MEMORANDUM

To: Members, TRB Executive Committee
    TAC Representatives to TRB Executive Committee

From: Neil Pedersen
      Executive Director

Subject: Agenda for TRB Executive Committee Meeting
         June 13 & 14, 2018

Enclosed or attached is the agenda book for the Executive Committee meeting on June 13 & 14 (all day Wednesday and Thursday until noon) in the Carriage House at the J. Erik Jonsson Center, Woods Hole, Massachusetts. All of you are receiving this information electronically. Chair Katie Turnbull urges all members to review the agenda material carefully 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. The Subcommittee on Planning and Policy Review (SPPR) met in April and spent a day discussing a number of the items on the agenda and a second day working on the draft “Critical issues in Transportation” document. This agenda reflects the items that SPPR felt were most important for the full Executive Committee to discuss. In addition to our traditional policy session on electric vehicles during the afternoon of June 13th, we will be having an hour and a half discussion on development of the next edition of the “Critical Issues in Transportation” document on the morning of 13th. 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.

**On June 12 (Tuesday), the TRB Division Committee will meet from 5-6 p.m. in Room 208 of the Main House.**

**On June 13 (Wednesday), the meeting will start promptly at 8:30 a.m. Breakfast will be served in the Main House at 7:30 a.m.**
We will break for evening activities at 5:30 p.m. The reception/dinner for members of the TRB Executive Committee and the Technical Activities Council and their guests will begin at 5:30 p.m., in the Main House. For those allergic to shellfish, chicken or vegetarian meals will be available.

On June 14 (Thursday), the meeting will start at 8:30 a.m. and adjourn by 12:00 noon. Breakfast (7:30 a.m.) and lunch (12 noon) will be served. If you are planning to stay for lunch on Thursday and would like to take a boxed lunch with you but did not RSVP yet, please let Cindy Baker know.

Casual resort wear is appropriate at the meetings, as well as the local restaurants. Low, comfortable shoes are suggested, as are sweaters and jackets; it can be windy and the evenings are usually cool.

Internet Access
Wireless internet will be available at no charge.

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

Note: If you find your plans change and you cannot attend the meeting, please call the hotel directly—Inn on the Square (508-457-0606). You must cancel 48 hours prior to your arrival. I would appreciate your letting us know also.
AGENDA FOR JUNE 2018 EXECUTIVE COMMITTEE MEETING

TRB Division Committee Meeting, Tuesday, June 12, 5-6 p.m., in Room 208 in the Main House *(members only)*

**WEDNESDAY, JUNE 13, 2018**

<table>
<thead>
<tr>
<th>Item</th>
<th>Time</th>
<th>Speaker</th>
<th>Type</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Welcome and Announcements</td>
<td>8:30 a.m.</td>
<td>Turnbull</td>
<td>Information</td>
</tr>
<tr>
<td>2.</td>
<td>Self-Introductions; Bias/Conflict of Interest</td>
<td>8:35</td>
<td>All</td>
<td>Discussion</td>
</tr>
<tr>
<td>3.</td>
<td>Approval of January 10-11, 2018 Minutes</td>
<td>8:50</td>
<td>Turnbull</td>
<td>Action</td>
</tr>
<tr>
<td>4.</td>
<td>Approval of Consent Agenda</td>
<td>8:55</td>
<td>Turnbull</td>
<td>Action</td>
</tr>
<tr>
<td>5.</td>
<td>Executive Director's Report</td>
<td>9:00</td>
<td>Pedersen</td>
<td>Information</td>
</tr>
<tr>
<td>6.</td>
<td>TRB Division Committee Report</td>
<td>9:20</td>
<td>Hanson</td>
<td>Information</td>
</tr>
<tr>
<td>7.</td>
<td>Diversity and Inclusion Plan Update</td>
<td>9:30</td>
<td>Lewis</td>
<td>Information</td>
</tr>
<tr>
<td>8.</td>
<td>Resilience Task Force Update</td>
<td>9:45</td>
<td>Arroyo</td>
<td>Information</td>
</tr>
<tr>
<td>9.</td>
<td>Break</td>
<td>10:00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Development of New TRB Strategic Plan</td>
<td>10:15</td>
<td>Pedersen</td>
<td>Discussion</td>
</tr>
<tr>
<td>11.</td>
<td>Critical Issues in Transportation</td>
<td>10:30</td>
<td>Turnbull</td>
<td>Discussion</td>
</tr>
<tr>
<td>12.</td>
<td>Lunch</td>
<td>12:00 p.m.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Forum on Preparing for AVs and Shared Mobility Systems</td>
<td>1:00</td>
<td>Norman (by phone)</td>
<td>Presentation</td>
</tr>
<tr>
<td>14.</td>
<td>Policy Session on Electric Vehicles</td>
<td>1:15</td>
<td>Turnbull</td>
<td>Presentations</td>
</tr>
<tr>
<td>15.</td>
<td>Plenary Discussion</td>
<td>2:30</td>
<td>Turnbull</td>
<td>Discussion</td>
</tr>
<tr>
<td>16.</td>
<td>Break</td>
<td>3:15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Breakout Groups</td>
<td>3:30</td>
<td>All</td>
<td>Discussion</td>
</tr>
<tr>
<td>18.</td>
<td>Break for Evening Activities</td>
<td>5:00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Reception/Dinner</td>
<td>5:30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Time</td>
<td>Speaker</td>
<td>Type</td>
<td>Page</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>-----------</td>
<td>------------------</td>
<td>------</td>
</tr>
<tr>
<td>20.</td>
<td>8:30 a.m.</td>
<td>Turnbull</td>
<td>Rapporteur Reports from Breakouts</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>8:50</td>
<td>Turnbull</td>
<td>Discussion of Policy Session Follow Up</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>9:30</td>
<td>Houston</td>
<td>Future Policy Sessions</td>
<td>120</td>
</tr>
<tr>
<td>23.</td>
<td>9:45</td>
<td>Houston</td>
<td>Centennial Update</td>
<td>127</td>
</tr>
<tr>
<td>24.</td>
<td>10:00</td>
<td></td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>10:15</td>
<td>Brach/Park</td>
<td>Technical Activities Update</td>
<td>129</td>
</tr>
<tr>
<td>26.</td>
<td>10:35</td>
<td>Brooks</td>
<td>Marine Board Update</td>
<td>138</td>
</tr>
<tr>
<td>27.</td>
<td>10:45</td>
<td>Brooks</td>
<td>International Subcommittee</td>
<td>141</td>
</tr>
<tr>
<td>28.</td>
<td>11:00</td>
<td>Hedges</td>
<td>CRP Update</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>11:15</td>
<td>Menzies</td>
<td>Consensus and Advisory Studies Update</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a. Status Update on Current Studies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>b. Transit and Mobility Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>c. Potential Self-Funded Studies</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>11:45</td>
<td>Turnbull</td>
<td>Other business</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>12:00 p.m.</td>
<td></td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>1:00</td>
<td></td>
<td>Adjourn</td>
<td></td>
</tr>
</tbody>
</table>

**Consent Agenda Items**

1. Conferences and Workshops | Brach | 163  
2. Marketing and Communications Plan Update | Marflak | 180  
3. SPPR Meeting Minutes | Menzies | 183  

**BACKGROUND ATTACHMENTS:**

- Rosters and Staff – page 192
- Organization Charts – page 200
- Division Descriptions – page 201
- Purpose and Duties of Executive Committee – page 213
- Standing Oversight Committees – page 215
- Project Approval Processes – page 218
- Policy on Executive Committee Participation – page 220
Next Meeting: January 16 & 17, 2019 (Wednesday & Thursday)
Marriott Marquis
Washington, DC

Next Summer Meeting: June 19-20, 2019 (Wednesday & Thursday)
(Woods Hole, MA)
Conflict of Interest and Bias Definitions

• “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.

• “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.
Conflict of Interest

- 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.

Bias

- Perspective -- point of view;
- Expertise -- relevant to understanding and analyzing the issues;
- Goal is to achieve balance, not disqualify.
TRB Executive Committee Meeting
-Draft Minutes-
Wednesday, January 10, 2018, 8:30 a.m. – 4:30 p.m.
Thursday, January 11, 2018 8:30 a.m. – 11:45 a.m.
Marriott Marquis, Washington, D.C.

View the Executive Committee Website for the Agenda Book and Select Presentations

January 10, 2018

I. Welcome, Introduction, and Overview of Agenda (p. 4)                     Dougherty
   A. Bias/Conflict of Interest Discussion (p. 6)   Dougherty/Pedersen
      • Recognition of committee members rotating off of the committee, new
        appointments, and reappointments.
      • Meeting attendee list is attached to the end of this document.
      • There were no significant issues raised during the conflict of interest discussion.
   B. National Academies of Sciences, Engineering, and Medicine (NASEM) anti-
      harassment statement (p. 7)

II. Approval of June 22 and 23, 2017 Minutes (p. 8)                   Dougherty
     Approved

III. Approval of Consent Agenda (p.18-63)          Dougherty
    A. Conference Approvals
    B. Marine Board Report
    C. Cooperative Research Program Report
    D. Subcommittee on Policy and Planning Review Report
    E. Transformational Technologies Task Force Closeout Report
    F. Transportation and Public Health Task Force Closeout Report
    G. New Revenues Task Force Closeout Report
    H. SHRP 2 Safety Phase 1 Status Report
     Approved

IV. Executive Director’s Report (p. 64)            Pedersen
    A. Pedersen reports that TRB finances are in good shape, due in part to the growth of
       private sector support through the new TRB Global Affiliates program, and continued
       support from the TRB Annual Meeting patron and exhibit opportunities.
    B. Strategic research roadmaps on transformational technologies, resilience, and
       health, are being developed.
    C. Roundtables and forums are being developed on automated vehicles and shared
       mobility.
D. The resilience task force has been reconstituted to focus on mitigation and sustainability.

E. TRB’s Critical Issues in Transportation document will be a strategic document for TRB. Twelve topic areas will be covered. The Subcommittee on Planning and Policy Review (SPPR) will be refining the list, and a list will be available for review in June 2018. The report will go through the National Research Council report review process.

F. Pedersen provided updates on the Inclusion and Diversity Strategic Plan, the International Activities Strategic Plan, and young members’ activities.

G. The NASEM is conducting two external reviews, the first on products and processes and the second regarding communication practices.

H. Pedersen announced that Mark Norman and Steve Godwin are making transitions. Norman is retiring, and Godwin is now a Scholar in Residence. Tom Menzies is now serving as acting director for consensus studies.

V. **Centennial Task Force Update (p. 88)**

A. The task force established a goal, theme, and logo for the event; identified products and promotional opportunities; and developed a marketing and communications plan to be in place by April 2018 so volunteers and staff can start developing materials for the upcoming celebration.

B. The committee is working on developing a 100th Anniversary History Book. Sarah Jo Peterson has been hired as the author and is actively conducting research for the book.

C. Other products include a website, social media campaign, lists, booklets, roaming exhibits, and an Annual Meeting Exhibit.

D. Fundraising activities are underway, including outreach to patrons as well as the Smithsonian, Ford, and other corporate or foundation partners.

E. Executive Committee members provided ideas on ways to interest the general media in TRB’s centennial.

VI. **Inclusion and Diversity**

A. **TRB Division Committee Update (p. 93)**

   - The TRB Division Committee was formerly known as the Subcommittee on NRC Oversight (SNO).
   - As part of NASEM, TRB’s Division Committee ensures that all TRB reports meet standards for objectivity and quality set by the institution; and tracks and promotes overall participation of minorities, women, and other underrepresented groups in all TRB committees and panels. Profession, age, gender, geography, race, and ethnicity are dimensions that the NASEM also tracks.
     - Younger volunteers are generally more diverse than senior volunteers.
     - It appears that younger volunteers are more reluctant to answer the question about race and ethnicity. Only about half responded to demographic questions versus 75 percent of those 35 and older.
     - Panel and committee involvement of women and minorities have flat-lined, so the Diversity and Inclusion Task Force will be considering a variety of strategies to increase involvement.
There is no growth in diversity for the people carrying out the reports of TRB. Women make up 26% of contractors, and underrepresented minorities make up 7% of contractors. More effort is needed by TRB to increase TRB’s diversity to improve the quality of what we do and offering opportunity to everyone.

B. Diversity and Inclusion Strategic Plan (p. 103)

- The mission of the Diversity and Inclusion Task Force is to facilitate making diversity and inclusion a core value for TRB staff, volunteers, contract awardees, projects and the transportation communities that TRB serves. A diverse and inclusive culture will enhance the mission of TRB because it will increase innovation and creativity. The task force developed seven strategies:
  1. Identify practices and develop primers for committee and panel chairs, and TRB staff highlighting strategies and resources used to recruit, welcome and actively involve a more diverse committee and panel membership.
  2. Engage with transportation-related organizations and other appropriate organizations that traditionally have a more diverse membership than TRB, to increase their members’ awareness of and participation in TRB.
  3. Find new ways for Annual Meeting and specialty conference attendees to engage in a way that creates inlets for everyone to make connections and feel included and welcomed.
  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, whether they are suppliers or research consultants.
  5. Identify and minimize barriers to achieving greater TRB staff diversity.
  6. Ensure that inclusion and diversity, and issues of equity, civil rights and workforce development are addressed through technical activities and research projects.
  7. Improve existing data, information, and communication mechanisms to support all strategies.

- Next steps: Refine action items and designate to TRB staff. A special committee chaired by Dr. Carol Lewis will provide oversight and identify performance measures. Progress on implementation of the strategic plan will be reported by the special committee to the TRB division committee and to the executive committee on a semi-annual basis.

- The Executive Committee discussed steps that it can take to help mentor underrepresented groups.

C. TRB Signing of a Memorandum of Understanding with Women’s Transportation Seminar (WTS), the International Transport Forum (ITF) – Geneva, and the Conference of Minority Transportation Officials (COMTO) (p. 109).

- As part of the Inclusion and Diversity Plan, Pedersen signed MOUs with WTS and COMTO to help foster partnerships and increase information sharing, awareness and involvement by TRB and organizational partners.
D. Minority Student Fellows Program (p. 113)  
Febey  
- 9th year of the program, 21 students, and 14 schools.  
- The U.S. Federal Highway Administration (FHWA) has helped to double the size of the program.  
- Febey reports that several other continuing and new partnerships are underway.  
- A checkbox donation option on the Annual Meeting registration page continues to be useful for donations.  
- Former fellows are returning to the Annual Meeting and are participating on TRB Standing Committees.

E. Young Members Council (p. 118)  
Kirley  
- Sponsored sessions at the Annual Meeting focused on professional development issues, the Six Minute Pitch, and participation in the Career Fair, and Young Professionals Reception.

VII. Break

VIII. Special Topic: Resilience (p. 119)  
A. Resilience and Sustainability Task Force  
Arroyo  
- The task force, in collaboration with the TRB standing committees, provides ways to enhance and improve how TRB committees and research programs address resilience and sustainability.  
- The task force suggests actions and strategies that could be taken when considering a risk and resilience management process and a holistic sustainability and resilience framework that reduces risk, improves services, sustains or grows the economy, adapts to changing conditions and empowers citizens.  
- Timeframe:  
  - First Meeting – September 2017: Discussion of scope and goals.  
  - Second Meeting – November 2017: Jennifer Jacobs presented on Climate Hazards and their impacts to transportation. The task force also considered topics for small working groups.  
  - Third Meeting – January 2018: Set a work period for six months and introduced and discussed small group themes and expectations.

B. Lessons Learned Hurricane Harvey and Irma  
- Tom Kelly, Metropolitan Transit Authority of Harris County, Texas discussed preparations for Hurricane Harvey.  
  - Storm developed into a hurricane in 48 hours, and the strength was unprecedented.  
  - No time to evacuate so METRO continued service until it began to rain.  
  - METRO relied on emergency management plans and continuity of service plans, and past relationships with public safety officials around the regions.  
  - Third major flood event in less than 2 years, lesson learned was that they will establish a forward command to drive people to safety. METRO assisted local and regional partners to transport flood victims to safety.
• Damage:
  o Two METRO busses completely flooded.
  o 17 busses were flooded but returned to service.
  o Damage to metro property estimated at $15 million.

• Suspension and return to service:
  o Service suspended Saturday, August 26, 2017 through Monday, August 28, 2017.
  o Tuesday August 29, 2017: Metro supports medically necessary trips.
  o Thursday August 31, 2017: Limited service.
  o Full return to service Tuesday, September 5 (after Labor Day). Over 500,000 cars flooded.

• Takeaway: Plans were very important, but the relationships that METRO employees developed across agencies had made the difference in their ability to respond and save lives.

ii. Tom Byron from Florida Department of Transportation discussed preparation for Hurricane Irma.
  • Irma formed about a week after Hurricane Harvey, and was a Category 5 Hurricane. The Florida Governor declared a state of emergency one week in advance of landfall, so FDOT had more flexibility with preparations.
  • On September 10, 2017, Hurricane Irma made landfall. Byron states that 7 million evacuated in Florida, which was one in three Floridians.
  • To help with the evacuation, FDOT instituted emergency shoulder use for cars. Byron states that once drivers used the shoulders, this helped with traffic flow. He reports there were no incidents or fatalities.
  • Returning home:
    o Key piece that helps to recover quicker is to work with prioritizing clearance for highways to be cleared of junk and debris.
    o Scour for bridges are an issue – no bridge is reopened until it’s looked at. Piles holding up bridge can be washed out with the storm surge.
    o Worse congestion for the return trip, and FDOT will examine emergency shoulder use for returning evacuees. Byron reports there were traffic jams from Atlanta to Florida on I-75 and from Virginia to Florida on I-95.
  • Great support from other State DOTs. Plans in place and executed helped Florida, great coordination with other stakeholders. Having established relationships with those stakeholders was important.

iii. The Executive Committee members discussed their experience with evacuation and event management with the California fires. Many agreed that some of the hardest work happens after a disaster, as employees forgo their own family responsibilities to help their community.
IX. Introduction to Policy Session on Public Transportation

A. American Public Transit Association (APTA) Chair’s Emphasis Areas
   - Mobility is changing for us and the customers are not looking for a specific mode of transportation. Driven by technology. Customers are looking for door-to-door service and real time information.

B. New APTA President/CEO Perspective
   - Looks forward to working with TRB in addressing challenges and opportunities in the transit industry.

X. CHAIRMAN’S LUNCHEON –Washington Convention Center, Ballroom A/B
Speaker, USDOT, Senior Advisor for Infrastructure, James Ray

XI. Activity Briefings

A. Paul P. Skoutelas, President and CEO, APTA
   - Transit ridership is growing in relationship to growth in population.
   - Local communities are stepping up to provide support for public transportation, and they’re willing to pay for it.
   - APTA researches transit users. APTA may conduct research itself or through contracts like TRB’s Transit Cooperative Research Program.
   - Many new APTA members include ridesharing companies and start-ups.
   - APTA is supportive of piloting transit innovations. Innovations include electric busses, automated vehicles, FTA-Mobility on Demand, etc.
   - Skoutelas is exploring how to help older systems to modernize to be more reliable. Older transit systems are in the most need for investment.

B. Gwen Chisholm Smith, Director, Transit Cooperative Research Program, provided an overview of TRB’s Transit Cooperative Research Program (TCRP). TCRP is authorized at $5 million a year through the FAST Act.

C. Stephen Andrle, Program Manager, SHRP 2 Naturalistic Driving Study Safety Data and Public Transportation, Technical Activities Division provided an overview of TRB’s Standing Technical Committees that are addressing public transportation issues.

Policy Session: Public Transportation

- Dr. Steven E. Polzin, Director, Mobility Policy Research, Center for Urban Transportation Research, University of South Florida

Dr. Polzin examined the relation of Vehicle Miles Traveled and trends in economic income, gross domestic product, and ridership declines within the last several years. Transit assumptions from 2012-2014 have changed in 2015-2017. It looks like trends with millennials (urban living, no car, use of transit) may be reversing historical trends as those millennials are moving out to the suburbs and purchasing cars later in life. Decreases in transit ridership may cause decreases in revenue which means cut services, and then decreases in ridership perpetuate. Dr. Polzin concluded that a broader discussion of mobility is necessary.
• **Dr. Susan Shaheen**, Adjunct Professor, Civil and Environmental Engineering; Co-Director of the Transportation Sustainability Research Center; and Director, Innovative Mobility Research at the University of California, Berkeley

Dr. Shaheen stated that when people have access to carsharing, they may use transit about the same or a little less than they have before. Bikesharing members ride the bus less in large cities. In small cities, bikeshare increases transit ridership. Shaheen laid out the factors that ridesharing/bikesharing can increase or decrease public transit ridership.

• **Randy Clarke**, Vice President Operations and Member Services, American Public Transportation Association

Clarke explored the needs of transit agencies in the United States, and how funding has been difficult to invest in assets. APTA explored international practices through the International Study Mission to Asia in 2017. For example, Hong Kong includes alternative revenue models (like residential flats and business space) to help use the revenues to get to 99.9 percent on-time performance. In Singapore, they took their money to invest in maintenance. Public transportation ridership in Tokyo alone is about half the daily ridership in the entire U.S. (17 million). In Asia, the public expectation of safety is part of the business culture. These countries collect and analyze data as part of their asset management strategy. They have 30-40 year capital plans.

Comments from Executive Committee Meeting:
1. The public will rely on transit for the foreseeable future, and more research and better data is needed.
2. Transit systems need to be at the table with mobility providers in order to give people choices on how they move around the region. For example, one app that includes all modes, travel times, and a payment option could be useful for the traveling public.
4. Low brand loyalty across all modes of travel.
5. Costs are going up in bus fares and labor.
6. The transit industry is focusing more on mobility, less on mode.

XII. **Breakout sessions and break for the evening**
XIII. Summary of Policy Sessions

Dougherty/Rapporteurs

http://www.trb.org/Main/TRBExecutiveCommitteeMinutes.aspx

The rapporteurs summarized the discussions they had in their breakout groups about each presentation, and then discussed TRB’s value proposition in relation addressing transit challenges.

A. Breakout Session Report on Travel Behavior and Public Transportation (Pat Thomas, Rapporteur)
   i. Performance metrics: is ridership the right metric. Is mobility or efficiency incorporated into metric, and how does the transit system allow the economy to function?
   ii. Best practices: Governance, finance policies and business models like restructuring finance and procurement policies. Land-use and environmental policies were also considered.

B. Breakout Session Report on Shared Mobility and Technology Impacts (Steve Cliff)
   i. Transit is shared mobility, and should be considering things like equity and social justice.
   ii. Cost comparisons of transit versus other service should take into account higher costs to adhere to regulations, for example, Buy America requirements.
   iii. More research is needed in evaluating what customers want, creating and carrying out pilot projects, and building relationships.

C. Breakout Session Report on Public Transportation Delivery (Hyun-A Park)
   i. Discussion around communicating the value of public transportation. For example, showing the relationship between transit and GDP.
   ii. In relation to workforce, leadership competency is really important. Placing the best people in leadership positions and developing the workforce. The customer wants to get from point a-to-b, and there’s a need to work across modes to address the needs of the customer.
   iii. With autonomous vehicles, the need for parking may go away (shared vehicles), so take parking infrastructure to make it into transit lanes.
   iv. Potential actions include scenario planning, workforce development guidance, investing in people.

The Executive Committee members will explore researching these public transit issues through the CRP program, or using policy study funds to conduct a quick-turnaround project.

XIV. Future Policy Session (p. 158) Houston

Approved: The Executive Committee selected electric vehicles for the June 2018 policy session.

