The National Academy of Sciences was established in 1863 by an Act of Congress, signed by President Lincoln, as a private, nongovernmental institution to advise the nation on issues related to science and technology. Members are elected by their peers for outstanding contributions to research. Dr. Ralph J. Cicerone is president.

The National Academy of Engineering was established in 1964 under the charter of the National Academy of Sciences to bring the practices of engineering to advising the nation. Members are elected by their peers for extraordinary contributions to engineering. Dr. C. D. Mote, Jr., is president.

The National Academy of Medicine (formerly the Institute of Medicine) was established in 1970 under the charter of the National Academy of Sciences to advise the nation on medical and health issues. Members are elected by their peers for distinguished contributions to medicine and health. Dr. Victor J. Dzau is president.

The three Academies work together as the National Academies of Sciences, Engineering, and Medicine to provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The Academies also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding in matters of science, engineering, and medicine.

Learn more about the National Academies of Sciences, Engineering, and Medicine at www.national-academies.org.

The Transportation Research Board is one of seven major programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to increase the benefits that transportation contributes to society by providing 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 committees, task forces, and panels 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.

Learn more about the Transportation Research Board at www.TRB.org.
Excellent organizations continually innovate and evolve to increase the value they provide to their sponsors and stakeholders. For the Transportation Research Board (TRB), 2015 was a year of evolution that built on past successes and initiated changes to meet the current and future needs of our customers.

TRB is known for convening researchers and practitioners from a wide range of fields to address current and future issues in transportation, for producing highly respected policy studies on complex and often contentious topics, and for managing research that introduces products widely used by transportation professionals. Guided by a strategic plan that reflects the input and vision of thousands of stakeholders, TRB is focused on innovation, leadership, purpose, growth, customer service, and flexibility.

**Innovation, Leadership, and Purpose**

**EXPANDING PARTICIPATION AND DIVERSITY**

TRB is best known for its convening activities. Our annual meeting attracts more than 12,000 attendees each January to Washington, D.C., from across the globe and from all disciplines involved in transportation. The Board draws on the expertise of 220 standing committees and task forces and convenes hundreds of other panels for conferences and workshops, for policy studies, and for projects conducted through the six Cooperative Research Programs. In total, more than 7,000 volunteers serve on TRB committees, task forces, and panels.

Diversifying participation in our committees, task forces, and panels in terms of race, gender, national origin, discipline, age, and experience is a priority for TRB. Among several efforts under way is the Minority Fellows Program, which doubled in size in 2015, thanks to a major increase in financial support from the Federal Highway Administration (FHWA) and from individuals. The 2016 Annual Meeting will welcome 26 students presenting papers through the program’s financial support. TRB also is reaching out to involve disciplines that are underrepresented in our activities and programs.

**APPLYING TECHNOLOGIES, EXTENDING OUTREACH**

TRB’s 94th Annual Meeting changed venues for the first time in nearly 60 years. The Water E. U.S. Transportation Secretary Anthony Foxx defined a 30-year framework for transportation priorities at the 2015 TRB Annual Meeting in Washington, D.C. (Photo: Risdon Photography)
online Transportation Research Information Documentation database now has more than one million entries for research papers and other documents on virtually every subject related to transportation.

**ADVISING DECISION MAKERS**

TRB policy committees advised the federal government and Congress on controversial and complex topics, including the maintenance and sources of funding for reinvestments in the nation’s inland waterways; improvements in the federal oversight of rate cases involving captive shippers and railroads; and the importance and value of federal research programs in railroad safety and in highways.

Policy committees also completed independent, third-party reviews for Congress on U.S. DOT reports addressing (a) the communications technology that is key to the connected vehicle initiative and (b) federal truck size and weight regulations. In response to congressional interest in the organizational reform of federal air traffic control (ATC) into an independent nonprofit entity, a steering committee organized a symposium to provide congressional staff with the views of experts involved in the reform of ATC in Europe and in past U.S. efforts.

**MANAGING RESEARCH FOR PRACTITIONERS**

The six Cooperative Research Programs administered by TRB—the National Cooperative Highway Research Program, the Transit Cooperative Research Program, the Airport Cooperative Research Program, the National Cooperative Freight Research Program, the Hazardous Materials Cooperative Research Program, and the National Cooperative Rail Research Program—issued 140 publications covering a variety of topics of value to practitioners.

Washington Convention Center and the interconnected Marriott Marquis Hotel in Washington, D.C., hosted participants from 68 countries. The new venue provides a single location for all attendees and offers technologies that enable live webcasts of select sessions, allowing participation by committee members unable to travel. Attendees gave the new venue high ratings in a survey.

In addition, TRB sponsored or cosponsored 66 conferences and workshops in 2015, with attendance totaling approximately 26,000. Webcasts of several conferences—notably, one on sustainability and another on resilience—reached international audiences.

TRB also hosted the third in a series of United States–European Union symposia, at the National Academy of Sciences building, on automated vehicles. These international symposia have proved valuable in sharing information in evolving fields of interest on both sides of the Atlantic. The Executive Committee is reviewing TRB’s involvement in international programs to identify those that promise the greatest mutual value for the Board and international partners.

TRB is committed to applying technology to expand participation in activities and awareness of products and services. TRB’s webinar series has enabled thousands of transportation professionals to learn about research results and current topics. In 2015, TRB conducted 72 webinars for an estimated 26,400 participants. The weekly *TRB E-Newsletter* highlights research conducted by TRB, the U.S. Department of Transportation (DOT), state DOTs, universities, and other transportation organizations for more than 58,000 subscribers. TRB’s comprehensive,
Many of the titles addressed a variety of safety and emergency management issues, including such topics as incorporating safety into planning processes; interactive training for maintenance and operations field personnel in all-hazards emergency planning, preparation, and response; work zone speed management; improving safety culture in public transportation; pedestrian crossings of transit rail lines; policing and security practices for small and medium-sized public transit systems; recovery after airport emergencies; best practices for airport cybersecurity; managing wildlife hazards at airports; unmanned aircraft systems; safety risk management for airports; and dealing with diversions of cargo traffic in national emergencies.

IMPLEMENTING SHRP 2 PRODUCTS
The research phase of the second Strategic Highway Research Program (SHRP 2) concluded in 2015. The $218 million program developed new methods and products for highway safety, renewal, capacity, and reliability.

- In the SHRP 2 Safety Focus Area, the Naturalistic Driving Study instrumented 3,500 vehicles with cameras and other digital recording devices and collected detailed data on the roadways most frequently used by the vehicles’ drivers. The compiled databases are available for researchers to study safety issues, particularly in relation to driver behavior. TRB has stewardship responsibility for the data until 2019. Guided by an oversight committee, TRB and its contractors are making the data available to qualified researchers.
- Transportation agencies across the nation are using SHRP 2 Renewal products to accelerate the rehabilitation and reconstruction of highways and bridges, to reduce traffic disruptions, and to build longer-lasting facilities.
- Results from research in the Capacity Focus Area are enabling planning and project development that meet community, economic, and environmental goals; improve safety and mobility; and increase the likelihood of obtaining necessary approvals in a timely manner.
- Products from the Reliability Focus Area are helping agencies operate the transportation system more effectively, reducing the variability of travel times.

Through implementation programs undertaken by FHWA and the American Association of State Highway and Transportation Officials, transportation agencies in every state and the District of Columbia are adopting SHRP 2 products to address user needs more effectively.

ORGANIZATIONAL CHANGES
Soon after the 2015 TRB Annual Meeting, a changing of the guard took place, as longtime Executive Director Robert E. Skinner, Jr., retired, and was succeeded by Neil J. Pedersen, a longtime TRB volunteer and former Chair of TRB’s Executive Committee and Technical Activities Council. Bob’s 30 years of service to TRB included 21 as Executive Director. Under his guidance, TRB strengthened the multimodal and multidisciplinary range of its programs, inaugurated major communications initiatives, fostered international research partnerships and coordination, and worked proactively to enhance the diversity of the Board’s committees and programs.

Also of note for 2015 was the reorganization within the National Academies to create the National Academy of Medicine and to integrate the Institute of Medicine staff with the other divisions. TRB draws tremendous strength from being part of the National Academies of Sciences, Engineering, and Medicine. Several initiatives highlighted here and in other portions of this annual report benefit greatly from the collective resources of the Academies.

TRB continues to seek opportunities to work with other parts of the Academies on issues of...
common interest. For example, TRB will be collaborating with the National Academy of Medicine and its operating division to address issues related to transportation and public health.

**Growth, Customer Focus, and Flexibility to Support Change**

**ADDRESSING STRATEGIC ISSUES**

A primary focus in 2015 was the implementation of the strategies and actions described in the strategic plan adopted by the TRB Executive Committee in June 2014. The plan calls for TRB to provide leadership on strategic, critical, emerging, and future issues in transportation. In 2015, the Executive Committee identified three strategic issues as priorities for TRB: transformational technologies, resilience, and transportation and public health.

- Transformational technologies have the potential to change transportation services fundamentally. These technologies include connected and autonomous vehicles, shared mobility services, unmanned aerial systems, and the Internet of Things, which relates to the concept of smart cities.
- Resilience includes the adaptation of the transportation system to a changing climate and the recovery of the system after severe weather events and human-caused disasters.
- The interrelationships of transportation and public health include the prevention of deaths and injuries from traffic crashes; access to health care facilities, particularly for those not able to drive; the effects of aging and disabilities on transportation; and the transmission of diseases via the transportation system.

The Executive Committee has established task forces to develop plans for addressing each topic, including collaborations with other parts of the Academies and with other organizations. Many sessions at the 2016 Annual Meeting will explore the three strategic issues. TRB standing committees are identifying activities related to the topics, and the Cooperative Research Programs are addressing the topics through several projects. These topics also may yield policy studies.

**CULTIVATING CONSTITUENCIES**

TRB took steps to involve a broader cross section of stakeholders and constituencies in programs and activities. These steps included initiating or building on relationships with transportation-related companies, government agencies, and trade associations—for example, the American Association of Motor Vehicle Administrators, companies developing transformational technologies, organizations representing women and minorities in transportation, and government agencies involved in transportation issues, such as the Environmental Protection Agency, the Department of Energy, and the Transportation Security Administration.

**ACCELERATING DELIVERY, TRACKING IMPACTS**

Another priority in the TRB strategic plan is to accelerate the delivery of research results to sponsors and stakeholders. This goal is driving changes in the production of the *Transportation Research Record: Journal of the Transportation Research Board* (TRR). In 2015, 5,600 papers were submitted to peer review for presentation at the 2016 Annual Meeting, publication in the TRR, or both. Approximately 900 of these papers will
be selected for publication in the journal.

A change in the TRR publication process, starting this year, enables early editing of select papers. As a result, approximately 20 percent of the papers accepted for publication in the 2016 series will be available three to five months earlier than in the past. TRB will continue to explore ways to speed the release of TRR papers and Cooperative Research Programs reports.

Another priority in the strategic plan is the development of ways to track the impacts of TRB research activities. The Cooperative Research Programs have identified and will be implementing methods to improve the tracking of the impacts of project reports. In cooperation with the National Academies Press (NAP), TRB has initiated a process to apply analytics tools available through NAP to identify the real-world impact of TRB’s practice-ready research results.

**TARGETING AND ENHANCING COMMUNICATIONS**

The Executive Committee is exploring options to enhance and expand TRB’s revenue sources to strengthen our long-term financial stability. An Executive Committee task force has developed revenue options and is exploring the feasibility of several—for example, attracting philanthropic gifts.

The Executive Committee recognized a need to enhance efforts to inform and educate stakeholders about TRB products and services. TRB developed a strategic marketing and communications plan that includes recommendations for changing communications practices. The plan seeks to integrate communications into every TRB project and activity and to keep communications practices vital and relevant as the transportation landscape changes. TRB is implementing a dissemination strategy that emphasizes the sharing of information with targeted audiences.

The development and deployment of software systems to provide volunteers and staff with the resources to meet the needs of their stakeholders and customers continued throughout the year. The software changes involved enhancements to the MyTRB system, which has improved the support of Technical Activities standing committee rotations, TRR paper submission and review, and Annual Meeting program development. We appreciate the commitment of all the volunteers who have assisted in the development, piloting, and initial deployment of the software changes.

**PARTNERING FOR INCREASED VALUE**

Innovation, leadership, purpose, growth, customer service, and the flexibility to support change are fundamental values that will continue as TRB hallmarks. We appreciate your support of TRB and look forward to partnering with you to ensure that TRB provides the greatest possible value to you, our stakeholders.

Thank you!

