Mitigating the Impacts of Weather on Surface Transportation: New Techniques and a Case Study

OCTOBER

- 7 Applications of Advanced Models to Characterize Asphalt Pavements
- 13 Institutional Architectures to Advance Systems Operations and Management
- 21 Development of a Precast Bent Cap System for Seismic Regions
- 26 Evaluating Airport Parking Strategies and Managing Parking Constraints

NOVEMBER

- 2 Simple Procedure for Selecting Mixing and Compaction Temperatures
- 3 America's Climate Choices: Adaptation Issues and Transportation Agencies
- 10 Tools to Evaluate Carbon Emissions from Transportation Agencies and Multipollutant Effects of Emission Control Strategies
- 17 Pavement Backcalculation Basics
- 29 Characterization and Prediction of Moisture-Induced Damage in Hot and Warm Asphalt Mixtures

DECEMBER

- 2 Safety and Operation of Pedestrian Hybrid Beacons
- 8 Long-Life Concrete Pavements: Design and Construction Concepts and State Experiences
- 9 Freeway Geometric Design for Active Traffic Management in Europe: Scan Findings and Recommendations
- 15 Quality-Related Specification Software: A Performance-Based Specification for HMA Pavement Construction

Transportation Research Records

- 2141 Nanotechnology in Cement and Concrete, Vol. 1
2142 Nanotechnology in Cement and Concrete, Vol. 2
2143 Transit 2010, Vol. 1
2144 Transit 2010, Vol. 2
2145 Transit 2010, Vol. 3
2146 Transit 2010, Vol. 4
2147 Highway Safety Data, Analysis, and Evaluation 2010, Vol. 1
2148 Highway Safety Data, Analysis, and Evaluation 2010, Vol. 2
2149 Traffic Control Devices, Visibility, and Highway–Rail Grade Crossings 2010
2150 Infrastructure Maintenance and Preservation
2151 Construction 2010, Vol. 1
2152 Construction 2010, Vol. 2
2153 Pavement Management 2010, Vol. 1
2154 Pavement Management 2010, Vol. 2
2155 Pavement Management 2010, Vol. 3
2156 Travel Behavior 2010, Vol. 1
2157 Travel Behavior 2010, Vol. 2
2158 Environment 2010
2159 Railways 2010
2160 Data Systems and Travel Survey Methods 2010
2161 Traffic Flow Theory 2010: Simulation Modeling
2162 Freight Systems: Intermodal Transportation, Hazardous Materials, and International Trade
2163 Social, Environmental, and Economic Sustainability—Including 2010 Thomas B. Deen Distinguished Lecture
2164 Concrete Materials 2010
2165 Statistical Methods and Visualization
2166 Marine Transportation and Port Operations 2010
2167 Geomaterials 2010
2168 Freight Transportation Modeling, Planning, and Logistics
2169 Maintenance Services and Surface Weather
2170 Geology and Properties of Earth Materials 2010
2171 Operational Effects of Geometrics and Access Management 2010
2172 Structures 2010
2173 Highway Capacity and Quality of Service 2010
2174 Planning 2010
2175 Travel Forecasting 2010, Vol. 1
2176 Travel Forecasting 2010, Vol. 2
2177 Aviation 2010
2178 Freeway Operations; Regional Systems Management and Operations; Managed Lanes 2010
2179 Bituminous Materials and Mixtures 2010, Vol. 1
2180 Bituminous Materials and Mixtures 2010, Vol. 2
2181 Bituminous Materials and Mixtures 2010, Vol. 3
2182 Highway Safety: Behavior, Management, and Roundabouts
2183 Information Systems, Geographic Information Systems, and Advanced Computing 2010
2184 Public-Sector Aviation: Graduate Research Award Papers, 2008–2009
2185 Human Performance, Simulation, and User Information Research
2186 Soil Mechanics 2010
2187 Economics, Demand Management, and Parking Policy
2188 Traffic Flow Theory and Characteristics 2010
2189 Intelligent Transportation Systems and Vehicle–Highway Automation 2010
2190 Bicycles 2010
2191 Energy and Global Climate Change 2010
2192 Traffic Signal Systems 2010
2193 Developing Countries 2010
2194 Vehicle Safety: Truck, Bus, and Motorcycle
2195 Highway Design 2010
2196 Network Modeling 2010, Vol. 1
2197 Network Modeling 2010, Vol. 2
2198 Pedestrians 2010
2199 Research and Education 2010
2200 Bridge Engineering 2010, Vol. 1
2201 Bridge Engineering 2010, Vol. 2
2202 Bridge Engineering 2010, Vol. 3

