

*Standing Committee on Conduct of Research (ABG10)*  
*Hau Hagedorn, Co-Chair*  
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## **Conduct of Research Committee: Where We've Been, Where We Are, and Where We Are Heading**



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As the Transportation Research Board (TRB) reaches its centennial and the Standing Committee on the Conduct of Research (COR) reaches its 51<sup>st</sup> year in the third decade of the 21<sup>st</sup> century, we are provided with an opportunity to reflect on the history, the current state, and the future of transportation research and the role of COR. In the past 100 years, we “have seen major changes in the way we plan, coordinate, and conduct transportation research, primarily as a result of numerous trends in the transportation sector and in society as a whole. There has long been widespread recognition that transportation is the foundation of our economy and our quality of life.” (1) More recently transportation agencies have seen their role change from Departments of Highways, providing highway infrastructure, to Departments of Transportation, providing infrastructure for all modes, facilitating increased mobility. Even more recently, the role has expanded to include transformational technologies “that can be expected to completely displace the status quo, forever changing the way we live and work.” (2)

### **HISTORY**

COR began as the first intergroup resource committee in 1968. The Committee existed as a member of Group 5, Intergroup Resources and Issues, and was known as A5001. In 2004, COR was moved to its current location in the Research and Education Section under the Policy and Organization Group (formerly known as the Management and Administration Group), with the number designation changing to ABG10, as COR is currently known. Between 1994 and 1996, the Standing Committee on Technology Transfer moved from a subcommittee of the Conduct of Research Committee to a full committee as A5012, later (and currently) known as ABG30. (January 2002 Conduct of Research Committee TRB Annual Meeting Notes, Bill Carr, personal communication)

The scope of COR is to increase the quality and effectiveness of transportation research by supporting and facilitating improved research planning and management processes. It

promotes improved coordination between those who sponsor and conduct research and those who implement research products. It assists the TRB in its role of stimulating research and serving as a national clearinghouse for research activities. COR focuses on research about research as opposed to the majority of TRB committees, which focus on research related to technical subject areas. (<https://sites.google.com/site/conductofresearchcommittee/>)

At the turn of the century, nearly twenty years ago, the Committee's Millennium Paper was published (*I*); this paper focused on transportation research in general. While this Centennial Paper continues where the Millennium Paper ended, its focus is on committee activities. Some major themes that remain important and continue to evolve include the following:

1. Communicating, Coordinating, and Collaborating in Research Activities
2. Research Funding
3. Research Process, with emphasis on the Research Cycle, Sharing and Implementing Research Results, and Determining and Communicating the Value of Research
4. Role of Research Administrators/Managers

Appendices A, B, and C contain listings of deliverables, events, and activities championed by COR, respectively, on each of these and other topics.

## **ACCOMPLISHMENTS**

Since the turn of the century, COR has had two committee chairs and four committee co-chairs. Bill Carr served as the committee chair from 1997 to 2003. Laurie McGinnis served as committee chair from 2003 to 2009. Laurie then went on to serve as the Research and Education Section Chair. Jason Bittner and Barbara Harder served as committee co-chairs from 2009 to 2015. Jason then went on to serve as the Research and Education Section Chair, replacing Laurie when her term ended. Jason continues to serve in this role. Hau Hagedorn and Sue Sillick continue to serve as committee co-chairs from 2015 to 2021.

COR has had two distinguished committee members identified and approved as Emeritus members: Denis Donnelly (2002) and Barbara Harder (2015).

In 2014, COR won the Blue-Ribbon Committee Award for Service to TRB.

