

The National Academies of
SCIENCES • ENGINEERING • MEDICINE



TRANSPORTATION RESEARCH BOARD

MEMORANDUM

TO: TRB Executive Committee

FROM: Neil J. Pedersen, Executive Director *Neil J. Pedersen*

DATE: December 30, 2021

SUBJECT: Agenda Book - TRB Executive Committee Meeting
January 12 & 13, 2022

Attached is the agenda book for your review prior to our winter TRB Executive Committee meeting on January 12 and 13, 2022. This year we will meet in the Liberty LM Room (Meeting Level 4), Marriott Marquis Hotel, Washington, DC.

All of you are receiving this information electronically. We will make hard copies available at the meeting for those who requested them. Chair Susan Shaheen urges all members to review the agenda material prior to the meeting, so that time spent in oral briefings can be reduced to a minimum. This will also expedite the handling of the more routine items on the agenda, allowing more time for discussion of substantive transportation issues. If you have limited time to review the agenda materials ahead of time, I ask that you read the Executive Director's report in Tab 6 and the draft TRB Strategic Plan in Tab 7. We will not have time to do detailed presentations on either item, but there is a lot of important information contained in both. You are asked to bring your agenda material with you as only late items or corrected material will be distributed at the meeting. (A few extra agendas will be available in case you forget yours.)

Please note that the electronic PDF version of the agenda book includes bookmarks. In the left column, please click the "Bookmark" icon to find tabs that will take you directly to each agenda item.

While you are attending the Annual Meeting, please consider attending some technical sessions or committee meetings. The program is especially interesting and full this year. For those of you who are relative newcomers to TRB, attending sessions and committee meetings will give you a better understanding of the day-to-day activities of the Board. We have also included a list of activities related to the Executive Committee immediately following the agenda.

I also encourage you to visit the exhibit hall. We depend on revenues from our patrons and exhibitors, and they appreciate meeting Executive Committee members.

I particularly direct your attention to the Executive Director's Reception for Executive Committee members on Tuesday evening starting at 6:30 pm, the Chair's Plenary Session beginning at 1:30 pm on Wednesday, and the Executive Committee Policy Session beginning at 3:30 pm on Wednesday. Breakfast will be available each day in the meeting room beginning at 7:30 am.

I look forward to seeing you and to our having a productive meeting.

Attachments

AGENDA FOR JANUARY 2022 EXECUTIVE COMMITTEE MEETING

TUESDAY, JANUARY 11, 2022

6:30-8:00 p.m.	Executive Director's Reception, Marquis Ballroom Salon 6
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WEDNESDAY, JANUARY 12, 2022

Item	Time	Page	Speaker	Type
1. Welcome and Announcements a. Cover Memo b. Agenda c. Zoom Instructions d. Policy Statement on Preventing Discrimination, Harassment, and Bullying	8:30 a.m.	1 2 5 7	Shaheen	Information
2. Self-Introductions; Bias/Conflict of Interest	8:40 a.m.	8	All	Discussion
3. Recognition of Outgoing Members of the Executive Committee	9:00 a.m.	11	Shaheen	Presentation
4. Approval of July 19-20, 2021 Minutes	9:05 a.m.	12	Shaheen	Action
5. Approval of Consent Agenda a. SPPR Meeting Notes b. Conference Approvals	9:05 a.m.	19 39	Shaheen	Action
6. Executive Director's Report a. Financial Update	9:15 a.m.	51	Pedersen	Information
7. Development of New TRB Strategic Plan	9:30 a.m.	66	Turnbull	Discussion
8. Break	10:00 a.m.			
9. Panel Discussion with USDOT Modal Administrators	10:15 a.m.	75	Hampshire, Dickson, Boss, Joshi, Lessley	Discussion
10. Introduction to Policy Session on Decarbonization a) USDOT Activities on Decarbonization b) TRB Committee Activities in Decarbonization	11:15 a.m.	80	Ford Wishnia Committee Chairs	Information
11. NTSB's Safety Priorities	11:45 a.m.	88	Homendy	Presentation
12. Walk to the Convention Center	12:05 p.m.			
13. Lunch in CC Room 209	12:15 p.m.			

14. Chairs Plenary Session	1:30 p.m.		Shaheen	
15. Walk back to the Marriott	3:00 p.m.			
16. Policy Session on Decarbonization	3:30 p.m.		Ford	Presentation/ Discussion
17. Break for Evening	6:00 p.m.			

THURSDAY, JANUARY 13, 2022

Item	Time	Page	Speaker	Type
18. Policy Session Follow Up Discussion	8:30 a.m.		Shaheen	Discussion
19. June 2022 Policy Session	9:00 a.m.	89	Houston	Action
20. Technical Activities Update	9:10 a.m.	97	Grimes/Brach	Information
21. TRB Division Committee Report	9:30 a.m.	99	Hendrickson	Information
22. Diversity, Equity, and Inclusion Strategic Plan	9:40 a.m.	106	Lewis	Presentation/ Discussion
23. Minority Student Fellow Programs	9:55 a.m.	112	Febey	Presentation
24. Young Member's Council	10:00 a.m.	117	Kontou	Presentation
25. Equity Conference Highlights	10:05 a.m.	118	Ward/ Williams	Presentation
26. Break	10:15 a.m.			
27. International Subcommittee	10:30 a.m.	131	Iwasaki	Information
28. Marine Board Update	10:40 a.m.	144	Grabowski	Information
29. Communications Update	10:50 a.m.	148	Mackie	Information
30. Cooperative Research Program Update	11:00 a.m.	150	Hedges	Information
31. Consensus and Advisory Studies Update	11:15 a.m.	172	Menzies	Information
32. Other Business	11:45 a.m.		Shaheen	Information
33. Adjourn	12:00 p.m.			

Consent Agenda Items	
1) Conferences and Workshops	Brach
2) SPPR Meeting Minutes	Menzies

Next Summer Meeting: (TBD)	June 15 & 16, 2022 (Wednesday & Thursday) Location: TBD
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Reference	D. Purposes and Duties of Executive Committee
A. Rosters and Staff	E. TRB Policy on Executive Committee Participation
B. Organization Charts	F. Standing Oversight Committees
C. Division Descriptions	G. Project Approval Processes

TRB EXECUTIVE COMMITTEE ZOOM MEETING INSTRUCTIONS

Sierra Hall is inviting you to a scheduled Zoom meeting.

Topic: TRB Executive Committee Winter Meetings – Day 1

Date/Time: Wednesday, January 12, 2022, 8:30 AM – 6:00 PM Eastern Time (US and Canada)

Join from PC, Mac, Linux, iOS or Android:

<https://nasem.zoom.us/j/99409659169?pwd=K2lvR2ExMzNITEFDN2IyeEpCa3pQUt09>

Password: 835515

Or iPhone one-tap :

US: +16513728299,,99409659169# or +13017158592,,99409659169# Or Telephone:

Dial(for higher quality, dial a number based on your current location):

US: +1 651 372 8299 or +1 301 715 8592 or +1 312 626 6799 or +1 470 250 9358 or +1 646 518 9805 or +1 646 558 8656 or +1 720 928 9299 or +1 971 247 1195 or +1 213 338 8477 or +1 253 215 8782 or +1 602 753 0140 or +1 669 219 2599 or +1 669 900 6833

Meeting ID: 994 0965 9169

Password: 835515

International numbers available: <https://nasem.zoom.us/u/a7yNMJxE>

Would you like to test your Zoom connection? Please click on the link below.

<https://nasem.zoom.us/test>

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Topic: TRB Executive Committee Winter Meetings – Day 2

Date/Time: Thursday, January 13, 2022, 8:30 AM – 12:00 PM

Sierra Hall is inviting you to a scheduled Zoom meeting.

Join from PC, Mac, Linux, iOS or Android:

<https://nasem.zoom.us/j/98809733890?pwd=eThDdTcwbTh2N1lwSUc4YXVScVZhQT09>

Password: 496582

Or iPhone one-tap :

US: +14702509358,,98809733890# or +16465189805,,98809733890# Or Telephone:

Dial(for higher quality, dial a number based on your current location):

US: +1 470 250 9358 or +1 646 518 9805 or +1 646 558 8656 or +1 651 372 8299 or +1 301 715 8592 or +1 312 626 6799 or +1 213 338 8477 or +1 253 215 8782 or +1 602 753 0140 or +1 669 219 2599 or +1 669 900 6833 or +1 720 928 9299 or +1 971 247 1195

Meeting ID: 988 0973 3890

Password: 496582

International numbers available: <https://nasem.zoom.us/j/ab2Fwgys2U>

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PREVENTING DISCRIMINATION, HARASSMENT, AND BULLYING: POLICY FOR PARTICIPANTS IN NASEM ACTIVITIES

The National Academies of Sciences, Engineering, and Medicine (NASEM) are committed to the principles of diversity, inclusion, integrity, civility, and respect in all of our activities. We look to you to be a partner in this commitment by helping us to maintain a professional and cordial environment. **All forms of discrimination, harassment, and bullying are prohibited in any NASEM activity.** This policy applies to all participants in all settings and locations in which NASEM work and activities are conducted, including committee meetings, workshops, conferences, and other work and social functions where employees, volunteers, sponsors, vendors, or guests are present.

Discrimination is prejudicial treatment of individuals or groups of people based on their race, ethnicity, color, national origin, sex, sexual orientation, gender identity, age, religion, disability, veteran status, or any other characteristic protected by applicable laws.

Sexual harassment is unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature that creates an intimidating, hostile, or offensive environment.

Other types of harassment include any verbal or physical conduct directed at individuals or groups of people because of their race, ethnicity, color, national origin, sex, sexual orientation, gender identity, age, religion, disability, veteran status, or any other characteristic protected by applicable laws, that creates an intimidating, hostile, or offensive environment.

Bullying is unwelcome, aggressive behavior involving the use of influence, threat, intimidation, or coercion to dominate others in the professional environment.

REPORTING AND RESOLUTION

Any violation of this policy should be reported. If you experience or witness discrimination, harassment, or bullying, you are encouraged to make your unease or disapproval known to the individual at the time the incident occurs, if you are comfortable doing so. You are also urged to report any incident by:

- Filing a complaint with the Office of Human Resources at 202-334-3400 or hrservicecenter@nas.edu, or
- Reporting the incident to an employee involved in the activity in which the member or volunteer is participating, who will then file a complaint with the Office of Human Resources.

Complaints should be filed as soon as possible after an incident. To ensure the prompt and thorough investigation of the complaint, the complainant should provide as much information as is possible, such as names, dates, locations, and steps taken. The Office of Human Resources will investigate the alleged violation in consultation with the Office of the General Counsel.

If an investigation results in a finding that an individual has committed a violation, NASEM will take the actions necessary to protect those involved in its activities from any future discrimination, harassment, or bullying, including in appropriate circumstances **the removal of an individual from current NASEM activities and a ban on participation in future activities.**

CONFIDENTIALITY

Information contained in a complaint is kept confidential, and information is revealed only on a need-to-know basis. NASEM will not retaliate or tolerate retaliation against anyone who makes a good faith report of discrimination, harassment, or bullying.

Updated December 2, 2021

Conflict of Interest

- “Conflict of interest” means any financial or other interest which conflicts with the participation of an individual in particular decisions of the institution because the interest (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.
 - Financial in nature;
 - For individual and immediate family;
 - Includes *current* employment, investment, and property interests and only lasts for the duration of the project;
 - Details provided on forms are confidential;
 - Financial conflicts are usually disqualifying

NASEM Conflict of Interest Definition

An individual has a conflict with respect to the task of a committee in any of the following circumstances:

1. The individual has a financial interest that could be affected directly and predictably by the outcome of the committee's work;
2. The individual's spouse, domestic partner, or dependent child has a financial interest that could be affected directly and predictably by the outcome of the committee's work; or
3. The individual has a current relationship with an entity that has a financial interest that could be directly and predictably affected by the outcome of the committee's work involving --
 - i. a business partnership or employment;
 - ii. the provision of compensated advisory or consulting services, including compensated service on a scientific or technical advisory board;
 - iii. the provision of representation services or service as an expert witness, whether compensated or not;

Bias

- “Bias” ordinarily relates to views stated or positions taken that are largely intellectually motivated or that arise from the close identification or association of an individual with a particular point of view or the positions or perspectives of a particular group.
 - Perspective -- point of view;
 - Expertise -- relevant to understanding and analyzing the issues;
 - Goal is to achieve balance, not disqualify.

Recognition of Outgoing Members of the Executive Committee

TRB would like to express appreciation to the following outgoing members:

- ***Susan Hanson*** – *Chair, TRB Division Committee 2013-2019; Member, TRB Executive Committee 2002-2008; 2013-2022*
- ***Katherine F. Turnbull*** - *Chair, TRB Executive Committee 2018-2019; Member, TRB Executive Committee 2016-2022*
- ***S. Jack Hu*** – *Member, TRB Executive Committee 2016-2022*
- ***William Kruger*** – *Member, TRB Executive Committee 2019-2022*
- ***Brian W. Ness*** – *Member, TRB Executive Committee 2018-2022*

Thank you for your service to the TRB Executive Committee!

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Executive Committee Meeting Minutes

July 19-20, 2021

Woods Hole and Virtual

Monday, July 19, 2021

8:30 a.m.

Welcome and Announcements (Shaheen) Information

8:40 p.m. Self-Introductions (Shaheen) Discussion

- a. Policy Statement on Preventing Discrimination, Harassment, and Bullying was noted.
- b. Bias/Conflict of Interest Discussion – There were no conflicts of interest reported.

8:50 a.m.

Approval of January 26-28, 2021 Minutes (Shaheen) Action

- The minutes were approved.

8:55 a.m.

Approval of Consent Agenda (Shaheen) Action

- The consent agenda was approved.

9:00 a.m.

TRB Division Committee Report (Hendrickson) Information

- a. A PowerPoint presentation with graphs was used to present data.
- b. A description of the organizational structure of NASEM was provided.
- c. The Committee reviews and approves panel and committee compositions, among other roles, and it oversaw 57 reports in the first six months of 2021.
- d. Race/ethnicity of the 16,345 Friends of TAD Standing Committees, Volunteers, CRP Panel Members have seen advances in more diversity.
- e. We are seeing more and more diversity in participation of TRB activities. Even a 1 percent increase in African-Americans involved with TRB is an increase of more than 100 people.

9:10 a.m.

TRB Communications Strategic Plan (Mackie) Action

- a. The Communications Strategic Plan was formally adopted.
- b. Questions and feedback included discussions about:
 - how much to do advertising
 - how to bundle our content
 - how to further develop key communications metrics

- how to get more transportation information out through the NRC/Academies' channels
- how to use the Executive Committee as true communications partners and find out how they are using TRB products and communicating TRB on social media
- how to incorporate more content sharing partnerships
- how to use AASHTO and APTA better in communications partnership
- how to incorporate the developing TRB value proposition into communications
- how to further leverage impacts, and
- how to even further curate information for our audiences.

9:40 a.m.

Executive Director's Report (Pedersen) Information

- a. We are moving to a "new normal" through COVID, including this being the largest in-person meeting since March 2020.
- b. The return to NASEM's offices is planned for October 4.
- c. We are preparing for an in-person TRB Annual Meeting in 2022.
- d. There is a tremendous amount of work going on by the Academies and TRB on President Biden's four priorities: COVID-10, economic recovery, climate change, and equity.
- e. Critical Issues equity addendum has been released and we are working on the next full edition of Critical issues.
- f. The National Research Council adopted a new strategic plan in February.
- g. The latest status of federal transportation funding was reported.
- h. The TRB financial status report was described.
- i. Transitions were detailed, including Cindy Baker's retirement this month.
- j. Thanks were given to the Executive Committee through a challenging time.
- k. A question was asked about how much the Annual Meeting represents out of TRB's revenues: it's about \$6 million out of \$16 to \$17 million.

10:00 a.m.

Break

10:15 a.m.

Signing of MOU with Latinos in Transit (Pedersen) Action

- A new MOU with Latinos in Transit was signed virtually by Neil Pedersen and Alva Carrasco, President of Latinos in Transit.

10:20 a.m.

Development of New TRB Strategic Plan (Turnbull) Discussion

- a. The NRC Strategic Plan was adopted in February. The current TRB plan was adopted in 2019.
- b. The current TRB and NRC missions and visions were reviewed and so was the proposed TRB language. Feedback was offered and included within the proposed language.
- c. The proposal regarding TRB's values is to adopt the NRC's values: objectivity, rigor, integrity, inclusivity, truth. One comment was that the NRC's values are devoid of humanity and the climate. The NRC's values are still evolving and these could still be updated.
- d. As TRB looks into the future, our Guiding Principles were reviewed, and they include:
 - a. adhere to the Academies' high standards
 - b. leverage the Academies
 - c. facilitate research in practice

- d. benefit from multi-disciplinary perspectives
 - e. provide useful products and growth opportunities, and evaluate and improve, and
 - f. leverage and develop diversity.
 - g. Comments were made to make implementation and communications more explicit, to include more about people and communities, and that some of the items sound more like goals than guiding principles.
- e. The current TRB and NRC goals were reviewed, as well as TRB's proposed language regarding resilience and sustainability in an ever-changing world. The language includes preparing decision makers, expanding TRB's impact, and assuring for TRB's creativity, resilience, and sustainability. Many comments were made about the language with several specific suggestions for language change.

11 a.m.

Biden Administration Priorities (Hampshire, Cliff, Pollack, Mims) Presentations and Discussion

- a. Robert Hampshire of U.S. DOT detailed the strategic pillars of the Biden Administration and how the DOT is aligning its own practice with those strategic goals. Among those pillars are safety, building equity into transportation, decarbonizing the country by 2050, and being excellent at delivering service. He discussed efforts by the DOT, including low-carbon fuels and fuel cell and battery work.
- b. Steven Cliff of NHTSA is launching a Safe System Approach that builds in equity, engineering, education, enforcement, and emergency medical services. NHTSA works on fuel economy and is revising standards, per the Biden Administration. American Jobs Plan has a lot of focus on zero-emission transportation, CAFÉ standards, and opening 500,000 new electric vehicle stations across the nation. NHTSA is taking an increased role on the safety of autonomous vehicles and technologies. For example, serious crashes must be reported to NHTSA within a day.
- c. Stephanie Pollack of FHWA notes that 1 in 3 fatalities is outside the car (pedestrians and bicyclists). Areas to work with TRB include developing equity metrics and baselines, figuring out how to do outreach with communities, and understanding equitable road pricing. Climate goals include establishment of methodologies for measuring GHG emissions (which have been flat for a long time) at state, regional, and project levels. Electric vehicle charging stations are needed along the national highway system. Resiliency is as much about precipitation and storms and heat for bridges and infrastructure as it is about sea-level rise, so we need best practices for this. Complete streets that are designed safely and feel safe cut across goals like economic strength and equity. Other issues include understanding post-COVID travel demand, automated enforcement and whether that can be more equitable, and improving methodologies for establishing and enforcing safe speed limits.
- d. Bradley Mims of FAA reported that his leadership team is aggressive and progressive. The FAA has provided \$20 billion to keep airports up and running during the pandemic. More than 1,500 (\$3.2 billion) in Airport Improvement Program grants are being awarded, with many of them focused on equity and recruitment of a diverse workforce. In terms of climate goals, there is \$100 million going to making aircraft cleaner and quieter, research on sustainable aviation fuels, and more efficient air traffic operations.

12:15 p.m.

Lunch

1:35 p.m.

Policy Session on Racial Equity (Ford) Information

- a. Laura Castillo-Page is in charge of DEI at the Academies. Infrastructure, capacity, culture, hiring and advancement, a DEI lens, policies and practices, and increased accountability through communications and data transparency are among the areas she's investigating. She is currently listening to leaders and will give Governing Board feedback and get staff and volunteer feedback.
- b. Carol Lewis reported on TRB's DEI initiatives, including identifying practices and primers for committees and panels, a new Blue Ribbon Award for Diversity, engaging with other transportation organizations, ways to make specialty conferences more inclusive, identifying resources and removing barriers for TRB staff, ensuring DEI in TRB's work, and improving data and communications to support all of this.
- c. Karen Febey reported on the Minority Student Fellows Program, which is approximately half funded by FHWA. This past year we received about \$12,000, which was the most donations ever in the 12 years of the program's history. Many efforts are underway to support the upcoming year of the program. Separately, of the 178 Standing Technical Committees, there are 8 that have a DEI focus. The Annual Meeting has a focus on equity, there are upcoming specialty conferences regarding DEI, and there are several TRB blogs, podcast episodes, and webinars focused on equity. There are also many publications on the topic, including a recent TR News issue devoted to the topic and special collections in TRR.
- d. Tierra Bills of Wayne State University discussed "transportation inequity," which is related to the growing extreme income inequality and the approximately 1 million people in Black communities displaced in the mid-century by interstates and urban renewal programs without proper compensation. She discussed her work on how unrecognized biases in data collection affect modeling and decision making. There are dynamics that are not caught in traditional travel demand models.
- e. Dorval Carter of CTA Chicago said that all of us would love to give free rides but we don't have the funding to do it, and the politics of leaders is also not always in line with the will of the public. To deal with those dynamics, a good spot to focus is on partnerships and community impact. Also, APTA announced that he is being selected as Transit Manager of the Year.
- f. Andrea D'Amato of Massachusetts DOT attended and secured the next speakers.
 - a. Liz Williams of the Massachusetts DOT Office of Transportation Planning is working with a group of data indicators for equity issues, especially for access to destinations. Transportation is important for what it does, not what it is. The DOT participates in the University of Minnesota Accessibility Observatory, which can detail levels of accessibility. Mass DOT adapted the data site for its own use and it is available to all.
 - b. Betsy Harvey is the transportation equity manager of the Boston MPO and discussed how she interacts with everyone across the entire agency and how equity is handled in the decision-making cycle.
- g. Robert Hampshire of U.S. DOT offered his initial feedback about this Policy Session. He discussed partnerships for building a robust science network and sharing knowledge and evidence-based decisions.

3:15 p.m.

Consensus Study on Equity Metrics (Menzie) Discussion

- a. There was a brief discussion on how to do research that assesses equity impacts of surface transportation funding programs.

3:20 p.m.

Break

3:30 p.m.

Plenary Discussion on Equity in Transportation (All) Discussion

- a. It was asked whether we have an equity assessment of all our agencies. It's difficult to know where to go for different needs even within individual agencies. Should we all have equity assessment coordinators, or equity managers like the Boston MPO?
- b. The transportation workforce could see a loss of young women and women of color, which would hurt equity goals.
- c. We still don't know the exact balance of using big data and being satisfied with the amount of data we already have collected, and also the amount of data to collect from actually being out in the field talking to people and communities.
- d. Sometimes we overthink transportation infrastructure and just need to talk to the communities. Missouri engages a community for three years and South Carolina has a massive highway project that includes a 10-year community engagement process.
- e. The auto industry has to understand consumer demand and what they might be interested in in the future. There could be consumer choice models that could be further developed.
- f. We all have an opportunity to share best practices and make a big difference on equity.
- g. A lot of the numbers we work with (such as VMT) have inherent bias baked into them, and it seems TRB could work on better measures that can reduce or remove inherent biases.
- h. Gentrification is a big concern when you're making any transportation investment.
- i. The dynamics with community outreach are very often the same voices showing up: white, wealthy, older.

5:10 p.m.

Concluding Remarks and Logistics (Pedersen)

- Neil Pedersen thanked the panelists for their thought provoking presentations and the committee for a rich discussion about issues related to transportation equity.

5:15 p.m.

Break

5:30 p.m.

Reception and Dinner

Tuesday, July 20, 2021

8:30 a.m.

Policy Session Follow-up Session (Shaheen) Information

- a. Any approach to measurement needs to take into account human geospatial issues, such as gerrymandering.
- b. Vacation, recreational, leisure transportation is also very important.
- c. We need to find ways to bake in equity, and issues like broadband access, before we plan the transportation routes.

- d. CRP studies could engage more with people in the research process, and create a movement of participatory research. CRP could create levels of participatory research and make it easy for the PIs to measure the levels of participatory research within each study. They do often include focus groups and surveys, but true participatory research is engaging with communities from the beginning. Perhaps tackling the barriers to participatory research could be a first step.
- e. Transit is the backbone of all the systems, and helps equity and climate, but we don't know what it looks like after the pandemic.

9 a.m.

January 2022 Policy Session (Houston) Information

- a. The January session will be on decarbonization. Speakers will be identified.

9:05 a.m.

Technical Activities Update (Grimes/Brach) Information

- a. There is a lot of focus on diversifying the content streams, including a growing influence for TRR and its 250-person editorial board. TRR is now the #1 transportation journal for policy and patents.
- b. The TRB Annual Meeting will be in person in 2022 and will be focused on Innovation.
- c. The committees were recently restructured after decades of staying the same. The next step is to restructure staff so they are working more on their projects and less on processes.
- d. Anne-Strauss Wieder has been selected as the Deen Lecturer for 2022.

9:20 a.m.

Next Critical Issues in Transportation (Turnbull/Pedersen) Discussion

- a. The last document was released at the 2019 Annual Meeting and discussed 12 topics and 63 issues. It guides TRB's focus for research.
- b. COVID and Racial Equity addendums have since been released.
- c. Transportation decarbonization seems like the most important potential issue.
- d. The future of cities, in terms of the "new normal" and "next normal," is a big issue that captures all the issues into a broader umbrella. We're at a point in time where we need to elevate the top issues such as safety, equity, and climate. We should organize these top issues and all their nuances.

9:55 a.m.

Break

10:15 a.m.

CRP Update (Hedges) Information

- a. The CRP Program has progressed a lot towards digital instead of paper-based during the pandemic, with a lot of help from TRB communications products and the APTA partnership, Impacts on Practice reports, and many other ways to disseminate materials.
- b. Much of the NCHRP research feeds into AASHTO manuals and materials.
- c. We are trying to make CEOs aware of research products, so that implementation will be funded.
- d. We showcase results in our annual reports.

10:35 a.m.

Marine Board Update (Grabowski) Information

- a. The takeaways from the Board's Spring meeting were that key stakeholders get very little time to talk with each other about emerging issues, research gaps were identified, and a followup workshop will probably be scheduled, including a tie-in to the consensus work on authorities of the Coast Guard.
- b. The focus at the upcoming meeting will be DEI in marine transportation.

10:45 a.m.

International Subcommittee (Iwasaki) Information

- a. New MOU agreements have been signed and there are new ones being drafted.
- b. There has been a focus on Africa and also on China. There has been good attendance at online conferences and webinars. TRB is reaching people around the world now more than ever during the pandemic.
- c. The International Subcommittee is going to revise its strategic plan.

11 a.m.

Young Member's Council (Kontou) Information

- a. This is one of four Coordinating Councils under the new TAC committee structure.
- b. The committee works on involvement, mentoring, and promotion of young member TRB participation.
- c. There will be a lot of planning that will happen at the TRB Annual Meeting, including holding the Six-Minute Pitch.
- d. The discussions about participatory research and the losses and potential losses of young women from the industry could be robust parts of the discussions. The committee is working to put together a diverse set of sessions on various related topics and also to partner with other committees, such as workforce and leadership development-related committees.

11:15 a.m.

Consensus and Advisory Studies Update (Menzies) Information

- a. The four report releases since the Executive Committee last met in January were detailed, including: offshore oil inspection, LNG by rail, transportation resilience metrics, and wheelchairs on airplanes.
- b. The status of study requests in recently enacted legislation was detailed, including in the Coast Guard Reauthorization Act, the FAA Reauthorization Act, and other pending surface transportation bills.

11:40 a.m.

Other Business (Shaheen) Information

- a. Thanks were given for allowing this to be an in-person meeting.
- b. This group provides some of the most valuable input to TRB, and a special thanks to Nat Ford and Susan Shaheen for leading the discussion.

11:45 a.m.

Adjournment for Lunch

Subcommittee on Planning and Policy Review
Fall Meeting
Monday, October 18, 2021
10:30 am to 3:30 pm EDT

ATTENDEES

SPPR Members and Liaisons

Katie Turnbull, TTI
Carlos Braceras, Utah DOT
Ginger Evans, CAG Holdings
Martha Grabowski, LeMoyne College/Rensselaer
Avery Grimes, Patriot Rail)
Susan Hanson, Clark University)
Chris Hendrickson, CMU
Randy Iwasaki, Amazon
Julie Lorenz, Kansas DOT
Patrick McKenna, Missouri DOT
Brian Ness, Idaho DOT
Craig Philip, Vanderbilt
Susan Shaheen, UC Berkeley
Shawn Wilson, Louisiana DOT

TRB Staff

Neil Pedersen
Gary Walker
Ann Brach
Scott Brotemarkle
Michael Covington
Patrice Davenport
Karen Febey
Paul Mackie
Noel Popwell
Katherine Kortum
Sierra Hall
Tom Menzies
Russell Houston

WELCOME, REVIEW OF AGENDA, APPROVAL OF CONSENT AGENDA

Katie Turnbull: We have two items on the consent agenda - approvals of conferences and workshops, and a summary of the spring SPPR meeting.

All members approved the consent agenda.

EXECUTIVE DIRECTOR'S REPORT

Neil Pedersen: Welcome to all, both in person and virtual. Good news, based on the hard work of many staff: we now have funding agreements in place from the Office of Secretary for Research and Technology, FTA, NHTSA, FRA, and FRA for TRB's core technical program. We also have an agreement with PHMSA, which is new. FMCSA has committed, but had to wait for 2022 funds. FHWA has continued their sponsorship at \$1.4 million per year. The new agreements are for about \$1M per year that support our core technical activities.

We received a briefing at a TCRP oversight committee meeting last Friday in which we learned that USDOT has slightly changed its strategic goals. The goals still include safety, economic strength and modernization, equity, and climate/sustainability. They have dropped the goal of COVID-19 recovery and replaced it with "transformation, building back better, future proofing." This will be relevant when we talk about critical issues.

The Senate passed their \$1.2T infrastructure bill in July or August. The hope was to have the bill pass the House before Sept 30, but that has been held up in debates about the size and content about social infrastructure. There was a short-term extension through Oct 31. There have been some expectations that transportation agencies would have a lot of new money; however, of the \$1.2T, only \$274B is new transportation funding. Continuation of surface transportation authorization is another \$250B. Much of the added funding is going to new discretionary programs. It is a respectable increase, but not a huge one for highway and transit programs. The best information I have heard will be about a 30% increase in historic funding programs, though even that might be optimistic.

Unidentified person: The certainty is the most important part.

Neil Pedersen: Not sure whether the social infrastructure portion can be solved by Halloween. If it is not passed by then and there is another extension, more revenue will need to be identified for the extension.

In terms of TRB operations, we have continued delivering our products and services virtually. Most staff continue to work virtually. Keck is open for those who want to go into offices. Out of 1,100 NASEM staff, perhaps 50-60 have been coming in on a regular basis. We will have the option of continuing to telework indefinitely until pandemic conditions change. DC does require everyone to wear a mask indoors unless they are in a private office with doors closed. Because many of our staff work in cubicles, NASEM didn't want to require them to come in and wear a mask all day. Meetings, conferences, and workshops are mostly being held virtually, but a few are in person like this one. The last two meetings at Woods Hole were in person, last week and the week before. The 2022 TRBAM will be in person.

The Jonsson Center in Woods Hole is for sale, listed for \$27.5 million.

Regarding incoming Executive Committee officers: Nat Ford will be the Chair and Shawn Wilson will be the Vice Chair. Chris Hendrickson has been reappointed as Division Committee Chair, and Susan Shaheen will succeed Katie Turnbull as SPPR Chair. All will take their offices at noon on Jan 13.

Susan Hanson's and Katie Turnbull's terms end on Jan 13. Along with Jack Hu and Bill Kruger, they will be leaving the Executive Committee. New members include Jim Albaugh, who is retired president/CEO of Commercial Airplanes at The Boeing Company. In addition to his aviation expertise, he is very interested in supply chain issues, which is an area we will be paying a lot of attention to. International Council on Clean Transportation's executive director is Drew Kodjak, an attorney. Carol Lewis will be joining us, and we all know her and are pleased. It is the first time we will have a professor from an HBCU on the Executive Committee. And Steward Pickett specializes in botany issues in urban areas and how they relate to equity, and will bring an interesting perspective.

The Carey Award recipient is Vincent Valdes. The Crum Award will go to Hani Mahmassani the Sharon Banks Award will go to Jackie Grimshaw, and the new Skinner Award will start with Robert Skinner. In the future the Crum Award will be focused on research, and the Skinner Award on research management. The Bartlett Award has not been announced.

We continue to be very involved in international conferences. I was the keynote speaker at the PANAM XXI Conference, a biannual conference. It was held virtually this year, and they had 300-400 attendees. I was also a speaker at the International Road Federation, the Geneva version, last week. Randy represented TRB at the ITS World Congress in a session TRB cosponsored there. We have renewed our MOU with PIARC/World Road Association. In January, we will renew our MOU with the European Council of Transportation Research Institutes. The big question on international activities is international participation in the 2022 TRBAM. That situation may have changed, because as of November 8 restrictions on international travel are being lifted. However, I suspect we will have far fewer international participants than we normally do.

As to finances, there have not been many changes for FY2021 since we met in June. We have made projections based on assumptions of both 5,000 and 10,000 attendees on the 2022 TRBAM. At the 2020 TRBAM, we had 14,000 attendees, and had about \$6M in revenues. With 10k attendees, it will be lower revenues, but manageable. With 5k attendees, net revenues would be about \$2M less than with 10k attendees. Costs would not be that much less with 5k attendees than 10k. If we do get 10k attendees, projections in my report show that we come pretty close to our reserve target looking out over the next five years. So with cost reductions that Ann will talk about, we think 10k attendees would mean we're in pretty good shape financially. However, there are many unknowns. We will need to redo the financial projections once we know what is in the infrastructure bill, for example. So it is premature to do too much projecting before the AM and the infrastructure bill.

Carlos Braceras: We hosted WASHTO at the end of Sept. We planned for 300 people and got more than double that, so about normal attendance. It was expensive to scale up. It slid too far before we decided to scale up. The World Congress claimed 13,000 attendees. I am not sure I buy that number, although it was very spread out so maybe. Those are points of reference.

Unknown participant: We capped a meeting at 500 and hit it with no problem. I'd like to come back to a point later - \$2M in the scheme of things is not necessarily budget killing but how can we continue to have a sense of community in the case that people don't come, so we can get them back in subsequent years?

Neil Pedersen: In the infrastructure bill, there is increased funding for USDOT research. Our funding is primarily based upon SP&R funds from the states, so the increase in formula funds becomes very critical for us.

Neil Pedersen: It has been a challenging year and a half but volunteers and staff have risen to the occasion. We have gotten support from all of you and I want to say thank you.

TRB STRATEGIC PLAN

Neil Pedersen: At the July Executive Committee meeting you all gave us many comments. We distilled them and incorporated what we could. Senior staff made revisions, which you will see now. We also worked on draft strategies. I want to focus on those strategies this morning but we welcome comments on the remainder. We have started outreach. It went to the NCHRP oversight committee and the TCRP oversight committee. We will be sending it to the other oversight committees, including both TAC and Marine Board, probably later this week.

NRC vision: *A nation and a world that rely on scientific evidence to make decisions that benefit humanity.*

Proposed TRB Vision: *A nation and a world that rely on scientific evidence and expertise to ensure a transportation system that benefits individuals and society.*

NRC mission: *The National Academies provide independent, trustworthy advice and facilitate solutions to complex challenges by mobilizing expertise, practice, and knowledge in science, engineering, and medicine.*

Proposed TRB Mission: *TRB mobilizes expertise, experience, and knowledge in pursuit of solutions to complex transportation-related challenges.*

NRC Values: *Independence, Objectivity, Rigor, Integrity, Inclusivity, Truth*

Proposal regarding TRB Values: *TRB, being a program division of the NRC, will use the NRC values as TRB's values*

We had a longer proposed mission statement that included our three major functions, but your suggestions were to cut that out and make it shorter. So now it's shorter and easier to remember. TRB, being a program division of the NRC, will use the NRC values as TRB's. We did not think it was a good idea to adopt only some of them. We have also changed "guiding principles" to "guiding tenets."

1. *Adhere to the National Academies' and TRB's high standards for objectivity, independence, non-partisanship, integrity, excellence, and an evidence-basis for all that we do;*
2. *Leverage being part of the National Academies of Sciences, Engineering, and Medicine, and the expertise available to TRB throughout the National Academies;*
3. *Facilitate researchers and practitioners interacting with and learning from each other;*
4. *Enable society to benefit from the multi-disciplinary and multi-modal expertise and commitment of TRB's participants, and the multi-disciplinary and multi-modal scope of its portfolio;*
5. *Meet the needs of TRB's sponsors and professionals working in transportation by offering relevant services and producing implementable solutions and useful products;*

6. *Facilitate the professional development and growth opportunities of students and transportation professionals at all stages of their careers;*
7. *Continually evaluate and improve TRB's services to maximize value to TRB's sponsors and participants; and*
8. *Leverage diversity of thought, background, and perspective and identify and eliminate barriers to full and active inclusion and development of a diverse set of TRB volunteer leaders.*

Unknown participant: #6 seems specific to students. Shouldn't we also encourage diversity here? That pipeline is critical.

Katie Turnbull: "the professional development and growth opportunities and diversity of students...?"

Unknown participant: In the mission statement, we say pursuit of solutions instead of "development" of solutions. That would be a higher standard. I don't remember how we got to "pursuit" instead of something more concrete.

Neil Pedersen: I don't remember the exact discussion around this term.

Unknown participant: "Develop," "deliver," "identify"?

Carlos Braceras: Before you develop something, you have to have the vision of where you're going. So I think maybe pursue and another verb.

Unknown participant: What about dropping the phrase and saying "to solve complex transportation-related challenges...?"

Unknown participant: We don't always solve them though. Politics and other topics get in the way.

Susan Hanson: Our original thinking on point 8 was to leverage diversity for a broader range of goals so we're more successful in everything we do. In particular, to make our products more accessible to the people that will be using them. I'd like it to be broader than just to say that we have a diverse set of volunteers.

Neil Pedersen: I understand the point. I'll run some alternative language by you.

Susan Hanson: Language in the NRC plan is kind of revealing in that regard. So much of the NRC strategic plan was about trying to emulate TRB in terms of how we operate, our success in reaching academics and practitioners, and so on. TRB was a model that many were eager to emulate.

Katie Turnbull: Interesting and good to know.

Neil Pedersen: Goals are also listed here.

NRC Goals

1. *Anticipate and prepare society for current and future challenges and opportunities*

2. *Expand the NRC's impact in the world*
3. *Strengthen all aspects of the NRC to achieve Goals 1 and 2 and ensure its continued creativity, resilience, and sustainability*

Proposed TRB Goals

1. *Anticipate and prepare transportation professionals and decision makers for current and future transportation-related challenges and opportunities.*
2. *Expand TRB's impact and influence through its objective research, information exchange, and advisory activities.*
3. *Assure TRB's continued creativity, resilience, and sustainability in an ever changing world.*

This is the first you're seeing the strategies under each goal.

1. *Anticipate and prepare transportation professionals and decision makers for current and future transportation-related challenges and opportunities.*
 - a. *Identify current and future critical transportation-related issues and address these issues through TRB's convening, research, and advising programs and activities.*
 - b. *Educate and communicate with transportation professionals, decision makers, and the public about these critical issues and work that TRB is doing to address them.*
 - c. *Identify appropriate state of the art and new methods for addressing critical issues.*

Unknown participant: For point "c," identify and use? Identify and incorporate? It's not enough to just identify.

2. *Expand TRB's impact and influence through its objective research, information exchange, and advisory activities.*
 - a. *Measure the impact of TRB's programs and activities.*
 - b. *As part of the planning and programming of TRB activities, identify actions to take to maximize the impact of the activity.*
 - c. *Educate transportation stakeholders about TRB's programs, products and activities, and about transportation issues and research.*
 - d. *Build a diverse and deep network of partners to develop a forward-looking TRB portfolio.*
 - e. *Design TRB activities to be diverse and inclusive to enhance impact.*
 - f. *Increase involvement by professionals from additional disciplines related to the critical transportation-related issues that TRB is addressing.*
 - g. *Provide lifelong learning opportunities by fostering and promoting an environment that continually enhances the diversity, inclusivity, skills, and capacity of the transportation professional community.*

Neil Pedersen: "Objective" is a term where during the AASHTO meeting it was suggested using "unbiased." Don't worry about the order of these.

Julie Lorenz: TRB has a convening role, and a leadership role and responsibility to pull together various interest groups. For example, in aviation, a recent research project brings in FAA and DOTs and other stakeholders to talk about jurisdictional issues. What we're really trying to do is foster conversations about airspace in the future. It's forward looking, minimal research. I don't know that I see our role of bringing people together here in an honest broker space.

Unknown participant: We can start to think about getting to many of these objectives through how you put your committees together and the perspectives and industries you include.

Neil Pedersen: F is trying to get at that, although we might need different wording.

Susan Hanson: We want to do more than educate stakeholders - we want to engage with them. That will help improve our impact.

Unknown participant: There are not organizations that can convene the types of conversations that TRB can at the national level. We can make discussions about policy and future decision making happen. The future is only going to get less clear, and those discussions will become more important.

Unknown participant: I agree that engage is more than “educate.” It’s more about the exchange, not just us pushing information out.

3. *Assure TRB’s continued creativity, resilience, and sustainability in an ever changing world.*
 - a. *Identify the issues and needs of existing and potential sponsors, partners, volunteers, and users of TRB’s programs, products, and activities and adapt to address the identified issues and needs.*
 - b. *Pursue continuous improvements and efficiencies in TRB programs, products, and activities to increase effectiveness, usefulness, and timeliness.*
 - c. *Introduce new programs, products, and activities to address needs identified by stakeholders taking into account resource availability.*
 - d. *Take advantage of current technology to expand TRB’s outreach and participation*
 - e. *Seek additional financial support in order to increase TRB’s impact and influence.*
 - f. *Expand the diversity of TRB participants, ensuring an inclusive and welcoming environment for all persons involved in transportation.*
 - g. *Sustain, support, and enhance staff.*

Randy Iwasaki: In G, add “retain”?

Unknown participant: D fits into several of the others. Can it be incorporated into them? It would go into B and C, for example.

Unknown participant: For point E - is there a dedicated staff element, or is that a board strategic element to pursue?

Neil Pedersen: Yes and yes. It’s one of Patrice’s principal responsibilities. But it is also a responsibility of the governing committees, the volunteers on the governing committees, and the senior leadership of the staff. One of the most successful persons on this call in doing that is Martha Grabowski. I hold her out as a model for volunteers being able to help find additional financial support for TRB.

Katie Turnbull: Martha, at some point, maybe you can share some of your secrets?

Martha Grabowski: That's very kind. Have a welcoming tent, and you can't have too many friends. And build a culture where everyone thinks it's their responsibility to build, not the responsibility of a single leader. We're lucky that everyone has an oar and rows.

Katie Turnbull: And people aren't afraid to ask.

Neil Pedersen: Martha's board is very good at going out and seeking opportunities. She is the leader, but she has a lot of support.

We will continue to review this with governing committees and senior staff will make further refinements based on all of the feedback. We will draft documents and performance measures to present to the executive committee in January 2022. That version will get a final review with stakeholders with a goal of being adopted by the executive committee in June 2022.

TAD UPDATE AND OVERVIEW OF 2022 TRB ANNUAL MEETING

Avery Grimes: We did make some changes to the June TAC meeting. Many things we'd normally spend time on, we relegated to a conference call. We thought the time we spend together these days is very precious. We wanted to spend the time doing things that were highly valuable.

The first day we talked about the key issues in each of our areas. That was a fabulous discussion and helped us understand our connections across groups. We want to foster knowledge of how our modes interact. The second day we spent more time talking about what makes us worthwhile. What's our value proposition? What value do we create together, not each of us individually? That value proposition is what draws people to us. Many things came out in that discussion and I wasn't aware of them all myself. There is no match to our breadth in the world, and we need to advertise that. If you want to come to the biggest and the best, come to TRB.

Ann Brach: We want to make sure we are looking at different audiences and the roles that they can play. Later this week TAC will have a call to review the draft materials.

Things look good with exhibitors and patrons. Registration numbers only just started coming in as we only opened it a few weeks ago. We're at maybe 1,500, not big, but all things considered that's not so bad. Several other transportation organizations are having or have had in person meetings, so I don't feel like we're way out on a limb. The DC convention center is having events this fall in person, so even within our locality we are seeing others hold large events.

A few things we learned from last year are important. People were grateful that we did something. They wanted it and were glad for it, and we had more people than we've ever had before. But we had fewer paying attendees in spite of lower fees and no travel costs. A few people explicitly said to us that the in-person informal interactions are why they come. We really saw people grateful for the virtual meeting but learned more about the value of the in person meeting.

A virtual meeting resulted in a \$3M reduction in net revenues. A 2022 virtual meeting would be worse, projecting \$4-5M reduction because we think fewer people would come and we would have to pay cancellation fees that we did not have to pay last year. People have choices this year, while last year

there was only virtual options for other meetings. If people start deciding to spend their time and budget on other meetings, we could lose market share with exhibitors and possibly even attendees.

Katie Turnbull: We had the 95th transportation short course last week. We surpassed past on-site registration and it went fine - it was hybrid. People are eager to get back.

Ann Brach: A virtual meeting would have been very expensive, not brought in money, and still not met people's needs.

A few highlights for this year: we will have a chair's plenary session instead of a chair's luncheon. It will be after Wednesday lunch and there will be no competing sessions so it is a true plenary session. With no competition, we can stream into all rooms to avoid crowds. We have fewer lectern sessions so we can combine rooms for more space. And we looked at all "discretionary" expenses, such as food. We found about \$1M of items and the goal was to reduce that by 50%. We've cut out most receptions and meals. Most who attend the chair's luncheon do it for free, so TRB pays for lots of meals. We also have some savings from fewer sessions - AV is unbelievably expensive. And we have very strict restraints on travel reimbursements. These data are not in one place, but once we were able to pull it together, it is the single largest expense for the TRBAM, about \$500k. It is important to pay for travel for the chairs and state representatives, but we have put strict restraints so we know our maximum amount.

For COVID, we are asking that people only attend if they are vaccinated and that they wear masks no matter the state of the DC mask mandate. We do have exceptions if you are speaking and are more than 6 feet away from others or eating or drinking. There will be no on-site registration to avoid lines in the registration area. You can register during the meeting, but you will have to do so online. Cutting out receptions reduces crowds and alcohol consumption. There will be larger session rooms, wide aisles for the exhibit hall, and an extra EMT on site. Additional security will be hired to do room security and mask reminders. Lots of extra cleaning and air filters and thermal scanning for high temperature - all available on the convention center website.

Ginger Evans: There was anticipation waiting for the feds to release international travelers from abroad. The question is what vaccines are recognized. you might want to make it clear that international vaccines are acceptable for our purposes too.

Craig Philips: What is the interest in the exhibit hall spaces? How many exhibitors are we expecting to attract?

Russell Houston: We're about 34% behind where we were from the 2020 AM at this point. We've spread out the exhibitors for 20' cross aisles and a 30' promenade. We want exhibitors and attendees to both be comfortable. We saw a big jump in the number of exhibitors recently. In the last two weeks, we've done about \$75k in sales. We're behind now, but we think people have been waiting and are starting to decide now. We've already set a record on the patron programs. There's a pent up demand from the business community that I think we'll benefit from.

Ann Brach: We are trying to encourage committees to hold mid-year meetings as virtual or hybrid. It's easier to do that with smaller events. Increasing the bandwidth and equipment in the meeting rooms for hundreds of meetings is cost prohibitive. We couldn't promise to have hybrid committee meetings. Committee members can try themselves, but we're not promising. We will record/stream the chair's

plenary session and a couple of other high profile events. Doing a good hybrid meeting requires expertise and equipment; it's not just turning on a zoom. Anything we can afford is not good enough for TRB and people won't put up with it. It's really a second meeting, managed by different people and planned differently, if you do a hybrid meeting. It's the difference between attending a sporting event in the venue and watching it on TV. They're managed differently, with different production values, and it costs a lot to do it. Our new COO at NASEM is interested in it, and if NASEM helps to invest in the equipment and people, we might be able to do it.

Chris Hendrickson: Can we spread out the poster sessions?

Ann Brach: Yes, we have lots of room for posters.

Martha Grabowski: Thanks for the background. I was taken with the point that a hybrid meeting is like two meetings in one. The sporting event analogy means that people have multiple screens up and are on multiple channels. People would be chatting and talking and slacking and looking at many screens at once. Asking a moderator of an in person meeting to do that in real time is a real challenge. So this is also a way to engage the younger generation, digital natives who are used to this multitasking.

Ann Brach: I was surprised to find that registration of young professionals went down for the virtual meeting. My interpretation is that the in-person meeting is even more important for them. Others have pointed out that they're more likely to have kids, making scheduling hard.

Carlos Braceras: Virtual meetings are really good for certain things, and so are in-person. We should be cognizant of how to make them complement each other.

Katie Turnbull: Our short course was hybrid, so we did some things differently and jazzed them up. The award presentations involved going out and talking to people and showing the scene. Other things added value and we will bring them back to even the only in person meetings.

Ann Brach: All of the interviews when you watch sporting events - that's extra value for people at home, because people in the stadium aren't seeing/hearing that.

Martha Grabowski: We could increase young people's engagement by putting out instagram and slack channels ahead of time. Neil and Ann in a tik tok challenge would really draw people in.

EXECUTIVE COMMITTEE MEETING POLICY SESSIONS

Russell Houston: The January 2022 session is on decarbonizing the transportation sector. There are three recent publications we'll highlight, one from NASEM. Chris Hendrickson was a member of that committee, and he'll speak to us on the transportation portion of it. We have Young Tae Kim, secretary general of ITF, who will come to talk to us, and they also have a recent publication on decarbonizing air transport. He'll also talk about other activities happening internationally. And we have Rachel Muncrief, deputy director of the International Council on Clean Transportation. They too have a report on decarbonizing road transport by 2050, so she'll talk about that report and their activities.

Julie Lorenz: When I travel for road races, I can check a box to offset my carbon travel. That might be an appropriate thing for us to offer. I'm sure there's a program you can tap into to manage that, but we could consider it for 2023.

Russell Houston: We're now asking SPPR for a suggestion we'll take to the executive committee in January for a June 2022 policy session. One is supply chain disruption, and the second is the future of goods movement. One is narrower than the other. Supply chain disruption is around COVID and the lingering effects. As far as goods movement is concerned, it could be a broader discussion. Automation, first/last mile deliveries, trucks in our neighborhoods. Supply chains could be part of the discussion. Finally, in the memo, there's a list that includes all of the critical issues and all of the policy sessions that we've done in the last few years.

Katie Turnbull: These topics are related. The future is very forward looking, talking about what we've learned during the disruption instead of just the disruption itself.

Craig Philips: We can weave something together that addresses these megatrends. We've had multiple decades of manufacturers focusing on just in time operations, and we all expect we can order something today and receive it tomorrow. Offshoring has made these supply chains so doggone long and thus vulnerable. We've supersized some features of the supply chain, like container ships going from 4k to 24k TEUs over two decades, but not other features. These could be weaved together very effectively to talk about the disruptions of the last year.

Susan Hanson: Agree with Craig's point. Supply chain disruption may be shorter term, no longer as applicable by June 2022.

Carlos Braceras: Super optimization of the movement of our goods has resulted in a zero resilience system. As government agencies, we don't understand the sensitivity of that system, and that is our fault. We've backed away and said we'd rather have cheap Christmas presents as our final goal. We need to know what elements the system is sensitive to. This will last beyond COVID.

Chris Hendrickson: I agree with Susan about timing. I hope that by June 2022 we will have the pandemic supply chain disruption behind us. I think we should explicitly include infrastructure here. We need someone to talk about the adequacy of infrastructure capacity.

Martha Grabowski: Agree with everyone focusing on the future. We should talk about autonomy and mixed use of autonomous and human operations. We also need to talk about labor and workforce and equity issues, the social impacts as well as the technologies.

Ginger Evans: These are a lot of really good thoughts. Make sure that future of goods movement includes all modes, even if they're not all listed in this summary. Aviation has significant network implications too.

Avery Grimes: Optimizing each portion of the supply chain has led to connections that are operating at over capacity. Ports are a big area. Supply chain disruption is the most acute issue facing us now. It may or may not still be true next year. If we can't keep things rolling today, a lot of problems will continue to occur and compound. Small businesses are going under because they can't get their goods.

Scott Brotemarkle: There are systemic issues that have been around a long time. One is segmentation of data and the data not being shared across the supply chain. It's hard to optimize across segments without it. Antiquated business practices have also become clear. In addition to the gee whiz and COVID, some basic things need to be addressed as well.

Neil Pedersen: My reaction to this broad topic was that we'd need to figure out how to get more specific to get value out of it. This discussion has convinced me we could have 4-5 sessions on this topic. We'll need some help on focusing it, specific issues we can get really good speakers to talk about. I was sobered last night when an expert on the news said he expected the current disruptions to last at least through Christmas 2022. Looking to the future based on what we've learned is probably the right way to go. Everyone refers to COVID, but this is bigger than COVID. The changes in buying habits have pushed this, and so has what may be additional retirements in certain industries. Truck driver shortages may be the biggest issue of all, and that's a long term issue.

Julie Lorenz: Trucking behaviors and driver preferences are also changing. Drivers want shorter routes. Many retailers are shifting their products to 80% warehouse and 20% retail. I'd like to understand the business aspects that drive the decisions.

Neil Pedersen: Maybe we can hear from our new Boeing representative. He could add a lot of insight on what has happened and what it means for the future.

Ginger Evans: I understand the concern about boiling the ocean. The interconnectivity of all these pieces is part of the problem though. First you have to identify the problems, and the development can follow once you've mapped it out. This is a big problem that's the sum of lots of little problems. So maybe we can focus by talking about identifying the many aspects that are the first steps.

Neil Pedersen: John Porcari has become a point person for President Biden on supply chain issues. We could hear from him on what he's found and lessons for the future.

Katie Turnbull: And he's a good speaker and understands the bigger picture.

Avery Grimes: Some of the specific issues we're facing today are coordination between boats, ports, railroads, and truckers trying to get goods out of ports through limited capacity. We can see where research could be applied to a better solution to what we're facing today. Right now we have too much stuff in the machine.

Neil Pedersen: These coordination issues are the issues that John Porcari has been charged to focus on. I'd prefer that we try to put together a straw person draft for circulation to all of you before the January meeting, before presenting it to the full committee.

Katie Turnbull: Maybe Porcari to talk about the bigger picture, and then a few specific speakers to talk about particular issues.

Lunch break

MARINE BOARD UPDATE

Martha Grabowski: Marine Board activities run from A to Z, from autonomous shipping to zero emissions. Anything maritime or offshore related is within our wheelhouse. We also have cross-cutting elements, such as human and intellectual capacity, safety management, and cybersecurity.

We've had staff transitions, and we celebrate Brie Schwartz's promotion. We're excited about Tess Austin who's joining us. On the Board member side, Shep Smith is joining us. He retired from NOAA recently and is familiar with TRB and the Marine Board, bringing a wealth of expertise and energy and enthusiasm.