Dan Sperling
Chair, TRB Executive Committee

Neil J. Pedersen
TRB Executive Director
TRANSPORTATION RESEARCH BOARD 2015 EXECUTIVE

Chair: Daniel Sperling, Professor of Civil Engineering and Environmental Science and Policy; Director, Institute of Transportation Studies, University of California, Davis
Vice Chair: James M. Crites, Executive Vice President of Operations, Dallas–Fort Worth International Airport, Texas
Executive Director: Neil J. Pedersen, Transportation Research Board

Victoria A. Arroyo, Executive Director, Georgetown Climate Center; Assistant Dean, Centers and Institutes; and Professor and Director, Environmental Law Program, Georgetown University Law Center, Washington, D.C.
Scott E. Bennett, Director, Arkansas State Highway and Transportation Department, Little Rock
Deborah H. Butler, Executive Vice President, Planning, and CIO (retired), Norfolk Southern Corporation, Norfolk, Virginia (Past Chair, 2013)
Jennifer Cohan, Secretary, Delaware Department of Transportation, Dover
Malcolm Dougherty, Director, California Department of Transportation, Sacramento
A. Stewart Fotheringham, Professor, School of Geographical Sciences and Urban Planning, University of Arizona, Tempe
John S. Halikowski, Director, Arizona Department of Transportation, Phoenix
Michael W. Hancock, Secretary, Kentucky Transportation Cabinet, Frankfort
Susan Hanson, Distinguished University Professor Emerita, School of Geography, Clark University, Worcester, Massachusetts
Steve Heminger, Executive Director, Metropolitan Transportation Commission, Oakland, California
Chris T. Hendrickson, Professor, Carnegie Mellon University, Pittsburgh, Pennsylvania
Jeffrey D. Holt, Managing Director, Bank of Montreal Capital Markets, and Chairman, Utah Transportation Commission, Huntsville, Utah
Roger B. Huff, Manager, Ford Global Customs, Material Export Operations, and Logistics Standardization, Ford Motor Company, Farmington Hills, Michigan
Geraldine Knatz, Professor, Sol Price School of Public Policy, Viterbi School of Engineering, University of Southern California, Los Angeles
Ysela Llort, Consultant, Miami, Florida
Donald A. Osterberg, Senior Vice President, Safety and Security (retired), Schneider National, Inc., Freedom, Wisconsin
James P. Redeker, Commissioner, Connecticut Department of Transportation, Newington
Mark L. Rosenberg, President and CEO, The Task Force for Global Health, Inc., Decatur, Georgia
Sandra Rosenbloom, Professor, University of Texas, Austin (Past Chair, 2012)
Henry G. (Gerry) Schwartz, Jr., Chairman (retired), Jacobs/Sverdrup Civil, Inc., St. Louis, Missouri
Kumares C. Sinha, Olson Distinguished Professor of Civil Engineering, Purdue University, West Lafayette, Indiana
Kirk T. Steudle, Director, Michigan Department of Transportation, Lansing (Past Chair, 2014)
Gary C. Thomas, President and Executive Director, Dallas Area Rapid Transit, Dallas, Texas
Paul Trombino III, Director, Iowa Department of Transportation, Ames
committee


James C. Card (Vice Admiral, U.S. Coast Guard, retired), Maritime Consultant, The Woodlands, Texas, and Chair, TRB Marine Board (ex officio)

Alison Jane Conway, Assistant Professor, Department of Civil Engineering, City College of New York, New York, and Chair, TRB Young Members Council (ex officio)

T. F. Scott Darling III, Acting Administrator and Chief Counsel, Federal Motor Carrier Safety Administration, U.S. Department of Transportation (ex officio)

Marie Therese Dominguez, Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation (ex officio)

Sarah Feinberg, Administrator, Federal Railroad 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)

John T. Gray II, Senior Vice President, Policy and Economics, Association of American Railroads, Washington, D.C. (ex officio)

Michael P. Huerta, Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)

Paul N. Jaenichen, Sr., Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)

Therese W. McMillan, Acting Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)

Michael P. Melaniphy, President and CEO, American Public Transportation Association, Washington, D.C. (ex officio)

Gregory G. Nadeau, Administrator, Federal Highway Administration, U.S. Department of Transportation (ex officio)

Peter M. Rogoff, Under Secretary for Transportation Policy, Office of the Secretary, U.S. Department of Transportation (ex officio)

Mark R. Rosekind, Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)

Craig A. Rutland, U.S. Air Force Pavement Engineer, Air Force Civil Engineer Center, Tyndall Air Force Base, Florida (ex officio)

Barry R. Wallerstein, Executive Officer, South Coast Air Quality Management District, Diamond Bar, California (ex officio)

Gregory D. Winfree, Assistant Secretary for Research and Technology, Office of the Secretary, U.S. Department of Transportation (ex officio)

Frederick G. (Bud) Wright, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)

Paul F. Zukunft (Admiral, U.S. Coast Guard), Commandant, U.S. Coast Guard, U.S. Department of Homeland Security (ex officio)

* Membership as of December 2015.
The TRB Executive Office provides policy and operational guidance for programs and activities; oversees committee and panel appointments and report review; supplies staff support to the Executive Committee and its Subcommittee for National Research Council (NRC) Oversight throughout the report review process; provides support and direction for human resources issues, staffing needs, information technology services, and the Minority Student Fellows Program; develops and directs the Board’s communications and outreach efforts; operates a bibliographic database of transportation research and provides library reference services; and maintains liaison with the executive offices of the National Academies of Sciences, Engineering, and Medicine, 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, policy studies, 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 in accord with the policies of the National Academies. The Executive Office oversees the implementation of the TRB strategic plan, as approved by the TRB Executive Committee, applying the following approaches:

1. Developing and implementing processes to identify and address emerging and critical transportation issues in a strategic and proactive manner.
2. Involving a broader cross section of stakeholders and constituencies in TRB programs and activities.
3. Conducting strategic reviews of the portfolio.
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 of Sciences, Engineering, and Medicine. As part of this oversight, the subcommittee monitors the Board’s progress in expanding the participation by minorities underrepresented in the transportation field and by women on TRB committees and panels.

Susan Hanson chairs the subcommittee and represents TRB as an ex officio member on the NRC Governing Board. Henry G. (Gerry) Schwartz, Jr., serves as SNO Vice Chair, with responsibilities that included oversight for the

4. Applying systematic approaches for identifying and tracking the impacts of TRB’s research programs.
5. Strengthening the long-term financial stability of TRB by augmenting traditional federal and federally derived sources of funding.
6. Developing and implementing coordinated approaches to communicate information on TRB activities and products that address emerging and critical issues.
7. Providing TRB staff with the knowledge, resources, and tools necessary to meet and exceed the expectations of TRB stakeholders and customers.

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 of Sciences, Engineering, and Medicine. As part of this oversight, the subcommittee monitors the Board’s progress in expanding the participation by minorities underrepresented in the transportation field and by women on TRB committees and panels.

Susan Hanson chairs the subcommittee and represents TRB as an ex officio member on the NRC Governing Board. Henry G. (Gerry) Schwartz, Jr., serves as SNO Vice Chair, with responsibilities that included oversight 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 of Sciences, Engineering, and Medicine—designed to ensure the independent, rigorous review of reports. In maintaining these high standards, TRB follows established guidelines that match the review criteria and procedures to the type of report.

**Minority Student Fellows Program**

In collaboration with the U.S. Federal Highway Administration, TRB administers the Minority Student Fellows Program to promote diversity in transportation research. The program provides all expenses for minority students from 14 eligible institutions to attend the Annual Meeting and present research at poster or lectern sessions. More than 55 graduate and undergraduate students have participated in the program, which began in 2010, and the 26 fellows selected to present their research at the 2016 Annual Meeting constitute the largest cohort to date.

**Publications**

To fulfill one of its oldest missions, TRB disseminates transportation research results and technical information through an array of 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. In addition to print, TRB publishes the majority of its 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 2015, the Board published 69 volumes containing 970 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. TRR Online includes all journal papers published since 1996, providing access to approximately 15,000 papers in the TRR series. The service allows all visitors to identify papers of interest and to review the abstracts. Access to the full papers is available to TRR Online subscribers and to 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. The Research Pays Off series, news items of interest to the transportation community, profiles of transportation professionals, book summaries, and highlights of TRB activities also are included. In 2015, TR News published theme issues on moving energy—the effects of the surge in domestic energy production on transportation and infrastructure—and on public health and transportation, a TRB “hot topic” for 2015. Other special features explored the legacy and future of the Panama Canal, technology trends at state agencies, the development and influence of TRB’s Critical Issues in Transportation, the logistical innovations of the American circus, commercial spaceports, and more. Selected features are posted on the TRB website, and the full issue is made accessible on the web on a four-month delay.

• 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 the U.S. Congress—focus on a variety of complex, often controversial, topics. Special reports published in 2015 included Modernizing Freight Rail Regulation, The Essential Federal Role in Highway Research and Innovation, and Funding and Managing the U.S. Inland Waterways System: What Policy Makers Need to Know. All current and selected out-of-print special reports are posted on the Board’s website.


• Transportation Research E-Circulars collect research problem statements, reports, and technical information from the work of TRB Technical Activities committees. Titles this year covered such topics as data for valuing transportation infrastructure, surface transportation financing, 50 years of traffic flow theory, moisture damage to hot-mix asphalt mixtures, geotechnical research deployment, transportation asset management from plans to practice, lessons from history about emerging technology, and more. Circulars are available exclusively in electronic format on the TRB website.

• Meeting Summaries adapt a model pioneered by another National Academies program unit to accelerate publication of officially approved reports on conferences. This year, TRB published a summary of the symposium on Air Traffic Control: Organizational Reform Options.


1 www.trb.org/Finance/TRRJournalOnline1.aspx
2 www.trb.org/Publications/PubsTRNewsMagazine.aspx
3 www.trb.org/Publications/PubsPolicyStudiesSpecialReports.aspx
4 www.trb.org/Publications/PubsConferencesandWorkshopsConferenceProceedings.aspx
5 http://www.trb.org/Publications/PubsConferencesandWorkshopsWeb.aspx
6 www.trb.org/Publications/PubsTransportationResearchCirculars.aspx
7 www.trb.org/main/blurs/171353.aspx
national transportation communities. Website functions—such as RSS (really simple syndication), Google-based search, Facebook, e-mail to a friend, and Twitter—allow users to keep up with and to share the latest developments in transportation research.

Through TRB’s popular webinar series, transportation professionals share and receive information online in a conference-like atmosphere without leaving their offices. The webinars disseminate information on new TRB reports, TRB Annual Meeting sessions, and topics requested by TRB committees.9 Because of the quality of its webinar program, TRB has authorization to issue professional development hours and certification maintenance credits through the American Institute of Certified Planners for select live webinars.

TRB produced more than 70 webinars in 2015. The average attendance at each session was more than 350. Two webinars exceeded 1,200 participants—one covering 20 years of roundabout design advances and one presenting innovative intersections for pedestrians and bicycles.

In the social networking arena, TRB’s Twitter, Facebook, Google+, and LinkedIn activities highlight TRB and National Academies products and meetings, as well as other transportation-related news.10 Since their launches, TRB’s social media sites have attracted more than 13,900 Twitter followers and more than 5,000 Facebook fans.

Communications

TRB has undertaken a variety of initiatives to improve the communication and public awareness of transportation issues and to enhance the dissemination of research findings worldwide.

Among the Board’s most successful communications initiatives is the weekly Transportation Research E-Newsletter, which reports on transportation research and research-related events within TRB and beyond.8 Circulation of the free newsletter is more than 58,000 and growing. Nearly 20 percent of the subscribers are employed by a federal, state, or local government agency.

TRB’s website is designed to help users 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 inter-

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

TRB’s webinar team (left to right): Steve Andreadis, Distance Learning and Electronic Dissemination Coordinator; Reggie Gillum, Customer Service and Marketing Associate; and Elaine Ferrell, Distance Learning Program Coordinator.

As Director of Information Technology and Research Services, Lisa Loyo (far left) guides work in software development and implementation, as well as TRID and the TRB library.
**Information Technology and Research Services**

In late 2014, TRB reorganized and consolidated the management of the Information Technology (IT) and Transportation Research Information Services (TRIS) departments. Both groups had key responsibilities that included the development, maintenance, and application of software in support of various TRB missions.

The IT department’s primary focus has shifted from the development of systems to operation, maintenance, and management. The new focus aligns with the TRIS staff’s responsibilities in relation to the Transport Research International Documentation (TRID) database, the Research in Progress (RiP) database and website, the Research Needs Statements (RNS) database, the Practice-Ready Papers (PRP) database, and the TRB Publications Index.

The responsibilities of the IT and Research Services group include customer support for internal and external users of TRB’s software systems; software enhancement and development; server and website monitoring and security; general IT support activities, such as training, documentation, and troubleshooting; and management and operation of transportation research services, bibliographic databases, and the TRB Library.