In 2017, COR reviewed the winner of the Wootan Paper Award for the paper titled: *Trends Over Two Decades of Transportation Research: A Machine learning Approach*. The Wootan Paper Award is an annual award for the best paper submitted within the Policy and Organization Group. This paper reported on a machine learning model developed to identify trends in past TRB papers. A topic model was used to group similar topics. Each topic was named and manually grouped, using committee structure as a basis for organization. The entirety of the 1998 through 2016 TRB Annual Meeting compendium of papers was included in the analysis. During this time period, a tremendous growth occurred in the number of accepted papers, with most topics seeing growth in paper submittals. "Holistic" topics, such as bicycles, buses, carsharing, energy, and GPS/mobile technology grew substantially and grew in proportion to all papers. Other topics, such as infrastructure, grew in number, but not as a proportion of all papers.

COR has four active goal teams:

1. Coordination and Collaboration
2. Committee Identity and Focus
3. Communications
4. Service to TRB

COR adopted the “action plan” template following a strategic planning retreat in about 2001. Action plans are COR’s tactical response to its strategic plan. Each goal team has an action plan.

The Committee Identity and Focus Goal Team regularly surveys members and friends to identify activities and issues of interest. These results are then used to help determine committee direction.

### **Communicating, Coordinating, and Collaborating in Research Activities**

The Communications Goal Team developed the committee website in 2001-2002, which has been used to highlight committee websites to the TRB Committee Communication Coordinators (CCC). This team also developed the COR logo. For TRB committees, COR pioneered the use of early collaborative websites and platforms, such as Ning. In 2009, based on COR’s communication efforts, COR engaged in the development of the CCC role and CCC Council establishment. Currently, COR is memorializing its research activities on its website to provide a history of where we have been and where we are going in regard to committee research activities. This team has also developed a new members guide; periodic newsletters, the first of which was published in 2003; webinar guidance, along with sponsoring a number of webinars. Topics covered include Management Guide to Intellectual Property for State Departments of Transportation (Jul. 2016), Technology Readiness Level Assessments for Research Program Managers and Customers (Apr. 2016), Communicating the Value of Research (May 2011), and Writing Research Statements (Jul. 2009). COR has had a Committee Communications Coordinator (CCC) and a Committee Research Coordinator (CRC) since these committee roles were established.

In 2007, COR through its subcommittee on coordination and collaboration, partnered with the American Association of State Highway and Transportation Officials (AASHTO) Research Advisory Committee (RAC) and its Task Force on Coordination and Collaboration, broadening the reach of both. Through this partnership, a number of tools were developed and marketed, such as the *Research Program and Project Management (RPPM)* website, *Funding Sources for Transportation Research: Competitive Programs* website, outreach to AASHTO committees, and numerous resource documents. Outreach efforts were directed to TRB CRCs and committees, AASHTO RAC, the Council of University Transportation Centers (CUTC), and others.

The RPPM website (<https://rppm.transportation.org/Pages/default.aspx>) is hosted by AASHTO and aggregates content created elsewhere on research program and project management. It is meant to be useful for anyone involved in transportation research, such as researchers, research administrators/managers, and research sponsors. Content is organized by the research cycle. No new content is created for the website, rather, it links to content available on the internet and is the home for content that is not available on the internet. Anyone can view the site, but to add or modify content, registration is required. The RPPM content and marketing group actively oversees efforts and continually refreshes content. This group also markets its use through brochures, e-mails, meetings, and other marketing opportunities. A webinar to market RPPM, illustrating the use of and content posting is currently being planned for 2019.

In addition to partnering with the AASHTO RAC Task Force on Coordination and Collaboration, COR has established a number of liaisons, such as the RAC, RAC Task Force on Program Management and Quality, RAC Task Force on the Value of Research, CUTC, TRB Education and Training Committee, TRB International Cooperation Committee, TRB

Knowledge Management Task Force, TRB Library and Information Science for Transportation Committee, and the TRB Technology Transfer Committee. These partnerships are considered vital to COR's operations.

### **Research Funding**

In 2008, the COR Coordination and Collaboration subcommittee worked with the AASHTO RAC Coordination and Collaboration Task Force and TRB to develop the *Funding Sources for Transportation Research: Competitive Programs* guide (<http://www.trb.org/ResearchFunding/ResearchFunding.aspx>), which went through a major update in 2018. This guide provides information of various research programs, comparison of programs so that users can identify appropriate funding programs for specific research projects, tools for coordination and collaboration, and information on writing an effective research statement. It is hosted within TRB's website and has been and continues to be widely marketed.