We're preparing for our fall virtual meeting in a couple of weeks and hoping for a face to face in April 2022. The fall meeting will focus on decarbonization. DOE set this up for us. They have been very energized in talking about ideas for decarbonizing the maritime sector, which are new conversations for both DOE and the Marine Board. We will bring together major industry players along with the regulatory agencies and authorities who have jurisdiction over various facets of the maritime transportation system. We want to talk about everyone's roles and move away from DOE's initial interest in identifying "a winner" in energy and looking instead at the system requirements. Initially, DOE wanted the Marine Board to anoint a winner in terms of maritime energy. "Is it hydrogen, biofuels, nuclear?" As though mentioning a winner in this area was going to be able to solve all the problems. We've had useful working meetings toward getting them to the sweet spot of considering decision and risk frameworks, optimal pivot points, and opportunities to invest in the infrastructure needed for decarbonization. It's gone from point solutions to a broader set of opportunities. Our framing questions are much broader than particular solutions for maritime fuels. We'll look at infrastructure needs, and the economics of the fuel marketplace and modal competition. In the final panel, we'll bring together regulatory and jurisdictional parties to talk about opportunities and roadblocks. We want to talk about the role of the regulator.

We'll also have leadership meetings with our core sponsors, where there's been some turnover. These include the Supervisor of Salvage within the Navy that clears items blocking waterways. The spring meeting will be in April at Beckman. We look forward to being next to each other, especially for the new members. The focus of the spring meeting will be DEI issues. As we'll be on the west coast, we'll engage with and tour the Port of LA/Long Beach. The DEI conversation will be an outgrowth of a conversation with MARAD. We ended a summit that we hosted for them by asking what kept them up at night. We heard answers about DEI issues and those associated with sexual awareness, assault, and harassment. The maritime administration and academies are under fire for issues on these topics.

Scott Brotemarkle: Another avenue we've been exploring in the last six months is forming greater partnerships with allied organizations in our space. PIANC is like PIARC for roads. They work closely with the Army Corps of Engineers. We will discuss how to partner on issues of common interest, create forums to cross-pollinate our research, and move simultaneously on many issues. And in naval engineering, we've had conversations with the Society for Naval Architects and Marine Engineers.

Randy Iwasaki: There are some issues with electrifying several ferry service providers, including in the San Francisco Bay area. Also, there's the issue of anchor drag, such as what happened with the pipeline off the California coast. Are these being addressed?

Martha Grabowski: We are talking to ferry providers about electrification. And the Coast Guard is quite interested in the oil spill implications of anchor dragging. So yes, although nobody has the answers nailed down.

Scott Brotemarkle: Anchor dragging is relevant for offshore wind development too, because of all of the cables required.

Neil Pedersen: Airplanes are looking at sustainable fuels now, primarily biofuels. Are these the same things for large ships, or is it a different concept?

Martha Grabowski: My non-expert answer is that the principles are similar but the mix is different.

Susan Shaheen: I'm curious about the use of ammonia as a fuel. That's a bigger component than in aviation. Looking to 2050, that's becoming close to 50% of the mix.

Martha Grabowski: That's part of the conversation. Nuclear has been suggested as well.

Susan Shaheen: If we do a lot of biofuels for decarbonizing aviation, and possibly maritime, what does that mean for our food, especially the use of soy?

Martha Grabowski: All of the fuels proposed have both infrastructure and systemic issues associated with them. We'll be looking at life cycle cost analysis in this upcoming meeting. Leveraging what's going on in other modes will be important too.

Scott Brotemarkle: And if aviation takes the largest share of the biomass for some of these fuels, how does that affect other modes?

Susan Shaheen: I'm not hearing great things about synthetic fuels due to high cost, so it's biofuels.

Martha Grabowski: The maritime sector usually doesn't have a lot of resources. So having DOE involved in these discussions is exciting with a lot of potential opportunities.

Scott Brotemarkle: We want to illuminate these complexities for DOE. We don't want to focus on one solution but invest in the possibility of many.

Julie Lorenz: 40% of corn and 30% of soybeans goes to fuel. As passenger vehicles are electrified, that opens up those crops. Farmers are concerned about what will happen to the price of those crops. If they shift to going to much bigger engines, that could have a really big effect.

Martha Grabowski: There's lots of opportunity for modeling in questions like these. We've asked about modeling, and it's been mostly quiet.

UPDATE OF CRITICAL ISSUES IN TRANSPORTATION

Tom Menzies: Steve Godwin did the last several updates. In order to have it ready for the 2023 TRBAM, we need to work on it this year. Historically, staff has written it based on things we want to focus on, but it has become bigger and more relevant, which leads to a challenge of lots of groups having lots of ideas to include. Steve has done a good job of synthesizing it over the years. We want to make it more focused in our next effort. One idea is looking at the societal goals that transportation contributes to or adversely impacts. If we think about the issues in those terms, we can frame a way to query people about topics that are critical issues. We also can't make a case that something was critical in 2019 but no longer is. We did addenda on new issues, focusing on COVID and racial equity, so we've added to the list.

We have been trying to start several studies over the summer, so we have been focused on that. But we did make an attempt at a matrix, with societal goals as rows and elements of the transportation system as the columns. The last document was a mix of goals and not-goals in its twelve major topic areas. And we want your feedback, especially on the goals. We don't just want to see transportation as a way to make the economy stronger, but a way to make society stronger. It's not easy to separate out all of these topics and say they're distinct. Equity, for example, comes up in a lot of topics.

Carlos Braceras: I like this as a way of organizing the thinking. It helps this engineer. In terms of an "end", AAHSTO's strategic plan includes "accessibility." Access to opportunities is something in transportation we don't often focus specifically on. It's separate from "equity in opportunities."

Ginger Evans: I also like the format. This is a way of thinking through it in a different way. My question is the possible impact on the changes of the fabric of our urban communities. Shared and electric vehicles will affect urban design. Urban design may not need to be explicit here but we should keep it in mind.

Neil Pedersen: We can incorporate that into the economic goal. Land use, urban design, social fabric.

Julie Lorenz: Start big and wide, and get smaller. A societal goal might be zero hunger. That could mean access to groceries to avoid food deserts. It could mean lower supply chain costs. Societal goals should be bigger, not just what transportation can do. For example, the sustainable development goals from the United Nations. Think of the big goals, how transportation fits in, and go from there. Quality education is a goal. This exercise might just make things bigger, but otherwise we might leave things off. Transportation is just a means to an end, and we need to think about the big ends.

Tom Menzies: That is good. The risk we run is that we think about transportation in a certain way and then define our goals from there.

Julie Lorenz: We get too hung up on transportation first. But we do have to come down a little from the big goals otherwise it gets ridiculous.

Neil Pedersen: We'll look at [UN sustainable development goals](#). USDOT has a goal of "building back better." Should that be one of our goals?

Carlos Braceras: It is a strategy. We're only calling it a goal to get it through Congress.

Tom Menzies: Many of these issues will fit across multiple goals. And we want to focus on how transportation can both help and hinder.

Susan Shaheen: I have been wondering if this would be helpful in looking at the past critical issues for 2019. When we think about the ends/goals, could we start to think about what we mean and how we would measure it? Having metrics helps to make it clearer what the goal really is. Equity and opportunity raises the question of where justice comes in. It has been a big theme for this administration. Another question is about labor - not just jobs, but labor issues we're having as a society in keeping essential services going. I also think a lot about land use and affordable housing. When thinking about the means, does that show up in systems, or do we need something else to capture that? Finally, do we need to come up with a way of ranking these issues? Does it make sense to have 60-some critical issues? Can we organize them differently to express their potential importance as a society, since we can't take everything on equally?

Patrick McKenna: The "building back better" piece of the USDOT goals is more of an outcome. But if we look at all of these ends and go through the means, we'll have some determined outcomes that we're seeking. Maybe that is where this grid might be expanded to suggest some possible/desired outcomes as a result of the critical issues. What are some of the desired outcomes we are seeking? We want to improve safety, but it might be an interesting exercise to try to quantify that. It might be interesting to look at whether we actually build back better. I think categorizing the issues in this last round helped to organize it.

Tom Menzies: We could think about the outcomes and which are the most potentially impactful.

Susan Hanson: How are you thinking of using this grid aside from the process of generating critical issues? Will it be public, appearing at the beginning of the document or part of the communication process, or just thought generation? Also, in the past, we have thought that when people pick up critical issues, they're looking for something that's relevant to them, and therefore it makes sense to have lots of issues.

Tom Menzies: For now, it is a thought exercise. It might be a way to structure a document, with these goals being the topic areas analogous to the categories we had before. But you're a couple steps ahead of us. This is just a different way of characterizing issues, most of which are the same as in the 2019 document. We'd look silly to say that we have critical issues and a few years later have a whole new list. It is the way that we think about them so they make more sense and are better connected to the reader.

Susan Shaheen by chat: Matrix could be presented in the context of a methodological discussion to support final critical issues document (depending upon the final approach employed).

Neil Pedersen: I don't think we should come up with a numbered list like last time. I do think it needs to improve in format and readability, and framing it around societal goals is a way to ensure that we're still comprehensive but not just having a list. Stephanie Pollock said if you have a list of 63 items then none of them are priorities.

Martha Grabowski: When people read the document, they are trying to see what the connection is between what they are thinking/reading and what they're living. If we take a broader approach and lift the conversation to a higher level about achieving societal goals, it speaks to people and acknowledges that the world has changed. We have social, economic, and labor conversations that were not underway last time. There is activism and awareness today that were not so true before. Using these broad goals talks to people who aren't usually into transportation and elevates our discussion.

Tom Menzies: This will be hard to execute well, but we will aim to have it done sometime after next year's summer executive committee meeting.

Neil Pedersen: Each of the TAC members defined key issues for their group last year. That makes a really good start. It helps us start with a broad long list and then try to figure out how to narrow it down.

Martha Grabowski via chat: I like the idea of thinking about how transportation can assist in achieving societal goals such as

- zero hunger;
- safe, equitable and rewarding work;
- safe and affordable housing;
- a healthy and sustainable environment;
- ethical and accessible justice systems; and
- freedom of movement and thought; ...

TRB COMMUNICATIONS

Paul Mackie: There's a story in the critical issues. There i's a big opportunity there from a communications standpoint.

I have three small communications updates. One is on the annual report. The 2021 annual report is slated to be released on Dec 16. It's a good, concise narrative, focusing on our impacts.

The second thing is implementing the strategic communications plan you approved this summer, which includes the annual meeting marketing plan. It started out well with advertising Pete Buttigieg at the TRBAM, which got a lot of attention. We've gotten a lot of help from NASEM about outreach, but there are also many smaller focused trade newsletters and such. We're reaching out to lots of those editors. We're building our list of social media influencers who have large followings and talk about many of our issues. With Ann's staff, we're putting together a "get involved" video to tell people and organizations why to get involved in TRB. There's the TRBAM express newsletter, which had nine issues during January 2021 and is an added benefit for attendees to get information on a semi-daily basis about what's going on - and we're selling ad space in that for the first time. What would people really want at a TRB exhibit? We've narrowed it to four booths: My TRB, TRIS/TRID, one for friends/individuals to get information, and one for organizations to get information. There may be another one or two.

The third thing is TRB Weekly, formerly the e-newsletter. We had 10,035 subscribers with the first week's list. The e-newsletter had 70,000 subscribers. We don't see this drop as a problem, because it seems there were thousands of subscribers who had dead accounts (not that the people themselves are dead) or who were not engaged. We expect that the current 11,024 subscribers, as of early

October, should increase by thousands through January. We have a 40-50% open rate, which is a major improvement, and better than most transportation newsletters. There are also people who open the email 80+ times. It seems that in many states, the research director subscribes to the newsletter and forwards it to DOT staff. So a better number for us might be “readers” than “subscribers.” We’ll have a lot of data to share about who is reading and what they are interested in.

Russell Houston: Paul and his team deserve a lot of credit for this newsletter update. We allow people to customize the newsletter, and we know that results in people who are more engaged with it.

Paul Mackie: This was quite a bit of work. It’s about 6,000 different versions of the newsletter, depending on what preferences a person has chosen.

ANNUAL GIVING PLAN

Patrice Davenport: We are trying to reinvigorate an annual giving program for individuals, based on the success of the centennial efforts. We have tried to roll out similar plans sporadically, based on milestones and holidays. We’ve gotten mixed feedback. To sustain our operations and provide high quality support for our volunteers, we incur expenses that are not covered by our various contracts. The Global Affiliate program and Annual Meeting Patron program are critical. We’ have had several meetings with the NASEM Office of Development and plan to start outreach in February 2022. If you have any feedback on this campaign, I would love to hear it.

Ginger Evans: When you sign up for the annual conference and make a donation there, is that this?

Patrice Davenport: Yes, but expanded. Our website does not make it obvious how to donate. We want to make it much clearer on how to give.

Ginger Evans: What we found in recent aviation efforts is that sponsors want to support action-oriented items. All of the directors said the same last week - it has to be different, and action-oriented.

Patrice Davenport: Ann and I go back and forth on talking about the importance of supporting the TRB mission. But something like supporting the Minority Fellows program is specific and compelling.

Katie Turnbull: I would focus on one or two things that lead to a specific reason that any one of us would want to support TRB. Not just general purpose, but a specific program like the Minority Fellows. I was surprised at how many people said no to the centennial fundraising.

Susan Shaheen: I am excited to see this idea coming back. Universities are very good at this. I work on a lot of campaigns in my department, and Katie’s points are dead on. Focusing on one or two things goes a long way. It’s really important to figure out what will move people. Transparency about where their funding is going is also important. The centennial was a great way to organize people, but what else do we need to do? Should we be doing more mentorship? The question is why we would give funding, and organize around that question. We raise money at universities for a building, or for a scholarship. This is a great idea, and will be great with some focus.

Katie Turnbull: There is also the possibility of following up on the Minority Fellows - supporting them in their first years of work when they're still low on the totem pole.

Randy Iwasaki: When we raised sales tax measures, we had to have a specific goal and it was based on our relationships with industry. They want to know how they will benefit.

Patrice Davenport: The new website is so helpful in improving the user experience.

CONSENSUS AND ADVISORY STUDIES

Tom Menzies: We have a new senior program officer, Noel Popwell.

Noel Popwell: I started last week. My background is government work and economics. I went to City University of New York for college, and also did graduate work there. My first job out of grad school was the City of Alexandria as a budget analyst. My last position was with the State of New Jersey, working with the Department of Treasury and the Department of Agriculture. I have also done studies for Congress and agencies through NAPA.

Tom Menzies: We also hired Brittany Bishop, a freshly minted chemical engineer. Her expertise is nanotechnology, but it will be great to have someone with a chemistry background given all of our work on offshore oil and gas issues. And Lida Bennison, from PGA, will be working with us too. We lost Anusha Jayasinghe to Ann's staff, where she was promoted to a Program Officer.

Since we last met, we have had two new studies. There is this cover for the wheelchair study, where we at least got a contrail in the blue sky. It was called for by Congress for people in power wheelchairs to get on and off airplanes and be secured in transit. Travel by air is nearly impossible for people who cannot get into a standard airline seat. We were looking for showstoppers - anything that would make feasibility impossible. The committee determined that there were no technical showstoppers. The main issue is uncertainty about the crashworthiness of a wheelchair, especially in a vertical test/rapid descent, so the FAA and others should start to test wheelchairs for this.

We also completed a study on transportation resilience metrics. Monica Starnes led it, and Sarah Jo Peterson helped to write it and did a great job. There is no one resilience metric you can use to summarize your infrastructure, but there's a framework to do an evaluation. The committee was a good mix of practitioners and academics, led by Joe Schofer.

Other ongoing studies are on the safety of DUKW boats, coast guard oversight of recognized organizations, safety of LNG by railroad tank car, changing risk profile for offshore oil and gas, the research and technology coordinating committee for FHWA, a review of FHWA's long-term infrastructure program, and the automated vehicle and shared mobility forum.

Then we have some new and pending studies. New studies include:

- Emerging Trends in Aviation Safety
- Automatic Shutoff Valves in Pipelines
- Future Coast Guard Authorities
- Repurposing Plastic Waste in Infrastructure

- Transportation Equity Metrics
- Safety Research to Practice (pending)
- Coast Guard Oversight of LNG Tanker Ships (pending)
- Review of Substance Abuse Treatment Programs for Airline Flight Crew (pending)

We also have studies in major bills. In the infrastructure bill:

- Trains Longer than 7,500 feet
- Stormwater Best Management Practices
- Transportation Workforce Development
- Driver Compensation Study

And the House transportation appropriations bill includes a series of studies on transportation equity metrics.

Julie Lorenz: I strongly support you coordinating with other parts of NASEM. And you and Paul have done a good job getting the word out about the wheelchair study.

FINAL COMMENTS

Patrice Davenport: A virtual career fair is on December 8.

Neil Pedersen: We got much better input than I even anticipated. Thank you all.

Katie Turnbull: Thank you all. It is my last meeting as chair, and it has been a privilege and a pleasure to serve as chair for the last three years. See you all in January.

ADJOURNMENT

**Proposals for TRB Sponsored/Cosponsored Conferences
(ACTION - Consent Agenda)**

The following criteria are used in evaluating proposals for conferences, workshops, and similar activities. In general, an activity should not be proposed unless it draws a favorable response to all applicable criteria. The TRB staff and the proposing committees feel that the conferences being proposed satisfy these criteria.

1. Is the proposed activity consistent with TRB's mission?
2. Does it have a high probability of producing worthwhile results?
3. Is the purpose of the activity objective and noncommercial? (Might the undertaking of the activity or the potential result give TRB an image of bias in an area in which it must remain neutral?)
4. Are the available time and funding adequate to conduct it in a proper manner and to carry it to a logical conclusion?
5. Is it within the existing staff capability of TRB or a capability that can reasonably be established?
6. Can committee members necessary to guide it be identified and their services obtained?
7. Does TRB retain the requisite control? Alternately, in case where TRB is not the lead organization, will TRB be involved in developing the program, and will TRB receive appropriate recognition?
8. Does it duplicate other efforts? Has the subject received all of the attention that is justified for the present time?
9. Is there a more appropriate organization, within the National Research Council or elsewhere, to handle it?

TRB Executive Committee approval is requested for five TRB Co-sponsored conferences as part of the consent agenda.

CONFERENCES PROPOSED FOR SPONSORSHIP BY TRB		
Title	Date	Location
1. IBTTA Road Usage Charging and Finance Conference*	May 15-17, 2022	Denver, Colorado
2. International Transportation Forum Research Day Workshop and ITF 2022 Annual Summit*	May 17-21, 2022	Leipzig, Germany
3. TRB Workshop at Highway Geology Symposium (HGS)*	May 23, 2022	Asheville, North Carolina
4. AASHTO Committee on Design Meeting in conjunction with TRB Committees on Performance Effects of Geometric Design and Roadside Safety Design*	August 2022	Kansas City, Missouri
5. 2022 National Hydraulic Engineering Conference*	August 16-19, 2022	Atlanta, Georgia

*TRB participates as a cosponsor

Cosponsored Conference Approval Form

Title:	IBTTA Road Usage Charging and Finance Conference
Location:	Denver, CO, USA Hilton Denver City Center Hotel
Date:	May 15-17, 2022
Description:	<p>The Infrastructure Investment and Jobs Act of 2021 signed into law by President Biden holds the promise of making historic investments in America's roads, bridges and rails, tackling the climate crisis, advancing environmental justice, and investing in communities that have often been left behind. This is good news for all who care about the future of America's surface transportation infrastructure. However, despite this new legislation, stabilizing transportation revenue has never been more important than it is today. Auto manufacturers have pledged to move rapidly toward producing only electric vehicles. This means that fuel tax revenues will continue to decline, leaving the highway trust funds of the states and federal government depleted and at great risk. In this environment, states are moving to alternative methods of paying for road infrastructure, including tolling and road usage charging (also known as VMT or MBUF). The policies, technology, marketing, communications, public acceptance, implementation and operation of tolling, pricing, and RUC are converging. During this conference, we will look at case studies, best practices, and lessons learned from both successful and unsuccessful implementation of tolling and RUC all over the world. We will also explore the convergence of tolling and RUC.</p> <p>More details: https://www.ibtta.org/events/road-usage-charging-conference</p>
Anticipated Attendees:	300+
Target Audience:	State DOTs, MPOs, toll operators, consultants, integrators, auto manufacturers, elected officials, researchers, and practitioners from 25 countries.
Admission:	Open Registration
Anticipated Products:	N/A
Convening Organization:	International Bridge, Tunnel and Turnpike Association (IBTTA)
Other Sponsors:	Mileage Based User Fee Alliance, ITS America
Funding:	
TRB Standing Committees:	AJE50 Standing Committee on Economics and Finance AEP50 Standing Committee on Transportation Demand Forecasting AEP60 Standing Committee on Transportation Demand Management
TRB Role:	Committee member(s) to serve on program committee Committee member(s) to review papers/abstracts.
TRB Staff Contact:	Claire Randall

Cosponsored Conference Approval Form

Title:	International Transportation Forum Research Day Workshop and ITF 2022 Annual Summit
Location:	Leipzig, Germany
Date:	May 17-21, 2022
Description:	<p>The International Transport Forum (ITF), together with the European Conference of Transport Research Institutes (ECTRI), the US Transportation Research Board (TRB) and the World Conference on Transport Research Society (WCTRS), are pleased to announce the holding of a Research Day on “Transport for Inclusive Society” with a focus of innovation, equity, accessibility, and climate mitigation. This Research Day will be held in Leipzig, Germany on Tuesday 17 May 2022, in conjunction with the International Transport Forum’s 2022 Annual Summit (18 - 21 May 2022).</p> <p>The objective of the Pre-Summit Research Day is to bring together top academics researchers and practitioners to present and discuss topics relevant to the Summit’s theme, providing highly valued input to the Summit’s core program.</p> <p>It is critically important that research results are brought into practice, especially considering the pace with which our transport system is currently evolving. The Research Day offers a great opportunity to exchange ideas not only between researchers, but also with representatives from national and city governments, and other decision makers.</p>
Anticipated Attendees:	80-100 international attendees
Target Audience:	policy makers, practitioners and researchers
Admission:	Open Registration
Anticipated Products:	Workshops, sessions, and published online proceedings of presentations. ITF is responsible for these materials.
Convening Organization:	International Transport Forum (ITF)
Other Sponsors:	European Conference of Transport Research Institutes (ECTRI) and World Conference on Transport Research Society (WCTRS)
Funding:	
TRB Standing Committees:	International Coordinating Council (A0020C)
TRB Role:	<p>Committee member(s) to serve on program committee</p> <p>Committee member(s) to organize or participate in session(s)</p> <p>Committee member(s) to review papers/abstracts.</p>
TRB Staff Contact:	Bill Anderson

Cosponsored Conference Approval Form

Title:	TRB Workshop at Highway Geology Symposium (HGS)
Location:	Asheville, North Carolina, Renaissance Asheville Hotel
Date:	May 23, 2022
Description:	Our transportation infrastructure has been repeatedly tested by an increase in extreme weather events. Improving resiliency at project and system level against these events will prevent harm and speed recovery and response efforts. Geotechnical Asset Management (GAM) efforts provide important insights to system vulnerabilities and performance and help target resiliency improvements using a risk-based approach and other methods. This 1/2-day workshop at HGS will highlight how application of GAM approaches will speed up efforts to reduce impact from increasing event severity and frequency.
Anticipated Attendees:	~70 for the Workshop, ~200 for entire symposium
Target Audience:	Transpiration Geologists, Geological Engineers, researchers and asset managers working for highway agencies, consulting firms and others.
Admission:	Open Registration
Anticipated Products:	Proceedings
Convening Organization:	The Highway Geology Symposium is the organizer of the primary event.
Other Sponsors:	North Carolina Department of Transportation.
Funding:	
TRB Standing Committees:	AKG00 Geology and Geotechnical Engineering Section, AKG00(1) Subcommittee on Geotechnical Asset Management
TRB Role:	Committee member(s) to serve on program committee Committee member(s) to organize or participate in session(s)
TRB Staff Contact:	Nancy Whiting

Cosponsored Conference Approval Form

Title:	AASHTO Committee on Design Meeting in conjunction with TRB Committees on Performance Effects of Geometric Design and Roadside Safety Design
Location:	Kansas City, Missouri
Date:	One of the first two weeks of August 2022, usually Sunday to Wednesday
Description:	The two TRB committees for roadside safety and geometric design both have technical counterparts within the AASHTO Committee on Design. The TRB committees will convene sessions and business meetings collocated in the AASHTO meeting to review the latest research and develop research needs.
Anticipated Attendees:	Approximately 300, half may attend some portion of the TRB events
Target Audience:	State DOTs, FHWA, AASHTO, Consultants, Industry, and Academia
Admission:	Open Registration
Anticipated Products:	
Convening Organization:	American Association of State Transportation Officials AASHTO
Other Sponsors:	
Funding:	
TRB Standing Committees:	Standing Committee on Performance Effects of Geometric Design (AKD10) Standing Committee on Roadside Safety Design (AKD20)
TRB Role:	Committee member(s) to serve on program committee Committee member(s) to organize or participate in session(s)
TRB Staff Contact:	Nelson Gibson

Cosponsored Conference Approval Form

Title:	2022 National Hydraulic Engineering Conference
Location:	Atlanta, GA, USA
Date:	August 16-19, 2022
Description:	The conference will include keynote lectures, technical sessions, and will also feature demonstrations, field trips, and short courses for surface transportation officials, including hydraulic engineers, environmental engineers, National Pollutant Discharge Elimination System (NPDES) specialists, roadway designers, and other professionals. Presentations will demonstrate solutions to the challenges transportation agencies face in designing hydraulic structures or features in a dynamically changing physical and regulatory environment.
Anticipated Attendees:	~250
Target Audience:	Federal, State, and local transportation officials, including hydraulic engineers, environmental engineers, National Pollutant Discharge Elimination System (NPDES) specialists, roadway designers, and others.
Admission:	Open Registration
Anticipated Products:	Presentations selected through abstract submission, and those abstracts, will be available online. The presentations will be videotaped and made available free of charge on the Internet.
Convening Organization:	AASHTO Technical Committee on Hydrology and Hydraulics (TCHH), Federal Highway Administration
Other Sponsors:	Georgia DOT, Georgia Institute of Technology
Funding:	
TRB Standing Committees:	AKD50 Standing Committee on Hydrology, Hydraulics and Stormwater
TRB Role:	Committee member(s) to serve on program committee Committee member(s) to organize or participate in session(s) Committee member(s) to review papers/abstracts.
TRB Staff Contact:	Nancy Whiting

TRB Conferences, Webinars, and Recordings
July 14, 2021- January 9, 2022

Conferences

(*indicates event cosponsored by TRB)

TRB Virtual Careers in Motion Networking Fair
December 8, 2021
online

Accelerated Bridge Construction Conference*
December 8, 2021
online

International Workshop on Structural Health Monitoring*
December 7, 2021
Stanford, CA

Transportation Infrastructure Innovations for Durability and Resilience (TriDurLE 2021)*
December 6, 2021

Geo-Extreme Conference*
November 7, 2021
Savannah, GA

Maritime Risk Symposium*
November 2, 2021
online

Conference on Transformative Times in Transportation Security - cancelled
November 1, 2021
online

Drug-Impaired Driving Conference
October 27, 2021
online

National Conference on Rural, Public, and Intercity Bus Transportation
October 25, 2021
online

International Conference on Scour and Erosion (ICSE-10)*
October 18, 2021
online

Research-to-Practice Transit Symposium*
October 12, 2021
online

ITS World Congress*
October 11, 2021
Hamburg, Germany

12th International Conference on Concrete Pavements*
September 27, 2021
online

Innovations in Freight Data Workshop
September 21, 2021
online

GeoChina 2021 International Conference*
September 18, 2021
NanChang, Jiangxi, China

Annual Workshop on Transportation Law
September 13, 2021
online

Highway Capacity and Quality of Service
August 24, 2021

XXI Pan-American Conference of Transport and Logistics 2021*
August 11, 2021
online

National Conference on Transportation Asset Management
August 10, 2021
online

Bridging Transportation Researchers Online Conference*
August 5, 2021

Geospatial Data Acquisition Technologies in Design and Construction Summer Committee Meeting
July 26, 2021

Webinars

TRB Webinar: Hit the Ground Running—Innovative Concrete Pavements in Roundabout Design
December 16, 2021

TRB Webinar: The Mighty River—Inland Waterway Resilience Analysis
December 15, 2021

TRB Webinar: Examining Exclusions—What’s Missing in the Historic Review Process?
December 9, 2021

TRB Webinar: Power Up! Implementing an Airport Microgrid
December 6, 2021

TRB Webinar: Innovations in Bridge Foundation Load Testing and Data Integration
December 1, 2021

TRB Webinar: Paving the Way Toward Carbon-Neutral Concrete
November 29, 2021

TRB Webinar: Pavement Maintenance Before Preservation
November 22, 2021

TRB Webinar: Performance and Benefits of Metalizing and Duplex Coating
November 18, 2021

TRB Webinar: Hit the Ground Running—Designing Roundabouts with Conventional
Pavement
November 17, 2021

TRB Webinar: Creature Comforts—Designing Terminal Restrooms and Ancillary
Spaces
November 16, 2021

TRB Webinar: Shovel Ready—Using Digital Terrain Models in Construction
November 15, 2021

TRB Webinar: Progress Toward More Resilient Pavements
November 9, 2021

TRB Webinar: Giving Low-Volume Roads a Longer Life with Geosynthetics
November 8, 2021

TRB Webinar: Navigating the Supply Chain Congestion Crisis
November 3, 2021

TRB Webinar: Building Information Modeling for Infrastructure
November 1, 2021

TRB Webinar: Designing and Implementing Smart Cities
October 28, 2021

TRB Webinar: Managing Equity in Priced Managed Lanes
October 27, 2021

TRB Webinar: Entrained Air-Void Systems for Durable Highway Concrete
October 26, 2021

TRB Webinar: Air Quality Impact Models for Electric Vehicle Fleets
October 21, 2021

TRB Webinar: Transportation Resilience Metrics
October 19, 2021

TRB Webinar: That's the Ticket! Evaluating Traveler Perspectives
October 18, 2021

TRB Webinar: Practical Perspectives on Alkali Silica Reactivity
October 14, 2021

TRB Webinar: Changing Transportation System Technologies
October 13, 2021

TRB Webinar: Attention Employers! Cultivating Talent in the Airport Environment
October 12, 2021

TRB Webinar: What's Next for Integrated Corridor Management?
October 7, 2021

TRB Webinar: Workforce Management in Transportation
October 5, 2021

TRB Webinar: Ensuring Construction Quality Assurance with Light-Weight
Deflectometers
September 30, 2021

TRB Webinar: Implementing Airport Public-Private Partnerships
September 29, 2021

TRB Webinar: TRID and Reference Management Software
September 28, 2021

TRB Webinar: Innovations in Using Vehicle Probe, Connected Vehicles, and Cellular Data
September 27, 2021

TRB Webinar: Evaluating the Performance of Retaining Walls and Embankments
September 15, 2021

TRB Webinar: Chip Seals, Microsurfacing, and Fog Seals Specifications
September 14, 2021

TRB Webinar: Training Operations Personnel at Small Airports
September 13, 2021

TRB Webinar: Enter and Search Projects Like a Pro with Research in Progress Database
September 8, 2021

TRB Webinar: A Guide to Joint Development for Public Transportation Agencies
September 2, 2021

TRB Webinar: LED Roadway Lighting's Effect on Driver Sleep Health and Alertness
August 31, 2021

TRB Webinar: Fixing the Bump at the End of the Bridge
August 30, 2021

TRB Webinar: Use and Design of Low-Density Cellular Concrete
August 26, 2021

TRB Webinar: Evaluating and Rating Unsurfaced Roads
August 25, 2021

TRB Webinar: Changing the Manual to Support Deployment of Automated Vehicles
August 18, 2021

TRB Webinar: Roadsides as Transportation Assets - Georgia Case Study
August 16, 2021

TRB Webinar: Road Passages and Barriers for Small Terrestrial Wildlife
August 12, 2021

TRB Webinar: Lend a Helping Hand—Sharing Airport Data for Risk Management
August 9, 2021

TRB Webinar: Reducing Crashes through Systemic Safety Analysis
August 4, 2021

TRB Webinar: Improving Pavement Geomaterial Performance with Unsaturated Soil
Mechanics
August 3, 2021

TRB Webinar: Integrating Multimodal Fare Payments
July 29, 2021

TRB Webinar: Using Drones to Inspect Bridges
July 28, 2021

TRB Webinar: Staying Connected—Social Media and Airport Emergency Management
July 27, 2021

TRB Webinar: Guidance for Setting Speed Limits
July 26, 2021

TRB Webinar: Public Transit as a Climate Solution
July 21, 2021

TRB Webinar: Are We All in the Same Boat? Involving Communities in Coastal
Resilience
July 20, 2021

Straight to Recordings

None since last Executive Committee Meeting

The National Academies of
SCIENCES • ENGINEERING • MEDICINE



TRANSPORTATION RESEARCH BOARD

MEMORANDUM

To: TRB Executive Committee

From: Neil J. Pedersen
Executive Director

Date: December 21, 2021

SUBJECT: Executive Director's Report

Note: This memorandum was prepared on December 21, 2021, during the rapid surge in COVID-19 cases nationwide. Because of the rapid changes in circumstances that are occurring due to the spread of the Omicron variant, some information may change between now and the Executive Committee meeting. These changes will be highlighted during my verbal report to the Executive Committee on January 12, 2022.

I am pleased to submit this Executive Director's Report for the TRB Executive Committee meeting that will be held on January 12-13, 2022. This report summarizes the status of a number of TRB activities, provides a financial report for TRB, and identifies several issues the Executive Committee will discuss during the upcoming meeting. More detailed information is provided for most of the items covered in this report in the remainder of the agenda book and in the attached TRB Annual Report, and most of the items will be discussed during the course of the Executive Committee meeting.

A Year of Adaptation and Resilience

When I issued my Executive Director's Report one year ago at this time, we had come through what had been the most disruptive year in the 101-year history of TRB. All TRB activities and programs had pivoted to a virtual environment; all TRB staff were teleworking; there had been major disruptions to the transportation system due to COVID-19; equity had risen to become a central issue of concern; a new Administration was about to take over with vastly different policy priorities from the previous Administration; and TRB was about to begin a four-week long virtual TRB Annual Meeting. We were in the midst of changes to both the transportation system and to TRB that meant we would never be going back to what had been "normal."

Throughout 2021, TRB volunteers and staff dealt with continual changes in the status of the pandemic; plans for returning to in person activities that kept getting postponed; a strong desire by everyone involved to adapt TRB programs and activities so they could continue to provide what volunteers, sponsors, and stakeholders find to be of greatest value from TRB; continual changes and disruptions in the transportation system that had significant implications for society, the economy, and individuals; and changes in policy priorities from both the Administration and Congress. I am pleased to report that TRB volunteers and staff continually adapted and responded to all these changes and disruptions, and I believe that TRB will be a stronger organization in the future as a result.

As we enter 2022, transportation policy makers and professionals are facing a number of critical issues such as supply chain disruptions, changing travel patterns and demand, transportation's role in addressing climate change, implementation of the major infrastructure bill that was signed into law late in the year, dealing with significant transportation-related equity issues, rapid changes occurring as a result of technology advances, shortages of transportation workers, and safety-related trends that are headed in the wrong direction. The need for TRB to address these issues and many more through its programs and activities has never been greater.

Year in Review

I have attached the 2021 TRB Annual Report, which describes TRB's numerous accomplishments during the past year. I will highlight a few of them here.

Technical Activities. The 2021 TRB Annual Meeting was held virtually for the first time ever. Over 20,000 people participated, which broke the record set in 2020 of more than 14,000 Annual Meeting attendees. This included many who had never attended the annual meeting before. Many committee meetings had two to three times or more attendees than 2020's in-person event. TRB's 177 standing technical committees continued to address current and emerging issues within the scope of their committees, including the priority issues of recovering from COVID-19's impact on transportation, supporting the nation's economic recovery from the pandemic, adapting to and mitigating climate change, and addressing transportation-related racial and social equity issues. In 2021, over 5,050 individuals served on TRB's standing technical committees and over 16,750 volunteers contributed to committee activities as Friends. TRB's standing technical committees operated for their first full year in the new committee structure implemented in 2020. TRB hosted 11 specialty conferences and co-hosted more than 20 others virtually during 2021. TRB's journal, the *Transportation Research Record* (TRR), experienced the single largest increase in its impact factor ever during 2021. The TRR also continues to lead the transportation field in policy and patent citations, a measure of

its impact in the practitioner community. Ann Brach and Avery Grimes will give a more detailed report on technical activities at the Executive Committee meeting.

Cooperative Research Programs (CRP). Research under TRB's highway, transit, airport, and behavioral cooperative research programs continued unabated in 2021, with almost all research panel meetings being held virtually. Total budgets for the four programs combined were in excess of \$60 million. Contractors conduct the actual research and more than 5,950 volunteers serve on CRP oversight committees and project panels. The four programs issued 114 reports in 2021. These programs continue to address the highest priority research needs of the stakeholder community. The Bipartisan Infrastructure Law (BIL) provides increases in funding and five-year funding certainty for the highway, transit and behavioral traffic safety programs. It also calls for reestablishment of a Freight Cooperative Research Program. Chris Hedges will give a more detailed report on the Cooperative Research Programs at the Executive Committee meeting.

Consensus and Advisory Studies Program. TRB completed several significant consensus studies during 2021, including the following:

- *The Role of Transit, Shared Modes, and Public Policy in the New Mobility Landscape*
- *Investing in Transportation Resilience: A Framework for Informed Choices*
- *Preparing for LNG by Rail Tank Car: A Review of a U.S. DOT Safety Research, Testing, and Analysis Initiative*
- *Modernizing the U.S. Offshore Oil and Gas Inspection Program for Increased Agility and Safety*
- *Options for Improving the Safety of DUKW Type Amphibious Vessels*
- *Strengthening U.S. Coast Guard Oversight and Support of Recognized Organizations: The Case of the Alternative Compliance Program*

TRB also continued to advise USDOT research, development, and technology programs. Tom Menzies will report on current and upcoming consensus and advisory studies at the Executive Committee meeting.

Communications. In July, the Executive Committee adopted a new strategic plan for TRB communications, which will guide TRB's communications efforts over the next several years. It contained the following objectives with a number of strategies under each objective:

- Increase awareness of TRB products, activities, and services.
- Communicate the value of TRB to TRB sponsors, potential sponsors, and the larger transportation community.
- Make TRB the "go to," essential, up-to-date source for information on transportation research related issues.

- Increase the impact that TRB is having in solving transportation and societal problems/issues.
- Increase the influence that staff, partners, and collaborators have to communicate TRB's information and messaging and to help protect and enhance the reputation of TRB and the Academies.

TRB revamped its weekly e-newsletter, rebranded it as the *TRB Weekly* during 2021, and changed the platform for its delivery. TRB also significantly increased its social media presence and launched both a new blog and a new podcast series called *Transportation Explorers* in 2021. Paul Mackie will give an update on communications, including progress on implementation of the new communications strategic plan at the Executive Committee meeting.

TRB continued its highly successful and popular webinar program during 2021. Over 150 credit hours were offered via professional development accreditation services across TRB's more than 100 total webinars this year. TRB webinars have a loyal following, with over 80 percent of attendees joining regularly and the satisfaction rate remaining above 90 percent. In addition, 18,800 state DOT employees attended webinars in 2021, receiving over 2,700 total accreditation hours.

Critical Issues in Transportation. During the 2021 calendar year, TRB issued two addenda to its 2019 edition of *Critical Issues in Transportation*. They were:

- *COVID-19 Addendum to Critical Issues in Transportation*, and
- *Racial Equity Addendum to Critical Issues in Transportation*

Given the attention to both COVID-19's impact on the transportation system and racial equity issues during 2020 and 2021, the TRB Executive Committee wanted to address both of these critical issues in a timely manner. In addition, given the rapid change occurring in much of the transportation system, the Executive Committee decided to initiate work on the next edition of *Critical Issues in Transportation* during 2021, with a goal to have a new edition published in late 2022. Tom Menzies will give a report on current thinking and progress on the new edition at the Executive Committee meeting.

Diversity, Equity, and Inclusion (DE&I). The National Academies of Sciences, Engineering, and Medicine has placed a high priority on addressing diversity, equity, and inclusion issues from a committee membership perspective, a staff perspective, a contracting perspective, and a programmatic perspective. The National Academies hired its first Chief Diversity and Inclusion Officer, Laura Castillo-Page, during 2021. Laura has been leading efforts in addressing all of these issues from a National Academies-wide perspective. TRB efforts on DE&I have been guided by its own Diversity, Equity and Inclusion Strategic Plan, which was adopted by the Executive Committee in 2018 and revised in 2021. TRB's Special Committee on Diversity, Equity and Inclusion, which Carol Lewis chairs, oversees implementation of the strategic plan. Carol will give a plan

implementation update and Chris Hendrickson will give an update on progress in diversifying membership of TRB's committees and research panels during the Executive Committee meeting. I particularly want to highlight TRB's "Conference on Advancing Transportation Equity," which gave a platform to a range of lived and professional experiences working on the front lines of transportation equity and justice. Nearly 900 people registered for the conference, which was held in September.

The TRB Minority Student Fellows Program, now in its thirteenth year, promotes minority participation in transportation and TRB. This year, the program welcomes 24 students from 13 institutions. The program supports students from historically black colleges and universities, Hispanic-serving institutions, and American Indian/Alaska Native-serving institutions to present their research at the TRB Annual Meeting. Each institution also designates a faculty mentor to oversee each student's research. For the first time, fellows will be presenting their research together in their own poster session. Karen Febey, who is the staff person for the Minority Student Fellows Program, will update the Executive Committee on the program. Executive Committee members are encouraged to make financial contributions to this worthwhile program.

International Activities. In January 2018, the Executive Committee adopted a strategic plan for international activities. This plan included strategies to increase international participation in TRB activities, to participate in joint convening activities with international organizations, to support new international activities, and to enter into joint memoranda of understanding with international organizations. The Executive Committee created an International Subcommittee, which Randy Iwasaki chairs. TRB conducted a number of joint activities with international organizations with which it has Memoranda of Understanding or Letters of Intent. During 2021, TRB entered into a new letter of intent with the World Bank and renewed the memoranda of understanding with PIARC (the World Road Association) and ECTRI (the European Council of Transportation Research Organizations). Randy Iwasaki will give a progress report on implementation of the strategic plan for international activities at the Executive Committee meeting.

Marine Board. In 2021, the Marine Board continued to use virtual technology to hold its two meetings in June and November. The spring meeting focused on *Emerging Challenges in the Maritime Domain*, novel uses of the maritime space that are having an impact on the missions and regulatory responsibilities of federal agencies with stewardship over the marine transportation system. Activities discussed included the impacts of wind farm development, automated and autonomous vessel introduction, marine aquaculture, and commercial space sector use of waterways for launch and recovery. The Marine Board's fall meeting featured a focus session on *Decarbonization and The Future of Marine Energy and Propulsion*, which featured international and domestic representatives from industry, research and the federal government to discuss the many systemic aspects and necessary partnerships that will be important to moving

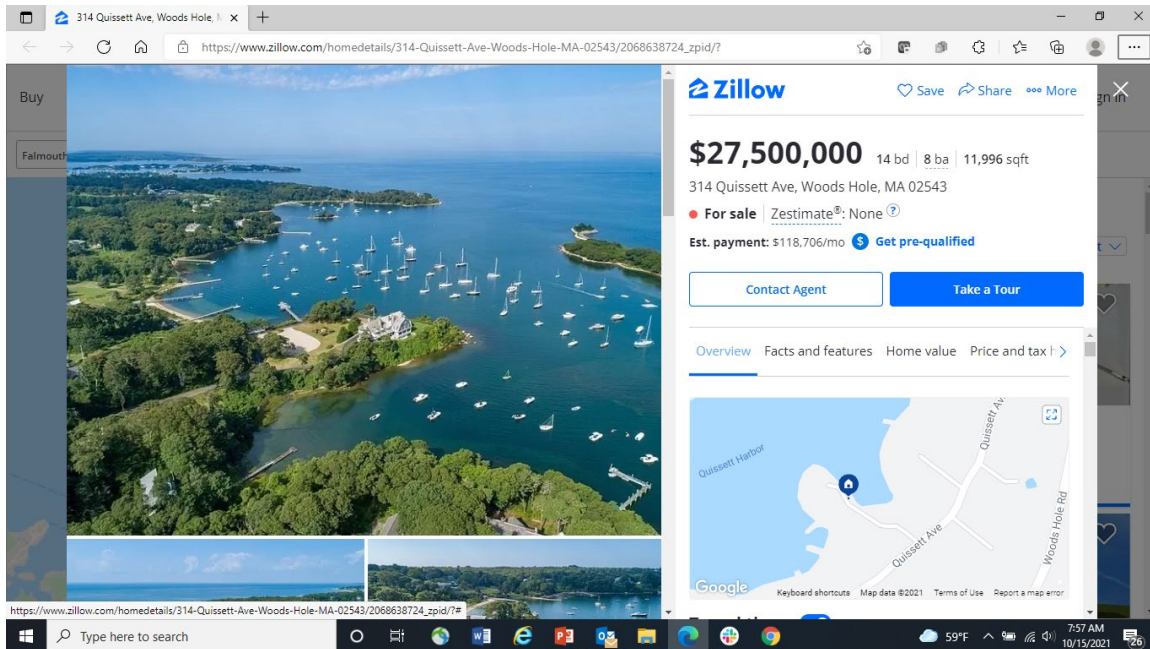
maritime toward a sustainable future. The Marine Board continues work on its broad portfolio, which includes autonomous shipping and the future of navigation; maritime resilience and risk; the future of the maritime supply chain; offshore wind energy; moving towards zero emissions shipping; U.S. maritime policy; Arctic marine challenges; human and intellectual capital challenges in the marine sector; safety management, culture, and inspections; and cyber in the marine transportation system. Martha Grabowski is Chair of the Marine Board, and she will give a more detailed report during the Executive Committee meeting.

TRB Operations

TRB has continued delivering its products and services mostly virtually, with a small number of committee meetings being held as hybrid meetings, including the summer Executive Committee meeting in Woods Hole. The Keck Building is open for those who choose to go to their offices or hold meetings, but a telework option remains available for TRB employees indefinitely until pandemic conditions change. Most meetings during 2021 were held virtually, as well as all conferences and workshops during the year. With the rapid spread of the Omicron variant of COVID-19, there is great uncertainty regarding when staff will return to the office or the status of conferences and workshops that are currently planned to be held in person during 2022.

Sale of the Jonsson Center in Woods Hole

Due to declining revenues and increased expenses, the National Academy of Sciences Council decided to put the Jonsson Center in Woods Hole up for sale. It is currently on the market and is listed for \$27.5 million. Unfortunately, this means that we will no longer be able to hold the summer TRB Executive Committee meetings or other TRB meetings in Woods Hole. We are currently working toward a contract to hold the summer 2022 Executive Committee meeting at a conference center near Dulles Airport in Virginia. I hope to have more detailed information by the time of the Executive Committee meeting.



Bipartisan Infrastructure Bill

On November 1, 2021, President Biden signed into law what had been previously called the Infrastructure Investment and Jobs Act (IIJA), but is now known as the Bipartisan Infrastructure Law (BIL).

The \$1.2 trillion funding bill included a five-year authorization of surface transportation programs, which are the source of a large majority of TRB's revenues. Out of the \$1.2 trillion of funding, \$274 billion is new transportation funding, with increases in both formula programs, as well as funding of a number of new discretionary programs.

The majority of funding for TRB comes from Statewide Planning and Research Funds, which in FY2022 are projected to increase 15 percent from FY2021 funding levels. This will most directly affect funding for TRB's core technical program and the National Cooperative Highway Research Program.

The legislation also includes several consensus studies, which Tom Menzies will discuss in his Consensus and Advisory Studies Division program report.

Restoration of USDOT Funding of TRB's Core Technical Program

During the last Administration, USDOT made the decision to reduce significantly the contribution of the Office of the Secretary and all modal administrations except FHWA to TRB's core technical program. This resulted in approximately a \$900,000 per year reduction in support for this program. We are pleased that TRB has now entered into agreements with all of the agencies whose funding had been reduced to restore the

funding and in a couple of cases increase funding. In addition, both the Office of the Under Secretary for Policy and the Pipeline and Hazardous Materials Administration have entered into agreements to become sponsors of TRB's core technical program. This not only means that funding has been restored for the program, but the chief executive officers of each of these agencies have once again become ex officio members of the TRB Executive Committee.

TRB Finances

Information on TRB revenues and expenditures is contained in Attachment 1 to this report.

Table 1 shows TRB actual spending and sources of funds by program for calendar years 2019 and 2020 and estimates for 2021.

In terms of revenues, 62 percent of TRB's revenues come from state departments of transportation, with another 29 percent coming from USDOT. Of the remaining 9 percent, 6 percent comes from fees and sales, 2 percent from private sources, and 1 percent from other federal agencies.

Between 2019 and 2021, TRB's expenditures have decreased by an estimated \$14 million, of which \$5.4 million is due to decreases in expenditures in the CRP, primarily due to slowdowns in contractors conducting research as a result of COVID-19 coupled with a reduction in travel costs related to the suspension of in person panel meetings. \$4.5 million of the decrease is due to the close out of TRB's stewardship of the SHRP 2 safety database; \$2.4 million is due to reduced expenditures for conferences and workshops; and \$1.6 million is due to reduced expenditures in TRB's core technical program, primarily related to lower TRB Annual Meeting expenditures. With the exception of the stewardship of the SHRP 2 database, most of these expenditure levels will eventually return to 2019 levels or higher, but the rate of rebound will be dependent on pandemic conditions.

Table 2 shows estimated revenues and expenditures for TRB's core technical program for a six-year period. The data in this table are for TRB's fiscal year (July 1 to June 30). The fiscal planning period for the core technical program is shown for this longer period because expenditures do not track revenues as closely on an annual basis when compared to our regular programs. We project for a longer time-frame in order to be able to plan and account for the impact of these annual variances on the available funds in the core program. Table 2 reflects an anticipated 15 percent increase in funding from state DOTs starting in TRB fiscal year 2023 due to the increase in Statewide Planning and Research funds from the Bipartisan Infrastructure Law. It also assumes a 2 percent per year increase in state DOT funding after that. Table 2 also reflects the restoration of funding from USDOT agencies to support TRB's core technical program. In addition it reflects a

\$3 million decrease in net revenues from the 2021 TRB Annual Meeting and approximately a \$2 million decrease in net revenues from the 2022 TRB Annual Meeting when compared to pre pandemic estimates. Both the 2021 and 2022 decreases in net annual meeting revenues reflect reduced expenditures, but an even greater decrease in revenues.

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 the TRB core technical program. While they could not have anticipated a worldwide pandemic their foresight has allowed us to address the financial impact of Covid-19 without having to lay off staff. As a matter of policy, the Executive Committee established a target level for the Reserve Fund of between 75 and 100 percent of annual expenditures. Based on current projections, at the end of FY2026, the reserve fund level is estimated to be 83 percent of projected FY2026 expenditures, which is within the target range.

The greatest short-term uncertainty in these projections is what effect COVID-19 will have on 2022 TRB Annual Meeting revenues. We will update the six-year estimates once we have final revenue and expenditure data from the 2022 TRB Annual Meeting.

Executive Committee Discussion Items

In addition to its oversight responsibilities, the Executive Committee sets strategic direction for TRB's programs and activities. It does this through development of a strategic plan for TRB and through discussion of critical issues in transportation.

The Subcommittee on Planning and Policy Review (SPPR) has been busy developing a new strategic plan for TRB that is in alignment with the new strategic plan that the National Research Council, TRB's parent organization, adopted in February 2021. The SPPR has circulated draft elements of the proposed plan, including vision, mission, values, tenets, goals, and strategies to TRB oversight committees and staff and received feedback. It has made changes based on the feedback received. The latest step was development of a draft set of actions. The current draft of the plan is included in the agenda book and will be discussed at the Executive Committee meeting on January 12. The next steps will be to develop performance metrics, assign responsibilities, and develop priorities for the actions, recognizing that it is a five-year plan and actions will be spread out over the five-year period. I hope that you will have an opportunity to review the draft plan prior to the Executive Committee meeting, since development and adoption of the strategic plan is one of the Executive Committee's most important responsibilities. Everything is on schedule for adoption of the new TRB strategic plan by the full Executive Committee at its June 2022 meeting.

We are pleased that we will once again have a panel of USDOT modal administrators at the Executive Committee meeting to discuss the greatest issues and challenges each of

their administrations is facing and how research might help in addressing these challenges. Robert Hampshire, Deputy Assistant Secretary for Research and Technology, will moderate, and the panel will include the following administrators and acting administrators:

- Steve Dickson, Federal Aviation Administrator
- Meera Joshi, Deputy Administrator, Federal Motor Carrier Safety Administration
- Amit Bose, Deputy Administrator, Federal Railroad Administration
- Lucinda Lessley, Acting Administrator, Maritime Administration

The Executive Committee policy session will be on decarbonization of the transportation sector. We will hear from USDOT and TRB committee leadership on the topic before lunch on January 12 and will have our usual discussion session with the following three experts on the topic in the afternoon.

- Chris Hendrickson, Carnegie Mellon University
- Young Tae Kim, International Transport Forum
- Rachel Muncrief, International Council on Clean Transportation

This will be a particularly timely discussion, given the policy priority being placed on climate change and decarbonization globally and in the United States at this time.

Transitions

Susan Shaheen's term as Chair of the Executive Committee will end at the close of the Executive Committee meeting on January 13. I would personally like to thank Susan for her leadership, guidance, thoughtfulness, and support during the challenging past year. Vice Chair Nat Ford will become Chair of the Executive Committee on January 13. Shawn Wilson will become Vice Chair at the same time. We look forward to Nat's and Shawn's leadership during the upcoming year.

Katie Turnbull's three-year term as Chair of the Subcommittee on Planning and Policy Review will also end on January 13, as will her term on the Executive Committee. I would personally like to thank Katie for her great leadership of the subcommittee, which acts on behalf of the Executive Committee in between meetings. SPPR also has responsibility for drafting both the TRB strategic plan and the *Critical Issues in Transportation* document. Susan Shaheen will succeed Katie as SPPR Chair on January 13.

Chris Hendrickson's three-year term as Division Committee Chair is also ending. Marcia McNutt, Chair of the NRC Governing Board has approved reappointment of Chris to a second three-year term as TRB Division Committee Chair. We ask for a lot from the

Division Committee Chair, and we are grateful for Chris' willingness to serve a second three-year term.

In addition to Katie, the terms of Susan Hanson, Jack Hu, Bill Kruger, and Brian Ness will be coming to a close on January 13. We want to thank all of them for their service to the committee, but I especially want to recognize Susan Hanson's service. She was TRB Division Committee Chair from 2013 to 2019 and has been a member of the Executive Committee a total of 15 years in two different periods of time since 2002.