**INFORMATION TECHNOLOGY**

TRB relies on several software systems to meet program requirements. The systems are used to maintain committee records, build and maintain TRB’s extensive website, build and make available the TRIS bibliographic databases, support the Annual Meeting paper submittal and peer review process, and help manage and monitor the progress of Cooperative Research Programs projects and products.

In 2015, under an ongoing, long-term effort to replace and upgrade these specialty software systems, TRB introduced a new system to manage the Annual Meeting paper submission, paper peer review, and program development processes. This new system was integrated with MyTRB, a web-based portal designed to provide TRB technical standing committee leaders with a suite of tools to manage committees online. MyTRB also allows committee members and other volunteers to manage their own profiles and contact information.

**TRID**

TRID is a comprehensive bibliographic database containing more than 1 million records of citations and abstracts of transportation research in all modes and disciplines. The records comprise published or ongoing research in English, German, French, or Spanish; more than 165,000 records link to full-text publications. The service offers simple and advanced searching and allows users to download and e-mail results, as well as to share via social media. TRID is available free of charge on TRB’s website.11

**PUBLICATIONS INDEX**

The TRB Publications Index includes more than 65,000 citations and abstracts for all TRB, Highway Research Board (HRB), SHRP, and Marine Board publications since 1923.12 The index offers simple and advanced searching and allows users to download and e-mail the results in a variety of formats. Records contain links to available full-text documents and to ordering information.

**RESEARCH NEEDS STATEMENTS DATABASE**

The RNS database is a dynamic collection of highest-priority topics developed by TRB technical standing committees.13 The database serves as a tool for reviewing research needs, setting research priorities, and identifying gaps in

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current research. More than 1,200 statements are posted.

RESEARCH IN PROGRESS DATABASE
RiP is a database of more than 12,900 records of active or recently completed research projects. The current awareness service notifies users about new and updated project records in specified subject areas. TRID offers users an option for searching the RiP database or the RiP and TRID databases simultaneously.

PRACTICE-READY PAPERS DATABASE
The PRP database helps practitioners easily find TRB Annual Meeting and TRR papers identified by peer reviewers on TRB’s standing committees as presenting research results immediately applicable to problems or issues. The database offers a search by keywords, title, author, index term, subject area, and date of publication, with links to the full text of PRPs since 2006 and to abstracts from 1998 to 2005.

TRB LIBRARY
The TRB library provides research and reference services to TRB sponsors, committee members, and staff. The library subscribes to more than 400 serial titles and contains the complete collection of TRB, HRB, SHRP, and Marine Board publications.

The TRB library participates in the Eastern Transportation Knowledge Network and the National Transportation Knowledge Network.

STAFF NEWS

MARK NORMAN, longtime Director of Technical Activities, was appointed Director of Development and Strategic Initiatives.

LISA L. LOYO was named Director, Information Technology and Research Services.

WILLIAM B. McLEOD was promoted to Manager, Library Services, and JANET S. DALY was promoted to Indexing Manager.

ADRIENNE C. BLACKWELL transferred from the Cooperative Research Programs to become Report Review Associate, and MICHAEL DECARME transferred from the Technical Activities Division to become Business Systems Analyst.

Joining the Communications staff were ELAINE FERRELL, Distance Learning Program Coordinator, and STEVE ANDREADIS, Distance Learning and Electronic Dissemination Coordinator.

The IT and Information Resources department added ALAN E. REZAIE as End User Support Specialist and BETH S. SAFFER as Database Librarian.
The Technical Activities Division provides a forum for transportation professionals and researchers to advance the knowledge and practice of the many disciplines that support all modes of transportation. The division’s staff of specialists in each mode and several disciplines works with thousands of volunteers on more than 200 standing committees to identify research needs, share information, and carry out other activities on behalf of TRB sponsors and the transportation community.

The Technical Activities Council oversees the organization and activities of the TRB standing committees. Daniel S. Turner, Emeritus Professor of Civil Engineering, University of Alabama, chairs the council. TRB representatives in each state department of transportation (DOT), in each sponsoring organization, in more than 150 universities, and in 25 transit agencies serve as liaisons to the committees and activities of the division.

The Technical Activities Division is focusing on three “hot topics” identified by the TRB Executive Committee:

- Transformative technologies,
- Transportation resiliency, and
- Transportation and public health.

Efforts to improve understanding in these areas contribute to other portions of the TRB strategic plan, such as identifying and pursuing strategic issues, strengthening relationships with sponsors for whom these issues are significant, and developing relationships with new stakeholders who can contribute expertise and insights in these areas.

Initiatives on the three hot topics began in previous years as a result of the experience and interests of Technical Activities standing committees. In 2015, several key activities advanced the topics; understanding will be developed and transformed into useful information for transportation decision makers and practitioners.

**Transformative Technologies**

Advanced technologies have been an ongoing interest for Technical Activities committees. Transformative, or disruptive, technologies...
The third annual EU–U.S. Transportation Research Symposium convened experts from across the globe to share research and perspectives on road transportation automation.

comprise innovative tools and techniques that fundamentally change transportation in one or more important ways. Examples include unmanned aviation systems, connected and automated vehicles (CAVs), 3-D printing, nanomaterials, big data, and on-demand and shared transportation services.

CAVs received focused strategic attention in 2014; related activities in 2015 included the following:

- The Fourth Symposium on Vehicle Automation, cosponsored by the Standing Committees on Intelligent Transportation Systems and on Vehicle–Highway Automation in the Ann Arbor, Michigan, area, attracted almost 900 participants from academia, industry, public agencies, and consulting firms.
- The Third European Union (EU)–U.S. Transportation Research Symposium, Towards Road Transport Automation Opportunities in Public–Private Collaboration, was sponsored by U.S. DOT, the EU, and TRB. The two-day symposium gathered high-level experts to share technological and socioeconomic perspectives on surface transport automation, with the goal of fostering transatlantic partnerships and collaboration on research areas of mutual interest.
- A workshop on Connected Vehicle Dynamic Mobility Applications and Multimodal Intelligent Traffic Signal Systems, sponsored by the Standing Committee on Traffic Signal Systems in Scottsdale, Arizona, explored the state of the practice in multimodal traffic signal control in relation to CAVs.
- The Ninth University Transportation Center Spotlight Conference on Connected and Automated Vehicles in Washington, D.C., cosponsored by TRB, identified roles for university transportation research programs in developing tools and concepts to enhance deployment of these advanced technologies.
Technical Activities efforts related to other transformative technologies include the following:

• TRB’s new Subcommittee on Unmanned Aircraft Systems cosponsored the NASA Unmanned Aircraft Systems Traffic Management Convention at Moffett Field in California.

• TRB cosponsored the 5th International Symposium on Nanotechnology in Construction, hosted for the first time in the United States, to establish collaborations among scientists and practitioners from around the world.

• A Performance Measurement and Data Conference included presentations on working with big data to develop and apply performance measures.

• The Freight Systems Group focused on big data issues in freight at a summer meeting.

Transportation Resilience

Transportation resilience refers to the ability of transportation systems to withstand, respond to, and recover from extreme events, whether caused by natural forces, human activities, or both. The Technical Activities Division established a Transportation Systems Resilience Section in 2015, with three standing committees focused on Critical Transportation Infrastructure Protection, Logistics of Disaster Response and Business Continuity, and Emergency Evacuations. Highlights of resilience activities in 2015 include the following:

• The First International Conference on Surface Transportation Systems Resilience to Climate Change and Extreme Weather Events convened nearly 250 climate scientists and transportation professionals in Washington, D.C., in September. The conference examined efforts to mainstream the consideration of climate change and extreme weather resilience in all transportation sector initiatives, including planning and
The Subcommittee on Health and Transportation led an interdisciplinary workshop at the 2015 Annual Meeting on Tools to Support Health and Transportation Planning and Analysis. The workshop offered information on tools for those working at the intersection of health and transportation. The subcommittee also assembled a theme issue of *TR News* on public health and transportation.

**Additional Initiatives**

Additional Technical Activities initiatives and milestones include the following:

- The moving of the TRB Annual Meeting to the Washington, D.C., Convention Center in January was a success. With all sessions in one venue, attendees were able to take advantage of the intermodal and interdisciplinary nature of the Annual Meeting program. The larger meeting rooms and superior Internet access allowed Technical Activities committees to explore different approaches to shar-

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*Transportation and Public Health*

For years, experts in transportation safety—especially highway safety—have argued that the tens of thousands of deaths and millions of injuries sustained from highway crashes constitute a public health issue of enormous proportions. Increasingly, other health issues associated with transportation have emerged—for example, the effects of air, water, and noise pollution; the spread of infectious diseases; the positive and negative effects of transportation on fitness and obesity; and the role of transportation in providing access to health care. Some 2015 highlights in this area include the following:

- The Standing Committees on Pedestrians and on Bicycle Transportation cosponsored a conference with the American College of Sports Medicine on Moving Active Transportation to Higher Ground: Opportunities for Accelerating the Assessment of Health Impacts.

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Preventing the spread of infectious disease in air travel is one of the many areas of intersection between public health and transportation. (Photo: Flickr)
Policy and Organization

POLICY AND ADMINISTRATION

The Fifth International Transportation Systems Performance Measurement and Data Conference, in Denver, Colorado, in June was a major activity of the Policy and Administration standing committees and involved onsite and web-based participants. A workshop for state practitioners on Transportation Asset Management: From Plans to Practice took place in conjunction with the conference.

INTERNATIONAL

The 2015 Annual Meeting attracted 2,130 attendees from outside the United States, an increase over previous years. The Standing Committee on International Cooperation led several Annual Meeting sessions, including a workshop on harnessing the potential payoff of research implementation across borders. The workshop engaged a diverse group of experts, with presentations including eight international perspectives.

DATA AND INFORMATION

Data and information initiatives combined investigation into the use of data in decision making with examination of data needs, sources, and management. Freight data were an area of emphasis. Highlights include the following:

- A peer exchange on Transportation Investment for Economic Development brought together the CEOs of six state DOTs and their economic development partners to explore ways for transportation investments to support economic development.

Additional highlights from the Technical Activities Division portfolio span the transportation disciplines and modes, as detailed in the following sections.

Ed Leonardo, Director of Meetings, worked with staff to ensure a smooth transition to the new Annual Meeting venue. (Photo: Risdon Photography)

Steve Phillips, Conference of European Directors of Roads, participates in a panel discussion on research implementation across borders at the 2015 Annual Meeting. (Photo: Risdon Photography)

Sara Maurer, Stanford University, presented research on bike share access at a poster session during the Transportation for Sustainability International Conference in May.
• A competition sought out good examples of the use of data and information to support transportation decisions.
• The Performance Measurement and Data Conference included themes on linking data to decision making and on working with new and big data sources for performance measures.
• A peer exchange on Data Governance focused on the business case for strategies to maximize the effectiveness of data-driven decision making for safety and other agency objectives.
• The Freight Fluidity Performance Measures Task Force worked with the Federal Highway Administration’s (FHWA’s) Freight Office to organize a second workshop on next steps in the deployment of a prototype fluidity measurement system.
• The Commodity Flow Survey Workshop continued the tradition of hosting survey users to gather feedback for the Bureau of Transportation Statistics.

RESEARCH AND EDUCATION

The five standing committees of the Research and Education Section worked to improve transportation research methods, the coordination of critical research, and the dissemination of the research results. The committees conducted the following workshops:

• Using Knowledge Management as a Tool for Successful Succession Planning,
• Keys to Transportation Research Innovation: Managing Intellectual Property,
• Ahead of the Curve: Mastering the Management of Transportation Research and Innovation, and
• Innovative Doctoral Research from the Dwight David Eisenhower Transportation Fellowship Program.

The Ahead of the Curve training program for research managers developed detailed outlines for the four core courses and piloted the introductory course at the July 2015 meeting of the Research Advisory Committee of the American Association of State Highway and Transportation Officials (AASHTO) and TRB state representatives.

Planning and Environment

TRANSPORTATION SYSTEM PLANNING

The planning committees had a busy year:

• The 15th National Transportation Planning Applications Conference, in Atlantic City, New Jersey, in May, provided planners an opportunity to learn from peers.
• Summer meetings took place in Salt Lake City, Utah, in July, in conjunction with the AASHTO Conference on 21st Century Mobility for Freight and Passenger Transportation. Committees met jointly to discuss ways of moving transportation research into practice—including techniques at conferences, user-friendly web tools, and specific ways to encourage practitioners to adopt new procedures, practices, or approaches.
• The Statewide Multimodal Transportation Planning Committee held a peer exchange in conjunction with the AASHTO Conference on 21st Century Mobility for Freight and Passenger Transportation. Committees met jointly to discuss ways of moving transportation research into practice—including techniques at conferences, user-friendly web tools, and specific ways to encourage practitioners to adopt new procedures, practices, or approaches.