### **Research Process**

In May 2003, COR and the Technology Transfer Committee convened a workshop, held in conjunction with the biannual meeting of the TRB state representatives, to examine the issues and challenges associated with optimizing the dissemination and implementation of research results. Over 60 transportation professionals from federal, state, county, and city agencies; private sector; and academia met in plenary sessions and the following five breakout groups:

1. New Techniques and Methods for Sharing Preliminary Research Findings
2. Efficient Dissemination of Published Materials
3. Developing Appropriate Materials for the Implementation of Research Results
4. Case Studies: Guidelines for Dos and Don'ts
5. Identifying Barriers to Dissemination and implementation (3)

Follow-up occurred at the committees' joint mid-year meeting in September 2003 to expand on issues and to develop the following five priority actions for the committees.

1. Conduct a study to document best practices for research implementation, including a benchmarking effort.
2. Develop a guide to support implementation activities, including contract verbiage, implementation plans, reporting mechanisms, and training tools.
3. Develop a framework and strategies for engaging end-users in all steps of the research process. Strategies should promote a dissemination mindset within researchers, sponsors, users, and technology transfer agents so that results will be communicated effectively to the various audiences.
4. Encourage the use of incentives to promote implementation activity, including financial, travel, recognition, and others. Promote the use of State Planning and Research funds to support these activities.
5. Promote the recognition and use of the National Transportation Library (NTL) as a key resource for research dissemination and implementation. Promote the NTL as the primary contact for national information management services and standards as well as the coordinator of national transportation library and information network (3).

In January 2004, each committee commented on the draft report, *Optimizing the Dissemination and Implementation of Research Results: A Summary of Workshop and Midyear Meeting Activities*. (3) and the listed priority actions, and a TRB E-Circular on the process and results was published in that year (3). See Appendix A for a listing of deliverables that resulted from this activity.

In 2011, the Committee partnered with the Technical Activities Council (TAC) and the Technology Transfer Committee to emphasize that research is a core committee activity. The Back-to-Basics Initiative was begun to facilitate this recognition and that it is not enough to develop research needs statements (RNS) and enter these into the RNS database. Rather, committees are responsible for moving their most pressing research needs through the entire research cycle from agenda setting through the conduct of research, technology transfer, implementation, and determining and communicating the value of research. The Back-to-Basics Initiative was to be achieved through the development of the Committee Research Coordinator (CRC) role, improvement of the RNS database, and the creation of the CRC Council. In 2011, committees were asked to identify a CRC. The introductory CRC webinar was held in late 2011 and the first workshop was held at the TRB Annual Meeting in 2012. The RNS database was updated and the CRC Council was established in this same year. This framework was modeled after the TRB Committee Communications Coordinator (CCC) and the CCC Council efforts.

Over the last seven years, the CRC Council has provided numerous resources for the CRCs to assist committees with their research activities, including a website (<https://sites.google.com/view/trbcrc>) to house the resources collected and materials developed. Some examples of the resources include the following: CRC 101 webinar; communication, coordination, and collaboration tools; successful practices and tools; sample process documents and resources for each step in the research cycle; success story presentations; AASHTO and TRB Committee Connections spreadsheet; funding program webinars with presentations, recordings, and Q&A documents; funding program deadlines calendar; meetings and workshops with presentations and notes; and committee metrics. This initiative is still going strong, with a majority of committees having a designated committee member acting as the CRC. The CRC Council continues to meet quarterly, and COR continues to support this effort.

In 2019, as a part of the Back-to-Basics Initiative, the CRC Council is planning a webinar of successful AASHTO and TRB collaborations, funding program webinars for new and updated programs as determined by the recent update to the *Funding Sources for Transportation Research: Competitive Programs* website, developing guidance for Section and Group CRCs, and webinars on each stage of the research cycle to complement documents created in 2018, providing step-by-step instructions for each stage of the research cycle. In addition, the CRC Council plans meetings and workshops for each TRB Annual Meeting and conducts an annual needs assessment of the CRCs and chairs.