XV. Technical Activities Council Update (p. 164) Park/Brach

A. The TRB 2018 Annual Meeting:
i. Facilitated 800+ Sessions and Workshops (includes 45 spotlight sessions):
   • 20 sessions on Transportation and Public Health
   • 61 sessions on Resilience and Sustainability
   • 85 sessions on transformational technologies

ii. Registration: 13,781 as of February 12, 2018 (a three percent increase from 2017)
   • 245 exhibitors
   • 31 patrons, including three platinum
   • 36 organizations at Careers in Motion
   • New attendees orientation was revamped

iii. Spotlight theme for 2019: Transportation for a Smart, Sustainable, and Equitable Future.

B. TRB SHRP 2 Naturalistic Driving Study
   i. Washington State DOT found through SHRP 2 data that more lighting is not necessarily better for safety.
   ii. As a result, Washington DOT is saving money and while creating safer roads.

C. Changes to the Transportation Research Record (TRR)
   i. TRB has outsourced post-acceptance editing, publication, and marketing of the TRR to SAGE Publications. TRR still belongs to TRB
   ii. SAGE will handle production, subscriptions, marketing
   iii. Committees still initiate calls for papers, review papers, recommend publication
   iv. Expected benefits:
      • Faster pre-edited publication online
      • More author services: increased impact factors, review of final proofs
      • More subscriptions
      • Higher impact factor
      • Somewhat lower cost
   v. TRB’s new TRR Managing Editor Patti Lockhart provides the journal with:
      • More state-of-the-art professional practices
      • Policies/procedures consistent with other peer-reviewed journals
      • Criteria and training for review coordinators, reviewers, authors
   vi. Goal: TRR will be the journal that transportation researchers/professionals send their best papers.

II. Break

III. International Subcommittee

   Brooks

A. Strategic plan for five years (p. 165)
   i. Goal One: Actively engage colleagues from outside the United States in TRB activities, committees, and panels.
   ii. Goal Two: Leverage bilateral international cooperative benefits when sponsoring or co-sponsoring international forums and conferences within current TRB processes and procedures.
   iii. Goal Three: 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.
iv. **Goal Four: Facilitate, review, and concur in Memoranda of Understanding between TRB and other international/national organizations.**

B. To achieve these goals, the committee proposes collecting data first to help set targets for growth. The Committee on International Cooperation will lead much of the implementation (A0010). Progress reports will be shared with the Executive Committee.

C. With a focus on partnerships and how partnerships can advance TRB’s mission, the committee received a suggestion to work with the Board on Global Health in NASEM’s Health and Medicine Division.

➤ **Strategic Plan approved by the Executive Committee**

IV. **TRB Forum: Preparing for Automated Vehicles / Shared Mobility Services (p. 179)  Norman**

A. **Goal: Convene perspectives on the critical issues surrounding the deployment of automated vehicles and shared mobility.** A key emphasis is on the discussion, identification, and facilitation of fact-based research needed to deploy these technologies in a manner and timeframe that informs policy to best meet long-term goals. Includes federal, state, and local agencies; academic or research institutions; private sector companies; and associations.

B. Inaugural forum meeting convenes February 27-28, 2018.

C. Executive Committee members suggested including the insurance industry.

V. **Global Affiliate Program (p. 191)  Davenport**

A. The Global Affiliate Program replaced TRB’s affiliate program.

B. Six levels of participation, and existing affiliates have been placed into the new packages.

C. 78 global affiliates and trying to attract new sectors to TRB.

D. Waymo from Google joined at the lowest level, which is promising. Other new affiliates are joining.

VI. **Critical Issues Update (p. 196)  Pedersen**

A. **Issues that would guide all TRB programs (not just to the consensus and advisory studies division)** Two documents will be produced:

   i. Guidance for our stakeholders (technical)

   ii. Broad audience

B. 12 topics with about 4-9 issues under each topic – total number of issues is 60

C. **Criteria to classify as a critical issue:**

   i. Is it an important longer term, future issue?

   ii. Is it expected to be a major policy issue in the future?

   iii. Will there be major changes related to the issue that will affect transportation in an important way?

   iv. Is it an issue that is cross cutting across multiple modes of transportation?

   v. Is it an issue of importance globally, and not just in the United States?
vi. Is it an issue that is related to broader societal goals?

vii. Is it an issue that is related to key outcomes we are trying to achieve?

D. Critical issue topics, which includes the number of issues associated with each topic:
   i. Transformational Technology (5)
   ii. Economics/Regulation (4)
   iii. Safety/Public Health (9)
   iv. Energy/Environment (4)
   v. Resilience/Security (5)
   vi. Funding/Finance (8)
   vii. Infrastructure/Asset Management (5)
   viii. Equity (6)
   ix. Governance (5)
   x. Population/Demographics (4)
   xi. Human Capital/Workforce (5)
   xii. Innovation (issues still to be identified)

E. A draft report will be available before the June Executive committee meeting.

VII. **Consensus and Advisory Studies (formerly Policy Studies) (p. 213)**

Menzies

A. Studies completed:
   i. Polar Icebreaker Cost Assessment (sponsored by the U.S. Coast Guard) (July 2017)
   ii. Review of US Department of Transportation Testing of Electronically Controlled Pneumatic Brakes (sponsored by the Federal Railroad Administration) (September 2017)
   iii. Safe Transport of Hazardous Liquids and Gasses in a Changing U.S. Landscapes (sponsored by the Executive Committee) (October 2017)
   iv. Designing Safety Regulation for High-Hazard Industries (sponsored by the Pipeline Hazardous Materials Safety Administration) (October 2017)

B. New studies:
   i. Propane Pipes Safety and Regulation Study (sponsored by the Pipeline Hazardous Materials Safety Administration)
   ii. Review of BSEE Offshore Inspection Program
   iii. Truck Size and Weight Research Roadmap (sponsored by the Federal Highway Administration)
   iv. Review of Innovative Bridge Research Program (sponsored by the Federal Highway Administration)

C. Ongoing Studies (with sponsor in parentheses):
   i. Future of the Interstate Highway System (Federal Highway Administration)
   ii. Truck Size and Weight Research Roadmap (Federal Highway Administration)
   iii. Review of Innovative Bridge Research Program (Federal Highway Administration)
   iv. Review of Long-term Infrastructure Program (Federal Highway Administration)
   v. Transit Evidentiary Data Study (Federal Transit Administration)
vi. Propane Pipes Safety and Regulation (Pipeline and Hazardous Materials Safety Administration)

vii. Review of Vessel Stability Standards (U.S. Coast Guard)

D. Candidate Self-Initiated Studies:
   i. Experience and Issues Associated with Mileage-Based User Fees
   ii. Policy Options for Enhancing the Quality, Quantity, and Reach of Transit by Integrating with Transportation Network Companies

➢ Approved: Policy Options for Enhancing the Quality, Quantity, and Reach of Transit by Integrating with Transportation Network Companies

Next Meeting takes place June 13-14, 2018 in Woods Hole, Massachusetts
Executive Committee Attendees
Malcolm Dougherty (Chair)
Katie Turnbull (Vice Chair)
Vicki Arroyo
Scott Bennett
James Crites
Ginger Evans
Stewart Fotheringham
Nathaniel Ford
Susan Hanson
Stephen Hargarten (National Academy of Medicine)
Jeff Holt
S. Jack Hu
Roger Huff
Geraldine Knatz (National Academy of Engineering)
Margaret Melinda McGrath
James Redeker
Leslie Richards
Daniel Sperling
Gary Thomas
Pat Thomas
James Tien (National Academy of Engineering)
Dean Wise
Charles Zelle

Ex Officio Attendees
Maryam Allahyar (Federal Railroad Administration)
Michael Berube (Department of Energy)
Mary Brooks (Marine Board)
Mark Buzby (Maritime Administration)
Steve Cliff (California Air Resource Board)
Howard Elliott (Pipeline and Hazardous Materials Safety Administration)
Audrey Farley (Office of the Secretary of Transportation – Research)
John Gray (Association of American Railroads)
Brandye Hendrickson (Federal Highway Administration)
Bevan Kirley (Young Members Council)
Timothy Klein (Office of the Secretary of Transportation – Research)
Hyun-A Park (Technical Activities Council)
Kelly Regal (Federal Motor Carrier Safety Administration)
Nan Shellabarger (Federal Aviation Administration)
Karl Simon (Environmental Protection Agency)
Paul Skoutelas (American Public Transportation Association)
Steven Smith (Federal Motor Carrier Safety Administration)
Vincent Valdes (Federal Transit Administration)
Walter Waidelich (Federal Highway Administration)
Jane Williams (Federal Transit Administration)
Bud Wright (American Association of State Highway and Transportation Officials)
Matt Welbes (Federal Transit Administration)

Policy Session
Randy Clarke (American Public Transportation Association)
Steven Polzin (University of South Florida)
Susan Shaheen (University of California, Berkeley)
MEMORANDUM

To: TRB Executive Committee

From: Neil Pedersen  
Executive Director

Date: May 21, 2018

SUBJECT: Executive Director’s Report

As I have for the past June Executive Committee Meetings, I will provide an abbreviated Executive Director’s Report that only covers items that are not included in other parts of the agenda book. Detailed information on many of the most important strategic items for TRB is contained in the remainder of the Executive Committee briefing book. We will discuss each of these items during the course of the Executive Committee meeting, and I will not repeat the information here.

Performance Review and Performance Goals

As I have each of the past two years, I have attached to this report my performance evaluation statement regarding achievement of my performance goals for the past year (Attachment A), together with performance goals that I have submitted for the upcoming year to Bruce Darling, the Executive Officer of the National Research Council, and my immediate supervisor (Attachment B). I do not intend to go over the report on achievement of the past year’s goals during the meeting, but I do encourage you to review it, and I would be happy to discuss any comments that you have on any information contained in the report. I will briefly present my performance goals for the upcoming year at the Executive Committee Meeting.

Financial Report

Attachment C shows the current budget for each of TRB’s major programs and the source of funds for these programs. There have not been significant changes since the report was shown to the Executive Committee in January 2018. At that time, I had indicated that the new Behavioral Traffic Safety Cooperative Research Program was added to the budget, and that program is now underway. Chris Hedges will provide an update on that program later in the meeting.
Attachment D shows a six-year projection of expenditures and revenues for TRB’s core technical program. This program includes TRB’s convening activities such as the annual meeting and conferences and workshops, support of TRB’s technical committees, support of the TRID bibliographic database and other library services, and publications support other than for cooperative research program publications. TRB has a goal of maintaining a reserve fund for the Core Technical Program of between 75 and 100 percent of annual expenditures. As can be seen in Attachment 2, the Core Technical Program Reserve Fund is projected to be between 79 percent and 100 percent of expenditures for the entire six-year budget period.

Although current projections show that TRB finances are in relatively good shape, there is a great deal of uncertainty looking to the future regarding federal funding support. Each year USDOT reviews its support for TRB and decides whether to continue to support TRB at past levels, so there is some uncertainty with the levels shown until those decisions get made. Perhaps the greatest uncertainty in the future financial projections is the funding levels for the federal surface transportation program starting in 2020. The current authorization bill, the FAST Act, calls for a large rescission in 2020, which could reduce funding available from federal and state DOT sources in that year. Federal surface transportation expenditures currently far exceed Highway Trust Fund revenues, and it is uncertain what federal surface transportation authorized funding levels will be after 2020. This reinforces the wisdom of the goal to keep the Core Technical Program Reserve Fund at 75 to 100 percent of projected expenditures. TRB will also need to begin doing contingency planning in case a reduction in federal funding occurs.

TRB continues to work to diversify its revenue sources. This past October the Global Affiliates Program was launched in an attempt to attract additional financial support from private sector firms; academic institutions; and foreign, state, and local governmental agencies who are not full sponsors of TRB. Additional efforts continue to increase funding from sources other than TRB’s principal sponsors. A report on revenues from the Global Affiliates Program and support from other sources of funding is contained in Attachment E.

The National Research Council Transformation Process

TRB is one of seven program divisions of the National Research Council, the operating arm of the National Academies of Sciences, Engineering, and Medicine. Dr. Marcia McNutt, Chair of the National Research Council, contracted with the National Academy of Public Administration (NAPA) to perform an external review of the NRC’s products and processes. NAPA released its report in February. The report makes a number of recommendations for reform, which fall under two general categories: (1) modernizing the NRC’s organization to adopt best management and business practices and technologies, and (2) enhancing the efficiency, timeliness, and responsiveness of the consensus study process.

The organizational recommendations include:

- Institute a line management structure with clearer delegations and accountability
- Consolidate administrative functions (finance, HR, IT, and communications)
- Standardize IT infrastructure and business processes; develop an enterprise IT architecture
- More clearly define staff roles, authorities, and responsibilities; improve staff development
- Modernize contracting methods
The consensus study recommendations include:

- Institute a strengthened and standardized project management system
- Adopt a risk based management approach
- Develop alternative consensus study products and processes
- Improve study life cycle processes to improve timeliness

At the direction of the NRC Governing Board, the NRC Transformation Process has been initiated with teams established that are addressing the issues in the NAPA report and several related issues. Teams will address the process and organizational issues in the areas of finance, HR, and IT. Another team, which originally was tasked with addressing issues with the consensus study process has had its scope expanded and it will now be addressing the full portfolio of products produced by the NRC and make recommendations on how sponsor needs can best be met through a range of products.

Marcia McNutt also initiated a separate external review of communications at the National Academies and in the NRC. This committee released its report in early May. A few key takeaways from the report and the follow up discussion by the NRC Governing Board include:

- The communications environment is undergoing rapid and dramatic change
  - Increasing digitization of media consumption
  - Over 60% of digital time is now mobile or non-desktop devices
- Need to think first about producing digital products, and increasingly for mobile platforms
- Current Academies digital efforts are tactical and inefficient, and not mobile optimized
- Need to move from current product-oriented transactional communications to a more strategic approach that is user focused
- Need to use data and social science to generate audience insights
- Need to think about communications from the beginning of a study or planning for an activity, and include in sponsor funding agreements
- Think of ourselves not just being in the evidence business but the communications of evidence business
- Create a centralized communications function to provide resources, expertise, policies, internal communications
- Need to have someone who is constantly staying current on communications
- Need data analysts to understand our audiences and what their needs are
- Need to have training modules developed

Another transformation team will be established to address communications at the Academies and within the NRC.
The conclusions of both the NAPA report and the external communications team report, as well as the work of the NRC transformation teams will be key input to development of TRB’s new strategic plan.

Concluding Thoughts

This is both an exciting and challenging time to be Executive Director of TRB. We will discuss the draft “Critical Issues in Transportation” report later in the agenda. The list of issues in the draft report shows that there are a large number of challenging topics for TRB to address in this period of rapid change in transportation. This creates opportunities as well as the obligation to stay on top of these issues if we are going to continue to play a leading role in transportation research and policy in the United States and globally. The NRC transformation effort will provide a broader context to address some needed changes in administrative processes, as well as in our products and our communications. Uncertainties regarding our future finances require that we prioritize our activities to those that are most important and that we be good stewards of the resources that we have been provided by our sponsors and other financial supporters. It is in this context that we will be beginning the preparation of TRB’s next strategic plan.

I would like to express my appreciation to the members of the Executive Committee for your continued support and strategic direction and oversight of TRB’s activities and products. I also want to express my appreciation to the dedicated, hardworking staff of TRB, who continue to carry very heavy workloads and who provide tremendous support to the 8,000 volunteers who are on TRB committees, task forces, and panels, and support to the tens of thousands of transportation professionals who avail themselves of TRB convening activities, webinars, and reports. It is a privilege to work with all of you!

Attachments
ATTACHMENT A

NEIL PEDERSEN'S ACHIEVEMENT OF PERFORMANCE GOALS FOR 2017

1. Manage TRB's finances to ensure that long term revenues and expenditures come closer to being in balance and TRB's Core Operating Reserve remains above 75 percent through FY 2021.
   - TRB was able to both increase revenues and decrease expenditures, resulting in reductions in the net annual deficit was reduced, and projected maintenance of the TRB Core Operating Reserve Fund above 75 percent through FY2022. Significant savings and additional revenues were derived from outsourcing of the publication of the Transportation Research Record.
   a. Secure additional financial support from sponsors and affiliates.
      o A commitment was secured that funding from the USDOT Office of the Secretary - Research (OST-R) for TRB's core program will increase from $300,000 in 2017 to $350,000 by 2019.
      o The state departments of transportation have agreed to an inflationary adjustment of approximately two percent per year through the end of the current surface transportation authorization in 2020 in both core program support and the NCHRP program. This results in an increase of approximately $175,000 per year in the core program support and approximately $900,000 per year in NCHRP support.
      o The National Highway Traffic Safety Administration reached agreement with TRB to fund a new Behavioral Traffic Safety Cooperative Research Program at $2.5 million per year.
   b. Implement TRB Global Affiliates Program, career fair, job board, and other revenue measures that are consistent with the Academies mission and policies.
      o The new TRB Global Affiliates Program was approved by the NRCEO's Office and was launched in fall 2017. Existing TRB affiliates were converted into the new program. Seven new or upgraded Global Affiliates were signed up in the first six months, accounting for $65,160 in additional revenue. Major marketing of the program is underway.
      o TRB's new career fair and job board were launched in time for the 2018 TRB Annual Meeting and both got off to a successful start. Based on positive feedback from participants, the career fair will be continued an expanded in 2019.
      o TRB was able to secure sponsors for several of the receptions that are held at the TRB Annual Meeting, thus offsetting the cost of these receptions. $32,500 in revenue was raised from reception sponsors.
      o Revenues for TRB Annual Meeting exhibits and patrons increased by a total of $144,037.
      o TRB increased its marketing of the annual meeting, and registration revenues increased by $225,605.
      o Total revenues for the TRB Annual Meeting increased by $428,244.

2. Manage sponsor relations to ensure that TRB is meeting sponsor needs.
   a. Engage with new CEOs of sponsor agencies after they are appointed.
o The TRB Executive Director and senior staff continued outreach to new state DOT CEOs after their appointment to educate them about TRB and the value that TRB provides to the state DOT.

o By the end of 2017 most of the USDOT modal administrator positions were not filled with confirmed candidates. I reached out to those who were in confirmed positions as well as with acting modal administrators. This outreach will continue in 2018 as more Senate confirmed positions are filled.

b. Attempt to minimize any potential loss of sponsor support in light of Administration budget proposals.

o TRB leadership worked with staff in the USDOT Office of the Secretary to avoid major cuts in core program support from USDOT. It appears that funding from the Federal Motor Carrier Safety Administration at $75,000 per year will be cut starting in 2019, but we are optimistic that funding from the remaining USDOT sponsoring agencies will be preserved.

o TRB is entering into multi-year agreements with a number of federal agency sponsors in an attempt to secure ongoing funding commitments from these agencies.

o Securing interest from federal agencies for funding of consensus studies remains a challenge.

3. Carry out the planned portfolio of activities for each of TRB’s strategic issues with appropriate involvement from other NRC divisions.

o In 2015 the TRB Executive Committee identified three strategic issues for all TRB programs to address: transformational technologies, resilience, and public health. Executive Committee task forces were established for each of the strategic areas, and these task forces developed plans that identified issues, activities, and gaps that should be addressed. Staff from other NRC program divisions participated in each of the task forces.

o The task forces in transformational technologies and public health completed their strategic plans and TRB is implementing the actions called for in these plans. The task force on resilience completed an initial plan and was subsequently reconstituted to broaden its scope.

o TRB had 85 sessions on transformational technologies at its annual meeting. It sponsored or co-sponsored several conferences, including the automated vehicle symposium in July, which has now become TRB’s second largest convening event with over 1,500 attendees. TRB launched its first roundtable on the future of automated vehicles and shared mobility services in 2017. All three of TRB’s cooperative research programs have research projects underway addressing the impact of transformational technologies on transportation. John Eisenberg from DEPS has been involved in many of these activities and staff from other divisions have been involved in individual activities.

o TRB staff continue to coordinate regularly with HMD staff on public health issues related to transportation. Twenty sessions at the TRB Annual meeting focused on transportation and public health. TRB’s Task Force on Transportation and Public Health is getting more public health professionals involved in its activities. Senior staff recently met with managers from
CDC and NIH to initiate discussions on potential ways we can work together on these issues and follow up discussions are scheduled.

- Dr. Steve Hargarten will be joining the TRB Executive Committee in January 2019 as an NAM member, and he is already contributing to TRB’s activities in the area of transportation and public health.
- TRB’s Resilience Task Force, under the leadership of Admiral James Card, completed its work and recommended a portfolio of activities related to adaptation to severe weather events. TRB is moving forward with many of these activities.
- A revised Resilience Task Force under the Leadership of TRB Executive Committee Vice Chair Vicki Arroyo is addressing how TRB can more effectively address climate related mitigation and the relationship between resilience and sustainability.
- TRB had 61 sessions at its annual meeting focused on resilience and sustainability. It is continuing a series of projects related to resilience in its cooperative research programs.
- Lauren Alexander from PGA continues to be involved in TRB’s resilience activities and Admiral Card represents TRB on PGA’s Resilient America Roundtable.
- TRB’s National Cooperative Highway Research Program is developing research roadmaps for each of the three strategic areas, which will serve to identify research priorities and gaps for TRB and others to address. TRB staff are coordinating with colleagues from other NRC divisions in the development of these research roadmaps.