Special Reports¹

- 300 Achieving Traffic Safety Goals in the United States: Lessons from Other Nations
301 Air Traffic Controller Staffing in the En Route Domain: A Review of the Federal Aviation Administration’s Task Load Model

Conference Proceedings¹

- 46 Women’s Issues in Transportation: Summary of the 4th International Conference, Volume I: Conference Overview and Plenary Papers
47 Research on the Transmission of Disease in Airports and on Aircraft: Summary of a Symposium

Letter Reports (online)

- Committee for Pavement Technology Review and Evaluation, January 15, 2010
Committee for Review of the Federal Railroad Administration Research and Development Program, February 12, 2010
Committee for the Study on Federal Funding for Transportation Improvements in Base Closure and Realignment Commission (BRAC) Cases, June 14, 2010
Long-Term Pavement Performance Committee, June 21, 2010
National Academy of Engineering–National Research Council Committee for the Analysis of Causes of the *Deepwater Horizon* Explosion, Fire, and Oil Spill to Identify Measures to Prevent Similar Accidents in the Future, November 16, 2010

Transportation Research E-Circulars (online)

- 142 Methodology for the Development and Inclusion of Crash Modification Factors in the First Edition of the *Highway Safety Manual*
- 143 Modal Primer on Greenhouse Gas and Energy Issues for the Transportation Industry
- 144 Research Needs Statements for Climate Change and Transportation
- 145 Joint International Light Rail Conference—Growth and Renewal
- 146 Trucking 101: An Industry Primer
- 147 Development in Asphalt Binder Specifications

TR News

Nos. 266–271

Online Newsletters

Intercity Rail Passenger Systems, No. 16
TRB Transportation Research E-Newsletter

Airport Cooperative Research Program (ACRP) Reports²

- 19 Developing an Airport Performance-Measurement System (includes workbook on CD-ROM)
- 25 Airport Passenger Terminal Planning and Design
 - Vol. 1: Guidebook
 - Vol. 2: Spreadsheet Models and User's Guide (includes CD-ROM)
- 27 Enhancing Airport Land Use Compatibility
 - Vol. 1: Land Use Fundamentals and Implementation Resources
 - Vol. 2: Land Use Survey and Case Study Summaries
- 28 Marketing Guidebook for Small Airports
- 30 Reference Guide on Understanding Common Use at Airports (with supplemental material on CD-ROM)
- 31 Innovative Approaches to Addressing Aviation Capacity Issues in Coastal Megaregions
- 32 Guidebook for Addressing Aircraft–Wildlife Hazards at General Aviation Airports
- 34 Handbook to Assess the Impacts of Constrained Parking at Airports (includes CD-ROM)
- 35 Planning for Offsite Airport Terminals
- 36 Airport–Airline Agreements: Practices and Characteristics
- 37 Guidebook for Planning and Implementing Automated People Mover Systems at Airports (includes CD-ROM)
- 38 Understanding Airspace, Objects, and Their Effects on Airports
- 39 Recommended Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management
- 40 Airport Curbside and Terminal Area Roadway Operations