In 2014 and 2015, COR partnered with the TRB Library and Information Science for Transportation (LIST) Committee, and the Minnesota Department of Transportation to develop Transportation Research Circular E-C194, published in March 2015, on *Literature Searches and Literature Reviews for Transportation Research Projects: How to Search, Where to Search, and How to Put it all Together* (<http://www.trb.org/main/blurbs/172271.aspx>). This document provides a basis for evaluating literature reviews and facilitates the development of research needs statements and problem statements based on previous completed and current active research. A TRB Annual Meeting session was also held on this topic in January 2015.

### **Role of Research Administrators/Managers**

In 2011, the TRB Technical Activities Council initiated what would become the Ahead of the Curve (AOTC) training program, partnering with COR and the Education and Training Committee. This training program is designed for those involved in managing research programs and activities. A TRB task force was formed to bring this program to life. When this task force

sunsetted, a joint subcommittee of COR and the Education and Training Committee was formed. Through the National Cooperative Highway Research Program (NCHRP) funding (NCHRP 20-105 and 105B), the training program was developed with an introductory course, four core courses, and 12 electives as follows:

#### Core Courses

1. Making Research Relevant
2. Running the Program
3. Delivering the Program
4. Program Quality Improvement

#### Elective Courses

1. Effective Problem Statements
2. Performance Measurement
3. Information and Knowledge Management
4. Advocating/Being a Champion
5. Innovation Management and Risk Management
6. Funding
7. Scientific Method
8. Intellectual Property, Innovation, and Technology Transfer
9. Strategic Planning for Research
10. Building Trusted Credible Partnerships
11. Continuous Quality Improvement
12. Program Design

Also, through this NCHRP project, the core courses were piloted one a year, 2015-2018. Four of the elective courses will be piloted in 2019. Following each pilot course, the training materials are revised. Participants will receive a certificate of completion once they complete the four core and four of the elective courses. The Ahead of the Curve Joint Subcommittee is overseeing this effort moving forward, with four working groups (Administrators, Editors, Trainers, and Writers). A current main focus of this Joint Subcommittee is finding a home for the AOTC training program.

### **What does the Future Hold?**

Current transformational technologies will likely largely provide direction to the future efforts of transportation research and COR activities, and will necessitate non-traditional partnerships, such as with the health and medicine, and the energy sectors. Common examples of transformational technologies in history include the internet, personal computer, e-mail, smart phone, internal combustion engine, and containerization. More recent transformational technologies and those that are currently pushing us forward include car sharing, on-demand ride services, hybrid and alternative-fueled vehicles, unmanned aircraft systems, connected and automated vehicles, truck platooning, the internet of things, artificial intelligence, machine learning, and 5G communications. Other issues driving us to the future include NextGen air-traffic operations, e-commerce, climate change and resiliency, evolving governance and funding sources, growing populations, emerging megaregions in the south and west, mode shift, and economic inequality (4).

Emerging technology that impacts the conduct of research include such items as the following: low cost, low energy sensors allow collection of new data; new types of data analytics, like machine learning, create new methods for studying human behavior, such as



through naturalistic studies; new sensors, data and analytics, computational modeling, and visualization technologies, such as augmented and virtual reality, allow for creating digital twins of physical assets that advance design, construction, inspection, and repair; and new IT products are creating new methods for collaborative research. One result of new technologies is the advent of networked research in which expertise or facilities from geographically diverse organizations are networked together using webinars and videoconferencing to address a significant challenge that could not be resolved in a cost effective and timely way by any one organization. This is a paradigm of research for the 21<sup>st</sup> century that COR can work to promote.