We are very pleased to welcome the following new members of the Executive Committee, whose three-year terms will begin on January 13:

- James F. Albaugh (NAE), Retired President and CEO, Commercial Airplanes, The Boeing Company
- Joel Jundt, Secretary, South Dakota Department of Transportation
- Drew K. Kodjak, Executive Director, International Council on Clean Transportation
- Dr. Carol A. Lewis, Professor, Transportation Studies, Texas Southern University
- Dr. Steward T. A. Pickett (NAS), Distinguished Senior Scientist, Cary Institute of Ecosystem Studies

They all will attend the January 12-13 meeting either in person or virtually, so you will have an opportunity to meet them at that time.

TRB Awards

The TRB Annual Meeting is also the time of year when TRB bestows its most prestigious awards. We are very pleased to recognize this year's award winners.

- W.N. Carey, Jr. Distinguished Service Award: Vincent Valdez, Southwest Pennsylvania Commission
- Roy W. Crum Distinguished Service Award: Hani Mahmassani, Northwestern University
- Sharon D. Banks Award for Humanitarian Leadership in Transportation: Jackie Grimshaw, Center for Neighborhood Technology
- Robert E. Skinner, Jr. Distinguished Transportation Research Management Award: Robert E. Skinner, Jr., TRB (retired)
- Thomas B. Deen Distinguished Lectureship: Anne Strauss-Weider, North Jersey Transportation Planning Authority
- George S. Bartlett Award: Carlos Braceras, Utah Department of Transportation

Please note that the SPPR, acting on behalf of the Executive Committee, established the Robert E. Skinner, Jr. Distinguished Transportation Research Management Award in 2021 and the award selection committee decided that Bob Skinner, former Executive Director of TRB from 1994 to 2015, should be the first recipient.

Gratitude to TRB Staff

I especially want to commend my colleagues on the TRB staff for their adaptability, resilience, hard work, and commitment to continuing to provide high quality products and services during this challenging year. They have risen to the occasion and I applaud them for what they have done.

We have experienced the retirement of a number of seasoned TRB staff members during 2021. Bill Rogers, Ray Derr, Larry Goldstein, Andy Lemer, Eileen Delaney, and Sharon Lamberton all retired from the Cooperative Research Program staff. Perhaps of greatest impact to the Executive Committee and to me personally is the retirement of the Cindy Baker. We will all miss Cindy and thank her for her dedicated service to TRB. We look forward to working with her successor Sierra Hall. We are grateful for the long time service to TRB of all these dedicated staff members. We are also pleased that we have been able to hire a number of very talented new staff to succeed them and look forward to their service to TRB.

Concluding Thoughts

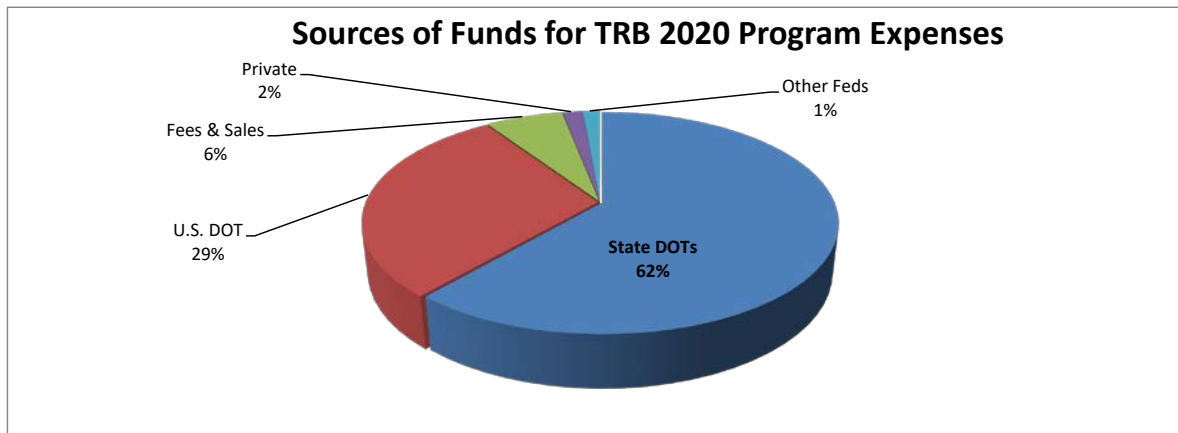
I would like to thank each of you for your support and for the direction that you have provided to TRB during this challenging year. Although our normal way of doing business has been disrupted for the past 22 months, TRB has been able to continue to provide products and services that are valued by its sponsors, volunteers, and customers. I am grateful for the commitment of the 8,000+ volunteers who are members of TRB's committees and panels, as well as the 16,000+ friends of TRB committees; the thousands of attendees at the TRB Annual Meeting; and the 127 dedicated TRB staff members; all of whom contributed to TRB's success this past year. I appreciate their creativity, commitment, resilience, and dedication to TRB's success. I look forward to engaging with all of you as we figure out how to prepare the nation and the world for future challenges and opportunities and as we expand TRB's influence and impact in the world.

Attachments

cc: Mr. Gregory Symmes, Chief Program Officer

TRB Spending by Program and Source(s) of Funds

	2019 act.	2020 act.	2021 est.	Source(s) of Funds
Core Technical Activities	\$15,497,000	\$14,769,000	\$13,873,000	State DOTs (53%), Fees & Sales (28%), FHWA (10%), Other (9%)
Cooperative Research Programs				
NCHRP	\$45,100,000	\$43,620,000	\$41,362,000	State DOTs (99.5%) FHWA (.5%)
ACRP	\$14,059,000	\$12,503,000	\$12,607,000	FAA
TCRP	\$5,451,000	\$5,327,000	\$4,485,000	FTA
NCFRP	\$224,000	\$32,000	\$0	OST-R
BTSCR	\$775,000	\$1,163,000	\$1,735,000	NHTSA/GHSA
Rail Safety IDEA	\$446,000	\$367,000	\$220,000	FRA
Evaluation of FHWA Research Projects	\$0	\$791,000	\$682,000	FHWA
Policy Studies	\$3,416,000	\$2,737,000	\$2,804,000	FAA (29%) FHWA(26%), Policy Fund (16%), Coast Guard (16%), FRA (7%), BSEE (6%)
Conferences, Workshops, Forums & Centennial	\$3,548,000	\$1,401,000	\$1,139,000	Registration Fees/Core (65%), State DOTs (13%), OST-R (12%), FHWA (4%), Other (6%)
SHRP2 (Safety Database)	\$4,494,000	\$1,392,000	\$0	FHWA
Marine Board	\$259,000	\$189,000	\$346,000	Army (24%), Coast Guard (24%), ONR (20%), NOAA (13%), BSEE (9%), MARAD (6%), SUPSALV (4%)
Total	\$93,269,000	\$84,291,000	\$79,253,000	



TRB CORE BUDGET ESTIMATE FOR SIX FISCAL YEARS (July 1 - June 30)

	<u>FY2021 (act)</u>	<u>FY2022</u>	<u>FY2023</u>	<u>FY2024</u>	<u>FY2025</u>	<u>FY2026</u>
Revenue						
State Highway & Transportation Departments (State DOTs)	8,004,000	8,004,000	9,201,000	9,385,000	9,573,000	9,764,000
Federal Highway Administration (FHWA)	1,425,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000
Other Federal Agencies						
Office of the Assistant Secretary for Research and Technology (OST-R)	81,000	231,000	300,000	300,000	300,000	300,000
Federal Transit Administration (FTA)	81,000	312,000	250,000	250,000	250,000	250,000
National Highway Traffic Safety Administration (NHTSA)	73,000	222,000	250,000	250,000	250,000	250,000
Federal Motor Carrier Safety Administration (FMCSA)	38,000	63,000	78,000	80,000	82,000	84,000
Federal Aviation Administration (FAA)	36,000	69,000	78,000	80,000	82,000	84,000
Federal Railroad Administration (FRA)	36,000	69,000	78,000	80,000	82,000	84,000
Pipeline and Hazardous Materials Safety Administration (PHMSA)	-	57,000	78,000	80,000	82,000	84,000
USDOT Office of the Under Secretary for Policy	-	38,000	78,000	80,000	82,000	84,000
Department of The Interior (DOI)	85,000	85,000	85,000	85,000	85,000	85,000
Air Force Civil Engineer Center (AFCEC)	75,000	76,000	78,000	80,000	82,000	84,000
Department of Energy (DOE)	75,000	76,000	78,000	80,000	82,000	84,000
Environmental Protection Agency (EPA)	75,000	76,000	78,000	80,000	82,000	84,000
Army Corps of Engineers (COE)	62,000	76,000	78,000	80,000	82,000	84,000
	<u>717,000</u>	<u>1,450,000</u>	<u>1,587,000</u>	<u>1,605,000</u>	<u>1,623,000</u>	<u>1,641,000</u>
Other Non-Federal						
Association of American Railroads (AAR)	75,000	76,000	78,000	80,000	82,000	84,000
American Public Transportation Association (APTA)	75,000	76,000	78,000	80,000	82,000	84,000
California Air Resources Board (CARB)	80,000	81,000	83,000	85,000	87,000	89,000
	<u>230,000</u>	<u>233,000</u>	<u>239,000</u>	<u>245,000</u>	<u>251,000</u>	<u>257,000</u>
TRB Fees & Sales	2,897,000	4,160,000	6,100,000	6,283,000	6,471,000	6,665,000
	13,273,000	15,247,000	18,527,000	18,918,000	19,318,000	19,727,000
Expenses						
Personnel Related Expenses	12,364,000	13,230,000	14,699,000	15,140,000	15,594,000	16,062,000
AM Logistics and Travel	379,000	2,158,000	2,223,000	2,267,000	2,335,000	2,405,000
Library, Publishing & Report Production	935,000	1,225,000	1,150,000	1,173,000	1,208,000	1,244,000
Staff/Committee Travel & Meetings	22,000	75,000	200,000	204,000	210,000	216,000
Other Costs	91,000	215,000	280,000	286,000	295,000	304,000
	13,791,000	16,903,000	18,552,000	19,070,000	19,642,000	20,231,000
Reserves						
Yearly Surplus/(Deficit)	(518,000)	(1,656,000)	(25,000)	(152,000)	(324,000)	(504,000)
Reserve Fund Balance	19,360,869	17,704,869	17,679,869	17,527,869	17,203,869	16,699,869
Percent of Core Operating Year	140%	105%	95%	92%	88%	83%

Attachment 2

TRB Annual Report can be found in the Appendix

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TRANSPORTATION RESEARCH BOARD

MEMORANDUM

TO: TRB Executive Committee

FROM: Katie Turnbull, Chair
Subcommittee on Planning and Policy Review (SPPR)
Neil Pedersen, Executive Director

DATE: December 22, 2021

SUBJECT: Development of New TRB Strategic Plan

The purpose of this memorandum is to update you on progress in the development of the new TRB Strategic Plan and to request that you review the attached draft sections of the plan prior to the January 12-13 TRB Executive Committee meeting. We have time on the agenda to discuss the strategic plan during the morning of January 12.

As background for new Executive Committee members, the National Research Council (NRC), TRB's parent organization, adopted a new strategic plan in February 2021. TRB committed to develop a new strategic plan to be in alignment with the NRC plan. Work has been underway on the new TRB plan since spring 2021.

Following our discussion at the July Executive Committee meeting, the SPPR and TRB staff revised the vision, mission, values, tenets, and goals statements based on the comments received during the July meeting. We developed a series of strategies to support each of the goals and circulated the revised plan elements to TRB oversight committees for review and comment. We made further refinements based on comments received, and we asked TRB staff to draft a proposed set of actions to support the strategies. After further review and revisions, we are offering the attached draft sections of the plan for your review. We have included corresponding sections of the NRC strategic plan, so you can see how the draft TRB plan aligns with the NRC plan. In reviewing the draft, it is important to remember that this is a five-year plan. It is quite an ambitious plan and the implementation is intended to occur over a five-year period. It is also important to remember that the final plan will need to be able to be accomplished within available staff, volunteer, and financial resources.

The next steps will be to make further revisions based on Executive Committee feedback and to develop a set of performance metrics. An introduction section will be drafted. SPPR also will work with staff to identify priorities, schedules, and responsibilities for plan elements. The goal is to have a final plan ready for adoption by the Executive Committee at its June 2022 meeting.

We look forward to our discussion regarding the draft plan on January 12th.

Attachment

Draft TRB Strategic Plan with Actions

December 22, 2021

Vision

NRC vision: A nation and a world that rely on scientific evidence to make decisions that benefit humanity.

Proposed TRB Vision: A nation and a world that rely on scientific evidence and expertise about transportation to ensure a system that benefits individuals, society, and the environment.

Mission

NRC mission: The National Academies provide independent, trustworthy advice and facilitate solutions to complex challenges by mobilizing expertise, practice, and knowledge in science, engineering, and medicine.

Proposed TRB Mission Statement: TRB mobilizes expertise, experience, and knowledge to anticipate and solve complex transportation-related challenges.

Values

NRC Values: Independence, Objectivity, Rigor, Integrity, Inclusivity, Truth

Proposal regarding TRB Values: TRB, being a program division of the NRC, will use the NRC values as TRB's values.

Guiding Tenets as TRB Looks to Its Future

1. Adhere to the National Academies' and TRB's high standards for objectivity, independence, non-partisanship, integrity, excellence, and an evidence-basis for all that we do;
2. Leverage being part of the National Academies of Sciences, Engineering, and Medicine, and the expertise available to TRB throughout the National Academies;
3. Facilitate researchers and practitioners interacting with and learning from each other;
4. Enable individuals and society to benefit from the multi-disciplinary and multi-modal expertise and contributions of TRB's participants, and the multi-disciplinary and multi-modal scope of its portfolio;
5. Meet the needs of TRB's sponsors and professionals working in transportation-related fields by offering relevant services and producing implementable solutions and useful, high quality products;

6. Facilitate the professional development and growth opportunities of students and transportation professionals at all stages of their careers;
7. Continually evaluate and improve TRB's services to maximize value to TRB's sponsors and participants; and
8. Leverage diversity of thought, background, perspective, and experience to better address transportation's challenges; identify and eliminate barriers to full and active inclusion in TRB; and develop of a diverse set of TRB volunteer leaders.

Goals

NRC Goals:

1. Anticipate and prepare society for current and future challenges and opportunities.
2. Expand the NRC's impact in the world.
3. Strengthen all aspects of the NRC to achieve Goals 1 and 2 and ensure its continued creativity, resilience, and sustainability.

Proposed TRB Goals

1. Prepare transportation professionals and decision makers to address current and future transportation-related challenges and opportunities.
2. Expand TRB's impact and influence through its objective research, information exchange, and advisory activities.
3. Assure TRB's continued creativity, resilience, and sustainability in an ever evolving world.

NRC Strategies under Each Goal

1. Anticipate and prepare society for current and future challenges and opportunities.
 - a. Proactively identify critical current and emerging problems and opportunities facing humanity and identify appropriate responses.
 - b. Build diverse and deep networks of partners to develop a forward-looking portfolio.
 - c. Develop new mechanisms and use state-of-the-art methodologies to anticipate and solve problems.
2. Expand the NRC's impact in the world.
 - a. Design NRC activities to be diverse and inclusive to enhance impact.
 - b. Enhance the impact of the NRC.
 - c. Adopt advanced technologies for communication.

3. Strengthen all aspects of the NRC to achieve Goals 1 and 2 and ensure its continued creativity, resilience, and sustainability.
 - a. Strengthen the governance of the NRC.
 - b. Sustain, support, and enhance staff.
 - c. Provide relevant and timely evidence-based guidance through continuous innovation and learning.
 - d. Develop new business models and methods.
 - e. Deploy technology to improve NRC operations.
 - f. Balance priorities.

Proposed TRB Strategies and Actions under Each Goal

1. Prepare transportation professionals and decision makers to address current and future transportation-related challenges and opportunities.
 - a. Identify current and future critical transportation-related issues and address these issues through TRB's convening, research, and advising programs and activities.
 - i. Publish a new edition of *Critical Issues in Transportation* in late 2022.
 - ii. Develop and highlight TRB Annual Meeting sessions related to the critical issues.
 - iii. Pursue sponsorship of conferences/workshops for the critical issues.
 - iv. Conduct research projects on the critical issues and disseminate the findings to key stakeholders.
 - v. Pursue sponsorship of consensus and advisory studies for critical issues, including working together with other National Academies program divisions on studies addressing these issues.
 - vi. Produce webinars that address critical issues.
 - vii. Produce Executive Committee policy sessions that address critical issues.
 - viii. Develop addenda to the *Critical Issues in Transportation* report as new or evolving issues develop between reports.
 - b. Educate and communicate with transportation professionals, decision makers, and the public about the critical issues identified and the work that TRB is doing to address them.
 - i. Develop strategies for communicating within the TRB stakeholder community about critical issue topic areas through e-newsletter articles, *TR News* feature editions, blogs, podcasts, and TRID feature articles.
 - ii. Develop communications strategies for individual reports and activities related to TRB's critical issues, including Cooperative Research Program reports, consensus study reports, topical *Transportation Research Record*

- editions, conference/workshop reports, and TRID snap searches on the topics.
- iii. Address critical issues in collaboration with other transportation organizations.
 - iv. Develop strategies for communicating with the broader public and decision makers about critical issue topic areas, as well as specific reports on these topic areas.
- c. Identify appropriate state-of-the-art and new methods for addressing critical issues.
- i. Identify opportunities to use data that has been collected or will be collected using state of the art data collection methods (e.g. crowdsourced data, cell phone probe data), as well as state of the art analysis methods (e.g. artificial intelligence, advanced geographic information systems).
2. Expand TRB's impact and influence through its objective research, information exchange, and advisory activities.
- a. In planning TRB activities, identify actions that will expand each activity's impact.
 - i. As part of initial planning for conferences/workshops, cooperative research studies, and consensus studies, develop a communications and outreach approach for when reports are issued, including measures to measure impact.
 - ii. Develop and deploy communications strategies to increase awareness of and participation in the TRB Annual Meeting, conferences, workshops, and committee meetings.
 - b. Measure the impact of TRB's programs and activities
 - i. Develop both quantitative and qualitative performance metrics to measure the impact of TRB's convening activities, research studies and reports, TRB's consensus study reports, *Transportation Research Record* and communications efforts.
 - ii. Collect data and anecdotal information from users and sponsors on the short- and long-term impact of selected reports.
 - iii. Issue periodic impact reports for individual TRB's programs, and summarize impact data in TRB's annual report.
 - iv. Working with oversight committees for each program area, adjust the program to focus on areas of greatest value and impact for TRB sponsors and stakeholders.

- c. Educate transportation stakeholders about TRB's programs, products, and activities.
 - i. Using impact information collected, develop and communicate value proposition statements for each of TRB's programs and major activities.
 - ii. Refine materials that describe TRB's programs, products, and activities, tailoring them to specific target audiences, as well as diverse audiences.
 - iii. Reach out to targeted audiences to educate and engage in dialogue with them about TRB and how TRB can benefit them.
 - iv. Develop communications materials and strategies about TRB's capabilities and value proposition for the following specific audiences:
 - Sponsors
 - Congressional staff
 - Transportation professionals and organizations from nations other than the United States
 - Young professionals and students
 - v. Equip TRB staff and volunteers to be ambassadors for TRB's programs, products, and activities.
 - vi. Adapt TRB's communications strategies to rapidly changing communications methods and to different groups of stakeholders.
 - vii. Strengthen and evolve the marketing strategy for the TRB Annual Meeting.

- d. Communicate with transportation professionals and the public about transportation issues and research.
 - i. Develop timely communications materials on transportation-related issues and share through blogs, social media, and other communications methods.
 - ii. Develop materials that demonstrate the value obtained from transportation research.

- e. To enhance impact, build a diverse and deep network of partners.
 - i. Identify a list of organizations that TRB will engage with, publicize each other's activities, and as appropriate establish liaisons between the organizations' committees.
 - ii. Pursue joint activities with these organizations.

- f. Ensure multidisciplinary involvement in addressing TRB's issues.

- i. Identify disciplines or sectors involved in transportation-related issues that are underrepresented in TRB, and develop strategies to engage with professionals from these disciplines or sectors.
 - ii. For individual standing technical committees, research panels, or study committees, ensure that membership reflects an appropriate diversity of disciplines.
 - g. Provide career-long learning opportunities by fostering an environment that continually enhances the diversity, inclusivity, skills, and capacity of the transportation professional community.
 - i. Develop appropriate communications materials, and communicate the benefits of standing committee volunteer opportunities to enhance professional development and encourage pathways for diverse groups to become actively engaged and take on leadership roles.
 - ii. Develop and deliver targeted communications materials for students, early career professionals, and underrepresented groups regarding learning and professional development opportunities through TRB.
 - iii. Enhance marketing of TRB's continuing education credit program.
- 3. Assure TRB's continued creativity, resilience, and sustainability in an ever evolving world.
 - a. Identify and address the issues and needs of existing and potential sponsors, partners, volunteers, and users of TRB's programs, products, and activities.
 - i. Conduct regular outreach meetings with sponsors to discuss their challenges and to discuss opportunities for TRB to assist in addressing their issues.
 - ii. Periodically survey participants in TRB events and webinars, and make appropriate adjustments based on feedback received.
 - iii. Seek feedback regarding TRB reports, the TRB website, and e-newsletter to identify potential areas for improvement.
 - b. Pursue continuous improvements and efficiencies in TRB programs, products, and activities to increase effectiveness, usefulness, and timeliness and to identify how to best use new resources.
 - i. Continually evaluate TRB's programs and activities to ensure that they are being delivered as efficiently and effectively as possible.
 - ii. Conduct reviews of key processes to identify improvements, opportunities for consistency or standardization, and efficiencies.

- iii. Implement IT changes that can improve efficiencies or effectiveness.
 - iv. In conjunction with National Academies initiatives, implement improved project management systems in TRB.
 - v. Work with oversight committees to determine the most effective way to use additional funding from the Infrastructure Investment and Jobs Act.
 - vi. Initiate the new Freight Cooperative Research Program.
 - vii. Coordinate with TRB sponsors to determine additional activities where TRB could help support the sponsor agency provided that appropriate financial support is provided.
 - viii. Work with NRC leadership and other program division staff on new NRC products or services emerging from the NRC strategic plan.
- c. Take advantage of technology to expand TRB's outreach and participation.
- i. Take advantage of videoconference technology to support TRB activities, as appropriate.
 - ii. Increase participation on TRB's social media platforms.
 - iii. Develop products that best meet sponsor and stakeholder needs, including digital formats as appropriate.
 - iv. Use state of the art collaboration tools for committee and panel work.
- d. Balance TRB's programs, products, and activities with available financial, volunteer, and staff resources to achieve the goals and strategies in this plan.
- i. Annually adjust the amount of activity in each program area to be in balance with the financial support made available to that TRB program area while meeting the needs of core constituencies.
 - ii. Use information developed on the use and impact of TRB's programs, products, and activities to make adjustments that ensure that the greatest value is provided for the resources that are available.
 - iii. Evaluate the effectiveness of TRB's Global Affiliate and Individual Affiliate programs.
 - iv. Evaluate the package of private sector support opportunities for the TRB Annual Meeting
 - v. Identify and pursue additional sponsors, affiliates, and other support opportunities for TRB programs, products, and activities.
 - vi. Make TRB's conferences and workshops self-supporting through sponsorships, exhibit sales, and registration revenues, including potential pool-fund arrangements.

- vii. Identify additional organizations that are willing to provide funds for Cooperative Research Program (CRP) research projects or self-funded TRB consensus studies.
 - viii. Train staff to assist in fundraising activities for specific programs and activities.
 - ix. Expand TRB's programs and activities to address new and future transportation issues as opportunities arise, provided financial and staff resources can be secured.
- e. Expand the diversity of TRB participants, ensuring an inclusive and welcoming environment for all persons involved in transportation.
 - i. Develop guidance materials and training for committee chairs, research panel chairs, and TRB staff to identify, recruit, and welcome diverse candidates for TRB committees and research panels.
 - ii. Work with minority-serving organizations to market TRB and opportunities for their members to be involved in TRB.
 - iii. Identify ways to ensure that TRB Annual Meeting and specialty conference attendees have equal opportunities to make connections and feel included, welcomed, and able to participate.
 - iv. Identify practices/and develop primers for TRB staff and the contracting office to identify and minimize barriers to achieving greater diversity among TRB contractors and their lead staff, whether they are suppliers or research consultants.
 - v. Improve existing data, information, and communication mechanisms to support diversity efforts.
- f. Sustain, support, and enhance staff.
 - i. Enhance methods used in recruiting and hiring candidates to fill staff vacancies.
 - ii. Improve the onboarding experience for new employees.
 - iii. Review training programs for employees in different job classes and develop more structure to employee training programs within each TRB division.
 - iv. Review career advancement strategies for staff.
 - v. Review and refine TRB's mentoring programs for staff.
 - vi. Review and revise process-related guidance materials for staff.
 - vii. Review and revise TRB's rewards and recognition program.



Robert C. Hampshire
Deputy Assistant Secretary for Research and Technology
U.S. Department of Transportation

Robert Hampshire serves as the Deputy Assistant Secretary for Research and Technology. Hampshire was previously an associate professor at the Gerald R. Ford School of Public Policy at the University of Michigan. He was also a research associate professor in both the U-M Transportation Research Institute (UMTRI) and Michigan Institute for Data Science (MIDAS), and an affiliated faculty member in the Department of Industrial and Operations Engineering (IOE).



Steve M. Dickson
Administrator
Federal Aviation Administration

Steve Dickson was sworn in as the FAA administrator for a five-year term on August 12, 2019, after being confirmed by the U.S. Senate. At the FAA, Administrator Dickson has been a staunch advocate for safety, global leadership, operational excellence, and the health, welfare and evolution of the FAA's workforce. Before coming to the FAA, Dickson spent nearly three decades at Delta Air Lines, retiring as the senior vice president of flight operations. In this role, he was responsible for the safety and operational performance of global flight operations, as well as pilot training, crew resources, crew scheduling, and regulatory compliance. During his career, he flew the Airbus A320 and the Boeing 727, 737, 757, and 767. Captain Dickson previously served as chairman of several industry stakeholder groups and federal advisory committees. Dickson is a distinguished graduate of the Class of 1979 at the United States Air Force Academy. He graduated from Georgia State University College of Law, magna cum laude. While on active duty, he flew the T-38 Talon supersonic jet trainer and F-15 Eagle fighter jet.



Meera Joshi
Deputy Administrator
Federal Motor Carrier Safety Administration

Meera Joshi serves as the Deputy Administrator of the Federal Motor Carrier Safety Administration. Most recently, Joshi served as General Manager of the New York office of Sam Schwartz Transportation Consultants and visiting scholar at NYU's Rudin Center for Transportation policy. Previously, Joshi served as chief regulator of New York City's for hire vehicle industry. Under her leadership, New York City mandated the reporting of granular trip data from large app operators, which informed landmark data-driven safety reforms, enforceable pay standards for drivers and meaningful access to service for the disabled. Joshi was also an executive manager in city agencies charged with oversight of the New York City Police Department and Department of Corrections.



Amit Bose
Deputy Administrator
Federal Railroad Administration

Amit Bose serves as the Deputy Administrator of the Federal Railroad Administration. Previously, Bose worked at HNTB, an architectural and engineering firm, where he also served as board chair of the Coalition for the Northeast Corridor and on the New Jersey Restart and Recovery Advisory Council. He has previously served in the Federal Railroad Administration (FRA) as Deputy Administrator, Chief Counsel, Senior Advisor and Director of Governmental Affairs; U.S. Department of Transportation as Associate General Counsel and Deputy Assistant Secretary for Governmental Affairs; New Jersey Transit; and New Jersey Department of Transportation.



Lucinda Lessley
Acting Administrator
Maritime Administration

Lucinda Lessley serves as the Acting Administrator of the Maritime Administration. Previously, Lessley worked in the House of Representatives for approximately 16 years. Most recently, she was Senior Investigator with the House Committee on Homeland Security. Prior to that, she worked for Congressman Elijah E. Cummings in a variety of positions, including as Policy Director of the House Committee on Oversight and Reform, Legislative Director in the Congressman's personal office, and as Professional Staff on the Transportation and Infrastructure Committee's Subcommittee on Coast Guard and Maritime Transportation.

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TRANSPORTATION RESEARCH BOARD

November 30, 2021

MEMORANDUM

TO: Members, TRB Executive Committee
FROM: Russell Houston *RH*
SUBJECT: January 12 & 13, 2022, Policy Session on Decarbonization of the
Transportation Sector

According to the U.S. Environmental Protection Agency, when electricity emissions are considered separately and not part of a cradle to grave calculation, transportation is the top source of direct greenhouse gas emissions (28 percent), followed by the electric power sector (27 percent), industry (22 percent), commercial and residential buildings (12 percent), and agriculture (10 percent).

According to Accelerating Decarbonization of the U.S. Energy System, a new report from the National Academies of Sciences, Engineering, and Medicine, achieving net-zero carbon emissions in the U.S. by 2050 is feasible and would not only help address climate change but also build a more competitive economy, increase high-quality jobs, and help address social injustices in the energy system.

The committee that produced the report suggest that electrification of the transportation sector would primarily be accomplished by manufacturing and performance standards for electric vehicles (powered by electricity and hydrogen).

The worldwide decarbonization of the transportation sector is critical to mitigating climate change, protecting human health, and revitalizing the world economy.

This session will explore efforts within the transportation sector to reduce its dependence on fossil fuels and those policies that the transportation sector will need to accommodate in order to meet the goal of net-zero carbon emissions by 2050.

This memo includes:

- A detailed agenda for the session,
- brief biographies on our panel members,
- a summary of TRB activities related to decarbonization.

In addition, a summary of the summer meeting TRB Standing Technical Committee on Air Quality and Greenhouse Gas Mitigation, which includes suggestions for research needs is available at <https://www.trbairqualityghg.org/wp-content/uploads/2021/09/2021-TRB-AMS10-Summer-Summary-2021-Final-Package-v2.pdf>.

January 2022 Executive Committee Policy Session Agenda

- | Time
(Eastern) | Wednesday, January 12, 2022 |
|---------------------------|--|
| 11:15 a.m. | <u>Nathaniel Ford</u> , Chief Executive Officer, Jacksonville Transportation Authority; and Vice Chair, TRB Executive Committee
<i>Welcome and Session Introduction</i> |
| 11:20 p.m. | <u>Andrew Wishnia</u> , Deputy Assistant Secretary for Climate Policy, Office of the Assistant Secretary for Transportation Policy, U.S. Department of Transportation
<i>U.S. DOT activities on Decarbonization</i> |
| 11:30 a.m. | <u>Douglas Eisinger</u> , Senior VP, Sonoma Technology; Affiliate Professor, University of Washington; and Chair, TRB Standing Technical Committee on Air Quality and Greenhouse Gas Mitigation
<i>Pressing Issues and Research Needs to Accomplish Decarbonization</i> |
| 11:35 a.m. | <u>Rebecca Dodder</u> , Physical Scientist, U.S. Environmental Protection Agency; and Chair, TRB Standing Technical Committee on Transportation Energy
<i>Pressing Issues and Research Needs to Accomplish Decarbonization</i> |
| 11:40 a.m. | Five minute Q and A |
| | <u>Break for Executive Committee Lunch and Chair's Plenary Session</u> |
| 3:30 p.m. | <u>Nathaniel Ford</u>
<i>Reconvene and Panel Introductions</i> |
| 3:35 p.m. | <u>Chris Hendrickson</u> , Hamerschlag University Professor Emeritus, Civil and Environmental Engineering, Carnegie Mellon University
<i>Summary of the transport technology and research related recommendations included in the NASEM's Accelerating Decarbonization of the U.S. Energy System</i> |
| 3:50 p.m. | <u>Young Tae Kim</u> , Secretary-General, International Transport Forum
<i>Explore the leading decarbonization initiatives taking place internationally, ITF's Decarbonizing Transport Initiative, and key recommendations included in Decarbonising Air Transport: Acting Now for the Future</i> |
| 4:05 p.m. | <u>Rachel Muncrief</u> , Deputy Director, International Council on Clean Transportation
<i>Review of issue of decarbonization in the transport sector in general and the road sector in particular draying in part from the ICCT's report on Decarbonizing Road Transport by 2050: Zero-Emission Pathways for Passenger Vehicle</i> |
| 4:20 p.m. | <i>Plenary Discussion</i> – Moderated by <u>Nathaniel Ford</u> |
| 5:55 p.m. | <u>Nathaniel Ford</u>
<i>Concluding Remarks</i> |

January 2022 Executive Committee Policy Session Agenda

6:00 p.m. Nathaniel Ford
Adjourn for the evening

Time **Thursday, January 13, 2022**
(Eastern)

8:30 a.m. *Plenary Discussion* – Moderated by Nathaniel Ford; and Susan Shaheen, Professor, CEE, and Co-Director, Transportation Sustainability Research Center, University of California, Berkley and Chair, TRB Executive Committee

9:00 a.m. End of Policy Session Discussion

Policy Session Panelists Biographies

Chris Hendrickson

Hamerschlag University Professor Emeritus, Civil and Environmental Engineering, Carnegie Mellon University



Dr. Chris Hendrickson is the Hamerschlag University Professor Emeritus, Director of the Traffic 21 Institute at Carnegie Mellon University, member of the National Academy of Engineering and Editor-in-Chief of the ASCE Journal of Transportation Engineering. His research, teaching and consulting are in the general area of engineering planning and management, including design for the environment, system performance, construction project management, finance and computer applications.

He is a member of the TRB Executive Committee, Chair of the TRB Division Committee, and a member of the National Academies of Sciences, Engineering, and Medicine Committee on Accelerating Decarbonization in the United States.

Dr. Hendrickson pioneered models of dynamic traffic equilibrium, including time-of-day departure demand models. He was an early contributor to the development of probabilistic network analysis for lifeline planning after seismic events. His work in construction project management emphasized the importance of the owner's viewpoint throughout the project lifecycle. With others at Carnegie Mellon's Engineering Design Research Center, he developed a pioneering, experimental building design system in the early 1990s that spanned initial concept through construction scheduling and animation

Since 1994, he has concentrated on green design, exploring the environmental life cycle consequences of alternative product and process designs. He has contributed software tools and methods for sustainable construction, pollution prevention and environmental management, including life cycle analysis software and a widely cited analysis of the life cycle consequences of lead acid battery powered vehicles.

Young Tae Kim

Secretary-General, International Transport Forum



Young Tae Kim is the Secretary-General of the International Transport Forum (ITF). He was elected by the transport ministers of ITF member countries at their annual summit on 1 June 2017 and took office in August 2017.

Prior to his election as ITF Secretary-General, Dr Kim distinguished himself in the civil service of his native Korea, most recently serving as Director-General in the Ministry of Land, Infrastructure and Transport (MOLIT). As Deputy Director-General from 2015, he was responsible for co-ordinating various transport policies including on autonomous vehicle, greenhouse gas reduction, urban transport, Intelligent Transport Systems and road safety, among others.

After joining the MOLIT in 1994 as Deputy Director for Urban Transport, Dr Kim also held several Deputy Director and Director positions with responsibility for housing welfare, integrated city development and overseas infrastructure construction. He was seconded to the Prime Minister's Commission on Administrative Reform in 1996 and the Presidential Committee on Social Inclusion in 2005-2007. From 2010 to 2014, Dr Kim worked in Washington, D.C., as Counsellor for Construction, Transport and Maritime Affairs at the Korean Embassy.

Dr Kim earned his Master's degrees in Public Policy from Seoul National University, Korea, and in Urban Studies from Paris University de Vincennes-Saint-Denis, France. He also received his Doctorate degree in Political Sociology and Public Policy from the Institut d'Etudes Politiques (Sciences-Po), Paris, France. Dr Kim speaks fluent English, French and some Spanish, in addition to his native Korean.

Rachel Muncrief

Deputy Director, International Council on Clean Transportation (ICCT)



As Deputy Director of the ICCT, Dr. Rachel Moncrief serves as a close partner to the Executive Director in the development and implementation of program strategies to eliminate the climate and health impacts of the transportation sector.

She also works to enhance the efficiency and effectiveness of the organization's operations. Rachel was previously the Program Director overseeing ICCT's Heavy Duty Vehicle and Compliance and Enforcement programs.

Dr. Moncrief came to the ICCT from the University of Houston, where her research focused on NOx and PM emissions reduction for diesel applications as well as full-scale vehicle and engine testing of heavy-duty vehicle technologies and fuels.

She holds a PhD in Chemical Engineering with a focus in catalysis and reactor engineering from Tulane University, an MBA from The University of Houston, and a BS in Chemistry from the University of Miami.

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TRB Snap Search: Decarbonization

TRB's involvement in research on Decarbonization from 2017-2021 Completed Projects

Publications

National Cooperative Highway Research Program (NCHRP)

- o [Report 909](#) - Guide to Truck Activity Data for Emissions Modeling
- o [Report 862](#) - Guide to Deploying Clean Truck Freight Strategies
- o [Web-Only Document 274](#) - Zero Emission Vehicles: Forecasting Fleet Scenarios and their Emissions Implications
- o [Web-Only Document 281](#) - Case Studies of Truck Activity Data for Emissions Modeling

Transit Cooperative Research Program (TCRP)

- o [Report 226](#) - An Update on Public Transportation's Impacts on Greenhouse Gas Emissions
- o [Report 219](#) - Guidebook for Deploying Zero-Emission Transit Buses

Airport Cooperative Research Program (ACRP)

- o [Report 220](#) - Guidebook for Developing a Zero- or Low-Emissions Roadmap at Airports
- o [Report 207](#) - Optimizing the Use of Electric Preconditioned Air (PCA) and Ground Power Systems for Airports
- o [Report 180](#) - Guidebook for Quantifying Airport Ground Access Vehicle Activity for Emissions Modeling
- o [Synthesis 100](#) - Airport Greenhouse Gas Reduction Efforts
- o [Synthesis 89](#) - Clean Vehicles, Fuels, and Practices for Airport Private Ground Transportation Providers
- o [Synthesis 85](#) - Alternative Fuels in Airport Fleets
- o [Web-Only Document 51](#) - Commercial Space Vehicle Emissions Modeling
- o [Web-Only Document 41](#) - Alternative Jet Fuels Emissions: Quantification Methods Creation and Validation Report

Conference Proceedings

- o [Proceedings 54](#) - Decarbonizing Transport for a Sustainable Future: Mitigating Impacts of the Changing Climate

Reports from the National Academies on Sciences, Engineering, and Medicine on Decarbonization

- o [Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions](#)
- o [Accelerating Decarbonization of the U.S. Energy System](#)
- o [Reducing Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, Phase Two](#)
- o [Deployment of Deep Decarbonization Technologies](#)
- o [Negative Emissions Technologies and Reliable Sequestration](#)
- o [Gaseous Carbon Waste Streams Utilization](#)
- o [Enhancing the Resilience of the Nation's Electricity System](#)

Current & Upcoming Projects

Current Projects

- o [ACRP 02-90](#) - Development of Airport Construction Emission Inventory Tool (ACEIT) Version 2.0
- o [NCHRP 25-64](#) - Considering Greenhouse Gas Emissions and Climate Change in Environmental Reviews: Resources for State DOTs
- o [Transit IDEA J-04/IDEA 96](#) - Multi-stage Planning for Electrifying Transit Bus Systems with Multiformat Charging Facilities

Upcoming Projects

- o [ACRP 02-98](#) - Airport Energy Resiliency
- o [ACRP 02-100](#) - Pathways to Airport Net Zero Carbon Emissions

Committees & Panels Addressing Decarbonization

TRB Standing Committees

- o [AEP70](#) – Environmental Analysis and Ecology
- o [AJL50](#) – Environmental Issues in Transportation Law
- o [AMS10](#) - Air Quality and Greenhouse Gas Mitigation
- o [AMS30](#) - Transportation Energy
- o [AMS40](#) – Alternative Fuels and Technologies
- o [AV030](#) – Environmental Issues in Aviation
- o [AW030](#) – Marine Environment

CRP Project Panels

- o [D2564](#) - Considering Greenhouse Gas Emissions and Climate Change in Environmental Reviews: Resources for State DOTs
- o [DA0280](#) - Quantifying Emissions Reductions at Airports from the Use of Alternative Jet Fuel
- o [DA02100](#) - Pathways to Airport Net Zero Carbon Emissions
- o [SAS0219](#) - Synthesis of Clean Vehicles, Fuels, and Practices for Airport Private Ground Transportation Providers
- o [TJ1136](#) - An Update on Public Transportation's Impacts on Greenhouse Gas Emissions

Past Webinars

- o [You can get there from here - Developing an emissions roadmap for airports](#) – May 21, 2020
- o [How It Affects You: IMO's January 1, 2020, Vessel Fuel Deadline](#) – August 13, 2019
- o [Priming the Pump: Cleaner Approaches to Airport Ground Transportation](#) – May 8, 2019
- o [Programs to Support the Deployment of the Electric Vehicle Infrastructure](#) – April 3, 2019
- o [The Alternative Fuels Corridor Program](#) – October 2018
- o [Technology Changes Influencing the Decline of Vehicle Emissions](#) – April 25, 2018
- o [What Makes an EV Incentive Program a Success?](#) – January 2017

This Snap Search was produced by TRB's Transportation Research Information Services (TRIS)



Andrew Wishnia
Deputy Assistant Secretary for Climate Policy
US. Department of Transportation

Andrew Wishnia serves as Deputy Assistant Secretary for Climate Policy in the Office of the Assistant Secretary for Transportation Policy in the U.S. Department of Transportation. Wishnia previously served at the U.S. Senate Committee on Environment and Public Works, including as Senior Policy Advisor, and also served at the Federal Highway Administration as Special Assistant for Policy to the FHWA Administrator, and as a Senior Program Manager at the White House Council on Environmental Quality. Wishnia previously served in the U.S. House of Representatives as a legislative assistant to Congressman John Yarmuth, now Chairman of the U.S. House Committee on the Budget.

Jennifer Homendy

National Transportation Safety Board



Jennifer Homendy took the oath of office as the 44th Member of the National Transportation Safety Board (NTSB) on August 20, 2018. She was unanimously reconfirmed by the Senate on August 1, 2019, for a five-year term expiring December 31, 2024.

Member Homendy is a tireless advocate for safety and brings to the Board expertise in the safety of railroads, pipelines, and hazardous materials (on all modes of transportation). From 2004 to 2018, she served as the Democratic Staff Director of the Subcommittee on Railroads, Pipelines, and Hazardous Materials, which is under the jurisdiction of the Committee on Transportation and Infrastructure (T&I Committee) of the United States House of Representatives. She previously held positions with the International Brotherhood of Teamsters, the Transportation Trades Department of the AFL-CIO, and the American Iron and Steel Institute.

During her tenure as Subcommittee Staff Director, Member Homendy guided major pieces of rail, pipeline, and hazardous materials safety legislation through the legislative process, including: the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU); the Rail Safety Improvement Act of 2008 (P.L. 110-432, Division A); the Passenger Rail Investment and Improvement Act of 2008 (P.L. 110-432, Division B); the Pipeline, Inspection, Protection, Enforcement, and Safety Act of 2006; the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011; the Fixing America's Surface Transportation (FAST) Act of 2015; the Protecting Our Infrastructure of Pipelines Enhancing Safety (PIPES) Act of 2016; and the Norman Y. Mineta Research and Special Programs Improvement Act of 2004, which created the Pipeline and Hazardous Materials Safety Administration (PHMSA), an agency charged with overseeing the safety of our nation's pipelines and hazardous materials transportation within the U.S. Department of Transportation (DOT). Throughout her tenure on the T&I Committee, she was an unwavering defender of transportation safety and worked to implement numerous safety recommendations proposed by the NTSB, including the installation of excess flow valves in distribution pipelines and implementation of positive train control (PTC).

In 2010, she spearheaded the T&I Committee's extensive oversight investigations of the Enbridge pipeline rupture in Marshall, Michigan, and PHMSA, which led to major safety improvements in pipeline and hazardous materials safety. In 2017 and 2018, she led a multimodal review of DOT's drug and alcohol testing program that identified significant safety gaps in the program.

Member Homendy is a graduate of the Pennsylvania State University and has been certified by the National Board of Fire Service Professional Qualifications (Pro Board) on Core HazMat Operations and Missions-Specific PPE and Product Control (hazmat operations level training). She completed Private Pilot Ground School and holds a motorcycle (M2) endorsement. She is also an avid runner and cyclist, which fuels her advocacy work for strengthening safety for pedestrians, bicyclists, and motorcyclists.

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TRANSPORTATION RESEARCH BOARD

November 30, 2021

MEMORANDUM

TO: Members, TRB Executive Committee
FROM: Russell Houston *RH*
SUBJECT: June 2022 Executive Committee Policy Session

June 2022, Policy Session – Action

The Subcommittee on Planning and Policy Review (SPPR) recommends that the Executive Committee select “Reimagining Goods Movement” as the topic for the June 2022 Policy Session. Potential components for a session for addressing the future of goods movement are included below. Also included in this memo is a list of TRB’s critical issues (Attachment A) as well as a list of all past policy session topics (Attachment B) to potentially aid in the committee’s discussion on a topic for the June 2022 session.

Reimagining Goods Movement

The coronavirus disease 2019 (COVID-19) has accelerated a number of changes in goods movement that had already been underway, such as much greater reliance on e-commerce; automation, especially for first and last mile deliveries; enhancing resilience into supply chains; the onshoring of manufacturing of parts and supplies; and driver and broader logistic worker shortages.

According to a recent Washington Post article, “Consumers are spending less today on services like airline travel and restaurant meals than they did in early 2020. But they are purchasing about 15 percent more goods like furniture and computers.” This change is impacting ports and other key transportation elements of the supply chain across the United States.

COVID-19 and the resulting shift in consumer behaviors has demonstrated the fragility of the nation’s goods movement system, as well as the vulnerability of supply chains and the significant impact that their disruption has on the economy and society within the U.S. and abroad. Issues around global supply chains existed before the pandemic and were greatly exacerbated by it.

The Subcommittee on Planning and Policy Review recommends that the Executive Committee explore, from a multimodal perspective, the future of goods movement as the topic for its June 2022 policy session.

Issues that might be discussed by members of the panel in their brief presentations prior to the plenary discussion include the following:

- Lessons learned from the current disruption in supply chains for the future.
- The future of “megatrends” that are being experienced by the goods movement industry such as just in time delivery; offshoring or nearshoring of the supply chain; and the supersizing of some components like ships in the supply chain but not others, such as port capacity; and the raise of the business to consumer supply chain.
- The sensitivity/vulnerability points in the goods movement system and the actions needed to increase the future resiliency and sustainability of the system at those and potentially other points.
- The future challenges of providing adequate infrastructure for the freight industry with the goal of equitable service to customers and equitable competition among carriers and modes.
- The future role of autonomy and semi-autonomy technologies in goods movement.
- Identification of outdated business practices and solutions.
- Benefits that might be achieved by optimizing data sharing across the supply chain amongst public and private sectors.
- The future implications of staffing shortages and employee empowerment, preferences, and behaviors, with particular emphasis on truck drivers.
- How the various aspects of goods movement—boats, ports, waterways, railroads, trucking, aviation, and pipelines—can achieve greater coordination.
- The role of local, state, and federal government in supporting and regulating what is mostly a private sector supply chain.

The session would be structured to explore and identify the various trends of goods movement, highlight some of the future challenges, and identify research needed to help address challenges and opportunities identified.

Attachment A

TRB Critical IssuesTransformational Technologies

1. Role of policy in development of connected and automated vehicles
 - a. Policy options to manage travel, congestion and emissions, especially from TNCs.
 - b. Policies to achieve net social benefits
 - c. Transition period issues with mixed traffic
 - d. Needed public sector investments, especially infrastructure
2. Shared mobility services
 - a. Relationship to transit
 - b. Regulatory issues between taxis and TNCs
3. Balancing state and federal safety oversight; sharing of information from pilots
4. Government oversight of artificial intelligence
5. Behavioral responses
 - a. # of trips, mode, willingness to pool
 - b. Auto ownership
 - c. Residential & commercial location
 - d. Safety issues with semi-automated vehicles
 - e. Public acceptance of risk with automated vehicles

Serving a Growing and Shifting Population

6. Mega-region internal travel and connections
7. Growth in travel in small/medium cities and in suburban/exurban areas
8. Rural access needs in light of decreasing population
9. Millennial and baby boomer needs, especially in low density areas

Energy/Sustainability

10. Reducing greenhouse gas emissions
11. Policies to move to more sustainable energy sources for transportation
12. Electric powered transportation; impacts on electric grid
13. Sustainability considerations in decision making

Resilience/Security

14. Adding security while maintaining mobility
15. Risk management approach to resilience
16. Adaptation to severe weather events and climate change
17. Security risks from drones
18. Cybersecurity
19. GPS vulnerabilities
20. Evacuation issues

Safety/Public Health

21. Adopting proven and new safety technologies

22. Semi-automated vehicle safety issues
23. Public health's linkage to transportation
24. Mitigation of pollution from transportation
25. Operator fatigue management
26. Unmanned aircraft safety issues
27. Safety management and safety culture
28. Impacts of marijuana and other drugs
29. Pedestrian and cyclist deaths and injuries

Equity

30. Equity impacts and opportunities of new technology services
31. Access issues for the economically disadvantaged
32. Environmental justice issues of equitable access and impacts of new facilities
33. Equity issues of alternative finance mechanisms
34. Equity issues of toll financing

Governance

35. Devolution's impact on funding and on interstate and international commerce
36. Addressing nationally significant bottlenecks
37. Megaregion and multi-jurisdictional decision making
38. Roles in providing mobility as a service
39. Implications of transformational technologies on institutions
40. Governance of data

System performance and Asset Management

41. Managing for system performance
42. How much can new technology substitute for adding capacity; ensuring new technology is incorporated in new infrastructure
43. Investing in preservation and maintenance; asset management and life cycle cost decision making
44. New materials, construction techniques, and maintenance approaches

Funding/Finance

45. Role of federal funding; how to pay for federal funding
46. Building support for raising user fees (e.g. fuel tax); efficient, effective, sustainable, and equitable user fees; subsidizing modes that cannot entirely rely on user fees (e.g. transit, inland waterways)
47. Responding to decreases in revenues due to improved energy efficiency and electric vehicles; mileage-based user fee issues

Goods Movement

48. Providing for growth in freight; changes in freight demand
49. Reducing emissions from freight
50. Worker shortages in freight
51. Technology changes in freight
52. Changes in how packages are delivered

- 53. Truck size and weight issues
- 54. Impacts of mega-vessels on ports and channels
- 55. Distribution of domestic energy

Institutional and Workforce Capacity

- 56. Local institutional capacity to address current issues
- 57. Preparing the workforce for new technologies and future issues
- 58. Attracting underrepresented groups into transportation
- 59. Displacements of workers by technology

Research and Innovation

- 60. Learning from new technology experiments and sharing lessons learned
- 61. Impact of rapid development and deployment of new technology on traditional research
- 62. Accelerating public sector research and innovation
- 63. Development and retention of the teachers and researchers of tomorrow

Attachment B**Past Session Topics**

Date	Topic	Rapporteur
1/88	Current Status & Future Outlook for Air, Rail, Trucking, Highway, Urban, & Water Transportation	Hoel & Koltnow
6/88	Small Group Discussion of Exec. Comm. Policy Initiatives	
1/89	Marine & Intermodal Transportation	Hoel
6/89	Transportation Response to Problems of Air Quality	Paaswell
1/90	High-Speed Ground Transportation	Walton
6/90	Relationship Between Transportation & Economic Development	Wolpert
1/91	The Environmental Imperative, Fuel Use, & Surface Transportation Funding	Sussman
6/91	Air Passenger Transportation: Congestion Pricing for Airports	Harris
1/92	Transportation Policy Research Priorities for the 1990s (USDOT Associate Administrators for Policy)	Lamm
6/92	International Economic Development & U.S. Transportation	Walton
1/93	U.S. & International Efforts to Assist Russia & Other Former Soviet Republics on Transportation-Related Problems	Borrone
6/93	Implications of U.S. Defense Conversion for Transportation	DeLong
1/94	Transportation Policy Priorities to Support a National Transportation System	Millar
6/94	The "Green" Car: Technological, Institutional, & Environmental Issues	Yerusalim
1/95	Intermodal Freight Transportation: Barriers, Linkages, and New Technologies	Wormley
6/95	Financing Transportation in the Post-ISTEA Era	Kelly
1/96	ISTEA: Impacts and Issues for Reauthorization	Wachs
6/96	Cross-Border Transportation Issues	Martinez
1/97	Institutional Arrangements for Transportation: Impacts of Changing Roles	Sterman
6/97	Effects of the Federal Role on the U.S. Aviation System: Current Status, Prospects for & Barriers to Change	Riniker
1/98	Zero-Car Households: Strategies To Improve Mobility & Accessibility for the Carless	Fitzgerald
6/98	Land Use and Transportation: Relationships and Trends	Gilbert
1/99	The Clean Air Act: Goals, Issues, & Impacts on Transportation	Winstead
6/99	Industry Consolidation: Regulatory Issues, Cross-Modal Comparisons	McCaig
1/00	Approaches to Achieving Advances in Transportation Safety	Canby

Date	Topic	Rapporteur
6/00	Transportation Implications of E-Commerce and Telecommunications Technology	Giuliano
1/01	A System Wide View of Transportation Finance	Campbell
6/01	Freight Transportation in the U.S. Economy: Capacity Issues and Operating Challenges	Wilding
1/02	U.S. Petroleum Dependence: Issues and Prospects for the Transportation Sector	Frosch
6/02	Work Force Development and Staffing Needs in Transportation	Meyer
1/03	Decision-Making Processes for Public Sector Transportation Investments	Kirby
6/03	Transportation Security Initiatives: Balancing Public Perceptions, Political Expectations, and Practical Applications	Rebensdorf
1/04	The Impact of Global Warming on Transportation	Kanafani
6/04	Shifting Patterns and Growth of Global Trade: Implications for the Transportation System	Shucet
1/05	Innovative International Roadway Safety Initiatives	McNeil
6/05	How Should America Pay for Transportation?	Morris
1/06	Raising the Public Profile of Transportation	Butler
6/06	20 th Century Institutions Mismatched to 21 st Century Missions	Miller
1/07	The Energy Component of Transportation Sustainability	Gittens
6/07	Innovative Transportation Performance Measures	Garber
1/08	Public-Private Partnerships: With an Emphasis on Equity	Rosenbloom
6/08	The Role of Transportation in Climate Change Mitigation	Johns
1/09	Key Issues in Transportation and Climate Change	N/A
6/09	Issues and Perspectives on Water Transportation	Scalzo
1/10	Dialogue with the U.S. DOT Deputy Secretary	
6/10	Definitional Issues Related to the Concept of Livability	Clark
1/11	Multimodal Freight Policy, Corridor-Level Priorities, and Funding Strategies	Conti
6/11	Financing and Funding Transportation in a Transitional Period	Seltzer
1/12	Inland Waterway Transportation: Issues, Challenges, Opportunities	Hancock
6/12	New Information and Telecommunication Technology Applications to Transportation: Opportunities and Challenges	Sperling
1/13	International Research Activities: Issues, Priorities, and Lessons Learned	Sinha
6/13	Energy: Transportation Fuels and Sources	Hendrickson
1/14	Session on Aviation Issues: Challenges and Opportunities	Arroyo
6/14	Connected Vehicles—A Pathway to Automation	Washington

Date	Topic	Rapporteur
1/15	Big Data	Fotheringham
6/15	The Intersection Between Urban Goods Movement, Smart Growth, and Public Health	Breakouts
1/16	Advancing Public Health Through Transportation: Challenges, Opportunities, and Lessons Learned	Breakouts
6/16	Cyber Security in an Age of Transformational Technology	Breakouts
1/17	Climate and Extreme Weather Resilience	Houston
6/17	Smart Cities and Transportation	Breakouts
1/18	Public Transportation: Challenges and Opportunities	Breakouts
6/18	Electric Vehicles	Breakouts
1/19	Transportation's Role in the Wellbeing of Rural Communities	Breakouts
6/19	Distraction	Breakouts
1/20	Artificial Intelligence	Berube
8/20	Urban Air Mobility	Virtual
1/21	The Impact of COVID-19 on Personal Mobility and Social Equity	Virtual
7/21	Racial Equity	None

Technical Activities Division Update
Read-Ahead Materials for TRB Executive Committee
December 1, 2021

2022 Annual Meeting

- Update to be provided at the Executive Committee meeting on January 13.