4. Continue significant involvement of members of the three Academies in TRB policy and program activities.

- As members of the TRB Executive Committee, the following Academy members have provided strategic direction and oversight of TRB activities: Susan Hanson (NAS), Stewart Fotheringham (NAS), Chris Hendrickson (NAE), Jack Hu (NAE), Geraldine Knatz (NAE), Mark Rosenberg (NAM), and James Tien (NAE). Although not yet a member of the Executive Committee, Steve Hargarten (NAM) has become actively engaged in the committee’s activities.
- TRB’s Division Committee is chaired by Susan Hanson (NAS); Chris Hendrickson (NAE) is Vice Chair; and James Tien (NAE) is a member. The Division Committee largely focuses on TRB’s report review process, study committee membership, and diversity and inclusion issues.
- The TRB Executive Committee’s Subcommittee on Planning and Policy Review provides strategic direction and oversight between Executive Committee meetings and strategic direction and oversight of TRB’s Consensus and Advisory Studies Division. Members include Susan Hanson (NAS) and Chris Hendrickson (NAE).
- Susan Hanson (NAS) and Chris Hendrickson (NAE) are members of TRB’s Special Committee on Implementation of TRB’s Inclusion and Diversity Strategic Plan.
- Craig Philip (NAE) and Thomas Bostick (NAE) serve on the Marine Board.
- The following Academy members were involved in completed consensus studies in 2017 (note that Susan Hanson (NAS) serves as Coordinator for all TRB reports):
  - Review of Department of Transportation Testing of Electronically Controlled Pneumatic Brakes. Letter 3. Chairman: Chair: Lou Lanzerotti (NAE); Member: Roger McCarthy
Monitor: Robert Sproull (NAE); Reviewers: Robert McMeeking (NAE), John Samuels (NAE), and Roger Schmidt (NAE)

- Committee for a Study of In-service Performance of Guardrail End Treatments. Member: Priyarnian Prasad (NAE); Reviewer: Dean Carlson (NAE)
- Long-Term Infrastructure Performance Committee Letter Report. Member: Kumares Sinha (NAE). Reviewers: John Breen (NAE) and John Kulicki (NAE)
- Study of Performance-Based Safety Regulations. Members: Kenneth Arnold (NAE) and Anthony Cox (NAE); Monitor: Ross Corotis (NAE); Reviewers: Roger Kasperson (NAE) and Gary Klein (NAS)
- Committee for a Study of Domestic Transportation of Petroleum, Gas, and Ethanol. Chair: Paul Gaffney (NAE); Members Ali Mosleh (NAE) and Craig Phillip (NAE). Reviewers: Jan Schilling (NAE) and Mary Lou Zoback (NAS)
- Committee on Polar Icebreaker Cost Assessment. Member: Keith Michel (NAE). Monitor: Charles Manksi (NAS); Reviewers: Rita R. Colwell (NAS), Charles R. Cushing (NAE), Chris Hendrickson (NAE), Kirs K. Tikka (NAE), and Alan R. Washburn (NAE)

- The following Academy members are involved in ongoing projects:
  - Future Interstates Study. Chairman: Norman Augustine (NAS/NAE); Members: C. Michael Walton (NAE) and Chris Hendrickson (NAE); Charles Manski (NAS) has been assigned as monitor
  - Research and Technology Coordinating Committee: Member: Chris Hendrickson (NAE)
  - Study on Propane Gas Pipe Facilities. Chairman: Craig Phillip (NAE)
  - Review of BSEE’s Offshore Oil and Gas Inspection Program. Member: James Tien (NAE)
  - Transit Research Analysis Committee. Member: Adib Kanafani (NAE)
  - Review of Transit Data Evidentiary Protection. Member: Thomas Deen (NAE)
  - Study of the Innovative Bridge Research Program. Member: Shankar Nair (NAE)
  - Study of Truck Size and Weight Limits Research Needs. Members: Dennis Wilkie (NAE) and Sharon Woods (NAE)
  - Study of USCG Vessel Stability Standards. Member: Donald Liu (NAE)
  - Long-Term Infrastructure Performance Committee. Member: Kumares Sinha (NAE)

5. Collaborate with other NRC divisions to conduct joint activities that meet sponsor and stakeholder needs.

- TRB staff were centrally involved in the planning and piloting of NRC’s new Leadership Development Program.
- Martin Offutt of BEES is assisting TRB in staffing a study for ONR on Naval Engineering
- Ray Wassel of DELS managed TRB’s Study on Electronically Controlled Pneumatic Brakes
- John Eisenberg from DEPS was a member of the TRB Task Force on Transformational Technologies, and has helped TRB in planning activities in this area. John Eisenberg, Michelle Schwalbe, John Holmes, and Elizabeth Zeitler, all from DEPS, and Toby Warden from DBVSE, are involved in TRB’s Forum on Preparing for Automated Vehicles and Shared Mobility Services.
o Lauren Alexander Augustine from PGA was a member of TRB’s Task Force on Resilience. Jim Card represented TRB as a member of the Resilient America Roundtable.

o TRB staff help support BASC’s climate change initiative.

o PGA staff participate with the planning committee for the Transportation Resilience Innovation Solutions 2018 Conference to be held in October.

o TRB staff worked together with several HMD staff members in the planning of a highly successful workshop on dealing with communicable diseases at airports.

o Alina Baciu from HMD is on TRB’s panel for developing a research roadmap for transportation and public health.

o TRB and HMD staff meet regularly to determine how they can work together.

o TRB staff worked together with staff from HMD, DBASSE, and DEPs to profile several of their consensus reports in TRB’s publication TR News.

o The following are projects completed or underway during 2017 in which TRB and other NRC units were involved:

  • Polar Icebreakers Cost Assessment, TRB lead with OSB, PSB assisting
  • Performance-based Safety Regulation, TRB lead, BOHSI assisted, GRP provided funding support
  • Light-Duty Vehicle Fuel Economy Study, BEES lead, TRB assisting
  • Transportation of Petroleum, Natural Gas, and Ethanol, TRB lead, BEES assisted
  • Review of the FMCSA Correlation Study, CNSTAT lead, TRB assisted
  • Roundtable on Unconventional Drilling Technologies, TRB assisting BSER
  • Evidentiary Protection of Transit Safety Information, TRB lead with CLAJ and CSTL
  • GAO Expert Panel on Pipeline Odorization, DELS lead with TRB and BEES
  • Reducing Alcohol-Impaired Fatalities, HMD lead, TRB assisting

o TRB staff are actively engaging with the other NRC units to develop new projects, including potential studies on:

  • Corrosion of Buried Steel, with BESR, NMMB, and BICE
  • Oil in the Sea, with OSB
  • Arctic Infrastructure, with OSB and PRB
  • Implementation Practices for Road Safety Program, with HMD and CSTB
  • Autonomy and Systems Integration, with BOHSI
  • Safety in the Offshore Oil and Gas Industry, with GRP

6. Support the Academies’ External Review of NRC Activities, Products, and Processes and implement appropriate recommendations from the review.

  o Because the Academies’ external review was not complete and released until February 2018, changes directly as a result of the external review were not implemented during the review period. However, a number of changes were implemented by TRB to existing processes and organizational structure as outlined below.

    a. Continue to implement changes to existing processes that have been identified to improve efficiencies.
• The post-acceptance process for papers that are to be published in TRB’s *Transportation Research Record* was outsourced to Sage Publications. This will result in faster publication, more widespread marketing, and considerable cost savings to TRB.

• NAP has taken over publication of the printed program for the TRB Annual Meeting.

• The Consensus and Advisory Studies Division successfully completed several expedited studies and then shared process lessons learned with the Report Review Committee.

• TRB Cooperative Research Programs has hired a consultant to conduct a full review of their business processes and IT technology. The result should be to reduce CRP’s dependency on paper and work towards greater consistency with NRC practices and ITS software support.

b. Adapt TRB’s organizational structure in response to changes in processes, products, and stakeholder needs.

• Responsibility for TRB’s Publications Unit, which had previously been located in the TRB Executive Office was split up, with responsibility for the Transportation Research Record being assigned to the Technical Activities Division, and responsibility for remaining publications assigned to the Publications Unit in the Cooperative Research Program Division.

• TRB’s Synthesis and IDEA programs were transferred from the Studies and Special Programs Division to the Cooperative Research Program Division. They were integrated into the staffing for the existing programs, thus ensuring better coordination and necessitating one less manager.

• A new Behavioral Traffic Safety Cooperative Research Program was added to the CRP Division portfolio.

7. Partner with U.S. and international transportation organizations in order to leverage joint activities that benefit TRB and its stakeholders.

• Memoranda of Understanding were executed with the International Road Federation (Geneva), the China Highway and Transport Society, the Council of Minority Transportation Officials, and the Women’s Transportation Seminar. Each MOU had specific actions which are being proactively managed.

• Further partnering activities were undertaken with the World Road Association and the European Council of Transportation Research Institutes. MOUs had been executed with these organizations during the previous reporting period.

• Informal partnering activities were undertaken with several other international transportation organizations, including the International Transport Forum and individual research organizations in Canada, France, and the Netherlands. The NCHRP program added representatives from France and the Netherlands to the panels for projects dealing with bridge scour and autonomous vehicles respectively.

• TRB leadership proactively partnered with leadership of the American Association of Highway and Transportation Officials, the American Public Transportation Association, and the Intelligent Transportation Association of America to help support each other’s activities.

8. Working together with the National Academies Press, implement organizational and process changes to improve efficiency and reduce the time to produce TRB publications.
   o TRB leadership worked together with Sandy Adams from National Academies Press to complete a comprehensive review of options for revising the publication of the *Transportation Research Record* (TRR). As a result of this review, the decision was made to outsource production of the TRR to Sage Publications, which will result in considerable cost savings, faster publication of accepted papers, and the opportunity for considerably more revenue as a result of Sage’s international marketing outreach.
   o TRB also made arrangements with NAP to have them publish the TRB Annual Meeting Program.

9. Increase diversity in TRB’s volunteer base and staff.
   o After several years of having plateaued in terms of participation by women and minorities on TRB committees and panels, 2-3 percent increases were achieved for new members of committees and panels in 2018. Due to the relatively small percentage of committee and panel members who turn over each year, it will take a few years for significant changes to be reflected in the overall membership data.
   o As vacancies have become available at the professional level, TRB has hired much higher percentages of women and minorities over the past few years. This trend continued in 2017.
     a. Working with the TRB Executive Committee’s Diversity and Inclusion Task Force, complete development of a diversity and inclusion plan for TRB.
        • Under the leadership of TRB Executive Committee member Nathaniel Ford, the task force produced a TRB Inclusion and Diversity Strategic Plan, which contained a series of strategies and action items. The plan was adopted by the Executive Committee at its January meeting. The strategic plan addresses inclusion and diversity issues and opportunities for TRB volunteers, staff, contractors, and programs.
     b. Proactively work with transportation organizations representing women and minorities to attract their members to participate in TRB programs and committees.
        • TRB signed memoranda of understanding with the Council of Minority Transportation Officials and the Women’s Transportation Seminar, the two largest organizations serving minority and female professionals in transportation. These MOUs call for a number of actions which help make TRB committee participation and employment opportunities better known to their members and which help to market TRB activities to their members.
        • TRB has initiated discussions with the National Society of Black Engineers and Hispanic serving organizations as well.

10. Continue to expand TRB’s marketing and communications efforts, including implementing the next set of recommendations in TRB’s Marketing and Communications Plan.
o A social media plan was deployed, which increased engagement with Twitter, Facebook, and LinkedIn followers.
o The webinar registration process was integrated with the MyTRB system.
o Increased marketing efforts were undertaken for the TRB Annual Meeting
o Additional marketing materials were developed for selective Cooperative Research Program products and distributed to AASHTO committees, state DOTs, transit agencies, and airports. The NCHRP oversight committee has funded the development of a marketing plan for the research program; the Transit and Highways IDEA programs have pooled funds to develop a more specific marketing plan for those two initiatives.
o Individual marketing and communications plans were developed together with ONPI and OCGA far in advance of completion of TRB consensus studies, so appropriate materials and marketing strategy could be developed as reports were being completed.
o Marketing was undertaken for TRB’s new Global Affiliates Program.
  a. Implement changes to TRB’s website as part of the NASEM Unified Web.
    o A new homepage was developed for TRB’s website. TRB staff actively participated in planning efforts for the NASEM Unified Web. Further changes to TRB’s website will be made as part of the Unified Web project.
11. Facilitate use of TRB’s products by TRB stakeholders and measure the impact of these products and TRB’s convening activities.
o In addition to increased marketing and communications about Cooperative Research Program products cited above, monies were set aside and a program was undertaken to help support implementation of CRP products in the highway and airport programs. Procedures were developed and the first implementation projects were initiated.
o TRB continued to populate a database of anecdotal examples of impacts of TRB products, studies, and convening activities and the value of these impacts. TRB stakeholders are providing additional examples as they become more aware of this effort. As more examples get added to the database, it will be possible to do more systematic evaluations of the impacts.
12. Provide oversight to TRB’s policy studies, ensuring timely completion and effective marketing and communication.
o Despite a change in leadership of the Consensus and Advisory Studies Division, all studies were kept on schedule. Reports were produced that received positive reviews both during the RRC review process and after public release.
o Resources were reallocated as necessary, including using staff from other NRC divisions that needed additional work (as outlined in Goal 5).
o As cited in Goal 10, marketing and communications plans were developed together with ONPI and OCGA far in advance of completion of TRB consensus studies, so appropriate materials and marketing strategy could be being developed as reports were being completed. The Polar Icebreakers Cost Assessment and the Transportation of Petroleum, Natural Gas, and Ethanol studies both received a lot of attention in the press and with Congressional staff.
ATTACHMENT B

NEIL PEDERSEN’S PERFORMANCE GOALS FOR 2018

1. Manage TRB’s finances so that long term revenues and expenditures for TRB’s Core Operating Reserve are projected to remain above 75 percent through FY 2023.
   a. Preserve financial support from existing sponsors and seek additional sponsors as opportunities become available.
   b. Continue to grow private sector support of TRB through growth in annual meeting patron, exhibit, reception sponsorship, career fair, job board revenues, as well as other opportunities that are consistent with the Academies mission and policies.

2. Manage sponsor relations to ensure that TRB is meeting sponsor needs.
   a. Engage with new and existing CEOs of sponsor agencies and be responsive to their identified needs to the extent that resources and Academy policies permit.

3. Working with the TRB Executive Committee complete TRB’s new “Critical Issues in Transportation” document and effectively market the document to TRB stakeholders and the media and general public.

4. Carry out the planned portfolio of activities for each of TRB’s existing strategic issues, with appropriate involvement from other NRC divisions.
   a. Begin planning for how TRB committees and programs will address the critical issues listed in the new “Critical Issues in Transportation” document.

5. Begin the process of developing a new TRB strategic plan, developing the plan in coordination with the development of NRC’s new operational and programmatic strategic plan.

6. Continue significant involvement of members of the three Academies in TRB policy and program activities.

7. Collaborate with other NRC divisions to conduct joint activities that meet sponsor and stakeholder needs.

8. Support NRC’s Transformation Teams as they identify changes to NRC’s activities, products, and processes, and implement appropriate actions emanating from the teams’ work.
   a. Continue to implement changes to existing processes that have been identified to improve efficiencies.
   b. Adapt TRB’s organizational structure in response to changes in processes, products, and stakeholder needs.

9. Partner with U.S. and international transportation organizations in order to leverage joint activities that benefit TRB and its stakeholders.

10. Increase diversity in TRB’s volunteer base and staff.
    a. Working with the TRB Special Committee on Implementation of TRB’s Inclusion and Diversity Strategic Plan, implement actions called for in the plan.
    b. Proactively work with transportation organizations representing women and minorities to attract their members to participate in TRB programs and committees.

11. Continue to expand TRB’s marketing and communications efforts, including implementing the next set of recommendations in TRB’s Marketing and Communications Plan.
a. Develop and implement a strategic marketing plan for TRB's annual meeting and specialty conferences.

12. Facilitate use of TRB's products by TRB stakeholders and measure the impact of these products and TRB's convening activities.

13. Provide oversight to TRB's policy studies, ensuring timely completion and effective marketing and communication.
## TRB Spending by Program and Source(s) of Funds

<table>
<thead>
<tr>
<th>Core Technical Activities</th>
<th>2016</th>
<th>2017</th>
<th>2018 est.</th>
<th>Source(s) of Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$17,159,000</td>
<td>$16,214,000</td>
<td>$16,624,000</td>
<td>State DOTs (46%), Self Generated (35%), Other (10%), FHWA (9%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cooperative Research Programs</th>
<th>2016</th>
<th>2017</th>
<th>2018 est.</th>
<th>Source(s) of Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCHRP</td>
<td>$37,984,000</td>
<td>$38,204,000</td>
<td>$38,660,000</td>
<td>State DOTs (99%) FHWA (1%)</td>
</tr>
<tr>
<td>ACRP</td>
<td>$14,648,000</td>
<td>$15,288,000</td>
<td>$15,140,000</td>
<td>FAA</td>
</tr>
<tr>
<td>TCRP</td>
<td>$5,883,000</td>
<td>$5,618,000</td>
<td>$5,465,000</td>
<td>FTA</td>
</tr>
<tr>
<td>HMCRP</td>
<td>$73,000</td>
<td>$49,000</td>
<td>$125,000</td>
<td>OST-R</td>
</tr>
<tr>
<td>NCFRP</td>
<td>$510,000</td>
<td>$847,000</td>
<td>$798,000</td>
<td>OST-R</td>
</tr>
<tr>
<td>NCRP</td>
<td>$370,000</td>
<td>$45,000</td>
<td>$368,000</td>
<td>FRA</td>
</tr>
<tr>
<td>BTSCRIP</td>
<td>$0</td>
<td>$42,000</td>
<td>$255,000</td>
<td>NHTSA</td>
</tr>
</tbody>
</table>

| Rail Safety IDEA            | $315,000    | $436,000    | $408,000    | FHWA                                        |

| Policy Studies              | $4,071,000  | $4,515,000  | $3,384,000  | FHWA (57%), Coast Guard (9%), Policy Fund (8%), FTA (8%), PHMSA (6%), FRA (5%), Other (7%) |

| Conferences & Workshops     | $2,020,000  | $1,692,000  | $1,695,000  | Registration Fees (57%), FHWA (18%), OST-R (16%), Other (9%) |

| SHRP2 (including Safety Database) | $5,336,000 | $4,463,000 | $5,539,000 | FHWA                                        |

| Marine Board                | $251,000    | $211,000    | $184,000    | Coast Guard (30%), Army (30%), NOAA (16%), BSEE (12%), MARAD (7%), Navy (5%) |

| Total                       | $88,620,000 | $87,624,000 | $88,645,000 |                                            |
### TRB CORE BUDGET ESTIMATE FOR SIX FISCAL YEARS (July 1 - June 30)

<table>
<thead>
<tr>
<th></th>
<th>FY2017 (act)</th>
<th>FY2018</th>
<th>FY2019</th>
<th>FY2020</th>
<th>FY2021</th>
<th>FY2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Highway &amp; Transportation Departments (State DOTs)</td>
<td>7,308,000</td>
<td>7,482,000</td>
<td>7,644,000</td>
<td>7,817,000</td>
<td>8,004,000</td>
<td>8,164,000</td>
</tr>
<tr>
<td>Federal Highway Administration (FHWA)</td>
<td>1,450,000</td>
<td>1,450,000</td>
<td>1,450,000</td>
<td>1,450,000</td>
<td>1,450,000</td>
<td>1,450,000</td>
</tr>
<tr>
<td>Other Federal Agencies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office of the Assistant Secretary for Research and Technology (OST-R)</td>
<td>300,000</td>
<td>205,000</td>
<td>360,000</td>
<td>350,000</td>
<td>350,000</td>
<td>350,000</td>
</tr>
<tr>
<td>Federal Transit Administration (FTA)</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
</tr>
<tr>
<td>National Highway Traffic Safety Administration (NHTSA)</td>
<td>214,000</td>
<td>120,000</td>
<td>216,000</td>
<td>216,000</td>
<td>216,000</td>
<td>216,000</td>
</tr>
<tr>
<td>Bureau of Indian Affairs/Department of The Interior (DOI)</td>
<td>85,000</td>
<td>85,000</td>
<td>85,000</td>
<td>85,000</td>
<td>85,000</td>
<td>85,000</td>
</tr>
<tr>
<td>Federal Motor Carrier Safety Administration (FMCSA)</td>
<td>75,000</td>
<td>75,000</td>
<td>75,000</td>
<td>75,000</td>
<td>75,000</td>
<td>75,000</td>
</tr>
<tr>
<td>Army Corps of Engineers (COE)</td>
<td>75,000</td>
<td>40,000</td>
<td>72,000</td>
<td>73,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td>Federal Railroad Administration (FRA)</td>
<td>65,000</td>
<td>40,000</td>
<td>72,000</td>
<td>73,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td>Air Force Civil Engineer Center (AFCEC)</td>
<td>65,000</td>
<td>70,000</td>
<td>72,000</td>
<td>73,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td>Department of Energy (DOE)</td>
<td>65,000</td>
<td>70,000</td>
<td>72,000</td>
<td>73,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td>Environmental Protection Agency (EPA)</td>
<td>32,500</td>
<td>70,000</td>
<td>70,000</td>
<td>73,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td>Federal Aviation Administration (FAA)</td>
<td>65,000</td>
<td>70,000</td>
<td>72,000</td>
<td>73,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td><strong>Other Non-Federal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association of American Railroads (AAR)</td>
<td>65,000</td>
<td>70,000</td>
<td>72,000</td>
<td>73,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td>American Public Transportation Association (APTA)</td>
<td>65,000</td>
<td>70,000</td>
<td>72,000</td>
<td>73,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td>California Air Resources Board (CARB)</td>
<td>32,500</td>
<td>70,000</td>
<td>75,000</td>
<td>75,000</td>
<td>75,000</td>
<td>77,000</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td>1,291,500</td>
<td>1,095,000</td>
<td>1,331,000</td>
<td>1,339,000</td>
<td>1,351,000</td>
<td>1,363,000</td>
</tr>
<tr>
<td><strong>TRB Fees &amp; Sales</strong></td>
<td>1,215,000</td>
<td>1,095,000</td>
<td>1,331,000</td>
<td>1,339,000</td>
<td>1,351,000</td>
<td>1,363,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>FY2018</th>
<th>FY2019</th>
<th>FY2020</th>
<th>FY2021</th>
<th>FY2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel Expenses (including overhead)</td>
<td>9,182,000</td>
<td>9,175,000</td>
<td>9,950,000</td>
<td>10,249,000</td>
<td>10,556,000</td>
</tr>
<tr>
<td>Staff/Committee Travel &amp; Meetings</td>
<td>260,000</td>
<td>300,000</td>
<td>306,000</td>
<td>312,000</td>
<td>318,000</td>
</tr>
<tr>
<td>AM Logistics and Travel</td>
<td>2,187,000</td>
<td>2,291,000</td>
<td>2,237,000</td>
<td>2,282,000</td>
<td>2,328,000</td>
</tr>
<tr>
<td>Publishing, Report Production &amp; Library</td>
<td>2,032,000</td>
<td>1,188,000</td>
<td>812,000</td>
<td>650,000</td>
<td>867,000</td>
</tr>
<tr>
<td>Other Costs</td>
<td>439,000</td>
<td>457,000</td>
<td>466,000</td>
<td>480,000</td>
<td>490,000</td>
</tr>
<tr>
<td>General &amp; Administrative Costs</td>
<td>2,892,000</td>
<td>3,017,000</td>
<td>3,167,000</td>
<td>3,260,000</td>
<td>3,349,000</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td>16,991,000</td>
<td>16,428,000</td>
<td>16,938,000</td>
<td>17,433,000</td>
<td>17,908,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>FY2020</th>
<th>FY2021</th>
<th>FY2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reserves</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly Surplus/Deficit Balance</td>
<td>(528,500)</td>
<td>(365,000)</td>
<td>(293,000)</td>
</tr>
<tr>
<td>Percent of a Core Operating Year</td>
<td>98%</td>
<td>100%</td>
<td>95%</td>
</tr>
<tr>
<td><strong>Total Reserves</strong></td>
<td>16,729,869</td>
<td>16,364,869</td>
<td>16,071,869</td>
</tr>
</tbody>
</table>
New Revenue Report – May 2018

Global Affiliate Program Status Update:
- A Global Affiliate Recruitment and Retention Plan is currently being developed to guide future marketing efforts for the program.
- New systems have been rolled out to communicate with new and renewing Global Affiliates about the value of program benefits.
- Ongoing efforts are being made to streamline the delivery of benefits and ensure we are leveraging technology to better automate program participation and engagement opportunities.
- Ongoing calls and meetings are occurring with lower level Global Affiliates about the value of upgrading their participation levels.
- Cross marketing and outreach has begun to prospects that would benefit from receiving Annual Meeting related benefits offered exclusively through the Global Affiliate program.