There are a number of publications that frame the questions and direction moving forward. The TRB *Critical Issues in Transportation 2018* (5) focuses on questions in 12 interrelated topical areas, as follows:

1. Transformational Technologies and Services
2. Serving a Growing and Shifting Population
3. Energy and Sustainability
4. Resiliency and Security
5. Safety and Public Health
6. Equity
7. Governance
8. System Performance and Management
9. Funding and Finance
10. Goods Movement
11. Institutional and Workforce Capacity
12. Research and Innovation (5)

This report states a balance of both state and federal safety regulatory oversight while enabling private sector transportation technology development and innovation will be necessary. It also questions how we can accelerate the pace of research to keep up with technological change (5).

The Fixing America's Surface Transportation (FAST) Act includes five primary purposes: improve infrastructure durability, improve mobility of people and goods, preserve the environment, preserve the transportation system, promote safety, and reduce congestion (4).

The USDOT *Beyond Traffic: Trends and Choices 2045* report (6) is the USDOT's "most comprehensive assessment of national conditions in decades and is, in effect, a call to action." "to breathe new life into funding and policy discussions at the federal, state, and local level." The report states further that "our transportation system is on the cusp of a major transformation, akin to the introduction of the steam engine or the automobile." This report "creates a framework for understanding the strategic content in which transportation policies and transportation research decisions are made." Below is an excerpt from the report identifying and defining six major trends: (6)

1. **How will we move?** How will we build a transportation system to accommodate a growing population and changing travel patterns? America's population will grow by 70 million by 2045. By 2050, emerging megaregions could absorb 75 percent of the U.S. population; rural populations are expected to continue declining. Population growth will be greatest in the South and West; existing infrastructure might not be able to accommodate it. It is possible that Americans, particularly millennials, will continue—as a matter of preference—reducing trips by car in favor of more trips by transit and intercity passenger rail. By 2045, there will be nearly twice as many older Americans as now; they will need quality connections to medical care and related services.

2. **How will we move things?** And reduce freight chokepoints that drive up the cost of doing business? By 2045, freight volume will increase by more than 40 percent. Online shopping is driving up demand for small package home delivery, which could soon substitute for many household shopping trips. Airline mergers and the consolidation of hubs may result in increased air traffic congestion. International trade balances, due in part to low U.S. energy costs, could shift from imports toward exports, but overall globalization will increase both, straining ports and border crossings. Strong domestic energy production may enable the U.S. to become a natural gas net exporter by 2020, but pipeline capacity may hamper growth and lead to greater movement of oil by rail.
3. **How will we adapt?** And make our infrastructure more resilient? Predicted rises in global temperatures and mean sea levels, and more frequent and intense storm events, could drastically affect highways, bridges, public transportation, coastal ports, and waterways. Federal fuel economy standards are slated to rise to the equivalent of 54.5 miles per gallon by 2025. Sales of hybrid and plug-in electric vehicles are growing rapidly and have the potential to greatly reduce transportation emissions.
4. **How will we move better?** And make our infrastructure more resilient? Technological changes and innovation may transform vehicles, infrastructure, logistics, and the delivery of transportation services. New sources of travel data have the potential to improve travelers' experiences, support more efficient management of transportation systems, and inform thoughtful investment decisions. Automation and robotics will affect all modes of transportation, improving infrastructure maintenance and travel safety, and enabling the mainstream use of autonomous vehicles.
5. **How will we grow opportunity for all?** How will we create a transportation system that connects all Americans to the American dream? The top 10 percent of income-earning families now earn as much income as the remaining 90 percent. Middle- and low-income American households spend, on average, nearly 20 percent of their income on transportation and 40 percent on housing—higher shares than for wealthier Americans. Between 2000 and 2012, the number of poor people living in suburbs increased from 10 million to 16.5 million. Today, more poor people live in the suburbs than in the cities or rural areas. Sprawling urban development is increasing, as is economic segregation; economic opportunity and social mobility are decreasing.
6. **How will we align decisions and dollars?** And invest the trillions of dollars our transportation system needs in the smartest way possible? Public revenues to support transportation are not keeping up with the rising costs of maintenance and capacity expansion. Nearly two-thirds of our roads are rated in less than good condition; a quarter of our bridges need significant repair. Federal gasoline-tax revenues have failed to keep up with our transportation needs and could decline further as vehicle fuel efficiency improves, and inflation further erodes purchasing power. Insufficient highway and transit revenues and the absence of reliable federal funding for rail, marine highways, and ports have created a need for new financing mechanisms.

