

TRANSPORTATION RESEARCH BOARD



| OVERVIEW |

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

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. Marcia McNutt 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.



INNOVATION AND PROGRESS THROUGH RESEARCH

OFTEN DESCRIBED AS THE lifeblood of the economy, a ubiquitous and well-functioning transportation system is essential to commerce and to the social connectivity and access to opportunity critical to improved quality of life. For nearly a century, the Transportation Research Board (TRB) of the National Academies of Sciences, Engineering, and Medicine has played a key role in developing a modern transportation system that better serves these functions through a range of convening, research, information-sharing, and advisory activities. Because of the rapid pace of change in transportation and technology, these activities are increasingly important to a national and global transporta-

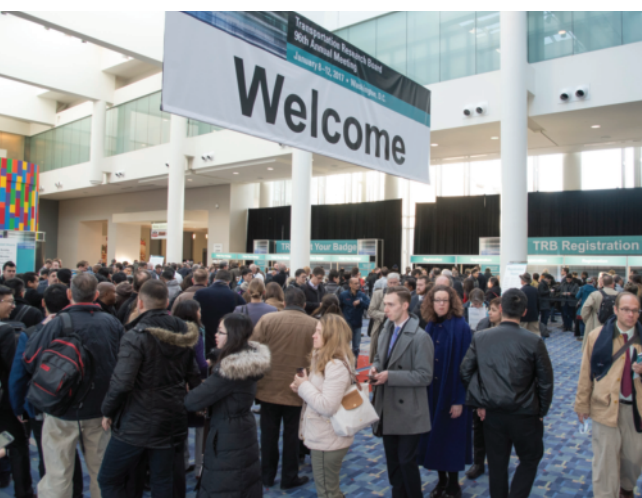
tion community facing many opportunities and challenges. Although it has long led efforts to ensure a well-designed, solidly constructed, and properly maintained transportation system, TRB has expanded its role to reflect society's broader interest in making the system safer, more accessible, less disruptive to communities, more benign to the environment, and more resilient to natural and man-made disasters. TRB supports the transportation community as it grapples with governance, funding, and regulatory issues and as it seeks to understand the changes made by technological developments and on the provision and use of transportation services.

Through its convening activities, TRB brings together many thousands of researchers and practitioners from around the world to share research results and innovations and to discuss current and future issues in transportation. TRB research addresses critical issues faced by owners and operators of the transportation system and develops solutions for practitioners. TRB also shares the results of leading transportation research through the *Transportation Research Record: Journal of the Transportation Research Board* and other publications and through its Transport Research International Documentation (TRID) database, which contains more than 1.1 million entries. TRB also advises the nation on complex, often contentious issues important to policy makers at all levels of government.

TRB is the more than 8,000 volunteers on its committees and research panels; the more than 13,000 attendees at its annual meeting; the



(Left to right:) Malcolm Dougherty, 2017 Executive Committee Chair; Katherine F. Turnbull, 2017 Executive Committee Vice Chair; and Neil Pedersen, TRB Executive Director. (Photo: Risdon Photography)



TRB's convening activities, including the high-profile Annual Meeting, bring together transportation researchers and practitioners from across the globe. (Photo: Risdon Photography)



TRB initiatives encompass all aspects of a societally beneficial transportation system—including its safety and accessibility. (Photo: Seattle DOT)

approximately 35,000 webinar participants and thousands of conference and workshop attendees; the tens of thousands of users of its publications, research reports, and TRID; the experts who serve on the policy study committees that advise the nation; and the dedicated staff who serve all of these participants.

This annual report overview summarizes TRB's convening, research, and advising accomplishments—as well as service to the national and the global transportation professional community—during 2017. For more details about the activities of each division, see the full version of the TRB 2017 Annual Report.