Global Affiliate Revenue: 2017 Global Affiliate Confirmed Revenue ($779,125)

<table>
<thead>
<tr>
<th></th>
<th>Amount Received</th>
<th>Goal</th>
<th>% to Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 renewals to date</td>
<td>$166,425</td>
<td>$780,000</td>
<td>21%*</td>
</tr>
<tr>
<td>2018 new revenue</td>
<td>$50,000</td>
<td>$78,000</td>
<td>64%</td>
</tr>
<tr>
<td>Progress to 2018 Goal</td>
<td>$216,425</td>
<td>$854,125</td>
<td>25%</td>
</tr>
</tbody>
</table>

*Most renewals occur during the latter half of the calendar year (this is resulting from the original join dates which align with the timing of the Annual Meeting)

Annual Meeting Revenue:

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019 Goal</th>
<th>% Growth/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Booth Sales</td>
<td>$866,380.00</td>
<td>$940,700.00</td>
<td>$1,000,000.00</td>
<td>6%</td>
</tr>
<tr>
<td>Career Fair Sales</td>
<td>$33,375.00</td>
<td>$40,000.00</td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Reception/Caucus Sales</td>
<td>$32,500.00</td>
<td>$40,000.00</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Gross Patron Sales</td>
<td>$185,875.00</td>
<td>$272,600.00</td>
<td>$310,500.00</td>
<td>14%</td>
</tr>
<tr>
<td>Gross Advertising Sales</td>
<td>$23,200.00</td>
<td>$15,750.00</td>
<td>$10,000.00</td>
<td>-37%</td>
</tr>
<tr>
<td>Mailing List Rental</td>
<td>$10,495.00</td>
<td>$10,500.00</td>
<td>$10,500.00</td>
<td>0%</td>
</tr>
<tr>
<td>TRB Live! Theaters</td>
<td></td>
<td>$12,000.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Sales</td>
<td>$1,074,480.00</td>
<td>$1,275,620.00</td>
<td>$1,423,000.00</td>
<td>12%</td>
</tr>
</tbody>
</table>

Other Planned New Revenue:
- Forum on Preparing for Automated Vehicles and Shared Mobility Services
  - Invoiced and 75% paid for 2018: $293,250
  - Invoiced and 32% paid for 2019: $190,250
OVERSIGHT ACTIVITIES

Committee and Panel Approvals
The Division Committee approved appointments to the following committees and panels from January–May 2018:

Technical Activities (Division A)

Consensus and Advisory Studies (Division B)
- Committee to Revise and Update of the U.S. Coast Guard Vessel Stability Regulations. Chair: Eugene A. Van Rynbach, Herbert Engineering Corporation.
- Committee on the Update of National Naval Responsibility for Naval Engineering. Chair: Heidi C. Perry, Draper Laboratory.

Executive Office
- TRB Forum on Automotive Vehicles and Shared Mobility, Co-Chairs: Kirk Steudle, Michigan DOT, Peter Sweatman, CAVita, and Gregory D. Winfree, Texas A&M Transportation Institute.

Cooperative Research Programs (CRP) (Division D)
During the period from January 2018 through May 2018, there were 8 CRP panels approved: 0 from the Airport Cooperative Research Program (ACRP), 4 from the Behavioral Traffic Safety Cooperative Research Program (BTSCRP), 2 from the National Cooperative Highway Research Program, and 2 from the Transit Cooperative Research Program (TCRP).
Report Review
From January through May 2018, the Division Committee oversaw reviews of the following report types:

Cooperative Research Programs of ACRP, NCHRP, and TCRP
- 12 ACRP Reports
- 19 NCHRP Reports
- 6 TCRP Reports
- 5 ACRP Syntheses
- 15 NCHRP Syntheses
- 0 TCRP Syntheses
- 1 ACRP Legal Research Digest
- 0 NCHRP Legal Research Digest
- 1 TCRP Legal Research Digest

Consensus and Advisory Studies Full-Length Reports
- Evidentiary Protection Issues for Transit Systems
- Safety Regulation for Propane Gas Pipeline Systems

Consensus and Advisory Studies Letter Reports
- Truck Size and Weight Limits Research Planning: Letter Report I
- Review of Federal Highway Administration Infrastructure R&D
- Transit Research and Development: Federal Role in the National Program

During the period of June–December 2018, the following six full-length and letter reports from Consensus and Advisory Studies are expected to undergo Division Committee review:
- Future of the Interstate Highway System
- Truck Size and Weight Limits Research Planning: Letter Report II
- ETG of Federal Highway Administration Long Term Pavement Planning Committee: Letter Report
- Transit Research and Development: Federal Role in the National Program
- Performance of Bridges Letter Report
- Review of USCG Vessel Stability Standards

During the period of June–December 2018, the following conference proceeding from Technical Activities is expected to undergo Division Committee review:
- European-U.S. Transportation Research Symposium #6: Socioeconomic Impacts of Connected and Automated Vehicles
Diversity at the Annual Meeting and in TRB Activities

Data on the gender and racial/ethnic composition of TRB’s NRC-approved committees for 2018 will be available in January 2019. Data detailing diversity at the Annual Meeting, on TRB’s Standing Committees, and on TRB’s Cooperative Research Panels are as follows:

Annual Meeting

Trends in Annual Meeting attendance of those who registered as full-time students and as young professionals (those 35 years and younger) are examined to highlight the increases in these groups’ attendance over the past seven years. The previous three years of attendance by gender, minority status, and underrepresented minority status (those who identify as African-American/black, American Indian/Native American, or Hispanic) are also detailed. It was not possible to correlate the extent to which the increases in students and young professionals were due to the corresponding increases in women and minorities.

Perceptions of diversity at the Annual Meeting are examined from responses to a question on the Post-Annual Meeting Survey and from tweets that used the TRBAM hashtag at the Annual Meeting. These survey responses are not necessarily representative of attendees as a whole, but can provide a barometer of those who were engaged and wanted to communicate their thoughts with us on the survey and with the public through Twitter.

Young Professional and Student Attendance

These data are from the number of attendees who registered as young professionals (those age 35 and under) or as students at the Annual Meeting. Between 2012-2018, young professional attendance rose by 30%, student attendance by 44%, and overall attendance by 37%. Although the percentages of young professional and student attendees has gone down, the actual number of these attendees, especially students, has increased markedly.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Young Professional</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendees</td>
<td>1,200</td>
<td>1,292</td>
<td>1,270</td>
<td>1,429</td>
<td>1,411</td>
<td>1,489</td>
<td>1,561</td>
</tr>
<tr>
<td>Percentage</td>
<td>15%</td>
<td>13%</td>
<td>14%</td>
<td>12%</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td><strong>Student</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendees</td>
<td>1,762</td>
<td>1,903</td>
<td>1,820</td>
<td>2,109</td>
<td>2,234</td>
<td>2,406</td>
<td>2,538</td>
</tr>
<tr>
<td>Percentage</td>
<td>24%</td>
<td>21%</td>
<td>22%</td>
<td>20%</td>
<td>19%</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Total Attendees:</strong></td>
<td>10,060</td>
<td>11,522</td>
<td>10,981</td>
<td>12,202</td>
<td>12,577</td>
<td>13,377</td>
<td>13,781</td>
</tr>
</tbody>
</table>
Attendance by Gender and Race/Ethnicity
Of those who completed the optional demographic questions when registering for the following Annual Meetings:

- 2018: 1.9% selected “Prefer Not to Respond” to the gender question, and 9.2% to the race/ethnicity question.
- 2017: 1.9% selected “Prefer Not to Respond” to the gender question, and 7.5% to the race/ethnicity question.
- 2016: 2.1% selected “Prefer Not to Respond” to the gender question, and 7.2% to the race/ethnicity question.

Results from the Attendee Post-Meeting Survey
Every year right after the Annual Meeting ends, TRB staff send a survey to all attendees to learn more about their satisfaction of the conference. This year, the survey had a 15% response rate. The survey question below asked attendees to rate, on a scale of 1-5, different aspects of their overall Annual Meeting experience. Thus, the weighted average is based on a maximum of 5. The three items related to diversity are in brackets.
Diversity-Related Tweets

TRB’s Office of Communications completed an analysis of all 3,440 unique tweets from the Annual Meeting. (Tweets are a form of social messaging that allows users to quickly communicate—in 280 characters or less—news or a thought that they categorize themselves with a hashtag.) Of these tweets, 9 were classified as “positive, about diversity,” 12 were classified as “diversity issues in need of improvement,” and 141 were classified as “equity research.” While not systematic data collection, these tweets can communicate strong negative and positive reactions to diversity issues and equity-related research as presented in various sessions.

The positive diversity tweets generally focused on the composition of attendees and session presenters. For example:

<table>
<thead>
<tr>
<th>Diversity-Related Tweets</th>
<th>EXCELLENT</th>
<th>GOOD</th>
<th>AVERAGE</th>
<th>FAIR</th>
<th>POOR</th>
<th>TOTAL</th>
<th>WEIGHTED AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities to establish/maintain personal and professional contacts</td>
<td>53.41%</td>
<td>37.83%</td>
<td>6.52%</td>
<td>1.75%</td>
<td>0.49%</td>
<td>2,054</td>
<td>4.42</td>
</tr>
<tr>
<td>Content addressing the latest developments in transportation</td>
<td>47.83%</td>
<td>42.91%</td>
<td>7.80%</td>
<td>1.22%</td>
<td>0.24%</td>
<td>2,051</td>
<td>4.37</td>
</tr>
<tr>
<td>Gaining ideas to incorporate in your work or organization</td>
<td>36.35%</td>
<td>45.61%</td>
<td>14.23%</td>
<td>2.97%</td>
<td>0.83%</td>
<td>2,032</td>
<td>4.14</td>
</tr>
<tr>
<td>Diversity of speakers</td>
<td>39.57%</td>
<td>42.37%</td>
<td>13.94%</td>
<td>3.24%</td>
<td>0.88%</td>
<td>2,037</td>
<td>4.16</td>
</tr>
<tr>
<td>Diversity of attendees</td>
<td>47.69%</td>
<td>35.89%</td>
<td>12.05%</td>
<td>3.29%</td>
<td>1.08%</td>
<td>2,034</td>
<td>4.26</td>
</tr>
<tr>
<td>Welcoming environment for new participants and/or perspectives</td>
<td>34.69%</td>
<td>43.91%</td>
<td>16.49%</td>
<td>3.71%</td>
<td>1.20%</td>
<td>1,995</td>
<td>4.07</td>
</tr>
<tr>
<td>Overall Annual Meeting experience</td>
<td>38.58%</td>
<td>50.56%</td>
<td>8.52%</td>
<td>2.00%</td>
<td>0.34%</td>
<td>2,053</td>
<td>4.25</td>
</tr>
</tbody>
</table>
Price Armstrong @pricearmstrong Jan 8
Again amazed by all the accents at #TRBAM, reminding me of how our international students and immigrants contribute so much to our country's intellectual wealth and innovation

SmashPatriCarchy! @peatonx Jan 11
Made it through 5 days at #TRBAM with no manels. Any male attendees with me on that?
* “Manels” is slang for “male panels.”

The tweets that focused on diversity issues in need of improvement generally referenced the composition of attendees and session presenters, and personal experiences while at the Annual Meeting. For example:

Jeralee Anderson @ecomisfit Jan 8
In a meeting room at #TRBAM, 6 women engineers, 35 men. We need more #WomenInSTEM

Rhett Fussell @rhettysetgo Jan 9
Just learned a few committees didn't read the #TRBAM "harassment policy" out loud while others have. The "didn’t Read" were led by males and the "dids" were led by females. We can do better gentlemen.
@NASEMTRB

The tweets that focused on equity-related research and sessions ranged from insights learned in a session, alerts of a good session/presentation in progress, to thought-provoking comments during panel discussions. For example:

Barb Chamberlain @barbchamberlain Jan 7
Gender-based harassment affects where/whether women walk. Woman in @ctbrown1911 focus group: "I'm up for grabs because I'm wearing lipstick." #TRBAM #MoveEquity #MeToo

Ken McLeod @Kenmcl Jan 7
How does equity affect automated enforcement? Cameras are colorblind, but placement of cameras is not #trbam

Joshua Baum @JoshuaBaum93 Jan 8
Ryland Lu, Master of Urban and Regional Planning candidate @UCLALuskin, presenting his research on the inequities caused by expanding rail over bus transit. #TRBAM
Technical Activities Division: Standing Committees
Participation of women and racial/ethnic minorities is detailed by examining participation of friends of committees, members of committees, and new members who just rotated on to committees. Changes planned to MyTRB will require those creating or updating their profiles to provide their gender and race/ethnicity (though they can select “Prefer not to respond”). These changes, which will be in place before registration opens for the 2019 Annual Meeting, are likely to increase the percentage of people reporting their gender and race/ethnicity in coming years.

Friends of Standing Committees
One way to become involved with TRB is to be a “friend” of a Technical Activities Standing Committee. Committee activities that friends do include the following:
- developing research problem statements, issuing calls for papers, and publishing critical issues and research needs;
- synthesizing and disseminating research results; and
- reviewing and recommending research papers for publication by TRB.

Data on friends are important to monitor because friends are often the pipeline for full committee members. The number of friends on committees shifts throughout the year as individuals can add themselves as friends at any time. Data about the 11,177 individuals who are friends of at least one standing committee (as of 5/8/18) are provided in the following breakdowns: international, gender, young professional (those 35 and under), and race/ethnicity.
Members of Standing Committees

TRB has 211 standing committees, each of which has 36 slots for members, or a total of 7,596 slots. As of 5/10/18, 6,072 of these slots are filled, and there are 4,901 unique members. (Some people are members of more than one committee.) The number of committee members will likely increase throughout the year as committees seek to fill all 36 allotted slots. Data about these unique members are provided in the following categories: international, gender, young professional (those 35 and under), and race/ethnicity.
Race/Ethnicity
(72.5% of members reporting)

- White, Not Hispanic or Latino: 76.2%
- Asian: 14.9%
- Hispanic: 3.5%
- African American/Black: 3.7%
- Two or More: 1.3%
- American Indian: 0.3%
Rotation Process of Committee Members

TA staff focus on increasing diversity through their yearly standing committee rotation process by working with committee chairs to identify eligible women and minorities to become members. Every year, 750 or 1/9 of all members rotate. In the most recent rotation process\(^1\), the change in overall minorities was +2.9%, the change in underrepresented minorities was +1.5%, and in females was +2.4%.

\(^1\) At the time of this report, final numbers from the 2018 rotation process were not yet available. The final numbers will be provided at the January 2019 Executive Committee and Division Committee meetings.
Cooperative Research Programs
To examine differences by race/ethnicity and gender in CRP, data are broken out by new members of panels in calendar years 2015, 2016, and 2017 then also for calendar years 2008, 2013, and 2018 to provide longer-term snapshots in time.

For the January 2019 meeting, data will be provided on race/ethnicity and gender of the new NCHRP and ACRP panels, thus providing a comparison with the current data. Data will also be provided on the panels for the new Behavioral Traffic Safety Cooperative Research Program.

Percentage of Race/Ethnicity of New Panel Members in 2015, 2016, and 2017*

<table>
<thead>
<tr>
<th>Year</th>
<th>Total N</th>
<th>% Minority</th>
<th>% UR Minority</th>
<th>% AA</th>
<th>% Hispanic</th>
<th>% Native Amer.</th>
<th>% Asian</th>
<th>% 2 or More</th>
<th>% White†</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCHRP</td>
<td>382</td>
<td>23.3</td>
<td>7.9</td>
<td>3.7</td>
<td>3.9</td>
<td>0.3</td>
<td>13.8</td>
<td>1.6</td>
<td>72.8</td>
</tr>
<tr>
<td>TCRP</td>
<td>58</td>
<td>25.9</td>
<td>15.5</td>
<td>8.6</td>
<td>6.9</td>
<td>0</td>
<td>8.7</td>
<td>1.7</td>
<td>72.4</td>
</tr>
<tr>
<td>ACRP</td>
<td>121</td>
<td>18.2</td>
<td>8.3</td>
<td>5.8</td>
<td>2.5</td>
<td>0</td>
<td>8.2</td>
<td>1.7</td>
<td>76.0</td>
</tr>
<tr>
<td>All CRP</td>
<td>561</td>
<td>22.5</td>
<td>8.7</td>
<td>4.6</td>
<td>3.9</td>
<td>0.2</td>
<td>12.2</td>
<td>1.6</td>
<td>73.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Total N</th>
<th>% Minority</th>
<th>% UR Minority</th>
<th>% AA</th>
<th>% Hispanic</th>
<th>% Native Amer.</th>
<th>% Asian</th>
<th>% 2 or More</th>
<th>% White†</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCHRP</td>
<td>291</td>
<td>27.5</td>
<td>12.4</td>
<td>7.2</td>
<td>4.8</td>
<td>0.3</td>
<td>13.1</td>
<td>2.1</td>
<td>68.0</td>
</tr>
<tr>
<td>TCRP</td>
<td>57</td>
<td>24.6</td>
<td>14.0</td>
<td>10.5</td>
<td>3.5</td>
<td>0</td>
<td>10.6</td>
<td>0</td>
<td>75.4</td>
</tr>
<tr>
<td>ACRP</td>
<td>88</td>
<td>20.5</td>
<td>9.1</td>
<td>6.8</td>
<td>2.3</td>
<td>0</td>
<td>11.4</td>
<td>0</td>
<td>78.4</td>
</tr>
<tr>
<td>All CRP</td>
<td>436</td>
<td>25.7</td>
<td>11.9</td>
<td>7.6</td>
<td>4.1</td>
<td>0.2</td>
<td>12.4</td>
<td>1.4</td>
<td>71.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Total N</th>
<th>% Minority</th>
<th>% UR Minority</th>
<th>% AA</th>
<th>% Hispanic</th>
<th>% Native Amer.</th>
<th>% Asian</th>
<th>% 2 or More</th>
<th>% White†</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCHRP</td>
<td>351</td>
<td>26.2</td>
<td>6.6</td>
<td>3.4</td>
<td>2.6</td>
<td>0.6</td>
<td>17.6</td>
<td>2.0</td>
<td>69.5</td>
</tr>
<tr>
<td>TCRP</td>
<td>76</td>
<td>14.5</td>
<td>7.9</td>
<td>3.9</td>
<td>3.9</td>
<td>0</td>
<td>4.1</td>
<td>2.6</td>
<td>81.6</td>
</tr>
<tr>
<td>ACRP</td>
<td>145</td>
<td>29.7</td>
<td>15.9</td>
<td>9.0</td>
<td>6.2</td>
<td>0.7</td>
<td>12.4</td>
<td>1.4</td>
<td>66.2</td>
</tr>
<tr>
<td>All CRP</td>
<td>572</td>
<td>25.5</td>
<td>9.1</td>
<td>4.9</td>
<td>3.7</td>
<td>0.5</td>
<td>14.5</td>
<td>1.9</td>
<td>70.3</td>
</tr>
</tbody>
</table>

Minority: Asian, African-American, Hispanic, Native American, Two or More
UR Minority: African-American, Hispanic, Native American
AA: African-American
*Percentages for the races/ethnicities do not add up to 100% because of the non-responses which were between 3-4% overall.
†This category is those who did not identify as Hispanic.
### Percentage of Females on New CRP Panels in 2015, 2016, and 2017

**2015**
- **NCHRP**: 23 females
- **TCRP**: 43.1 females
- **ACRP**: 40.4 females

**2016**
- **NCHRP**: 27.8 females
- **TCRP**: 34.2 females
- **ACRP**: 36.4 females

**2017**
- **NCHRP**: 28.2 females
- **TCRP**: 37.2 females
- **ACRP**: 34.1 females

---

### Percentage of Race/Ethnicity of All Panel Members in 2008, 2013, and 2018*

#### 2008

<table>
<thead>
<tr>
<th></th>
<th>Total N</th>
<th>% Minority</th>
<th>% UR Minority</th>
<th>% AA</th>
<th>% Hispanic</th>
<th>% Native Amer.</th>
<th>% Asian</th>
<th>% 2 or More</th>
<th>% White†</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCHRP</td>
<td>1203</td>
<td>16.2</td>
<td>6.6</td>
<td>2.5</td>
<td>3.0</td>
<td>1.1</td>
<td>9</td>
<td>0.6</td>
<td>78.7</td>
</tr>
<tr>
<td>TCRP</td>
<td>165</td>
<td>17.0</td>
<td>15.8</td>
<td>12.1</td>
<td>2.4</td>
<td>1.2</td>
<td>1.3</td>
<td>0</td>
<td>72.1</td>
</tr>
<tr>
<td>ACRP</td>
<td>44</td>
<td>15.9</td>
<td>11.4</td>
<td>4.5</td>
<td>6.8</td>
<td>0</td>
<td>4.7</td>
<td>0</td>
<td>79.5</td>
</tr>
<tr>
<td>All CRP</td>
<td>1412</td>
<td>16.3</td>
<td>7.8</td>
<td>3.7</td>
<td>3.0</td>
<td>1.1</td>
<td>8</td>
<td>0.5</td>
<td>78.0</td>
</tr>
</tbody>
</table>

#### 2013

<table>
<thead>
<tr>
<th></th>
<th>Total N</th>
<th>% Minority</th>
<th>% UR Minority</th>
<th>% AA</th>
<th>% Hispanic</th>
<th>% Native Amer.</th>
<th>% Asian</th>
<th>% 2 or More</th>
<th>% White†</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCHRP</td>
<td>960</td>
<td>17.9</td>
<td>6.4</td>
<td>2.0</td>
<td>3.6</td>
<td>0.7</td>
<td>10.6</td>
<td>1.0</td>
<td>78.9</td>
</tr>
<tr>
<td>TCRP</td>
<td>316</td>
<td>26.3</td>
<td>19.9</td>
<td>16.1</td>
<td>3.5</td>
<td>0.3</td>
<td>4.7</td>
<td>1.6</td>
<td>68.4</td>
</tr>
<tr>
<td>ACRP</td>
<td>247</td>
<td>12.1</td>
<td>7.3</td>
<td>4.0</td>
<td>2.4</td>
<td>0.8</td>
<td>4.5</td>
<td>0.4</td>
<td>80.6</td>
</tr>
<tr>
<td>All CRP</td>
<td>1523</td>
<td>18.7</td>
<td>9.3</td>
<td>5.3</td>
<td>3.4</td>
<td>0.7</td>
<td>8.2</td>
<td>1.1</td>
<td>77.0</td>
</tr>
</tbody>
</table>

#### 2018

<table>
<thead>
<tr>
<th></th>
<th>Total N</th>
<th>% Minority</th>
<th>% UR Minority</th>
<th>% AA</th>
<th>% Hispanic</th>
<th>% Native Amer.</th>
<th>% Asian</th>
<th>% 2 or More</th>
<th>% White†</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCHRP</td>
<td>1332</td>
<td>23.4</td>
<td>9.1</td>
<td>4.3</td>
<td>4.4</td>
<td>0.5</td>
<td>12.7</td>
<td>1.6</td>
<td>73.6</td>
</tr>
<tr>
<td>TCRP</td>
<td>196</td>
<td>27.6</td>
<td>18.4</td>
<td>12.2</td>
<td>6.1</td>
<td>0</td>
<td>7.7</td>
<td>1.5</td>
<td>69.4</td>
</tr>
<tr>
<td>ACRP</td>
<td>323</td>
<td>22.3</td>
<td>11.1</td>
<td>7.4</td>
<td>3.7</td>
<td>0</td>
<td>10.3</td>
<td>0.9</td>
<td>72.4</td>
</tr>
<tr>
<td>All CRP</td>
<td>1851</td>
<td>23.7</td>
<td>10.4</td>
<td>5.7</td>
<td>4.4</td>
<td>0.3</td>
<td>11.8</td>
<td>1.5</td>
<td>73.0</td>
</tr>
</tbody>
</table>

*Minority: Asian, African-American, Hispanic, Native American, Two or More

UR Minority: African-American, Hispanic, Native American

AA: African-American

*Percentages for the races/ethnicities do not add up to 100% because of the non-responses which were between 3-6% overall.