The *USDOT Research, Development, and Technology Strategic Plan FY 2017-2021* (4) states “transportation is evolving from a field focused on operational efficiency to one of the most innovative and rapidly changing areas of the economy.” (4) The plan focuses on four critical transportation topic areas: improving infrastructure, improving mobility, preserving the environment, and promoting safety, mapped to the five FAST Act primary purposes listed above. It identifies four overarching themes: policy research, emerging technology, research



coordination, and big data. Finally, the report contains the research and development strategies and activities of each Operating Administration for addressing the research needs within each critical transportation topic area (4).

Understanding the changes we are experiencing makes it possible for us to sketch out our transportation future that will at least, in part, be driven by research and innovation. Research and innovation will transition us through these looming transformational changes in transportation, helping us to bridge the gap to the future. We cannot make these critical transitions without research and innovation.

## REFERENCES

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## **APPENDIX A: LIST OF DELIVERABLES CHAMPIONED BY THE CONDUCT OF RESEARCH COMMITTEE**

The activities of the Conduct of Research Committee have resulted in numerous deliverables, such as the following:

- Accelerating Implementation of Transportation Research Results (NCHRP Synthesis 461)
- Communicating the Value of Research (NCHRP Report 610)
- Optimizing the Dissemination and Implementation of Research Results (E-C070)
- Effective Experimental Design and Data Analysis in Transportation Research (NCHRP Report 727)
- Facilitating Partnerships in Transportation Research (NCHRP Synthesis 312)
- Guide for Transportation Technology Transfer (NCHRP Report 768)
- Guide to Sustaining a Culture of Innovation within Departments of Transportation (NCHRP Report 885)
- Intellectual Property Management Guide for State Departments of Transportation (NCHRP Report 799)
- Literature Searches and Literature Reviews for Transportation Research Projects (TRB E-Circular 194). This was taken further with the development of a LibGuide titled *Literature Searches and Literature Reviews for transportation Research Projects: getting Started* by the Northwestern Transportation Library
- Performance Measures for Research, Development, and Technology Programs (NCHRP Synthesis 300)
- Performance Measurement Toolbox and Reporting System for Research Programs and Projects (NCHRP Web-Only Document 127)
- The D in RD&T White Paper (Jan. 2002)
- Managing Transportation Research Programs (ongoing NCHRP Synthesis)
- Review of the Need for Decentralization of Transportation Research Management White Paper (Jan. 2002)
- Review of the Process for Publication and Dissemination of Knowledge in the Field of Transportation White Paper (Jan. 2002)
- Scientific Approaches to Transportation Research and subsequent NHI course
- Seven Keys to Building a Robust Research Program (NCHRP Synthesis 280): COR was heavily involved in developing the brochure for and marketing the results of this research.
- Systems Approach to Evaluating Innovations for Integration into Highway Practice (NCHRP Report 442)
- Transportation Research Implementation: Application of Research Outcomes (TRB Conference Proceedings 51)
- Transportation Technology Transfer Successes, Challenges, and Needs (NCHRP Synthesis 355 TRB Committee Outreach 1-Pager)

## **APPENDIX B: LIST OF EVENTS CHAMPIONED BY THE CONDUCT OF RESEARCH COMMITTEE**

The activities of the Conduct of Research Committee have resulted in numerous events, such as the following:

- AASHTO RAC Annual High Value Research Poster Sessions
- Accountability and Performance Measures: Economic Keys to Building a Robust Research Program Session (Jan. 2006)
- Advancing Future Transportation with Breakthrough Innovations Session (Jan. 2006)
- Advancing Innovation and the Implementation of New Technology through Training Session (Jan. 2002)
- Ahead of the Curve Sessions (multiple)
- Are We Too Comfortable? Changing the Culture of Transportation Research (Jan. 2017)
- Be Prepared, Work Smarter: Strategic Program Elements for Effective Research Leaders Session (Jan. 2013)
- Being Smart about Intellectual Property Rights: Use and Impact for Researchers and Practitioners Session (Jan. 2011)
- Best Practices and Lessons Learned through Private Industry Partnerships with Public Agencies and Academia to Implement Research Results Session (Jan. 2012)
- Beyond Research: From Innovation to Economic Growth Session (Jan. 2019)
- Built for Success: What it Takes to Run a Modern Transportation Program Session (Jan. 2016)
- Can We Keep Up? Accelerating Research Processes to Keep Pace with Disruptive Technologies Session (Jan. 2016)
- Changing the Culture of Transportation Research: Systematically Implementing Research Results Session (Jan. 2017)
- Combining TRB and Google Search Tools Session (Jan. 2011)
- Communicating the Value of Research Session (Jan. 2010)
- Communicating the Value of Research: Information Continuum Session (Jan. 2004)
- The Conduct of Transportation Environmental Research: What You Should Know About Getting It Done Session (Jan. 2009)
- Creating a Culture of Innovation Session (Jan. 2018)
- Creating Dynamic Stakeholder Networks Session (Jan. 2005)
- Critical Knowledge Management Needs and Issues for Transportation Agencies Session (Jan. 2011)
- Crowdsourcing: Exploring a Fast-Growing Citizen Engagement Tool for Transportation Research Session (Jan. 2014)
- The Cultures of Conducting Research Session (Jan. 2002)
- Development: Bringing Research Products to Market Session (Jan. 2003)
- Dissemination and Implementation of Research Results Workshop (May 2003)
- Effective Literature Searches and Search Reviews: Tools and Tricks for the Trade Session (Jan. 2015)
- EU-US Transportation Research Symposium on Transport Research Implementation: The Application of Research Outcomes Parts 1 & 2 Sessions (Jan. 2015)
- Everything You Need to Know About Web 2.0: Using Communications and Collaboration to Improve Transportation Research Session (Jan. 2010)
- Excelling at Research Program Performance Measurement Session (Jan. 2014)
- Fast Tracking Research to the Real-World Session (Jan. 2001)

- Findability of Transportation Information Session (Jan. 2009)
- Framing U.S. Surface Transportation Research for the Future Session (Jan. 2014)
- From Transport Research to Innovation: Case Study-Based Presentation of U.S. and International Experiences Session (Jan. 2019)
- Implementation of NCHRP Project Results by State Departments of Transportation: AASHTO Research Advisory Committee Initiative Session (Jan. 2012)
- Implementing NCHRP Research: Case Studies and Discussion Session (Jan. 2019)
- Improving the Conduct of Research through Peer Review and Peer Exchanges Session (Jan. 2006)
- Information Bridge Across the Organization: Knowledge Management and Human Resources Session (Jan. 2004)
- Information, Images, and Data: Practical Guide for Using and Owning Intellectual Property Session (Jan. 2011)
- The Innovation Culture: Building New Bridges Between Research and Practice Session (Jan. 2019)
- Innovation Management: Building a Foundation for Effective Technology Transfer through Integration with the Research Process Session (Jan. 2016)
- Innovative Research Partnerships: Charting New Territory Parts 1, 2, and 3 Sessions (Jan. 2009)
- Innovations Worth Deploying Now: High Value Research Results Session (multiple years)
- Intellectual Property Management Guide for State Departments of Transportation Session (Jan. 2015)
- International Collaboration: The Why and How to Achieve Results Session (Jan. 2011)
- International Research Collaboration Platforms: Updates and New Developments Session (Jan. 2018)
- International Transportation Research Databases: Borderless Access to Information Session (Jan. 2009)
- Keys to Engage the Private Sector in Transportation Research: International Models and Successes Session (Jan. 2014)
- Keys to Transportation Research Innovation: Managing Intellectual Property Session (Jan. 2015)
- Knowledge Management (Jan. 2004)
- Knowledge Management: Meeting Organizations' Ever-Changing Demand Session (Jan. 2007)
- Looking Toward the Horizon: Research Results from FHWA Exploratory Advanced Research Program Session (Jan. 2011)
- Managing Information and Knowledge: Tools of the Trade Session (Jan. 2014)
- Meeting the Challenge to Achieve a Nationally-Coordinated Research Program Session (Jan. 2007)
- Meeting the Needs of all Partners Session (Jan. 2001)
- National Research Frameworks Part 1: International Perspective on Research Agenda Setting & Part 2: Townhall Meeting Sessions (Jan. 2012)
- New International Research Collaboration Platforms Session (Jan. 2017)
- Paths to Commercialization Session (Jan. 2007)