Organization

As a major program division of the National Academies of Sciences, Engineering, and Medicine, TRB has access to staff in the six other program divisions of the Academies and to experts who are elected by their peers to the honorific societies—the National Academy of Sciences, the National Academy of Engineering, and the National Academy of Medicine—for contributions to scientific research, engineering, or medicine and health. The National Academies provide independent, objective analysis and advice to the nation; conduct activities to solve complex problems; and inform public policy decisions on matters related to science, engineering, and medicine. TRB upholds the National Academies' rigorous standards for objectivity, balance, integrity, and ethics.

The TRB Division Committee conducts oversight of the Board's activities on behalf of the National Academies. Susan Hanson, a member of the National Academy of Sciences, serves as chair of the Division Committee and Chris Hendrickson, a member of the National Academy of Engineering, serves as vice chair. Strategic direction for TRB's activities and programs is provided by the Executive Committee. Twenty-six members of the Executive Committee are appointed from government, academia, and the private sector and represent all modes of transportation;



The 2017 Technical Activities Council provides oversight and strategic direction to the work of more than 5,000 volunteers on TRB's standing committees and task forces. (Photo: Risdon Photography)



The AASHTO Special Committee on Research and Innovation is the governing board for NCHRP.

and 20 ex officio members are top executives from TRB sponsoring agencies. After adopting a strategic plan for TRB, the Executive Committee is monitoring progress on its implementation.

The 220 standing technical committees of TRB cover all modes and a wide variety of issues in transportation. Each committee comprises approximately 30 to 35 members, with additional volunteers on its friends list. The committees organize Annual Meeting and conference sessions, review papers submitted for presentation at the Annual Meeting and for publication in the *Transportation Research Record*, develop research problem statements for the Cooperative Research Programs and other research organizations, and serve as communities of practice for experts in their respective subject areas.

More than 5,080 volunteers fill 6,855 positions on TRB's standing technical committees and task forces. These committees are organized into eleven groups, with oversight provided by the Technical Activities Council and its chair, Hyun-A Park. TRB's Technical Activities Division staff supports the work of the committees.

TRB's three largest Cooperative Research Programs cover highways, airports, and transit. An oversight panel for each program selects research projects, and each project is conducted by a contractor team and guided by a panel of experts. More than 3,300 volunteers serve on CRP project and oversight panels, and TRB's Cooperative Research Programs Division provides staff support for these activities. In 2017, TRB entered into an agreement to launch a Behavioral Traffic Safety Cooperative Research Program with an annual budget of \$2.5 million.

TRB's consensus studies advise on policy issues and review federal research programs. Ap-

proximately 160 volunteers, selected to avoid financial conflicts and to balance expertise and perspectives, serve on these study committees. Their work is overseen by the Executive Committee's Subcommittee on Planning and Policy Review, chaired by Daniel Sperling. TRB's Studies and Special Programs Division provides staff support.

An internationally recognized source of expertise on maritime transportation and marine engineering and technology, TRB's Marine Board identifies needs in maritime research and facilitates information exchange on new technologies, laws and regulations, economics, the environment, and other issues affecting the marine transportation system, port operations, coastal engineering, and governance. At the request of a sponsoring agency or on its own initiative, the Marine Board conducts evaluations of and provides advice on the ability of the nation's marine and maritime industries to operate safely, efficiently, and in an environmentally responsible manner. It comprises 20 members and is chaired by Mary Brooks.

TRB's Executive Office provides strategic direction and oversight of staff, as well as a variety of administrative, publication, communications, and information technology functions. The Administration and Finance Division manages TRB's finances, which encompass support from sponsors and affiliates, service of volunteers on committees and panels, the size of the Annual Meeting, and the number of contracts at any given time.

Strategic Initiatives

The TRB Executive Committee has identified



Chris Hendrickson, Vice Chair of the TRB Division Committee, participates in an Executive Committee meeting. (Photo: Risdon Photography)



The Subcommittee on Planning and Policy Review guides TRB's consensus studies, which advise on policy issues and review federal programs.

three topics critical to the future of transportation—transformational technologies, resilience, and the relationship between transportation and public health—and has charged all of TRB’s programs and organizational units with implementing activities and research that advance these topics. The Executive Committee established task forces to recommend activities and research to address each of these areas holistically, discover research gaps, and find ways for TRB to enhance the state of knowledge and the state of practice. The oversight committees for each TRB division also identified activities in the three strategic areas.