†This category is those who did not identify as Hispanic.
Percentage of Female Participation on all CRP Panels in 2008, 2013, and 2018

- ACRP: 18.2% (2008), 30.4% (2013), 34.7% (2018)
- NCHRP: 16.3% (2008), 20.7% (2013), 23.6% (2018)
- TCRP: 30.1% (2008), 30.1% (2013), 33.2% (2018)
Inclusion and Diversity Strategic Plan Update
Transportation Research Board

Background
TRB's Inclusion and Diversity Initiative began with a task force, chaired by Nat Ford. The group first met at the 2017 Annual Meeting with the following mission:

To facilitate making diverse and inclusive involvement a core value for TRB staff, volunteers, contract awardees, projects and the transportation communities TRB serves. A diverse and inclusive culture will enhance the mission of TRB because it will increase innovation and creativity.

After this first meeting, the task force then broke into four workgroups to develop strategies and action items. The workgroups met over a span of eight to ten months to develop and then refine their goals, strategies, and actions that were combined to form the Inclusion and Diversity Strategic Plan. The Executive Committee approved the Plan at its January 2018 meeting.

Implementation
TRB staff leaders and the newly-formed Special Committee on Inclusion and Diversity will oversee implementation. The Committee is chaired by Carol Lewis of Texas Southern University. Committee members are as follows:

- Tanisha Hall, Tennessee Department of Transportation, AASHTO
- Susan Hanson, Clark University (emerita): Chair of the TRB Division Committee
- Chris Hendrickson, Carnegie Mellon University: member of Executive Committee, SPPR, and Vice Chair of the TRB Division Committee
- Rosemarie Merrigan, Minnesota Department of Transportation
- Hyun-A Park, Spy Pond Partners, LLC: Chair of the Technical Activities Council

Before the Committee met, TRB staff leaders reviewed and revised action items to reflect efforts already underway and efforts that may be possible given current resources. To date, the Committee has held two conference calls during which time it has started review of the revised action items, their status, and proposed metrics. It has also discussed steps to ensure that the Plan is a “living document” and that inclusion and diversity become part of TRB culture.

Strategies and Associated Action Items
The following are the seven strategies and associated action items underway:

Strategy 1
Identify practices and develop primers for committee and panel chairs and TRB staff highlighting strategies and resources used to recruit, welcome and actively involve a more diverse committee and panel membership.
• TA staff focusing on increasing diversity through its yearly standing committee rotation process that has 750 or so members rotating, or 1/9 of all positions.
• TA staff working with committee chairs on including diversity outreach efforts in their triennial strategic plans.
• Inclusion and diversity staff leads are developing a process and resources for contacting organizations when looking for volunteers for TRB activities.

Strategy 2
Engage with other transportation-related organizations to increase their members’ awareness of and participation in TRB.
• Tracking our existing MOUs to ensure we are meeting our roles and responsibilities, and benefitting from the agreements.
• Surveying staff on a semi-annual basis to identify conferences they are already attending to look for gaps in those we are not attending.
• For those attending the conferences, will be draft talking points and materials so they can discuss TRB involvement.

Strategy 3
Find new ways for AM and specialty conference attendees to make connections and feel included/welcome.
• Encouraged all committees to have a specified greeter to welcome newcomers to their meetings. Now an ongoing action at every Annual Meeting.
• When forming panels during AM sessions, will continue to consider diversity of panelist composition.

Strategy 4
Identify resources for TRB staff and contracting office to identify and minimize barriers to greater diversity among TRB contractors.
• Will be developing a webinar about best practices when responding to RFPs, available to all, not just DBEs.
• Reviewed documentation on best practices, policies and procedures in DBE contracting to clarify and promote our policies to all.
• Continuing “CRP Office Hours” at the Annual Meeting to engage with people interested in responding to RFPs.

Strategy 5
Identify and minimize barriers to achieving greater TRB staff diversity.
• Will survey TRB staff hired in previous 6 years to ask about the extent to which they felt welcomed and integrated. Allow people to identify by race/ethnicity.
• Will enhance staff mentoring programs.
• Will enhance outreach to educational institutions, especially Minority-Serving Institutions, to discuss TRB and TRB employment opportunities.
• Working with the Academies’ Human Resources Office to develop training for recruiters and staff in hiring positions, like trainings on how unconscious biases affect how applicants are viewed.

Strategy 6
*Ensure that inclusion and diversity, and issues of equity, civil rights, and workforce development are addressed through technical activities and other projects.*

• Will include inclusion- and diversity-related topics as part of TRB strategic plan updates to demonstrate executive level commitment.
• Including inclusion- and diversity-related topics in TRB’s “Critical Issues in Transportation” document.
• In upcoming *TR News* editions, will be highlighting TRB emphasis on inclusion and diversity and how the organization as a whole, and its committees and panels have benefitted from inclusion and diversity.

Strategy 7
*Improve existing data, information, and communication mechanisms to support all strategies.*

• To improve overall data quality, those updating or creating new MyTRB profiles will have to respond to gender and race/ethnicity questions, (but also have “Choose not to respond” option).
• On an on-going basis, reviewing promotional material and *TR News* to ensure content is representative of a broad array of transportation professionals.

**Moving Forward**
The Special Committee will continue to monitor action items in progress and those planned, while considering associated metrics and other action items that may be feasible. Given the breadth of experience that the Special Committee members have with inclusion- and diversity-related initiatives, TRB staff will draw on them for advice on organizational changes needed for successful implementation.

The Committee’s work intersects with inclusion and diversity concerns both in TRB and throughout the Academies. For instance, within TRB, its Division Committee has expressed concern about the numbers regarding stagnant involvement of women and minorities on TRB panels and committees. And TRB’s Technical Activities Council has been focusing on increasing diversity of its committee members and chairs during the rotation process. Action items in the Plan reflect these concerns, and will reflect any new concerns and initiatives of the two groups.

Around the Academies, staff from the Division on Behavioral and Social Sciences and Education recently formed a group to focus on diversity on Academy boards, committees, reviewer slates, and panels. TRB staff are involved with this group and will be looking for ways to coordinate efforts. The Executive Committee will receive another update at its January 2019 meeting.
CONTEXT FOR TASK FORCE RECOMMENDATIONS

Transportation systems play a critical role in the effective functioning of social and economic systems in our society. This is especially apparent when these systems are challenged during and following disruptive events like natural disasters. Faced with increasing risks of climate change, extreme weather, and other disruptive events, transportation systems must not only become more sustainable to address the causes of some of these challenges, but must also be resilient and continue to provide the services now and in the future and connectivity that our communities and interdependent systems depend upon. Equity and inclusion are also fundamental to a resilient and sustainable system that meets user needs. However, these concepts can be challenging as transportation systems involve a complex mix of public and private interests, including layers of governmental authorities from federal and state DOTs, to regional organizations (e.g., MPOs, COGs, airport authorities, ports) and local agencies, businesses, and related stakeholders. All of these entities, as well as transportation users, have important roles in ensuring that infrastructure and services function effectively and cohesively. As TRB defines its strategy relating to resilience and sustainability research, it is important to consider not only research gaps, but also the importance of governance, communications, and community engagement.

OVERVIEW OF PROCESS

The Resilience and Sustainability Task Force¹ was tasked with providing recommendations on how TRB could more strategically align and direct its research and engagement efforts relating to resilience and sustainability. To limit the scope of this effort, the Task Force opted to focus primarily on resilience to climate change impacts including extreme weather, and sustainability from a low-carbon emissions standpoint. The Task Force identified 4 areas to consider: (1) The nexus of resilience and sustainability, (2) Multimodal and cross-modal issues, (3) Cost and financing issues, and (4) Community resilience. The Task Force formed working groups for each of these areas, and each produced its own recommendations which are summarized in the pages that follow. However, these themes are not isolated, and the working groups identified cross-cutting recommendations in many areas. Through the process of Task Force and working group meetings, several overarching, cross-cutting, and strategic-level recommendations emerged. These recommendations provide a frame for some of the more specific recommendations in the pages that follow.²

STRATEGIC AND OVERARCHING RECOMMENDATIONS FOR TRB

1. **Define and institutionalize “resilience” and “sustainability” at TRB**: Adopt an organizational definition for “resilience” and “sustainability” in the transportation context. These definitions should recognize how resilient transportation infrastructure and operations contribute to sustainability. Institutionalize these concepts into TRB activities and organization.

2. **Transportation governance mapping**: Map relevant stakeholders who are key components of multimodal transportation and interdependent systems, including at community levels.

3. **Communications and stakeholder engagement**: Improve efforts to communicate and engage with the wide range of stakeholders from national to local levels about TRB products, activities, and research needs relating to resilience and sustainability. Ensure that these efforts are inclusive and center on transportation’s role in serving and connecting people both equitably and sustainably.

4. **Research mapping and best practices**: With help from TRB stakeholders, engage in mapping to understand and relate past and current research efforts relating to resilience and sustainability (including on all specific topics identified in working group recommendations), and to identify gaps. Develop a clearinghouse for best practices in transportation resilience and sustainability identified through this mapping effort.
Resilience and Sustainability Working Group Problem Statement

Resilience and sustainability are terms that often describe impacts to and impacts from transportation. Resilience is generally considered to include planning for, withstanding, and recovering from major disruptions to the system, whereas sustainability is a more holistic concept to ensure long-term (intergenerational) outcomes are balanced and equitable in terms of social, economic and environmental impacts. Conceptually, there is a need to shift toward viewing resilience and sustainability together, as goals that are naturally linked and interdependent. Traditional views of sustainability should be expanded to encompass the idea that sustainability inherently requires resilience (and vice versa). Systems cannot be sustainable (i.e., function for people at the same level) unless they are resilient to a range of threats they may face, and they cannot be resilient unless constructed, maintained, and operated to account for the range of hazards they may foreseeably face.

There is an opportunity on a strategic level since TRB has yet to adopt an organizational definition of sustainability. The working group focused on climate change adaptation and mitigation (reducing greenhouse gas emissions) as key resilience and sustainability issues, and identified thematic areas of alignment between adaptation and mitigation (e.g., electrification of transportation, transformational technologies, green infrastructure, intermodal connectivity, integrated planning, energy supply). To produce recommendations, the group started with the following framing questions:

- What are the top concerns when comparing and correlating resilience and sustainability?
- Where are there natural linkages between adaptation/resilience and sustainability/mitigation; what are the challenges?
- What can be done to ensure that sustainability solutions are at least not maladaptive, and that adaptation solutions (e.g., added redundancies) support emission reduction goals?

Working Group Recommendations for TRB

Strategic Recommendations

1. Adopt an organizational definition for sustainability in the transportation context that recognizes the roles of resilience and reduced emissions in being sustainable.

2. Develop a strategy for engaging with relevant national organizations (e.g., NACTO and AASHTO), local organizations and MPOs, networks (e.g., ULI, the Transportation and Climate Initiative, etc.), and other critical sectors (e.g., energy, water, communications, health) to promote partnerships to ensure that TRB’s work on resilience and sustainability is relevant to their constituencies. Coordinate this effort with the development of TRB’s new strategic plan and develop priorities for engagement based on strategic benefit to TRB and advancing the state of knowledge and practice.

Best Practices in Resilience-Sustainability Overlap:

3. Seek funding to commission a policy study to explore policy levers and decision points at the natural intersections of climate change mitigation and adaptation; include successful case studies.

4. Develop a literature review or clearinghouse of best practices in efforts to reduce carbon intensity in transportation and disseminate widely (carbon pricing, low carbon fuel standards, zero emission vehicle mandates, land use strategies, clean energy in ROW, and other polices).

5. Highlight and disseminate reports that connect low-carbon transportation to enhanced resilience (e.g., California Transportation Plan, California Climate Change Scoping Plan, etc.).

Innovation Research:

6. Perform a comprehensive review of research to determine gaps in knowledge for various policy approaches that support resilience and sustainability, and their co-benefits. Encourage research that closes these knowledge gaps.
7. Identify gaps and opportunities for the transportation and technology communities to develop new information for the transportation community to support sustainable transportation systems.
Multimodal and Cross-Modal Working Group Problem Statement

The topics of transportation resilience and sustainability are both larger than any one jurisdiction, agency, or provider can manage unilaterally. It is critical to provide decision-makers with the tools (and motivation) to understand transportation as a unified system of multiple modes connecting multiple jurisdictions with shared vulnerabilities. It is also critical to understand the interdependencies across sectors and supply chains, and how changes like innovations in technology (e.g., the rise of shared electric connected automated (SECA) vehicles) affect the resilience and sustainability of interdependent systems for the movement of people and goods. The overarching themes of equity and inclusion are fundamental to any discussion of multimodal resilience and sustainability as well; decision makers must avoid the disproportionate impacts of transportation and land use investments that have occurred in the past. The Cross-Modal and Multimodal Working Group framed its recommendations for TRB around the following questions:

- How should modal organizations^5 with overlapping service territories work together to enhance resilience regardless of federal, state, regional, local, or private control?
- What cross-sectoral (e.g., power, telecommunications, fuel, etc.) dependency issues need to be addressed?

Working Group Recommendations for TRB

Governance

1. Call for research into multi-modal and inter-jurisdictional collaboration (perhaps with the involvement of an influential MPO) to develop a framework to support more cohesive transportation governance approaches and tools. The objective should be to facilitate a more powerful, in-depth understanding of multi-modal/cross-jurisdictional risks and opportunities as they pertain to resilience and sustainability.

Technology/Innovation

2. Call for research into the role of SECA technologies in potentially enhancing and/or weakening the resilience and sustainability of transportation networks and the electrical grid at varying levels of adoption.

3. Call for research into the issues associated with the reliability and resilience of data and communications infrastructures essential for SECA operations.

Goods Movement/Logistics

4. Work with the goods movement community to better understand how transportation agencies can help facilitate large-scale modal “flexing” (movement of goods via non-primary networks) to help minimize freight flow disruptions.

5. Work with the goods movement community to research agreements with communications providers to help minimize the disruption of information flows.

Equity/Inclusion and Transit/Non-Motorized Transportation

6. Actively encourage all active resilience and sustainability-oriented committees to weave equity and inclusion into their activities as a fundamental theme.

7. Promote research that helps better characterize and quantify the resilience benefits of modal diversification for passenger trips (along with sustainability co-benefits). The CRPs should consider collaborating on a special, cross-cutting research program that explores how to identify and evaluate the feasibility of a range of resilience strategies for disadvantaged populations, including modal diversification.

Cross-Sectoral

8. Facilitate dialogues and/or forge research partnerships on the topic of resilience with other (non-transportation) sectors and utilities, including the business community.
Cost and Financing Working Group Problem Statement

Future damage to transportation infrastructure from extreme weather and climate will likely be extremely costly, both in terms of direct losses due to infrastructure damage and indirect losses due to lost productivity and inability to move goods and people. Therefore, it becomes increasingly important to incorporate resiliency considerations proactively to minimize disaster costs. Given the limited federal, state and local transportation revenues, more work is needed to address the funding and finance implications of the impacts of extreme weather and climate change. The Funding and Financing Working Group considered the following framing questions:

- Based on increased severity of weather events and rising seas and limited available funding, how can adaptation and resilience be funded or financed?
- How can a risk and asset management approach be incorporated into addressing this issue?
- What current formulas might need to be adjusted and how can a business case be developed?

Working Group Recommendations for TRB

Opportunities to utilize existing funding and finance for resiliency
Transportation agencies have flexibilities in how funding can be leveraged to address resiliency in programs and projects, but those flexibilities may not be well or equally understood.

1. Encourage funding agencies to communicate funding opportunities at TRB committee meetings and other convening activities
2. Use the TRB annual meeting to educate and highlight existing funding methods and flexibilities, including case examples.
3. Create case studies of how states, cities, and others have financed climate adaptation projects.
4. Assist FHWA, FTA, and FEMA in providing information as they develop guidance to leverage emergency funding for resiliency.

Economic justifications for resiliency
It is essential that practitioners have the tools and methods available to make the business case for resiliency investments. Improved economic analysis tools and methods are needed to address this gap.

5. Utilize TRB committees and communications infrastructure to highlight findings of soon to be completed research on benefit-cost analysis methods (e.g., ACRP 02-78, NCHRP 20-101).
6. Encourage additional CRP research to further improve benefit-cost analyses and address gaps.
7. Synthesize existing best practices in communicating economic tradeoffs of resilience investments to decision makers.

Innovative financing: Resiliency in PPPs and tolling projects
It is likely that public/private partnerships (PPPs) and other innovative finance mechanisms will be increasingly used to fund transportation projects given the current funding environment, and resiliency should be factored into these projects.

8. Synthesize approaches and gap analysis on incorporating resilience in PPP agreements.
9. Encourage CRP research to identify innovative options for resiliency funding (e.g. tolls for high risk projects, cap and invest).
10. Utilize committees and communications infrastructure to deliver findings to TRB stakeholders.
Community Resilience Working Group Problem Statement

TRB plays an important role in informing transportation research, but currently, TRB's structure and processes are not well understood by many of its stakeholders, and many community-level stakeholders – like local agencies and everyday transportation system users – are unaware of the existence of TRB and its research products. These stakeholders could derive benefits from better access to TRB research and products, and could also provide valuable input on community-level needs that could help inform future research needs. By improving its engagement and communications with the wide range of transportation stakeholders, TRB could better ensure that transportation research is designed to foster resilient, sustainable transportation systems that meet the needs of communities. The Community Resilience Working Group's recommendations aim to address the following questions:

- How can TRB better engage organizations and stakeholders at the community-level and across the range of authorities that are involved in sustaining effective transportation networks?
- How can TRB better communicate on an ongoing basis regarding research and products that relate to community resilience and sustainability?
- What are the additional research gaps that TRB should explore to ensure that transportation improves overall community resilience and sustainability?

Working Group Recommendations for TRB

Stakeholder Engagement
1. Encourage committees to map and identify (in a generalized way) relevant authorities, levels of government, and other stakeholders that have a role in planning or providing transportation services or infrastructure, and those within sectors that rely on transportation services (or that transportation relies on).
2. Consider participating in a community resilience stakeholders group. This group should be used to periodically check in with relevant groups to determine whether TRB research and outreach efforts are meeting the needs of communities, and where to make improvements.

Communications
3. Use existing TRB publications more effectively as communication tools. Easy-to-digest publications, like TR News, could be used to communicate best practices in transportation that foster community resilience, and to engage with stakeholders at the community level.
4. Revisit the Resilience Section’s Communications Plan to determine any updates needed to ensure wide dissemination of TRB’s resilience work, gathering input from organizations that work on community resilience in this process. (e.g., Resilient America Roundtable, USDN, etc.)
5. In the near term, work with the National Academies’ new Climate Communications Initiative.

Community Resilience Research Gaps
6. Create problem statements around the following identified gaps in current TRB research.
   a. Transportation’s role in current community resilience and sustainability planning.
   b. Intersection of TRB with Social Science community focused on local engagement
   c. Long term planning and adapting to changing conditions (e.g., transformational technologies, intersection of transportation and land use decisions, etc.)
   d. Co-benefits of policies to reduce GHGs, from a community resilience and equity perspective
ENDNOTES

1 The Resilience and Sustainability Task Force was Chaired by TRB Executive Committee Vice Chair Vicki Arroyo (Georgetown Climate Center), and its membership included: TRB Executive Committee members Malcolm Dougherty (formerly Caltrans), Gary Thomas (Dallas Area Rapid Transit), and Geraldine Knatz (University of Southern California); and Ex Officio members Steve Cliff (California Air Resources Board), John Contestabile (Johns Hopkins University), Josh DeFlorio (Port Authority of New York and New Jersey), Susanne DesRoches (City of New York), Elizabeth Fretheim (Walmart), Alice Hill (Stanford University), Jennifer Jacobs (University of New Hampshire), Mike Lewis (Colorado Department of Transportation), Ben McFarlane (Hampton Roads District Planning Commission), and Josh Sawislak (AECOM).

2 The working group recommendations that follow have been distilled to a single page each, but are each a product of multiple conference calls and drafts of recommendations and considerations. The Task Force and Working Groups encourage the TRB Executive Committee and other readers to explore the more detailed documents included in the Appendices to this briefing book, in order to get a fuller picture of the considerations addressed by each Working Group.

3 The Resilience and Sustainability Working Group’s membership included: Steve Cliff (Chair), Vicki Arroyo, Karl Simon, Josh Sawislak, and Bill Anderson (TRB staff).

4 The Multimodal and Cross-Modal Working Group’s membership included: Josh DeFlorio (Chair), John Contestabile, Geraldine Knatz, Elizabeth Fretheim, Oana Deselnicu (for Mike Lewis), Ellen Greenberg, Jennifer Weeks (TRB staff), and Annie Bennett. Additional contributions were received from: Anne Strauss-Weider, Susan Shaheen, Steven Wong, and Joan Walker.

5 For the purposes of this exercise, a “modal organization” is any public or private entity that owns or operates a service or infrastructure network that serves the mobility needs of individuals and/or businesses.

6 The Cost and Financing Working Group’s membership included: Michael Culp (Chair), Vicki Arroyo, Josh Sawislak, Alice Hill, Malcolm Dougherty, and Bill Anderson (TRB staff).

7 The Community Resilience Working Group’s membership included: Susanne DesRoches (Chair), Annie Bennett, Stephen Cauffman, Christine Koester, Ben McFarlane, Jennifer Jacobs, Karl Simon, Gary Thomas, and Jennifer Weeks (TRB staff).
MEMORANDUM

To: TRB Executive Committee

From: Neil Pedersen  
Executive Director

Date: May 21, 2018

Subject: Preparation of the next TRB Strategic Plan

Historically TRB has prepared a new or updated strategic plan approximately every five years. The TRB Executive Committee adopted the current strategic plan in June 2014. The original schedule called for adoption in January 2015, but it was completed six months ahead of the original schedule in order that the new Executive Director would have strategic direction from the Executive Committee upon taking office.

The Subcommittee on Planning and Policy Review (SPPR) has lead responsibility for development of the plan. The full Executive Committee receives updates during the process and has responsibility for adopting the final plan.

It is time to begin the process for development of the next TRB strategic plan. The purpose of this memo is to give some background information and to identify a proposed approach that is based on discussions by SPPR at its April meeting and further developed by staff since that time.

Development of this strategic plan will occur within the context of a great deal of financial uncertainty, particularly regarding federal funding. It will be critical that the plan address this uncertainty and focus on priorities and what is sustainable within the resources that are available.

Ongoing or Recently Completed Planning Efforts Will Inform the Planning Process

There are a number of planning efforts that have been completed during the past few years or are currently underway that address many of the issues that would likely come up in a new strategic planning process. Among them are:

- “Improving the National Research Council’s Study and Administrative Processes: An Independent Review,” by the National Academy of Public Administration
- NRC Transformation Teams
- “Critical Issues in Transportation,” anticipated in Fall 2018
- National Academies’ External Communications Review report, April 2018
• TRB Marketing and Communications Strategic Plan
• TRB Inclusion and Diversity Strategic Plan
• Strategic Plan for TRB International Activities: 2018-2023
• Plans from the task forces for transformational technologies, resilience, and public health
• New Revenues Task Force report
• Technical Activities Council Strategic Alignment process
• Technical Activities Division process analysis and IT evaluation
• Transportation Research Record external peer review, restructuring, and ongoing strategic assessment and improvements
• Strategic plans for NCHRP, ACRP, and TCRP
• Cooperative Research Program business process review, May 2018
• Global Affiliate Strategic Marketing Plan – in development
• Centennial Plan

As can be seen, considerable strategic planning has been going on in each of TRB’s programmatic areas and in many of the areas identified in the last strategic plan. SPPR recommended that the new TRB strategic plan incorporate and build upon all the planning that has been underway, and avoid duplication of these efforts. SPPR also felt that the existing plan has served TRB well and is still in the process of being implemented, so the approach should be to update the existing plan, rather than start over with a new planning effort.