SOCIAL AND ECONOMIC ISSUES

The committees involved in Social and Economic issues sponsored events aligned with two of the hot topics: the Transportation for Sustainability International Conference and the interdisciplinary workshop on Tools to Support Health and Transportation Planning and Analysis.
The workshop examined the nature of roadway departure crashes and explored strategic ways to reduce their frequency and severity.

- The Standing Committee on Landscape and the Environment met in Albuquerque and Santa Fe, New Mexico, in August to learn about transportation landscape issues in the Southwest, cultural landscapes and transportation, and related multimodal projects and to develop research needs statements.
- The Standing Committee on Pavement Management Systems cosponsored the 9th International Conference on Managing Pavement Assets, in Alexandria, Virginia, in May.

**Design and Construction**

**DESIGN**

Standing committees examined research needs, priorities, and findings via webinars, midyear meetings, and conferences:

- The Standing Committee on Roadside Safety Design held a joint workshop with the AASHTO Technical Committee on Roadside Safety on Making Roadside Departure Safety a Priority, in Chicago, Illinois, in July.

New bridges on I-91 in Hartford, Vermont, were constructed next to the existing bridges and moved laterally into place in a single weekend. Accelerated bridge construction techniques dramatically reduce the offline time for bridges undergoing replacement. (Photo: Vermont Agency of Transportation)

Katharine Hayhoe, Texas Tech University, delivers the keynote presentation at the First International Conference on Surface Transportation System Resilience to Climate Change and Extreme Weather Events in September.

ENVIRONMENT, ENERGY, AND CLIMATE CHANGE

Seven of the eight Environment and Energy Section committees sponsored or cosponsored conferences in 2015 on such topics as ecological issues in transportation systems; the changing approaches to solid and hazardous waste, from remediation and management to resource efficiency; and technological advances to decrease harmful emissions from heavy freight traffic and improve air quality. The 1st International Conference on Surface Transportation Systems Resilience to Climate Change and Extreme Weather Events was a focus of activities and offered occasion for the new Transportation Systems Resilience Section and its committees to hold midyear meetings.

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- The Standing Committee on Pavement Management Systems cosponsored the 9th International Conference on Managing Pavement Assets, in Alexandria, Virginia, in May.
and the state of the practice in the design and construction of concrete overlays;
• Publication of a circular, *Moisture Damage to Hot-Mix Asphalt Mixtures*; and
• Cosponsorship of the 5th International Symposium on Nanotechnology in Construction, in Chicago in May.

**GEOTECHNICAL ENGINEERING**

The geotechnical engineering committees addressed practitioners’ concerns through workshops, sessions, and specialty conferences. Highlights of activities include the following:

• A workshop on Improving Processes for Characterization of Soil Corrosion Potential of Buried Metallic Elements examined research needs and the methods, challenges, and protocols for various applications, as well as time-dependent electrochemical considerations related to AASHTO specifications.
• A workshop on full-depth reclamation projects for road rehabilitation presented lessons learned and outlined benefits, such as expedited construction, reuse of in-place materials, and decreased project costs.
• The 11th International Conference on Low-Volume Roads, held in Pittsburgh, Pennsylvania, in July, facilitated international technology transfer on safety, soil stabilization, materials, pavements, and maintenance.

In addition, committees in the Structures Section cosponsored international conferences on accelerated bridge construction, nondestructive testing, and orthotropic bridge decks.

**CONSTRUCTION AND MATERIALS**

The standing committees in the Construction, the Asphalt Materials, and the Concrete Materials Sections addressed issues and emerging topics through the following activities:

• Workshops on data standards for streamlining digital project delivery from design to construction; innovative additives for asphalt materials, including recent changes in performance-graded binder specifications; and the state of the practice in the design and construction of concrete overlays;

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Hot-mix asphalt delivered from a material transfer vehicle, an example of the techniques presented in Transportation Research E-Circular 198, *Moisture Damage to Hot-Mix Asphalt Mixtures*.

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Maintenance and Operations in Des Moines, Iowa. The conference provided information on the state of the art and practice in infrastructure maintenance operations and management. Papers and presentations examined such topics as needs-based budgeting, incorporating risks within maintenance operations and management, tools for transparent decision making, and mobile technology in maintenance operations, including winter maintenance.

The 14 standing committees sponsored a variety of workshops and sessions at the 2015 TRB Annual Meeting:

- Advances in Technology, Facilities, and Operations for Winter Maintenance;
- Developing the 21st Century Maintenance Workforce;
- Managing and Maintaining Nonpavement, Nonbridge Highway Assets;
- Handing over Digitally Constructed Projects to Operations and Maintenance; and
- Performance-Based Contracting: Toward More Efficient and Effective Road Maintenance.

Safety and System Users

In addition to the conference on Moving Transportation to Higher Ground, highlights of activities undertaken by the Safety and System Users committees included the following:

- The Standing Committees on Highway Safety Performance and on Safety Data, Analysis, and Evaluation held a joint midyear meeting in Irvine, California, to review ongoing research and future needs, particularly for the development of the second edition of the Highway Safety Manual; and
- The 2nd National Roadway Safety Culture Summit in Washington, D.C., in November engaged participants in a dialogue on safety culture changes in transportation organizations.

In addition, the following committees and subcommittees met during the year to discuss states of practice and knowledge and to identify areas for research: Highway Safety Workforce Development; Young Drivers; Safe Mobility for Older Persons; Truck and Bus Safety; Traffic Law Enforcement; Occupant Protection; and Alcohol, Other Drugs, and Transportation.
The Annual Workshop on Transportation Law continues to be the cornerstone of the outreach and educational efforts by the Legal Resources Group. The 54th annual workshop, held in Chicago in July, attracted nearly 200 participants and addressed such issues as the following:

- Legal and technical issues related to the Americans with Disabilities Act (ADA) requirements for public rights-of-way and
- Recent litigation involving guardrail end treatments and the potential legal impacts to public entities.

The Legal Resources Group explored approaches to other concerns through conferences and workshops that addressed such issues as the following:

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The Legal Resources Group explored approaches to other concerns through conferences and workshops that addressed such issues as the security of infrastructure and data, the inclusion of right-of-way and legal professionals on project delivery teams, and the coordination of risk management and tort liability in the development and redevelopment of land uses.

Research related to National Cooperative Highway Research Program Project 20-6, Legal Problems Arising out of Highway Programs and Transit Cooperative Research Program Project J-5, Legal Aspects of Transit and Intermodal Transportation Projects continued to revise Selected Studies in Transportation Law. Supplements have been completed for Volume 1, Contracts, Volume 2, Environmental, and Volume 5, Transit.

**Aviation**

The Standing Committee on Aviation System Planning sponsored its triennial National Aviation System Planning Symposium in Charleston, South Carolina. The Standing Committee on Aircraft-Airport Compatibility met with the American Society of Civil Engineers in Miami, Florida, at the 2015 Airfield and Highway Pavements Conference. TRB’s new Unmanned Aircraft Systems Subcommittee cosponsored the NASA Unmanned Aircraft Systems Traffic Management Convention.

The Aviation Group committees maintained active involvement in TRB’s Airport Cooperative Research Program (ACRP), developing and sponsoring problem statements and providing reviews of problem statements for the ACRP Oversight Committee. Several committees, including Environmental Impacts of Aviation, Airfield and Airspace Capacity and Delay, and Light Commercial and General Aviation, held summer meetings in Washington, D.C., to advance discussions about completed, ongoing, and needed research in aviation.

**Marine**

The standing committees of the Marine Group, together with the Marine Board, cooperatively address issues in marine transportation on behalf of TRB. Major themes addressed at the 2015 Annual Meeting and the Marine Group Summer Meeting included seaport resiliency and cargo diversion; port drayage and chassis

A panel discussion at the Marine Board meeting in June addressed freight mobility challenges and research needs.
management; Arctic shipping; and marine environmental, safety, and human factors concerns.

In spring and fall meetings, the Marine Board addressed cybersecurity in the marine transportation system, response to emergencies in the Arctic, and human and intellectual capital in marine transportation. The Marine Board identified 11 priority issues for 2015 and prepared fact sheets including additional resources and lists of committee members with related expertise. Topics of focus were the aging infrastructure; Arctic shipping; building and fostering a strong safety culture; climate change; cybersecurity; emergency planning, preparedness, response, recovery, and mitigation; the future of navigation; human and intellectual capital; marine incidents and development of a near-miss database; new energy options and the associated infrastructure requirements; and risk assessment and analysis. The issues are guiding the Marine Board’s engagement with federal agencies, transportation stakeholders, and the standing committees.

**Rail**

The growth of the domestic energy-producing sector remained the dominant issue for the railroad industry, as the volume of rail movements of crude oil and ethanol continued despite the softening of petroleum prices. Highlights of the Rail Group committee activities for the year include the following:

- A half-day workshop at the TRB Annual Meeting focused on trends in the movement of crude oil by rail and on the separation of passenger and freight trains in urban areas.
- An Annual Meeting session brought together industry leaders to discuss the surge in domestic intermodal container movements.
- The 2015 Joint Rail Conference in San Jose, California, cosponsored by TRB, featured a dialogue on the construction of California’s high-speed rail system.

**Freight Systems**

The standing committees in the Freight Systems Group have been exploring the interdependencies and interplays between infrastructure resiliency, supply chain dynamics, system capacity, and investment strategies. In 2015, the committees carried out the following initiatives:

- Partnered with the Marine Group to organize four Freight Day sessions at the 2015 Annual Meeting, focusing on consumer and manufacturing effects on corridors, infrastructure and operations trends, policy and strategic initiatives, and energy mobility;
- Cosponsored a conference with the American Association of Port Authorities on shifting international trade routes and the possible effects on freight flows in the United States in relation to the expansions of the Panama and Suez Canals;
- Partnered with the Data and Information Group to organize the FHWA-sponsored workshop on a freight fluidity measurement system; and
- Jointly organized a summer meeting addressing trends in domestic energy flows and regulation; port disruption, resilience, and cargo

Trends in the movement of crude oil by rail were among the topics explored by Rail Group standing committees in 2015. (Photo H. Michael Miley, Flickr)

Drew McElroy discusses disruptive technologies and the Internet during one of the four Freight Day sessions at the 2015 Annual Meeting. (Photo: Risdon Photography)
diversion; the effects of pending trade agreements on the U.S. freight system; and big data.

**Public Transportation**

The Public Transportation Group committees stimulate and foster research and communication to advance public transportation, travel demand management, and accessibility. The group explores issues, best practices, research needs, and technology transfer in support of public transportation providers, users, policy makers, and funders. Activities in 2015 included the following:

- The 13th National Light Rail and Streetcar Conference, in Minneapolis, Minnesota, cosponsored by TRB and the American Public Transportation Association;
- The 14th TRANSED Conference, in Lisbon, Portugal, on the development of transport services and systems that meet the needs of people with disabilities;
- The inaugural meeting of the Public Transportation and Security Task Force; and
- A retreat hosted by Denver Regional Transportation District to refine the mission of the group and to update the strategic plan.

**SHRP 2 Safety Data Phase 1**

As SHRP 2 ended on March 31, the first phase of implementing its largest product—two petabytes of real-world driving data—began under a memorandum of understanding between FHWA, AASHTO, the National Highway Traffic Safety Administration, and TRB. A small team of SHRP 2 staff is responsible for this activity, now housed in the Technical Activities Division. The Phase 1 budget of $25 million supports key activities that include the following:

- Establishment of the Safety Data Oversight Committee to provide policy guidance, plus two expert task groups to supply technical expertise on such issues as data access and user community development;
- The completion of contracts to operate the

Miraflores Locks on the Panama Canal. (Photo: Amanda Richards)
Naturalistic Driving Study Data and the Roadway Information Database, facilitating data use by more than 80 research projects and exploring downloadable public use data sets;

- The rollout of the production version of the InSight website, which provides information about the safety data and allows selected data to be viewed and queried;
- A student competition to encourage graduate and undergraduate students to explore innovative uses of the data; and
- Webinars to introduce potential users to the data, along with periodic publications to update stakeholders on the progress on Phase 1.

Members of the SHRP 2 Oversight Committee directed the program to a successful conclusion in 2015, delivering more than 100 products that improve highway infrastructure renewal, safety, reliability, and capacity. The Technical Activities Division is managing the first phase in the use of the vast safety data assembled under SHRP 2.

**STAFF NEWS**

ANN M. BRACH was named Director of Technical Activities in March, after completing three-and-a-half years at the helm of SHRP 2.