TRANSFORMATIONAL TECHNOLOGIES

New and emerging technologies—connected and automated vehicles, shared-use mobility services, and unmanned aerial systems—have the potential to fundamentally change how passengers and goods move in the transportation system. Smart cities, big data, and cybersecurity will affect the transportation system of the future in profound ways.

TRB facilitates a wide range of activities related to transformational technologies.

- Eighty-three sessions addressed transformational technologies at the 2017 TRB Annual Meeting.
- The Automated Vehicle Symposium, cosponsored by TRB and by the Association for Unmanned Vehicle Systems International, attracts more than 1,500 attendees and is TRB’s second-largest meeting each year.
- Many papers on transformational technologies are presented at the Annual Meeting and are published in the *Transportation Research Record*.
- The Cooperative Research Programs explore a



Neil Pedersen spoke at the 2017 Automated Vehicle Symposium. The event is TRB’s second-largest meeting each year. (Photo: AUVSI)

variety of issues associated with transformational technologies.

- The TRB Executive Committee has devoted two of its recent policy sessions to cybersecurity and smart cities and has provided strategic direction on how to address these issues.
- TRB has created a website devoted to transformational technologies.¹
- The National Academies–TRB Forum: Preparing for Automated Vehicles and Shared Mobility will bring together leaders from the private sector, research organizations, and government on a regular basis to discuss critical issues on this topic and to provide input on the preparation of an updated research roadmap.

RESILIENCE

Defined as the ability to prepare and plan for, absorb, recover from, and more successfully adapt to naturally occurring or man-made adverse events, resilience is a key focus for the National Academies. Previously, the TRB Executive Committee established a task force to provide strategic direction on resilience-related programs and projects. That task force developed a strategic plan largely focused on adapting to severe weather events and recommended many activities and research projects that now are under way or recently completed.

Recognizing that adaptation and mitigation must both be considered in order to address resilience, and that resilience is tied directly to sustainability, the Executive Committee formed a reconstituted task force in 2017 that focuses on both mitigation and adaptation, as well as on the relationship between resilience and sustainability. TRB committees sponsored 25 sessions related to resilience at the Annual Meeting. The Technical Activities Council created a Resilience Section to identify and address resilience-related focus areas for standing committees. Along with publishing many reports on transportation systems resilience each year, the Cooperative Research Programs have begun to develop a resilience research roadmap.

In May, TRB sponsored a joint symposium with the European Commission, Decarbonizing Transport for a Sustainable Future: Mitigating Impacts of the Changing Climate, and continues to participate in the National Academies’ Resilient America Roundtable.

¹ www.trb.org/main/SPOTT.aspx



U.S. Coast Guard officers assess storm damage at a port. Resilience to natural or man-made disasters is a major research focus at the National Academies of Sciences, Engineering, and Medicine. (Photo: Coast Guard News, Flickr)

TRANSPORTATION AND PUBLIC HEALTH

TRB has partnered with the National Academies' Health and Medicine Division to collaborate on issues related to transportation and public health, which includes staff involvement by each division in the other's committees and activities. The intersection between public health and transportation was the topic of 29 sessions and 35 meetings at the 2017 TRB Annual Meeting.

A project is under way to develop a research roadmap for public health and transportation that will guide TRB's future research activities in this area. Other projects include a guidebook for integrating transportation and health care providers and research on preparing airports for communicable diseases on arriving flights. TRB continues to identify ways to collaborate with the public health community in addressing transportation and public health.

CRITICAL ISSUES IN TRANSPORTATION

TRB issues a report on critical issues in transportation approximately every five years. In 2017, TRB began work to develop the next edition, which aims to identify the most important issues in transportation during the next five to 10 years and to pinpoint future focus areas for TRB's programs and committees, including: economics and regulation; energy and environment; equity; funding and finance; governance; infrastructure and asset management; resilience and security; research, innovation, and workforce challenges; safety and public health; and transformational technologies. The new edition of *Critical Issues in Transportation* is expected to be completed in late 2018.