Proposed Process and Schedule to Develop the New TRB Strategic Plan

SPPR is proposing a schedule in which a new strategic plan will be adopted by the Executive Committee at its June 2019 meeting. The following process is proposed in order to meet this schedule.

Between June 2018 and the Fall 2018 SPPR Meeting

• Staff will draft an updated SWOT analysis for review by SPPR.
• Staff will review the TRB vision, mission, and strategic goals in light of changes since 2014 and issues identified in the prior SWOT analysis and will propose appropriate changes to both for the SPPR’s consideration.
• Staff will draft high-level strategies for consideration by SPPR based on the strategies in the last plan, strategies and issues identified in the plans listed above, the new “Critical Issues in Transportation” document, and guidance from the NRC transformation effort.
• SPPR will review all these items at its October 2018 meeting.
Between the October 2018 SPPR Meeting and the January 2019 Executive Committee Meeting

- Staff will revise the draft document based on SPPR input.
- The revised document will be circulated to TRB oversight committees (TRB Division Committee, SPPR, Technical Activities Council, and CRP oversight panels) for their comment and suggestions.
- Based on input received, a revised version will be prepared for Executive Committee review at its January 2019 meeting.

Between the January 2019 Executive Committee Meeting and the Spring 2019 SPPR Meeting

- Staff will make revisions based on Executive Committee input.
- Staff will circulate the revised draft to selected volunteers and focus groups to get reactions between the January 2019 Executive Committee meeting and the Spring SPPR meeting.
- Staff will prepare a list of proposed action items under each strategy and proposed performance measures for SPPR to review at its Spring 2019 meeting.

Between the Spring 2019 SPPR Meeting and the June 2019 Executive Committee Meeting

- Based on SPPR input, staff will revise the draft plan, including action items and circulate it one additional time to the TRB oversight committees for review.
- Staff will revise the plan based on this input and circulate the revised version to SPPR for their approval.
- The SPPR endorsed plan will be sent to the Executive Committee for their approval at their June 2019 meeting.

Although key issues that should be addressed in strategies and action items will be identified through the process outlined above, there are a few that we expect will need to be included, such as:

- Meeting sponsor needs
- Addressing critical transportation issues
- Diversifying revenue sources
- Contingency planning if federal funds are reduced
- Use of technology in providing digital products and other services
- Broadening participation, including increasing racial and gender diversity, international participation, and participation in transportation sectors currently underrepresented
- Alternative products and services that should be offered
- Marketing and communications strategy
- Supporting the NRC’s transformation efforts

During the June 2018 Executive Committee, we will seek the committee’s endorsement of the proposed process and will discuss potential key issues that committee members feel should be addressed in the new strategic plan.
MEMORANDUM

To: TRB Executive Committee

From: Neil J. Pedersen  
Executive Director

Date: May 21, 2018

Subject: “Critical Issues in Transportation”

As the Executive Committee has discussed at its last two meetings, the next edition of TRB’s “Critical Issues in Transportation” is scheduled to be published by the end of the year. A draft list of issues is attached, together with a PowerPoint presentation that summarizes the issues. This draft list was developed based on input received from the Executive Committee members, the Technical Activities Council, the Marine Board, chairs of the standing technical committees, and a number of transportation experts. The Subcommittee on Planning and Policy Review spent a day at its April 2018 meeting further developing and refining the list.

The principal audience for the version that is attached is the TRB stakeholder community. This version of the document is intended to be a listing of those issues that the Executive Committee has identified as being critical for TRB to address in the next five years through its programs and studies. Once the Executive Committee has endorsed the list, a lay version will be developed that will focus on the twelve topic areas highlighted in the attached document. The attached report will be further refined with references added, and it will then go through the National Research Council’s (NRC) report review process, where a group of experts who were not involved in the development of the document will review it to ensure that it meets the NRC’s report standards.

The schedule for completion of both documents is the end of the year, so the reports can be available in time for the 2019 TRB Annual Meeting. The reports will be used as input to the development of the next TRB strategic plan, which is scheduled to be completed in June 2019. Once the report has been finalized, it is anticipated that the Executive Committee will identify a smaller number of issues from the list as TRB strategic priorities.

An hour and a half has been set aside on the Executive Committee agenda to discuss the list of critical issues. Chair Katie Turnbull and I ask that you review the attached document prior to the meeting, so we can minimize the time spent in presenting it, and can spend most of the time discussing the list of issues.

In addition to thanking all the TRB stakeholders who provided input to the list of issues, and the members of the SPPR for their thoughtful review of the list of issues, I would like to thank Steve Godwin for the great job that he did in distilling the hundreds of comments that we received into a single coherent list of issues. We look forward to our discussion.

Attachments
Everyday life depends on transportation in myriad, yet profound ways that are easy to take for granted. As we approach the third decade of the 21st century, however, transportation faces an unusually high degree of uncertainty from transformational technologies such as autonomous vehicles and drones; unreliable funding for infrastructure and operations; rapid changes in service options; and possible major changes in policies affecting trade, climate, environmental protection, and sources of energy. The potential consequences of these changes on consumer choices of types, modes, and amounts of travel, auto ownership, and residential location could make safety, congestion, emissions, and fuel consumption either markedly better or markedly worse. Correspondingly, these potential consequences could adversely or positively impact the overarching commercial truck, rail, waterborne, and air transportation networks and employment, with significant implications for the economy and delivery of goods and services.

In light of the pace of change occurring and the issues transportation faces, it is important to discuss these issues in the context of broader societal goals that transportation supports: a vibrant, growing economy; livable communities; safety and security for all citizens; a sustainable, healthy future; and equitable opportunity and access for all, including the disabled and economically disadvantaged.

In this edition of Critical Issues in Transportation, the TRB Executive Committee poses a series of challenging questions about potential critical issues looking out five to ten years into the future. The intent is to frame questions that can be addressed through research, policy analysis/development, and debate to help society prepare for the potentially unprecedented changes that lie ahead. Identification of these questions is also intended to help guide development of TRB’s next strategic plan and TRB’s activities, programs, and research for the next five years. These questions are organized under 12 different, but often interrelated, topic areas.

This list is by no means intended to be comprehensive. Rather, it highlights what TRB’s Executive Committee, based on extensive consultation, determines to be key issues for the transportation community to address over the next five years. Priorities will vary among TRB’s wide range of programs and committees. TRB’s Executive Committee will select a limited number of strategic priorities from among these issues as TRB-wide focus areas for research, studies, and activities.

This document was developed with input from many transportation experts and from TRB’s Technical Committees and the Marine Board. The Executive Committee appreciates the assistance of these individuals and groups, but has applied its judgment in the selection and formulation of the questions and assumes sole responsibility for this document.

Transformational Technologies
Major new innovations could improve transportation services and benefits for society and the
environment. (This section mostly addresses passenger issues; additional implications for
freight are also addressed in the Sustainability and Goods Movement sections.) Consumer
preferences and market pressures will play central roles in determining which dominate and
which do not, but, public policies aimed at serving the public interest will also play a key role in
encouraging and directing their commercialization. The potential benefits from these
technologies are fewer crashes and fatalities, less congestion, reduced emissions, improved
efficiency, improved mobility, and better accessibility for the disabled, elderly, young, and
economically disadvantaged. The benefits and costs of innovations such as automated vehicles,
vessels, and aircraft; freight drones; and e-commerce and related urban freight delivery will
depend on the actual capabilities of these concepts, how quickly and pervasively these
innovations unfold, and how society chooses to deal with them. Potentially most consequential
in terms of passenger service, cost, and environmental impact are the combination of shared
services, automation, and electric drive technologies. Leveraging the synergy among these
three major changes enhances the probability of achieving the societal goals outlined above. In
this section we highlight a few questions about transformational technologies, primarily
affecting passenger trips, and how they can best serve these societal goals.

1. How can and should public policy steer the development of connected and autonomous
motor vehicles (CAVs)?

a. Driverless vehicles operated by commercial services could have much lower
operating costs than conventional services owing to higher asset utilization and
reduced labor costs. Such vehicles could operate almost constantly. Whether they
increase or decrease total travel, congestion, and emissions will depend in large part
on whether consumers will continue to prefer to ride alone or will be willing, or can
be encouraged, to share rides and whether the vehicles offered use fossil fuels or
forms of energy that result in lower overall emissions. Potentially, vehicle miles of
travel, congestion, and emissions could all be significantly reduced. On the other
hand, autonomous vehicles could allow commuters to live even farther from where
they work and facilitate additional sprawl, which could also increase total travel,
congestion levels, and energy consumption. What policy options can and should be
exercised to maximize the social benefits and minimize the adverse effects of
autonomous vehicles?

b. Low-cost autonomous vehicles could reduce the need for automobile ownership,
thereby freeing up space for urban redevelopment, as such a large share of urban
space is devoted to parking. What will be the effect of various technology
developments and policies on auto ownership and what will induce more shared use
of vehicles and less need for parking? What are the opportunities to repurpose on-
and off-street parking for higher uses and balance loss of parking lanes to other uses
with new needs for pick-up and drop-off spots for autonomous vehicles?

c. Federal policy has been promoting connectivity among vehicles and infrastructure
that would communicate with one another at very high bandwidth to enhance
safety. The private sector is developing autonomous vehicles that would rely on
sensors without constant driver control and, ultimately, no driver control. Because
an individual vehicle lasts 10-20 years, and assuming a gradual market penetration
of automated vehicles, it will take well over 20 years for the transition. As a result
there would be a long time span when CAVs would be operating side-by-side with
conventional driver-operated vehicles. What could the public sector do to foster
technological innovation and steer such a transition to improve safety? What issues
will need to be addressed to ensure safety during the transition period when
autonomous vehicles will operate in mixed traffic with human-driven vehicles?
d. How can liability issues associated with failures in automated vehicle performance
be addressed and resolved in the public interest?
e. CAVs will depend upon constant, high-speed sensing and communication that will
require standardization for connectivity. Federal policy delegates standards
development to voluntary committees of standards organizations created for this
purpose. What standards will need to be developed, how strong should the public
presence be in development of these standards, and how should public influence
over standards development be provided?

2. Are additional federal and/or local policies needed to influence shared mobility services?
a. Transportation network companies (TNCs), such as Uber and Lyft, as well as shared
car and bike programs, are expanding consumer options. They are impacting existing
modes and services in very different ways. For instance, in urban areas they are
drawing some trips away from transit, but also supporting transit by providing “first
and last mile” access and egress. What are the opportunities for demand-responsive
app-based services to complement or link with conventional transit services—while
ensuring that the mobility disadvantaged are not abandoned? (See also discussion
of access under the Equity topic below).
b. TNCs have disrupted urban taxi markets in innovative ways that have increased total
trips, typically at lower cost to consumers, but many jurisdictions have regulations
covering pricing, service areas, and safety that apply differently to TNCs compared
with taxis. How can and should regulation allow competition to play out across
these different kinds of companies and services?
c. Many jurisdictions in the past have mandated that taxi operators provide accessible
vehicles for the disabled, as well as trained drivers to operate them, and some have
added surcharges on taxi trips to generate revenues for this service; this model,
however, is imperiled by the rapid growth in TNCs. How should local jurisdictions
fund and provide transportation services for the disabled in light of these changes?

3. What public policies are needed to encourage deployment of electric- and hydrogen-
powered vehicles? (Energy sources for electricity are discussed under the
Energy/Sustainability topic below.)
a. What is the appropriate public role in facilitating distribution and adequate coverage
of hydrogen and electric recharging infrastructure for alternatively-fueled vehicles?
b. If short-haul aviation trips by battery-powered vehicles become viable, how should they be regulated, what responsibility would the public sector have to support this mode, and how should it be paid for?

c. An increase in electric vehicle operation would reduce revenues that pay for roads, highways, and public transportation, since the main source comes from motor fuels taxes. As vehicle energy efficiency improves, resulting in less tax revenue, and as alternative fueled vehicles become more common, further depleting fuel excise tax revenue, how should states and the federal government respond? Should user fees be expanded and extended? Or should some other funding approach be pursued?

4. How will transformational transportation technologies affect where people and businesses choose to locate, in turn affecting consumption of space, demand for infrastructure, energy consumption, and emissions? What transportation policies can incentivize location and development decisions that are consistent with communities’ desired goals? How will transformational technologies affect travel behavior?

5. How can data from transportation be integrated with data from other sectors to improve provision of city and regional public services (“Smart Cities”)? How can unconventional data sources about travel and risk exposure be used to analyze safety risks? TNCs are generating massive amounts of data about trips. Negotiated agreements and sophisticated data-sharing agreements are needed that protect the competitiveness of the companies while also providing a boon to cities and regions trying to better manage their transportation systems. How can TNC trip data be shared or used by local and regional governments for purposes of planning? (See also #41 regarding data protection and access.)

6. As transportation vehicles become increasingly automated, what is the appropriate balance of both state and federal safety regulatory oversight while enabling private sector transportation technology development and innovation?

7. As artificial intelligence (AI) tools are developed with increased capability to substitute for human operators of transportation systems, how can we assure the consistent and safe performance of these technologies in a diversity of conventional and unanticipated situations? Who will be legally and financially responsible for performance assessment and assurance of AI systems? How can AI be used to improve system performance and safety?

Serving a Growing and Shifting Population

Population growth in the United States is expected to average about 1 percent annually, with travel increases of equal magnitude, but growing urbanization, particularly concentrated in approximately 12 megaregions, regional migration, particularly toward the South and West, and depopulation of many rural areas and some urban areas ensure that this growth will not be even across the country. Rapid technological changes are occurring even as the nation experiences continued residential development at low-population densities on the peripheries
8. Mega-regions are emerging as the engines of the national economy. The concentration of
growth into these twelve areas is also resulting in their becoming the locations with the
worst congestion, which continues to grow faster than capacity can be provided. Much of
the traffic growth in megaregions occurs between urban cores within megaregions; such
trips are not as well served by transit or rail as by automobile. Longer distance passenger
and freight movements, concentrated in corridors connecting the megaregions and facilities
generating these trips, are becoming more and more congested. Solving mega-region
transportation problems, both internally and in terms of external connectivity, will be
important to ensure their continued vibrancy and contribution to the national economy.
What transportation policies are most effective for improving internal megaregion travel
and ensuring that they are well connected to the rest of the nation and the world?

9. If population shifts described above persist, what transportation policies and programs will
be needed to serve these distinct areas of the country? How can rural and farm access to
services and markets be sustained as populations and resources for infrastructure decline
and competition among freight carriers for transporting goods decreases in rural areas?

10. How can rural populations be ensured adequate access to jobs and services, how is that
access changing, and what policies are needed to provide adequately for rural access
needs? Access is a particular challenge for the economically disadvantaged, the elderly, and
the disabled, who lack transit options and service by TNCs due to low population densities
and lack of high-speed Internet service in many rural areas.

11. Although many Millennials, the largest population cohort, are locating in center cities, aided
by new transportation options, the largest portion are settling in the urban periphery or in
areas between urban centers within megaregions, making it more difficult to provide non-auto options. Retiring baby boomers also tend to settle in suburbs and the Sunbelt. What
are the transportation implications of these demographic trends among the largest
population cohorts and how can adverse effects be minimized or avoided?

Energy/Sustainability

Drastic reductions in greenhouse gas (GHG) emissions are needed in coming decades from all
sectors in order to avoid the possibility of catastrophic climate change. Other sectors are
decarbonizing faster than transportation, which may be the most challenging sector because of
its requirements for high energy density fuels, particularly for aviation, large ships, and long-haul trucking. Largely for that reason, even as the nation confronts climate change, oil and
natural gas will continue to be major sources of transportation energy in the United States and
internationally for many years to come. Adverse environmental effects result not only from
producing, shipping, and combusting energy, but also from mining and manufacturing the many
components of vehicles. The manufacture of many lightweight materials and batteries are particularly resource-intensive. Local air pollution continues to be a problem in some urban areas, much of it from transportation, despite major improvements in vehicle emission technology.

12. Transportation in the United States contributes more GHG emissions than any other sector and its share is growing. Freight emissions are growing fastest. To make a proportional contribution to GHGs, however, reductions from transportation would need to go beyond the aggressive federal fuel economy/GHG standards adopted in 2012. What are the most cost-effective strategies to stabilize and ultimately reduce GHG emissions and what is the role of transportation in achieving this goal? How should these strategies differ among automobile, other passenger, and freight modes?

13. Society cannot depend on market forces alone to identify and apply environmentally sustainable energy sources for motor vehicles, aircraft, and vessels in coming decades. What are the most consequential and cost-effective strategies to move the transportation sector toward sustainable energy sources while taking into account the full environmental consequences from energy source through propulsion?

14. As major industrialized nations impose zero- and low-emission requirements, automakers are responding with promises to shift to production of electric, plug-in hybrid, and hydrogen fuel-cell vehicles. What are implications of growing reliance on electrical power in transportation and how can they be managed to gain the most societal benefit?
   a. Electricity to power transportation vehicles could reduce emissions, but the benefits depend on the source of energy (coal, gas, petroleum, nuclear, renewables) that electric utilities choose, or are incentivized to employ. How should the public sector best affect these choices?
   b. What will be the impact of growing demand from transportation on the electric grid, and how can recharging be accomplished to maximize benefits for the grid and users?
   c. What is the potential for transportation infrastructure itself to generate energy from solar radiation, wind, or other environmentally sound sources?

15. According to the UN World Commission on Environment and Development: “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainability is often described as having a triple bottom line of economic growth, equity, and environmental protection (including addressing climate change). It requires that there be long-term consideration of the implications of decisions and policies on social, economic, and environmental systems. Examples would include making decisions based on life cycle cost considerations and long-term vitality of communities and key natural environmental systems. How can consideration of long-term sustainability goals be better incorporated into public policy debates and decisions about transportation?
16. There have been a number of legislative and regulatory changes made in the past decade in an attempt to streamline the environmental approval process for transportation projects. Finding ways to speed up project development and environmental approval projects while protecting the environment remains a priority of federal, state, and local transportation officials. Lessons can be learned from state, local, and private project sponsors that have redesigned the project development processes. How can the project development and environmental review process for providing new or expanded roads, public transportation, railroads, ports, waterways, and airports be streamlined to save time and cost without sacrificing environmental protections based on the lessons learned from best practices?

Resilience/Security

Recent intense floods, super storms, and hurricanes have disrupted the lives of millions and caused trillions of dollars of damage. Combined with the vulnerability of transportation facilities to terrorism, these events have made public and private officials acutely aware of the need to identify community vulnerabilities and plan for responses to natural and human-caused disasters, including near- and long-term climatic changes, such as sea level rise, droughts, and heat waves. Communities, however, face differing threats and will need strategies fitted to their circumstances. Businesses, beneficial cargo owners, and common carriers must anticipate and plan for supply chain resilience in the face of broad disruptions. An equally compelling set of questions address the larger challenge of protecting, modifying, or rebuilding highly vulnerable highways, bridges, transit facilities, railroads, waterways, airports, and ports to make them more resilient; adding redundancy, where possible; and determining how to pay for these improvements in order to avoid significant economic impacts and save money in the long-run.

17. Terrorist strikes world-wide continue to demonstrate the vulnerability of transportation systems. Aviation has developed layers of security to protect against terrorism, albeit at high cost. Other modes are more open and vulnerable – piracy at sea, for example. Improved analysis of trade-offs between security and efficiency of freight and passenger movement is needed to inform policy makers. How can strategies appropriate for each mode be developed to apply layers of security without excessively impeding passenger movement and commerce?

18. Research leading to the development of robust risk assessment and risk management methods for vulnerable assets and policies and designs for extreme events is in everyone’s interest. Yet, no single organization has responsibility or funds to invest in the necessary research to guide resilience strategies. What kinds of decision-making tools can best help public agencies make appropriate decisions about climate change and terrorism in a risk-management framework? How can risk management approaches be incorporated in transportation planning and decision making? How can results from climate models be translated into changes in design standards for severe weather events?

19. How can the adaptation, operation, and strengthening of infrastructure to be more resilient be addressed?
a. What policies, programs, research, and investments should be undertaken to adapt existing transportation facilities and systems to rising sea levels, stronger storm surges, more frequent flooding, and other powerful and damaging extremes of weather?

b. Communities and states are beginning to adapt and change. How can these experiences be best evaluated and shared?

c. In light of the inability to be precise about the scale and timing of future impacts, how can funding policies, designs, and standards be modified to build in flexibility to allow for needed adaptation, including allowing the rebuilding of more resilient infrastructure after being damaged or destroyed?

d. How can policy makers and the public be convinced that the extra, near-term costs of adaptive management are justified in the long run?

e. What are feasible strategies for defending or retreating from the highest-risk areas and avoiding continued investment in the most vulnerable ones?

20. Drones – large and small – raise questions about their use by terrorists, or for illegal purposes, such as smuggling drugs, that would be very difficult to detect and deter. Aviation and defense sectors are working actively on drone detection and interdiction technologies. **How can security forces most effectively mitigate the security risk from drones?**

21. Partially-automated and, eventually, autonomous, vehicles, vessels, and aircraft remain vulnerable to hackers in ways that threaten safety and public confidence. **How can and should cybersecurity for these systems be made as robust as possible?** What capabilities will public agencies need to verify whether cybersecurity is being managed effectively? Cybersecurity concerns for transportation extend far beyond automation. Myriad public and private systems for managing flows of vehicles, accounting records with personal information, and other systems are vulnerable to hacking and ransomware. **What are best practices, how can they be shared, and what role should the public sector play in overseeing and enhancing cybersecurity?** Systems across all modes that rely on GPS are vulnerable to “spoofing” that threatens guidance systems. All transport modes are highly dependent on GPS for guidance and navigation, but there is no national or regional back up should GPS systems fail. **How can these vulnerabilities be overcome or managed effectively?**

22. As a result of more severe massive storms and threats of terrorist attacks, large-scale evacuations will become more common. The transportation system, however, is incapable of evacuating entire metropolitan areas on short notice. **What strategies are needed for better preparation, response, communication and sheltering-in-place on a regional scale?**

**Safety/Public Health**

Transportation is essential to the economy and the lifestyles of U.S. citizens, but it exacts a large toll in the form of deaths and injuries to travelers, suffering by their loved ones, and adverse health effects from transportation operations and emissions.
23. Although crashes of aircraft and trains draw intense media attention, 95 percent of transportation fatalities occur on the nation’s roads and highways. The public and private sectors have made great strides in occupant protection. How can society advance safety technologies and accelerate adoption of proven crash-avoidance technologies? Many driver warnings and semi-automated features being added to motor vehicles today have the opportunity to greatly enhance safety. Can such technologies be further refined to avoid crashes altogether? And how should semi-automated driving, which requires driver vigilance even when relying on the vehicle to steer and brake, be regulated to assure that they do not lead to more distracted driving and increased inattentiveness?

24. How can we accelerate the adoption of crash protection measures that have been proven effective such as safety belt use and helmet laws, as well as adoption of the safest road designs? What lessons can be learned from those states and localities that have been successful in implementing these measures?

25. Transportation’s effects on health are widespread, including the effects of emissions, noise, and urban heat islands; spread of infectious diseases; and psychological stress and chronic disease among transportation operators. How can we develop a deeper understanding and management of public health linked to transportation and promote healthier approaches? How can transportation contribute to controlling the spread of infectious diseases? How can active transportation be increased and adverse health impacts of transportation reduced?

26. Operator fatigue is an ongoing major safety concern and source of incidents and accidents in all modes of transportation. What are the most effective regulatory and management approaches to managing fatigue, how can proven strategies gain more widespread application, and how can elected officials support appropriate requirements on operators to reduce the risk to workers and the public?