Transportation Research Record (TRR)

- The journal citation impact factor went up 50% this year to 1.560; the impact factor has doubled in the last 4 years and has tripled over the last decade.
- Other impacts—on policy, innovation, and public news and engagement:
 - #1 transportation journal in policy citations
 - #1 transportation journal in patent applications, tied with IEEE's ITS journal
 - #5 transportation journal in news citation
 - #6 transportation journal in Twitter engagement
- In addition to the treasure trove of papers submitted at the time of the Annual Meeting, the TRR is publishing papers from some of our smaller conferences (and from conferences of a few other organizations that do not have their own journals).
- Special collections have focused to the following themes:
 - COVID-19 and Transportation
 - TRB Graduate Research Award Program on Public-Sector Aviation Issues
 - TRB Minority Student Fellows
 - A special collection on freight is in the works now

Specialty Conferences

- In a “normal” year TRB sponsors 15-20 conferences and workshops that are smaller than the Annual Meeting (500-1500 attendees) and that address a more focused topic or set of topics.
- Because of COVID-19, no in-person specialty conferences were held in 2020 or 2021. Some conferences were postponed, a few were cancelled, and several were converted to virtual conferences.
- Virtual specialty conferences held in 2021 were:
 - Advancing the Marine Transportation System through Automation and Autonomous Technologies: Trends, Applications, and Challenges, *March 15, 2021*
 - Measuring and Managing Freight System Resilience Workshop, *April 6-8*
 - Conference on Transportation Planning Applications, *June 21-24*
 - Automated Road Transportation Symposium 2021, *July 12, 2021*
 - National Conference on Transportation Asset Management, *August 10, 2021*

- Conference on Advancing Transportation Equity, *September 8, 2021*
- Annual Workshop on Transportation Law, *September 13, 2021*
- Innovations in Freight Data Workshop, *September 21, 2021*
- At this time we expect to hold approximately 15 conferences in 2022 and we expect most, if not all of them to be in-person or hybrid.

Field Visits

- Technical Activities Division staff visit state department of transportation and other sponsors on a regular basis. Because of COVID these trips have not taken place for two years. Instead we held a series of virtual state visits, loosely organized by the 4 AASHTO regions of the country.
- The virtual visits provided an opportunity for TRB to give updates to the state DOTs and for the state DOTs to tell TRB about the research and innovations they are working on. As usual a report on the results of these visits will be included in an issue of the *TR News* magazine.

Staff Changes

- Restructuring:
 - In order to be more efficient, bring our operations up to industry standards, and ensure that our technical staff are able to focus on the critical issues being addressed by the committees, we have begun a restructuring of our staff.
 - Operational activities will be led by a team of business operations staff under a new director of operations, Chris Rajaratnam.
 - Program activities will be coordinated under a new deputy division director position filled by Stephen Maher, who was previously a Senior Program Officer (SPO) for committees in the Transportation Infrastructure Group.
- Other changes due to turn-over and restructuring:
 - Anusha Jayasinghe, previously in TRB's Consensus and Advisory Studies Division, has taken over the planning and analysis committees from Jennifer Weeks, who moved to TRB's Cooperative Research Programs Division.
 - By the first of the year we will have a new Senior Program Officer for infrastructure design committees to take over from Stephen Maher.
 - Amy Hardcastle replaced Rachel Laney as a peer review coordinator for the Transportation Research Record journal as publications graphics specialist.
 - Tess Austin filled a Program Operations Coordinator position that had been open for months.
 - James Bryant, SPO for maintenance and preservation committees, is now the staff team leader for the SPOs supporting the Transportation Infrastructure Group (taking over from Stephen Maher who held this position before becoming deputy division director).

REPORT OF THE TRANSPORTATION RESEARCH BOARD DIVISION COMMITTEE July through December 2021

BACKGROUND

The Transportation Research Board (TRB) Division Committee (Div-Comm) liaises between the Governing Board of the National Research Council (NRC) and TRB. The Div-Comm ensures that TRB meets the NRC's standards for objectivity and ensures that its activities are appropriate for the NRC. In addition, the Div-Comm monitors TRB's specially-funded project committees and panel appointments, report review, and programs that are approved by the NRC Governing Board. The Div-Comm Chair assists the Executive Committee with special project approvals requested of the NRC Governing Board.

Members of the 2021/2022 Div-Comm are Chris Hendrickson (NAE), Chair; Susan Shaheen, Executive Committee Chair; Carlos Braceras, State DOT Representative; and James Tien (NAE). The *ex officio* non-voting members are Carlos Braceras, Outgoing Executive Committee Chair; Nat Ford, Incoming Executive Committee Chair; and Carol Lewis, Special Committee on Diversity, Equity, and Inclusion Chair. Thanks to Carlos Braceras and Patrick McKenna who are concluding their terms, and welcome to Julie Lorenz, State DOT Representative, and Shawn Wilson, Incoming Executive Committee Chair, who are beginning their service on the Div-Comm.

OVERSIGHT ACTIVITIES

The following projects and committees were approved by the NRC Governing Board Executive Committee from July through December 2021. Yearly totals for oversight activities for 2021 and previous years are on Table 1, found on p.3.

Committee and Panel Approvals

The Div-Comm Chair approved appointments to 40 committees and panels from July 1 through December 31, 2021.

Consensus and Advisory Studies (CAAS) (Division B)

- Data, Metrics, and Analytic Methods for Assessing Equity Impacts of Surface Transportation Funding Programs
- Criteria for Installing Automatic and Remote-Controlled Shutoff Valves on Existing Gas and Hazardous Liquid Transmission Pipelines
- Emerging Trends in Aviation Safety

- New Coast Guard Authorities

Cooperative Research Programs (CRP) (Division D)

36 were CRP panels:

- 19 from the Airport Cooperative Research Program (ACRP),
- 9 from the National Cooperative Highway Research Program (NCHRP), and
- 8 from the Transit Cooperative Research Program (TCRP).

Report Review

From July through December 2021, the Div-Comm oversaw reviews of 52 reports from CAAS and the CRPs. Of those reports, 50 were from the CRPs:

Program	Research	Syntheses	Legal	Totals
ACRP	4	2	1	7
NCHRP	26	8	1	35
TCRP	1	7	0	8
Totals	31	10	2	50

In CAAS, there were 2 monitored reviews—reviews overseen by both the National Academies’ Report Review Committee and the Div-Comm Chair.

Monitored CAAS Reviews

- Options for Improving the Safety of DUKW Type Amphibious Vessels
- Strengthening U.S. Coast Guard Oversight and Support of Recognized Organizations: The Case of the Alternative Compliance Program

Table 1
TRB Division Committee Data: 2012-2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CRP Reports (All types)	129	99	149	87	116	149	118	131	90	102
Policy Study Letter Reports	8	10	6	5	8	8	4	4	0	0
Full-Length Policy Study Reports	2	4	2	8	2	3	8	3	5	7
Conference Reports from Technical Activities/CRPs	6	7	2	2	3	2	6	2	1	0
SHRP 2 Reports	18	17	24	3	n/a	n/a	n/a	n/a	n/a	n/a
Meeting-in-Brief	n/a	n/a	1	1	0	0	0	0	0	0
Totals	163	137	184	106	126	162	136	140	96	109

CRP Panels

CRP Panels (new)	87	87	67	74	51	71	79	84	84	120
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NRC-Approved Committees

Division A (TAD)	5	2	4	6	0	1	1	1	3	0
Division B (CAAS)	11	6	4	4	5	8	3	4	4	4
Division D (CRP)	0	0	0	0	4	0	3	1	2	0
SHRP 2	1	0	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Totals	17	8	9	10	5	9	4	6	9	4

Involvement in TRB by Race/Ethnicity and Sex

The Div-Comm monitors TRB's progress in broadening the representation of minorities and women, both as members and as chairs of its volunteers in the standing committees in the Technical Activities Division, the panel members of cooperative research program panels, and the committee members who carry out consensus studies in the Consensus and Advisory Studies Division.

Starting in fall 2021, the National Academies changed the categories through which volunteers report their race/ethnicity and sex in order to more closely mirror how U.S. Census demographic data are collected. Before, volunteers could select only one response (American Indian/Alaska Native, Asian or Pacific Islander, Black/African American, Hispanic/Latino, Other, Two or More, White, and Prefer Not to Answer). Now, volunteers can select more than one race/ethnicity if they choose. These categories have shifted a little and are now as follows: American Indian/Alaska Native, Asian, Black/African American, Hispanic/Latino, Native Hawaiian/Other Pacific Islander, Other, White, and Prefer Not to Answer). In addition, "gender" is now called "sex" and the option of Other is provided as a response option (in addition to Male, Female, and Prefer Not to Answer).

How Data Will Now Be Reported

- Because volunteers are no longer limited to selecting just one category for reporting the race/ethnicity, data for each race/ethnicity will be reported in two ways: (1) responses for each race/ethnicity category for those who responded to only that one category, and (2) responses for each race/ethnicity category AND those who responded that they identify in at least one other race/ethnicity category. When reporting these responses, respondents are counted in each category to which they provide a reply—so are double-counted.
- The denominator for reporting volunteers' demographic data is those who have both updated and reported their demographic information—not the total number of those who are on committees or panels. Thus, those who have not yet updated their demographic information and those who selected "Prefer Not to Respond" are not included.
- Those included in the denominator are individual friends, committee members, or panel members—thus if someone is, for instance, a panel member on multiple panels or a member of multiple committees, they are counted only once.

Table 2 below shows the composition of friends and members on TAD committees, CRP panels, and CAAS committees during 2021 by race/ethnicity. Table 3 shows

the composition of males and females. Given the low response rates and different reporting categories, comparisons to previous years are not provided.

For TAD standing committees, members of the 176 committees are appointed at the TRB level. Each committee is allotted 36 slots and selects its own members while working with its TRB staff member; chairs are approved by TRB's TAD director.

Individuals can also become involved in standing committees through becoming a "friend of a committee" which allows them to sign up for an unlimited number of committees. Friends can attend meetings and participate in committee activities, and can be considered for committee membership.

On CRP panels, individuals included are those who serve as either a chair, member, or AASHTO monitor on panels that are Div-Comm-approved and active panels that oversee contract projects. The data reported in 2021 include Div-Comm approved panel members and members from Executive Office-approved panels (e.g., topic panels and NCHRP synthesis panels) so as to reflect the full range of recruitment efforts by CRP program officers and panel participation in the CRPs.

For the Consensus and Advisory Studies (CAAS) committees, the response rate is similar to those in the other divisions but number of total unique committee members (128), is smaller than the N of total unique volunteers for CRP (3,166), TAD members (4,623), and TAD friends (17,143).

Future Reporting

Once more volunteers update their demographic information, year-to-year comparisons will be possible and will be included in subsequent reports. In addition to the demographic data provided above, the Div-Comm will also start reporting demographic data on those nominated but not selected for a CRP panel and all TRB volunteers. In addition, the Div-Comm will resume reporting on committee and panel chairs as well as new CRP panel members.

Table 2

	TAD Friends	TAD Members	CRP Members	CAAS Members
<i>Response Rate</i>	24.0%	45.7%	34.2%	34.4%
<i>American Indian/Alaska Native</i>	0.3%	0.4%	0.2%	n/a
<i>American Indian/Alaska Native + One or More Other Races/ Ethnicities</i>	0.5%	0.6%	0.3%	n/a
<i>Asian</i>	21.4%	16.1%	13.5%	9.1%
<i>Asian + One or More Other Races/ Ethnicities</i>	22.0%	16.7%	13.9%	n/a
<i>Black/African American</i>	4.4%	3.7%	7.5%	13.6%
<i>Black/African American + One or More Other Races/ Ethnicities</i>	4.7%	3.8%	7.8%	n/a
<i>Hispanic/Latino</i>	4.3%	3.8%	3.4%	4.5%
<i>Hispanic/Latino + One or More Other Races/ Ethnicities</i>	5.2%	4.7%	4.7%	9.1%
<i>Native Hawaiian/Other Pacific Islander</i>	0.3%	0.3%	0.4%	n/a
<i>Native Hawaiian/Other Pacific Islander + One or More Other Races/ Ethnicities</i>	0.3%	0.4%	0.5%	n/a
<i>Other Race/Ethnicity</i>	2.8%	2.2%	1.7%	2.3%
<i>Other Race/Ethnicity + One or More Other Races/ Ethnicities</i>	2.9%	2.4%	1.8%	n/a
<i>White</i>	64.6%	71.6%	64.1%	65.9%
<i>White + One or More Other Races/ Ethnicities</i>	66.4%	73.3%	65.4%	70.5%

Table 3

	TAD Friends	TAD Members	CRP Members	CAAS Members
<i>Response Rate*</i>	25.9%	48.6%	33.5%	35.2%
<i>Male</i>	70.3%	69.9%	63.6%	57.8%
<i>Female</i>	29.7%	30.1%	36.4%	42.2%

*No one provided an "other" response when reporting sex.

Diversity in CRP Contractors

TRB encourages participation of women and minorities as principal investigators (PIs) on university teams and of disadvantaged business enterprises (DBEs) so as to represent a variety of perspectives on CRP projects. (DBEs are small businesses that have at least a 51% interest and control of daily business operations by those who identify as African American, Hispanic/Latino, Native American, Asian-Pacific and Subcontinent Asian American, or women.) Therefore, TRB collects data on minority and women PIs from university teams serving as NCHRP contractors, and on contract funding that went to DBEs from new ACRP, BTSCR, NCHRP, and TCRP contracts. Complete information on diversity in DBE contractors was not available in time for the Annual Meeting; instead, a full report will be provided at the Executive Committee's summer meeting.

Since July 2019, all organizations submitting proposals to CRP have responded to a question that asks how their team would bring a diverse and inclusive approach to their research, and policies or programs that they have in place to promote diversity and inclusion at their organization. Details about DE&I elements in the winning proposals from 2021 will also be provided at the summer meeting.

Diversity, Equity, and Inclusion (DE&I) Strategic Plan Update Transportation Research Board

Background

TRB's Diversity, Equity, and Inclusion (DE&I) Initiative's mission of creating and fostering an inclusive environment that leads to increased diversity and equitable outcomes for all participants is a priority for TRB. The TRB DE&I Strategic Plan provides a roadmap for building such an environment at all levels of the organization. Successful implementation of the strategies and actions in the plan requires coordination across the entire organization, including volunteers, contractors, and staff. TRB management will hone each strategy, identify priorities, and assign action items to appropriate staff and committee/panels. TRB's Special Committee on Diversity, Equity, and Inclusion will monitor progress on the plan's strategies and will report to the TRB Division Committee and the Executive Committee.

The Executive Committee approved the TRB Inclusion and Diversity Strategic Plan at its January 2018 meeting and the Special Committee on Inclusion and Diversity was subsequently formed. In fall 2020, the special committee recommended that "equity" be added to its name to reflect that TRB must attend to equity issues in order to identify and eliminate barriers to full and active participation in TRB, and to develop volunteer leaders from underrepresented groups.

The Special Committee meets at the Annual Meeting and holds quarterly conference calls to review and propose action items. The chair is Dr. Carol Lewis, Texas Southern University, and the members are as follows:

- Gloria Bender, TransSolutions LLC
- Andrew Braham, University of Arkansas
- Alva Carrasco, WSP
- George (Avery) Grimes, Patriot Rail Company, Chair of TAC
- Tanisha Hall, Fairpointe Planning, LLC
- Chris Hendrickson, Carnegie Mellon University: member of Executive Committee, SPPR, and Chair of the TRB Division Committee
- Hyun-A Park, Spy Pond Partners, LLC
- Natalie Stiffler, City of Boulder
- Kimberly Webb, Michigan Department of Transportation

Susan Hanson, Clark University (emerita), is rotating off the committee after being a member since the committee's formation. The committee thanks her for her service and for her many thoughtful contributions to its work.

Karen Febey is staff to the committee.

Working Definitions

To guide its work, the committee agreed on the following definitions:

Diversity is defined as the variety of experiences, cultures, and physical attributes that influence interactions within a community including, but not limited to, race, language, sexual orientation, age, culture, socioeconomic status, gender, religion, perspective, ability, and experience.

Inclusion means that all individuals and groups are welcomed, valued, respected, and supported equally as they contribute to the mission and success of a community.

Equity is the process of ensuring that individuals, especially those from traditionally marginalized groups, have equal access to opportunities to advance, contribute, and develop in a group, organization, or function. Achieving equity involves dismantling the barriers that have prevented equality of access to opportunity, participation, and outcomes for members of disadvantaged groups.

Updates on Strategies and Associated Action Items

The following are the seven strategies and associated actions that have been accomplished or are underway in TRB:

Strategy 1

Identify practices and develop primers for committee and panel chairs, and TRB staff that ensure equitable opportunities for all, and highlight strategies and resources used to recruit, welcome and actively involve a more diverse committee and panel membership.

- NCHRP's governing body, the AASHTO Research and Innovation (R&I) Committee, is revising its 5-year strategic plan and accompanying 1-year action plan, both of which will reflect DE&I priorities established by the AASHTO Board of Directors.
- The Technical Activities Council's new Blue Ribbon Award for Diversity (which recognizes committees that use innovative strategies to improve their membership's diversity), was awarded to the Standing Committee on International Trade and Transportation (AT020). Over half of this committee's membership is comprised of people from underrepresented groups and nearly half of its friends are from underrepresented groups.

Strategy 2

Engage with transportation-related organizations and other appropriate organizations that serve women and members of minority groups that are underrepresented in TRB to increase their members' awareness of and participation in TRB.

- TRB staff continues collaboration with COMTO through their MOU, most recently by participation in COMTO's Annual Meeting, its leaders speaking at the Welcome Orientation of TRB's Minority Student Fellows, and through distributing calls for nominations for CRP projects. In addition, COMTO hosted a session at TRB's Transportation and Equity Conference.
- TRB has begun implementation of its MOU with Latinos In Transit through its leaders also speaking at the Welcome Orientation of TRB's Fellows and collaboration with each other's mentoring initiatives.
- TRB signed the Center for Automotive Diversity, Inclusion, and Advancement's MobilityXX Pledge as a show of support for its goals of increasing the number of women in transportation by 10 percent in 10 years.

Strategy 3

Find new ways for Annual Meeting and specialty conference attendees to engage in a way that creates openings for everyone to have equal opportunities to make connections and feel included, welcomed, and able to participate.

- The theme for this year's Annual Meeting is "Innovating an Equitable, Resilient, Sustainable, and Safe Transportation System" and one of the curated programs features sessions focused on equity.
- At the Annual Meeting, the New Attendee Welcome Session and Young Member Coordinating Council sessions like Six-Minute Pitch, Three-Minute Thesis Workshop and its subcommittee meetings welcome and support topics of interest of students and young professionals.
- In November, TRB staff hosted a joint webinar with CUTC entitled "Ensuring a Productive TRB Annual Meeting Experience for All Young Attendees: Networking and Involvement Tips."
- TRB staff worked with FHWA Dwight David Eisenhower Transportation Fellowship Program (DDETFP) staff to engage the 200+ DDETFP fellows in standing committees' meetings and activities, and other Annual Meeting sessions/events, especially those planned by the Young Members Council.
- Mentoring initiatives: TRB staff/volunteers identified Annual Meeting mentors for all Minority Student Fellows this year. YMC subcommittees are also establishing similar Annual Meeting mentoring initiatives.
- TRB has a new process for appointing conference planning committees, which now requires a Young Member to be appointed to each committee.

Strategy 4

Identify practices/and develop primers for TRB staff and the contracting office to identify and minimize barriers to achieving greater diversity among TRB contractors and their lead staff, whether they are suppliers or research consultants.

- The CRPs continue to ask organizations submitting proposals about how their team would bring a diverse and inclusive approach to their research, and policies or programs that they have in place to promote diversity and inclusion.

- TRB's ACRP implemented new project teaming capabilities through its [IdeaHub](#) portal that allows contractors and sub-contractors to connect when submitting a proposal—thus facilitating opportunities for finding the right expertise and connecting with disadvantaged business enterprises and minority-owned businesses.

Strategy 5

Identify and minimize barriers to achieving greater TRB staff diversity.

- The National Academies' Director of Workforce Diversity and Inclusion, Zach Thomas, is implementing employee resource groups (ERGs) in early 2022. ERGs will be based off of staff interest and can be focused on any dimension of diversity (race/ethnicity, gender, sexual identity, disability, etc.).
- The new NASEM Diversity Council, which includes a TRB representative, will be addressing staff diversity issues.
- In TRB and throughout NASEM, HR and hiring managers are ensuring that open positions are advertised widely to attract candidates from wider demographics.

Strategy 6

Ensure that technical activities and research projects address diversity, equity, and inclusion.

- The CRPs have a robust array of ongoing, anticipated, and newly funded projects that address DE&I-related topics. Some of the projects in progress include the following:
 - [ACRP 01-48](#) - Assessing Airport Programs for Travelers with Disabilities and Older Adults
 - [ACRP 04-24](#) - Guidelines to Develop an Anti-Human Trafficking Action Plan for Airports
 - [BTSCR P BTS-15](#) - Highway Safety Behavioral Strategies for Rural Areas
 - [NCHRP 08-150](#) - Valuation of Transportation Equity in Active Transportation and Safety Investments
 - [NCHRP 08-152](#) - Strategies for Advancing Equity in Transportation Planning by Increasing Diversity, Equity, and Inclusiveness in the Transportation Planning Profession
 - [NCHRP 08-155](#) - Researching and Responding to Racial Disparities in the Construction of Expressways
 - [NCHRP 08-159](#) - Understand How Accessibility to Employment, Health Care, Education, and Other Vital Needs Varies for Different Population Groups in Different Settings, and Methods for Effectively Assessing Mobility and Accessibility Needs
 - [NCHRP 08-160](#) - Understand the Role of Transportation Infrastructure Investment in Gentrification and Displacement and Identify Effective Policies and Strategies to Address These Effects

- [NCHRP 08-161](#) - Identify Emerging Approaches for Public Engagement to Meaningfully Involve Minorities, Low-income, and Other Vulnerable Populations
- [NCHRP 08-162](#) - Identify Practices and Policies to Advance Social Justice and Equity into Transportation Decision-making
- [TCRP B-46](#) - Tactile Wayfinding in Transportation Settings for Travelers Who Are Blind or Visually Impaired
- [TCRP B-47](#) - Impact of Transformational Technologies on Underserved Populations
- ACRP's Insight Event about systemic racism issues at airports is tentatively planned for April 2022. A conference proceedings report that summarizes discussions will follow.
- TRB will host [TRANSED: Mobility, Accessibility, and Demand Response Transportation Conference](#) in September 2022 which has the theme of "Inclusive Accessible and Sustainable Demand Response Transportation."
- A consensus study committee, the Committee on Data, Metrics, and Analytic Methods for Assessing Equity Impacts of Surface Transportation Funding Programs" was approved by the National Academies' Governing Board. The committee first met in December 2021 and plans to release its subsequent report in 2023.
- Transportation Research Record (TRR) staff are incorporating DE&I work by maintaining the following open-access collections:
 - [COVID-19 and Transportation](#): papers covering the impact of the virus on transportation;
 - [Equity and Transportation](#): papers covering transportation equity issues across all modes;
 - [Gender Issues in Transportation](#): a collection of older, influential papers combined with more recent papers—all covering a wide array of women's travel issues;
 - [Minority Student Fellow papers](#): from the 2010-2021 cohorts of all fellow papers accepted for publication; and
 - [ACRP Graduate Research Award Program on Public Sector Aviation Issues](#): from the 2010-2021 cohorts of all Graduate Research Award recipients.
- The Standing Committee on Equity in Transportation hosted the (virtual) [Advancing Transportation Equity Conference](#) in September 2021. An e-circular summary of select conference discussions is due out in 2022.
- TRB hosted two DE&I-related webinars, "Managing Equity in Priced Managed Lanes and Examining Exclusions" and "What's Missing in the Historic Review Process."
- TRB's Transportation Research Integrated Database (TRID) has a [snap search](#) on social equity on its homepage.

Strategy 7

Improve existing data, information, and communication mechanisms to support all strategies.

- TRB Division Committee is implementing the National Academies' new racial/ethnic categories for collecting demographic data from TRB volunteers (which now allow people to select an unlimited number of race/ethnic categories when identifying their race/ethnicity). In addition, the Division Committee will begin collecting data on the panel members who were nominated but not selected for a CRP.
- TRB's Communications Department has released/updated the following articles on its blog (on TRB's webpage):
 - [Equitably Connecting Rural and Urban Populations](#)
 - [Making Travel More Equitable for People with Disabilities](#)
 - [Building Socioeconomic Equity Through Transportation Research](#)
 - [Steps for Transportation Workforce Diversity Outlined in TRB Research](#)

Update on TRB Minority Student Fellows Program

The TRB Minority Student Fellows Program, now in its thirteenth year, promotes minority participation in transportation and TRB. This year, the program welcomes 24 students from 13 institutions. The program supports students from historically black colleges and universities, Hispanic-serving institutions, and American Indian/Alaska Native-serving institutions to present their research at the TRB Annual Meeting. Each institution also designates a faculty mentor to oversee each student's research. For the first time, fellows will be presenting their research together in their own poster session, session 1268, which takes place on Tuesday, January 11 from 10:30-12:00 PM in Convention Center, Hall A. More information about their presentations are provided below.

The participating institutions are Arizona State University; California State Polytechnic University, Pomona; California State University, Los Angeles; City College of New York; Florida A&M University; Florida International University; Morgan State University; North Central Carolina University; Tennessee State University; Texas Southern University; University of Arizona; University of New Mexico; and University of Texas at El Paso.

This year's cohort of 24 students represent a variety of transportation disciplines and include both undergraduate and graduate students. Students come from not only civil engineering and planning, but also from construction engineering, mechanical engineering, electrical engineering, earth science, and sustainable build environments. In addition, the two students from the 2021 cohort were awarded Alumni Scholarships to attend the 2022 Annual Meeting and participate in activities with those from the 2022 cohort.

The largest source of program funding for the students has come from FHWA's Dwight David Eisenhower Transportation Fellowship Program. Other key sources of funding are from organizations that have earmarked money for students at particular schools: Advancing Sustainability through Powered Infrastructure for Roadway Electrification at the University of Texas at El Paso; Arizona Department of Transportation; Cambridge Systematics; Michigan Department of Transportation; North Carolina Department of Transportation; North Central Texas Council of Governments; and Tennessee Department of Transportation. The final source of funding is individual contributions—some made throughout the year but most from individual registrants to the Annual Meeting who donate when registered. Executive Committee members have contributed to the program this way, and their donations are greatly appreciated. Executive committee members are all cordially invited to the Fellows Welcome Reception, which will take place in room 209 of the Convention Center on Sunday, January 9 from 4:30-6:00 PM.

The fellows' first activity was an orientation in November when they went over their schedule, travel logistics, and learned about TRB and the Annual Meeting format. In January, the special events planned for them include an orientation on Sunday morning, the welcome reception on Sunday afternoon, a federal government career panel with FHWA/DOE/EPA staff, and a networking luncheon. Fellows will also be attending a variety of Annual Meeting events including the New Attendee Welcome Session, standing committee meetings, the Young Members Council Six-Minute Pitch session, the Chair's Plenary Session, and Dwight David Eisenhower Transportation Fellowship Program presentations, among other events.

The 24 students participating in the 2022 program are as follows:

Ash Avila is a junior at the University of Arizona pursuing a bachelor's degree in sustainable build environments with a focus on sustainable communities and urban planning. Her paper is titled "The Effect of Vehicles on Personal Heat Exposure: A Pilot." Ash's faculty mentors are Nicole Iroz-Elardo, Ladd Keith, and Kristina Currans. (Poster A122)

Esther Bia is a senior at the University of New Mexico pursuing a bachelor's degree in civil engineering with a focus on transportation. Her paper is titled "The Impact of Bus Rapid Transit on Traffic Safety: A Case Study from Albuquerque, New Mexico." Esther's faculty mentor is Nick Ferenchak. (Poster A101)

Marvin Burton is a senior at Arizona State University studying civil engineering with a focus on transportation. His paper is titled "Evaluating the Effect of Waste Polyethylene-Terephthalate on the Resistance of Asphalt Binder to Ultraviolet Aging." Marvin's faculty mentor is Ellie Fini. (Poster A123)

Sarah De La O is a master's student at the University of Texas, El Paso studying civil engineering with a focus on pavement design. Her paper is titled "Evaluating the Impact of Considering Nonlinear Geomaterial Behavior on the Acceptance and Design Life of Airport Pavements." Sarah's faculty mentors are Imad Abdullah, Cesar Tirado, and Soheil Nazarian. (Poster A102)

Dunsin Fadojutimi is a senior at Morgan State University studying electrical engineering with a focus on transportation equity. Her paper is titled "Investigating the Number of Bike Share Program Usage Among Different Races." Dunsin's faculty mentors are Mansoureh Jeihani and Eazaz Sadeghvaziri. (Poster A120)

Jayson Francois is a Ph.D. student at Florida Agricultural and Mechanical University studying electrical engineering with a focus on signals, systems, and communication. His paper is titled "Cost-Duration-Based Project Selection Framework: A Multi-Attribute Utility Theory Model." Jayson's faculty mentor is Doreen Kobelo. (Poster A130)

Omar Galicia is a master's student at California State Polytechnic University, Pomona studying urban and regional planning with a focus on planning and policy. His paper is titled "Public Transit Planning Strategy: A Methodology for Prioritizing Transit Service Investments." Omar's faculty mentor is Rick Willson. (Poster A103)

Isabel Gutierrez is a master's student at North Carolina Central University studying earth science with a focus on GIS. Her paper is titled "Using Travel-Time Algorithms to Measure Seafood Deserts in the Research Triangle Region." Isabel's faculty mentor is Tim Mulrooney. (Poster A110)

Preston Jackson is a junior at Florida Agricultural and Mechanical University studying construction engineering technology. His paper is titled "The Impact of Freeways on Urban Growth: Case Study of Florida." Preston's faculty mentor is Doreen Kobelo. (Poster A111)

Maya Mayes is a senior at Tennessee State University studying civil engineering. Her paper is titled "Safety Analysis of Near Intersections Parking." Maya's faculty mentor is Deo Chimba. (Poster A143)

Jeannine Mbabazi is a senior at Tennessee State University studying civil engineering. Her paper is titled "Alternative Truck Routing in Freight Intermodal Connectors Case of Tennessee." Jeannine's faculty mentor is Deo Chimba. (Poster A112)

Norel McAdoo is a senior at Tennessee State University studying civil engineering. His paper is titled "Correlation of Incident Duration to Highway Crashes." Norel's faculty mentor is Deo Chimba. (Poster A150)

Jesus Molina is a senior at Florida International University studying civil engineering with a focus on transportation. His paper is titled "Is There a Relationship Between Daylight Saving Time and Traffic Crashes?" Jesus's faculty mentor is Priyanka Alluri. (Poster A162)

Ricardo Polanco is a junior at City College of New York studying civil engineering with a focus on transportation. His paper is titled "Bikeshare Access for Healthcare Workers and Communities of Concern in New York City During COVID-19." Ricardo's faculty mentors are Alison Conway and Robert Paaswell. (Poster A151)

Jose Portillo is a senior at Tennessee State University studying civil engineering. His paper is titled "Patterning Demographic and Socioeconomic Characteristics Affecting Pedestrian and Bicycle Crash Frequency." Jose's faculty mentor is Deo Chimba. (Poster A152)

Jennifer Restrepo is a master's student at the University of New Mexico studying civil engineering with a focus on structural engineering and mechanics. Her paper is titled "Accessing Pedestrian Bridge Serviceability and Displacements Using Low-cost Sensors." Jennifer's faculty mentor is Fernando Moreu. (Poster A142)

Joi Robinson is a senior at Tennessee State University studying civil engineering. Her paper is titled "Freight Segment Crashes and Hazmat Evaluation." Joi's faculty mentor is Deo Chimba. (Poster A131)

Christopher Rocha is a master's student at California State University, Los Angeles studying civil engineering with a focus on transportation. His paper is titled "Additive Manufacturing of Cementitious Material: Opportunities and Challenges." Christopher's faculty mentor is Mehran Mazari. (Poster A153)

Daniel Romero is a senior at California State Polytechnic University, Pomona studying civil engineering with a focus on transportation. His paper is titled "Air Quality Evaluation on I-210 Freeway Before-and-After Safer-at-Home Order during the COVID-19 Pandemic." Daniel's faculty mentors are Yongping Zhang and Xinkai Wu. (Poster A133)

Kamalen Santos-Diaz is a master's student at University of Texas, El Paso studying civil engineering with a focus on electric road systems. Her paper is titled "A Review of the Ecological and Economic Benefits and Challenges of Electric Road Systems." Kamalen's faculty mentor is Soheil Nazarian. (Poster A140)

Valencia Stewart is a master's student at Texas Southern University studying transportation planning and management. Her paper is titled "Teleworking and Telelearning: The Next Generation." Valencia's faculty mentor is Gwendolyn Goodwin. (Poster A121)

Dominic Thompson is a senior at the University of New Mexico studying mechanical engineering. His paper is titled "Use of Remote Structural Tap Testing Devices deployed via Ground Vehicle for Health Monitoring of Transportation Infrastructure." Dominic's faculty mentor is Fernando Moreu. (Poster A113)

Jervani Thompson is a senior at Texas Southern University majoring in general studies, with an emphasis on traffic studies. His paper is titled "Ensemble Learning Algorithms for Traffic Root Cause Analysis." Jervani's faculty mentor is Gwendolyn Goodwin. (Poster A132)

Isaac Zuniga is a master's student at the University of Texas, El Paso studying civil engineering with an emphasis on pavement foundations. His paper is titled "Impact of Moisture Content on Various Properties of Geomaterials." Isaac's faculty mentor is Soheil Nazarian. (Poster A141)

The two students from the 2021 cohort who were awarded TRB Minority Student Fellow Alumni Scholarships to attend the 2022 Annual Meeting are Laura Camarena, currently pursuing a master's degree in civil engineering at the University of Texas at El Paso, and Benson Long, who just completed his bachelor's degree in civil engineering under faculty mentor Nick Ferenchak at the University of New Mexico. Laura will be presenting a research titled "Impact of Fine Aggregates in Achieving Adequate Skid Resistance in Hot Mix Asphalt Mixtures" under the guidance of her faculty mentors, Soheil Nazarian and Cesar Tirado. (Poster A100)

Young Members Coordinating Council Report, January 2022

In its twelfth year, the Young Members Coordinating Council (YMCC) has continued to develop and promote opportunities for involvement, resources, connections, and representation in all levels of TRB.

Changes following the Strategic Alignment effort of the Technical Activities Council and the implications regarding restructuring were reflected at the Group level subcommittees focusing on young members.

Organization

Dr. Eleftheria (Ria) Kontou serves as Chair of the Young Members Coordinating Council, effective April 15, 2021. Following the Strategic Alignment effort, YMCC continues to have representation from most TAC Groups, although, the level of participation varies. For example, a newly established Group level subcommittee is the Sustainability and Resilience one with three co-chairs (i.e., Suzie Boxman, Brittney Gick, and Stephen Wong).

Efforts to promote and maintain an effective level of young member activity include:

- Documenting key points for YMCC and its subcommittees to share with Group and Section leadership.
- Mentoring programs organized at the group subcommittee level.
- Exploring strategies and platforms to help foster effective communication with young members and friends.

YMCC Representation at TAC and TRB Executive Committee

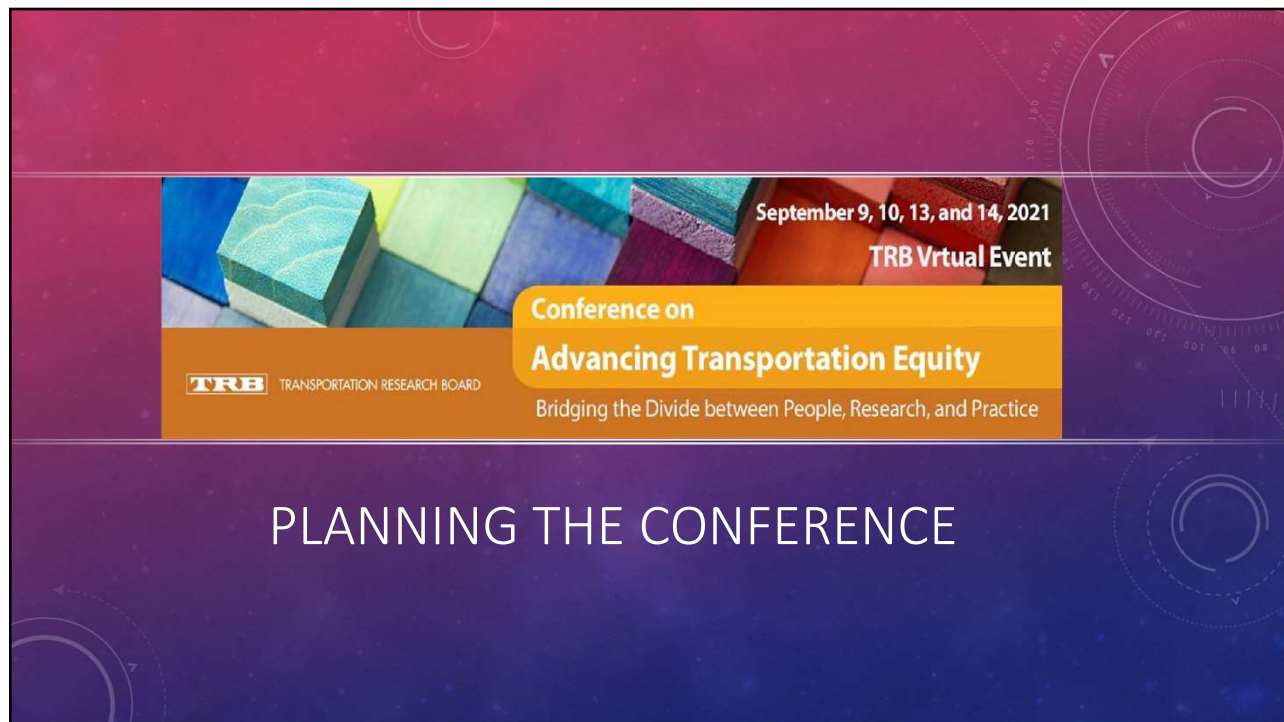
The YMCC Chair continues to serve as an active member of TAC and ex officio member of the Executive Committee. This action has helped establish young member representation at all levels and spheres of TRB, offering the opportunity to share young member input and to communicate directly back to young members with relevant information.

2022 Annual Meeting and Other Activities

Young members continue to be actively engaged in several sessions, including:

- Sponsored session: The Six-Minute Pitch - A Transportation Startup Challenge
- Meetings of Young Members Coordinating Council and the following Group-level Young Member Subcommittees: Aviation, Freight Systems/Marine, Policy and Organization, Public Transportation, Safety and Operations, Sustainability and Resilience, Transportation Infrastructure.
- Workshop session: Early Academic Successful Careers: Resources and Advice
- Several Young Member subcommittees continue to have active mentorship programs and organize meetings and other events.
- Providing assistance with organizing the upcoming TRB Virtual Career Fair on February 17, 2022.





September 9, 10, 13, and 14, 2021
TRB Virtual Event

Conference on
Advancing Transportation Equity
Bridging the Divide between People, Research, and Practice

TRB TRANSPORTATION RESEARCH BOARD

PLANNING THE CONFERENCE

GATHERING AT TRB ANNUAL MEETING 2017

- An Annual Meeting Gathering is a “meeting” opportunity for TRB technical committees to consider a new topics.
- Co-Sponsored by – Committees on Environmental Justice (Gloria Jeff and Tracee Strum-Gilliam) and Strategic Management (Andrea D’Amato); held on Wednesday afternoon
- Theme was Regional and Local Transportation Equity: A Corridor to Sustainable and Resilient Communities
- The agenda included:
 - Overview of how disadvantaged communities are effected during disasters and how communities respond
 - Openly discuss tools used during planning to avoid negative consequences caused by disasters in LMICs
 - Openly discuss tools and resources to rebuild communities so that LIMCs increase resilience to all hazards
 - Consider options for TRB committees to collaborate on research and information sharing around these issues

OUTCOMES OF THE GATHERING AT TRB ANNUAL MEETING 2017

- 11 TRB Technical Committee were represented during the Gathering (not counting subcommittees) (Maritime, Public Transit, Bike/Ped, Environmental Justice and Health, Public Engagement, Freight, Resilience, Policy, Planning, Transportation Economics, Socioeconomics and land use)
- The attendees spotted five potential outcomes through collaboration on this theme -
 - (1) build awareness of a transportation equity role in correlation to community resilience and sustainability,
 - (2) study and review communities using available resources for implementation at regional and community levels,
 - (3) identify gaps in an ability to link risk reductions to all safety and security hazards and to demonstrate economic development opportunities,
 - (4) identify workforce development and educational curriculum to develop the skills and knowledge, and
 - (5) identify research needed.
- Proposed forming a joint subcommittee on equity and planning a conference on equity

GROWING EQUITY IN TRANSPORTATION

- 2018 – Seven Co-sponsoring Standing Committees established a Joint Subcommittee on Equity under the Standing Committee on Environmental Justice. Co-sponsoring were (prior committee structure):
 - Strategic Management (ABC10)
 - Transportation Issues in Major Cities (ABE30)
 - Social and Economic Factors (ADD20)
 - Transportation and Sustainability (ADD40)
 - Accessible Transportation and Mobility (ABE60)
 - Public Transportation Planning and Development (AP025)
 - Paratransit (AP060)
- 2019 – Four co-sponsoring committee held a joint summer mid-year meeting and identified research ideas
- 2019 – TRB approved the Conference on Advancing Transportation Equity to be hold in Twin Cities, Minnesota in 2020.

PLANNING COMMITTEE

- Co-Chair, Beverly Ward, BGW Associates, LLC
- Co-Chair, Elizabeth Williams, Massachusetts DOT
- Alex Karner, University of Texas, Austin
- Bobby Cottam, Burns & McDonnell
- Cassie Halls, University of California, LA
- Eric Tang, VHB
- Kim Kolody, Jacobs
- Sarah Parkins, WSP
- Zachary Elgart, Texas A&M Transportation Institute
- Erica Blonde, HNTB Corp
- Gloria Jeff, Minnesota DOT
- Tracee Strum-Gilliam, PRR, Inc.
- Andrea D'Amato, Mass DOT
- Bill Anderson, TRB Senior Program Officer
- Gary Jenkins, TRB Program Operations Coordinator
- Sam Cid, TRB Conference Manager

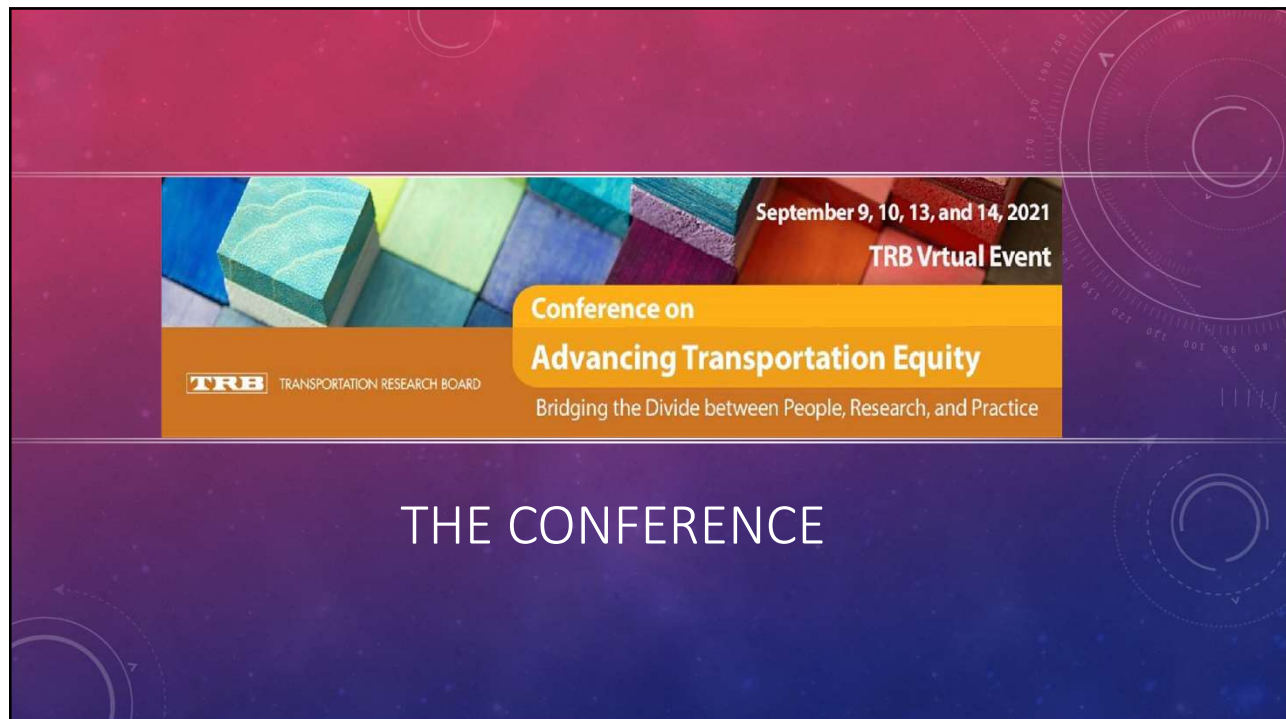
CATE LEARNING OBJECTIVES

- Public policy solutions for rural, suburban, and regional planners to adopt in regional plans, asset and performance management processes, and budgeting to advance the goals of transportation equity.
- Data and demographic solutions supporting transportation equity and infrastructure design to balance the distribution of benefits and burdens which enhance community and infrastructure resilience and sustainability.
- Project oriented research needs statements through identifying gaps in resilience and equity policies and practices and existing resources for transportation planning, community standards and codes, and transportation equity.
- Sharing national level frameworks for stakeholder engagement that facilitate community driven analysis and planning solutions for equity and resilience analysis as well as planning and implementation practices.

IMPACT OF COVID ON PLANNING

NOTE: the pre-COVID conference began as an in-person meeting with virtual attendance as a registration options.

- Moved event from Minnesota to the NAS Building in Washington, DC
- Postponed event from June 2020 to September 2021 – still planning for in-person and virtual attendance options
- With the COVID spike in Summer 2021 CATE transitioned the program to a full-virtual conference to be held over four days (September 9–10 & 13–14)



September 9, 10, 13, and 14, 2021
TRB Virtual Event

Conference on
Advancing Transportation Equity
Bridging the Divide between People, Research, and Practice

TRB TRANSPORTATION RESEARCH BOARD

THE CONFERENCE

CATE PATRONS

Platinum

Cruise, LLC | HNTB | Metro Analytics | VHB | WSP

Silver

HDR

Bronze

Burns & McDonnell | Cambridge Systematics | EBP | Street Light Data
WTS International | ICF

CATE PLENARY PROGRAM INCLUDED

Keynote Speaker:

- **Carlos Monje Jr.**, Under Secretary of Transportation for Policy, Office of the Secretary, U.S. Department of Transportation
- **Stephanie Pollack**, Acting Administrator, Federal Highway Administration
- **Robert Hampshire**, Deputy Assistant Secretary of Research and Technology, U.S. Department of Transportation
- **Jennifer D. Roberts**, Assistant Professor; Director of the Public Health Outcomes and Effects of the Built Environment Laboratory; and Co-Director of NatureRx@UMD, University of Maryland

Also, five Plenary Sessions address many of the critical policy, practice and research issues today.

CATE TECHNICAL PROGRAM INCLUDED

- TRB received 268 submissions to the CATE Call for Abstracts; invited speakers were allocated time in one of these session:
 - 20 Technical Sessions – “Arrested Mobility”, Justice40, Storytelling, all modes and disciplines
 - 11 Roundtables – regional and urban communities, focused programs
 - 15 Lightening Talk or Poster Sessions
- Focus on Students and Young Professionals
 - Held three well attended sessions focused on workforce and mentorship discussions
 - Offered connections with over two dozen mentors who are experts and well respected
 - Provided a Mentors and Resources Hall instead of an Exhibit Hall for Patrons

CATE ALSO OFFERED ATTENDEES

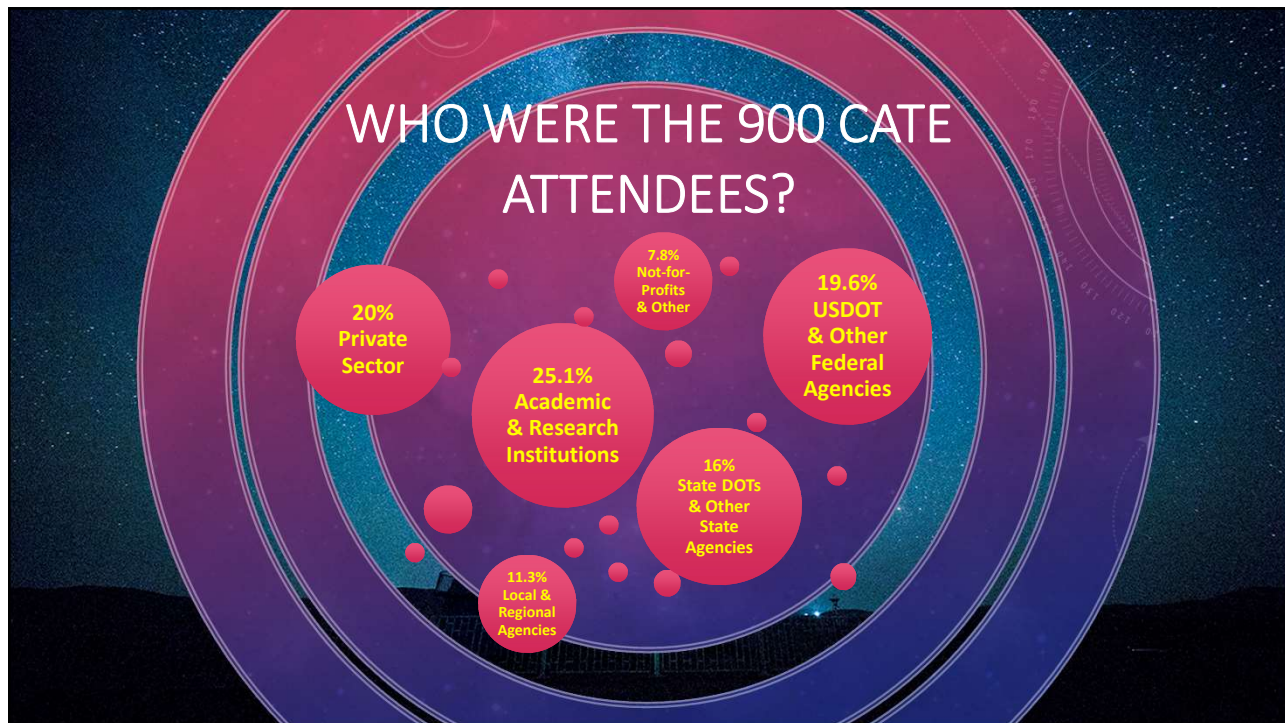
- CATE provided attendees with several ways to voice ideas, experiences, and perceptions:
 - Attendees could volunteer to take notes in any session they attend – almost every session had at least one note-taker and all session were recorded
 - Zoom Chat and Q&A functions were open and saved – many sessions had active chats
 - Attendees could submit research need statements coming out of session discussions via the CATE RNS Express – 16 research needs were submitted
- CATE provided attendees with resources to download and consider for implementation
 - Patrons provided information and resources in the Mentors and Resources Hall
 - FHWA provided links to seven resources in the Mentors and Resources Hall, such as its *Environmental Justice Analysis in Transportation Planning and Programming: State of the Practice*
 - TRB provided links to nine resources from Transit and Aviation CRP reports, the DEI related materials from the Critical Issues report, TR News, TRID, Transportation Research Record, and the Minority Student Fellows Program
 - Twelve Virtual Technical Tours demonstrating active and planned local and state transportation programs adopting social equity

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TRB TRANSPORTATION RESEARCH BOARD

HIGHLIGHTS FROM THE CONFERENCE



TAKEAWAYS FROM PARTICIPANTS

- “Not looking for an ally, Looking for an accomplice.”
- “Truth”
- “Humility”
- “Learning opportunities unexpected”
- “Validation of ongoing efforts by TRB to keep Equity in transportation conversations”
- “Every voice is important, necessary to strengthen transportation decision making”
- “More courage to stand up for those who are not yet at the table”
- Format created an explicit connection to the workforce of the future
- Not a singular event

HIGHLIGHTS FROM SESSION DISCUSSIONS

CATE RNS EXPRESS SUBMISSIONS

1. Returning Citizens and the Transit Driver Shortage - A Solution for Success?
2. Mining for NGO data on hard to reach populations
3. Have implemented equity initiatives and equity-focused criteria resulted in observable and appreciative changes to equity priority communities?
4. Equity in Emergency Preparedness
5. What is the future of AV's in Rural communities
6. Setting a standard for accessibility to destinations
7. Making equity changes: The How, not the What
8. Current practices of collecting, documenting, and storing race and ethnicity data as part of application forms for ADA paratransit riders

CATE RNS EXPRESS SUBMISSIONS

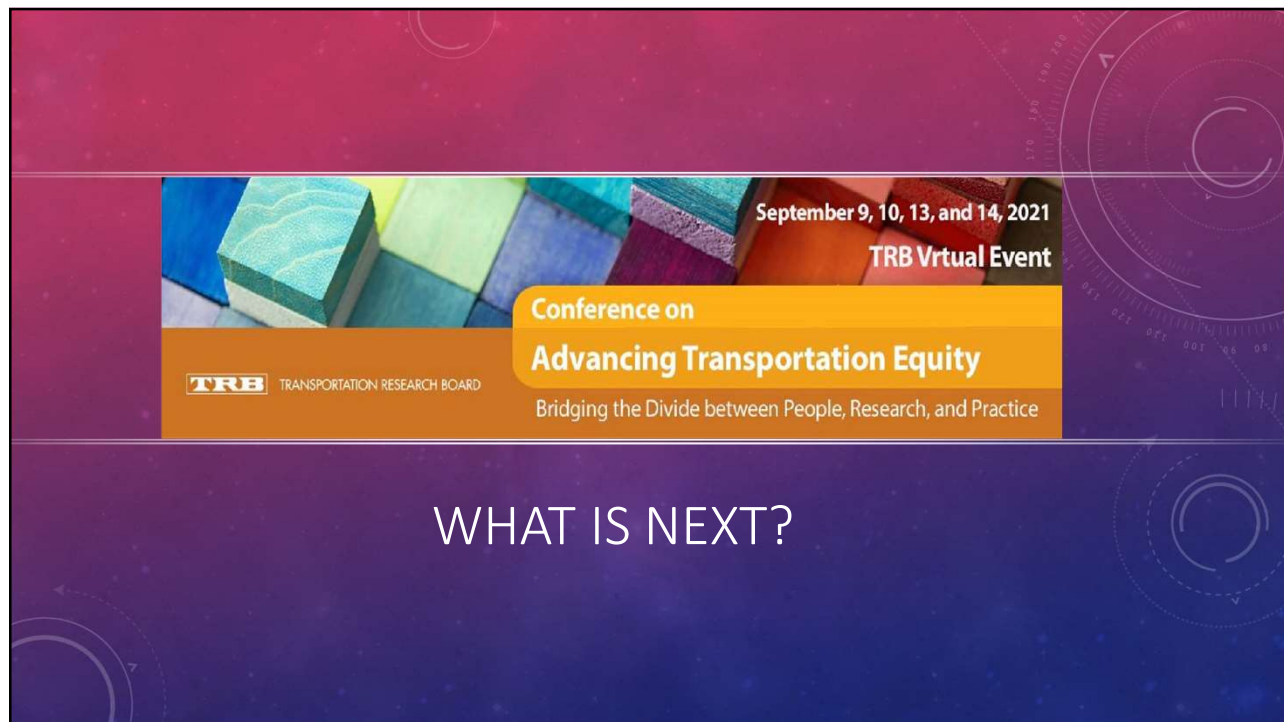
9. Towards Equity in Auto Ownership and Operation
10. Cost/benefit analysis of direct payments to individuals vs service providers
11. Crashes, Race & Policing: An Alternative Approach
12. Transportation Investments & Displacement: What Should We Know but Don't?
13. Exploring tools and methods to make community engagement a long-term partnership between DOTs and communities
14. Rolling Out the Recommendations
15. Transit Safety, Security, and Enforcement Strategies for Mobility Justice
16. How can federal transportation and environmental law, regulations, and guidance be strengthened to advance equity and environmental justice in transportation planning and NEPA?