Convening Activities

With more than 13,300 participants, the 2017 Annual Meeting was the largest in TRB history. Attendees were roughly evenly split from among public-sector agencies (32 percent), private-sector organizations (37 percent), and academic institutions (31 percent). More than 800 sessions and workshops covered a range of topics related to transportation, and the event hosted meetings of all 220 of TRB's standing technical committees and task forces—as well as approximately 300 subcommittees.

With its 276 exhibits covering more than 35,000 square feet of exhibit hall space, the Annual Meeting was ranked by the magazine *Trade Show Executive* as one of the 50 fastest-growing shows, both by net square feet and by number of exhibiting companies. At the 2018 Annual Meeting, TRB will introduce its first annual Careers in Motion Job Fair.

In addition to the Annual Meeting, in 2017 TRB sponsored 48 conferences and workshops and cosponsored 36 others on a wide variety of subjects, from specific technical topics to broader policy issues. More detailed information on TRB's annual meeting, conferences, and workshops can be found in the full version of the TRB 2017 Annual Report.

TRB's popular webinar series allows stakeholders to participate in TRB activities without having to travel to events. In 2017, TRB conducted 98 live webinars with an estimated overall at-



The Exhibit Hall at the TRB Annual Meeting is one of the fastest-growing trade shows in the country. (Photo: Risdon Photography)

tendance of 35,000 and produced 15 prerecorded webinars that were viewed by more than 4,000 people. As with its conferences and workshops, TRB's webinar subjects ranged from specific technical topics to broader issues. Webinars present the results of TRB research, allow standing committees to address and discuss issues, and facilitate the sharing of success stories and lessons learned in research implementation.

TRB's Annual Meeting, conferences, workshops, and webinars provide professional development opportunities for TRB stakeholders at every stage of their career. Many sessions and webinars count as credits for professional engineer license renewals and planner certifications.

Research

TRB manages three large programs through its Cooperative Research Programs Division: the National Cooperative Highway Research Program (NCHRP), the Airport Cooperative Research Program (ACRP), and the Transit Cooperative Research Program (TCRP). Previously authorized cooperative research programs in rail and hazardous materials are nearing completion, and a new Behavioral Traffic Safety Cooperative Research Program began in late 2017. The programs focus largely on applied research—each program's oversight committee is composed of leaders from transportation organizations that will use the products of the research, and that research is contracted out and managed by Cooperative Research Programs Division staff.

In 2017 the Cooperative Research Programs Division managed approximately 517 ongoing



NCHRP projects are guided by panels of technical specialists and practitioners, who define the scope of work and select the projects' contractors.



TRB conferences and workshops facilitate career development and networking opportunities for transportation students and professionals. (Photo: Risdon Photography)

projects and issued 118 publications, with an increasing focus on the implementation of research results by transportation stakeholders and proactive efforts to improve usability and awareness of research products for practitioners. For more on TRB's Cooperative Research Programs, see the full TRB 2017 Annual Report.

In addition to managing its own research programs, TRB features research conducted by others through its Annual Meeting and in the *Transportation Research Record*, the largest transportation journal in the world. Of the 6,000 papers submitted for peer review in summer 2017, 3,400 were selected for presentation at the 2018 TRB Annual Meeting and 900 were selected to be published in the 2018 *Transportation Research Record*. In 2017 several measures were taken to streamline the publication process, including outsourcing the steps in the process from final acceptance of a paper through publication.

TRB also showcases research in the Transportation Research Information Services databases. The largest of these is TRID, which contains more than 1.1 million records of citations and abstracts of transportation research from around the world. TRB also maintains the Publications Index, Research Needs Statements, Research in Progress, and Practice-Ready Papers databases.