Also moving to the division from SHRP 2 were STEVEN J. ANDRLE, as Program Manager for SHRP 2 NDS Safety Data and Public Transportation; DAVID J. PLAZAK, as Associate Director–Safety Data; and ALYSSA M. HERNANDEZ, as Program Officer, Safety Data.

CLAIRe E. RANDALL joined the staff as Program Officer, Public Transportation.

ELIZABETH ANGELA CHRISTIAN was hired as Program Coordinator.

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The Roy W. Crum Award for outstanding transportation research leadership was presented to Forrest M. Council, former Director and current Research Scientist, University of North Carolina Highway Safety Research Center (HSRC). A nationally recognized expert in highway safety issues, Council has overseen research to identify and strengthen methodologies in roadway safety—including development of the Federal Highway Administration’s (FHWA’s) Accident Research Manual. After retiring as HSRC director in 1999, Council dedicated his time to research—notably the planning, development, and implementation of FHWA’s Highway Safety Information System.

He began his longtime association with TRB in 1974 as a member of the Traffic Records Committee. Since then, Council has served on approximately 25 TRB committees, panels, and task forces. In 2009, he was appointed emeritus member of the TRB Standing Committee on Safety Data, Analysis, and Evaluation and was named a National Associate of the National Research Council of the National Academies of Sciences, Engineering, and Medicine.

Katherine F. Turnbull received the W. N. Carey, Jr., Distinguished Service Award for contributions to transportation research and to TRB. Turnbull is Executive Associate Director and Research Scientist, Texas A&M Transportation Institute (TTI).

For more than 27 years, Turnbull has been an active TRB volunteer, serving as chair or member of more than 23 councils, groups, sections, committees, panels, and task forces—as well as authoring nearly 40 TRB publications since 1988. She is nationally recognized for her work in performance measurement and assessment of high-occupancy vehicle and high-occupancy toll facilities, intelligent transportation systems technologies, and innovative transit service in national parks and federal lands.

Turnbull served as chair of the TRB Technical Activities Council from 2011 to 2013; in 2011, she was named a National Associate of the National Research Council of the National Academies of Sciences, Engineering, and Medicine.

Robert E. Skinner, Jr., received the Frank Turner Medal for Lifetime Achievement in Transportation, Executive Director of TRB from 1994 until his retirement earlier this year, Skinner presided over a period of robust growth in TRB programs and influence.

During his 21-year tenure as Executive Director, TRB’s annual budget rose from $35 million to $113 million. Initiatives and programs developed under Skinner include the Airport Cooperative Research Program; the second Strategic Highway Research Program; the Minority Student Fellows Program; the Young Members Council; and efforts to increase participation by women, members of minority groups, and young people in committees, activities, and leadership positions. TRB also expanded the range of its programs and fostered international research partnerships and coordination.

Daniel Sperling, Professor of Civil Engineering and Environmental Science and Policy, University of California (UC), Davis, delivered the 2015 Thomas B. Deen Distinguished Lecture on the emerging transportation of mobility, vehicles, and fuels. A leading expert on transportation technology assessment and on the energy and environmental aspects of transportation, Sperling is founding director of the Institute of Transportation Studies at UC Davis.

A pioneer in the study of efficient, low-carbon transportation systems, Sperling was appointed to the California Air Resources Board in 2007. His advisory work includes service on the review committees of three U.S. Department of Energy national laboratories. He also has served on 13 National Research Council committees, was founding chair of the TRB Standing Committee on Alternative Transportation Fuels, and was first chair of the Standing Committee on Sustainable Transportation.

Author and coauthor of more than 200 technical papers and 12 books, notably Two Billion Cars and Driving Climate Change: Cutting Carbon from Transportation, Sperling was named a National Associate of the National Research Council of the National Academies of Sciences, Engineering, and Medicine in 2004.
Several major studies were completed and released during 2015, spanning a range of topics: connected vehicle technology, reinvestment in inland waterways, freight rail regulation, evaluations of the research and development (R&D) programs of the Federal Railroad Administration (FRA) and of the Federal Highway Administration (FHWA), the regulation of truck size and weight, and the innovative urban mobility services provided by upstart companies such as Uber and Lyft.

**Connected Vehicle Initiative**

At the direction of the U.S. Congress, the Com-

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1 [www.trb.org/Publications/PubsPolicyStudiesSpecialReports.aspx](http://www.trb.org/Publications/PubsPolicyStudiesSpecialReports.aspx)
More reliance on a user-pays funding strategy for the commercial navigation system is feasible and would generate new revenues for maintenance and promote economic efficiency.

The committee concludes that an asset management program focused on economic efficiency would help prioritize maintenance spending and would identify the funding levels required for reliable freight service. The TRB Executive Committee initiated and funded this study; Chris Hendrickson, Carnegie-Mellon University, chaired the committee.

FRA Research and Development Program

TRB Special Report 316, Evaluation of the Federal Railroad Administration Research and Development Program, assesses the effectiveness of the agency’s process for identifying research priorities and the usefulness of R&D products for improving safety in track and structures, rolling stock, train control and communications, and human factors. The committee concluded that the productivity of the R&D program appears good and that the program appears well focused on safety.

The Committee for the Review of the U.S. Department of Transportation (DOT) conducted a peer review of a U.S. DOT report to Congress on dedicated short-range technology for applications such as automated and connected vehicles. (Photo: U.S. DOT)

U.S. Inland Waterways System Maintenance and Funding

TRB Special Report 315, Funding and Managing the U.S. Inland Waterways System: What Policymakers Need to Know, explores the role and importance of the federally funded inland waterways system, priorities for future investment, the beneficiaries, and the sources of funding. The study committee finds that

- The most critical need for the inland waterways system is a sustainable and well-executed plan for maintaining system reliability and performance and
- More reliance on a user-pays funding strategy for the commercial navigation system is feasible and would generate new revenues for maintenance and promote economic efficiency.

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Maintenance on Lock and Dam 8 near Genoa, Wisconsin. The U.S. inland waterways system was the subject of a TRB policy study. (Photo: Patrick Moes, U.S. Army Corps of Engineers)
The report recommends ways to strengthen the program in the areas of communications with industry and the Office of Railroad Safety, priority setting, strategic planning, and project evaluation. FRA requested and funded the project; John Samuels, NAE, Norfolk Southern (retired), chaired the committee.

**FHWA Research and Innovation**

TRB Special Report 317, *The Essential Federal Role in Highway Research and Innovation*, summarizes conclusions and advice on FHWA’s critical role in highway research, development, and technology (RD&T) that TRB’s Research and Technology Coordinating Committee (RTCC) has provided over the years.3 The RTCC monitors and reviews FHWA’s research and technology activities and advises on research topics and on the conduct of research. The RTCC concludes that FHWA plays an essential role in exploratory, advanced research; addresses national priorities that other highway RD&T programs do not; and facilitates adoption of innovations at the state and local levels through technology transfer.

The RTCC notes that FHWA, along with its other responsibilities, will play a particularly important role in

- Ensuring the standardization of safety alerts from infrastructure and vehicles to motorists as part of the national connected vehicle initiative and
- Assisting transportation agencies in implementing the many innovations developed in the second Strategic Highway Research Program (SHRP 2).

FHWA funds the RTCC’s work. Michael Meyer, Modern Transport Solutions, LLC, chaired the committee.

**Modernizing Freight Rail Regulation**

TRB Special Report 318, *Modernizing Freight Rail Regulation*, examines the future role of the Surface Transportation Board (STB) in overseeing and regulating service levels and rate offerings as railroads become revenue adequate.6 This congressionally requested report recommends approaches to resynchronize a regulatory program that has become outdated. The study committee finds that although the U.S. freight railroad industry has become modernized and financially stable since the Staggers Rail Act of 1980, some of the industry’s remaining economic regulations have not kept pace and should be replaced with practices better-suited to today’s modern freight rail system. FRA funded the study. Richard Schmalensee, Massachusetts Institute of Technology, served as the committee chair.

**U.S. DOT Truck Size and Weight Study**

In the Moving Ahead for Progress in the 21st Century Act, Congress mandated a U.S. DOT study of truck size and weight. U.S. DOT requested a peer review of the study; the TRB committee issued an initial letter report in mid-2014 and released a final letter report after receiving the draft empirical results in mid-2015.7 The committee concluded that the study lacks a consistent and complete quantitative summary of alternative configuration scenarios and that major categories of costs—such as bridge structures, crashes, and infrastructure—are not estimated. The letter report does not take a position on changes to the federal truck size and weight limits but offers recommendations for improving the study’s estimates. James Winebrake, Rochester Institute of Technology, chairs the committee.

**Innovative Urban Mobility Services**

The TRB Executive Committee initiated a project to assess the consequences of urban transportation services made possible by mobile phone applications. Special Report 319, *Between Public and Private Mobility: Examining the Rise of Technology-Enabled Transportation Services*, provides...

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7 www.trb.org/Main/Blurbs/173282.aspx.
guidance to policy makers and regulators about transportation network companies (TNCs), such as Uber and Lyft, which are gaining popularity but generating controversy by competing with traditional taxi providers. Also of interest are the potential effects on travel behavior, residential location preferences, and vehicle ownership from such mobility services as carsharing, bikesharing, and integrated applications that provide real-time information about travel time and cost for urban mobility options. Brian Taylor, UCLA, chairs the committee.

Assistance in Other National Academies Studies
In addition, the Policy Studies staff assisted the National Academies’ Board on Energy and Environmental Systems on three projects: evaluating fuel conservation technologies for light-duty vehicles and for medium- and heavy-duty trucks, both for the National Highway Traffic Safety Administration; and a study of options for funding electric vehicle recharging stations, for the Department of Energy.

FORTHCOMING REPORTS
- Offshore Oil and Gas Industry Safety Culture is a study conducted under the auspices of the Marine Board. The project is funded through a settlement between the U.S. Department of Justice and a company operating in the Gulf of Mexico. Nancy Tippins, Valtera Corporation, chairs the study committee. The final report is expected in early 2016.
- Intercity Passenger Travel: Opportunities and Issues in Short-Haul Markets is a study initiated by the TRB Executive Committee to examine the potential for expanded intercity passenger rail in the context of consumer demand for all modes of intercity travel. Martin Wachs, RAND Corporation, chairs the committee; the report is expected to be released in early 2016.
- The Bureau of Safety and Environmental Enforcement (BSEE), which oversees the safety of offshore oil and gas operations, has asked TRB, under the auspices of the Marine Board, to initiate a study examining real-time technologies for monitoring offshore oil and gas exploration and production facilities. The study will advise BSEE on the state of the art and on ways that the offshore industry and the bureau can use the technologies

\[\text{http://onlinepubs.trb.org/onlinepubs/sr/sr319.pdf}\]
to enhance safety. The chair of the study is Richard Sears, Stanford University.

- TRB also is assisting the NRC Committee on National Statistics in a study for the Federal Motor Carrier Safety Administration; the study will provide advice on the appropriate research methods and data for assessing the ways that regulating the hours of operation affects driver fatigue and safety.

**ONGOING STUDIES**

Other committees provide ongoing peer review of the research and development programs of FHWA, FRA, and the Federal Transit Administration, as well as for major FHWA research activities, such as the Long-Term Pavement Performance Program and Long-Term Bridge Performance Program. The committees that review these programs and major projects provide advice regularly via letter reports publicly available on TRB's website.9

**NEW STUDIES**

TRB Policy Studies staff began work on two major studies at the end of 2015:

- Transportation of Petroleum, Natural Gas, and Ethanol, initiated by the TRB Executive Committee, is examining policy and technical options to facilitate the most efficient and lowest-risk means of transporting liquid and gaseous domestic energy products.
- Performance-Based Safety Regulation, funded by the Pipelines and Hazardous Materials Administration, is addressing the possible replacement of prescriptive safety regulations with a performance-based approach that encourages the pipeline industry to exceed minimum requirements.

**Synthesis Programs**

Under the sponsorship of the Cooperative Research Programs administered by TRB—specifically the Airport Cooperative Research Program (ACRP), the National Cooperative Highway Research Program (NCHRP), and the Transit Cooperative Research Program (TCRP)—the Synthesis Programs unit prepares reports on current practice and knowledge for a range of key airport, highway, and transit topics.

Practitioners and researchers make extensive use of the reports.

An airport panel, a highway panel, and a transit panel select the study topics each year. In 2015, 10 new airport, 16 new highway, and six new transit studies started up. 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 55–57. Approximately 1,000 copies of each ACRP and NCHRP report are published in hard copy, with 600 to 700 distributed to state DOTs, airport operators, and TRB topic-area subscribers. Starting in 2014, TCRP reports are published on the TRB website only; ACRP and NCHRP reports are also available on the website.10

TRB maintains an inventory of hard-copy synthesis reports for sale.11 Following are summaries of illustrative reports published in 2015.