27. As ever-more technology is available and used by transportation operators, how do we reduce the death and injury resulting from related distractions, such as cellphone use by both vehicle operators and pedestrians, or from erosion of operator skills as reliance on automation grows?

28. Unmanned aircraft systems (UAS) are growing rapidly – recreational UAS are expected to triple in five years to as many as 3.5 million units and commercial UASs may grow 10-fold to reach over 400,000 units. Meanwhile, sightings of near-by UASs by commercial pilots and near-misses are also growing. How can and should risk to the traveling public be managed as these new technologies proliferate?

29. As transportation systems become increasingly complex and confront rare and difficult to define risks, it becomes increasingly difficult for safety regulators to write simple and effective rules to ensure safety. How can regulators and industry be incentivized to
strengthen their safety management systems and safety cultures in ways that will encourage firms to achieve safety levels beyond what can be realized alone through compliance with existing rules and standards?

30. Marijuana legalization and growing opioid addiction may increase drug-related deaths and injuries in transportation. The effects of marijuana on driving performance, however, is much more difficult to discern, measure, and enforce than those of alcohol. What might expanded legalization of marijuana and increased opioid abuse mean for impaired driving in the years ahead and for appropriate safety responses? In addition, how do other legal and illegal drugs affect driving performance and what drugs should be tested for following incidents and crashes?

31. Despite long-term trends in reduced death and injury rates in highway transportation due to improved vehicles and infrastructure, the United States is experiencing rapid growth in pedestrian and cyclist deaths (a 46% increase in pedestrian deaths since 2009) and is falling behind the safety level being achieved in other industrialized democracies. How can the U.S. best learn from experience abroad in reducing deaths and injuries and identify and address growing sources of risk?

Equity

As states and local governments evaluate and impose alternative road user fees and taxes to supplement or replace motor fuel taxes, they do so without a firm factual basis about the impacts on the poor and rural communities. These impacts depend partly on comparisons about the share of income that is taxed, which can be readily estimated, but also on how the revenues generated by taxes and fees are used, which has not been adequately studied. The U.S. population will age considerably in coming decades; one in four U.S. drivers will be over 65 and more than 5% will be over 80 by 2030. Access to medical facilities is becoming particularly consequential as hospitals consolidate in rural areas and due to the changes many states have made in how they manage Medicaid transportation. Technology offers an opportunity to address access issues for the economically disadvantaged, the elderly, and the disabled if appropriate policies are adopted to ensure that adequate access is provided.

32. As general revenues and sales taxes replace user fees, it raises basic questions about fairness because (a) some taxes are more regressive than fuel taxes and (b) the funding for transportation services becomes disconnected from its use. What are the implications for both fairness and efficiency of this trend? What are the full consequences of alternative funding mechanisms for transportation on the accessibility of those with the least resources? How can the inequities of existing user fees be ameliorated?

33. Many new transportation services, such as TNCs and car sharing depend on user access to smart phones and credit cards, yet 23% of adults (57 million) lack smart phones and 7% of households (9 million) lack bank accounts and credit cards. How can people without bank accounts, credit cards, or smart phones gain access to innovative new services? What
transportation services and technologies, including automated vehicles, TNCs, and enhanced transit services are best suited to helping the disabled and older travelers who do not drive maintain independent living? How can we avoid adding new barriers and maximize the utility of technological innovations for older and disabled travelers?

34. How does transportation access affect economic opportunities and outcomes for the economically disadvantaged? What transportation technologies and policy interventions would be most effective in enhancing access to employment opportunities, better health care, and greater choices for shopping and education in an affordable manner? As urban areas have gentrified and housing costs have increased, economically disadvantaged populations have moved to suburban and exurban areas that are not as well served by transit and where transportation costs are higher for these populations. What transportation policies are most effective in addressing the growth of low-income populations in suburban and exurban areas poorly served by public transit?

35. As transportation facilities are expanded and improved to serve a growing population and economy, how can we best ensure that any adverse effects do not fall disproportionately on minority and low-income communities?

Governance

Transportation has a long history of being provided or regulated at multiple levels of government, including municipalities, cities, counties, special districts, regional planning organizations, states, and federal agencies, each of which has a role in planning, funding, and managing some aspect of transportation infrastructure. Many transportation functions such as public transit, airports, waterways, and ports are also planned for, or provided, through thousands of special authorities. The transportation systems that support metropolitan areas and mega-regions typically span myriad jurisdictional lines raising questions about which level of government should be responsible for, and for what aspects of, system planning, funding, and management. As metropolitan areas grow into mega-regions spanning multiple states, questions arise about reforms of existing institutions to address the associated demands for integrated and efficient transportation systems. Added to this mix is the interdependence of the public and private sectors as private trucks, aircraft, barges, and ships use public infrastructure for the movement of people and freight and as dependence grows on private companies to finance, build, and manage public infrastructure.

36. As states and local governments assume greater responsibility for transportation services and infrastructure and rely less on federal support, how does this shift affect their commitment to facilitating interstate and international commerce? Cross-border coordination among states in planning and policy-making is a major gap, particularly regarding freight movements. Metropolitan areas that host major ocean ports and airports that serve international and interstate commerce bear the brunt of local noise and traffic
caused by these facilities. What best practices can be put in place to assure effective and equitable treatment of these cross-border externalities?

37. Major bottlenecks to traffic flows spanning modes and jurisdictions are well known, but are particularly hard problems to solve. Chicago’s CREATE project is an example of a $30 billion plus set of projects involving rail, highways, public transportation and multiple private carriers and public jurisdictions. Other examples where unfunded very high-cost local projects affect travel across multiple states include the NY/NJ Gateway project and the rail tunnel project in Baltimore. How can financial, institutional, and competitive barriers be overcome to reduce nationally significant bottlenecks at large-scale, complex multimodal facilities?

38. As metropolitan areas and megaregions grow in significance and as sources of economic prosperity, what is the appropriate institutional form for making transportation investments at this scale given the many and complex jurisdictions and state interests? Hundreds of MPOs exist, but many are too small in scope and scale to take on multi-modal planning for transportation at the metropolitan-wide or mega-region scale. What institutional reforms are needed to serve the public more effectively and efficiently and how can these determinations be made? In light of the considerable experimentation going on, how can jurisdictions best learn from each other about effective strategies in meeting their regions’ multi-modal transportation needs?

39. Mobility as a Service could provide for real-time, traveler-specific information on travel options to make travelers better off (by allowing them to select their preferred mode of travel based on time, price, and trip-time uncertainty) and society better off (by allowing travelers to consider non-solo-driving options and thereby increase use of modes with lower public and private costs). The concept of bundling mobility services into subscription programs has garnered global attention and traction, but requires solving barriers to integrated fare payments and data sharing and development and support for a common app that provides consumers with a fair and integrated perspective on all their travel options. What are the appropriate public and private roles in providing for Mobility as a Service by leading, or supporting, or, at least, not inhibiting the development and deployment of such options and a common app? How can institutional and modal funding barriers be overcome and partnerships built across levels of government and between the public and private sectors?

40. What are the implications of transformational technologies for existing transportation institutions? If highways become more automated and funded through direct user charges, for example, what are the appropriate institutions for carrying out these operational functions in areas and regions spanning multiple jurisdictions? Is the concept of regional transportation agencies as coordinators of mobility services and service contracts an institutional model worthy of consideration going forward?
41. Innovative transportation service companies are amassing immense databases of travel and trips that vastly surpass what local governments have for planning and analysis. How can data sets be shared between the private and public sectors to improve planning and operations? Who should own transportation data, who should have access to the data, and who should be responsible for data analysis? How can the data be kept secure and protect personal privacy and proprietary information?

Asset Performance and Management

Congestion costs the nation more than $125 billion annually — $1,700 for every motorist — and is growing. Limited opportunities and high cost to expand facilities in already congested areas will place greater emphasis on maximizing the performance of the existing transportation network. As travel volumes continue to grow and funding remains highly constrained, state and local agencies are struggling to maintain the nation’s infrastructure, the replacement value for which is in the trillions of dollars. Much better information about the life-cycle performance of materials, designs, deployment strategies, and predictive models can help managers use maintenance strategies to extend the expected life and life-cycle performance for highways, bridges, rail lines, ports, waterways, and airports, if they can account for local conditions, traffic, materials, weather, and available funding. More importantly, much greater focus is required by public officials on managing existing assets before choosing to expand them or build new ones.

42. How can officials improve the performance of the existing system of roads, public transit, airports, waterways, and ports to better serve personal travel and goods movement? Financing mechanisms have a role to play in charging premiums for peak-period trips in highly congested urban areas. Technological innovation may make it possible to move CAVs through existing networks more efficiently at much shorter headways on narrowed lanes without harming, and possibly improving, safety. In the shorter term, corridor level performance can be enhanced with improved communication technologies and messaging to motorists.

43. Setting and managing toward performance goals are new priorities in federal legislation governing surface transportation funding. The ultimate performance goals are safe and efficient origin-to-destination trips for both passengers and freight. How can officials responsible for public infrastructure sharpen their focus on managing for performance? What kinds of data and tools will help agencies deploy strategies that enable them to achieve the most important performance goals? How can contracts with vendors be restructured to focus on meeting performance goals rather than specifications?

44. How can support be developed at the federal, state, and local level to invest in system preservation and maintenance? How can decision makers be convinced to invest in longer-lived facilities and systems when initial costs may be higher but life-cycle costs lower?
45. How can new materials, construction techniques, and improved maintenance cost-effectively enhance infrastructure performance over its full life cycle and be moved into practice more quickly? Part of the challenge is overcoming the inherent caution of infrastructure managers responsible for assets with long service lives. What are the barriers and opportunities for doing so through certification or warranties for new materials based on accelerated and third-party testing?

46. Movements of agricultural products, petroleum and natural gas, as well as commodities moved to support fracking can do major damage to parts to the transportation system that are aging or inadequate from a structural or capacity standpoint to handle the movements of these heavy products. The system is also vulnerable to failures of major segments that are very disruptive to the supply chain. How can these issues be planned for and addressed?

Funding/Finance

For generations, user-fee funding has provided a steady, and at times, ample source of funding for highways, bridges, airports, ports, and public transportation. User fee funding has many efficiency, efficacy, and equity merits, but despite majority public support for paying taxes and user fees dedicated to infrastructure, federal officials have been reluctant to raise these taxes and fees to account for inflation and demand. As a result, jurisdictions are seeking less efficient and less equitable taxes to pay for transportation. Congress has resisted airports’ requests to increase passenger facility charges to provide terminal and gate capacity. Shortfalls in revenue from aviation ticket taxes constrain essential federal services, including air traffic control. Inland marine transport moves low-cost shipments of bulk products and helps sustain agricultural exports, yet user-fee revenues to the inland waterway trust fund are well below the levels required to sustain and operate the system. National policy makers disagree about what share of the cost should be borne by general taxpayer revenue. Funding and decision making at the individual modal level hampers providing multi-modal solutions. Highway, transit, airport, and port officials are increasingly relying on public-private partnerships (P3s), which depend on some kind of revenue stream and profit for investors that raise questions about overall cost to the public and equity.

47. Given federal reluctance to adjust user fees to account for the effects of inflation and respond to growing demand and growing share of capital funding by states and local governments, what is the rationale for, and what should be the level of, federal funding for transportation systems and services? What are the most cost-effective, cost-beneficial, and equitable ways to pay for the federal share of multi-modal transportation?

48. The majority of the public supports an increase the motor fuels tax if the funds are dedicated to maintenance. The motor carrier industry, American Automobile Association (AAA), and U.S. Chamber of Commerce have endorsed substantial increases. Most states have raised their motor fuels taxes since 1992, the last time that federal fuel taxes were
raised for transportation. How can political support be found for raising the federal motor fuels taxes or alternative user fees to provide public infrastructure? What are the consequences of the trend away from user-fee funding and how can states and the nation as a whole steer toward more efficient, effective, sustainable, and equitable forms of user-fee funding for transportation services and systems in the future?

49. The merits of motor fuels taxes as the main source of user fees weakens as vehicles become more fuel-efficient and some vehicles pay no fuel tax at all. Mileage-based user fees (MBUF) could serve as a replacement for, or supplement to, the fuel taxes relied on by federal, state, and some local governments for highway infrastructure. What version of a MBUF best protects privacy, allocates resources according to demand, minimizes administrative expenses, and can gain public and political acceptance?

50. As the use of public-private partnerships (P3s) grows in transit, highways, ports, and airports, questions arise about how to protect and further the public interest for the long term while also providing adequate incentives and risk for private investment. What public and private financing tools are appropriate for enhancing the delivery and production of necessary transportation infrastructure projects, and what is the appropriate role of private sector contractors in delivering public transportation services and in managing publicly owned transportation facilities? How can public multi-year plans and budgets, worked out in painstaking detail, avoid significant disruptions from proposers of P3 projects who want to jump to the front of the queue?

51. As more funding is derived from imposing tolls and fees on users for use of individual transportation facilities, what appropriate and equitable mechanisms are available to fund low-density network links, typically in rural areas, that are unable to pay for themselves from direct user charges?

52. How can funding be sustained for modes such as public transportation and inland waterways that cannot rely wholly on user fees?

53. How can policy makers use funding to incentivize or reward agencies and industries that reduce carbon emissions?

54. Transit agencies can partner with mobility service providers to provide trips for the disabled, elderly, and transportation disadvantaged and thereby reduce energy consumption and potentially reduce costs, but where will they find funding to subsidize these services?

Goods Movement

Freight movement is expected to continue to grow dramatically in coming decades to serve an expanding population and growing economy and will increasingly contribute to bottlenecks and
capacity problems on the entire multi-modal system. Solving the complexities and costs of
urban freight movements and the “last mile” problem are particularly acute topics for the
freight sector. Also pressing in light of labor shortages, particularly in trucking, is how greater
automation of freight movements can be accomplished safely and cost-effectively. Major
challenges for the freight sector include how to reduce carbon emissions through technology,
alternative fuels, and efficiency improvements.

55. How can society provide for adequate capacity for the anticipated volume of future freight
in the most cost-effective and responsive way? Automation in freight may move faster than
in passenger transportation because of private incentives and competitive pressures and
will unfold differently than for passenger vehicles because of the greater degree of safety
regulation that applies to commercial transportation. Truck platooning has been
demonstrated and could soon be feasible on a larger scale. How do regulators at the federal
and state level respond most effectively to the potential that technology offers while
protecting the public from additional risks?

56. Automation can potentially play a significant role in increasing freight system efficiency.
Shifting to electric vehicles and equipment can reduce emissions. What can be done to
make freight equipment/vehicles less polluting and less reliant on fossil fuels, and what can
be done to make the system more efficient, which will also reduce emissions?

57. Trucking, rail, and maritime companies are experiencing labor shortages that are projected
to continue into the future as the “Baby Boom” generation continues its wave of
retirements. What is the potential for automation to ameliorate these worker shortages,
and when would it occur?

58. What is the public role in transformational changes in goods delivery?
   a. Growing public expectation of same-day delivery in urban areas could increase the
      number of small freight delivery vehicles in operation at the same time and thereby
      increase congestion and emissions. How can and should the public sector manage
      this problem?
   b. Delivery vehicles themselves may transform from package trucks and vans to drones
      flying packages to suburban and rural areas and robots that operate on urban
      streets as well as sidewalks. How can policy makers anticipate, monitor, plan for,
      and regulate such revolutionary changes?
   c. Large freight drones – operating in the air and on the sea – could emerge and
      revolutionize freight transportation. How can aviation drones be safely and
      efficiently integrated into managed airspace and how can maritime drones,
      autonomous vessels, and manned vessels co-exist and be safely managed in existing
      traffic lanes?

59. Lack of data and quantitative measures hamper management of supply chain performance
and resiliency. How can proprietary data be shared and analyzed to develop indicators of
supply chain performance to identify infrastructure bottlenecks that the public sector could
address?
60. Are the benefits of deregulation at risk from merger policies allowing for the concentration of carriers in air, rail and ocean transportation? If so, what are the best strategies to maximize consumer welfare? In aviation, four carriers now control 81 percent of total domestic trips. Is that too few to ensure adequate competition in city pair markets? Freight railroads have been reduced in number such that regional monopolies can disadvantage captive shippers even as rail carriers compete aggressively in long-haul markets, with each other, motor carriers, and, in some markets, inland waterways. Three ocean carrier alliances represent nearly 80 percent of global container trade and roughly 90 percent of container capacity on major trade routes. Ocean carriers continue to exert formidable pressure on seaports and trade corridors to keep pace with economies of scale realized by mega-vessels that carry 20,000 containers or more. These vessels demand deeper channels, more efficient port terminals, and hinterland intermodal capacity and connectivity to accommodate short-term surges in demand, which in turn demand massive infrastructure funding. To what degree is this sustainable and what should the public sector role be in reacting to these pressures from world trade and shipping?

61. Despite the need to move away from fossil fuels, until more sustainable options are widely available, the nation will continue to rely on fossil sources, particularly domestically-produced petroleum and natural gas. How can expanded domestic energy production be distributed to consumers in a manner that best serves the public interest?

62. What will be the effect of changes in manufacturing on goods movement? How will it change supply chains? What will be the effect of additive manufacturing or 3D printing?

Institutional and Workforce Capacity

Information technology (IT) firms and entrepreneurs using IT to develop and deploy innovations are meeting social goals for mobility while also causing disruptive changes. Local and state agencies are struggling to address the challenges of transformational technologies and climate change, but often without adequate financial and technical resources to meet the need. Moreover, as transportation systems become more technologically complex, the future workforce will need higher skill levels in fields such IT as well as diverse disciplinary perspectives to address complex social and environmental problems.

63. Agencies at all levels are being pressed to address the challenges of growing and shifting population and transportation demand, rapid technological change, and climate change. Even as the problems become more complex, the institutions themselves lack resources and technical capacity to address them. How do we enhance institutional capacity to address these tremendous challenges?

64. Regulatory workforces in agencies responsible for overseeing private operators will need to be as educated, trained, and skilled as their industry counterparts in designing, building, operating, and maintaining future systems in order to perform their missions safely and
cost-effectively. How can and should the workforce be prepared to manage the impacts of
transformational technologies and climate change and operate, maintain, and manage
increasingly complex systems?

65. Given our growing, shifting, and increasingly diverse population, the perspective of a variety
of racial and ethnic communities are needed to inform transportation planning and decision
making at all levels. How can we best attract more students and professionals from
underrepresented racial and ethnic groups into transportation?

66. In response to funding shortfalls, staffing reductions, and inability to compete for wages
demanded by high-skill workers, government agencies are increasingly turning to private
providers for transportation goods and services and high-skill support services such as IT.
Contracting for services from the private sector, however, requires a new and broader set
managerial and evaluative skills for public-sector transportation planners, engineers, and
managers. How do we insure that the public sector has the expertise and skills to negotiate
contracts, and oversee contractors, in ways that best serve the public interest?

67. As the baby-boom generation retires, many agencies and companies face losing as much as
30 to 40 percent of their existing workers in the next five years. These changes provide new
opportunities for younger generations with greater familiarity with technology, but how do
organizations manage this transition without loss of critical areas of expertise and judgment
that comes from on-the-job experience? In order to retain younger workers, how can
organizations adapt to younger cohorts that have higher expectations for mobility across
employers and different lifestyle expectations?

68. The tremendous innovations resulting from broader application of IT and automation will
also be disruptive to the work force. What are the likely impacts of transformational
technologies on transportation-related jobs over time and how can displaced workers best
be assisted in finding meaningful and rewarding work? What are the workforce challenges
associated with the nascent phases of the adoption of automation in freight transportation?
How will the skills of pre/post/phased automation workforces be maintained on parallel
tracks in the intermediate term?

69. With all the changes taking place, including the incorporation of transformational
technologies, transportation is becoming a very different and exciting field. How can
educators and industry capture this excitement and convey to students and potential
workers the many rewards of the transportation profession?

Research and Innovation

Public investments in basic research have long been seen as necessary to expand knowledge
and understanding that the private sector will not fund due to lack of incentives. This
investment, coupled with patent and trademark protections and venture capital, has created a
virtuous cycle of innovation that has driven the U.S. economy forward since World War II.
Examples abound today of transformative transportation technologies and business models
that build on decades of public investments in basic research. Public ownership and
management of transportation infrastructure has a different set of incentives that inhibit risk-
taking and reward caution. Even so, steady incremental gains in infrastructure design,
construction, and management, identified through research, have provided great benefits to
the public over time. On top of struggles to maintain the publicly supported transportation
research and innovation enterprise, private sector innovation and increasingly rapid product
development and deployment cycles are disrupting the ability of research organizations to
monitor, evaluate, and understand the implications for society of disruptive innovation and
change.

70. The remarkable degree of innovation in transportation and efforts to meet the great
challenges of disruptive technological changes and climate change are resulting in myriad
natural experiments across the country. How can these experiences be better captured,
analyzed, and disseminated to allow for broader social learning and improved service
provision? How can new technologies be accommodated in new codes, regulations, and
practices as rapidly as possible?

71. Accelerating private product development and deployment cycles are posing new
challenges. Witness the deployment of pilot autonomous vehicles into the field using
machine learning to improve service and safety more rapidly and effectively than they could
in the lab and the sweeping disruption of urban taxi markets by TNCs. Cities and states,
however, are allowing experiments to go forward on public roads and potentially exposing
their populations to risks to which they have not consented. What does the accelerating
change in transportation product deployment portend for the traditional research
enterprise?

72. Growing demands on the transportation system and declining investments in public-sector
R&D are coupled with the challenges of managing the explosion of private sector
innovations in transportation and strong disincentives for risk taking in the public sector.
How can we build and sustain a culture of innovation in public-sector airport, highway, port,
and transit infrastructure and operations; accelerate the pace of research to keep up with
technological change; and move innovations into practice more quickly?