Second Strategic Highway Research Program

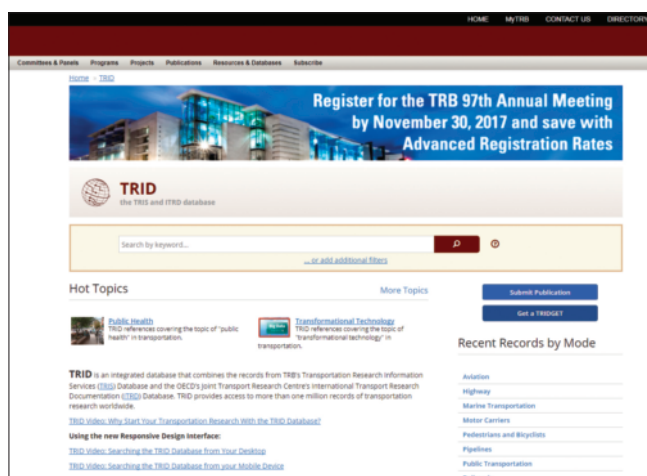
The Second Strategic Highway Research Program (SHRP 2) conducted the largest naturalistic

driving study ever undertaken. More than 3,000 vehicles, equipped with video cameras and other data collection devices, provided information on drivers and their vehicles in natural driving conditions and gathered more than two petabytes of safety data that never before had been available, especially data related to driving behavior. Through 2019, TRB is responsible for stewardship of the database and for making the data available to qualified researchers to conduct safety-related research studies. To date more than 250 data use licenses have been issued and more than 70 research papers using the data have been published, with many more expected over the next few years. TRB also is developing a plan for stewardship of the database after 2019.

Advising Activities

The TRB Studies and Special Programs Division produced many significant consensus study reports in 2017. Prepared by National Academies-appointed committees, the volumes underwent a rigorous peer-review process before being published as National Academies reports. They include the following:

- *In-Service Performance Evaluation of Guardrail End Treatments*, which recommends a research design for evaluating the in-service performance of guardrail end treatments and advises on the required data and actions for conducting evaluations.
- *Designing Safety Regulations for High-Hazard Industries*, which examines the salient factors for regulators of high-hazard industries choosing among regulatory design types.
- *Safely Transporting Hazardous Liquids and Gases in a Changing U.S. Energy Landscape*, which offers recommendations to the U.S. Department of Transportation's (DOT's) Pipelines and Hazardous Materials Safety Administration and Federal Railroad Administration for developing a more robust safety assurance and emergency response capability for future safety challenges.
- *Acquisition and Operation of Polar Icebreakers: Fulfilling the Nation's Needs*, which recommends building four heavy polar icebreakers, proposes an acquisition strategy, and identifies and recommends ways for the U.S. Coast Guard to improve the nation's polar icebreaking capacity.
- *Review of the Department of Transportation Testing and Analysis Results for Electronically Controlled*



TRID is TRB's largest database, with more than 1.1 million records.

Pneumatic Brakes, which reviews and provides advice on U.S. DOT's plan to test the assumptions underlying its comparisons between the emergency braking performance of electronically controlled pneumatic brakes and the performance of conventional braking systems on railroad tank cars.

Additional consensus studies are under way, including a large study on the future of the U.S. Interstate Highway System, a study to develop a roadmap for truck size and weight research, a study of the regulatory requirements for small propane gas pipeline systems, and a study of the need for evidentiary protection of transit agency safety information.

In addition to producing consensus studies, TRB convenes committees to review the research programs of several modal administrations in U.S. DOT. Research program reviews currently are under way for the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA).

Diversity and Inclusion

In late 2016, the TRB Executive Committee established a Task Force on Diversity and Inclusion, chaired by Executive Committee member Nathaniel Ford and composed of representatives from each of TRB's oversight committees and key standing technical committees. The task force worked during 2017 to develop a strategic plan to address diversity and inclusion issues for underrepresented groups—minorities, women, persons with disabilities, and young profes-

sionals—in TRB’s committees, programs, staff, research panels, contracting organizations, and partnerships with minority- and women-serving transportation organizations. The plan will be presented for adoption by the TRB Executive Committee at its January 2018 meeting.