CALL TO ACTION

- Equity is about people
- Challenge for the 21st Century transportation professional is about the how and why people use and are affected by transportation infrastructure
- Importance of valuing not only the input of those with initials after their names but also value “Lived Experiences”
- Sharing of responsibilities for us all
 - People
 - Assets
 - Benefits and Burdens

CALL TO ACTION

- Keep equity in the forefront of decision discussions
 - Even when:
 - It is not the popular position
 - Not everyone’s first choice to discuss or consider
 - In conversation so that those who are not yet at the table point of view can be considered



September 9, 10, 13, and 14, 2021
TRB Virtual Event

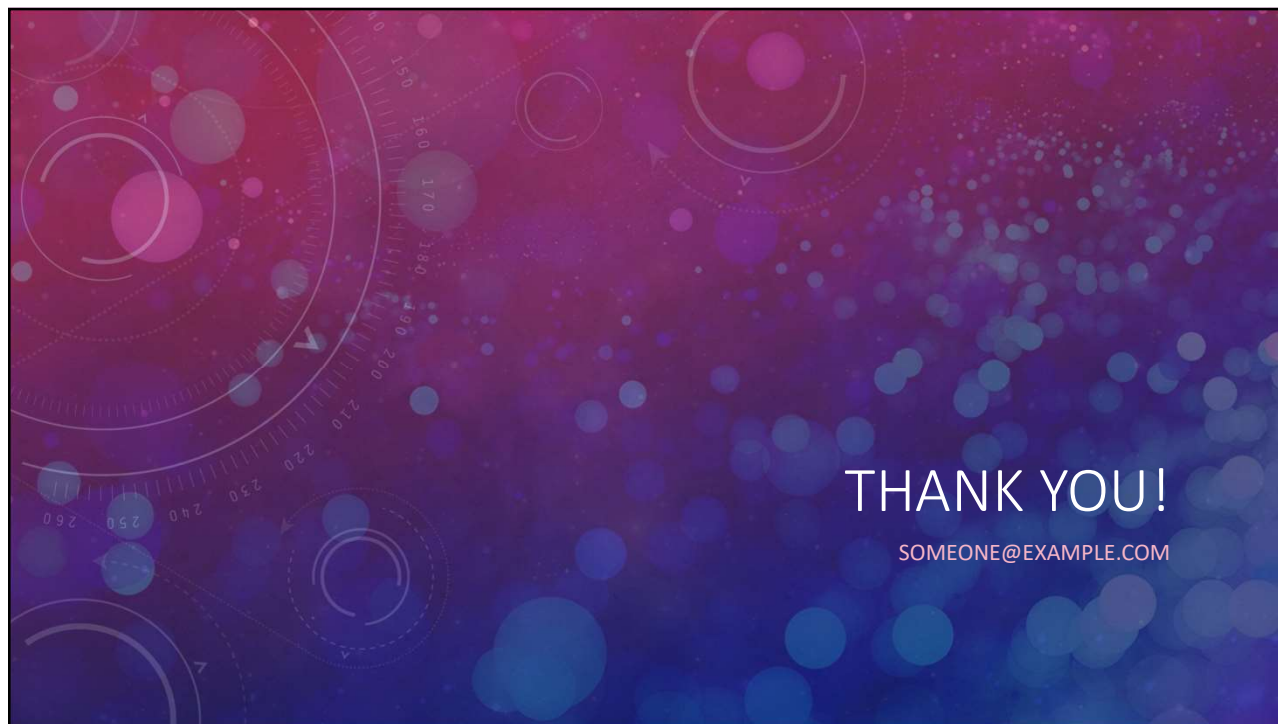
Conference on
Advancing Transportation Equity
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TRB TRANSPORTATION RESEARCH BOARD

WHAT IS NEXT?

WHAT IS NEXT?

- Writing a Conference Report (e-Circular), lead author is Zachary Elgart, Texas A&M Transportation Institute
- Coordinate a Zoom Meeting with TRB Co-sponsoring committee to consider research ideas
 - Draft Research Needs Statements
 - Propose webinars and Annual Meeting Sessions
- Plan a Mid-Year Meeting held at an HBCU that may include an unconference program
- Coordinate Zoom meetings with AASHTO committees and TRB committees to exchange ideas
- Plan for the second CATE to be held in 2024 or 2025



THANK YOU!

SOMEONE@EXAMPLE.COM

2021 Report on TRB International Activities
Executive Subcommittee on International Activities (E0004)
Randy Iwasaki, Chair

Background

TRB streamlined and standardized its international activities in 2017, and established a subcommittee to the Executive Committee, which was charged with advising the Executive Director on TRB's international activities, reviewing partnership agreements with key international organizations, encouraging increased international elements of some cooperative research projects with an interest to increase cross-border collaboration, and proposing a five-year strategic plan for TRB international activities. A goal of the subcommittee is to monitor how well TRB's efforts complement and support the international interests and activities of all of TRB's sponsors and of its parent organization, the National Academies of Sciences, Engineering, and Medicine—and whether TRB's international ties can be strengthened. The subcommittee has been taking steps to determine how TRB can measure the impact of its international activities through the level of engagement efforts, adoption of practice, and learning from committees and reports, as well as providing guidance for the direction of future international activities that TRB may undertake. In January 2018, the Executive Committee approved the vision, mission, goals and objectives for a 5-year strategy of TRB's international activities. In June 2018, Dr. Mary Brooks, a former chair of the subcommittee, in collaboration with TRB staff, briefed the SPPR on indicative data that may measure effectiveness of TRB's program within international communities.

2021 International Activities

TRB has a total of sixteen signed agreements (e.g., Memorandums of Understandings [MOUs] and Letters of Intent [LOIs]) in effect with international partners. The Technical Activities Division initiated its first in 2006 with the European Conference of Transport Research Institutes (ECTRI). Nine of the agreements are annually implemented through Action Plans coordinated with each partner organization. In 2017 TRB renewed MoUs with ECTRI and the World Road Association (PIARC) that were written to sustain a standard level of collaboration and allow for unique cooperative activities. The format of agreements and implementation action plan with ECTRI and PIARC is the same structure used with International Road Federation in Geneva (IRF in Geneva); China Highway and Transportation Society (CHTS); China Overseas Transportation Association (COTA), International Transport Forum (ITF); the World Bank; Pan-American Society of Transportation Research (PANAMSTR); and World Conference on Transport Research Society (WCTRS).

The following is a 2021 update on activities implementing these agreements:

ECTRI & TRB: ECTRI and TRB will re-sign the MoU and Action Plan on January 10th, 2022. In 2019, Caroline Almeras, Secretary General of ECTRI, became the Co-Chair of the TRB International Coordinating Council (A0020C). ECTRI, TRB, ITF, and WCTRS jointly planned and held a *Research Day* on “Transport Innovation for Sustainable Development”.

The *Research Day* was originally to have been held in person in Leipzig, Germany, but due to COVID-19 travel restrictions was converted to a two-day virtual workshop held on May 11-12, 2021, in conjunction with the International Transport Forum's 2021 Annual Summit that was convened virtually over two weeks. Members of TRB committees presented, including

Giovanni Circella, Chair of AEP35. The same group of organizations is currently planning the 2022 Research Day around the theme of “Transport for Inclusive Society.”

ECTRI issued a Strategic Plan (2021-2030) in February 2021. Three Workshops were organized with ECTRI Member representatives and experts from ECTRI Thematic Groups and Task Forces. The strategy focuses on *mobility, freight and logistics, economics and policy, safety, security and resilience, and traffic management and modeling*. A new set of ambitious Strategic Objectives around these topics areas were defined to drive ECTRI activities. Those objectives take into account the requirements and needs of ECTRI Members, partners and customers. The topic areas align with many of the TRB Critical Issues and will help guide future international activities between ECTRI and TRB.

PIARC & TRB: In July 2021, PIARC and TRB re-signed their MOU and Action Plan. PIARC and TRB, in coordination with FHWA and AASHTO, established this framework for the mutual exchange of information and cooperation in the area of roads, road transport, and related issues. In early 2021, TRB and PIARC updated a contact list of liaisons designated between PIARC committees and corresponding TRB committees. Liaisons report on the activities of each committee to the other as well as share information and research ideas and needs. PIARC and TRB share 47 volunteers who liaise between our committees (include U.S. representatives to PIARC and PIARC members serving on TRB Committees).

TRB participated in three PIARC Advisory Group Virtual Meetings. These meetings bring together international partner organizations, in a similar manner as TRB’s International Coordinating Council, to share information on activities and reports that would benefit their members and readers. It is also an opportunity to ask that international partners support specific activities (e.g., TRB shared PIARC’s survey on the “Future of Transport.”).

TRB is co-sponsoring the PIARC 16th World Winter Service and Road Resilience Congress, February 7-11, 2022. Co-sponsorship is a way to promote major events of our partners through the *TRB Weekly* and www.trb.org event calendar. The TRB sections on sustainability and resilience (AMS00 and AMR00), in collaboration with ECTRI, AASHTO, and FHWA, are organizing two Foresight Sessions that will be held at the PIARC 16th World Winter Service and Road Resilience Congress. The sessions are on the following subjects:

- a. FORESIGHT SESSION: RESILIENCE FRAMEWORKS AND METRICS FOR ROAD STAKEHOLDERS. TRB’s Chair of the Section on Transportation Systems Resilience (AMR00), Ann Strauss-Weider, Chair of the TRB Section on Transportation Systems Resilience (AMR00), and Chair of the consensus study committee for the report, *Investing in Transportation Resilience: A Framework for Informed Choices*, Joseph Schofer, will present in this session.
- b. FORESIGHT SESSION: MANAGED RETREAT: DIFFICULT BUT NECESSARY. Tim Sexton, Chair of TRB’s Section on Sustainability and Transportation (AMS00), leads the organization of this session. Mark Abkowitz, Chair of TRB’s Standing Committee on Extreme Weather and Climate Adaptation (AMR50), is supporting the coordination of this session.

Additionally, the National Highway Cooperative Research Program (NCHRP) supports State DOT representatives who are participating on PIARC Technical Committees. Many of them serve as a liaison between PIARC Technical Committees and the corresponding TRB Standing Committee. NCHRP's most recently supported Bijan Khaleghi (Washington State DOT), Christos Xenophonos (Rhode Island DOT), and Deanna Belden (Minnesota DOT). NCHRP initially intended to support Caroline Mays (Texas DOT) and John Milton (Washington State DOT), but their meetings were cancelled or converted to all-virtual events. NCHRP supported Paul Ajegba (Michigan DOT), Victoria Sheehan (New Hampshire DOT), and Shawn Wilson (Louisiana DOT) to participate in the ITS World Congress in Hamburg, Germany. Tim Sexton (Minnesota DOT) was supported for his participation in the United Nations' Climate Change COP26 in Glasgow, United Kingdom.

IRF in Geneva & TRB: TRB signed an agreement with the International Road Federation in Geneva (IRF in Geneva) during its World Road Congress, November 2017, in India. The agreement is a framework for the mutual exchange of information and cooperation in the areas of research and training in roads, road transport, and related issues. An updated action plan to implement the agreement was signed during 2021. TRB collaborated with the IRF in Geneva in the CHTS MMM Webinar Series and a workshop to be held during the 2022 TRB Annual Meeting.

TRB participated in the IRF Africa Board Meeting, July 6, 2021. The Board specifically wanted to learn about TRB's ICC and technical committees. During the meeting, the Board and General Secretary of IRF in Geneva requested that TRB organize a virtual workshop to teach African governments and research institutions how they may engage in TRB technical activities and research projects.

CHTS & TRB: TRB signed an agreement with the organizers of the World Transport Convention in China, the China Highway and Transportation Society (CHTS) in Washington, DC, at the 2018 TRB Annual Meeting. During the 2021 World Transport Convention, co-sponsored by TRB and heavily promoted, Neil Pedersen spoke and participated in a Plenary Session and TRB supported the organization of a Special Session on mobility management.

CHTS collaborated with TRB, which co-sponsored the series, and other international partners to convene a series of webinars during 2020 and 2021 on subjects related to mobility management. During 2021, the following events were held:

1. *Road Safety and Mobility Security – Planning for the Future*, February 2021 was organized by CHTS, PIARC (John Milton, WSDOT), International Road Federal in Geneva, and TRB's ICC, Section on Safety (ACS00), and Standing Committee on Safety Performance and Analysis (ACS20).
2. *Re-Imagining Integrated Mobility Management Systems*, April 29, 2021, was organized by CHTS, COTA, ECTRI, ERTICO, and TRB. Neil Pedersen provided opening remarks. Carol Schweiger, Co-Chair of TRB Standing Committee on Innovative Public Transit Services and Technologies (AP020), presented on the multimodal components of a complete trip with a special focus on TSMO and ITS.
3. *Intersection of Curbside/Sidewalk and Mobility Management*, October 11, 2021, was organized in collaboration with TRB, ERTICO, and CHTS as a Special Session held during the ITS World Congress, Hamburg, Germany. Randy Iwasaki, Chair of the

Executive Committee Subcommittee on International Activities, Carol Schweiger, Co-Chair of TRB Standing Committee on Innovative Public Transit Services and Technologies (AP020), and Johanna Zmud, member of AED10 and AEP35 made presentations on behalf of TRB.

COTA & TRB: TRB co-signed a Letter of Intent with the China Overseas Transportation Association during its Transportation Seminar during the 2020 TRB Annual Meeting. During the 2021 TRB Annual Meeting COTA-TRB held a Spotlight Session: *Prospective Collaborations in Transportation across Pacific: Paving Bridge for Next 20 Years*. Additionally, COTA organized a webinar featuring TRB, ITS America and ITE to encourage COTA members to become more involved in each organization's committees and events.

ITF & TRB: TRB exchanged Letters of Intent with the ITF during the 2019 TRB Annual Meeting. As mentioned above, ITF, ECTRI, WCTRS, and TRB jointly planned and held a *Research Day* on "Transport Innovation for Sustainable Development". Additional details not mentioned above include (1) TRB managed the Call for Abstracts and the abstract review processes for this event; (2) Abstracts were to be submitted by March 29, 2021 on the following themes:

- *Seize the opportunities offered by micro-mobility and active transport.*
- *Connect remote and rural areas with innovative sustainable transport solutions.*
- *Stimulate adoption of low-carbon vehicle technologies.*
- *Use innovation to promote sustainable urban mobility in post-Covid 19 recovery.*

(3) TRB co-sponsored this event and widely promoted it; (4) 55 abstracts were received; 21 abstracts were selected for presentations in 7 sessions that were chaired by ITF and EC experts; and (5) Speakers came from 4 continents (3 Asia, 6 North America, 11 Europe, 1 Oceania). Approximately 90 people attended this event. The quality of the presentations greatly improved and the partners are considering how presenters could be invited to publish research papers in the TRR, ETRR, and WCTRS Transportation Policy Journal.

PANAMSTR – TRB: TRB signed a Letter of Intent with the Pan-American Society of Transportation Research (PANAMSTR) in 2020 and signed an Action Plan to implement the agreement in February 2021. TRB co-sponsored and promoted the XXI Pan-American Congress of Transportation Research in Lima August 11-13, 2021. Approximately 500 papers were submitted from 30 countries. Neil Pedersen was a keynote speaker of the conference, discussing critical issues in transportation. The conference and call for abstracts were widely promoted via social media, TRB's *Weekly*, and calendar of events. Additionally, PANAMSTR and the TRB Committee on Disaster Logistics, Emergency Evacuations and Business Continuity (AMR20) are jointly planning a webinar on freight resilience.

World Bank – TRB: TRB signed a Letter of Intent with the World Bank in August 2021. TRB's Standing Committee on Transportation Issues in Developing Countries (AME40) participated in a virtual workshop organized by the World Bank and ITF, May 20, 2021, entitled *Challenges and Future Possibilities: Improving "Informal" Public Transport in Developing Countries*. The workshop was attended by people from all over the globe, such as the Philippines, India, Mexico, South Africa, and more. TRB's AME40 is hosting a similar workshop in collaboration

with the World Bank and ITF during the TRB 2022 Annual Meeting. TRB will draft and publish a workshop report (E-Circular) to share a conversation summary and findings.

WCTRS – TRB: TRB signed a Letter of Cooperation with the World Conference on Transport Research Society (WCTRS) in June 2021. As stated previously in this report, TRB, ECTRI, ITF, and WCTRS jointly planned and held a 2021 ITF *Research Day* on “Transport Innovation for Sustainable Development”. Additionally, WCTRS and TRB will plan a workshop on decarbonization transport to be held during the TRB Conference on *Sustainability and Emerging Transportation Technologies (SETT)*, March 15-18, 2022, which will be held at the NASEM Beckman Center in Irvine, California. The workshop summary will be included in the SETT conference report (E-Circular).

Many of the above activities, partner reporters, and other TRB announcements of international interest were promoted via TRB’s *Weekly* (newsletter) and Event Calendar. Here is a listing of further international engagement activities organized, managed, and hosted by TRB staff and volunteers:

Events and Conference: TRB convened and co-sponsored events organized by TRB’s international partners, such as workshops and sessions where TRB committee members spoke and participated. In 2021 (a COVID-19 year), TRB sponsored 4 international conferences and co-sponsored 16 additional international conferences.

The International Coordinating Council (A0020C) held a Virtual Open House of the ICC during the 2021 TRB Annual Meeting. The purpose of the meeting was to educate TRB committee members about the vision, mission, and scope of the ICC and how it is a resource for TRB technical committees.

- a. The International Coordinating Council (ICC) vision is centered on the evolution of international perspectives, practices, and research in all facets and services of all modes of transportation with an overarching goal of creating value for members, partners, friends, TRB and the National Academies of Sciences, Engineering and Medicine and to be a leader for international coordination and collaboration on subjects related to transportation research and practice.
- b. During its mid-year meeting on July 15, 2021, the ICC passed the Strategic Plan for the International Coordinating Council. Each of TRB’s coordinating councils were asked to develop a plan for achieving its goals and objectives. The mission of the ICC is to support Technical Activities Committees in addressing international perspectives within their committee scopes and in collaboration with TRB’s international partner organizations. The goals of the plan include:
 - Goal One: Collaborate with TRB Technical Committees on International Activities - *Encourage TRB participants to initiate and engage in international activities to increase international collaboration.*
 - Goal Two: Engage Non-U.S. Colleagues and Partners in TRB Activities, Committees, and Panels - *Actively engage colleagues from outside the United States in TRB activities, committees, and panels.*
 - Goal Three: Leverage International Cooperative Benefits through Convening Activities - *Facilitate external collaboration with partners and TRB participation in partner events and activities.*

- c. The ICC established a calendar of partner events where TRB supports session or program content. The calendar tracks three years of past and upcoming events. The 2021 Calendar of International Events with TRB Collaboration is at the end of this report.
- d. The ICC supported coordination of session topics and speakers for the 2022 TRB Annual Meeting. The ICC was given one workshop and one lectern session to organize in the annual meeting program, and it received 17 proposals to consider. All of the proposals focus on one of the 12 topics from the TRB *Critical Issues in Transportation* report.

TRB's Executive Subcommittee on International Activities (E0004) met three times during 2021. Randy Iwasaki, Chair of the Executive Subcommittee on International Activities, is leading the subcommittee members on a re-evaluation of its strategic plan. The subcommittee focuses its assessment on the question – *What revisions, if any, would help close out the effective first edition of the strategic plan and enable reaching a next level of engagement through a second edition of the strategic plan?* The subcommittee explores how the plan can be more action focused, can incentivize more impactful engagement and collaboration, and leverage more of TRB's resources without weakening its mission.

Twinning and Collaborative Research Projects: TRB's Cooperative Research Programs Division shared lists of approved research projects to identify potential twinning research projects or pairing of international project teams working similar research scopes. There are 56 cooperative research projects (ACRP, BTSCR, NCHRP, and TCRP) with at least one panel member residing outside of the United States. The Chair of two of these projects resides outside of the United States:

- ACRP Project Panel on An Airport-Centric Study of the Urban Air Mobility Market
- ACRP Project Panel on Commercial Space Vehicle Emissions Modeling

There are four cooperative research projects (3 ACRP and 1 NCHRP) with a Principal Investigator contracted to lead the project who resides outside the United States, and they are –

- Robin Riecker, ACRP 04-048: *Transportation Emergency Response Application (TERA) Support Materials for Airport EOC Exercises*
- Michael Tretheway, ACRP 03-60: *Incorporating Shock Events into Traffic and Forecasting and Airport Planning*
- Tim Arendt, ACRP 02-96: *Update ACRP Report 99: Guidance for Treatment of Airport Stormwater Containing Deicers*
- Sherif El-Tawil, NCHRP 20-30 (IDEA 235): *High Bond Steel Fibers for Ultra High Performance Concrete (UHPC)*

2021 International Strategic Goals, Objectives and Impact Indicators

This is the fourth year of reporting data on TRB's international activities. We are on our way to developing a benchmark with the data and then later will evaluate trends and effectiveness. Each data point or narrative aligns with one of the objectives and goals in the 2018-2023 International Activities Strategic Plan. In the future, the report will evaluate effectiveness over a 5-year period. The Executive Subcommittee (E0004) will initially evaluate the data sets this year, and recommend modifying measures if needed.

Goal One: Engagement of Non-U.S. Colleagues and Partners

Actively engage colleagues from outside the United States in TRB activities, committees, and panels.

Objectives:

- Pair international partner committees and research panels with relevant TRB technical committees and research panels to include consideration of international perspectives in TRB programs.
- Identify and cultivate twinning research opportunities with international research partners.
- Offer networking opportunities for international attendees of the TRB annual meeting, including encouraging informal mentorships of young international researchers.

Indicators of Goal One Effectiveness:

The activities above should show impacts in the TRB online resources and committee roles. Initially the subcommittee proposes measuring the following:

- A. Number of international subscribers to the TRB Newsletter. Average readership for the TRB Weekly, the recently (2021) redesigned TRB newsletter, is about 87 percent U.S.-based, with the rest subscribing from across the world, primarily from Canada, Australia, the United Kingdom, and France.
- B. International use of Transportation Research International Documentation (TRID). TRID is an integrated database that combines the records from TRB's Transportation Research Information Services (TRIS) Database and the OECD's Joint Transport Research Centre's International Transport Research Documentation (ITRD) Database. TRID provides access to more than 1.3 million records of transportation research worldwide. Between September 18, 2020 – August 19, 2021 unique TRID sessions were conducted more than 3 million times from 239 countries and territories.

Region	Nation	2020-2021	2019-2020
North America			
	USA	519,173	465,926
	Canada	91,563	77,223
	Mexico	28,678	23,090
Asia			
	China	171,000*	148,103
	India	352,164	217,764

	Japan	33,283	32,470
Europe			
	United Kingdom	132,578	99,018
	Germany	205,426	145,894
	France	62,415	40,639
Africa & Middle East			
	Iran, Islamic Republic of	39,002	29,676
	South Africa	33,375	18,980
	Turkey	42,435	31,036
Central & South America			
	Columbia	22,023	20,681
	Brazil	31,480	29,848
Australia			
	Australia	87,138	73,540

* Number for China is approximate as TRID is experiencing heavy bot-scripted traffic from Beijing and Tianjin beginning in 2020.

- C. Number of non-U.S. experts serving on Cooperative Research Program Division project panels and twinning of research projects. TRB's Cooperative Research Programs includes 56 active international twinning research projects. Twinning research in these projects is described as the inclusion of international researchers on a TRB project panel who are actively working on a closely related research project funded by another country or non-U.S. research institution. The international members of the project panel serves as a liaison between research teams in both countries to share results and facilitate complementary outcomes.
- D. Number of non-U.S. members participating on TRB Technical Activities Committees. There are 176 TRB Technical Activities committees, each of which may appoint up to 5 International Members. The Subcommittee for International Activities and the International Coordinating Council cannot compel a Technical Activities committee to add international members, if they are not using the designated slots. People can self-register and become a friend of any committee.
- E. Papers submitted to TRB's Annual Meeting Calls for Papers. TRB received 4,949 papers for presentation and/or publication consideration for the TRB 2022 Annual Meeting. Of those submissions, 2459 (49.7% of the papers submitted) were from non-U.S. corresponding authors. Papers are still in the re-review process for TRR publication consideration. A complete and accurate breakdown of acceptance and rejection for presentation and/or publication is not available yet.
- F. Number of annual meeting paper reviews by non-U.S. committee members and friends. To review the papers submitted for the 2022 TRB Annual Meeting 23,084 reviews were completed. Of the reviews completed, 6,253 (27.1% percent of reviews) were completed by non-U.S. committee members or friends. Here is a list nations receiving the most invitations to review.

Country	Number of Reviews
Canada	993
China	1053
Australia	381
United Kingdom	330
Netherlands	293
Germany	317
India	343

G. Engagement of international professionals through the TRR. The Transportation Research Record (TRR) is among the richest resources TRB generates annually. Reconciliation and validation of the user search data from Atypon to SAGE for 2021 shows 509,233 TRR access sessions from 198 countries in 2021, as of December 1. It is important to note, SAGE has 7,218 qualifying institutions in its Developing World Initiatives, which receive free or discounted subscriptions to SAGE journals such as TRR. Here is a regional global breakdown of the TRR access sessions.

Global Region	2021
Africa	2.6%
Asia	20.3%
Australasia	4.8%
Eastern Europe	1.7%
Middle East	4.1%
North America (excl US)	5.6%
South America	2.8%
United Kingdom	5.7%
United States	36.2%
Western Europe (excl UK)	16.1%

Goal Two: Leverage Bilateral International Cooperative Benefits through Convening Activities

Leverage bilateral international cooperative benefits when sponsoring or co-sponsoring international forums and conferences within current TRB processes and procedures.

Objectives:

- Create opportunities for international dialogue to advance research to resolve critical global, transcontinental, or international transportation issues.
- Exchange international research and innovation results among TRB's international partners.
- Support sponsorship and co-sponsorship of international conferences to ensure they address criteria for international activities and leverage existing international partnerships.

Indicators of Goal Two Effectiveness:

The activities above should show impacts in the TRB online resources and committee roles. Initially the subcommittee proposes measuring the following:

- A. Number of non-U.S. based exhibitors at the Annual Meeting. There were 206 exhibitors in the 2020 annual meeting exhibit hall. The international exhibitors account for about 20% of the exhibitors on the floor, and roughly 21% of the gross exhibit revenue.
- B. The number of international attendees at the annual meeting. During the 2021 Virtual Annual Meeting, 20,640 people attended. Of those attendees, 15% were from outside the United States. The number of international attendees from each nation varies from year to year. During the 2020 Annual Meeting, 14,035 people attended. Of those attendees, 16.4% were from outside the United States.
- C. The number of nations and international registrants participating in international webinars. During the 2021 calendar year, 1,146 non-U.S. individuals registered for at least one live webinar of which 745 were actual attendees residing outside of the U.S. An average webinar in 2021 had 228 attendees. 112 webinars were held. Additional registration and attendee data for TRB webinars:

Year	Number of Webinars	Average Registrants	Average Attendees	Non US Registrants	Non US Attendees
2021	112	343	228	1146	745
2020	107	451	297	1552	960
2019	89	378	236	1260	735
2018	104	356	208	1600	871
2017	100	375	229	1347	800
2016	98	357	230	582	433
2015	73	364	242	514	400
2014	87	279	146	1012	566

Goal Three: Provide Guidance on New International Activities

Encourage TRB participants to initiate and engage in new international activities (such as forums and conferences not sponsored or co-sponsored by TRB; and cooperative research and twinning research projects) with an eye towards international collaboration.

Objectives:

- Based on the activities of Goals One, Two, and Four, enhance and grow international activities supporting National Academies of Sciences, Engineering, and Medicine and TRB missions.
- Make introductions to and recommendations for new partners for international collaboration.

Indicators of Goal Three Effectiveness:

As documented under Goals 1 and 2, TRB expanded its formal relationships with several additional international organizations during 2020 and 2021. The virtual format for activities with partners actually enabled additional activities with these partners over what had previously been the case with in person activities. In the interest of not being repetitive, the new activities will not be repeated here.

Goal Four: Facilitate Cooperative International Agreements

Facilitate, review, and concur in Memoranda of Understanding between TRB and international and national organizations outside the United States.

Objectives:

- Review MOUs signed over the past 3-5 years to identify commonalities and differences; identify the set of "non-negotiable" items from the TRB perspective; develop a standard template, but allow for deviations.
- Consider alternative types of agreements (such as communication agreements) to better support the primary objectives.

Indicators of Goal Four Effectiveness:

The new memoranda of understanding and letters of intent that TRB entered into in 2020 and 2021 were documented under Goals 1 and 2. Each of these was reviewed and concurred in by the Executive Subcommittee. Again, these MOUs and LOIs are documented under Goals 1 and 2, so in the interest of not being repetitive are not listed here.

Supplemental Information 2021 Event Calendar of International Activities

The International Coordinating Council (ICC) established a calendar of partner events where TRB supported session or program content. See attached, Appendix A, the CY2021 calendar of events. Each event includes the type of TRB support or engagement provided during the planning and/or convening of the event.

2021 Calendar of International Activities

PARTNER	EVENT	DATE	TRB SUPPORT AND RESOURCES	NOTES
TRB	Annual Meeting	January 5-29		<i>Virtual</i>
CHTS	MMM5 Webinar	April 29	<ul style="list-style-type: none"> • TRB Co-sponsorship • Promotion of event 	<i>Virtual – No registration fee</i>
ITF	Pre-Summit Research Day at ITF Annual Summit	May 11-12	<ul style="list-style-type: none"> • TRB Co-Sponsorship • Promotion of event and call for abstracts and support for reviewing abstracts 	<i>Virtual – https://www.itf-oecd.org/pre-summit-research-days-2021</i>
ITF	Annual Summit	May 17-28	<ul style="list-style-type: none"> • TRB Co-sponsorship • Promotion of event 	<i>Virtual – https://www.2021.itf-oecd.org/</i>
ECTRI	Open Science Webinar	June 9	Promotion of event	https://beopen-project.eu/events/making-open-science-the-new-normal-for-transport-research
CHTS	World Transport Convention	June 15-19, Xi'an, China	<ul style="list-style-type: none"> • TRB Co-sponsorship • MMM6 at WTC 	https://en.wtc-conference.com/
COTA	COTA Webinar 2021 Series	June 17	<ul style="list-style-type: none"> • TRB Co-sponsorship • <input type="checkbox"/> Promotion of event 	Virtual – https://us02web.zoom.us/j/83218423372 Provide information and guidance for Young Students and Professionals on how to get involved in services and activities of TRB Standing Committees
USDOT	Public Information Session on Equity	June 18	Promotion of event	Virtual public information session on Equity at DOT. Senior DOT leaders speaking about DOT equity agenda and Request for Information on Transportation Equity Data. https://www.transportation.gov/equity-RFI
EC	European Union Research and Innovation Days 2021	June 23-24	<input type="checkbox"/> Promotion of event	Virtual – https://ec.europa.eu/research-and-innovation/en/events/upcoming-events/research-innovation-days

				Opportunity to learn about the “hot themes” within Horizon Europe R&I Program Watch the recording there
PIARC	Disaster Management: The Effects and Management of COVID-19 Whilst Looking at the Future	June 30	<input type="checkbox"/> Promotion of event	Virtual event - https://zoom.us/meeting/register/tJYrcO-trzkuE9HazUdfMKtz-LBRIC-AL7Pr
EC	Horizon Europe “Climate, Energy, and Transport” (Cluster 5) Information Days	July 5-6	<input type="checkbox"/> Promotion of event	Virtual event - Opportunity to learn about the Horizon Europe R&I Workprogramme2021-2022 topics in Climate, Energy and Transport cluster
IRF/SAT C	Annual Southern Africa Transport Conference	July 5-7	<ul style="list-style-type: none"> • Promotion of event • Participate in IRF Africa Board Meeting 	https://irfnet.ch/event/southern-africa-transport-conference/
TRB	ICC Mid-Term Meeting	July 15	<ul style="list-style-type: none"> • Zoom Meeting account • Promote event to TRB committees 	<i>Partner to provide space and telecom at no charge</i>
PANAM	XXI Conference	August 11-13 Lima, Peru	<ul style="list-style-type: none"> • TRB Co-sponsorship • Promotion of event and call for abstracts 	https://panamstr.org/en/
ECTRI	Young Researchers Seminar	September 15-17	Submission of Young researcher abstracts and support in tutoring	
IRF	Annual Autumn Conference	October 20-21	Promotion of event	www.irfnet.ch
APTA	TRANSform conference and Expo	November 7-11 Orlando, FL	Promotion of event	https://www.aptaexpo.com/apta2021/public/enter.aspx
COTA	20 th & 21 st Joint CICTP Conference (CICTP 2020-21)	December 16-19 <i>Xi'an, China</i>	<ul style="list-style-type: none"> • TRB Co-sponsorship • Promotion of event 	http://www.cota-home.org/cictp/cictp2020-21.html



MARINE BOARD

of the
TRANSPORTATION RESEARCH BOARD

TRB Executive Committee Meeting
January 2022

M. Grabowski, Chair
S. Brotemarkle, Program Director

11.30.2021

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2022 Marine Board Areas of Interest

- Autonomous Shipping / Future of Navigation
- Maritime Resilience
- Future of the Maritime Supply Chain
- U.S. Offshore Wind Energy Development
- Towards Zero Emissions Shipping
- U.S. Maritime Policy
- Arctic Maritime Operations

Crosscutting Elements

- Human and Intellectual Capital
- Safety Management, Culture and Inspections
- Cyber in the Marine Transportation System





<https://www.dw.com/en/how-do-offshore-wind-farms-affect-ocean-ecosystems/a-40969330#>
 Retrieved 21 August 2021

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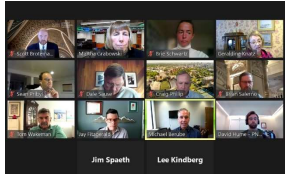

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Marine Board Virtual Fall Meeting


November 17-18, 2021

***Focus Session: Decarbonization:
The Future of Marine Energy and Propulsion***

- Major shipping industry players, regulatory agencies
- Public and private sector roles to stimulate conditions for maritime decarbonization and alternative fuel adoption
- Technical, policy and economic opportunities for and barriers to U.S. leadership in decarbonizing shipping
- Decision and Risk-based Frameworks
- Research Gaps
- Pathways and partnerships

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Marine Board Virtual Fall Meeting Nov 2021

Key Takeaways

- **Change is already underway**
 - Maersk McKinney Møller Center
 - CMA-CGA
 - MSC Group
 - American Waterway Operators
 - ‘Right thing to do’, urgently
 - Needs to be a decade of action-now
- **Costs will be huge**
 - Increasing current efficiencies will help
 - Leverage tools to innovate
- **Complexities, unintended consequences**
- **Collaboration as an accelerant**
 - US Agencies demonstrated their collaboration and coordination efforts - as evidenced by their shared presentations

- **Maritime unprecedented attention due to supply chain imperatives**
 - Creativity
 - Poly-fuel strategies
 - Market-regulatory approaches
- **Market forces and regulation**
 - Regulation can undermine market forces
- **Momentum changes in international arena**
- **Movement framed by equity & workforce considerations**
- **Marine Board - DOE engagement moving forward**

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Fall Agency Leadership Meetings

Key Issues

US Army Corps of Engineers

Dr. Joe Manous, Director, Institute for Water Resources

- **PIANC partnership?** (*World Association for Waterborne Transport Infrastructure*)
 - USACE - IWR serves as the Executive Secretariat for the U.S. Section
 - How can Marine Board become more actively tied to PIANC – some more formal tighter connection – what does this look like – member – MOU? – co-sponsor of conferences
 - Finding working group members through TRB and Marine Board – as part of an MOU – expert exchanges – share our reports both ways – updates from PIANC in Marine Board meetings
 - Appreciate the fact that Marine Board can connect them to industry through forums
- **Decarbonization** – as policy or technical issue
- **Risk-based Decision Analysis**

Fall Agency Leadership Meetings

Key Issues

Bureau of Safety and Environmental Enforcement (BSEE)(DOI)

Stacy Noem, Chief, Office of Offshore Regulatory Programs

- **New players in Offshore** –
 - Mosaic of responsibilities, authorities, working practices, safety cultures
 - Questions about responsibilities, authorities
- **Ocean Energy Safety Institute (OESI) 2.0**
 - Research Roadmaps for oil, gas, wind, marine energy
- **Cyber concerns** – staffing up accordingly
- **Risks and Safety**
 - Well construction, abandonment
 - Lifting safety and accidents—cranes and lifeboats -- precursors
- **Data Modeling, Quality, Gaps, Sharing, Baselines**
 - Structural Health Monitoring – Digital Twins
 - Talent capabilities match with industry


Fall Agency Leadership Meetings

Key Issues

US Coast Guard
RDML John Mauger
Asst. Commandant for Policy and Prevention

- Marine Board Areas of Interest are on point
- **USCG Triple challenge** –
 - More capacity from MTS and its novel uses, while reducing environmental impacts, in the face of increasing complexity (automation, optimization, efficiency).
 - Commercial space, Offshore wind, waterways safety
 - Automated vessels, Cyber implications
 - Decarbonization & Digitalization as pathways
- **US Maritime Policy, Great Powers competition**
 - Vulnerable state of supply chain
- **Data Concerns**
 - Near miss reporting
 - Data trust, harnessing troves of existing data – machine learning

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Marine Board Spring Meeting, 2022

Beckman Center, Irvine CA, April 4-7

- **Diversity, Equity and Inclusion (DEI) in Marine Transportation**
 – *Focus Session*
- Panel discussions:
 - Human Capital and Workforce Issues
 - Community Impacts of Ports and Freight Mobility
 - Federal Agency Initiatives in Maritime Domain
- Ports of LA, Long Beach tours
 - Automation, Decarbonization, DEI in port planning context

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Nat Ford, JTA, TRB Annual Meeting presentation, 27 January 2021




<https://cf-images.us-east-1-prod-boltdns.net/v1/static/854081161001/a1c173f3-2308-4a74-a954-1c9ffc38e0ba?e=128ad-11719-4402-9140-62f58a76e919/1280x720/match/image.jpg>, 8 October 2021

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TRB Communications Update

Paul Mackie, TRB Director of Communications/Media
January 2022



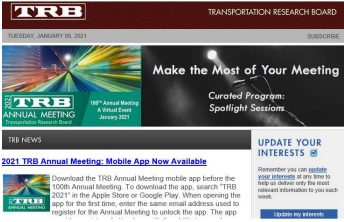
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TRANSPORTATION RESEARCH BOARD

Communications Strategic Plan
Updated: January 9, 2022
Adopted by TRB Executive Committee: July 19, 2021

Table of Contents	Pg.
1. Executive Summary	2
2. Communications Objectives and Goals	4
3. Current Landscape	10
4. Key Audiences and Stakeholders	15
5. Tactics	21
6. Metrics for Success	26

Newsletter upgrades




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TRB Weekly

TRB Weekly covers the latest in transportation research.
December 7, 2021 | [Update Your Preferences](#) | [View this email in your browser](#)

TRB Annual Meeting

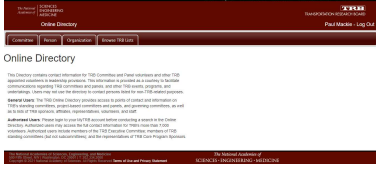
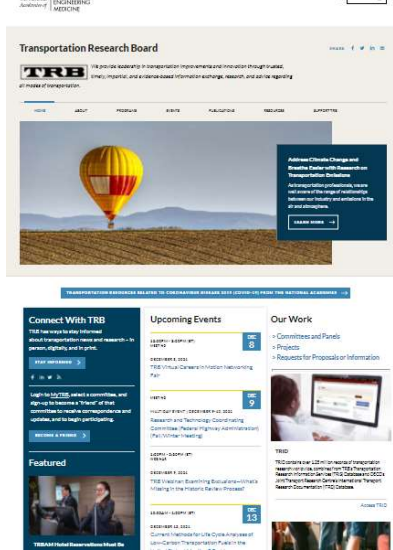


Fill Out Your Schedule with the Online Program

- TRB's lists = newsletters are our most important communications tactic
- We're utilizing them more = *TRBAM Express*, ARTS event, *Goin' Places* for staff
- Weekly* = tear it down to build it back stronger, very engaged, 15k-50k subscribers
 - 100% delivery rate
 - 40% open rate average
 - 14% click rate average

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Website upgrades


➔


- Moved ~100 web pages to Academies' platform. Those pages (including blog content) are performing well
- Still hundreds of thousands of webpages on the old TRB web platform
- New platform = higher return rates, time spent on site, more pages per session, and much lower bounce rate
- Working with Academies' Communications on more comprehensive TRB web strategy

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Meeting people where they are

- **Webinars:** Benefit to industry, Performing very well, Undertake a review to improve as needed
- **Podcast:** Benefit for Volunteers, Build into part of an Academies podcast network
- **Videos:** Tell stories that grow TRB's audience, Explore doing more videos
- **Media Coverage:** 1,200 media hits was down about 30% from 2020
- **Social Media:** Making growth that equates to new, diverse audiences comparably to how *TRB Weekly* is growing our core audience
 - LinkedIn = 26% growth in past year
 - Twitter = 4% growth
 - Facebook = 4% growth
- **NEXT?: AUDIENCE, AUDIENCE, AUDIENCE!!!**

➔


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Agenda Item 30

Status Report to Executive Committee TRB Cooperative Research Programs (CRP) January 2022



October 15, 2021. The TCRP Oversight and Project Selection Commission (TOPS) holds the last meeting at the J. Erik Jonsson Center in Woods Hole.

CRP Staff Changes 2021

Retirements:

Ray Derr
Bill Rogers
Ed Harrigan
Andy Lemer
Larry Goldstein
Eileen Delaney

New Staff Members:

Ahmad Abu-Hawash, NCHRP
Roberto Barcena, NCHRP
Jordan Christensen, ACRP
Zuxuan Deng, NCHRP
Heather DiAngeles, NCHRP
Leslie Harwood, NCHRP
Chris McKenney, NCHRP
Richard Retting, NCHRP/BTSCR
Trey Wadsworth, NCHRP
Jennifer Weeks, NCHRP

Promotions:

Waseem Dekelbab, NCHRP Associate Program Manager
Natalie Barnes, Director of Publications

2021 CRP Highlights

National Cooperative Highway Research Program

ANNOUNCEMENTS



Propose New Topics for the FY 2023 NCHRP Synthesis Program

26 October 2021

Due by February 17, 2022

You are invited to propose a new NCHRP Synthesis topic. Upload your synthesis topic statement in a Word document to the [NCHRP Synthesis Topic Submission Portal](#) by February 17, 2022.

An outline to guide you in creating your synthesis topic statement is available here: [Synthesis Topic Outline](#).

New topics will be selected in May 2022 and will be posted on this website.

For more information, visit [NCHRP Synthesis Program](#).



NCHRP Solicitation for Panel Nominations

10 August 2021

NCHRP is soliciting panel members for various NCHRP projects. Please identify or nominate qualified individuals online, through [this link](#). We encourage the nomination of members of historically underrepresented groups, including women, young professionals (age 35 and younger), and members of minority groups.

Panels for new projects are scheduled to meet beginning in August through October. In many cases, three meetings are held in the life of a project, and these normally occur in Washington, D.C., but **this year—given uncertainty about or inability to travel—panel meetings may be held virtually through the end of 2021.**

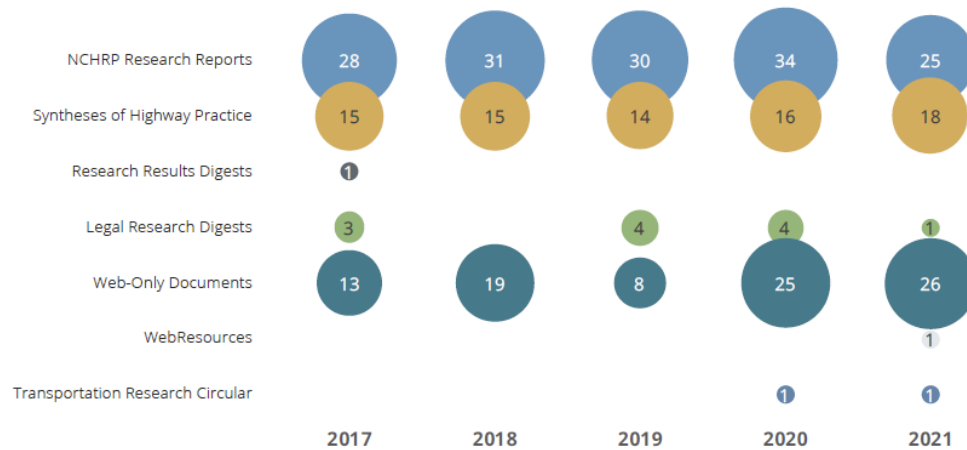
[Learn more](#) about the roles of NCHRP panel members and liaisons.

[Nominate Panel Members](#)

Research Products

Dissemination of research findings to practitioners is a primary objective of the entire NCHRP research process. Publication of the final report or other deliverables is a key means of dissemination. NCHRP research findings are published in several numbered series, which are listed in Table 1 of this Annual Report. In CY 2021, NCHRP produced 72 research products, and quantities for these series published over the past 5 years are shown in Exhibit 2.

Exhibit 2. NCHRP Research Products Produced, CY 2017 through CY 2021



Panel Members

NCHRP continues to engage panel members drawn from all walks of professional life, with heavy dependence on practitioners from AASHTO member departments. Exhibit 4 provides a breakdown of the affiliation of new NCHRP panel members since FY 2018.

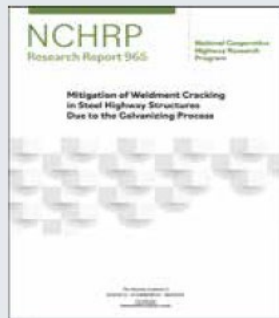
Exhibit 4. Affiliations of New Panel Members, FY 2018 through FY 2022

Affiliation	2018	2019	2020	2021	2022
State agencies	397	351	344	227	291
Federal agencies	9	3	8	2	89
Local agencies, transit agencies, MPOs	41	35	9	-	17
Educational institutions	87	63	63	46	64
Industry, consultants, associations	193	84	104	62	117
Other	2	1	15	3	13
All	729	537	543	340	591*

* as of November 30, 2021.

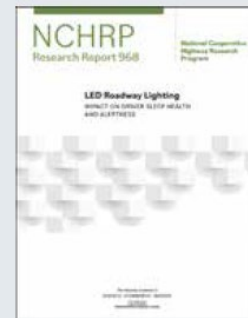
RESEARCH SHOWCASE

Mitigation of Weldment Cracking in Steel Highway Structures Due to the Galvanizing Process



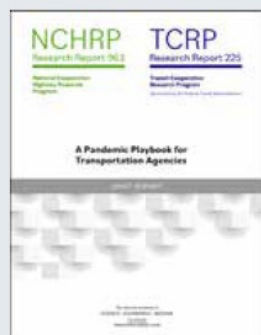
RESEARCH SHOWCASE

Determining the Impact of LED Roadway Lighting on Driver Sleep Health and Alertness



RESEARCH SHOWCASE

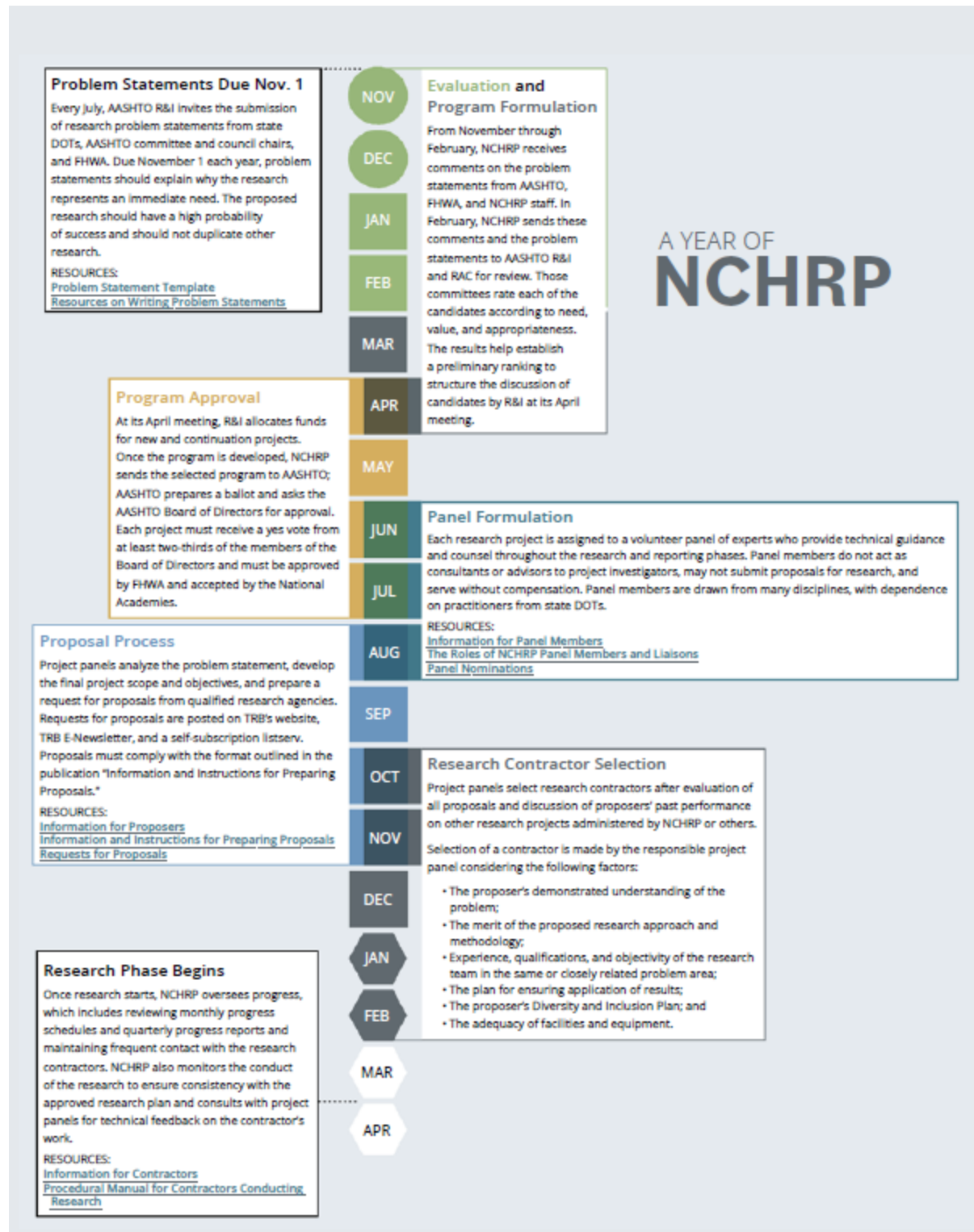
Improving Transportation Agency Responses to a Pandemic



RESEARCH SHOWCASE

A Tool and Guide to Aid in Identifying Suggested Posted Speed Limits





Transit Cooperative Research Program

In FY 2021, TCRP is on schedule to produce 25 publications, including 17 research reports, 4 syntheses, 2 legal research digest, 1 Research Results Digest and one web- only document bringing the total to more than 745 publications since the inception of the program. These publications are all available at <http://www.trb.org/Publications/PubsTCRPPublications.aspx>.

The following TCRP publications of particular interest were completed during the year.

Policy and Planning

TCRP Research Report 223 provides a guidebook to help communities improve transportation to health care and a research plan to address the continuing need to understand how community partnerships between the health-care and transportation sectors develop and can be encouraged. The guidebook provides useful strategies and resources for three important audiences—health care, transportation, and other stakeholders—to build effective relationships to improve customer-focused mobility services to health-care services.

TCRP Research Report 226: An Update on Public Transportation’s Impacts on Greenhouse Gas Emissions updates aspects of previous TCRP research on public transportation’s role in reducing greenhouse gas (GHG) emissions and supporting sustainability. This report provides useful information that is presented in clear, easy-to-understand language amply supported by exhibits and graphics.

Emergency Response

NCHRP Research Report 963/TCRP Research Report 225: A Pandemic Playbook for Transportation Agencies (Playbook) is designed as a practical guide for managing a transportation agency’s response to a pandemic. It draws on domestic and international research and interviews with key U.S. transportation leaders to provide questions and plays for state departments of transportation (DOTs) and transit agencies to consider. The transportation leaders interviewed during the COVID-19 pandemic for this

Administration

The objective of this synthesis was to understand how transit agencies manage, store, analyze, and govern the data they collect. The study focused on how transit agencies use data governance and processes to transform service data into information and insights. TCRP Synthesis 153 will assist transit agencies that want to develop and/or adopt a data-driven culture. A literature review was conducted, and detailed survey responses of data-gathering practices of 28 transit agencies were collected. An analysis of the state of the practice emphasizing lessons learned, current practices, challenges, and gaps in information is provided. Case examples from a variety of agencies were also developed.