ACRP Syntheses of Airport Practice²

- 18 Aviation Workforce Development Practices
- 19 Airport Revenue Diversification
- 20 Airport Terminal Facility Activation Techniques
- 21 Airport Energy Efficiency and Cost Reduction

ACRP Research Results Digests²

- 8 Synthesis of Information Related to Airport Practices
- 9 Alternative Aircraft and Pavement Deicers and Anti-Icing Formulations with Improved Environmental Characteristics

- 10 Light Detection and Ranging Deployment for Airport Obstructions Surveys
- 11 Helping Airports Understand the Payment Card Industry Data Security Standard

ACRP Legal Research Digests²

- 9 Case Studies on Community Challenges to Airport Development
- 10 Analysis of Federal Laws, Regulations, and Case Law Regarding Airport Proprietary Rights

ACRP Web-Only Documents (online)

- 8 Alternative Aircraft Anti-Icing Formulations with Reduced Aquatic Toxicity and Biochemical Oxygen Demand

Hazardous Materials Cooperative Research Program (HMCRP) Research Results Digests²

- 1 Hazardous Materials Cooperative Research Program: A Status Report

National Cooperative Freight Research Program (NCFRP) Reports²

- 3 Separation of Vehicles—Commercial Motor Vehicle—Only Lanes (joint report with NCHRP Report 649)
- 4 Representing Freight in Air Quality and Greenhouse Gas Models
- 5 North American Marine Highways
- 6 Impacts of Public Policy on the Freight Transportation System
- 7 Identifying and Using Low-Cost and Quickly Implementable Ways to Address Freight-System Mobility Constraints
- 8 Freight-Demand Modeling to Support Public-Sector Decision Making

NCFRP Research Results Digests²

- 2 National Cooperative Freight Research Program: A Status Report

National Cooperative Highway Research Program (NCHRP) Reports³

- 525 Surface Transportation Security, Vol. 16: A Guide to Emergency Response Planning at State Transportation Agencies
- 600C Human Factors Guidelines for Road Systems—Collection C
- 644 Guidelines for Conducting a Disparity and Availability Study for the Federal Disadvantaged Business Enterprise Program
- 645 Blast-Resistant Highway Bridges: Design and Detailing Guidelines
- 646 Validating the Fatigue Endurance Limit for Hot Mix Asphalt
- 647 Recommended Design Specifications for Live Load Distribution to Buried Structures
- 648 Mixing and Compaction Temperatures of Asphalt Binders in Hot-Mix Asphalt
- 649 Separation of Vehicles—Commercial Motor Vehicle—Only Lanes (joint report with NCFRP Report 3)
- 650 Median Intersection Design for Rural High-Speed Divided Highways
- 651 Load and Resistance Factor Design (LRFD) Design and Construction of Shallow Foundations for Highway Bridge Structures
- 652 Time-Related Incentive and Disincentive Provisions in Highway Construction Contracts
- 653 Effects of Debris on Bridge Pier Scour
- 654 Evaluation and Repair Procedures for Precast–Prestressed Concrete Girders with Longitudinal Cracking in the Web

Transit Cooperative Research Program (TCRP) Reports²

- 71 Track-Related Research, Vol. 7: Guidelines for Guard-Restraining Rail Installation
- 95 Traveler Response to Transportation System Changes, Ch. 19: Employer and Institutional Transportation Demand Management Strategies
- 138 Estimating Soft Costs for Major Public Transportation Fixed Guideway Projects
- 139 Guidebook for Recruiting, Developing, and Retaining Transit Managers for Fixed-Route Bus and Paratransit Systems
- 140 Guide for Planning and Operating Flexible Public Transportation Services
- 141 Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry
- 142 Vehicle Operator Recruitment, Retention, and Performance in Americans with Disabilities Act of 1990 Complementary Paratransit Operations

TCRP Syntheses of Transit Practice²

- 85 Effective Use of Citizen Advisory Committees for Transit Planning and Operations
- 86 Relationships Between Streetcars and the Built Environment