**ACRP SYNTHESIS REPORTS**

ACRP Synthesis 68, Strategies for Maintaining Air Service, by Mike Gordon, compiles the current practices of smaller airports to maintain air service during airline route consolidations and cancellations.

ACRP Synthesis 64, Issues Related to Accommodating Animals Traveling Through Airports, explores ways for airports to develop a coor-

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10 www.trb.org/Publications/PubsNCHRPSynthesisReports.aspx; www.trb.org/Publications/PubsTCRPSynthesisReports.aspx; and www.trb.org/Publications/PubsACRPSynthesisReports.aspx.

NCHRP SYNTHESIS REPORTS

- NCHRP Synthesis 480, *Economic and Development Implications of Transportation Disinvestment*, by Chandler Duncan and Glen Weisbrod, examines methods for estimating the effects of disinvestment on transportation systems. The report includes information on economic forecasting and travel demand models, risk or probability models, needs models, and benefit and impact models. A TRB webinar on the report attracted 157 registrants, and the 2014 International Transportation Economic Development Conference in Dallas, Texas, addressed the topic.

- NCHRP Synthesis 479, *Forecasting Transportation Revenue Sources: Survey of State Practices*, by Martin Wachs and Benton Heimsath, documents current and proposed forecasting methodologies, as well as the shortcomings of the methods, as reported by state DOTs. The report includes information about the types of revenue being forecasted and DOT satisfaction with the accuracy of the projections. TRB hosted a webinar on the report in August with 150 registrants.


- NCHRP Synthesis 478, *Design and Load Testing of Large-Diameter, Open-Ended Driven Piles*, by Dan A. Brown and W. Robert Thompson III, documents the state of practice in the selection, use, design, construction, and quality control of large-diameter, open-ended driven piles for transportation structures. Agencies can apply the information to develop methods, technical guides, and design...
codes. TRB is sponsoring a webinar on this report in December 2015.

TCRP SYNTHESIS REPORTS

- TCRP Synthesis 114, Critical Incident Management and Clearance Practices for Rail Transit, by Daniel K. Boyle, summarizes the major issues for rail transit agencies in responding effectively to incidents and in identifying successful strategies and examines the effects of post-incident evaluation on response to the next incident. The report presents proven solutions and serves as a concise guide for communities and responders.
- Transit agencies have begun making schedule and real-time operational data available to the public, a practice known as open data. TCRP Synthesis 115, Open Data: Challenges and Opportunities for Transit Agencies, by Carol Schweiger, reviews the state of the practice in applying open data for transit planning, service quality, and customer information.

The National Transit Institute has recommended the two TCRP Synthesis reports as topics for webinars.

IDEA 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.

Three IDEA programs were operating in 2015:

- NCHRP IDEA, collectively funded by the state DOTs, for highway-related research;
- Transit IDEA, funded by FTA through TCRP, for research on innovations applicable to transit practice; and
- Rail Safety IDEA, sponsored by FRA, supporting projects to improve the safety of railroad operations.

STRUCTURE AND ACTIVITIES

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. IDEA projects are high-risk investigations of unproven concepts. Funds awarded for any one project range between $50,000 and $150,000. Frequently, however, the funds are augmented through cost-share arrangements, nearly doubling the amount of research that can be supported through the IDEA programs.

At the 2015 TRB Annual Meeting, the transit, highway, and safety programs conducted poster sessions highlighting 22 of the most promising current projects. Each session attracted a constant stream of interested visitors, who interacted directly with the inventors.

Each of the IDEA programs publishes an annual report that includes summaries of completed and current projects. The summaries also are posted on the IDEA page of the TRB website, along with the IDEA program announcement, which contains forms and guidelines for submitting proposals.12 Contractor final reports for completed IDEA projects are posted on the TRB website.13

RECENT SUCCESSES

- NCHRP IDEA Project 171, Producing a Sustainable and Bio-Based Alternative for Petroleum-Based Asphalt, by Elham H. Fini, North Carolina A&T State University, aims to produce bioasphalt adhesives from swine manure. The European Union’s Infravation Program selected this as a demonstration project; several European adhesive and asphalt vendors have indicated interest in the

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13 www.trb.org/Publications/PubsIDEAHighwayFinalReports.aspx; http://www.trb.org/Publications/PubsIDEATransitFinalReports.aspx; and www.trb.org/Publications/PubsIDEASafetyFinalReports.aspx.
product, and manufacturers from four European nations have requested licensing for the technology.

- The Hybrid Composite Beam (HCB), developed jointly under the NCHRP IDEA and the High-Speed Rail IDEA programs, by John Hillman, continues to gain acceptance among state DOTs in the construction of highway bridges. The HCB weighs approximately one-tenth of a typical precast concrete beam of the same span length, and the improved speed of installation is well suited to accelerated bridge construction. FHWA’s Highways for LIFE program has facilitated implementation of the technology in the United States. To date, 17 highway bridges in nine states and the province of British Columbia have installed HCBs, and at least 11 more projects are under consideration or construction in five states and three Canadian provinces.

Canadian Pacific Railroad is installing HCBs on a bridge in British Columbia. The White House recently recognized Hillman as one of 12 “Transportation Champions of Change.”

- Transit IDEA Project 76, RideScout Mobile Application, aggregates information from all types of ground transportation. RideScout provides door-to-door trip planning for users with a single point of access for all ride providers in the system. The application was launched in Austin, Texas, and Washington, D.C., and more than a dozen U.S. cities have implemented it. DaimlerChrysler recently acquired RideScout.

- Transit IDEA Project 78, Rail Neutral Temperature Monitoring, by Peter Bartek, Protran Technology, developed and tested a system to monitor rail neutral temperature for significant changes, which can contribute to rail buckling and derailments. The Maryland Transit Administration has tested the device, and the Washington Metropolitan Area Transit Authority is conducting pilots in various locations. Harsco Corporation, an industrial services company, recently acquired Protran Technology.

**STAFF NEWS**

**JILL WILSON**, Senior Program Officer, retired in 2015 after more than 20 years of exemplary service to TRB and to the Division on Engineering and Physical Systems.

**THOMAS R. MENZIES** was promoted to Deputy Program Director, and **MARK HUTCHINS** was promoted to Senior Program Officer.

**VELVET FITZPATRICK** and **MICAH HIMMEL** joined the Policy Studies staff as program officers in August 2015.
RB 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 Office of the Assistant Secretary for Research and Technology (OST-R);
- 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), sponsored by the Federal Railroad Administration (FRA).

During 2015, these programs produced 140 publications on a range of topics valuable to practitioners.

National Cooperative Highway Research Program

A forum for coordinated and collaborative research, NCHRP addresses issues integral to the functions of state departments of transportation (DOTs) and to the work of transportation professionals at all levels of government and private practice. Since 1962, NCHRP has helped the transportation community find practical solutions to pressing problems and develop and apply innovations to improve current practices.

Support for NCHRP is voluntary; funds are drawn from the Federal-Aid Highway apportionment for State Planning and Research (SPR) and can be spent only for the administration of projects approved by at least two-thirds of the states. NCHRP’s close association with AASHTO and its position within the National Academies of Sciences, Engineering, and Medicine have enabled the program to carry out research with sound, practical, and nationally important results. Stakeholder involvement throughout the NCHRP process guarantees that the program addresses high-priority research
needs and develops products that are ready for implementation by transportation practitioners.

NCHRP manages projects in research areas that range from highway and bridge planning, materials, design, construction, and operations, to economics and finance, policy, land use, environmental issues, and workforce development. The results of these research projects have appeared in 1,343 publications in the NCHRP Report and NCHRP Synthesis of Highway Practice series, in addition to 398 Research Results Digests and 67 Legal Research Digests, as well as 294 other documents published electronically. NCHRP reports published during the past 12 months are listed on pages 55–56.

PROVEN PROCESS

AASHTO considered 122 problem statements for the Fiscal Year (FY) 2016 program and selected 16 continuing projects and 45 new projects. Each NCHRP project 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 through 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 DOTs, and other organizations.

NCHRP panels convened for more than 162 project meetings in 2015; more than 2,416 volunteers offered their time, energy, and expertise as panel members, attending meetings and reviewing materials, primarily for the challenges and the satisfaction of making contributions to the field. Most NCHRP research projects have recommended specifications and produced manuals and guidelines that have had a direct impact on practice, and the program often partners with AASHTO to ensure that the state DOTs learn about and deploy the products. Examples of NCHRP successes can be found in the Impacts on Practice series.1

OTHER ACTIVITIES

In March, the AASHTO Standing Committee on Research (SCOR), which serves as the governing board for NCHRP, agreed to support a series of projects to explore the impacts of connected and automated vehicles on state and local transportation agencies. The projects are

1 www.trb.org/NCHRP/NCHRPImpactsONPractice.aspx.
investigating a strategic communications plan for connected and automated vehicle research, road markings for machine vision, the implications of automation for motor vehicle codes, dedicated lanes for connected and automated vehicles, and regional transportation planning and modeling tools that include the impacts of connected and automated vehicles.

In addition, SCOR initiated three activities:

1. **An update to the SCOR strategic plan.** The update was completed, approved in June, and posted on the SCOR—Research Advisory Committee website.¹

2. **Incorporating strategic research needs into the FY 2017 call for problem statements.** The FY 2017 call, issued on July 1, 2015, encouraged the submission of problem statements in three strategic areas: resiliency, freight transportation, and transformational technologies, in addition to the statements typically developed by practitioners in AASHTO committees and member agencies, FHWA, and SCOR.

3. **Development of an implementation plan for NCHRP research results.** The plan is slated for presentation at the SCOR meeting in December 2015.

**RESEARCH RESULTS**

Following is a sample of the NCHRP reports published in 2015 that have particular impor-

tance to AASHTO. All reports are available on the TRB website.³ General information on all projects is available in the NCHRP Summary of Progress, December 31, 2015,⁴ and on the web.

**NCHRP Reports**

- **NCHRP Report 797**, *Guidebook on Pedestrian and Bicycle Volume Data Collection*, describes methods and technologies for counting pedestrians and bicyclists, offers guidance on developing a nonmotorized counting program and on selecting appropriate counting methods and technologies, and provides examples of how organizations have applied nonmotorized count data.
- **NCHRP Report 798** examines *The Role of Planning in a 21st Century State Department of Transportation—Supporting Strategic Decision Making*.
- **NCHRP Report 799**, *Management Guide to Intellectual Property for State Departments of Transportation*, addresses issues related to copyrights, patents, and other intellectual property used or produced as part of an agency’s business activities.
- **NCHRP Report 806**, *Guide to Cross-Asset Resource Allocation and the Impact on Transportation System Performance*, provides guidance and a spreadsheet tool for applying data-driven techniques to prioritize projects, develop programs, analyze scenarios, and set targets. The tool and guidebook also offer assistance in analyzing and communicating the performance impacts of investment decisions.
- **NCHRP Report 811**, *Institutionalizing Safety in Transportation Planning Processes: Techniques, Tactics, and Strategies*, provides field-tested guidance on integrating safety into transportation planning and programming, as well as ways of measuring the effectiveness and success of the efforts.
- **NCHRP Report 813**, *A Guide to Agencywide Knowledge Management for State Departments of Transportation*, assists state transportation agencies in adopting and implementing a strategy for knowledge management—a variety of techniques for preserving and enhancing the knowledge of an organization’s employees as a productive asset.

¹ [http://research.transportation.org/Pages/SCORStrategicPlan.aspx](http://research.transportation.org/Pages/SCORStrategicPlan.aspx)

² [www.trb.org/NCHRP/NCHRP.aspx](http://www.trb.org/NCHRP/NCHRP.aspx)


Mcity is a test facility for connected and automated vehicle systems at the University of Michigan. AASHTO SCOR has authorized a series of NCHRP projects on connected and automated vehicles. (Photo: University of Michigan)
includes information on economic forecasting and travel demand models, risk or probability models, needs models, and benefit and impact models.

*NCHRP Legal Research Digest*

NCHRP Legal Research Digest 65, *Liability Aspects of Pedestrian Facilities*, addresses legal claims that relate to pedestrian facilities, such as sidewalks and crosswalks, and focuses on allegations of violations of the Americans with Disabilities Act and lawsuits alleging negligence by a government agency in maintaining its facilities.

**Transit Cooperative Research Program**

Initially 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 selects research for the program; the committee also serves as a subcommittee of 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 operating procedures. In its 23 years, TCRP has undertaken more than 700 research studies. Details on the program’s progress since 1992 can be found in the 2015 TCRP Annual Report.5

TCRP produced 20 publications in 2015, bringing the total to more than 620 since the program’s inception. The following TCRP pub-

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Under the direction of Sherry Little (fourth from right), the TCRP Oversight and Project Selection Committee sets research priorities for the program.
lications of particular interest were completed during the year.