Operations

TCRP Synthesis 155: Intelligent Transportation Systems in Headway-Based Bus Service synthesizes the current state of the practice of headway-based service operations and focuses on the proactive use of intelligent transportation systems technologies to optimize these services. A literature review was conducted, along with gathering detailed survey responses of practices from 16 transit agencies.

TCRP Research in Action Case Studies



Understanding Direct-Fixation Track Design Requirements and Challenges

The Problem

THE WAVE OF RETIREMENTS underway across the transit industry poses challenges for younger employees who do not possess decades of institutional knowledge to help guide decision making. At the Chicago Transit Authority (CTA), for example, many civil engineers have been on the job for a dozen years or less. While CTA is very supportive of continuing education, positions often can only be filled once the opening is vacant, reducing the opportunities new civil engineers have for institutional knowledge transfer. As a result, there are "gaps in our knowledge" that only hard, historical data can fill when mentoring is unavailable, says Matthew T. Gibbs, Civil Engineer IV with CTA. This is especially important with respect to assessing the condition of the agency's tracks and related components as well as designing specifications for new construction.



Baseline Data Provides Context for System Performance

CTA IS AMONG THE transit agencies interviewed for TCRP Report 71: Track-Related Research Volume 4: Direct-Fixation Track Design Specifications, Research and Related Material. Although the report was issued in 2005, it

continues to serve as a valuable source of independently verified knowledge for CTA and other rail transit operators. Gibbs notes the importance of "learning about the past so you can improve and not make the same mistakes" with respect to direct-fixation (DF) track system construction.

The two-part report provides specific, objective guidance on the design and construction of DF track systems. The first part



Managing Bus Passenger No-Show Policies in Rural Kansas

The Problem

THE FLINT HILLS AREA Transportation Agency (a la Bus) operates rural bus services and a small urban service in the Manhattan, Junction City, and Fort Riley County area in northeast Kansas. In pre-Covid times, the agency served about 300,000 riders annually, with 70 percent of operations along fixed routes and 30 percent for demand response. In the mid-2000s, as ridership grew, tips to work overtook time dial tips as the primary reason customers used the service. Concurrently, passenger no-shows and cancellations rose, representing roughly 25 percent of all trip bookings in 2006—as many as 30 to 40 rides on a given day.



need, which tied up buses and drivers who could not respond to legitimate on-demand requests for service. As Smith put it, "that wasn't acceptable."

At the time, a la Bus allowed unlimited passenger subscriptions, that is, customers could book recurring inbound and outbound trips and schedule those trips a year or more in advance. Anne Smith, a la Bus's executive director, was the dispatcher at the time. She experienced first-hand the problems arising from customers reserving tips they did not

At the time, the options for addressing the problem, including wholesale suspension of riders, were not palatable and such drastic measures did not comply with the Americans with Disabilities Act (ADA). Moreover, the technology was not yet in place for a la Bus's two-person staff to track and manage repeat no-show passengers.

Precise Definitions Inform Best Practices

SEEKING ANSWERS, SMITH found TCRP Synthesis 60, Practices in No-Show and Late Cancellation Policies for ADA Paratransit. The report documents current and innovative practices among U.S. transit agencies in the development and implementation of passenger no-show and late cancellation policies for paratransit programs. The report's authors completed 134 surveys with transit agencies and consulted with FTA



Developing a Precision-Driven Asset Management Program

Bringing Asset Managers Together

THE SANTA CLARA VALLEY TRANSPORTATION AUTHORITY (VTA) operates over 400 buses, 42 miles of light rail, and paratransit service in the areas in and around San Jose, California's Silicon Valley. VTA also a funding partner in the area's regional rail services (ACE and Caltrain). VTA currently faces a more than \$400 million state-of-good-repair (SGR) backlog. The agency's formal efforts to institute a blended asset-management program—combining policies that already work well with new approaches—has been five years in the making and is ongoing.



Bruce Abanadillo, VTA's Principal Transportation Planner and Program Manager for Transportation Asset Management, has spearheaded the effort by serving as a managing liaison between the executive team and all of the divisions and consultants involved in the process. One of the tools Abanadillo has relied on to track on effective asset management program is TCRP Research Report 198, The Relationship Between Transit Asset Condition and Service Quality. The report offers detailed guidance to transit decisionmakers on how asset condition and transit service quality relate in terms of investment prioritization. Specifically, the report provides a quantitative method

in the form of detailed worksheets for characterizing service quality and showing how this quantitative measure varies with changes in asset condition. Implementing these quantitative methods has required a focus on change management principles and obtaining concurrence among the asset creators, asset owners, and maintenance personnel. For example, the original asset management work group formed at VTA was offended by seven people, including just one representative from operations who was out-numbered by outside consultants and staff from GIS and construction. Abanadillo changed the group's makeup to ensure that it had "the asset owners in the

room" to avoid duplicative efforts and coordinate more efficient practices. Today, the work group includes more than 26 members, the majority of them from operations (who also comprise three-quarters of the organization's staff). Abanadillo acknowledges that overcoming turf battles has been a big part of the challenge.

TCRP Report 198 is clear about the need to address organizational silos that may inhibit best practices in asset management. The report states that "[d]espite the fact that asset maintenance and operations are inextricably linked, in many transit agencies the units with responsibility for these areas seem to view themselves in opposition to each other given the need

Airport Cooperative Research Program



ACRP Research Report 226: Planning and Design of Airport Terminal Restrooms and Ancillary Spaces.

This report provides a thoughtful, step-by-step process to help airport industry practitioners plan, design, and implement terminal restroom and other ancillary amenity projects. It is an updated and expanded version of *ACRP Report 130: Guidebook for Airport Terminal Restroom Planning and Design* and reflects the latest thinking on this quickly evolving topic.



ACRP Research Report 229: Airport Collaborative Decision Making (ACDM) to Manage Adverse Conditions.

Airport collaborative decision making (ACDM) is a process in which the stakeholders of operations share information to improve policies, planning, real-time coordination, and decisions regarding operations. This report proposes a step-by-step approach to implementing ACDM, supported by templates and a workbook, to involve stakeholders, define common goals and objectives, appoint leadership for the initiative, tailor a vision that serves the local needs, and develop a roadmap of successful projects delivering practical improvements.



ACRP Synthesis 115: Practices in Airport Emergency Plans

An airport emergency plan (AEP) is meant to support airports in defining roles and responsibilities of stakeholders during emergencies, identifying specific threats that could affect airports, and establishing communication protocols for the airport community. *ACRP Synthesis 115: Practices in Airport Emergency Plans* gathers relevant data specific to AEP practices that can effectively be applied to other airports, including general aviation airports, whether required to maintain an AEP or not.



ACRP Research Report 233: Airport Biometrics: A Primer

Biometrics is one of the most powerful but misunderstood technologies used at airports today. The ability to increase the speed of individual processes, as well as offer a touch-free experience throughout an entire journey is a revolution that is decades in the making. *ACRP Research Report 233: Airport Biometrics: A Primer* is designed to help aviation stakeholders, especially airport operators, to understand the range of issues and choices available when considering, and deciding on, a scalable and effective set of solutions using biometrics.



ACRP Research Report 231: Evaluating the Traveler's Perspective to Improve the Airport Customer Experience

Today's airports have become much more than transportation hubs. They are increasingly becoming places where people dine, shop, relax, work, and interact. This expanded role comes with challenges as airports try to understand and address the needs of their diverse customer base. *ACRP Research Report 231: Evaluating the Traveler's Perspective to Improve the Airport Customer Experience* presents information and tools to better understand the traveler's perspective of the airport journey and how airports might respond to the evolving needs of their travelers.

ACRP Research in Action 2021



Establishing Health Protocols During the COVID-19 Pandemic at Laredo International Airport

When the COVID-19 pandemic struck, Laredo International Airport (LRD) in Laredo, TX needed to update its communicable disease response plan to include more detailed guidance for operating under the unprecedented conditions of a global pandemic. In April 2020, the LRD director attended the ACRP webinar *Helping Airports Plan for and Respond to Communicable Disease Threats*, which gave the airport the tools to develop a strong COVID-19 response plan, resume operations, and keep customers and employees healthy and safe.

Image credit: Elsy Borgstedte, Laredo International Airport.

Implementing COVID-19 Safety Measures at Airports

During the COVID-19 pandemic, the Aeroplex/Aerolease Group—which owns and operates airport facilities in Van Nuys, CA and Long Beach, CA and manages facilities in Santa Monica, CA—struggled to find concrete guidance and best practices to ensure the safest possible conditions for their customers once California allowed nonessential travel again. Aeroplex staff used *ACRP Report 91: Infectious Disease Mitigation in Airports and on Aircraft* to deploy best practices for cleaning and disinfecting commonly used areas and surfaces within airports.



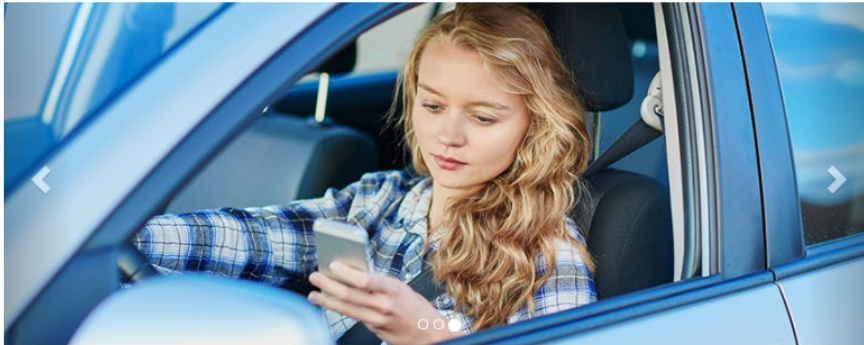
Image credit: iStock images.

AMBASSADORS

The ACRP Ambassador program comprises a select group of experienced airport professionals that help amplify the program's reach. Ambassadors volunteer to attend conferences and industry events across the country to help staff exhibit booths and present ACRP research to encourage its implementation, engage fellow practitioners in ACRP's research process, and share information and key messages about the program.

In 2021, Ambassadors resumed travelling to in-person conferences to interact with their peers face-to-face. Ambassadors attended several industry events in 2021, including the North Carolina Airports Association Annual Conference in Pinehurst, NC, the 4 States Airport Conference in Kansas City, MO, and the Mississippi Airports Association Annual Conference in Biloxi, MS. Since the initiative's inception in 2012, Ambassadors have engaged thousands of practitioners at more than 200 events across the United States and Canada.

BEHAVIORAL TRAFFIC SAFETY COOPERATIVE RESEARCH PROGRAM



About BTSCR
Read more about the Behavioral Traffic Safety Cooperative Research Program.

Projects
View all active projects of the BTSCR.

Getting Involved
Information for Project Panel Volunteers, Proposers, and Contractors.

Publications
BTSCR publications contain the findings of individual research projects.

Search by keyword...

Search: www.trb.org OR the TRID Database

New projects selected in 2021

BTS-20	BTSCR BTS-20: Underreporting of Impaired and Distracted Driving Behaviors in Motor Vehicle Crashes
BTS-21	BTSCR BTS-21: Equity in Pedestrian and Bicyclist Mobility, Safety, and Health: The Impact of Racial Bias
BTS-22	BTSCR BTS-22: Effectiveness of Different Forms of Innovative Traffic Safety Messaging
BTS-23	BTSCR BTS-23: The Impacts of Experience on Teen Driving: Evidence from the Naturalistic Driving Study

New CRP Projects FY2022

CRP Project Number	Name	Contract Amount
Airport Cooperative Research Program		
01-50	ACRP 01-50: Guidance for Improved Data Privacy Management for Airports	\$350,000
01-51	ACRP 01-51: Enhancing DBE and ACDBE Participations at Airports	\$400,000
01-52	ACRP 01-52: Championing the Airport System--Facing Challenges to the Paradigm	\$692,000
02-100	ACRP 02-100: Carbon Removal and Reduction to Support Airport Net-Zero Goals: A Playbook and Tools	\$600,000
02-101	ACRP 02-101: Onboarding Employees to Airport Environmental Issues	\$400,000
02-102	ACRP 02-102: Encouraging Community Support for Airports and Air Travel	\$400,000
02-97	ACRP 02-97: Update to ACRP Environmental Reports 11, 43, 147 & 160	\$650,000
02-98	ACRP 02-98: Airport Energy Resiliency	\$1,200,000
02-99	ACRP 02-99: Use of Equity and Environmental Justice Data to Support Airport Decision-Making	\$400,000
03-65	ACRP 03-65: ACRP Policy and Planning Product Updates	\$500,000
03-66	ACRP 03-66: Digital Twins for Airports	\$350,000
03-67	ACRP 03-67: Peer-to-Peer Car Sharing Challenges and Opportunities at Airports	\$400,000
03-68	ACRP 03-68: Integrated Contingency Planning for Small and Non-Hub Airports	\$400,000
05-03	ACRP 05-03: Mitigating and Responding to Airport Cybersecurity Events	\$600,000
07-19	ACRP 07-19: Update to ACRP Report 25: Airport Passenger Terminal Planning and Design	\$500,000
09-22	ACRP 09-22: Cost-Effective Training for Airfield Electricians at General Aviation and Small Airports	\$300,000
10-33	ACRP 10-33: Incorporating Emerging Ground Access Technologies at Airports	\$500,000
10-34	ACRP 10-34: Airport Microgrid Toolkit Upgrade to WebResource	\$100,000

11-02/Task 43	ACRP 11-02/Task 43: Quick Response: Successful Community Integration of Advanced Air Mobility	\$100,000
National Cooperative Highway Research Program		
01-57B	NCHRP 01-57B: Validating Proposed Definitions for Comparable Pavement Cracking Data	\$500,000
03-142	NCHRP 03-142: Evaluating the Impacts of Real-Time Warnings and Variable Speed Limits on Safety and Travel Reliability during Weather Events	\$400,000
03-143	NCHRP 03-143: Warrants for a Pedestrian Traffic Control Signal and for Other Pedestrian Traffic Control Devices	\$600,000
03-144	NCHRP 03-144: Leveraging Existing Traffic Signal Assets to Obtain Quality Traffic Counts	\$450,000
07-32	NCHRP 07-32: Future-Proofing Automatic Traffic Signal Performance Measurement Systems for Scalability, Transferability, and CAV Integration.	\$500,000
08-150	NCHRP 08-150: Valuation of Transportation Equity in Active Transportation and Safety Investments	\$650,000
08-151	NCHRP 08-151: Building Risk-Management Momentum in Agencies	\$350,000
08-152	NCHRP 08-152: Strategies for Advancing Equity in Transportation Planning by Increasing Diversity, Equity, and Inclusiveness in The Transportation Planning Profession	\$350,000
08-153	NCHRP 08-153: Guidance on Improving Truck Traffic Estimates in "Design Traffic" Forecasts	\$425,000
08-154	NCHRP 08-154: Guidance for Agencies to Incorporate Uncertainty into Long-Range Transportation Planning	\$600,000
08-155	NCHRP 08-155: Researching and Responding to Racial Disparities in the Construction of Expressways	\$400,000
08-156	NCHRP 08-156: Planning for Innovative and Emerging Mobility Futures at Intermodal Passenger Facilities	\$200,000
08-157	NCHRP 08-157: Best Practices for Data Fusion of Probe and Point Detector Data	\$200,000
08-158	NCHRP 08-158: Communicating the Value, Interactions, and Impacts of Freight to Stakeholders	\$350,000
08-159	NCHRP 08-159: Understand how accessibility to employment, health care, education, and other vital needs varies for different population groups in different settings, and methods for effectively assessing mobility and accessibility options	\$500,000
08-160	NCHRP 08-160: Understand the role of transportation infrastructure investment in gentrification and displacement and identify effective policies and strategies to address these effects.	\$400,000

08-161	NCHRP 08-161: Identify emerging approaches for public engagement to meaningfully involve minorities, low-income, and other vulnerable populations.	\$500,000
08-162	NCHRP 08-162: Guidance for Improving Outcomes and Implementing Equitable Transportation Decision-making	\$750,000
09-68	NCHRP 09-68: Considering Binder Availability of Recycled Asphalt Materials	\$500,000
09-69	NCHRP 09-69: Verifying Material Quantities at Asphalt Mix Plants	\$400,000
10-111	NCHRP 10-111: Evaluation and Selection of 3D Model Viewers for Construction Inspection	\$400,000
10-112	NCHRP 10-112: Guidelines for digital technologies and systems for remote construction inspection for highway infrastructure projects	\$500,000
10-113	NCHRP 10-113: Design Review and 3D Model Quality Management for Model-based Design and Construction	\$450,000
10-114	NCHRP 10-114: Developing Performance and Safety Specifications for Rejuvenating Seals	\$300,000
12-124	NCHRP 12-124: Improved Demand Predictions on Shear Studs for Composite Steel Bridge Design	\$900,000
14-47	NCHRP 14-47: Tools and Technology for Roadside Landscape Asset Management	\$350,000
14-48	NCHRP 14-48: Construction Guide Specifications for Pavement Treatments - Sand Seals and Ultra-thin Bonded Surface Treatments	\$200,000
15-81	NCHRP 15-81: Guideline for Depicting Existing and Proposed Utility Facilities in Design Plans	\$550,000
17-102	NCHRP 17-102: Safety Performance for Active Transportation Modes using Exposure Models	\$700,000
17-103	NCHRP 17-103: Developing multidisciplinary safety strategies from understanding roadway fatality trends during the new millennium	\$500,000
17-104	NCHRP 17-104: Enhancement of Roadside Design Features Safety Performance Models for the Highway Safety Manual	\$500,000
17-105	NCHRP 17-105: MASH Crashworthiness of Luminaire Poles	\$0
17-106	NCHRP 17-106: Motorist behavior and safety impacts on bicyclists from centerline and shoulder rumble strips on high-speed two-lane highways	\$400,000
17-107	NCHRP 17-107: Work Zone Intrusion Frequency and Characteristics	\$600,000
17-108	NCHRP 17-108: Develop Crash Modification Factors (CMFs) for Alternative Intersections, Including Displaced Left-Turn (DLT), Median U-Turn (MUT), and Restricted Crossing U-Turn (RCUT).	\$600,000

17-109	NCHRP 17-109: Crash Modification Factors (CMFs) for Automated Traffic Signal Performance Measures (ATSPMs)	\$400,000
19-19	NCHRP 19-19: Sustaining a Zero Fare Public Transportation Program in a Post COVID-19 World	\$300,000
19-20	NCHRP 19-20: Interdependence of Federal, State, and Local Transportation Funding and Ownership	\$450,000
20-05/Topic 53-01	NCHRP 20-05/Topic 53-01: DOT Practices to Promote Equity in Transportation Funding	\$45,000
20-05/Topic 53-02	NCHRP 20-05/Topic 53-02: Practices to Motivate Safe Behaviors with Highway Construction and Maintenance Crews	\$45,000
20-05/Topic 53-03	NCHRP 20-05/Topic 53-03: Practices leveraging social media data for emergency preparedness and response	\$45,000
20-05/Topic 53-04	NCHRP 20-05/Topic 53-04: Practices for the Collection, Use, and Management of Utility As-Built Information	\$45,000
20-05/Topic 53-05	NCHRP 20-05/Topic 53-05: Practices for Bioretention Stormwater Control Measures	\$45,000
20-05/Topic 53-06	NCHRP 20-05/Topic 53-06: Local Calibration of LRFD Geotechnical Resistance Factors	\$45,000
20-05/Topic 53-07	NCHRP 20-05/Topic 53-07: Curing Practices for Concrete Pavement	\$45,000
20-05/Topic 53-08	NCHRP 20-05/Topic 53-08: DOT Strategies and Programs For Electric Vehicle Charging	\$45,000
20-05/Topic 53-09	NCHRP 20-05/Topic 53-09: Use of Unmanned Aerial Systems for Highway Stormwater Inspections	\$45,000
20-05/Topic 53-10	NCHRP 20-05/Topic 53-10: Practices for Contrast Pavement Markings	\$45,000
20-05/Topic 53-11	NCHRP 20-05/Topic 53-11: Resilient Design with Distributed Rainfall-Runoff Modeling	\$45,000
20-05/Topic 53-12	NCHRP 20-05/Topic 53-12: Practices for Adding Bicycle and Pedestrians Access on Existing Vehicle Bridges	\$45,000
20-05/Topic 53-13	NCHRP 20-05/Topic 53-13: Practices for Steel Bridge Fabrication and Erection Tolerances	\$45,000
20-05/Topic 53-14	NCHRP 20-05/Topic 53-14: Use of Probe Data for Freight Planning and Operations	\$45,000
20-05/Topic 53-15	NCHRP 20-05/Topic 53-15: Coordination of Upgrades and Installation of New Software Required by Traffic Operations and Maintenance	\$45,000
20-05/Topic 53-16	NCHRP 20-05/Topic 53-16: Critical Findings for Tunnel Functional Systems	\$45,000
20-05/Topic 53-17	NCHRP 20-05/Topic 53-17: Integrating Freight and Active Transportation into Policies, Programs, Plans, and Project Development	\$45,000

20-05/Topic 53-18	NCHRP 20-05/Topic 53-18: Moisture Measurement for Foundations and Slopes	\$45,000
20-05/Topic 53-19	NCHRP 20-05/Topic 53-19: State DOT Product Evaluation Processes	\$45,000
20-129	NCHRP 20-129: Best Management Practices to Address Encampments on State Highway Rights of Way	\$350,000
20-24(139)	NCHRP 20-24(139): Into the 2020s: A Peer Exchange Series for State DOT CEOs	\$900,000
20-24(141)	NCHRP 20-24(141): The Art of Decision-Making	\$300,000
22-52	NCHRP 22-52: Development of a Crashworthy Tangent End Treatment for Low Speed Curbed Roadways	\$750,000
22-53	NCHRP 22-53: Development of Guidance for Enhanced Delineation of Barriers and other Roadside Safety Hardware, Slopes, and Hazards	\$450,000
22-54	NCHRP 22-54: MASH Hardware Evaluation with New Proposed Test Vehicles	\$1,000,000
22-55	NCHRP 22-55: Develop, fabricate, and test surrogate bogey vehicles and pendulum masses with noses for evaluating MASH breakaway performance of luminaire poles, signs, and work zone devices.	\$850,000
22-56	NCHRP 22-56: Development of Prefabricated Concrete Barrier Systems for Accelerated Bridge Construction	\$1,000,000
23-22	NCHRP 23-22: Increasing Competition on Projects Delivered by Alternative Methods by Defining and Assessing Contractual Risk Profiles	\$500,000
23-23	NCHRP 23-23: Data Governance Design and Implementation - Links Between Governance Approaches and Performance Effects in DOTs	\$350,000
23-24	NCHRP 23-24: Develop Methods to Allow Agencies to Incorporate Quantitative Risk Assessment at Project and Network Level	\$500,000
23-25	NCHRP 23-25: Interstate Information Sharing of State Truck Regulatory Requirements	\$400,000
23-26	NCHRP 23-26: Measuring Impacts and Performance of State DOT Resilience Efforts	\$300,000
23-27	NCHRP 23-27: Strategies to Strengthen Data Driven Decision-making	\$300,000
23-28	NCHRP 23-28: Changes to 4.9 Ghz Spectrum Access and Authorization – What You Need to Know	\$250,000
25-65	NCHRP 25-65: Successful Approaches in Preparing Convincing Section 106 Effect Determination	\$150,000

**Behavioral Traffic Safety Cooperative
Research Program**

BTS-20	BTSCRIP BTS-20: Underreporting of Impaired and Distracted Driving Behaviors in Motor Vehicle Crashes	\$450,000
BTS-21	BTSCRIP BTS-21: Equity in Pedestrian and Bicyclist Mobility, Safety, and Health: The Impact of Racial Bias	\$500,000
BTS-22	BTSCRIP BTS-22: Effectiveness of Different Forms of Innovative Traffic Safety Messaging	\$350,000
BTS-23	BTSCRIP BTS-23: The Impacts of Experience on Teen Driving: Evidence from the Naturalistic Driving Study	\$400,000

Transit Cooperative Research Program		
A-47	Transit Capacity and Quality of Service Manual, 4th Edition	\$400,000
A-48	Strategies to Mitigate and Reduce Assaults Occurring on Public Transit Vehicles and Property	\$250,000
B-50	Public Transportation Information Systems for Passengers who are Vision Disabled	\$350,000
D-22	Evaluating Frog Design to Minimize Noise and Vibration and Improve Life-Cycle Costs	\$300,000
E-14	Electric Bus Fire Prevention and Risk Management	\$350,000
H-61	Resilience and Emergency Response Planning for Zero-Emission Fleets	\$215,000
J-11/Task 43	Analysis of Public Transportation Health Impacts and Benefits	\$125,000
J-11/Task 44	Improving Access to Public Transit with Transit-Oriented Streets	\$125,000

CRP Publications since June 2021

Series and number	Title	Date
ACRP Legal Research Digest 43	Legal Considerations for Telecommunications at Airports	10/4/21
ACRP Research Report 220	Guidebook for Developing a Zero- or Low-Emissions Roadmap at Airports	8/31/21
ACRP Research Report 233	Airport Biometrics: A Primer	10/5/21

ACRP Research Report 234	Rapid Slab Repair and Replacement of Airfield Concrete Pavement	8/27/21
ACRP WebResource 10	Periodic Publication on Transformative Technologies at Airports	10/7/21
ACRP WebResource 2	Airport Passenger Terminal Design Library, 2020 Updates	11/4/21
NCHRP Legal Research Digest 84	Fix it, Sign it or Close it: State of Good Repair in an Era of Budget Constraints	7/28/21
NCHRP Research Report 876	Guidelines for Integrating Safety and Cost-Effectiveness into Resurfacing, Restoration, and Rehabilitation (3R) Projects	7/8/21
NCHRP Research Report 968	LED Roadway Lighting: Impact on Driver Sleep Health and Alertness	7/20/21
NCHRP Research Report 971	Revised Clear-Water and Live-Bed Contraction Scour Analysis	7/14/21
NCHRP Research Report 973	Long-Term Aging of Asphalt Mixtures for Performance Testing and Prediction: Phase III Results	11/10/21
NCHRP Research Report 974	Application of Crash Modification Factors for Access Management	11/9/21
NCHRP Research Report 975	Transportation System Resilience: Research Roadmap and White Papers	9/15/21
NCHRP Research Report 976	Resilience Primer for Transportation Executives	7/29/21
NCHRP Research Report 978	Initiating the Systems Engineering Process for Rural Connected Vehicle Corridors	10/22/21
NCHRP Research Report 980	Attracting, Retaining, and Developing the Transportation Workforce: Transportation Planners	11/29/21
NCHRP Research Report 982	Relationships Between the Fatigue Properties of Asphalt Binders and the Fatigue Performance of Asphalt Mixtures	8/13/21
NCHRP Research Report 985	Integrating Effective Transportation Performance, Risk, and Asset Management Practices	9/7/21

NCHRP Research Report 988	Rural Transportation Issues: Research Roadmap	9/23/21
NCHRP Research Report 991	Guidelines for the Development and Application of Crash Modification Factors	11/17/21
NCHRP Synthesis 565	Maintenance and Surface Preparation Activities Prior to Pavement Preservation Treatments	9/29/21
NCHRP Synthesis 566	Practices for Bridge Approach Systems	7/7/21
NCHRP Synthesis 567	State DOT Practices for Developing and Implementing TSMO Plans	7/27/21
NCHRP Synthesis 568	Portland Cement Concrete Pavement Joint Sealant Practices and Performance	7/12/21
NCHRP Synthesis 569	Practice and Performance of Cold In-Place Recycling and Cold Central Plant Recycling	8/25/21
NCHRP Synthesis 570	Practices for Closing Out Highway Projects from Substantial Completion to Final Payment	8/11/21
NCHRP Synthesis 572	Night and Weekend Movement of Oversize/Overweight Loads	8/23/21
NCHRP Synthesis 573	Practices for Integrated Flood Prediction and Response Systems	9/9/21
NCHRP Synthesis 574	Temporary Pavement Markings Placement and Removal Practices in Work Zones	10/3/21
NCHRP Synthesis 576	Practices for Project-Level Analyses for Air Quality	10/8/21
NCHRP Synthesis 577	Collaborative Practices for Performance-Based Asset Management Between State DOTs and MPOs	10/3/21
NCHRP Web-Only Document 244	Developing Guidelines for Integrating Safety and Cost-Effectiveness into Resurfacing, Restoration, and Rehabilitation (3R) Projects	7/9/21
NCHRP Web-Only Document 294	Revised Clear-Water and Live-Bed Contraction Scour Analysis Training Manual	7/16/21

NCHRP Web-Only Document 300	Guidance to Predict and Mitigate Dynamic Hydroplaning on Roadways	7/29/21
NCHRP Web-Only Document 302	Development of a Comprehensive Approach for Serious Traffic Crash Injury Measurement and Reporting Systems	8/13/21
NCHRP Web-Only Document 304	Criteria for Restoration of Longitudinal Barriers, Phase II	8/30/21
NCHRP Web-Only Document 305	Validation of a Performance-Based Mix Design Method for Porous Friction Courses	9/15/21
NCHRP Web-Only Document 306	Safety Prediction Methodology and Analysis Tool for Freeways and Interchanges	10/11/21
NCHRP Web-Only Document 307	Recommended Guidelines for the Selection of Test Levels 2 through 5 Bridge Railings	9/27/21
NCHRP Web-Only Document 309	Safety Performance of Part-Time Shoulder Use on Freeways	11/5/21
NCHRP Web-Only Document 309	Safety Performance of Part-Time Shoulder Use on Freeways	11/5/21
NCHRP Web-Only Document 310	Evaluation and Synthesis of Connected Vehicle Communication Technologies	10/13/21
NCHRP Web-Only Document 311	Improving the Efficiency and Consistency of Section 106 Compliance for State DOTs: Strategies for Project-Level Programmatic Agreements	10/22/21
NCHRP Web-Only Document 313	Selecting Ramp Design Speeds	11/24/21
NCHRP Web-Only Document 314	Updating the AASHTO LRFD Movable Highway Bridge Design Specifications	11/5/21
TCRP Legal Research Digest 56	Joint Development Agreements Using FTA Funds or FTA-Funded Assets	8/25/21
TCRP Legal Research Digest 57	Fix it, Sign it or Close it: State of Good Repair in an Era of Budget Constraints	7/28/21
TCRP Research Report 227	Prioritization of Public Transportation Investments: A Guide for Decision-Makers	9/24/21

TCRP Research Report 228	Resource Guide for Improving Diversity and Inclusion Programs for the Public Transportation Industry	7/2/21
TCRP Research Report 229	Assessing and Mitigating Electrical Fires on Transit Vehicles	7/30/21
TCRP Research Report 230	Transit and Micromobility	10/28/21
TCRP Research Report 231	Recent Decline in Public Transportation Ridership: Analysis, Causes, and Responses	8/30/21
TCRP Research Results Digest 115	Use of Agency Service Agreements in ADA Paratransit Delivery	8/24/21
Technical Activities Division Transportation Research Circular E-C273	TRB Centennial Circular: History and Future Perspectives on Foundation Design for Transportation Structures	7/9/21
Technical Activities Division Transportation Research Circular E-C274	Quality Assurance: Past, Present, and Future	9/15/21

CONSENSUS AND ADVISORY STUDIES DIVISION

Director, Thomas Menzies

The Consensus and Advisory Studies Division provides consensus advice to the federal government and the transportation community more broadly based upon the deliberations of special, ad hoc committees appointed by the chair of the National Research Council.

INFORMATION AND DISCUSSION ITEMS

Studies Completed since July 2021 Executive Committee Meeting with Briefs	Information
Studies Underway with Task Statements of New Studies	Information
Pending Studies and Studies in Infrastructure Investment and Jobs Act	Information
Critical Issues in Transportation 2023	Discussion (slides)

Consensus Studies, Completed Reports 2021

Special Report 343: Strengthening U.S. Coast Guard Oversight and Support of Recognized Organizations: The Case of the Alternative Compliance Program

This report assesses the effectiveness of the U.S. Coast Guard's oversight of recognized organizations (ROs) and its impact on compliance and on the safety of vessels inspected by these organizations. The report also provides recommendations on additional steps the Coast Guard should consider to ensure the effective oversight and performance of ROs in carrying out their delegated statutory certifications and services and to further compliance by vessel owners and operators

Special Report 342: Options for Improving the Safety of DUKW Type Amphibious Vessels

This report provides guidance to USCG on actions it could take that would increase safety on DUKW boats used for commercial passenger service. DUKWs are essentially military cargo trucks that float. Although tour operations that use the historic vessels from World War II have adapted the DUKWs to meet modern safety standards to the extent possible, some hazards of the original design remain. The report reviews design, engineering, and outfitting options to provide reserve buoyancy and prevent flooding, and it assesses the potential for additional restrictions on operating areas to provide a safer environment for waterborne tours. It also evaluates the advisability of wearing life jackets while on the water and covers methods for improving safety operations.

Special Report 341: Technical Feasibility of a Wheelchair Securement Concept for Airline Travel: A Preliminary Assessment

There appear to be, in this preliminary assessment, no formidable issues that present design and engineering challenges for installing in-cabin wheelchair securement systems in airplanes. While equipping enough airplanes with securement systems to provide meaningful levels of airline service would require substantial effort, the types of cabin modifications required to provide the needed space and structural support would likely be of moderate technical complexity for many individual airplanes. The report identifies and examines potential technical challenges to the development and implementation of an in-cabin wheelchair securement system.

Special Report 340: Investing in Transportation Resilience: A Framework for Informed Choices

Significant progress has been made over the last decade in integrating resilience criteria into transportation decision-making. A compelling case remains for investing in making transportation projects more resilient in the face of increasing and intensifying storms, floods, droughts, and other natural hazards that are combining with sea-level rise, new temperature and precipitation norms, and other effects from climate change. The report reviews current practices by transportation agencies for evaluating resilience and conducting investment analysis for the purpose of restoring and adding resilience. These practices require methods for measuring the resilience of the existing transportation system and for evaluating and prioritizing options to improve resilience by strengthening, adding redundancy to, and relocating vulnerable assets.

Special Report 339: Preparing for LNG by Rail Tank Car: A Review of a U.S. DOT Safety Research, Testing, and Analysis Initiative

Liquefied natural gas (LNG) has not been transported to any significant degree by freight railroads in the United States. When the Further Consolidated Appropriations Act of 2020 was enacted, it directed the Pipeline and Hazardous Materials Safety Administration (PHMSA) to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine (NASEM) to convene a committee of independent experts to study the safe transportation of LNG by rail tank car. The report finds that PHMSA's task force presented a comprehensive plan of work that built on longstanding safety programs, as well as surfacing opportunities for future research. The findings in the report will serve as a good base for the second phase of TRB's phased continued study of the issue.

Special Report 338: Modernizing the U.S. Offshore Oil and Gas Inspection Program for Increased Agility and Safety Vigilance

The Bureau of Safety and Environmental Enforcement (BSEE), in seeking to augment and improve its offshore oil and gas inspection program, should focus less on inspecting all oil platforms and become more outcome-based by focusing on the riskiest entities. These are among the findings of the report. Given the expectation that it inspect each offshore facility at least once per year, BSEE faces many challenges as it seeks to fulfill its stated mission "to promote safety, protect the environment, and conserve resources through vigorous regulatory oversight." Although BSEE has taken a number of initiatives to meet these challenges, it faces many constraints and will need to make many strategic-level choices to innovate and evolve its inspection program to keep pace with the continually changing offshore energy landscape.

STATUS OF CONSENSUS STUDIES AND OTHER ACTIVITIES UNDERWAY

(Expenditures through November 2021)

<u>PROJECT</u>	<u>SPONSOR</u>	<u>FUNDED AMOUNT</u>	<u>SPENT</u>	<u>SCHEDULE BEGAN</u>	<u>COMPLETION</u>	<u>COMMENT</u>
1. Research and Technology Coordinating Committee	FHWA	\$200,000 (per year)	20%	10/2003	9/2023	Last meeting 12/2021; Next meeting 5/2022
2. Long-term Infrastructure Performance	FHWA	\$320,000 annually for 5 years (\$1.6 million total)	50% of annual	7/2017	6/2022	Last meeting 11/2021; Next meeting TBD
3. Transit Research Analysis Committee	FTA	\$200,000 per year	25%	9/2003	7/2022	Next meeting pending FTA guidance
4. AV/Shared Mobility Forum	multiple	\$650,000	65%	1/2018	continuing	Webinar planning
5. Emerging Trends Symposia	FHWA	\$250,000	65%	9/2020	8/2022	Event held 12/2021
6. Emerging Aviation Safety Trends (first report)	FAA	\$560,000	20%	7/2021	6/2022	Meetings underway
7. Gulf of Mexico Offshore Energy Production Safety Risks	Gulf Research Program	\$962,000	60%	1/2020	5/2022	Meetings underway

STATUS OF CONSENSUS STUDIES AND OTHER ACTIVITIES UNDERWAY

(Expenditures through November 2021)

8. Automatic Shutoff Valves for Pipelines	PHMSA	\$720,000	15%	8/2021	3/2023	Meetings underway
9. Safe Transportation of LNG by Rail	PHMSA	\$1,000,000	60%	4/2020	8/2022	Meetings underway
10. Repurposing Plastics Waste in Infrastructure	USDOT/EPA	\$1,600,000	5%	9/2021	3/2023	Committee formation
13. Future Authorities for Coast Guard	USCG	\$780,000	5%	9/2021	3/2023	Committee formation
14. Transportation Equity Metrics	USDOT/TRB	\$1,000,000	5%	9/2021	9/2023	Meetings under way (awaiting USDOT RFP (\$500,000 match of TRB funds)

Task Statements of Five Consensus Studies Initiated Since July Executive Committee Meeting

Emerging Trends in Aviation Safety

In response to a request from Congress, this project will “identify, categorize, and analyze emerging safety trends in air transportation.” The committee will review data and analyses of all relevant sources of information, such as operational data being used by the Federal Aviation Administration (FAA) and the air transport industry to monitor for potential safety concerns; government and industry voluntary aviation safety reporting systems; FAA's annual safety culture assessment; and other sources the committee deems appropriate, including National Transportation Safety Board accident investigations; FAA investigations of accidents and incidents; air carrier incidents and safety indicators; and international investigations of accidents and incidents, including information from foreign authorities and the International Civil Aviation Organization. The committee will assess whether these available sources of information are being analyzed in ways that can help identify emerging safety risks as the aviation system evolves and whether other information should be collected and analyzed for this purpose, such as data on accident precursors. The committee may engage in its own empirical analyses of databases.

The project will focus primarily on commercial air transportation sector, but will also include other current and prospective users of the national airspace system that could pose risks to commercial aviation. The committee will draw on the results of FAA's annual internal safety culture assessments and also advise the agency on data and approaches for assessing safety culture to assure that FAA is identifying emerging risks to commercial aviation and sharing that information throughout the agency and with the public.

The project will produce an initial report in mid-2022, biennial reports through 2030, and a final report in 2031. It is expected that the committee's first report will include a high-level assessment of the efficacy of domestic public and private sources of data and information for identifying and assessing emerging risks and advise on data gaps that need filling. The first report is also expected to include the approach the committee intends to pursue in subsequent biennial reports to assess the robustness of domestic and international data sources and processes for analyzing them for the purpose of identifying emerging risks to commercial air transportation. In addition to documenting its study findings in each report, the committee may offer advice to Congress, FAA, industry, and others on options for improving means for identifying, monitoring, understanding, and addressing emerging aviation safety risks, including supplementing, improving, and harmonizing existing databases, reporting systems, and analysis methods.

New Coast Guard Authorities

An ad hoc committee of the National Academies of Sciences, Engineering, and Medicine will examine emerging issues that are likely to require Coast Guard oversight, regulation, or other actions over the next decade and consider whether the Service's existing authorities are appropriate and sufficient for these purposes. To do so, the committee should survey potential developments that could affect the

Coast Guard's eleven missions, including changes in technological capabilities, cybersecurity risks, climate and environmental conditions, and geopolitical factors that could impact the use of the navigable waterways, the types and levels of risk associated with commercial and recreational maritime activities, and how and where the Coast Guard needs to operate as a Service and military force.

Based on this survey and informed by consultations with the Coast Guard and other experts and interested parties, the study committee will identify those issues that it believes are likely to have the greatest relevance to and impact on the Coast Guard's missions and review the Service's existing authorities and related abilities (such as force levels, asset mix, and training) to address them. Where it finds potential limitations and shortcomings in these authorities and related abilities, the committee will consider any adjustments or additions to them that can be made during the near- to longer-terms. The committee will make recommendations to Congress and the Coast Guard as appropriate.

Criteria for Installing Automatic and Remote-Controlled Shutoff Valves on Existing Gas and Hazardous Liquid Transmission Pipelines

The committee will study current and potential methodologies and standards, including regulatory criteria, for deciding when an automatic shutoff valve (ASV), remote-controlled valve (RCV), or other equivalent Emergency Flow Restricting Device (EFRD) should be installed on existing gas transmission pipelines and on existing hazardous liquid pipelines in high-consequence areas, as defined in federal regulation.

The study will examine current federal regulatory requirements governing decisions about where and when to install these devices on existing pipelines, including regulatory criteria on factors to be considered and methodologies to be used for making such decisions. Consideration will be given to the treatment of public safety and environmental risks by these methodologies and the treatment of economic, technical, and operational feasibility. The study will identify and assess other potential methodologies for making such installation decisions on existing pipelines. In doing so, the committee will consider ASV, RCV, and EFRD technological capabilities; statutory and procedural limits on federal regulatory authority to require their use; relevant recommendations by the National Transportation Safety Board; and current and proposed regulatory criteria for the installation of ASVs, RCVs, and EFRDs on newly constructed and fully replaced pipelines. The study will take into account issues associated with reliance on manual control valves, including human factors and accessibility concerns. As appropriate, recommendations will be made regarding regulatory or statutory changes that might be considered at the federal and state levels.

Data, Metrics, and Analytic Methods for Assessing Equity Impacts of Surface Transportation Funding Programs

The study committee will identify and advise on opportunities for using data, metrics, and analytic methods to better inform decisions for allocating and programming federal surface transportation funds to enhance equity for underserved communities. The committee will consult the definitions of equity and underserved communities contained in Executive Order 13985 and consider the U.S. Department of Transportation's (USDOT) interest in ensuring that its funding programs produce outcomes that are

equitable for underserved communities in terms of environmental justice and access to jobs, school, food, health care, and other life needs and services.

In focusing on the surface modes, the committee will examine USDOT funding programs for highways, public transportation, and passenger rail service. While the study scope will not include programs for funding maritime and aviation infrastructure and services, it will include programs for funding surface transportation access to marine ports and airports. To keep the scope manageable, the committee will pay particular attention to those funding programs that it believes are likely to have the greatest impacts on equity for underserved communities.

The committee will review equity-related data, metrics, and analytic methods that have been proposed by researchers and that are being used in transportation and other sectors, by other federal agencies, and by state and local governments. The committee will examine the applicability of these data, metrics, and methods to USDOT decision-making criteria, assessing their practical value by considering how they could be used in administering some specific USDOT programs. On the basis of its review and assessments, the committee will advise on the most promising methodological approaches and requisite data for analyzing equity impacts considered at the national, state, and local levels.

In keeping with the Executive Order's interest in ensuring that prompt actions are taken to account for equity in federal transportation funding, the committee will consider how existing data sources, metrics, and analytic methods can be used for this purpose by USDOT in making decisions for its discretionary funding programs. Accordingly, it is expected that early in its deliberations, the committee will convene a public information-gathering session in which experts in transportation equity issues and analysis will be consulted for their ideas on how existing data sources, metrics, and analytic methods applicable to equity can be used in administering USDOT's discretionary funding programs.

While the application of existing data and analytic tools to discretionary programs can provide the earliest opportunities to elevate equity in federal surface transportation funding, it is expected that the committee will also consider and advise on ways that state and local governments can measure, analyze, and account for equity when using federal surface transportation funds that are allocated by formula. Should it find that existing data sources are insufficient and that new sources of data are needed to better account for equity in USDOT's discretionary and formula funding programs, the committee may recommend options for meeting these needs.

Repurposing Plastics Waste in Infrastructure

In response to requests from Congress, this study will identify domestic and international examples of transportation and non-transportation infrastructure projects that have used recycled plastic materials. Based on an examination of these projects and a review of other relevant research and sources of information, the study committee will review and assess:

- The effectiveness and utility of the uses of plastics waste in infrastructure, including when it is incorporated into the asphalt mixes of pavements and other materials used in transportation and non-transportation infrastructure;

- The extent to which plastics waste materials are consistent with recognized specifications and standards for asphalt and other infrastructure of different types and that are subject to different service levels and performance demands (e.g., strength, maintainability, service life, ride quality);
- The health, safety, and environmental impacts of plastics waste on humans and animals when used in transportation and non-transportation infrastructure;
- The ability of infrastructure containing plastics waste to withstand worsening natural disasters, extreme weather events, and other hazards;
- Any other relevant impacts of plastics waste materials when used in asphalt and other transportation and non-transportation infrastructure; and,
- New material applications that could lead to the greater utilization of waste plastics in infrastructure and any potential economic advantage of using plastics waste in infrastructure.

On the basis of this assessment, the committee will identify opportunities for repurposing plastics waste in infrastructure and the characteristics and qualities of the waste streams needed to enable cost-effective and safe applications that provide acceptable service and environmental performance when considered on a life-cycle basis. The study will consider options for better connecting the product design with end-of-use stages of the plastic life cycle, including new polymer options and approaches that reduce the impacts of plastics that enter the environment and that improve recycling of plastics through mechanical and chemical methods. In doing so, consideration will be given to the life cycle impacts from repurposing plastics waste, including on greenhouse gas emissions and to the potential for infrastructure containing plastics in material to perform effectively under changing climate and environmental conditions. The committee may make recommendations, as appropriate, on additional research and demonstrations needed for the repurposing of plastics waste in infrastructure and on policy options for furthering understanding and use of these materials in infrastructure.

Informed by this assessment, the committee will take a longer-term view by considering how plastic recycling processes and upstream plastics manufacturing and product uses can be made more compatible with the recycling and repurposing of plastics waste for infrastructure. The committee may choose to make research and policy recommendations with respect to these issues as appropriate.

SUMMARY OF PENDING STUDIES

<u>Study</u>	<u>Sponsor</u>	<u>Scope</u>	<u>Status</u>
1. Certificate of Compliance Inspection Program for LNG tanker vessels	USCG	Evaluate the constraints and challenges to maintaining examination efficiency under the Certificate of Compliance program for bulk liquefied gases cargo, liquefied natural gas exports, and associated vessel traffic at United States ports.	Enacted in Section 8254, National Defense Authorization Act for FY 2021. Initial engagement with USCG. Waiting for GAO study due in January before this study can be scoped out. Anticipated start 6/2022
2. Highway Safety Research to Practice	FHWA/NCHRP/IIHS	Options for ensuring evidence-based highway safety research informs safety practitioners	Approved by NCHRP. Awaiting FHWA RFP for matching amount (\$300,000 each). IIHS committed \$100,000.
3. Review of Substance Abuse Treatment Programs for Airline Flight Crew Members	FAA	Review of HDIP for pilots FADAP for flight attendants	FAA appropriated \$1,000,000. DBASSE will lead the project. Awaiting FAA RFP.
4. Driver (CDL) Compensation Study	FMCSA	Impacts of methods of driver compensation on safety and driver retention	Enacted in Sec. 23022 of IIJA. Conversations underway with FMCSA

<p>5. Impacts of Trains Longer than 7,500 feet</p>	<p>FRA</p>	<p>Potential impacts to safety, rail operations, and environment from freight trains that are longer than 7,500 feet</p>	<p>Enacted in Sec. 22422 of IIJA</p>
<p>6. Stormwater Best Management Practices</p>	<p>FHWA</p>	<p>Make recommendations on the evaluation and selection by state DOTs of transportation of potential stormwater management and total maximum daily load compliance strategies</p>	<p>Enacted in Sec. 11520 of IIJA</p>
<p>7. Transportation Workforce Development</p>	<p>OST-R</p>	<p>Workforce needs assessment that addresses the education and recruitment of technical workers for the intelligent transportation technologies and systems industry</p>	<p>Enacted in Sec. 25020 of IIJA</p>

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New Officers

Mr. Nathaniel Ford, Sr., Chief Executive Officer, Jacksonville Transportation Authority (Chair)

Dr. Shawn Wilson, Secretary, Louisiana Department of Transportation and Development (Vice Chair)

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Mr. James (Jim) F. Albaugh, President and Chief Executive Officer of Boeing Integrated Defense Systems, The Boeing Company (Retired), President and Chief Executive Officer of Boeing Commercial Airplanes, The Boeing Company (Retired)

Mr. Douglas (Doug) C. Ceva, VP Customer Lead Solutions, Prologis, Inc.

Mr. Joel M. Jundt, Secretary of Transportation, South Dakota Department of Transportation

Dr. Drew Kodjak, Executive Director, International Council on Clean Transportation

Dr. Carol A. Lewis, Professor, Transportation Studies, Texas Southern University

Dr. Steward T.A. Pickett, Distinguished Senior Scientist, Cary Institute of Ecosystem Studies

New Ex Officio Members

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Dr. Tristan Brown, Deputy Administrator, Pipeline and Hazardous Materials Safety Administration

Dr. Steven Cliff, Deputy Administrator, National Highway Traffic Safety Administration

Mr. Stephen M. Dickson, Administrator, Federal Aviation Administration,

Ms. Nuria I. Fernandez, Administrator, Federal Transit Administration

Dr. Robert C. Hampshire, Deputy Assistant Secretary for Research and Technology

Dr. Meera Joshi, Deputy Administrator, Federal Motor Carrier Safety Administration

Dr. Susan A. Shaheen, Professor and Co-Director, TSRC, University of California

Ms. Polly Trottenberg, Deputy Secretary of Transportation, U.S. Department of Transportation

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ASSOCIATE EXECUTIVE DIRECTOR

Russell Houston

- Annual Meeting Exhibit and Patron Programs
- Committee and Panel Approvals
- Communications
- Information Technology
- Transportation Research Information Services

STRATEGIC PROGRAM DEVELOPMENT DIRECTOR

Patrice Davenport

- Revenue Development
- Strategic Initiatives

SR. REPORT REVIEW OFFICER

Karen Febey

- Report Review
- Minority Student Fellows Program
- Inclusion & Diversity
- TRB Division Committee

HR DIRECTOR

Claudette Louard-Clarke

- Human Resources
- Staff Development Training

TECHNICAL ACTIVITIES

Ann Brach

- Annual Meeting Program
- Conferences and Workshops
- Marine Board
- Standing Technical Committees
- State Visits
- Transportation Research Record: Journal of the Transportation Research Board

Consensus and Advisory Studies Division

Thomas Menzies

- Consensus Studies
- Forums and Roundtables
- Research Program Advisory Committees

ADMINISTRATION AND FINANCE

Gary Walker

- Budgets and Finance
- Affiliates Accounts
- Publications Sales and Distribution
- Administrative Services

Note: organizationally is part of the Office of the Chief Financial Officer

COOPERATIVE RESEARCH PROGRAMS

Christopher Hedges

- National Cooperative Highway Research Program
- Airport Cooperative Research Program
- Transit Cooperative Research Program
- Behavioral Traffic Safety Cooperative Research Program

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EXECUTIVE OFFICE

Neil J. Pedersen, Executive Director

TRB Executive Office

TRB's Executive Office is headed by Executive Director Neil Pedersen. The TRB Executive Office provides policy and operational guidance for programs and activities; oversees committee and panel appointments and report review; provides support and direction for human resource issues and staffing needs; directs the Board's communications and information technology efforts; operates a bibliographic database of transportation research and provides library reference services; provides staff support to the Executive Committee and the TRB Division Committee; and maintains liaison with the executive offices of the National Academies of Sciences, Engineering, and Medicine, the Board's parent institution.

Oversight Activities

The Executive Office supports the work of the TRB Executive Committee, which provides policy direction to TRB programs and activities within the overall policies of the Academies. Oversight of committee and panel appointments and of report review is the responsibility of the TRB Division Committee, which ensures that TRB meets institutional standards and that its activities are appropriate for the Academies. As part of its oversight function, the committee monitors the Board's progress in expanding the representation of minorities and women on TRB committees and panels.

Chris Hendrickson, Chair, TRB Division Committee, represents TRB as an ex officio member on the NRC Governing Board. The Executive Office processes the Board's large volume of committee and panel appointments and maintains committee membership records. A hallmark of the Academies is its institutional process to ensure the independent, rigorous review of reports. In maintaining these high standards, TRB follows Academies' guidelines that carefully match the review criteria and procedures to the type of report.

Program Development and Strategic Initiatives

In addition, the Executive Office is responsible for ensuring stable, long term revenue streams for TRB and for coordinating strategic initiatives across the board's various divisions. To carry out these responsibilities, the EO helps facilitate the increased use of technology to deliver TRB products and services; oversees the development and implementation of action plans for strategic, long term, cross cutting, and critical issues; encourages the exploration of new and innovative ways to facilitate information transfer within the rules of the Academies; helps promote the value of TRB products and services; oversees TRB's international participation strategy; administers the Minority Student Fellows Program; and is responsible for helping to ensure the continued development of the next generation of TRB volunteers.

Communications

The Executive Office is charged with developing, coordinating, and carrying out communications activities that span the entire organization. The following communications activities conducted by the NASEM's Office of the Chief Communications Officer are overseen by the Executive Office:

- The [Transportation Research E-Newsletter](#) is a free weekly electronic service designed to keep individuals up-to-date on TRB activities and to highlight selected transportation research related activities taking place at the federal and state levels, and within the academic and international transportation communities. More than 67,000 people from around the world receive the E-Newsletter.
- The [TRB Webinar Series](#) produces approximately 100 webinars per year on a variety of topics. TRB's webinars are produced with funding received from TRB Sponsors and TRB Sustaining Affiliates. Accordingly, employees of TRB Sponsors and TRB Sustaining Affiliates may attend the session without a fee. TRB is authorized to issue Professional Development Hours (PDH) for select, live webinars. TRB is also a registered with the American Planning Association's professional institute, the American Institute of Certified Planners (AICP), to provide Certification Maintenance credits.
- TRB uses [Social Media](#) such as Twitter, Facebook, and LinkedIn to help our audience stay connected to transportation research. Social media also helps TRB to better understand how its reports and products are being used.

Information Technology and Research Services

TRB has a consolidated Information Technology (IT) and Transportation Research Information Services (TRIS) department. Both groups had key responsibilities that included the development, maintenance, and application of software in support of various TRB missions.

The IT group's primary focus systems operation, maintenance, and management. The 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, and the TRB [Publications Index](#).

The responsibilities of the IT and Research Services groups 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](#).

[TRID](#)

In January 2011, TRB and [ITRD](#) released [TRID](#), the TRIS and ITRD Database. TRID is the world's largest and most comprehensive bibliographic resource on transportation research information. It is produced and maintained by the Transportation Research Board of the US

National Academies with sponsorship by State Departments of Transportation, the various administrations at the U.S. Department of Transportation, and other sponsors of TRB's core technical activities. ITRD is produced by ITRD member organizations under the sponsorship of Joint Transport Research Centre (collectively JTRC) of the International Transport Forum and Organisation for Economic Cooperation and Development (OECD) and ITRD. The records comprise published or ongoing research in English, German, French, or Spanish; more than 200,000 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.