- People and Deals of Research Collaboration: Keys to Building a Robust Research Program Session (Jan. 2007)
- Policy Research to Address Our Aging Infrastructure: Keys to Robust Research Programs Session (Jan. 2008)
- The Power of Innovation: Capturing the Value of Investments and Innovation Session (Jan. 2018)
- Preparing for a Future Strategic Highway Research Program Parts 1 & 2 Sessions (Jan. 2004)
- Prioritizing and Selecting Research: Metrics and Criteria with End Implementation in Mind Session (Jan. 2012)
- Promise and Limits of Measuring Research Impacts: Federal, State, TRB, and Academic Perspectives Session (Jan. 2016)
- Providing Leadership in Transportation Innovation Session (Jan. 2014)
- Public Access, Open Access, and Open Data: New Requirements for federally Funded Research Session (Jan. 2016)
- Pursuing Entrepreneurial Innovation: Role of Business in Creating a Safer, More Efficient, and More Durable Transportation System (Jan. 2013)
- Research Collaboration: How Can We Improve Our Partnerships Session (Jan. 2006)
- Research Implementation: Moving Ideas to Implementation (Jan. 2011)
- Research Implementation Showcase Session (Jan. 2003)
- The Right Tool for the Right Job: Search, Discovery, and Current Awareness Tools, Tips, and Tricks for Busy Transportation Professionals Session (Jan. 2011)
- Shared Challenges and Ideas for Implementing Innovations Session (Jan. 2015)
- Supporting and Incorporating Innovative and Effective Practices in Construction and Maintenance Session (Jan. 2013)
- Tapping into International Expertise for Research Development, Governance, and Administration Session (Jan. 2014)
- Transport Research and international Cooperation Prospects in East Asia: China, Japan, and Korea Session (Jan. 2018)
- Transportation Technology Transfer Successes, Challenges, and Needs Session (Jan. 2005)
- Transportation's Written Word: Issues for Publication, Search, and Lasting Impact Session (Ja. 2015)
- Understanding Research Organization Cultures: Working Together for Win-Win Solutions Session (Jan. 2003)
- Use of Technologies in Communicating Session (Jan. 2007)



## **APPENDIX C: LIST OF ACTIVITIES CHAMPIONED BY THE CONDUCT OF RESEARCH COMMITTEE**

The Conduct of Research Committee worked with TRB on a number of activities, such as the following:

- Accelerating Research Methods for Transformational Technologies
- Developing Practice-Ready Papers Identification
- Improving the Paper Review Process
- Marketing the Benefits of the TRB Annual Meeting
- Paper Review Instructions
- Preloading of Presentations
- Presentation Guidelines for the TRB Annual Meetings,
- Promoting Committee Websites
- Promoting Research Pays Off Articles
- Providing Information on Non-Paper TRB Annual Meeting Sessions, such as presentations and posters
- TRB Annual Meeting E-Sessions

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