OPERATIONS, MAINTENANCE, AND SAFETY

- TCRP Report 174, *Improving Safety Culture in Public Transportation*, defines safety culture and identifies the key components for the public transportation industry; presents methods and tools for assessing safety culture; describes performance indicators and reporting practices; presents best practices; and provides guidelines for initiating and building a program.

- TCRP Report 175, *Guidebook on Pedestrian Crossings of Public Transit Rail Services*, presents engineering treatments to improve pedestrian safety for light rail, commuter rail, and streetcars. The guidebook addresses key pedestrian safety issues associated with public transit rail services; summarizes flow-charts for decision making about pedestrian treatments at rail crossings; presents information on 34 treatments; and includes four case studies.

- TCRP Report 177, *Preliminary Strategic Analysis of Next-Generation Fare Payment Systems for Public Transportation*, addresses the design of next-generation transit fare payment systems to improve customer experience, streamline transit system operation, and integrate transit more effectively into mobility management programs. The report presents information and solutions related to emerging technologies for expanding fare payment options.

- TCRP Report 180, *Policing and Security Practices for Small and Medium-Sized Public Transit Systems*, responds to the specific challenges and issues associated with the security of small and medium-sized transit agencies. The report provides baseline options and identifies security countermeasures in use, prospective countermeasures, and best practices for reducing risks. The report is intended as a reference for transit agency personnel without security backgrounds who must address, perform, or supervise security activities as a part of their job.

PLANNING AND MARKETING

- TCRP Report 173, *Improving Transit Integration Among Multiple Providers*, presents a comprehensive set of guidelines and procedures for evaluating, planning, and implementing steps to integrate transit services in areas with multiple providers. The report comprises two volumes—the Transit Integration Manual and the Research Report—to guide the process of transit service integration, including tips for success.

- TCRP Report 176, *Quantifying Transit’s Impact on GHG Emissions and Energy Use—the Land Use Component*, analyzes the complex interrelationships between transit and land use patterns to understand their role in...
compact development and in reducing greenhouse gas (GHG) emissions. An Excel-based sketch modeling tool applies the findings to estimate the land use benefits of transit projects with a minimal amount of input data.

- TCRP Report 179, *Use of Web-Based Rider Feedback to Improve Public Transit Services*, provides an easy-to-use toolkit of best practices, emerging platforms, and promising approaches for customer web-based and electronic feedback to improve public transit services. Part I identifies best practices using in-house or third-party web-based and mobile platforms and provides guidance on managing feedback; Part II helps agencies select the most appropriate web-based feedback tool.

**Human Resources**

- TCRP Report 178, *A National Training and Certification Program for Transit Vehicle Maintenance Instructors*, proposes a national program for training and certifying transit bus and rail maintenance instructors. The report describes best practices in the public and private sectors to prepare and certify technical instructors, as well as the instructional delivery methods most effective for maintenance instructors.

**Airport Cooperative Research Program**

Airports present dynamic operating environments challenged with perpetual threats and opportunities. Airport practitioners need easy access to tools and information to help manage these and other challenges and to ensure that their airports are operating safely and efficiently. For the past 10 years, ACRP has met this vital need for resources and has provided the airport community with unbiased, proven solutions.

Established in 2005, ACRP is an applied research program that develops near-term practical solutions to problems faced by airport operators and their stakeholders and develops research publications available online at no additional cost to the industry. TRB manages the program, which is sponsored by FAA. ACRP undertakes research and other technical activities across disciplines, including airport design, construction, law, maintenance, operations, safety, policy, planning, human resources, and administration. The research fills voids in knowledge and practice, addresses persistent problems, and offers guidance on new issues to spur innovation in airport management.

ACRP has authorized 469 research projects, each scoped and guided by panels of subject-matter experts. The program has engaged thousands of public- and private-sector stakeholders—airport practitioners, academicians, consultants, advocates, and students—to identify problem areas and develop innovative publications that provide guidance, extend knowledge, identify best practices, and offer practical tools to overcome the challenges faced by airports. ACRP applies a grass-roots approach to engage practitioners, ensuring that the research captures the issues most relevant to the airport industry.

Through its more than 300 publications and its engagement with stakeholders, ACRP plays a key role in helping airports collaborate and share lessons learned, fulfill their environmental responsibilities, and operate safely and effi-
and opportunities in the industry. ACRP research has shed light on issues relating to emerging threats and opportunities:

- ACRP Report 140, Guidebook on Best Practices for Airport Cybersecurity;
- ACRP Report 142, Effects of Airline Industry Changes on Small- and Non-Hub Airports; and
- ACRP Synthesis 68, Strategies for Maintaining Air Service.

**PRACTICAL SOLUTIONS AND TOOLS**

In ACRP’s practical, hands-on tools and resources, industry stakeholders find a reliable source of information for innovating and for improving the conduct of airport business. ACRP's growing library offers software guidance, modeling tools, sample planning documents, best practices, worksheets, checklists, and more.

Maintaining safe and efficient operations in a capacity-constrained system is critical to the transportation of people and goods. ACRP resources assemble the guidance to help airport practitioners anticipate, prepare for, and implement solutions to meet new challenges involving revenue, emergency management, winter operations, wildlife mitigation, energy use, and more. Titles released in 2015 include the following:

- ACRP Report 122, Innovative Airport Responses to Threatened and Endangered Species;
- ACRP Report 123, A Guidebook for Airport Winter Operations;
- ACRP Report 124, Airport Parking Garage Lighting Solutions;
- ACRP Synthesis 60, Airport Emergency Post-Event Recovery Practices;
- ACRP Synthesis 62, Cell Phone Lots at Airports; and
- ACRP Synthesis 65, Practices to Develop Effective Stakeholder Relationships at Smaller Airports.

**EMERGING THREATS AND OPPORTUNITIES**

Management of an airport requires situational awareness and planning; ACRP publications inform practitioners about emerging threats and opportunities in the industry. ACRP research has shed light on issues relating to emerging threats and opportunities:

- ACRP Report 140, Guidebook on Best Practices for Airport Cybersecurity;
- ACRP Report 142, Effects of Airline Industry Changes on Small- and Non-Hub Airports; and
- ACRP Synthesis 68, Strategies for Maintaining Air Service.

**MANAGEMENT OF SMALL AIRPORTS**

ACRP research continues to resonate with the management of small airports. ACRP Report 16, Guidebook for Managing Small Airports (2008), is a perennial favorite and compiles information on the many issues faced by practitioners. Managers of the nation’s small airports have varied backgrounds and fill many roles—for example, dealing with budgets, debris on the runway, customer service, and emergency management planning.

ACRP has produced comprehensive resources for managers of small airports, including guidance on a range of financial, administrative, operational, and technical topics. Titles added in 2015 include the following:

- ACRP Report 128, Alternative IT Delivery Methods and Best Practices for Small Airports;
- ACRP Report 123, A Guidebook for Airport Winter Operations, examines effective chemical applications for ice and snow removal at airports. (Photo: Batts, Inc.)
Flight information display at the Tampa International Airport cell phone lot. ACRP Synthesis 62, Cell Phone Lots at Airports, presents findings from surveys of these services and facilities at North American airports. (Photo: Harriet Baskas, StuckatTheAirport.com)

- ACRP Report 138, Preventative Maintenance at General Aviation Airports; and

Through engagement with stakeholders and with a well-established research process, ACRP consistently provides the airport community with relevant, valuable guidance and tools to help practitioners successfully manage their day-to-day operations, avoid common problems, and take advantage of new opportunities for growth and innovation.

National Cooperative Freight Research Program

Authorized in 2005 under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), NCFRP is sponsored by OST-R and managed by TRB, with program guidance provided by an oversight committee comprising a representative cross section of freight stakeholders. Annual funding averaged $3.4 million during SAFETEA-LU, but the Moving Ahead for Progress in the 21st Century Act (MAP-21) repealed NCFRP.

Although the program will be closing down, all research activity funded through FY 2012 will be completed as planned. As of the end of 2015, eight projects remain. Work on six of the eight projects should be completed by early to mid-2016. The remaining two projects are in development as a result of a balance in the program funding through FY 2012. The two new projects, which will be under way in the spring of 2016, are

- NCFRP Project 49, Understanding and Using New Truck Data Sources to Address Urban Freight Challenges; and

Three reports were published in 2015:

- NCFRP Report 33, Improving Freight System Performance in Metropolitan Areas: A Planning Guide, identifies strategies and practical solutions for public and private stakeholders to improve regional freight movement and system performance in metropolitan areas. The guide serves as a comprehensive reference, from the urban core to suburban and exurban areas, and includes a tool to aid in selecting alternatives for various problems, as well as Freight Trip Generation software that identifies problematic locations.
- NCFRP Report 34, Evaluating Alternatives for Landside Transport of Ocean Containers, presents a systematic method for evaluating alternatives to diesel trucks for transporting containers between deepwater ocean ports and inland destinations within 100 miles. The report reviews active inland container transport proposals, including work in Southern California on zero-emissions container movement systems, and proposes performance-based criteria reflecting the transportation, emissions, energy use, congestion relief objectives, and cost of alternative transport options. The criteria can be used to evaluate container transport technology and systems.
- NCFRP Report 35, Implementing the Freight Transportation Data Architecture: Data Element Dictionary, describes the research to develop a dictionary for the myriad of freight data ele-
The National Cooperative Rail Research Program (NCRRP) was initiated under TRB management in 2012 with the sponsorship of FRA. The program carries out applied research on problems that address the following:

- Intercity rail passenger and freight rail services, including technologies and operating speeds, enhanced rail systems and infrastructure, and new high-speed, wheel-on-rail systems;
- Ways to expand the transport of international trade by rail, enhance the efficiency of intermodal interchange at ports and other terminals, and increase the capacity and availability of rail service for seasonal freight;
- The interconnectedness of commuter rail, passenger rail, freight rail, and other rail networks; and
- 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.

**Publications**

The NCRRP Oversight Committee, appointed by the Secretary of Transportation, selected initial research topics with one year of funding at $5.0 million. During 2015, two NCRRP reports were released:

- **NCRRP Report 1**, *Alternative Funding and Financing Mechanisms for Passenger and Freight Rail Projects*, identifies alternative funding and financing tools for passenger and freight rail project development, including capital investments, operations, and maintenance.

**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 efforts as a stakeholder-driven, problem-solving program, funding research on real-world, day-to-day operational issues with near-to midterm time frames. Annual funding averaged $1.1 million, but MAP-21 did not provide funding beyond FY 2012.

The program will be discontinued with the completion of the remaining active project, initiated in July 2014 and expected by early 2016. The project findings will be published as **HMCRP Report 15**, *Evaluation of Small Quantities of Class 3 and Class 9 Hazmat Materials in Transportation*.

**National Cooperative Rail Research Program**

Authorized by the Passenger Rail Investment and Improvement Act, NCRRP was initiated under TRB management in 2012 with the sponsorship of FRA. The program carries out applied research on problems that address the following:

- Intercity rail passenger and freight rail services, including technologies and operating speeds, enhanced rail systems and infrastructure, and new high-speed, wheel-on-rail systems;
- Ways to expand the transport of international trade by rail, enhance the efficiency of intermodal interchange at ports and other terminals, and increase the capacity and availability of rail service for seasonal freight;
- The interconnectedness of commuter rail, passenger rail, freight rail, and other rail networks; and
- 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.

**Publications**

The NCRRP Oversight Committee, appointed by the Secretary of Transportation, selected initial research topics with one year of funding at $5.0 million. During 2015, two NCRRP reports were released:

- **NCRRP Report 1**, *Alternative Funding and Financing Mechanisms for Passenger and Freight Rail Projects*, identifies alternative funding and financing tools for passenger and freight rail project development, including capital investments, operations, and maintenance.

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9 A temporary link to the freight data dictionary web application is available at http://freightdatadictionary.com.
In addition, NCRRP published Legal Research Digest 1, *Buy America Requirements for Federally Funded Rail Projects*, and Legal Research Digest 2, *Railroad Legal Issues and Resources*.

**PROJECTS IN PROGRESS**

Research projects under way include the following:

- Project 2-01, Comparison of Passenger Rail Energy Consumption with Competing Modes;
- Project 3-01, Intercity Passenger Rail Service and Development Guide;
- Project 3-02, Intercity Passenger Rail in the Context of Dynamic Travel Markets;
- Project 7-01, Alternative Financing Approaches for Passenger and Freight Rail Projects;
- Project 7-02, Developing Multistate Institutions to Implement Intercity Passenger Rail;
- Project 7-03, Inventory of Federal and State Passenger and Freight Rail Programs; and
- Project 12-01–Task 2, Legal Aspects of Rail Programs: Issues That Emerge When Public Entities Acquire a Real Property Interest in Rail Lines.