The TRB Minority Student Fellows Program continues to offer opportunities to get involved in TRB to transportation students at historically minority-serving colleges and universities. Under the guidance of a faculty advisor, transportation students from participating institutions submit papers for peer review and presentation at the Annual Meeting. In 2017, the program provided travel expenses for 23 students to attend the meeting. The Minority Student Fellows Program is supported by FHWA as well as by corporations and individuals.

International Cooperation

The TRB Executive Committee formed a Subcommittee on International Activities in 2016 to encourage global knowledge sharing among transportation professionals, collaborative research between TRB and other international organizations, and strategic international partnerships to advance the mission of the National Academies and TRB. The subcommittee addresses the engagement of professionals from other nations in TRB activities, TRB’s participation in international forums and conferences, and cooperative research opportunities with and joint activities between TRB and other international research organizations.

TRB recently signed memoranda of understanding (MOUs) with the World Road Association and with the European Conference of Transport Research Institutes. TRB also is conducting discussions regarding several more international MOUs and is coordinating with research organizations in France, the Netherlands, and Canada to conduct joint research projects.

In 2017, TRB cosponsored 10 conferences outside the United States. TRB representatives spoke at several other international conferences and many TRB conferences included international speakers and participants. At the 2017 Annual Meeting, more than 2,400 attendees—or 18 percent of the total—came from outside the United States. TRB and its participants benefit greatly from ever-increasing international cooperative efforts.



Neil Pedersen (*left*) and Patrick Malléjac (*right*), World Road Association (PIARC) Secretary General, signed a memorandum of understanding between TRB and PIARC in January. (Photo: Risdon Photography)

Communications

Guided by its marketing and communications plan, TRB continues to increase awareness and knowledge of its products and services within the transportation community. A new home page features graphics, photos, and a more flexible design that allows TRB to easily and quickly convey information to users.² The new website incorporates responsive design, which changes the visual structure of a web page based on a user’s screen size, platform, and orientation. ACRP instituted a similar change on its website.

TRB deployed a social media plan to enhance its push communications, resulting in significantly increased engagement with Twitter, Facebook, and LinkedIn followers. This year also marked the 15th anniversary of the TRB E-Newsletter, which now has a circulation of more than 70,000.³

TRB’s webinar series continues to grow in popularity and attendance.⁴ In 2017 the webinar registration process was integrated with the My-TRB system, to streamline the user experience and to enhance the value of the information offered to TRB sponsors.

Preparing for TRB’s Centennial

TRB will celebrate 100 years of service to the nation and the transportation profession in 2020. In preparation for this centennial milestone, the TRB Executive Committee has appointed a task

² www.trb.org

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

⁴ <https://webinar.mytrb.org/Webinars>

force to plan for the celebration, which will promote the value of transportation research and TRB's critical role in the process. The theme of the celebration will be "Moving Ideas: Advancing Society—100 Years of Transportation Research." In addition to events that will span the year between the 2020 and 2021 TRB Annual Meetings, an author has been contracted to prepare a book celebrating TRB's 100th birthday.

Finances

TRB's 2017 financial statement includes sources of revenues for each of TRB's major programs and appears on pages 10–11.

Total 2017 revenues for TRB's core program, which consists of its convening activities, publications, and library services, are estimated to be \$16.2 million, with total expenditures estimated to be \$16.5 million. The difference between income and expenditures is funded with monies drawn from the reserve fund in accordance with TRB's long-term financial plan. State DOTs fund 44 percent (\$7.4 million) of total core program expenditures; federal agencies, 16 percent (\$2.8 million), with more than half of this amount coming from FHWA; other sponsors, 1 percent (\$0.2 million); TRB sales and fees, 37 percent (\$6.2 million); and the reserve fund, 2 percent (\$0.3 million). Conferences and workshops are supported by fees—\$1.6 million in 2017.