TCRP Research Results Digests²

- 94 Synthesis of Information Related to Transit Problems
- 95 Performance Measurement and Outcomes
- 96 Managing Increasing Ridership Demand

TCRP Legal Research Digests²

- 30 Legal Handbook for the New Starts Process
- 31 Guide to Federal Buy America Requirements—2009 Supplement
- 32 Reconciling Security, Disclosure, and Record-Retention Requirements in Transit Procurements
- 33 Developing and Implementing a Transit Advertising Policy
- 34 Application of Physical Ability Testing to Current Workforce of Transit Employees

TCRP Web-Only Documents (online)

- 48 Ground-Borne Noise and Vibration in Buildings Caused by Rail Transit
- 49 Methods for Forecasting Demand and Quantifying Need for Rural Passenger Transportation
- 50 Survey Instrument, Productivity Charts, and Interview Protocol for Case Studies for TCRP Report 142
- 51 Guiding the Selection and Application of Wayside Energy Storage Technologies for Rail Transit and Electric Utilities

Cooperative Research Programs CD-ROMs

- 20 Selected Studies in Transportation Law, Vol. 3: Environmental Law and Transportation, 2010 Supplement
- 74 Supplemental Materials for ACRP Report 30
- 75 Airport Passenger Terminal Planning Spreadsheet Models for ACRP Report 25, Vol. 2
- 76 NCHRP Research Results Digest 341: Compliance Monitoring Tools
- 77 Model Job Descriptions and Employer Information
- 78 PLANSAFE: Forecasting the Safety Impacts of Sociodemographic Changes and Safety Countermeasures

- 79 Workbook for ACRP Report 19
- 80 Parking Forecast Model and Instruction for Use: Supplemental Materials for ACRP Report 34
- 82 Database of APM Systems for ACRP Report 37
- 84 Road Safety 101
- 85 Appendixes for NCHRP Report 677
- 87 Low-Cost Improvement Analysis Tool

Commercial Truck and Bus Safety Synthesis Program (CTBSSP) Synthesis Reports²

- 17 Special Safety Concerns of the School Bus Industry
- 18 Older Commercial Drivers: Do They Pose a Safety Risk?

Strategic Highway Research Program 2 (SHRP 2) Renewal Research Reports²

- 16 Strategies for Improving the Project Agreement Process Between Highway Agencies and Railroads

Ignition²

- No. 16

¹ Available in print and online.

² Entire series available in print and online.

³ Publications released since 2001 are available in print and online.

TRB Publications

January 1–December 31, 2010

- 61 *Transportation Research Record: Journal of the Transportation Research Board*
- 2 Special Reports
- 2 Conference Proceedings
- 5 Letter Reports (online)
- 6 Transportation Research Circulars (online)
- 6 issues of *TR News*
- 1 issue of *Intercity Rail Passenger Systems Update* (online)
- 49 issues of *TRB E-Newsletter* (online)
- 16 ACRP Reports
- 4 ACRP Syntheses
- 4 ACRP Research Results Digests
- 2 ACRP Legal Research Digests
- 1 ACRP Web-Only Document (online)
- 1 HMCRP Research Results Digest
- 6 NCFRP Reports
- 1 NCFRP Research Results Digest
- 34 NCHRP Reports
- 11 NCHRP Syntheses
- 9 NCHRP Research Results Digests
- 2 NCHRP Legal Research Digest
- 17 NCHRP Web-Only Documents (online)
- 7 TCRP Reports
- 2 TCRP Syntheses
- 3 TCRP Research Results Digests
- 5 TCRP Legal Research Digests
- 4 TCRP Web-Only Documents (online)
- 11 CRP CD-ROM
- 2 CTBSSP Synthesis
- 1 SHRP 2 Renewal Research Report
- 1 issue of *Ignition*

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U.S. Coast Guard

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