All are scheduled for publication by mid-2016. The pending reauthorization process and appropriations will determine NCRRP’s continuation.

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**STAFF NEWS**

**SREYASHI ROY** joined the staff as an editor in July 2015.

**DAN MAGNOLIA** and **NATASHA DONAWA** joined the staff as Senior Program Assistants in July and August 2015, respectively.

**JOSEPH SNELL** was promoted to Administrative Coordinator, Cooperative Research Programs, in November.
The TRB Administration and Finance Division provides financial management services 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 of Sciences, Engineering, and Medicine.

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 expenditures are estimated at $93 million for the calendar year 2015 (see graph, page 50). A statement of income and expenditures appears on pages 48–49.

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 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 for individual affiliates, organizational affiliates receive most publications at no cost and complimentary registrations—as

(continued on page 50)
## STATEMENT OF ACTIVITIES

### FUNDING SUPPORT BY PROGRAM AND EXPENDITURES

Calendar Years 2014 and 2015

<table>
<thead>
<tr>
<th>Program</th>
<th>2014 (Actual)</th>
<th>2015 (Projected)*</th>
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<tr>
<td><strong>Core Technical Activities</strong></td>
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<tr>
<td>State Highway and Transportation Departments (State DOTs)</td>
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<td>$6,973,000</td>
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<td><strong>Federal Government</strong></td>
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<td>Federal Transit Administration (FTA)</td>
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<td>National Highway Traffic Safety Administration</td>
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<td>Bureau of Indian Affairs, Department of the Interior</td>
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<td>Federal Motor Carrier Safety Administration (FMCSA)</td>
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<td>Federal Aviation Administration (FAA)</td>
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<td><strong>Total, Cooperative Research Programs</strong></td>
<td>$54,761,000</td>
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### DISTRIBUTION OF TRB EXPENDITURES

- Consultants and Contracts: 54%
- Salaries (Including Fringe Benefits): 36%
- Indirect Costs: 20%
- Other Direct Costs: 2%
- Editing, Abstracting, and Publishing: 1%
- Travel and Meetings: 5%

### TRB FUNDING SUPPORT

- Federal: 48%
- State DOTs: 45%
- Other: 7%
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<td>Innovations Deserving Exploratory Analysis (IDEA)</td>
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<td><strong>TRB TOTAL</strong></td>
<td>$112,584,000</td>
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<td><strong>Sources of Funds</strong></td>
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<td><strong>Total</strong></td>
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<td><strong>Expenditures by Major Cost Category</strong></td>
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<td><strong>Total Expenditures</strong></td>
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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 2015 comprises actual data through October and estimates for the rest of the year.
well as marketing and exhibit opportunities—at the TRB Annual Meeting. Organizational affiliate contributions range from $4,850 to $11,875, depending on the level of benefits selected.

In addition to the many benefits offered to an organizational affiliate, TRB sustaining affiliates are also entitled to complimentary registration for any webinar offered by TRB. In 2015, TRB conducted more than 70 webinars on a variety of transportation-related topics, with more than 26,000 registered attendees. The webinars offered 90 Professional Development Hours for professional engineers, and certified planners could earn more than 50 hours of Certification Maintenance credits from the webinars approved by the American Institute of Certified Planners. The minimum annual contribution for a sustaining affiliate is $19,000.

Sponsors are the major source of financial support for TRB’s core programs. Federal, state, and local government agencies, professional societies, and organizations that represent industry groups are eligible to participate as TRB sponsors. Fees and services are negotiated to fit each sponsor’s needs and to assure fundamental support for the Board’s programs and activities of interest to the entire transportation community. The minimum annual sponsor fee is $65,000. Each sponsor places a representative on the TRB Executive Committee. (See pages 58–59 for a list of TRB sponsors and sustaining affiliates)

**Publications Sales and Distribution**

TRB’s timely distribution of publications disseminates the results of transportation research and technology worldwide. In addition to hard-copy books, TRB releases almost all publications—some exclusively—in electronic format. Sponsors and subscribers have the option to receive all publications released by TRB or to receive only those publications in a particular transportation mode or a select area of interest. A complete listing of TRB publications issued from January 1 through December 31, 2015, appears on pages 54–57.

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**STAFF NEWS**

**ANDREA KISINER**

retired as Manager of Publication Sales and Affiliate Services after 16 years of outstanding service.

Andrea Kisiner acknowledges colleagues at her retirement reception in September.
# TRB Conferences and Workshops

## (January 1, 2015 – December 31, 2015)

### January
- **11–15** TRB 94th Annual Meeting
- **29–30** Shifting International Trade Routes Workshop

### February
- **15–18** Geosynthetics Conference*

### March
- **23–26** Joint Rail Conference*

### April
- **13–14** Moving Active Transportation to Higher Ground: Opportunities for Accelerating the Assessment of Health Impacts
- **16–17** Ferry Safety and Technology: Design and Operations Conference
- **19–22** American Association of State Highway and Transportation Officials (AASHTO) Geographic Information Systems (GIS) for Transportation Symposium*
- **21–23** International Highway Technology Summit: Cities, Transportation, and People*
- **26–28** International Bridge, Tunnel and Turnpike Association Transportation Finance and Road Usage Charging Conference

### May
- **7–8** Transportation for Sustainability: International Conference
- **10–15** International Choice Modeling Conference*
- **17–19** 9th National Aviation System Planning Symposium
- **17–21** 15th TRB National Transportation Planning Applications Conference
- **18–22** 9th International Conference on Managing Pavement Assets*
- **21–26** 5th International Symposium on Nanotechnology in Construction*
- **26–29** 2nd International Conference on Public–Private Partnerships*

### June
- **1–2** 5th International Conference on Transportation Systems Performance Measurement and Data
- **7–10** American Society of Civil Engineers Airfield and Highway Pavements Conference
- **10–12** 6th International Conference on Bituminous Mixtures and Pavements*
- **22–24** 5th International Symposium on Highway Geometric Design*
- **24–26** Summer Meeting and Conference of Freight Systems and Marine Committees

### July
- **6–9** Southern African Transportation Conference (SATC)*
- **12–15** 11th International Conference on Low-Volume Roads

### August
- **18–22** 54th Annual Workshop on Transportation Law
- **19–23** 14th AASHTO-TRB Conference on Transportation Infrastructure Maintenance and Operations*
- **20–24** Automated Vehicles Symposium *
- **28–31** TRANSED: 14th International Conference on Mobility and Transport for Elderly and Disabled People*

### September
- **2–5** International Symposium on Systematic Approaches to Environmental Sustainability in Transportation
- **9–12** 44th Annual International Congress and Exposition on Noise Control Engineering*
- **9–13** 9th International Conference on Road and Airfield Pavement Technology
- **24–25** 8th New York City Bridge Conference*

### October
- **6–8** 5th International Road Safety and Simulation Conference*
- **26–28** International Symposium on Frontiers of Road and Airport Engineering*

### November
- **4–5** 9th University Transportation Center Spotlight Conference: Connected and Automated Vehicles
- **5–6** 2nd National Roadway Safety Culture Summit
- **11–15** Disrupting Mobility: A Global Summit Investigating Sustainable Futures*
- **15–18** 15th Pan-American Conference on Soil Mechanics and Geotechnical Engineering*
### December
- **7–8** National Accelerated Bridge Construction Conference*
- **9–10** Advancing Freight Fluidity Performance Measures Workshop
- **17–20** 3rd Conference of the Transportation Research Group of India*

*TRB was cosponsor of the meeting.

### TRB Webinars, Webcasts, and Recorded Sessions
(JANUARY 1, 2015–DECEMBER 31, 2015)

#### January
- **8** Organizational Approaches and Analytic Tools to Improve Operations Capability
- **21** Guide to Regional Transportation Planning for Disasters, Emergencies, and Significant Events
- **21** Second Strategic Highway Research Program (SHRP 2) Tuesdays: Freight Demand Modeling and Data Improvement Strategic Plan
- **29** Tools for Pedestrian and Bicycle Volume Data Collection

#### February
- **9** Maintenance Training and Certification Programs
- **11** Planning for Safety Considerations on Airfields
- **17** Decisions Are Made on Tuesday Mornings: The Role and Requirements for Data in the Decision-Making Process
- **24** Factors That Influence Air Service Development
- **26** Performance of Warm-Mix Asphalt Technologies: Stage I—Moisture Susceptibility

#### March
- **5** The Impact of Regulatory Compliance and Through-the-Fence Operations on Small Airports
- **11** Long-Term Pavement Performance Program InfoPave: Visualization to Facilitate Extraction of Information Out of Data
- **17** Next Generation Air Transportation System: Research Update
- **18** Developing Reliability-Based Bridge Inspection Practices
- **24** Model for Publishing and Linking Transportation Datasets and Reports
- **30** Considerations for the Selection of Continuously Reinforced Concrete Pavement (CRCP) for Projects

#### April
- **1** Pothole Patching: One More Time
- **2** Debt Finance Practices for Surface Transportation: Current Issues and Research Needs
- **8** Rigid Pavement Preservation: Research Results

#### May
- **6** Tools for Analysis of Capacity and Efficient Flow for Roundabout Design, Part 1
- **13** Effective Practices for the Protection of Transportation Infrastructure from Cyber Incidents
- **18** Use and Implementation of the Federal Highway Administration Stochastic Empirical Loading and Dilution Model: Oregon and Massachusetts
- **21** Risk Management Applications for All Airports

#### June
- **1** 20 Years of Advances in Roundabout Design, Roundabout Construction Sequencing, and the Case for Illumination of Roundabouts
- **3** Mechanistic–Empirical Design and Details for CRCP
- **8** Green Infrastructure in the Transportation Sector
- **16** Funding and Managing the U.S. Inland Waterways System: What Policymakers Need to Know
- **17** Case Studies in Performance-Based Analysis of Geometric Design
- **18** Business Planning Approaches for Disruptive or Irregular Airport Operations
- **24** Materials for Unbound Granular Pavement Layers

#### July
<table>
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<th>Issue</th>
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<tr>
<td>Basics of Asphalt Modeling, Part 3: Viscoelastic Models to Decipher and Unify Asphalt Stiffness Measures</td>
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<td>Accessing the SHRP 2 Safety Data: User Responsibilities and Access Procedures</td>
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<td>Resources for Evaluating Airport Sustainability Practices</td>
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<td>Using Winter Severity Indices for Winter Maintenance Performance Management</td>
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<td><strong>August</strong></td>
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<td>6</td>
<td>Using the New Research in Progress Project Entry Interface</td>
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<td>Best Practices and Strategies for Assessing Economic Implications of Disinvestment or Right-Sizing Scenarios</td>
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<td>Transportation Revenue Forecasting in the States</td>
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<td>18</td>
<td>Flexible Pavement Preservation: Research Results</td>
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<td>19</td>
<td>Innovative Intersections for Pedestrians and Bicycles</td>
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<tr>
<td>24</td>
<td>Mechanisms and Mitigation Strategies for Reflective Cracking in Rehabilitated Pavements</td>
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<td>26</td>
<td>Connected-Vehicle Tracking to Improve Operational Efficiency</td>
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<td>27</td>
<td>Guidance and Considerations for Improving Airport Terminal Amenities</td>
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<td>31</td>
<td>Seismic Pushover Analysis Using the American Association of State Highway and Transportation Officials’ Guide Specifications for Load and Resistance Factor Design Seismic Bridge Design</td>
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<td><strong>September</strong></td>
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<td>2</td>
<td>Methods to Identify and Map State Freight Economic Corridors Based on Freight-Intensive Land Uses Concrete Joint and Crack Sealing Basics</td>
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<td>3</td>
<td>Cold Central Plant Recycling: A Proven Paving Approach Using 100% Recycled Materials</td>
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<td>8</td>
<td>Bridging the Gap: Pillars to Build a New Future</td>
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<td>9</td>
<td>Airport Wildlife Management</td>
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<td>10</td>
<td>Superpave®: Constructing Asphalt Pavement with Road Air Voids Equal to Design Air Voids</td>
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<tr>
<td>16</td>
<td>Multimodality in Major Cities: Urban Success Stories</td>
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<tr>
<td>22</td>
<td>Topics of Special Concern for General Aviation Airports</td>
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<tr>
<td>24</td>
<td>Putting Transportation Asset Management into Practice in a State Department of Transportation (DOT)</td>
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<td>28</td>
<td>More Tools from the Geotechnical Toolbox: Case Histories</td>
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