In 2017 the TRB Executive Committee approved the creation of a new Global Affiliates Program to further diversify TRB's revenue sources and to provide additional financial support for its programs. In the Global Affiliates Program, organizations can support TRB at one of six different levels in exchange for participation in various programs and recognition for their sponsorship.

Funding for all of the Cooperative Research Programs totaled \$59.4 million in 2017. State DOTs supply the largest share of these funds, \$38.2 million to support NCHRP. ACRP received \$14.8 million from the Federal Aviation Administration and TCRP received \$5.7 million from FTA. TRB's expenditures for SHRP 2 totaled \$4.7 million in 2017 with funds coming from FHWA. Funding for TRB's policy studies totaled \$4.8 million in 2017, which comes from sponsors for each study, 90 percent of which are federal agencies.

Total expenditures for all of TRB's programs in 2017 are estimated at \$88 million. Of this, 51.8 percent comes from state DOTs, 38.7 percent



(Left to right:) Greg Winfree, Michael Trentacoste, and Todd Ripley—of the Texas A&M Transportation Institute, a TRB sustaining affiliate; the Federal Highway Administration, a TRB sponsor; and the Maritime Administration, a Marine Board sponsor, respectively—confer at the Annual Meeting. (Photo: Risdon Photography)

comes from federal sources, 9.2 percent comes from other sources, and 0.3 percent comes from TRB's reserve fund, which is intended for use in an unanticipated revenue shortfall. The target for the reserve fund is between 75 and 100 percent of core program expenditures each year. At the end of the year, the reserve fund is anticipated to be 99 percent of projected 2017 core program expenditures.

TRB is committed to meeting the needs of its stakeholders. Feedback and suggestions are welcome—go to the TRB Message Center online: www.trb.org/Contact/GeneralQuestions.aspx, or call 202-334-2934.

STATEMENT OF ACTIVITIES

Funding Support by Program and Expenditures, Calendar Years 2016 and 2017

	2016 (ACTUAL)	2017 (PROJECTED)*
Core Technical Activities		
State Highway and Transportation Departments (State DOTs)	\$7,140,000	\$7,395,000
Federal Government		
Federal Highway Administration (FHWA)	1,675,000	1,450,000
Office of the Assistant Secretary of Transportation for Research and Technology (OST-R)	300,000	300,000
Federal Transit Administration (FTA)	250,000	250,000
National Highway Traffic Safety Administration	212,000	212,000
Bureau of Indian Affairs, Department of the Interior	85,000	85,000
Federal Motor Carrier Safety Administration (FMCSA)	75,000	75,000
Department of Energy (DOE)	65,000	65,000
Environmental Protection Agency (EPA)	0	65,000
Federal Aviation Administration (FAA)	65,000	65,000
Federal Railroad Administration (FRA)	65,000	65,000
U.S. Air Force Civil Engineer Center	65,000	65,000
U.S. Army Corps of Engineers	75,000	75,000
Subtotal, Federal Government	\$2,932,000	\$2,772,000
Other		
American Public Transportation Association	65,000	65,000
Association of American Railroads	65,000	65,000
South Coast Air Quality Management District, California	65,000	0
California Air Resources Board	0	65,000
Fees and Sales	6,104,000	5,872,000
Subtotal, Other	\$6,299,000	\$6,067,000
Total, Core Technical Activities	\$16,371,000	\$16,234,000
Marine Board Core Program		
U.S. Coast Guard	75,000	75,000
U.S. Army Corps of Engineers	75,000	75,000
National Oceanic and Atmospheric Administration	40,000	40,000
Bureau of Safety and Environmental Enforcement	30,000	30,000
Maritime Administration	19,000	19,000
U.S. Navy	12,000	12,000
Total, Marine Board Core Program	\$251,000	\$251,000
Cooperative Research Programs (CRP)		
National Cooperative Highway Research Program (State DOTs)	37,984,000	38,155,000
Airport Cooperative Research Program (FAA)	14,648,000	14,798,000
Transit Cooperative Research Program (FTA)	5,883,000	5,689,000
National Cooperative Freight Research Program (OST-R)	510,000	918,000
National Cooperative Rail Research Program (FRA)	370,000	49,000
Hazardous Materials Cooperative Research Program (Pipeline and Hazardous Materials Safety Administration)	73,000	54,000
Total, Cooperative Research Programs	\$59,468,000	\$59,663,000