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. 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. The database serves as a tool for reviewing research needs, setting research priorities, and identifying gaps in current research.

Research in Progress Database

RiP is a searchable database of records of active or recently completed research projects from State Departments of Transportation, the modal administrations at the U.S. Department of Transportation, the Transportation Research Board, and university transportation centers. 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.

TRB Library

The TRB Library provides research and reference services to TRB sponsors, committee members, and staff. The library subscribes to almost 250 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 in the National Transportation Knowledge Network.

TECHNICAL ACTIVITIES

Ann Brach, Director

About the Technical Activities Division

Who We Are

The Technical Activities Division provides a forum for transportation professionals to identify, facilitate, and share research and information related to transportation. The Division carries out activities on behalf of TRB sponsors and the transportation community through a network of over 200 [standing committees](#) comprised of more than 5,000 volunteers.

Our Mission

The Technical Activities Division supports TRB's mission of promoting innovation and progress in transportation through research and information exchange by identifying [needed research](#) and [research in progress](#), and disseminating [completed research results](#).

Our Staff

The [Technical Activities Division staff](#) consists of specialists within each transportation mode and topic, as well as specialists in publishing, meeting logistics, and business operations. They oversee the activities of the Division's network of volunteers, who carry out the following activities:

Our Activities

- **Standing committees and task forces** provide an opportunity for you to network with others in your field, and stay current on emerging issues while contributing to the continuing evolution of transportation research and practice. Learn [how to get involved in standing committees](#)
- **Technical Activities Council**, consisting of the overall Chair and the Chairs of each of the [Groups of committees](#), provides a forum for interchange between the Groups of committees. They assist in identifying emerging topics of interest to the transportation community and cross-cutting issues, and foster outreach efforts to other transportation organizations.
- **Conferences, Meetings, Webinars, and Workshops** are sponsored and cosponsored by many of the Division's standing committees.
- **TRB Annual Meeting** is hosted every year and is the largest transportation conference in the world with over 700 sessions, workshops and 300 meetings that attracts over 14,000 professionals from around the globe. The Annual Meeting is held in January of every year in Washington, DC.
- **Supporting State DOT Representatives & Our Field Visit Program** serves as a major source of information collected and disseminated by TRB. Transportation professionals on the TRB staff meet on site with representatives of state departments of transportation,

and with representatives of universities, transit and other modal agencies and industry. Annual results of field visits are published each year

- **Publications** are disseminated by the Technical Activities Division that showcase transportation research results through [Transportation Research Records](#), [Conference Proceedings](#), and [Transportation Research Circulars](#).

July 8, 2021

CONSENSUS AND ADVISORY STUDIES

Tom Menzies, Director

Consensus and Advisory Studies Division

The Consensus and Advisory Studies Division conducts consensus and advisory studies at the request of the U.S. Congress, executive branch agencies, states, and other sponsors.

CONSENSUS AND ADVISORY STUDIES

With the guidance of committees drawn from the nation's leading experts, [the Consensus and Advisory Studies unit](#) produces reports examining complex and controversial transportation issues. Studies cover all modes of transportation and a variety of safety, economic, environmental, and research policy issues. The U.S. Congress and the executive branch have adopted many recommendations from the reports, attesting to the substantive value of the studies. The TRB Executive Committee's Subcommittee on Planning and Policy Review provides oversight for the unit. All completed consensus reports, dating from 1982, are posted on the [TRB website](#). (can this link be added to this red text?: <http://www.trb.org/Publications/PubsPolicyStudiesSpecialReports.aspx>

Cooperative Research Programs Division

Christopher Hedges, Director

The Cooperative Research Programs Division of the TRB, led by Director Christopher Hedges, administers a number of major research programs sponsored by other organizations.

National Cooperative Highway Research Program

Sponsored by the member departments of the American Association of State Highway and Transportation Officials (AASHTO) in cooperation with the Federal Highway Administration, the NCHRP was created in 1962 as a means to accelerate research on problems that affect highway planning, design, construction, operation, and maintenance nationwide. All of the state highway and transportation departments contribute to an annual cooperative pool to fund the program's activities. AASHTO committees and member departments and the Federal Highway Administration recommend research topics each year, and the AASHTO Special Committee on Research and Innovation (R&I) determines both the projects to be funded and the levels of funding for those projects. A close working relationship with AASHTO during execution of the projects and the participation of experienced practitioners on project panels help ensure the application of completed NCHRP study results.

Transit Cooperative Research Program

The TCRP was initiated in 1992 by three cooperating organizations: the Federal Transit Administration, the program sponsor; the Transit Development Corporation, a nonprofit educational and research organization established by the American Public Transportation Association, which provides program governance through the TCRP Oversight and Project Selection (TOPS) Committee; and the National Academies of Sciences, Engineering, and Medicine, acting through TRB, which serves as program manager. Under TCRP, the transit industry develops innovative near-term solutions to operating problems and adapts appropriate new technologies and approaches to help meet the demands placed on the nation's public transit systems. The program's research covers topics relating to all aspects of public transportation, including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices. Each year, the TOPS Committee selects a program of research from the large number of candidate research problem statements submitted by organizations and individuals in the transit community.

Airport Cooperative Research Program

The ACRP was authorized in federal aviation legislation and funding is made available through the annual federal appropriations process. ACRP, which began in 2006, is an industry-driven applied research program that develops near-term, practical solutions to problems faced by airport operators. The program is sponsored by the Federal Aviation Administration (FAA). Research topics are selected by an independent governing board appointed by the U.S. Secretary of Transportation that includes individuals from airports, universities, FAA, and the aviation industry..

PURPOSES AND DUTIES OF THE TRB EXECUTIVE COMMITTEE

The TRB Executive Committee is the senior policy body of TRB, composed of approximately 25 members appointed by the Chairman of the National Research Council (NRC). These members are selected so as to provide balanced representation of transportation modes, academic disciplines, private and public sectors, levels of government, geographical regions, and other relevant factors. Members are appointed for a term of three years and may be reappointed for one term. In addition, approximately 20 *ex officio* members serve on the Executive Committee; these members have no vote but otherwise participate fully in Executive Committee activity. *Ex officio* members include the representatives of the Board's various sponsoring organizations.

The Executive Committee meets twice a year, once at TRB's Annual Meeting in Washington each January and once in June. The Chair of TRB's Executive Committee, appointed by the Chairman of the NRC, serves a one-year term, and presides over the Committee discussions, which are directed toward obtaining consensus on issues wherever possible. When formal rules of debate are required, Roberts' Rules of Order are employed.

The Executive Committee performs a number of functions in serving four different constituencies — the National Research Council (NRC), TRB, TRB's sponsors, and itself.

Executive Committee Responsibilities to the NRC

The TRB Executive Committee is officially an advisory group to the Chairman and the Governing Board of the NRC, who look to the Executive Committee to provide oversight of TRB's activities. Such oversight is intended to ensure that TRB's activities are appropriate for the NRC and constructive to the transportation system and the nation. Reports (both written and oral) regarding ongoing and proposed TRB projects are brought to the Executive Committee at each meeting and are approved, rejected, or accepted after modification. The Board is also expected to note new opportunities for TRB to provide its services or projects and, where appropriate, to find ways to bring such projects into being.

The TRB Division Committee is charged to ensure that NRC procedures and policies are faithfully employed with respect to study and project committee appointments and report review. The membership of the TRB Division Committee is drawn from the membership of the TRB Executive Committee. The Division Committee is chaired by the TRB Division Chair, who must be a member of the National Academy of Sciences or the National Academy of Engineering and a member of the TRB Executive Committee. The TRB Division Chair serves as an *ex officio* member of the NRC Governing Board.

The Executive Committee has a Subcommittee on Planning and Policy Review (SPPR), which reviews and approves proposed projects and studies, develops lists of Critical Issues in Transportation, plans and develops opportunities for new Executive Committee initiatives, and generally handles those substantive transportation issues that require action during the interval between the twice-yearly meetings of the Executive Committee. The SPPR generally meets in April and October in Washington, DC.

The Executive Committee has a Subcommittee on International Activities, which provides oversight of TRB's international activities, including review of Memoranda of Understanding and Letters of Intent with international organizations, and monitoring progress in implementation of the Executive Committee's Strategic Plan for International Activities.

The Executive Committee has also established a Special Committee on Diversity, Equity, and Inclusion, which provides oversight of implementation of the Executive Committee's Diversity, Equity, and Inclusion Strategic Plan.

TRB's Expectations of the Executive Committee

Most TRB projects and activities are conducted by expert volunteers who agree to serve on TRB technical standing committees, study committees, panels, task forces, and other similar groups. At any one time, about 500 such groups are in existence, composed of more than 7,000 professionals serving without compensation. The Executive Committee, either directly or through the TRB Division Committee or the CAAS, provides oversight on the formation, termination, and membership of committees and on the review of projects undertaken and reports produced. The Executive Committee can also influence committee and other TRB activities by developing and monitoring strategic plans, preparing the critical transportation issues, and undertaking special activities of its own. From time to time, Executive Committee members are also called on to perform special duties, such as assisting with report review or fundraising for special projects.

The Executive Committee also serves as a symbol of the prestige attached to serving on TRB committees. Executive Committee members are selected in part because they occupy some of the most prestigious and influential positions in the industry. Their participation on the Executive Committee demonstrates support for research and cross-modal dialogue at the highest levels, and thereby provides motivation for the uncompensated service of otherwise highly paid experts on whom TRB depends for its products and services.

Sponsors' Expectations

At the core of TRB, and perhaps its most visible feature, is a collection of Technical Activities, which include more than 175 TRB standing committees, the TRB Annual Meeting, publications programs, field visits to organizations conducting transportation research, and information services. About \$17 million—approximately one-fifth of TRB's total budget—is spent annually on these activities, supported by funding from individual states, federal agencies, private transportation organizations, local governments, individual affiliates, publication sales, and conference registration fees. These funds are pooled and spent in accordance with budgets approved by the Executive Committee. TRB's sponsors look to the Executive Committee to ensure that these funds are spent in ways appropriate to TRB's mission and in ways that encourage research and its dissemination.

Executive Committee's Own Expectations

Although the responsibilities summarized above indicate that the Executive Committee has more than enough duties for a group that only assembles twice a year, members often comment that their greatest personal satisfaction in serving comes from participating in discussions of substantive transportation issues and that they would like to devote more time at meetings to such discussion. The caliber and diversity of talent represented on the Executive Committee make serving on it a unique experience for

most members, providing an unusual opportunity to share different perspectives in far-reaching discussions of major transportation issues. Thus, an effort is made to conduct the Executive Committee's official business expeditiously at meetings, in order to leave time for these other important activities of the Board. Executive Committee policy sessions and other discussions of substantive issues have led to the initiation of important TRB projects and other activities.

Last updated December 29, 2021

TRB STANDING OVERSIGHT COMMITTEES

TRB Division Committee

Composition

The Division Committee's membership, drawn from the TRB Executive Committee, consists of a chair who is an *ex officio* member of the National Research Council (NRC) Governing Board, a member of one of the Academies, the chair of the TRB Executive Committee, and a representative from a state department of transportation. The chair of the TRB Executive Committee serves a one-year term as a full member, while the other full members serve three-year terms. The Division Committee also includes the TRB Executive Committee's vice chair and immediate past chair as *ex officio* non-voting members who serve one-year terms.

Function

To ensure that TRB meets NRC standards for objectivity and that its activities are appropriate for the NRC; to monitor TRB with respect to specially funded project committee and panel appointments, report review, and the summary of Division programs presented to the NRC Governing Board. The Division Committee Chair serves as the TRB Division Chair for NRC Oversight and as an *ex officio* member of the NRC Governing Board.

Appointment Procedure

Appointed by NRC Chair upon recommendation of Executive Director in consultation with the NRC Chief Program Officer and Chair of TRB Executive Committee, subject to approval of the NRC Governing Board. Appointment letters signed by NRC Chair. Selection of members complies with TRB *Terms of Reference*.

Subcommittee on Planning and Policy Review (SPPR)

Composition

Subcommittee of the TRB Executive Committee, composed of 11 members. The Chair and 10 other members serve 3-year terms.

Function

To advise the Executive Committee and staff on matters relating to selection, scope, and execution of policy-oriented studies within TRB; establish goals and directions for those parts of TRB engaged in policy studies; plan and develop opportunities for new Executive Committee initiatives; identify critical transportation issues warranting TRB consideration; act for Executive Committee on all matters requiring its attention between regular Executive Committee meetings; advise the Chairs of the Executive Committee and the Division Committee of actions taken; and report to the Executive Committee on all of its activities at each Executive Committee meeting. The SPPR is also charged to identify major transportation problems, with particular attention to multimodal and intermodal issues; propose action plans for TRB that address these problems; and suggest sources for the funds

needed to pursue these plans. The SPPR also oversees TRB's strategic planning process, including development of TRB Strategic Plans, and develops policy session agendas and other program initiatives of the TRB Executive Committee.

Appointment Procedure

Appointed by Chair of the TRB Executive Committee following guidelines approved by the Executive Committee. Bias/conflict-of-interest statements are not required.

Technical Activities Council (TAC)

Composition

The Technical Activities Council consists of the overall Chair, the Chairs of each of the eleven Groups, and one or more at-large members. All serve 3-year terms. Members who are in the second year of their 3-year term serve as the Council's representatives to the TRB Executive Committee, along with the Technical Activities Council Chair.

Function

Program Function: Provides a forum for interchange and interaction among the Groups, between the Groups and the TRB Executive Committee, and between the Groups and TRB staff. Assists in identifying emerging topics of interest to the transportation community and cross-cutting issues. Facilitates interaction among Groups, Sections, and committees to address cross-cutting issues and opportunities. Fosters outreach efforts to other transportation organizations and groups.

Administrative Function: Plays a significant role in refining and implementing processes and techniques for improving the quality of meetings and publications emanating from Technical Activities Division volunteer activities. Serves as a focal point for the continuing review in each of the Group Executive Boards of the need for establishing new committees and for discharging those that are no longer necessary.

Appointment Procedure

Appointed by the TRB Executive Director with approval by Division Committee Chair. Bias/conflict of interest statements are required.

MARINE BOARD

Composition

15-20 members. The Chair and the other members serve 3-year terms.

Function

To identify research and policy study needs and provide a forum for the exchange of information relating to new technologies, laws and regulations, economics, the environment, and other issues affecting the marine transportation system, port operations, coastal engineering, and marine governance. Also, to oversee standing technical committees in related areas.

Appointment Procedure

Appointed by NRC Chair following recommendation of TRB Executive Director in consultation with NRC and members of Marine Board. Appointment letters are signed by the TRB Executive Director. Bias/conflict of interest statements are required.

COOPERATIVE RESEARCH PROGRAM OVERSIGHT COMMITTEES

Composition

Varies according to program and origin. Some oversight bodies (NCHRP, TCRP, ACRP, and BTSCR) are entities that are appointed outside the NRC/TRB. Others may be internally appointed.

Function

To select research problems and program the funding for them, on behalf of the constituent user groups associated with the program.

Appointment Procedure

Varies according to program and origin. Internally appointed committees are appointed by TRB Executive Director following approval by TRB Division Committee Chair and, if appropriate, by the NRC Chair. Appointment letters are signed by the TRB Executive Director. Bias/conflict of interest statements are required.

TRB PROJECT APPROVAL PROCESSES

Policy Studies and Program Reviews

Description

Projects conducted by NRC-appointed committees that provide consensus findings, recommendations, advice

Approval Steps

Approval by TRB Executive Committee or Subcommittee on Planning and Policy Review; approval by Executive Committee of NRC Governing Board

Product

Full-length study reports, interim reports, letter reports

Conferences and Workshops

I. Organized by TRB Standing Technical Committees

Description

Outgrowth of standing committee activity; no significant outside funding; often self-supporting; no consensus findings, recommendations, or advice

Approval Steps

Approval by TRB Executive Committee or Subcommittee on Planning and Policy Review

Product

Transportation Research Circular

II. Organized by Other Organizations and Cosponsored by TRB

Description

Conference formats vary, but TRB must have a role in conference planning

Approval Steps

Approval by TRB Executive Committee or Subcommittee on Planning and Policy Review

Product

No TRB publication

III. Organized by Specially Appointed (“Ad Hoc”) TRB/NRC Committee

Description

Supported by outside funding; may or may not lead to consensus findings, recommendations, or advice (most are not authorized to do so)

Approval Steps

Approval by TRB Executive Committee or Subcommittee on Planning and Policy Review; approval by Executive Committee of NRC Governing Board

Product

Conference or workshop report, summary, or proceedings (in the TRB Conference Proceedings series)

Cooperative Research Program ProjectsDescription

Supported by NCHRP, TCRP, ACRP, or NCFRP funding; projects selected by NRC/TRB-appointed oversight committees or by non-NRC/TRB entities representing the user communities; research conducted by contractors selected by individual project panels, which oversee the work and review final report

Approval Steps

Approval by the TRB Division Committee Chair of research problems selected by the non-NRC/TRB entities (SCOR, TOPS, and AOC Committees)

Product

CRP Reports, Research Results Digests

Synthesis ProjectsDescription

Supported by NCHRP, TCRP, ACRP, or FMCSA funding; projects selected by oversight panels representing the user communities; research conducted by contractors under the guidance of individual topic panels. Umbrella panels review final documents.

Approval Steps

Approval by the TRB Executive Director of research topics selected by oversight panels.

Product

Synthesis report

**TRB POLICY ON EXECUTIVE COMMITTEE PARTICIPATION IN
COOPERATIVE RESEARCH PROGRAM (CRP) PROJECTS
Revised 1/8/2021**

In the administration of its contract research programs, TRB wishes to maximize both the substance and the appearance of fairness in the selection and management of its contractors, at the same time ensuring the quality and expanding the number of potential researchers as much as possible.

It is in TRB's interest to use the expertise of the best qualified individuals and organizations available to perform its research programs, where no actual or apparent conflicts of interest exist. However, conflicts may arise or appear to exist if members of TRB's Executive Committee or organizations with which they are affiliated submit proposals on projects.

To prevent such problems in the administration of the Cooperative Research Programs (CRP) administered by TRB, members of the Executive Committee are not permitted to serve as principal investigators on any CRP projects. Additionally, the following rules will apply to all members of the Executive Committee:

1. No involvement is permitted in the selection process for CRP contractors, where the individual Executive Committee member or an affiliated organization is being considered.
2. No involvement is permitted in TRB's administration of a contract in which the individual or an affiliated organization is involved.
3. No involvement is permitted in setting or modifying administrative policies that would directly or materially affect either the administration of existing contracts with the individual or affiliate organization, or the individual's or affiliate organization's ability to submit proposals.

The Chair of the TRB Executive Committee, serving a one-year term; the Chair of the TRB Division Committee, serving a three-year term; and the Vice Chair of the Division Committee, serving a three-year term, have close ties to the Executive Director and to the activities of TRB. Neither of the Chairs nor the Vice Chair has any role in the selection of contractors for CRP projects. Nevertheless, because of these special relationships, the following additional rules also will apply to their activities on CRP projects during their terms as Executive Committee Chair, Division Committee Chair, and Division Committee Vice Chair:

4. Individuals serving in these positions may not personally propose on any CRP project during their years of service as Executive Committee Chair, Division Committee Chair, and Division Committee Vice Chair. This limitation on their right to propose on a CRP project as an individual does not extend to a governmental or academic entity with which they are affiliated provided that the individuals in question do not hold a significant financial interest (other than their salaries) in the governmental entity or academic institution of higher learning. Affiliated organizations in which an Executive Committee Chair, Division Committee Chair, or Division Committee Vice Chair holds a significant financial interest, other than a salary derived from a position in a governmental entity or an academic institution of higher learning, may also propose, but only in accordance with case-specific guidelines established by the Division Committee in advance of that individual's appointment as Executive Committee Chair, Division Committee Chair, or Division Committee Vice Chair to ensure that there is neither actual nor perceived conflict of interest.
5. They may not be personally consulted or participate in any way in the preparation of a proposal, or otherwise provide information that would be advantageous to a proposal team.
6. They may not work on a project as a member of the research team or as a consultant to the team.

Where a newly appointed Chair of the Executive Committee, Chair of the Division Committee, Vice Chair of the Division Committee, or other member of the Executive Committee has existing activities or commitments covered in the foregoing list of rules on a CRP project at the time of appointment, those activities will be reviewed and recommendations made on a case-by-case basis by the members of the Division Committee (exclusive of a newly appointed chair, vice chair, or member if his/her activities are being considered).

July 8, 2021

TRANSPORTATION RESEARCH BOARD 2021 ANNUAL REPORT



The National Academies of
SCIENCES • ENGINEERING • MEDICINE

About TRB and NASEM

The Transportation Research Board (TRB) is one of seven program divisions of the National Academies of Sciences, Engineering, and Medicine—private, nonprofit institutions that provide expert advice on some of the most pressing challenges facing the nation and the world. The work of the National Academies helps shape sound policies; inform public opinion; and advance the pursuit of science, engineering, and medicine. Because TRB is housed within the National Academies, TRB’s staff and volunteers have unequalled access to members of the Academies and their expertise.

TRB’s mission is to provide leadership in transportation improvements and innovation through trusted, timely, impartial, and evidence-based information exchange, research, and advice regarding all modes of transportation. TRB’s mission is accomplished through the hard work and dedication of more than 8,000 volunteers and a staff of 130 professionals.



Welcome

A Message from TRB Leadership

We are pleased to present this annual report for the Transportation Research Board (TRB) of the National Academies of Sciences, Engineering, and Medicine on behalf of the TRB Executive Committee, the thousands of volunteers involved in TRB committees and research panels, and the TRB staff. This year required continued adaptability and resilience as the country endured a second year confronting the COVID-19 pandemic. TRB's volunteers and staff overcame the challenges and accomplished much for our sponsors, our stakeholders, and the nation, which we summarize for you on the following pages.

Throughout the year, TRB was able to fulfill its mission to provide leadership in transportation improvements and innovation through trusted, timely, impartial, and evidence-based information exchange, research, and advice regarding all modes of transportation. This was accomplished through the hard work and dedication of more than 8,000 volunteers who are friends and members of TRB's various committees and research panels, as well as TRB's 130 staff members. Much of TRB's work was done virtually during 2021, while continuing to meet TRB's high standards for quality, objectivity, independence, nonpartisanship, integrity, excellence, and an evidence basis in all that we do.

The 2021 TRB Annual Meeting was held virtually for the first time in the organization's 101-year history. More than 20,000 people participated, which broke the record set in 2020 of more than 14,000 Annual Meeting attendees. This included many who had never attended our conference. Many committee meetings had two to three times or more attendees than at 2020's in-person event. Dorval R. Carter, Jr., President of the Chicago Transit Authority, pre-

sented the 2021 Thomas B. Deen Distinguished Lecture, with a focus on equity in transportation. His lecture was then posted on YouTube and has since been viewed more than 5,500 times on various platforms.

Throughout the year, TRB's 177 standing technical committees continued to address current and emerging issues within their scope, including the priority issues of recovering from COVID-19's impact on transportation, supporting the nation's economic recovery from the pandemic, adapting to and mitigating climate change, and addressing transportation-related racial and social equity issues. These committees helped TRB host 10 specialty conferences and cosponsored more than 20 others virtually, including several that were postponed from 2020. In addition, TRB hosted more than 110 webinars during the year.

TRB's multimodal Cooperative Research Programs (CRP) continued unabated through-





out 2021, with 105 publications that ranged from very specific technical topics to broader policy issues. TRB also issued several consensus study reports that offered impactful advice to the federal government and others on important policy issues.

This annual report is organized around and provides information on progress made in achieving the six goals in TRB’s strategic plan, which was adopted by the TRB Executive Committee in June 2019. These goals are:

1. Information Exchange
2. Research
3. Advice
4. Collaboration
5. Workforce Development
6. Communications

We are confident that TRB accomplished a great deal in each of these six areas during 2021.

As TRB looks to 2022 and beyond, we hope to once again be able to meet in person to exchange ideas, share best practices, advance research, collaborate in addressing transportation-related challenges, and interact with professional colleagues and friends. No matter the format, TRB will continue to provide leadership in finding solutions to complex transportation-related problems facing society and in sharing these solutions widely.

As we begin a new year, we hope that you will actively participate in TRB’s convening, research, and advising activities; take advantage of the numerous resources that TRB makes available to the transportation professional community; and learn from the brightest and best who make TRB the premier transportation research organization that it is. By doing so, you will have the opportunity to contribute to solving some of the most vexing transportation-related challenges facing the nation and the world.

The need for TRB’s leadership has never been greater. TRB will continue to adapt to the rapid changes taking place in transportation and in society to ensure that we rise to the challenge. We are all TRB, and we all must work together to provide leadership to create a better future. We look forward to having you join with us in this journey.

Thank you for all that you do for TRB!



Susan Shaheen
TRB Executive Committee Chair
 Professor of Civil and Environmental Engineering and Co-Director of the Transportation Sustainability Research Center at University of California, Berkeley



Nathaniel P. Ford, Sr.
TRB Executive Committee Vice Chair
 Chief Executive Officer of the Jacksonville Transportation Authority



Neil J. Pedersen
TRB Executive Director



TRB's Mission and Work

Strengthening Our Capacity to Contribute to the Well-Being of Our Nation and the World

Since March 2020, resilience and adaptability have become increasingly vital skills worldwide. Change and uncertainty are concepts to which we have all become more accustomed. TRB is leading the way into underexplored territory. As part of a larger scientific organization, TRB's work often intersects with or illuminates the larger scientific challenges of our time. The National Academies of Sciences, Engineering, and Medicine bridges gaps across its various units to provide constantly updating thematic collections of resources.¹ Currently in focus are COVID-19; diversity, equity, and inclusion (DE&I); climate change; and economic recovery. TRB's 2021 resources are featured heavily throughout these pages, and this work has been drawing in a new audience of experts.

Much like transportation and research professionals around the world, TRB staff and volunteers are showing up to work in new ways. We are all learning to embrace new work styles and new ways to communicate and collaborate to achieve a shared mission.



Neil J. Pedersen, TRB Executive Director

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Convening, Researching, and Advising

TRB's mission is divided into three interconnected roles: to convene, research, and advise.

TRB officially celebrated its 100th Annual Meeting throughout the month of January in its first-ever virtual platform. TRB's volunteers and friends kept the momentum and excitement of an in-person conference alive by making an extra effort to offer a welcoming and inclusive environment to all meeting attendees. A virtual format gave attendees options they never had before, allowing them to sit in on a single session or, at the other extreme, attend far more sessions by watching events afterwards that they missed the first time around.

In addition to the popular "Our Work is Never Done: Examining Equity Impacts in



Public Transportation” Deen lecture,² other popular sessions focused on transportation industry impacts of COVID-19, decarbonization, automated vehicles, and pedestrian safety. Annual Meeting audience members demonstrated that they are ready to embrace change.

In addition to a record-shattering 20,000-plus attendees at the 2021 TRB Annual Meeting, TRB also brought together volunteers through standing committees, panels, forums, conferences, workshops, meetings, and webinars. The TRB Annual Meeting remains the leading annual event for transportation researchers and professionals to access and share the latest in transportation research. In response to travel restrictions around the ongoing pandemic, convening opportunities continued virtually and allowed even wider participation from the transportation community.

In 2021, more than 5,050 individuals served on TRB’s standing technical committees. In addition, nearly 16,750 volunteers contributed to committee activities as Friends. TRB’s Technical Activities Division convenes these committees, overseeing and managing the committees’ activities in support of TRB’s mission and strategic goals. Ann Brach is Director of the division and George (Avery) Grimes of Patriot

Rail Company serves as the volunteer leader and chair of the Technical Activities Council.

TRB manages a plethora of research projects and publications annually. TRB’s flagship journal, *Transportation Research Record (TRR)*, publishes nearly 800 peer-reviewed papers yearly. The journal published special collections this year featuring research about equity and transportation, as well as research from TRB’s Minority Student Fellows and the Graduate Research Award Program on Public-Sector Aviation Issues.

TRB’s bimonthly magazine, *TR News*, features timely articles on new and state-of-the-art research and practice, transportation news, profiles of transportation professionals, new book notices, and news of TRB activities. Issues



Ann Brach
Director, Technical
Activities Division



George (Avery) Grimes
Chair, Technical
Activities Council

DID YOU KNOW?

- More than 130 Texas A&M Transportation Institute employees were able to participate in the virtual 2021 TRB Annual Meeting.
- Nearly one year into the launch of the new National Academies-TRB unified website, traffic has increased by 280 percent—with more than 700,000 monthly visitors.

in 2021 focused on DE&I and the response to climate change and also featured dozens of articles on issues ranging from freight supply chain resilience to airport terminal services and spaces.

TRB manages research programs focusing on highways, public transit, airports, and behavioral traffic safety through its CRP Division with total budgets in excess of \$60 million. Contractors conduct the actual research, and more than 5,950 volunteers serve on CRP oversight committees and project panels. Christopher Hedges is Director of this division. The following TRB volunteers lead the oversight organizations for CRP:

- Joel Jundt of South Dakota Department of Transportation is the chair of the AASHTO Special Committee on Research and Innovation.
- Rhonda Hamm-Niebruegge of St. Louis Lambert International Airport is the chair of the Airport Cooperative Research Program (ACRP) Oversight Committee.
- Tom Glass of Pennsylvania Department of Transportation is chair of the Governors Highway Safety Association (GHSA) Research Committee.
- Doran Barnes of Foothill Transit is the chair of the Transit Cooperative Research Program (TCRP) Oversight and Project Selection Commission.

TRB consensus reports are the result of research performed by committees of volunteer experts supported by staff from the Consensus



“If any of your listeners are not aware of the TRB Minority Fellows program, please look into it. Get to know it. It is fabulous. If you are feeling down and you’re not feeling energized, listen to these kids. I mean, reading through their research projects is awe-inspiring.”

—Carlos Braceras, former TRB Executive Committee Chair, on TRB’s Transportation Explorers podcast

and Advisory Studies Division. Scores of TRB consensus reports have contributed to changes in legislation in the United States, and, in 2021, about 110 volunteers served on committees for this program. Tom Menzies is Director of this division, and Katie Turnbull of Texas A&M Transportation Institute is the TRB volunteer leader and chair of the Subcommittee on Planning and Policy Review.

Either in response to requests from sponsoring agencies or on its own initiative, TRB’s internationally recognized Marine Board identifies research needs and provides a forum for the exchange of information on new technologies, laws and regulations, economics, the environment, and other issues affecting the marine transportation system; port operations; coastal engineering; and marine governance. Martha Grabowski, McDevitt Distinguished Chair in Information Systems at Le Moyne College in Syracuse, New York, and Senior Research Scientist at Rensselaer Polytechnic Institute in Troy, New York, is Marine Board Chair. Scott Brotemarkle of TRB’s Technical Activities Division serves as the Marine Board’s Program Director.



Tom Menzies
Director, TRB Consensus and Advisory Studies



Katie Turnbull
Chair, Subcommittee on Planning and Policy Review



Christopher Hedges
Director, TRB Cooperative Research Programs



Joel Jundt
Chair, AASHTO Special Committee on Research and Innovation



Rhonda Hamm-Niebruegge
Chair, ACRP Oversight Committee



Tom Glass
Chair, Governors Highway Safety Association Research Committee



Doran Barnes
Chair, TCRP Oversight and Project Selection Commission

GOAL 1

Information Exchange

Convening Face-to-Face and Webcam-to-Webcam

In January 2021, vaccinations against the coronavirus disease (COVID-19) were just rolling out. Health precautions made an in-person meeting impossible, and the 2021 TRB Annual Meeting—already known as “the biggest transportation research conference in the world”—grew. Staff and volunteers extended themselves an incredible amount and hosted 20,000 attendees at more than 450 sessions throughout the entire month of January. The event also was home to more than 400 committee and subcommittee meetings. TRB’s Annual Meeting is an opportunity for policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions to meet and address all things transportation. The program covers all transportation modes and nearly every relevant aspect imaginable.

TRB and the National Academies stake their reputations on impartial and rigorous scientific research. It is equally important to share that information with audiences who need it and can put it into action.

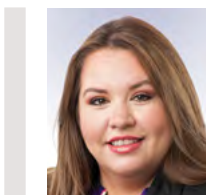
Despite fluctuating permissions and protocols for an in-person gathering, TRB ensured that the diverse transportation community continued to have the opportunity to work together. Many events that were postponed in 2020 went forth in a new format, drawing participants from a spectrum representing the public, private, academic, and user communities. In total, TRB convened or cosponsored 34 conferences, workshops, or meetings in 2021.

Over the summer, TRB hosted three particu-



larly outstanding events featuring especially diverse participants.

- The Automated Road Transportation Symposium (ARTS) panelists represented a wide variety of private industries, as well as academia, government, and research. Topics included safety, business development, roadway operations, public acceptance, and legislative and regulatory affairs that span local, federal, and international spheres. More than 800 people attended the symposium.
- “How We Move Matters,” an event organized with the National Academies Environmental Health Matters Initiative, explored the connections between new and changing ground



“We were able to take the information from ACRP and develop employee training early on while other agencies in our community didn’t have trainings yet.”

—Elsy Borgstedte, Assistant Director,
Laredo International Airport

mobility options and environmental health, featuring experts in public health, consumer behavior, energy, and transportation. A Slack channel allowed for constant conversations between panelists and attendees during the event and for a more lasting connection afterwards.

- TRB’s “Conference on Advancing Transportation Equity” gave a platform to the range of lived and professional experiences of people working on the front lines of transportation equity and justice. Nearly 900 people registered for the conference.

Learning from the Experts Firsthand

TRB’s webinar program has been at the forefront of virtual connections for more than 10 years and continues to offer more sessions every year. Most webinars are based on research published by TRB. More than 350 volunteers shared their knowledge through presentations to 21,000-plus webinar registrants in 2021. Each webinar offers a Question and Answer session, allowing a real opportunity to connect and learn from the exchange.

Early in the pandemic, Laredo International Airport in Texas joined a TRB ACRP webinar on airport plans and responses to communicable disease threats. The webinar and resulting networking opportunities allowed the airport to update its emergency plans and operations and ensure a safe environment.

Finding National and Local Solutions for State Agencies

TRB’s State Partnership Program is a joint effort between TRB and state departments of transportation (DOTs). TRB has visited state DOTs since the 1940s. The pandemic prevented any such visits in 2020. Over the past year, TRB staff developed a pilot effort for virtual visits. Twenty states participated in virtual group visits, and another 10 opted for individual virtual visits in 2021.

TRB IN THE NEWS

- In addition to articles in trade magazines about the Automated Road Transportation Symposium event, TRB volunteer Jane Lappin, who helps organize the conference, was quoted in a *Philadelphia Inquirer* article about easing the public’s concerns about the safety of automated vehicles.
- U.S. Senator Martin Heinrich (D-New Mexico) quoted the TRB consensus study report *Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions* in a *New York Times* op-ed: “Working to electrify our vehicles, homes and businesses is a critical part of achieving economy-wide net-zero emissions by 2050.”¹
- More lanes dedicated to transit allow travelers on a bus or train to zip past traffic jams, which in turn can help shift more drivers out of cars and into transit, writes TRB volunteer Simon Berrebi in Bloomberg CityLab, citing *TCRP Research Report 209: Analysis of Recent Public Transit Ridership Trends*.²
- Automated vehicle tech company Waymo is using data from TRB’s second Strategic Highway Research Program naturalistic driving study to help build out the driving scenarios for autonomous vehicles, notes *The Verge*.³
- A model building better autonomy into vehicles to keep them from veering into other side-by-side vehicles is detailed in TRR and reported on by the University of Nebraska and others.
- The 2020 consensus study report *Leveraging Unmanned Systems for Coast Guard Missions* made recommendations to the U.S. Coast Guard that are now being put into action. As such, the Coast Guard will “take a more strategic and accelerated approach to exploit the capabilities of existing and future unmanned systems,” reported *Sea Power Magazine*.⁴
- LED lighting is no worse for driver alertness and sleep health than the commonly used high-pressure sodium roadway lighting, reports the National Safety Council’s *Family Safety and Health Magazine* and *Transport Topics*, citing *NCHRP Research Report 968: LED Roadway Lighting: Impact on Driver Sleep Health and Alertness* and its related webinar.⁵⁻⁶
- The SEAHIVE marine and estuarine shoreline protection system—developed via the NCHRP Innovations Deserving Exploratory Analysis Program and Florida DOT—will generate data about climate change and sea level rise, with construction beginning next month at Wahoo Bay in Pompano Beach, Florida.

¹ <https://www.nytimes.com/2021/06/08/opinion/climate-change-electricity-fossil-fuels.html>

² <https://www.bloomberg.com/news/articles/2021-04-13/biden-s-infrastructure-plan-must-put-transit-first>

³ <https://www.theverge.com/2021/7/6/22565448/waymo-simulation-city-autonomous-vehicle-testing-virtual>

⁴ <https://seapowermagazine.org/u-s-coast-guard-establishes-uxs-cross-functional-working-group>

⁵ <https://www.safetyandhealthmagazine.com/articles/21255-study-explores-led-roadway-lightings-impact-on-driver-alertness-sleep-health>

⁶ <https://www.ttnews.com/articles/trb-panelists-consider-future-study-potential-led-lighting>

GOAL 2

Research



Covering Timely and Persistent Issues

By conducting, sharing, and promoting research, TRB creates and expands access to knowledge on current and future issues in transportation. TRB research is particularly focused on innovative and implementable practices and technologies. In 2021, TRB complemented 2019's *Critical Issues in Transportation* report to provide a way to frame future areas of research, policy analysis, and debate with *COVID-19 Addendum to Critical Issues in Transportation* and *Racial Equity Addendum to Critical Issues in Transportation*. At the same time, TRB continues to administer research

into the day-to-day issues facing transportation, including, for example, understanding emissions, network design, and traffic interchanges.

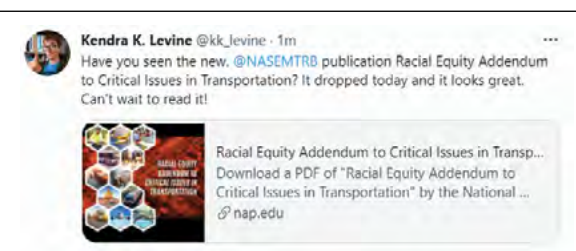
TRR's Editorial Board, staff, reviewers, and authors contributed to the journal's largest single jump in impact per the Journal Citation Reports impact factor. The

impact factor is a key measure of a journal's prestige and can improve the career opportunities of authors published in journals with a high impact factor. TRR also continues to lead the transportation field in policy and patent citations, a measure of its impact in the practitioner community. The journal's editors and staff are working more than ever to reach new audiences by getting papers of exceptional merit or interest featured in media outlets such as *The Conversation* and many others.³

TRB's most downloaded publications in 2021 show the country's focus on future improvements to transportation's role in climate change, as well as improving safety.

Strengthening Research on Transportation and the Environment

TRB Executive Committee member and National Academy of Engineering member Chris T. Hendrickson served on a National Academies committee that produced *Accelerating Decarbonization of the U.S. Energy System*. The report charts a path to achieving net-zero carbon emissions in the U.S. by 2050 in a way



Released in October, the well-received *Racial Equity Addendum to Critical Issues in Transportation* aims to identify and address inequities and injustices caused and contributed to by transportation.

that would help address climate change, build a more competitive economy, increase high-quality jobs, and help address social injustice.

TCRP and ACRP explored their respective sectors' role in climate change emissions through the following:

- TCRP Research Report 219: *Guidebook for Deploying Zero-Emission Transit Buses*,
- TCRP Research Report 226: *An Update on Public Transportation's Impacts on Greenhouse Gas Emissions*,
- TCRP Research Report 221: *Redesigning Transit Networks for the New Mobility Future*,
- ACRP Research Report 220: *Guidebook for Developing a Zero- or Low-Emissions Roadmap at Airports*, and
- ACRP Web-Only Document 51: *Commercial Space Vehicle Emissions Modeling*.

Understanding emissions is only a piece of the puzzle. Transportation also is concerned with the changes we already see occurring from climate change. Knowledge gaps and a five-year research plan to address them are outlined in *National Cooperative Highway Research Program (NCHRP) Research Report 975: Transportation System Resilience: Research Roadmap and White Papers*.

Advancing Research on Effective Safety Measures

A new forum for coordinated and collaborative research, TRB's Behavioral Traffic Safety Coop-



MOST DOWNLOADED CRP AND CONSENSUS REPORTS PUBLISHED IN 2021

1. *An Update on Public Transportation's Impacts on Greenhouse Gas Emissions*
2. *Redesigning Transit Networks for the New Mobility Future*
3. *The Role of Transit, Shared Modes, and Public Policy in the New Mobility Landscape*
4. *Guide for Pedestrian and Bicyclist Safety at Alternative and Other Intersections and Interchanges*
5. *Diverging Diamond Interchange Informational Guide, Second Edition*
6. *Guidebook for Deploying Zero-Emission Transit Buses*
7. *Investing in Transportation Resilience: A Framework for Informed Choices*
8. *Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide*
9. *Options for Reducing Lead Emissions from Piston-Engine Aircraft*
10. *Low-Speed Automated Vehicles (LSAVs) in Public Transportation*

erative Research Program (BTSCRP) is a partnership between GHSA, the National Highway Traffic Safety Administration (NHTSA), and TRB. The program develops practical solutions to save lives, prevent injuries, and reduce costs of road traffic crashes associated with unsafe behaviors. The year 2021 saw the publication of BTSCRP's inaugural report, *BTSCRP Research Report 1: Using Electronic Devices While Driving: Legislation and Enforcement Implications*, which received coverage by *Forbes*, ITS International, *Collision Week*, Westat, AASHTO, and Staten Island Live. Policy makers and other stakeholders can reference the newly compiled resources, toolkits, and best practices to identify ways to enhance enforcement and education efforts. Jurisdictions with strong traffic safety laws—supported by enforcement, public education, and outreach—tend to have lower overall traffic fatality rates.

Automated vehicles hold great promise for improving safety and are slowly moving in the right direction. *TCRP Research Report 220: Low-Speed Automated Vehicles (LSAVs) in Public Transportation* and a related webinar present a practitioner guide and current uses of LSAVs. As noted in coverage by *Government Technology* and *Smart Cities Dive*, an unexpected safety benefit was the use of these vehicles in transporting COVID-19 tests and food deliveries without exposing drivers unnecessarily during the pandemic.

GOAL 3

Advise and Inform Policy

As part of the National Academies of Sciences, Engineering, and Medicine, TRB study committees provide formal advice to the federal government through consensus studies and also review of U.S. DOT research programs. Additionally, TRB provides useful information that informs policy discussions at all levels of government through workshops and research reports.

Convening to Advise

Upon request, National Academies-appointed consensus study committees provide advice to Congress, executive branch federal agencies, the states, and other organizations on an array of complex and often controversial transportation topics of national significance. Committee members are selected to provide appropriate expertise and a balance of perspectives on the issues involved. Through such special expert committees, TRB also conducts periodic or continuing reviews of specific transportation research and technology programs. Policy study committee activities are subject to the requirements of Section 15 of the Federal Advisory Committee Act Amendments of 1997.

TRB conducts advisory studies in accordance with procedures of the National Acad-

emies. Congress or executive branch agencies request some studies, while others are self-initiated studies funded by TRB. Committees of volunteer experts supported by staff from TRB's Consensus and Advisory Studies Division conduct these studies.

Formal policy advice comes through TRB's consensus studies. Each study committee produces a report with evidence-based conclusions

and recommendations that are subject to the National Academies' rigorous report review process. As with other research published by TRB this year, the reports reflect transpor-

tation's connections to and impacts on the environment, health and safety, equity, and the economy.

One consensus study committee examined the country's increased reliance on shared modes of transportation, such as ride-hailing or scooter- and bike-sharing. The committee concluded that these modes can enhance mobility and sustainability, along with equity. But they will need to be scaled up through public and private partnerships. TRB's *The Role of Transit, Shared Modes, and Public Policy in the New Mobility Landscape* recommends that cities, transit agencies, and other mobility providers collaborate in goal-setting, experimentation, testing, and implementation to increase the positive societal benefits of the shared modes. Having been downloaded thousands of times, the report's potential impact is promising.

Significant progress has been made over the last decade in integrating resilience criteria into transportation decision making based on the framework for measuring and evaluating investments in resilience, as documented in *Investing in Transportation Resilience: A Framework for Informed Choices*. Green Car Congress and Transportation Today explored the report's findings.⁴⁻⁵

Although leaded gasoline was phased out from use in motor vehicles 25 years ago because of health concerns, it is still used in small gasoline-powered aircraft—as a group the single largest emitter of lead in the country. TRB's *Options for Reducing Lead Emissions from Piston-Engine Aircraft* finds that significantly reducing these emissions requires leadership and strategic guidance of the Federal Aviation Administration along with a broad-based and sustained commitment by other government agencies, pilots, airport managers, aviation fuel and service suppliers, and aircraft manufacturers. An NBC News article featured the report, asking, "Why are these planes still using toxic fuel?" And an article in *Grist* quoted the report, noting the level of aviation gas emissions.⁶

Allowing people who are nonambulatory to



State, federal, and local transportation agencies utilize TRB workshops and research reports in policy discussions and development.



remain in their personal wheelchairs for airline travel can be beneficial for people who cannot transfer to and from an airline seat. TRB's *Technical Feasibility of a Wheelchair Securement Concept for Airline Travel: A Preliminary Assessment* concluded that providing space inside an airplane cabin for a wheelchair securement does not present any formidable technical challenges.

Although equipping enough airplanes with securement systems to provide meaningful levels of airline service would require substantial effort, the types of cabin modifications required to provide the needed space and structural support would likely be of moderate technical complexity for many individual airplanes. The ability of the wheelchairs themselves to be crashworthy and protect the occupant during an emergency landing or survivable crash, however, warrants further evaluation testing. The study committee recommended that a research program be developed for this purpose.

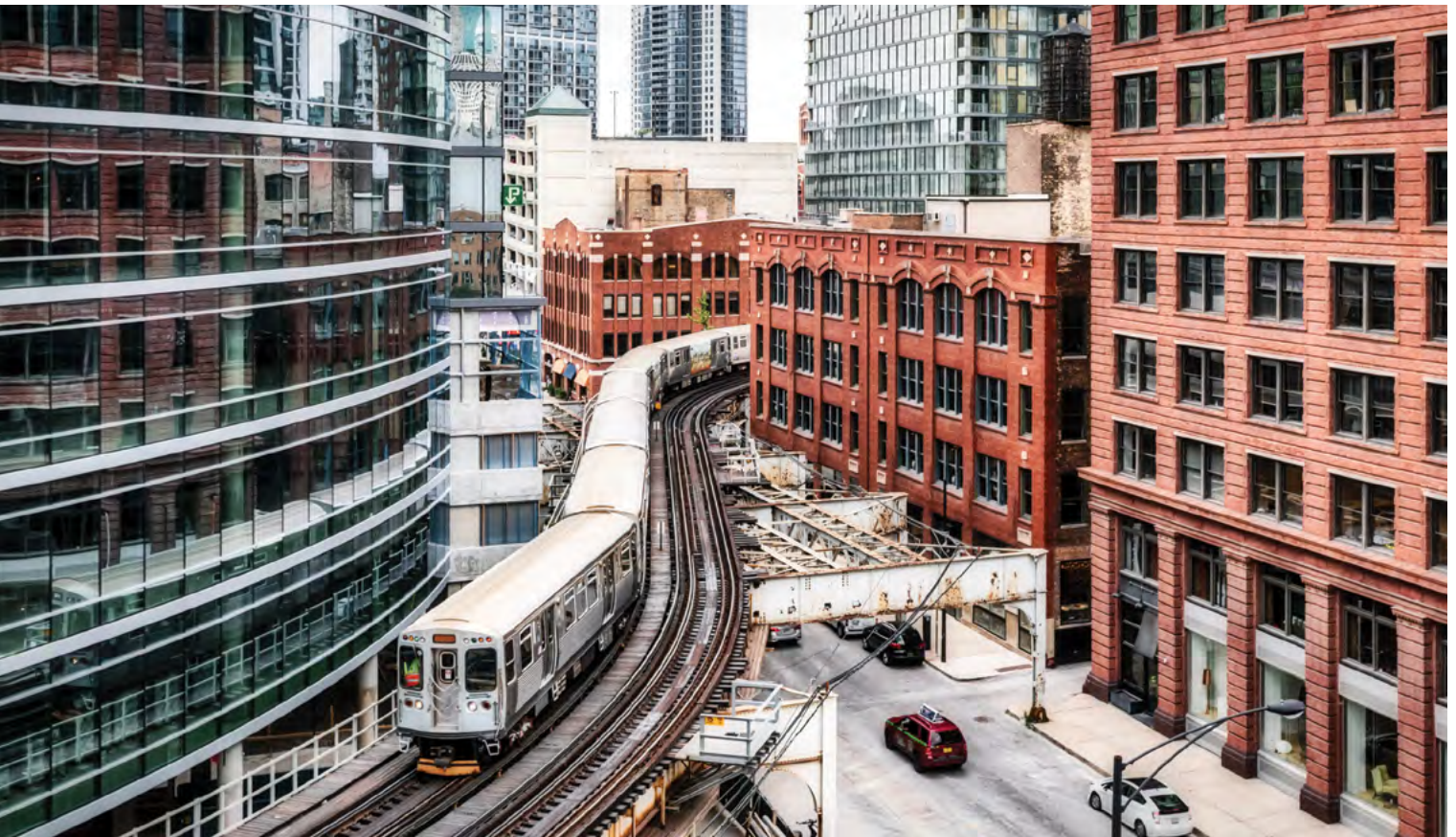
Published in 2019, TRB's *Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future* continues down the road as a relevant resource, with

infrastructure high on the national agenda through the latter half of 2021. Along with TRB staff member Monica Starnes, report authoring committee chair Norman Augustine wrote a letter to the editor that appeared in the July 11 edition of the *Wall Street Journal* about finding new sources of funding for U.S. interstates, citing the consensus report.⁷ Looking further back, TRB's *Improving Motor Carrier Safety Measurement*, published in 2017, has led to a new U.S. DOT methodology, as noted on July 3 in *Homeland Security Today*.

As policy continues to develop, TRB research lives a long and useful life. Other consensus reports released in 2021 include the following:

- *Preparing for LNG by Rail Tank Car: A Review of a U.S. DOT Safety Research, Testing, and Analysis Initiative;*
- *Modernizing the U.S. Offshore Oil and Gas Inspection Program for Increased Agility and Safety Vigilance;* and
- *Options for Improving the Safety of DUKW Type Amphibious Vessels.*

GOAL 4 | Collaboration



Communities of Individuals

TRB's standing technical committees operated for their first full year in the new committee structure that was implemented in 2020. New and rescoped committees addressed transportation and health, as well as equity issues in transportation. Sustainability and resilience have received renewed attention, and transportation infrastructure committees have realigned themselves to work better across disciplinary areas and facilitate a more multimodal approach to infrastructure. A new concept—coordinating councils—supports collaboration across committees on issues related to international transportation concerns and transportation issues in rural areas and cities. Committees continue to increase the diversity of their membership. The Technical Activities

Council has established a Blue Ribbon Committee award to recognize best practices in promoting committee diversity.

Strengthening Domestic and International Partnerships

The transportation industry is complex and comprises a wide range of actors. TRB partners with other organizations to ensure its advice, research, and collaboration includes all voices. TRB has entered into memoranda of understanding or letters of intent with many domestic and international organizations to partner and work together on activities for mutual benefit. In 2021, TRB entered into new arrangements with Latinos in Transit and the World Bank and cosponsored many joint webinars with partner organizations to discuss current

and emerging issues, with volunteers and staff participating.

In addition to these partnerships, TRB volunteers helped create content for nearly two dozen cosponsored conferences held this year.

Considering the Future

To share perspectives on new issues and challenges surrounding automated vehicles and shared mobility, TRB hosts the Forum on Preparing for Automated Vehicles and Shared Mobility Systems. Topics discussed during forum events are varied and include opportunities for automated vehicles and shared mobility modes to benefit transportation and society through increased safety, reduced congestion, enhanced accessibility and equity, and increased environmental and energy sustainability.

Expert Collaborations Moving Forward

TRB staff and volunteers share resources and expertise across the transportation industry. The University of Central Florida credits its work with TRB and NCHRP for helping its civil engineering program flourish, receive many accolades, and continue recruiting top talent.

NHTSA's *Countermeasures That Work* report notes that it draws heavily from



NCHRP's guides for state DOTs to use in implementing the AASHTO Strategic Highway Safety Plan.

To give more attention to papers on equity and transportation in TRR, staff coordinated press releases with authors' institutions, including The University of Texas at Austin, Portland State University in Oregon, and the University of Michigan. The Equity and Transportation collection papers are available via open access.



GOAL 5

Workforce Development

Growing Transportation Careers at All Levels

Through its collaborative structure, TRB is an ideal home for informal mentoring. From a first job through experience as a seasoned expert, TRB connects professionals to colleagues within their industry and in the larger transportation field. The Minority Student Fellows Program welcomed another outstanding class to the 2021 TRB Annual Meeting. Graduate-level aviation students present and publish work in TRR through close work with advisors in the ACRP Graduate Research Awards. Undergraduate students are eligible for ACRP's University Design competition.

For the past three years, TRB has been conducting a large in-person transportation career fair, Careers in Motion, at the Annual Meeting—

along with an ongoing comprehensive slate of programming to cultivate top-notch professional development skills—to better serve the needs of young professionals and seasoned job seekers. TRB held its first virtual Careers in Motion Networking Fair in 2021, with nearly 30 employers participating. The virtual platform allowed for easier access to candidates from across the globe, featured phone and video functionality, and enabled employers to interact with hundreds of job seekers. The career fair once again offered opportunities for experts to review and provide feedback on job seekers' resumes.

Supporting the Workforce

CRP publications offer practical insights and frameworks for transportation practitioners. Research is often divided by mode of transpor-





Twenty-five Minority Student Fellows from 17 minority-serving institutions presented posters at the 2021 TRB Annual Meeting. Three fellows' papers were published in TRR. Two received the Alumni Scholarship Award to attend the 2022 Annual Meeting.

tation; however, the issues cross industry lines. Popular research reports in 2021 focused on cultivating talent, strengthening resilience, and improving DE&I in the industry.

- *ACRP Research Report 230: Enhancing Academic Programs to Prepare Future Airport Industry Professionals* offers guidance for airport professionals and academia in preparing graduates for careers as airport industry professionals. *ACRP Research Report 232: Playbook for Cultivating Talent in the Airport Environment* provides inspiring, proven, and readily implementable techniques for airport leaders and managers. *NCHRP Synthesis 567: Summary State DOT Practices for Developing and Implementing TSMO Plans* documents current practices related to the development and implementation of transportation systems management and operations plans.
- *NCHRP Research Report 970: Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide* offers a tool for agencies to self-assess their efforts to improve the resilience of the transportation system through mainstreaming resilience concepts into agency decision making and procedures. *NCHRP Research Report 976: Resilience Primer for Transportation Executives* outlines the state transportation CEO's role in resilience and presents approaches taken in various states, along with concepts and tools.
- *TCRP Research Report 228: Resource Guide for Improving Diversity and Inclusion Programs for the Public Transportation Industry* covers how diversity programs at transit

agencies have evolved; how inclusion has been incorporated; and what policies, plans, and practices have been successfully implemented. A TRB blog post on transportation workforce diversity further outlines TRB resources in the field.⁸

In many cases, COVID-19 affected transportation workers more than those in other professions, with many employees deemed critical from the beginning of the pandemic. In early 2021, TRB published a blog post on resources available to keep the workforce safe and healthy. Another blog post examined resources to improve the safety of active work zones.