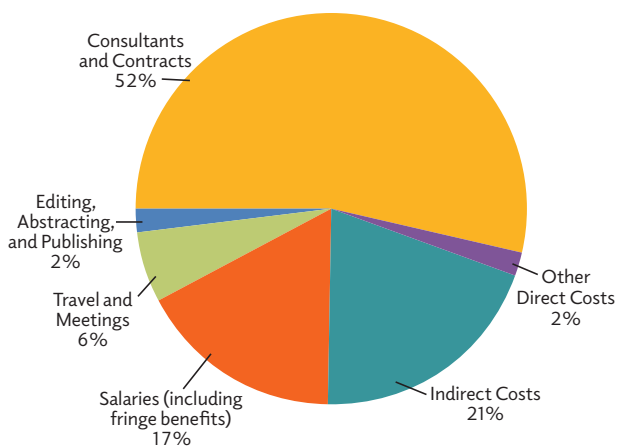
	2016 (ACTUAL)	2017 (PROJECTED)*
Rail Safety IDEA Program	\$315,000	\$381,000
Strategic Highway Research Program 2 Safety Data Phase 1	\$5,336,000	\$4,717,000
Policy Studies	\$4,322,000	\$4,789,000
Conferences and Workshops	\$2,171,000	\$1,642,000
TRB TOTAL	\$88,234,000	\$87,677,000
Sources of Funds		
Federal	34,645,000	34,042,000
State DOTs	45,124,000	45,550,000
Other	8,465,000	8,085,000
	\$88,234,000	\$87,677,000
Expenditures by Major Cost Category		
Salaries (including fringe benefits)	15,173,000	14,986,000
Travel and Meetings	4,785,000	5,355,000
Editing, Abstracting, Publishing	2,629,000	1,866,000
Consultants and Contracts	45,191,000	47,979,000
Other Direct Costs	2,022,000	1,879,000
Indirect Costs	18,588,000	17,858,000
Total Expenditures	\$88,388,000	\$87,923,000

TRB Reserve Fund

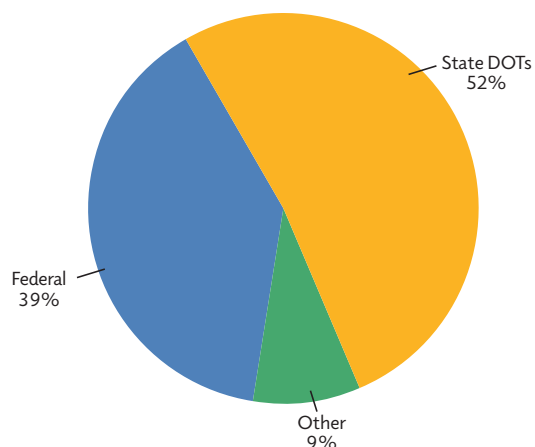
Fund balance, end of previous fiscal year	\$16,734,000	\$16,580,000
Plus (minus) current fiscal year income over (under) expenditures	-154,000	-246,000
Balance, current fiscal year	\$16,580,000	\$16,334,000

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 by the TRB Executive Committee.

Distribution of TRB Expenditures



TRB Funding Support



*Calendar Year 2017 comprises actual data through October and estimates for the rest of the year.

TRANSPORTATION RESEARCH BOARD

Chair: Malcolm Dougherty, Director, California Department of Transportation, Sacramento

Vice Chair: Katherine F. Turnbull, Executive Associate Director and Research Scientist, Texas A&M Transportation Institute, College Station

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

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