Interactive and Inclusive Learning Opportunities

Every year, TRB offers professional development to thousands of participants through an extensive webinar program. More than 150 credit hours were offered via professional development accreditation services across TRB's more than 100 total webinars in 2021. TRB webinars have a loyal following: More than 80 percent of attendees join regularly, and the satisfaction rate remains above 90 percent. This year more than 18,800 state DOT employees attended TRB webinars, receiving more than 2,700 total accreditation hours. State DOT employees in California, North Carolina, and Wisconsin led the pack in taking advantage of the courses freely available to sponsors.

While addressing a number of specific technical issues challenging transportation professionals, TRB offered five webinars for improving DE&I, six related directly to economic recovery, and eight focused on reducing and preparing for climate change. To ensure TRB webinars are reflective of the transportation research community, an emphasis was placed on diverse perspectives and equity con-



This was the most successful interaction I had at a virtual show. Careers in Motion is an excellent networking event to have at the TRB Annual Meeting. It allows us time to meet one-on-one with individual candidates.

—Amy Gilleece, National Events Leader Advisory, PM/CM, Transportation, WSP USA



TOP FIVE WEBINARS BY NUMBER OF PARTICIPANTS

- Redesigning Transit Networks for the New Mobility Future (613)
- Addressing Justice in Transportation (569)
- Fixing the Bump at the End of the Bridge (563)
- Truck Assumptions for Roundabout Design (543)
- Centering Seams—Maintaining Centerline Joints in Asphalt Pavements (492)

Data as of October 2021.

siderations in the guidelines for proposing and presenting webinar topics.

Research contractors are likely to be most successful and produce results relevant to all users when they bring diverse perspectives and experiences to their teams and research plans. To help broaden the expertise and diversity needed to conduct ACRP research, staff

launched ACRP Project Teaming Opportunities, a forum that allows diverse business owners and a wide range of research specialists to easily identify themselves and find each other to team up, even before a project is started.

Putting Research to Work

Eagle River Union Airport is in the middle of a popular fishing, hiking, biking, and outdoor adventure destination in Wisconsin's Northwoods. Rob Hom, Eagle River Union Airport manager, saw a potential for missed fuel sales through self-serve fueling equipment and turned to *ACRP Research Report 192: Airport Management Guide for Providing Aircraft Fueling Services*.

“Though we had anticipated that this infrastructure improvement would enhance our services and reduce operational expenses, the economic analysis tools included in the report really saved time and effort to present useful information to assist with the decision-making process,” says Hom.

GOAL 6 | Communication

In July, TRB's Executive Committee approved a new strategic communications plan, which outlines tactics most likely to help TRB meet and exceed the following documented communications objectives:

- Increase awareness of TRB products, activities, and services;
- Communicate the value of TRB to TRB sponsors, potential sponsors, and the larger transportation community;
- Make TRB the “go-to,” essential, up-to-date source for information on transportation research-related issues;
- Increase the impact of TRB in solving transportation and societal problems and issues; and
- Increase the influence of staff, partners, and collaborators in communicating TRB's information and messaging and helping to protect and enhance the reputation of TRB and the Academies.

TRB continues to put the new strategic communications plan into practice, adding sub-

strategies to the plan—including strategic and documented plans for social media, event promotion, influencer partnerships, and more. This strategic communication is aligned with and part of TRB's overall strategic plan, which is currently being updated and scheduled to be approved in 2022.

Staying Up to Date

Following the successful launch of TRB's new website in 2020, TRB rolled out an updated look and platform for its flagship weekly newsletter. *TRB Weekly* allows our tens of thousands of readers to tailor their subscriptions to get as little or as much transportation research news as they desire. The modernized layout and responsive design is perfectly suited for reading on phones, tablets, and smaller screens, in addition to laptops and desktops. It allows TRB to be more flexible and creative in curating content for the newsletter.

In addition to *TRB Weekly*, three mode-specific listservs send out announcements of new projects, calls for nominations, calls for





problem statements, and requests for proposals as they arise. Listserv subscribers often are responsible for further spreading the message at their university transportation centers, professional groups, consultancies, or state DOTs.

Reaching New Audiences

These major changes to our website and newsletter will better allow us to strategically grow our audience through these and other platforms, including our rapidly growing social media presence. Among the findings in the TRR article “Twelve-Year Analysis of Transportation Research Board Annual Meeting’s Official Hashtag” is a need to implement and improve strategies that help transportation research communities encourage continuous and active participation during and after conferences.⁹

TRB gave additional attention to key specialty conferences on social media. In a single week in July, TRB live-tweeted about ARTS and the How We Move Matters Environmental Health Matters Initiative. Communicating more aggressively about ARTS allowed TRB to strengthen ties with an established audience, while communicating about How We Move Matters helped reach important audiences traditionally focused on environmental health.

Communications for ARTS extended well beyond social media, with registered attendees including famed YouTuber Road Guy Rob and journalists from the *Washington Post*, *Wall Street Journal*, CNN, WIRED, SiriusXM, and others. Ads for the symposium in TRB’s weekly e-newsletter and on the Transportation Research International Documentation (TRID) database garnered thousands of clicks weekly for more than a month. A conference-specific newsletter went out daily to registrants who subscribed.

TRBAM Express, another new conference-specific newsletter, also debuted this year. The newsletter reached more than 20,000 attendees of the month-long Annual Meeting, with nine total issues. Updates to the meeting schedule, technical advice for accessing online presentations, and social media coverage were some of the most popular items in the newsletters.

Well-positioned products like TRB webinars have a loyal audience base but continue to attract new audiences. A survey of webinar attendees in 2021 found that 12 percent were new to TRB webinars.

New Ways to Stay Up to Date

TRB launched a new podcast series in 2021, *TRB’s Transportation Explorers*, in which hosts Elaine Ferrell and Paul Mackie interview



TRB volunteers on some of the hottest topics in transportation. The nearly two dozen episodes are available for subscribers or one-time listeners on all major podcast platforms. Former Transportation Secretary Anthony Foxx discussed equity issues; Alicia Trost, Chief Communications Officer at San Francisco's Bay Area Rapid Transit District, updated listeners on the Bay Area's transportation efforts with the COVID-19 vaccine; and Secretary of the Louisiana Department of Transportation and Development Shawn Wilson tackled climate change resilience.

TRB's still-new blog on its website continues to corral the vast amount of research on all modes of transportation that is housed under our roof. The content is designed to give audiences an easy way to find exactly the research they need. The International Grooving and Grinding Association tweeted a link to its followers to TRB's blog post on distracted driving, and AASHTO's journal cited it.¹⁰ The author of a TRR paper thanked TRB on Twitter for including information presented in the research in a blog feature on work zone safety.¹¹ Kent State University featured TRB's blog post on passenger transportation.¹²

TRB continues to develop and maintain the Transportation Research Information Services (TRIS) databases, including TRID and the Transportation Research Thesaurus (TRT). TRID is the world's largest, most comprehensive bibliographic resource on published and ongoing transportation research, with more than 1.3 million records and more than 345,000 links to free or fee-based full text. TRID includes data sets and technical reports from state and federal DOTs; projects on ongoing, recently completed, or soon-to-be-started research from TRB's Research in Progress database; and comprehensive coverage of peer-reviewed transportation journals.

TRT provides a common and consistent language for use by producers and users of transportation information and is being modernized to increase its value to a growing community of stakeholders. The thesaurus comprises more than 12,000 terms, and its website features improved browse and search options, customized exports, and curated lists of "hot topic" terms.

Several TRB Executive Committee members joined Joe Biden's presidential adminis-



tration in 2021. Vicki Arroyo, 2019 Executive Committee chair, was appointed associate administrator of the Office of Policy at the U.S. Environmental Protection Agency. Executive Committee member Nuria Fernandez was confirmed as Federal Transit Administrator. And Steve Cliff, the ex officio Executive Committee member representing the California Air Resources Board, was appointed deputy administrator of NHTSA.

TRB volunteers spoke out about safety, equity, and climate change. Reese Brewer was quoted in Arkansas's *Fort Smith Times Record* about equity, noting that adding microfreight hubs in often-underserved communities could be more fair and equitable for potentially marginalized neighborhoods.

A paper published in TRR, "Identification of Optimal Left-Turn Restriction Locations Using Heuristic Methods," makes a safety case for removing left-turn lanes in cities and was covered by *Popular Mechanics*, *ZME Science*, and the *Times of London*. TRB volunteer Vikash Gayah furthered the message through an op-ed published in Wisconsin's *La Crosse Tribune* and Missouri's *St. Louis Post-Dispatch*. Inspired by NCHRP research, Missouri DOT will improve at least one of its own left turns by installing a "J-turn," according to the *Daily Journal Online*.

As climate change continues to threaten current and future transportation options, TRB volunteer Herby Lissade spoke with Smart Cities Dive about the feasibility for an underground transit loop in Ft. Lauderdale, Florida.



2021 and the Future

The National Research Council, the operating arm of the National Academies, adopted a new strategic plan in early 2021, defining the organizational vision, mission, and values.¹³ TRB is working actively to develop a new strategic plan, with input from staff and volunteers, to be in alignment with the National Research Council strategic plan. It will particularly emphasize anticipating and preparing for current and future transportation-related challenges and opportunities; expanding TRB's impact; and ensuring TRB's continued creativity, resilience, and sustainability. The plan is scheduled to be adopted in mid-2022.

Upcoming Work on Climate Change, Equity, COVID-19, and Economic Recovery

Forthcoming research will pay further attention to the most crucial topics facing the nation and

the world. A few specific examples of our broad portfolio of work include the following:

- Research is under way on NCHRP guidelines for roadside management and technology that can benefit safety, ecology, and the economy.
- Another NCHRP project will assess regulator air pollution dispersion models to better quantify the impacts of transportation sector greenhouse gas emissions.
- An ACRP publication will help clarify the relationship between air service and economic development.
- Airports and travelers can expect further research from ACRP to understand and mitigate the risk of communicable disease transmission.

TRB also will continue its work on the full range of topics and issues of concern to its





Russell W. Houston
TRB Associate
Executive Director



Patrice A. Davenport
Director, Strategic
Program Development



Paul Mackie
Director, TRB
Communications/Media,
Office of the Chief
Communications Officer



Gary Walker
Senior Deputy Director,
TRB Program Finance,
Office of the Chief
Financial Officer

standing technical committees and research programs. Consensus reports in the works will cover topics from aviation safety trends and metrics for transportation equity to pipeline automatic shutoff valves and repurposing infrastructure plastic waste.

The year 2021 has been unusual for everyone. At TRB, nearly all events and meetings were held virtually, so we look forward to 2022 and hope to hold in-person meetings and conferences as the conditions of the pandemic allow. Some of those upcoming events include

- The TRB Annual Meeting in January in Washington, D.C.;
- The Conference on Sustainability and Emerging Transportation Technology in March in Irvine, California;
- The Symposium on Managed Lanes in May in Atlanta, Georgia;
- The International Conference on Roundabouts in May in Monterey, California; and
- TRANSED: Mobility, Accessibility, and Demand Response Transportation Conference in September in Seattle, Washington.

Endnotes

1 For more, visit <https://www.nationalacademies.org/topics>.

2 View the video at <https://youtu.be/1BMgn5lvm3c>.

3 This article, which cites the TRR paper “Deep Learning-Based Visual Identification of Signs of Bat Presence in Bridge Infrastructure Images: A Transfer Learning Approach,” is available at <https://theconversation.com/artificial-intelligence-can-help-highway-departments-find-bats-roosting-under-bridges-166806>.

4 For more, see <https://www.greencarcongress.com/2021/08/20210811-resilience.html>.

5 To read the report, visit <https://transportationtodaynews.com/news/23724-report-recommends-usdot-include-resilience-factors-when-considering-projects>.

6 For more, see <https://grist.org/regulation/avgas-lead-epa-aviation-san-jose-reid-hillview>.

7 “Finding New Funds for the Interstate Highway System” can be accessed at <https://www.wsj.com/articles/finding-new-funds-for-the-interstate-highway-system-11626021590>.

8 To read the blog post, visit <https://www.nationalacademies.org/trb/blog/steps-for-transportation-workforce-diversity-outlined-in-trb-research>.

9 The paper is available at <https://journals.sagepub.com/doi/full/10.1177/03611981211037232>.

10 To read the blog post, visit <https://www.nationalacademies.org/trb/blog/laws-and-safety-efforts-can-prevent-distracted-driving>.

11 The blog post can be found at <https://www.nationalacademies.org/trb/blog/work-zones-need-detailed-research-planning-and-technology-to-be-made-safe>.

12 To read the blog post, visit <https://www.nationalacademies.org/trb/blog/passenger-transportation-takes-off-in-new-directions>.

13 To view the National Research Council strategic plan, visit https://www.nationalacademies.org/documents/link/web?!dcService=GET_LE&dLinkId=LDo3D446FoBA296DA9440EBB9739B64B92A9477E7306&item=fFileGUID%3aDB4DC1FoF8C6D4707DAA110A4790523122A000124DB5&scsOriginalFileName=rc-sp-final.pdf.

TRB Volunteer Leadership

TRB’s Executive Committee provides strategic direction and oversight of TRB’s programs and activities. The 26 appointed members of the volunteer Executive Committee are chosen from among public- and private-sector executives, prominent academicians, and members of the National Academies. In addition, 19 ex officio members—top executives from

TRB’s sponsoring agencies—serve on the Executive Committee. There are two additional ex officio voting members; however, they are former chairs rather than representatives of sponsoring agencies. As TRB Executive Director, Neil Pedersen is the only staff member on the committee.

Transportation Research Board 2021 Executive Committee*



Susan A. Shaheen, Professor, Civil and Environmental Engineering, and Co-Director, Transportation Sustainability Research Center, University of California, Berkeley



Nathaniel P. Ford, Sr., Chief Executive Officer, Jacksonville Transportation Authority, Jacksonville, Florida



Neil J. Pedersen, Executive Director, Transportation Research Board, Washington, D.C.



Michael F. Ableson, CEO, Arrival Automotive–North America, Detroit, Michigan



Marie Therese Dominguez, Commissioner, New York State Department of Transportation, Albany



Ginger Evans, Chief Strategy Officer, CAG Holdings, Inc., Washington, D.C.



Michael F. Goodchild, Professor Emeritus, Department of Geography, University of California, Santa Barbara



Diane Gutierrez-Scaccetti, Commissioner, New Jersey Department of Transportation, Trenton



Susan Hanson, Distinguished University Professor Emerita, Graduate School of Geography, Clark University, Worcester, Massachusetts



Stephen W. Hergarten, Professor, Emergency Medicine, Medical College of Wisconsin, Milwaukee



Chris T. Hendrickson, Hamerschlag University Professor of Engineering Emeritus, Carnegie Mellon University, Pittsburgh, Pennsylvania



S. Jack Hu, UGA Foundation Distinguished Professor of Engineering, Senior Vice President for Academic Affairs, and Provost, University of Georgia, Athens



Randell Iwasaki, Leader, State and Local Transportation for Amazon Web Services, Walnut Creek, California



Ashby Johnson, Executive Director, Capital Area Metropolitan Planning Organization, Austin, Texas



William Kruger, Vice President, UPS Freight for Fleet Maintenance and Engineering, Richmond, Virginia



Julie Lorenz, Secretary, Kansas Department of Transportation, Topeka



Michael R. McClellan, Vice President–Strategic Planning, Norfolk Southern Corporation, Norfolk, Virginia



Patrick K. McKenna, Director, Missouri Department of Transportation, Jefferson City



Brian W. Ness, Director, Idaho Transportation Department, Boise



Craig E. Philip, Research Professor and Director, VECTOR, Department of Civil and Environmental Engineering, Vanderbilt University, Nashville, Tennessee



Leslie S. Richards, General Manager, Southeastern Pennsylvania Transportation Authority, Philadelphia



Kevin J. Thibault, Secretary, Florida Department of Transportation, Tallahassee



James M. Tien, Distinguished Professor and Dean Emeritus, College of Engineering, University of Miami, Coral Gables, Florida



Shawn Wilson, Secretary, Louisiana Department of Transportation and Development, Baton Rouge



Michael R. Berube, Deputy Assistant Secretary for Sustainable Transportation, U.S. Department of Energy, Washington, D.C. (*ex officio*)



Amit Bose, Deputy Administrator, Federal Railroad Administration, Washington, D.C. (*ex officio*)



Carlos M. Braceras, Executive Director, Utah Department of Transportation, Salt Lake City (*ex officio*)



Tristan Brown, Deputy Administrator, Pipeline and Hazardous Materials Safety Administration, Washington, D.C. (*ex officio*)



Steven Cliff, Deputy Administrator, National Highway Traffic Safety Administration, Washington, D.C. (*ex officio*)



Richard Corey, Executive Officer, California Air Resources Board, Sacramento (*ex officio*)



Stephen M. Dickson, Administrator, Federal Aviation Administration, U.S. Department of Transportation, Washington, D.C. (*ex officio*)



Nuria I. Fernandez, Administrator, Federal Transit Administration, Washington, D.C. (*ex officio*)



LeRoy Gishi, Chief, Division of Transportation, Bureau of Indian Affairs, U.S. Department of the Interior, Germantown, Maryland (*ex officio*)



Martha R. Grabowski, McDevitt Distinguished Chair in Information Systems, Le Moyne College, Syracuse, New York, and Senior Research Scientist, Rensselaer Polytechnic Institute, Troy, New York (*ex officio*)



William H. Graham, Jr. (Major General, U.S. Army), Deputy Commanding General for Civil and Emergency Operations, U.S. Army Corps of Engineers, Washington, D.C. (*ex officio*)



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



Robert Hampshire, Deputy Assistant Secretary for Research and Technology, U.S. Department of Transportation, Washington, D.C. (*ex officio*)



Meera Joshi, Deputy Administrator, Federal Motor Carrier Safety Administration, Washington, D.C. (*ex officio*)



Eleftheria Kontou, Assistant Professor, University of Illinois, Urbana-Champaign, Urbana, and Chair, TRB Young Members Coordinating Council (*ex officio*)



Stephanie Pollack, Deputy Administrator, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. (*ex officio*)



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



Karl Simon, Director, Transportation and Climate Division, U.S. Environmental Protection Agency, Washington, D.C. (*ex officio*)



Paul P. Skoutelas, President and CEO, American Public Transportation Association, Washington, D.C. (*ex officio*)



Katherine F. Turnbull, Executive Associate Director and Regents Fellow Research Scientist, Texas A&M Transportation Institute, College Station (*ex officio*)



Jim Tymon, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (*ex officio*)

APPENDIX A**Statement of Activities**

Funding Support by Program and Expenditures, Calendar Years 2020 and 2021

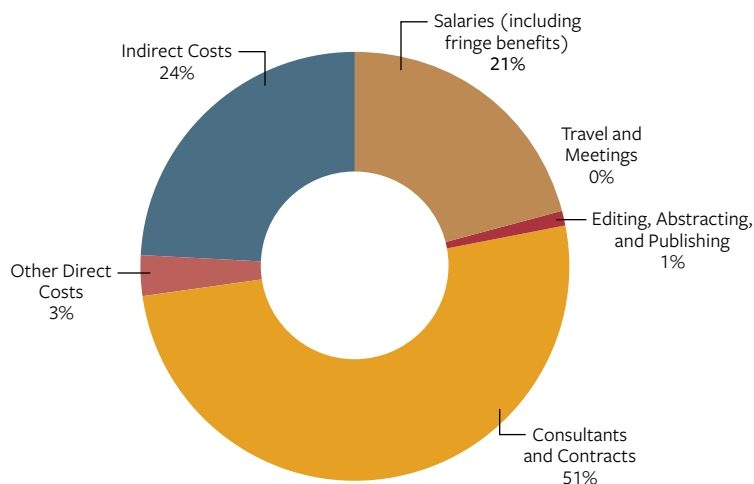
	2020 (ACTUAL)	2021 (PROJECTED)*
Core Technical Activities		
State Highway and Transportation Departments (State DOTs)	\$7,910,000	\$8,004,000
Federal Government		
Federal Highway Administration (FHWA)	1,425,000	1,400,000
Federal Transit Administration (FTA)	187,000	194,000
National Highway Traffic Safety Administration (NHTSA)	162,000	127,000
Department of the Interior	85,000	85,000
Office of the Assistant Secretary of Transportation for Research and Technology (OST-R)	225,000	81,000
Department of Energy (DOE)	74,000	76,000
Environmental Protection Agency	74,000	76,000
U.S. Air Force Civil Engineer Center	74,000	76,000
U.S. Army Corps of Engineers	25,000	75,000
Federal Aviation Administration (FAA)	54,000	42,000
Federal Railroad Administration	54,000	38,000
Pipeline and Hazardous Materials Safety Administration	0	25,000
Federal Motor Carrier Safety Administration	56,000	31,000
Subtotal, Federal Government	\$2,495,000	\$2,326,000
Other		
California Air Resources Board	79,000	81,000
American Public Transportation Association	74,000	76,000
Association of American Railroads	74,000	76,000
Fees and Sales	2,853,000	4,398,000
Subtotal, Other	\$3,080,000	\$4,631,000
Total, Core Technical Activities	\$13,485,000	\$14,961,000
Marine Board Core Program		
U.S. Coast Guard	75,000	75,000
U.S. Army Corps of Engineers	75,000	75,000
Office of Naval Research	65,000	65,000
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 Supervisor of Salvage and Diving	12,000	12,000
Total, Marine Board Core Program	\$316,000	\$316,000
Cooperative Research Programs		
National Cooperative Highway Research Program (State DOTs)	43,869,000	41,362,000
Airport Cooperative Research Program (FAA)	12,503,000	12,607,000
Transit Cooperative Research Program (FTA)	5,093,000	4,485,000
Behavioral Traffic Safety Cooperative Research Program (Governors Highway Safety Association, NHTSA)	1,163,000	1,735,000
National Cooperative Freight Research Program (OST-R)	32,000	0
Total, Cooperative Research Programs	\$62,660,000	\$60,189,000

	2020 (ACTUAL)	2021 (PROJECTED)*
Rail Safety IDEA Program	\$367,000	\$220,000
Evaluations of FHWA Research and Technology Program Projects	\$791,000	\$682,000
Second Strategic Highway Research Program Safety Data, Phase 1	\$1,392,000	\$0
Policy Studies	\$2,313,000	\$2,804,000
Conferences, Workshops, Forums, Research Projects, and TRB Centennial	\$1,350,000	\$945,000
TRB TOTAL	\$82,674,000	\$80,117,000
Sources of Funds		
Federal	26,571,000	25,131,000
State DOTs	51,779,000	49,366,000
Other	4,324,000	5,620,000
	\$82,674,000	\$80,117,000
Expenditures by Major Cost Category		
Salaries (including fringe benefits)	16,823,000	16,417,000
Travel and Meetings	1,452,000	251,000
Editing, Abstracting, and Publishing	1,489,000	1,048,000
Consultants and Contracts	42,970,000	40,418,000
Other Direct Costs	2,035,000	2,182,000
Indirect Costs	19,522,000	18,937,000
Total Expenditures	\$84,291,000	\$79,253,000
TRB Reserve Fund		
Fund balance, end of previous fiscal year	\$19,206,000	\$17,589,000
Plus (minus) current fiscal year income over (under) expenditures	(1,617,000)	864,000
Balance, current fiscal year	\$17,589,000	\$18,453,000

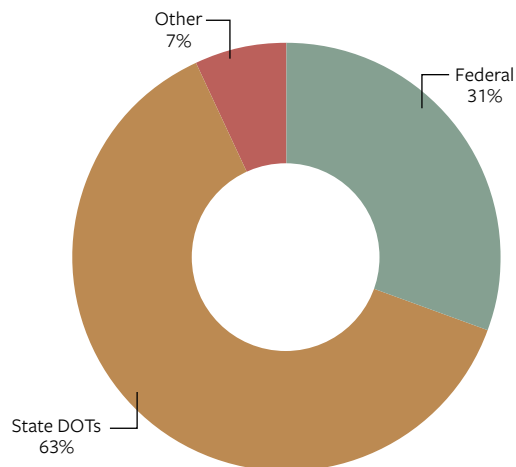
In 1965, the TRB Executive Committee approved a reserve fund to provide for orderly adjustments in the event of a temporary shortfall in anticipated revenues for TRB technical activities. This fund, built up over the years from surplus income in excess of expenditures from nonfederal sources for any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

* Calendar Year 2021 comprises actual data through October and estimates for the remainder of the year.

Distribution of TRB Expenditures



TRB Funding Support



APPENDIX B**Institutional Affiliates****Sponsors****State Transportation Departments***(Listed with TRB Representatives)***Alabama Department of Transportation**

Juanita Owens

Alaska Department of Transportation and Public Facilities

Anna Bosin

Arizona Department of Transportation

Dianne Kresich

Arkansas State Highway and Transportation Department

Christopher Dailey

California Department of Transportation

Dara Wheeler

Colorado Department of Transportation

Stephen Cohn

Connecticut Department of Transportation

Edgardo Block

Delaware Department of Transportation

Drew Boyce

District Department of Transportation

Stephanie Dock

Florida Department of Transportation

James D. Dockstader

Georgia Department of Transportation

Supriya Kamatkar

Hawaii Department of Transportation

Casey C. Abe

Idaho Transportation Department

Ned E. Parrish

Illinois Department of Transportation

Megan Swanson

Indiana Department of Transportation

Barry K. Partridge

Iowa Department of Transportation

Peggi S. Knight

Kansas Department of Transportation

Daniel Wadley

Kentucky Transportation Cabinet

Jason Siwula

Louisiana Department of Transportation and Development

Samuel Cooper

Maine Department of Transportation

Dale Peabody

Maryland State Highway Administration

Richard Y. Woo

Massachusetts Department of Transportation

Stephen Woelfel

Michigan Department of Transportation

Carol Aldrich

Minnesota Department of Transportation

Hafiz Munir

Mississippi Department of Transportation

Cynthia Smith

Missouri Department of Transportation

Jennifer Harper

Montana Department of Transportation

Susan C. Sillick

Nebraska Department of Roads

Mick S. Syslo

Nevada Department of Transportation

Ken Chambers

New Hampshire Department of Transportation

Ann Scholz

New Jersey Department of Transportation

Amanda Gendek

New Mexico Department of Transportation

Randy Trujillo

New York State Department of Transportation

Wei-Shih Yang

North Carolina Department of Transportation

Neil Mastin

North Dakota Department of Transportation

Matthew Linneman

Ohio Department of Transportation

Vicky Fout

Oklahoma Department of Transportation

David Ooten

Oregon Department of Transportation

Michael Edward Bufalino

Pennsylvania Department of Transportation

Brian Wall

Rhode Island Department of Transportation

Christos Xenophontos

South Carolina Department of Transportation

Terry Swygert

South Dakota Department of Transportation

David L. Huft

Tennessee Department of Transportation

David Lee

Texas Department of Transportation

Kevin Pete

Utah Department of Transportation

Cameron T. Kergaye

Vermont Agency of Transportation

Emily Parkany

Virginia Department of Transportation

Catherine McGhee

Washington State Department of Transportation

Anne Freeman

West Virginia Department of Transportation

Perry Keller

Wisconsin Department of Transportation

Diane Gurtner

Wyoming Department of Transportation

Timothy McDowell

Federal Government**U.S. Department of Transportation****Federal Aviation Administration****Federal Highway Administration****Federal Motor Carrier Safety Administration****Federal Railroad Administration****Federal Transit Administration****National Highway Traffic Safety Administration****Office of the Assistant Secretary of Transportation for
Research and Technology****Pipeline and Hazardous Materials Safety Administration****U.S. Air Force Civil Engineer Center****U.S. Army Corps of Engineers****U.S. Coast Guard****U.S. Department of Energy****U.S. Department of the Interior****U.S. Environmental Protection Agency****Other Organizations****American Association of State Highway and Transportation
Officials****American Public Transportation Association****Association of American Railroads****California Air Resource Board****Marine Board Sponsors****Bureau of Safety and Environmental Enforcement
Maritime Administration****National Oceanic and Atmospheric Administration****Office of Naval Research****Office of the Supervisor of Salvage and Diving, U.S. Navy****U.S. Army Corps of Engineers****U.S. Coast Guard****Global Affiliate Sustaining Circle****Applied Research Associates, Inc.****Caliper Corporation****HDR****HNTB****Jacobs****Kittelson & Associates, Inc.****Michael Baker International, Inc.****National Transportation Safety Board****Port Authority of New York and New Jersey****Texas A&M Transportation Institute****The World Bank****U.S. Department of Agriculture****VHB****Washington Metropolitan Area Transit Authority****WSP****Calendar and Fiscal Year 2021 Core Financial Support
Provided by**

- 91 Sponsor and Sustaining Global Affiliates
- 55 Organizational Affiliates from 10 nations
- More than 600 individual affiliates

APPENDIX C**TRB Webinars, Conferences, and Workshops**

January 1–December 31, 2021

*In-person conferences and workshops are noted with their location.***January**

11, 14	Safe Transportation of Liquefied Natural Gas (LNG) by Railroad Tank Car Committee Meeting	4	Bureau of Safety and Environmental Enforcement Inspection Report Briefing
13–15	International Symposium on Pavement, Roadway, and Bridge Life Cycle Assessment*	4	TRB Webinar: Transportation Impacts in Managing Retreat from High-Risk Areas
22, 25	Meeting: Committee on Options for Improving the Safety of Amphibious Vessels (DUKW Boats) When Used in Passenger Service	5	USCG Oversight of Recognized Organizations Committee Meeting
24–28	TRB 100th Annual Meeting	8	Gulf Research Program Committee on Risk
28–29	U.S. Coast Guard (USCG) Oversight of Recognized Organizations Committee Meeting	8	TRB Webinar: Visualizing Effects of COVID-19 on Transportation: A One-Year Retrospective

February

2	TRB Webinar: Options for Reducing Lead Emissions from Piston-Engine Aircraft	10	TRB Webinar: Diversity in Airport Business Contracting and Workforce Programs
3	TRB Webinar: Rock On—The Impacts of the Mischaracterization of Rock	11	TRB Webinar: Concrete Overlays of Asphalt
4	TRB Webinar: Understanding Pavements—Long-Term Pavement Performance Program Updates	15	Meeting: Committee on Options for Improving the Safety of DUKW Boats When Used in Passenger Service
8	TRB Webinar: People Movers and Shakers—Quality of Life in Airport Communities	15	TRB Webinar: Texting While Driving—Implications of Legislation on Electronic Devices
10	TRB Webinar: Driving Toward the Truth—Dispelling the Myths About Cannabis Products	15–17	Advancing the Marine Transportation System Through Automation and Autonomous Technologies: Trends, Applications, and Challenges
17	TRB Webinar: Centering Seams—Maintaining Centerline Joints in Asphalt Pavements	16	TRB Webinar: The Ubiquitous Unmanned Aerial Vehicle—UAVs for Infrastructure Monitoring
18	TRB Webinar: A Two-Way Ticket—Collaborative Planning Among Airports & Public Agencies	18	TRB Webinar: Measuring Resiliency—Tools for Analyzing Resilient Transportation Systems
22	TRB Forum on Automated Vehicles and Shared Mobility: State and Regional Department of Transportation (DOT) Perspectives on Connectivity	23	TRB Webinar: The New Virtual Reality for Public Meetings and Social Distancing
22	TRB Webinar: Using Artificial Intelligence to Predict Deterioration of Highway Bridges	24	TRB Webinar: Emerging Challenges for Congestion Pricing on Managed Lanes
22–25	Geosynthetics Conference*	25	TRB Webinar: Analyzing Corridors and Systems with the Highway Capacity Manual
25	TRB Webinar: Retrospective, Perspective, and Prospective of Transit-Oriented Development	26, 30	USCG Oversight of Recognized Organizations Committee Meeting
26	USCG Oversight of Recognized Organizations Committee Meeting	30	TRB Webinar: Real-Time Response—A Pandemic Playbook for Public Transportation Agencies

March

2	TRB Webinar: Developing Airport Emergency Plans	31	TRB Webinar: Evaluating Tack Coat Materials' Durability in Asphalt Pavements
3	TRB Webinar: Chemical Treatments on Low-Volume Roads		

April

6–8	Measuring and Managing Freight System Resilience Workshop
7	TRB Webinar: Advances in Pavement Condition Surveys
8	TRB Webinar: Truck Assumptions for Roundabout Design

- 11–18 10th International Conference on Bridge Maintenance, Safety, and Management*
- 12 TRB Webinar: Technical and Sustainability Aspects of Lightweight Concrete Bridges
- 13 TRB Webinar: Minutes Matter—Bus Service Reliability
- 14 TRB Webinar: Geochemistry and Mineralogy in Chemical Soil Stabilization
- 19–21 International Transportation Finance Summit*
- 20–21 Joint Rail Conference*
- 20 TRB Webinar: The Day of the Drones—Airports and Unmanned Aircraft Systems, Part 1
- 21 TRB Webinar: Navigating Environmental Compliance for Public–Private Partnerships
- 22 TRB Webinar: Hydrodemolition for Bridge Rehabilitation
- 26 TRB Webinar: Paving the Way to Successful AASHTOWare Pavement ME Implementation
- 27 TRB Webinar: The Day of the Drones—Airports and Unmanned Aircraft Systems, Part 2
- 28 TRB Webinar: Strategically Implementing Transportation Security Measures
- 29 USCG Oversight of Recognized Organizations Committee Meeting
- 29 TRB Webinar: Washout! Infiltration-Caused Failure of Slopes Made of Plastic Clay
- 29–30 Research and Technology Coordinating Committee (RTCC) Meeting

May

- 6 TRB Webinar: Senior Leadership’s Role in Embedding Transportation Resilience
- 11–12 Research Day at the International Transport Forum Annual Summit*
- 12 TRB Webinar: Increasing Return on Investment through Geotechnology
- 13 TRB Webinar: How Ridehailing Companies Affect Airport Revenues and Operations
- 16–20 National Association of Environmental Professionals Annual Conference and Training Symposium*
- 17 TRB Webinar: Visualizing Transportation System Performance
- 18 TRB Webinar: Improving Transportation Access to Health Care
- 24–27 4th International Conference on Transportation Geotechnics*
- 24 TRB Webinar: Geotechnical Responses to Extreme Events
- 25 TRB Webinar: Drilled Shaft Design for Durability, Mix Stability, and Thermal Criteria
- 26–28 International Conference on Resource Sustainability: Sustainable Pavement Technologies*
- 26 TRB Webinar: Enhancing the Capacity for Transportation System Resilience

June

- 2 TRB Webinar: Not Easy Being Green—Colorizing Bicycle Lanes to Enhance Safety
- 3 TRB Webinar: Trust but Verify—Validating Contractor Test Data
- 7 Safe Transportation of LNG by Railroad Tank Car Committee Meeting
- 8 TRB Webinar: Catching Up on Low-speed Automated Vehicles in Public Transit
- 10 Gulf Research Program Committee on Risk
- 14 TRB Webinar: Redesigning Transit Networks for the New Mobility Future
- 15–19 World Transport Convention 2021*
Xi’an, China
- 16 TRB Webinar: Rapid Testing for Asphalt-Treated Cold Recycled Pavements
- 17 TRB Webinar: Casting Connections—Improving Performance and Durability of Steel Bridges
- 21–24 TRB Conference on Transportation Planning Applications
- 21 TRB Webinar: State and Local Deployments of Connected & Automated Vehicle Infrastructure
- 22 TRB Webinar: The Future of Bridge Foundation Designs with Artificial Intelligence
- 23–28 6th International Symposium on Highway Geometric Design*
- 23 TRB Webinar: Compost It! Environmental Benefits of Compost in Highway Roadsides
- 28 TRB Webinar: Addressing Justice in Transportation
- 29 TRB Webinar: One Pack to Rule Them All—The Cone Penetration Test Expansion Pack
- 30–July 2 10th International Conference on Structural Health Monitoring of Intelligent Infrastructure*
Porto, Portugal

July

- 7 TRB Webinar: What is the True Cost of Infrastructure Assets Maintenance?
- 8 TRB Webinar: Asphalt Killers—Fatigue, Formulation, and Old Age in Binders
- 12, 14, 16, 19, 21 TRB Roadside Safety Design and AASHTO Roadside Safety Joint Committee Meeting
- 12–14 International Symposium on Frontiers of Road and Airport Engineering*
- 12–15 Automated Road Transportation Symposium 2021
- 15 USCG Oversight of Recognized Organizations Committee Meeting
- 16 Review of Federal Highway Administration Infrastructure R&D: Expert Task Group on Pavements
- 20 TRB Webinar: Are We All in the Same Boat? Involving Communities in Coastal Resilience

- 21 Review of Federal Highway Administration Infrastructure R&D: Expert Task Group on Bridges
- 21 TRB Webinar: Public Transit as a Climate Solution
- 26–28 Geospatial Data Acquisition Technologies in Design and Construction Summer Committee Meeting
- 26 TRB Webinar: Guidance for Setting Speed Limits
- 27 Review of Federal Highway Administration Infrastructure R&D
- 27 TRB Webinar: Staying Connected—Social Media and Airport Emergency Management
- 28 TRB Webinar: Using Drones to Inspect Bridges
- 29 TRB Webinar: Integrating Multimodal Fare Payments
- 13 TRB Webinar: Training Operations Personnel at Small Airports
- 14 TRB Webinar: Chip Seals, Microsurfacing, and Fog Seals Specifications
- 15 TRB Webinar: Evaluating the Performance of Retaining Walls and Embankments
- 16 Gulf Research Program Committee on Risk
- 21 TRB Webinar: Improving Bus Stops through Transit Agency Relationships
- 21–23 Innovations in Freight Data
- 27–Oct. 1 12th International Conference on Concrete Pavements*
- 27 TRB Webinar: Innovations in Using Vehicle Probe, Connected Vehicles, and Cellular Data
- 28 TRB Webinar: TRID and Reference Management Software
- 29 TRB Webinar: Implementing Airport Public–Private Partnerships
- 30 TRB Webinar: Ensuring Construction Quality Assurance with Light-Weight Deflectometers

August

- 3 TRB Webinar: Improving Pavement Geomaterial Performance with Unsaturated Soil Mechanics
- 4 TRB Webinar: Reducing Crashes Through Systemic Safety Analysis
- 5–6 Bridging Transportation Researchers Online Conference*
- 9 TRB Webinar: Lend a Helping Hand—Sharing Airport Data for Risk Management
- 10–12 National Conference on Transportation Asset Management
- 11–13 11th Pan-American Conference of Transport and Logistics 2021*
- 12 TRB Webinar: Road Passages and Barriers for Small Terrestrial Wildlife
- 16 TRB Webinar: Roadsides as Transportation Assets—Georgia Case Study
- 18 TRB Webinar: Changing the Manual to Support Deployment of Automated Vehicles
- 19 USCG Oversight of Recognized Organizations Committee Meeting
- 24–27 Highway Capacity and Quality of Service
- 25 TRB Webinar: Evaluating and Rating Unsurfaced Roads
- 26 TRB Webinar: Use and Design of Low-Density Cellular Concrete
- 30 Emerging Trends in Aviation Safety Committee Meeting
- 30 TRB Webinar: Fixing the Bump at the End of the Bridge
- 31 TRB Webinar: LED Roadway Lighting’s Effect on Driver Sleep Health and Alertness

September

- 2 TRB Webinar: A Guide to Joint Development for Public Transportation Agencies
- 8 TRB Webinar: Enter and Search Projects Like a Pro with Research in Progress Database
- 9–14 Conference on Advancing Transportation Equity
- 13–15 60th Annual Workshop on Transportation Law

October

- 5 Review of Federal Highway Administration Infrastructure R&D: Expert Task Group on Pavements
- 5 TRB Webinar: Workforce Management in Transportation
- 7 TRB Webinar: What’s Next for Integrated Corridor Management?
- 11–15 ITS World Congress*
Hamburg, Germany
- 12 TRB Webinar: Attention Employers! Cultivating Talent in the Airport Environment
- 12–14 Research-to-Practice Transit Symposium*
- 13 TRB Webinar: Changing Transportation System Technologies
- 14 TRB Webinar: Practical Perspectives on Alkali Silica Reactivity
- 18 TRB Webinar: That’s the Ticket! Evaluating Traveler Perspectives
- 19 TRB Webinar: Transportation Resilience Metrics
- 18–21 International Conference on Scour and Erosion*
- 20 Emerging Trends in Aviation Safety Committee Meeting
- 21 TRB Webinar: Air Quality Impact Models for Electric Vehicle Fleets
- 25–27 National Conference on Rural, Public, and Intercity Bus Transportation
- 26 TRB Webinar: Entrained Air-Void Systems for Durable Highway Concrete
- 27 TRB Webinar: Managing Equity in Priced Managed Lanes
- 27–29 Drug-Impaired Driving Conference
- 28 TRB Webinar: Designing and Implementing Smart Cities

November

- 1–5 Maritime Risk Symposium*
- 1–5 Conference on Transformative Times in Transportation Security
- 1 TRB Webinar: Building Information Modeling for Infrastructure
- 3 Navigating the Supply Chain Crisis
- 5 TRB Webinar: Ensuring a Productive TRB Annual Meeting Experience for All Young Attendees
- 7–10 Geo-Extreme Conference*
Savannah, Georgia
- 8 TRB Webinar: Giving Low-Volume Roads a Longer Life with Geosynthetics
- 9 TRB Webinar: Progress Toward More Resilient Pavements
- 15 TRB Webinar: Shovel Ready—Using Digital Terrain Models in Construction
- 16 TRB Webinar: Creature Comforts—Designing Terminal Restrooms and Ancillary Spaces
- 17 TRB Webinar: Hit the Ground Running—Designing Roundabouts with Conventional Pavement
- 18 TRB Webinar: Performance and Benefits of Metalizing and Duplex Coating

- 22 TRB Webinar: Pavement Maintenance Before Preservation
- 29 TRB Webinar: Paving the Way Toward Carbon-Neutral Concrete
- 30–
Dec. 1 Review of Federal Highway Administration Infrastructure R&D

December

- 1 TRB Webinar: Innovations in Bridge Foundation Load Testing and Data Integration
- 6 TRB Webinar: Power Up! Implementing an Airport Microgrid
- 7–9 International Workshop on Structural Health Monitoring*
Stanford, California
- 8–10 Virtual Accelerated Bridge Construction Conference*
- 9 RTCC Meeting
- 9 TRB Webinar: Examining Exclusions—What’s Missing in the Historic Review Process?
- 15 TRB Webinar: The Mighty River—Inland Waterway Resilience Analysis
- 16 TRB Webinar: Hit the Ground Running—Designing Roundabouts with Innovative Concrete Pavements

* TRB was cosponsor of the meeting.

APPENDIX D**Publications**

January 1–December 31, 2021

Transportation Research Record (online)

- 2675:1 Issue 1: January 2021
- 2675:2 Issue 2: February 2021
- 2675:3 Issue 3: March 2021
- 2675:4 Issue 4: April 2021
- 2675:5 Issue 5: May 2021
- 2675:6 Issue 6: June 2021
- 2675:7 Issue 7: July 2021
- 2675:8 Issue 8: August 2021
- 2675:9 Issue 9: September 2021
- 2675:10 Issue 10: October 2021
- 2675:11 Issue 11: November 2021
- 2675:12 Issue 12: December 2021

Special Reports¹

- 336 Options for Reducing Lead Emissions from Piston-Engine Aircraft
- 337 The Role of Transit, Shared Modes, and Public Policy in the New Mobility Landscape
- 338 Modernizing the U.S. Offshore Oil and Gas Inspection Program for Increased Agility and Safety Vigilance
- 339 Preparing for LNG by Rail Tank Car: A Review of a U.S. DOT Safety Research, Testing, and Analysis Initiative
- 340 Investing in Transportation Resilience: A Framework for Informed Choices
- 341 Technical Feasibility of a Wheelchair Securement Concept for Airline Travel: A Preliminary Assessment

Transportation Research Circulars (E-Circulars) (online)

- E-C268 6th International Conference on Women's Issues in Transportation: Insight, Inclusion, and Impact: Framing the Future for Women in Transportation
- E-C269 2020 Commodity Flow Survey Workshop
- E-C270 Opportunities for Research on Transportation and Equity
- E-C271 Critical Issues in Aviation and the Environment 2021
- E-C272 Technology Exchange on Local Road Bridge Programs
- E-C273 TRB Centennial Circular: History and Future Perspectives on Foundation Design for Transportation Structures
- E-C274 Quality Assurance: Past, Present, and Future
- E-C275 Measuring and Managing Freight System Reliance Workshop

TR News Magazine

- 331 Challenges of Truck Size and Weight (January–February 2021)
- 332 2021 Virtual Event: TRB's 100th Annual Meeting (March–April 2021)

- 333 Diversity, Equity, and Inclusion in the Transportation Profession (May–June 2021)
- 334 Innovations on the Horizon: Research Needs for the Marine Transportation System of the Future (July–August 2021)
- 335 State of Emergency: What Transportation Learned from 9/11 (September–October 2021)
- 336 Collaboration and Innovation at MnROAD Research Facility (November–December 2021)

Online NewslettersTRB Transportation Research E-Newsletter/*TRB Weekly*²**Airport Cooperative Research Program (ACRP) Research Reports³**

- 220 Guidebook for Developing a Zero- or Low-Emissions Roadmap at Airports
- 225 Rethinking Airport Parking Facilities to Protect and Enhance Non-Aeronautical Revenue
- 226 Planning and Design of Airport Terminal Restrooms and Ancillary Spaces
- 227 Evaluating and Implementing Airport Privatization and Public–Private Partnerships
- 228 Airport Microgrid Implementation Toolkit
- 229 Airport Collaborative Decision Making (ACDM) to Manage Adverse Conditions
- 230 Enhancing Academic Programs to Prepare Future Airport Industry Professionals
- 231 Evaluating the Traveler's Perspective to Improve the Airport Customer Experience
- 232 Playbook for Cultivating Talent in the Airport Environment
- 233 Airport Biometrics: A Primer
- 234 Rapid Slab Repair and Replacement of Airfield Concrete Pavement

ACRP Synthesis³

- 115 Practices in Airport Emergency Plans

ACRP Legal Research Digests³

- 21 Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters as of December 31, 2019 (Update)
- 21 Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters as of December 31, 2020 (Update)
- 41 Legal Issues Relating to Airport Commercial Contracts
- 42 Legal Implications of Data Collection at Airports
- 43 Legal Considerations for Telecommunications at Airports

ACRP Web-Only Document (WOD)

- 51 Commercial Space Vehicle Emissions Modeling

ACRP WebResources

- 2 Airport Passenger Terminal Design Library, 2020 Updates
 10 Periodic Publication on Transformative Technologies at Airports

National Cooperative Highway Research Program (NCHRP) Research Reports⁴

- 876 Guidelines for Integrating Safety and Cost-Effectiveness into Resurfacing, Restoration, and Rehabilitation (3R) Projects (and WOD 244)
 948 Guide for Pedestrian and Bicyclist Safety at Alternative and Other Intersections and Interchanges
 956 Guidebook for Data and Information Systems for Transportation Asset Management
 957 Utilization Measurement and Management of Fleet Equipment
 958 Electrochemical Test Methods to Evaluate the Corrosion Potential of Earthen Materials
 959 Diverging Diamond Interchange Informational Guide, 2nd Edition
 960 Proposed AASHTO Practice and Tests for Process Control and Product Acceptance of Asphalt-Treated Cold Recycled Pavements
 961 Entrained Air-Void Systems for Durable Highway Concrete
 962 Proposed Modification to AASHTO Cross-Frame Analysis and Design
 963 A Pandemic Playbook for Transportation Agencies (joint with TCRP Research Report 225)
 964 Protocols for Network-Level Macrotexture Measurement
 965 Mitigation of Weldment Cracking in Steel Highway Structures Due to the Galvanizing Process
 966 Posted Speed Limit Setting Procedure and Tool: User Guide (and WOD 291)
 967 Asphalt Binder Aging Methods to Accurately Reflect Mixture Aging
 968 LED Roadway Lighting: Impact on Driver Sleep Health and Alertness
 970 Mainstreaming System Resilience Concepts into Transportation Agencies: A Guide (and WOD 293)
 971 Revised Clear-Water and Live-Bed Contraction Scour Analysis (and WOD 294)
 973 Long-Term Aging of Asphalt Mixtures for Performance Testing and Prediction: Phase III Results
 974 Application of Crash Modification Factors for Access Management
 - Volume 1: Practitioner's Guide
 - Volume 2: Research Overview
 975 Transportation System Resilience: Research Roadmap and White Papers
 976 Resilience Primer for Transportation Executives
 978 Initiating the Systems Engineering Process for Rural Connected Vehicle Corridors
 - Volume 1: Research Overview
 - Volume 2: Model Concept of Operations
 - Volume 3: Model System Requirements Specification

- 980 Attracting, Retaining, and Developing the Transportation Workforce: Transportation Planners
 983 Reliability of Crash Prediction Models: A Guide for Quantifying and Improving the Reliability of Model Results (and WOD 303)

NCHRP Syntheses⁴

- 560 Practices for Construction-Ready Digital Terrain Models
 561 Use of Vehicle Probe and Cellular GPS Data by State Departments of Transportation
 562 Repair and Maintenance of Post-Tensioned Concrete Bridges
 563 Performance Metrics for Public-Private Partnerships
 564 Practices for Selecting Pedestrian and Bicycle Projects
 565 Maintenance and Surface Preparation Activities Prior to Pavement Preservation Treatments
 566 Practices for Bridge Approach Systems
 567 Summary State DOT Practices for Developing and Implementing TSMO Plans
 568 Portland Cement Concrete Pavement Joint Sealant Practices and Performance
 569 Practice and Performance of Cold In-Place Recycling and Cold Central Plant Recycling
 570 Practices for Closing Out Highway Projects from Substantial Completion to Final Payment
 572 Night and Weekend Movement of Oversize/Overweight Loads
 573 Practices for Integrated Flood Prediction and Response Systems
 574 Temporary Pavement Markings Placement and Removal Practices in Work Zones
 575 Lighting Practices for Isolated Rural Intersections
 576 Practices for Project-Level Analyses for Air Quality
 577 Collaborative Practices for Performance-Based Asset Management Between State DOTs and MPOs

NCHRP Legal Research Digest⁴

- 84 Fix It, Sign It or Close It: State of Good Repair in an Era of Budget Constraints (joint with TCRP Legal Research Digest 57)

NCHRP Web-Only Documents

- 244 Developing Guidelines for Integrating Safety and Cost-Effectiveness into Resurfacing, Restoration, and Rehabilitation (3R) Projects (and Research Report 876)
 286 Principles and Guidance for Presenting Active Traffic Management Information to Drivers
 291 Development of a Posted Speed Limit Setting Procedure and Tool (and Research Report 966)
 292 Roadside Hardware Replacement Analysis: User Guide
 293 Deploying Transportation Resilience Practices in State DOTs (and Research Report 970)
 294 Revised Clear-Water and Live-Bed Contraction Scour Analysis Training Manual (and Research Report 971)
 295 Improved Prediction Models for Crash Types and Crash Severities
 296 Guidelines for Cost-Effective Safety Treatments of Roadside Ditches

- 297 Intersection Crash Prediction Methods for the Highway Safety Manual
- 299 Investigating the Relationship of As-Constructed Asphalt Pavement Air Voids to Pavement Performance
- 300 Guidance to Predict and Mitigate Dynamic Hydroplaning on Roadways
- 302 Development of a Comprehensive Approach for Serious Traffic Crash Injury Measurement and Reporting Systems
- 303 Understanding and Communicating Reliability of Crash Prediction Models (and Research Report 983)
- 304 Criteria for Restoration of Longitudinal Barriers, Phase II
- 305 Validation of a Performance-Based Mix Design Method for Porous Friction Courses
- 306 Safety Prediction Methodology and Analysis Tool for Freeways and Interchanges
- 307 Guidelines for the Selection of Test Levels 2 Through 5 Bridge Railings
- 309 Safety Performance of Part-Time Shoulder Use on Freeways
- Volume 1: Informational Guide and Safety Evaluation Guidelines
 - Volume 2: Conduct of Research Report
- 310 Evaluation and Synthesis of Connected Vehicle Communication Technologies
- 311 Improving the Efficiency and Consistency of Section 106 Compliance for State DOTs: Strategies for Project-Level Programmatic Agreements
- 313 Selecting Ramp Design Speeds
- Volume 1: Guide
 - Volume 2: Conduct of Research Report
- 314 Updating the AASHTO LRFD Movable Highway Bridge Design Specifications
- 225 A Pandemic Playbook for Transportation Agencies (joint with NCHRP Research Report 963)
- 226 An Update on Public Transportation's Impacts on Greenhouse Gas Emissions
- 227 Prioritization of Public Transportation Investments: A Guide for Decision-Makers
- 228 Resource Guide for Improving Diversity and Inclusion Programs for the Public Transportation Industry
- 229 Assessing and Mitigating Electrical Fires on Transit Vehicles
- 230 Transit and Micromobility

TCRP Syntheses (online)

- 152 Transit Agency Relationships and Initiatives to Improve Bus Stops and Pedestrian Access
- 153 The Transit Analyst Toolbox: Analysis and Approaches for Reporting, Communicating, and Examining Transit Data
- 154 Innovative Practices for Transit Planning at Small to Mid-Sized Agencies
- 155 Intelligent Transportation Systems in Headway-Based Bus Service

TCRP Research Results Digest (online)

- 115 Use of Agency Service Agreements in ADA Paratransit Delivery

TCRP Legal Research Digests (online)

- 56 Joint Development Agreements Using FTA Funds or FTA-Funded Assets
- 57 Fix It, Sign It or Close It: State of Good Repair in an Era of Budget Constraints (joint with NCHRP Legal Research Digest 84)

TCRP Web-Only Document

- 73 Guide to Joint Development for Public Transportation Agencies: Appendices (and Research Report 224)

Behavioral Traffic Safety Cooperative Research Program Research Report

- 1 Using Electronic Devices While Driving: Legislation and Enforcement Implications

1 Available in print and online.

2 Relunched as *TRB Weekly* in September 2021.

3 Entire series available in print and online.

4 Publications released since 2001 available in print and online.

Transit Cooperative Research Program (TCRP) Research Reports (online)

- 219 Guidebook for Deploying Zero-Emission Transit Buses
- 220 Low-Speed Automated Vehicles (LSAVs) in Public Transportation
- 221 Redesigning Transit Networks for the New Mobility Future: Resource and Toolkits
- 222 Analysis of Green Bond Financing in the Public Transportation Industry
- 223 Guidebook and Research Plan to Help Communities Improve Transportation to Health-Care Services
- 224 Guide to Joint Development for Public Transportation Agencies (and WOD 73)

APPENDIX E**TRB Staff**

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