73. Transportation researchers evaluating the most basic and the latest developments in
transportation are often found in universities that prize the best and brightest in every field,
Public agencies and private companies turn to such individuals for insight and guidance,
particularly in these times of deep uncertainty. Declining public research support makes it
more difficult to sustain faculty positions in transportation and keep them on the cutting
dge of knowledge. How can we foster the development and retention of the teachers
needed for developing future generations of transportation professionals?
Critical Issues in Transportation

TRB Executive Committee

June, 2018

Steering Transformational Technologies

1. Connected and autonomous vehicles
2. Shared mobility services
3. Electric and hydrogen-powered vehicles
4. Location and development impacts
5. Big data and smart cities
6. Balance of regulatory oversight and technology development and innovation
7. Artificial intelligence
Serving a Growing and Shifting Population

8. Addressing Mega-region internal travel and connectivity
9. Serving growth & non-growth areas
10. Providing rural access
11. Implications of continued development on urban periphery

Energy/Sustainability

12. Reducing greenhouse gas emissions
13. Shifting to sustainable energy sources
14. Managing electrification impact on grid
15. Incorporating sustainability into decisions
16. Streamlining project development and environmental review process
Resilience/Security

17. Adding security without impeding mobility
18. Adopting a risk management approach to resilience
19. Adapting to severe weather events
20. Addressing security risks of drones
21. Cybersecurity and GPS vulnerabilities
22. Managing around limits of evacuation

Safety/Public Health

23. Adopting proven & improving new technologies
24. Adopting proven crash protections
25. Transportation impacts on public health
26. Managing operator fatigue
27. Dealing with operator distraction
28. Risks of unmanned aircraft
29. Strengthening safety management & safety culture
30. Addressing impacts of marijuana and other drugs
31. Learning from success of other nations
Equity

32. Equity of alternative funding & financing mechanisms
33. Access to new technology services for disabled and elderly travelers
34. Improving access for the economically disadvantaged
35. Ensuring environmental justice

Governance

36. Devolution’s impact on interstate and international commerce
37. Addressing nationally significant bottlenecks
38. Applying decisions at the right scale for megaregions & multi-jurisdictional networks
39. Public vs private roles in Mobility as a Service
40. Adapting institutions to transformational technologies
41. Governing big data collection and access
Asset Performance and Management

42. Improving system performance through pricing & technology
43. Managing for performance
44. Life cycle asset management
45. Accelerating innovative materials, construction, and maintenance
46. Impacts of heavy loads on rural roads

Funding/Finance

47. Reassessing role of federal funding
48. Returning to user-fee funding
49. Transitioning to mileage based user fees
50. Appropriate roles of P3s in finance & management
51. Funding low density links
52. Funding for public transit and inland waterways
53. Incentivizing carbon emission reductions
54. Subsidizing disabled, elderly, and economically disadvantaged transportation
Goods Movement

55. Providing for sharp increases
56. Reducing emissions
57. Addressing worker shortages
58. Potential of transformational technologies
59. Data challenges, e.g. proprietary data
60. Consumer impacts of carrier concentration
61. Safely distributing domestically produced energy
62. Effect in changes in manufacturing (e.g. 3D printing)

Institutional and Workforce Capacity

63. Institutional capacity to address current issues
64. Preparing the workforce to address TT, climate change, & increasing complexity
65. Attracting underrepresented groups
66. Managing increasing outsourcing
67. Addressing baby boomer retirement & attracting Millennials
68. Preparing for worker displacement by automation
69. Exciting & attracting future workforce
Research and Innovation

70. Learning, and sharing lessons from, innovations
71. Impact of rapid product cycles on traditional research paradigm
72. Accelerating public sector research and innovation
73. Developing & retaining teachers for tomorrow’s workforce
Objective: Academies-TRB Forum on AVs and Shared Mobility

- Bring together public, private, and research organizations to share perspectives on critical issues surrounding the deployment of automated vehicles and shared mobility. Focus on the discussion, identification, and facilitation of fact-based research needed to deploy these technologies in a manner and timeframe that informs policy to meet long-term goals.
  - The long-term goals include increasing safety, reducing congestion, enhancing accessibility, increasing environmental and energy sustainability, and encouraging economic development and equity.
Participating Federal, State, and Local Agencies

- U.S. Department of Transportation
- Transport Canada
- State Transportation Agencies
  - Caltrans and California DMV
  - Florida DOT
  - Michigan DOT
  - Ohio DOT
  - Virginia DOT
  - Washington State DOT
  - Washington State Transportation Commission
- Local Transportation Agencies
  - New York City DOT
  - Maricopa County DOT

Academic and Research Institution Participants

- AAA Foundation for Traffic Safety
- City College of New York
- Southwest Research Institute
- Texas A&M Transportation Institute
- University of Arizona
- University of California ITS
- University of Michigan and American Mobility
Private Sector Participants

- Original Equipment Manufacturers (OEMs)
  - Auto Alliance
  - Toyota Research Institute
- Shared Mobility
  - Lyft
  - ZipCar
- Technology and Equipment Companies
  - Cubic Transportation Systems
  - Econolite
- Consulting Firms
  - Alta Planning & Design
  - WSP USA

TRB Committees & National Academies Boards

- TRB Executive Committee
- TRB Standing Committees
  - Vehicle-Highway Automation
  - Intelligent Transportation Systems
  - Emerging Technology Law
  - Emerging and Innovative Public Transport and Technologies
  - Travel Analysis Methods Section
  - Subcommittee on Emerging Ridesharing Solutions
- National Academies Partner Liaisons
  - Computer Science and Telecommunications Board
  - Board on Mathematical Sciences and Analytics
  - Committee on Theoretical and Applied Statistics
  - Board on Energy and Environmental Systems
  - Board on Human-Systems Integration
Association Partner Liaisons

- Partner Associations
  - AASHTO
  - APTA
  - ITE
  - ITS America
  - SAE International
  - I-95 Corridor Coalition

Products of the Forum

- Research roadmap
  - NCHRP Project 20-102
- White papers
- Authored perspectives
- Workshops and sessions
- TR News articles
- Forum website
- Forum annual report
- Research partnerships
Forum Kick-Off Meeting Agenda
February 26-27, 2018

- Review of Forum mission, value propositions, work plan, & products
- Roundtable Discussion - Perspectives from the Private Sector
- U.S. DOT Activities Update
- Developing the Research Roadmap - Laying the Foundation
  - Research focus areas suggested by Forum participants (survey)
  - Research focus areas suggested by NCHRP contractor
  - Open discussion
- Developing the Research Roadmap - Building
  - Open discussion
  - Next steps
- Forum Activities for 2018
- Final Thoughts and Observations
Forum Action Items
Developing the Research Roadmap

• NCHRP Contractor
  • Prepare synthesis of research needs
  • Prepare first draft of research roadmap for NCHRP panel/funding
  • Develop catalog of research needs for Forum that includes transformative issues, scenarios, and unintended consequences
  • Present to Forum participants, NCHRP panel, and others at AVS2018 in July

• TRB AV Forum
  • Develop Forum white paper:
    • Making the case for a strategic approach to research
    • Catalogue of research needs identified by Forum participants
  • Deliver summary presentation at AVS2018 plenary session
  • Sponsor half-day breakout session at AVS2018 to generate input from others
  • Continuing to evolve research roadmap to serve as THE go-to roadmap for Forum participants

Forum Action Items (cont.)

➢ Prepare for remaining 2018 convening activities
  • AVS2018 Forum meeting & sponsored breakout session
  • Spring & fall interactive webinars
➢ Develop information resources for Forum participants
  • Research needs white paper
  • Bibliography of information resources directly addressing Forum mission
  • Forum website
  • Potential additional white papers to inform Forum deliberations
➢ Facilitate research partnerships among Forum participants and others
➢ Schedule presentations on TRB/Forum activities
  • 2018: TRB Committees, AASHTO Committees, ASCE, AVS2018, ITE, ITS America, AUVSI Xponential, NCUTCD, SAE, Texas A&M, VDV Future Congress (Berlin)
  • Develop slide template for use by Forum participants at other venues
Forum Research Focus Areas
(see attached research needs catalogue)

Impacts on Safety

Transportation System Impacts

Social, Environmental, and Economic Impacts

Cross-Cutting Issues

Data Considerations

Next Steps for Forum

- May 30th, 2018 Conference Call
- July 8th-9th Meeting in San Francisco
- Revise/update white paper and research needs catalogue
- Identify research needs gaps
- Develop research priorities
- Facilitate research partnerships
Mark Norman (mnorman@nas.edu)
Katherine Kortum (kkortum@nas.edu)
Adrienne Blackwell (ablackwell@nas.edu)
Patrice Davenport (pdavenport@nas.edu)
Ray Derr (rderr@nas.edu)
Richard Cunard (rcunard@nas.edu)
CATALOGUE OF RESEARCH NEEDS

The full listing of critical research needs, as identified to date by Forum participants, is shown below. Forum participants will update this listing on a regular basis. Future versions of this catalogue will note research that has been completed and/or is underway.

<table>
<thead>
<tr>
<th>SAFETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential adverse impacts on safety due to AVs</td>
</tr>
<tr>
<td>Determining how safe is safe enough?</td>
</tr>
<tr>
<td>What is the tipping point for safety?</td>
</tr>
<tr>
<td>Developing new certification tools and processes</td>
</tr>
<tr>
<td>State and local policies to ensure safety prior to deployment</td>
</tr>
<tr>
<td>Clarifying federal and state responsibilities</td>
</tr>
<tr>
<td>Roles of simulation, modeling, and off-road testing vs. on-road testing</td>
</tr>
<tr>
<td>Potential safety scenarios during the transition to highly automated vehicles</td>
</tr>
<tr>
<td>Educating drivers on AV capabilities</td>
</tr>
<tr>
<td>Re-engaging drivers’ attention when human intervention needed</td>
</tr>
<tr>
<td>Implications of long term mixed vehicle fleet</td>
</tr>
<tr>
<td>Liability in a world of AVs</td>
</tr>
<tr>
<td>Impacts on insurance and tort law</td>
</tr>
<tr>
<td>Impacts on law enforcement and first responders</td>
</tr>
<tr>
<td>Minimum set of safety data needed for AV operations and crashes</td>
</tr>
<tr>
<td>Impacts of shared mobility on safety</td>
</tr>
<tr>
<td>Impacts on evacuations</td>
</tr>
<tr>
<td>Safe operations of commercial vehicles</td>
</tr>
</tbody>
</table>
## TRANSPORTATION SYSTEM IMPACTS

### Infrastructure Enablers for AVs & Shared Mobility

- Future designs of highways, streets, intersections, etc.
- At what point should we dedicate lanes to AVs?
- Infrastructure needs for V2I
- Impacts on public agencies' procurement policies
- Impacts on existing standards and standards-development processes

### Critical paths to level 4/5 automation for light and heavy-duty vehicles (use cases)

- Timeline scenarios

### Synergy within the transportation ecosystem

- Convergence between connected vehicles and automated vehicles
- AV deployment in a shared mobility environment
- Urban/suburban/intercity/rural environments
- Heavy duty vehicles/light duty vehicles/transit/bikes/pedestrians
- Impacts of truck platooning on other users
- Accommodating low-speed automated delivery vehicles (e.g., robots)

### Potential impacts of higher level automated vehicles and shared mobility on traveler behavior and freight movement

- Impacts of shared mobility on VMT & system capacity
- Behavior of other road users around highly automated vehicles
- Should zero occupancy vehicles be regulated?

### Impacts of shared mobility on transit

- Helping transit agencies solve first mile/last mile issues

### Models for integration of AVs & shared mobility with transit/micro-transit

### Impacts on infrastructure funding

- Impacts on traditional revenue streams
- Pricing levers to support policies and societal goals
- Continued funding support for legacy systems
- Risks and rewards for investment planning

### AVs impact on asset management practices

- Deterioration from vehicles travelling on same track
# SOCIAL, ENVIRONMENTAL, ENERGY, & ECONOMIC IMPACTS

## Net positive and negative social impacts of AV deployment and shared mobility

- Managing unintended consequences (e.g., security, privacy, labor impacts, insurance)

## What are the right metrics and measurements that should be used to improve social outcomes?

- Diverse planning tools to address key social and environmental transportation issues

## Addressing social inclusion and equity in shared mobility

## Impacts on land use, and how land use impacts AVs and shared mobility

- Facilitating active/livable communities
- Impacts on the built environment
- What's in it for rural areas?

## Integrating shared mobility for mega-regions

## Evaluation of pilot deployments to determine contributions to various societal goals

## How to best serve those with special needs

## Preparing the future workforce

- Jobs displaced vs. jobs created
- Attracting the "best & brightest" into the transportation profession
## DATA CONSIDERATIONS

### Models for sharing of data

- Public sector use of private sector data
- Sharing of crash data
- Making data available for research and planning models
- Protocols for data sharing and management for real-time operations & freight supply chains
- Use of transportation data to support Smart Cities

### Getting the most out of "Big Data"

- Limitations and capabilities of future technologies and the cellular network
- Identifying & sharing good practices in data curation, sharing, and management
- Investment planning for IT systems, data, and staffing
- Development of data formatting standards

### Meeting cybersecurity and privacy challenges

- Cybersecurity and privacy for V2I communications
- Cybersecurity for traffic management systems

### Framework for automated/connected vehicle pilot and smart cities data analytics for policy guidance
### CROSS CUTTING TOPICS

Alternative scenarios for synergy among automated vehicles, shared mobility, & alternative fuels

| Models for scenario planning (with critical paths) and use cases |
| Auto ownership scenarios and implications |
| Rate of deployment of mixed fleet, and implications |
| Impacts on land use; density |
| Common set of deployment tools for freight operations |
| How strong are the various links among AVs, CVs, EVs, and shared mobility? |
| Models for Mobility-On-Demand (MOD)/Mobility-As-A-Service (MaaS) |
| Impacts on airport landside operations, seaports, and intermodal facilities |

**Systems approach – how will this all work from beginning to end with all players in ecosystem?**

**Implications for transportation planning and planning models**

| Modeling the impacts of increased penetration of AVs & shared mobility |
| Revisiting the traditional 4-step planning process |
| Moving to objective-based planning |
| Evolution to near-term or real-time planning |
| Planning for rural areas |

What constitutes success/failure of pilots and deployments?

**Education:**

| Training for all users |
| Clarifying the value of new systems/technologies |
| Consumers attitudes/perceptions regarding safety, security, and privacy |
| Informing policy makers |

**Precursory policy analysis for these technologies and services**

| Policy framework for government intervention/regulation |
| Impacts on the traditional roles of the public and private sectors |
| Risks of "doing nothing" |

**Cooperative national research plan for automated vehicles and shared mobility systems**

<p>| Develop widely shared and continuously updated research roadmap |</p>
<table>
<thead>
<tr>
<th>Conduct gap analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop topology for setting priorities and for conducting research</td>
</tr>
<tr>
<td>Facilitate public/private/academic research partnerships</td>
</tr>
<tr>
<td>Streamlining of traditional research processes</td>
</tr>
<tr>
<td>What is the barrier breaking research that enables transformation?</td>
</tr>
</tbody>
</table>
MEMORANDUM

TO: Members, TRB Executive Committee
FROM: Russell Houston
SUBJECT: June 13-14, 2018, Policy Session on Electric Vehicles

Drawing from special invited experts, the session will explore the impact of electric vehicles on the transportation sector. Specifically, the session will focus on scenarios for electric vehicle deployment, the electric vehicle’s role in the automated vehicle revolution, and impacts of electric vehicle deployment on the electric grid.

In preparation for the session, members are encouraged to read the summary of a report produced by Norway’s Institute for Transport Economics. The report identifies knowledge gaps in assessing whether Norway can reach its goal of only zero emission passenger vehicles being sold in the country by 2025. The summary is included with this memo.

The session will be teed-up at 11:45 a.m. and resume after lunch at 1:15 p.m. on Wednesday, June 13. A summary of TRB activities, the panel presentations, general discussion, and breakouts will last until approximately 5:30 p.m. The session will conclude with the rapporteurs’ presentations and committee discussion from 8:30 a.m. to 9:30 a.m. on Thursday, June 14.

Fore! Teeing Up the Session

- **Daniel Sperling**  
  Professor of Civil Engineering and Environmental Science and Policy, and founding Director of the Institute of Transportation Studies at the University of California, Davis  
  *The importance of this policy session.*

Activity Briefings

- **Russell Houston**  
  Associate Executive Director, Transportation Research Board  
  *Briefing on TRB electric vehicle-related activities.*

Session Panel Members

- **Timothy Lipman**  
  Co-Director, Transportation Sustainability Research Center, University of California, Berkeley  
  *An overview touching upon some of the scenarios for electric vehicle deployment and technology, and policy issues.*

- **Peter Kosak**  
  Former Executive Director, Urban Mobility, General Motors  
  *The role of electric vehicles in the automated vehicle revolution.*
Timothy Lipman
Energy and Environmental Technology, Economics, and Policy Researcher and Lecturer, University of California, Berkeley

Timothy E. Lipman is an energy and environmental technology, economics, and policy researcher and lecturer with the University of California, Berkeley. He is serving as co-Director for the campus's Transportation Sustainability Research Center (TSRC), based at the Institute of Transportation Studies, and is also director of the Northern California Center for Alternative Transportation Fuels and Advanced Vehicle Technologies (NorthCAT) effort.

Lipman’s research focuses on electric-drive vehicles, fuel cell technology, combined heat and power systems, biofuels, renewable energy, and electricity and hydrogen energy systems infrastructure.

Most of his research projects are related to the transformation of energy systems to support motor vehicles and buildings, examining how both incremental and "leap frog" technologies can be applied to reduce greenhouse gas emissions and other negative environmental and social impacts of energy use. A central concept for his research is that the electrification of the transportation sector can realize synergy with a concentrated effort to reduce the carbon intensity of the electrical grid, yielding benefits for the electricity sector as well as the expanded use of electricity, hydrogen, and biofuels.

Lipman received his BA from Stanford University; and he received both his MS in transportation technology and policy, and Ph.D. degree in environmental policy analysis from the University of California, Davis.

Peter Kosak
Former Executive Director of General Motors Urban Mobility

Peter Kosak is the former executive director of General Motors (GM) Urban Mobility where he helped pioneer GM’s urban mobility and shared-use strategies, developed new mobility technical and operational capabilities, and led the company’s first market deployments globally. Prior to heading the urban mobility effort, he was GM’s Global Vehicle Line Executive, leading a cross-functional program team that defined, positioned, and developed the Cadillac flagship sedan (CT6).

Kosak is a passionate technology and business leader who leverages a rare combination of automotive and start-up experiences. Among his strengths are envisioning and defining opportunities within the new urban mobility space, inspiring teams and partnerships to achieve a clear shared vision, and building and executing concrete strategies and roadmaps to achieve that vision.
Kosak’s other roles at GM included managing the purchasing of strategic components, subsystems, and technologies for all global programs; leading the definition, design, execution, and continuous improvement of complete interiors for GM midsize cars, trucks, and vans; and serving as the vehicle line director for the 2004 Cadillac SRX, which was recognized as “Best Luxury SUV” three years in a row by Car and Driver magazine.

As a leader in the area of marketing and design, he drove definition and development of the Aurora, Intrigue, and Alero; and was deeply involved in market research and feeding consumer and competition insights into design studios.

Kosak has a BS in mechanical engineering from the University of Massachusetts Amherst, a MS in mechanical engineering from Purdue University, and a MBA from the Columbia Business School.

### Daniel Bowermaster
Program Manager, Electric Transportation, Electric Power Research Institute

Daniel Bowermaster is the program manager for electric transportation at the Electric Power Research Institute (EPRI), an independent non-profit center for public interest energy and environmental research. Bowermaster’s team is charged with helping provide research focused on the development of technology, infrastructure, and analytics necessary to support the advancement of electric transportation.

His program’s research focuses on the development, deployment, and analysis of plug-in electric vehicles and charging infrastructure and as such, collaborates heavily with the automotive and technology industries. Research projects include plug-in electric vehicle driver behavior changing projects, analysis of electric and natural gas options for fleet support, and plug-in electric vehicle readiness for utility customers.

For EPRI, Bowermaster has managed a nationwide deployment project for light- and medium-duty plug-in hybrid vehicles and related electric infrastructure research.

Prior to EPRI, Bowermaster was with Pacific Gas and Electric Company where he managed commercial and industrial customers zero percent interest and zero fee financing of energy efficiency projects; provided guidance for early stage energy efficiency products and services; supported plug-in electric vehicles from initial launch through mass market adoption.

Bowermaster has a BS in mechanical engineering from the University of California, Davis; and a MA in International Studies and MBA from the University of Pennsylvania.
Electromobility status in Norway

Mastering long distances – the last hurdle to mass adoption

Erik Figenbaum

Front-page photography: Shutterstock
Preface

This report is part of the work in the Electromobility Lab Norway (ELAN) research project. ELAN is led by the Institute of Transport Economics and is financed by the Research Council of Norway.

The objective of this report is to provide a status on the development of the Battery Electric Vehicle (BEV) market in Norway up to the end of 2017. This status includes identification of knowledge gaps that needs to be filled to be able to assess whether Norway can reach the Parliament (Stortinget) target that only zero emission passenger vehicles shall be sold in Norway from 2025.

The report draws on and elaborates on previous works done at the Institute of Transport Economics. This work has established that BEVs are well suited as the local transport vehicle in multi-vehicle households. A special focus of the ELAN project is on the prerequisites for replacing also the “primary” vehicle of multi-vehicle and single-vehicle households with BEVs. The “primary vehicle” in this sense is the vehicle households use for long distance driving on weekends and for vacations. The more demanding transportation tasks that needs to be accomplished for this usage pattern leads to a need to overcome other and more severe barriers to adoption of BEVs.

The report has been written by Erik Figenbaum. Quality assurance has been done by Research Director Michael W. J. Sørensen. Trude Kvalsvik has been responsible for the final finish of the report.

Oslo, March 2018
Institute of Transport Economics

Gunnar Lindberg
Managing Director

Michael W. J. Sørensen
Research Director
Battery electric vehicles (BEVs) reached a market share of 20% in Norway in 2017, and a fleet share of 5.1%. This development is the result of very large incentives and a long term stable BEV-policy. In addition, another 20% bought a Plug-in Hybrid Vehicle (PHEV) that make up another 2.6% of the fleet. These results are impressive compared to any other nation, but not nearly enough to meet the Norwegian Parliaments ambitious target of only selling zero emission vehicles by 2025. The main BEV user group has been multi-vehicle households replacing one vehicle. However, after 2025 also single vehicle households must buy BEVs, and BEVs must replace all vehicles in multi-vehicle households, not just one. A flow of new BEVs with longer range coming on the market the coming years will aid the transition. If the charging infrastructure is built out concurrently with the increase in the fleet, then more users will find BEVs attractive and easy to use. Data from main-road toll road stations reveals that peak travel days can become a major barrier. Building out charging infrastructure capacity to absorb these peaks completely may not be economically viable. Users will thus confront a trade-off between daily cost and time savings and longer stops and more queues on long distance trips, or they must buy BEVs with range long enough to get them to the final destination on peak travel days.

Higher electric vehicle share of the fleet than anywhere else

Battery electric vehicles (BEVs) reached a market share of 20% in Norway in 2017, and a fleet share of 5.1%. Norway’s large incentives and the long term stable BEV-policy have been essential in achieving these impressive results not seen anywhere else in the world. They are, however, not nearly enough to meet the Norwegian Parliaments target of only selling zero emission vehicles by 2025. Zero emission in this sense is defined as zero tailpipe emissions. The main option for achieving that target seems to be BEVs. Fuel Cell Electric Vehicles (FCEVs) running on hydrogen may be another option, but so far no car manufacturer has started full series production of these vehicles. Plug in Hybrids are only part-time zero emission. In this report the focus is on BEVs ability to contribute to the target.

The main BEV user group has up to 2018 been multi-vehicle households. Earlier research has shown that this user group has had few challenges taking BEVs into use. To be able to reach a target of only selling BEVs from 2025, also single vehicle households must start using BEVs, and BEVs must replace all vehicles in multi-vehicle households. New barriers will thus emerge.

Long distance driving (trips, sum of trips or total driving over a day), exceeding the range of BEVs, lead to a need for owners to charge during the trip or the day, or to adapt their driving behavior. Combined with long charge time this will be the remaining main barrier to adoption of BEVs in Norway. The charging process of BEVs is more time consuming than filling fuel in an Internal Combustion Engine Vehicle (ICEV). Fast charging can give 3-5 km of range per minute of charge. Some vehicles can be fast charged about twice as fast. If charge queues also occurs, then long distance driving could become impractical on
peak travel days. Users will also need larger BEVs as these trips often are done with vehicles full of luggage and with all household members in the vehicle.

These issues are the remaining major barriers to adoption of BEVs as primary vehicles (the vehicle used for long distance driving) in Norway.

Price is not a barrier to consumer adoption of BEVs. The Norwegian incentives even out the cost of a BEV and an ICEV. In many cases the BEV will be the cheapest option. Battery life is still a barrier although the batteries seems to hold up capacity well under Nordic conditions. Surveys indicate that users are less worried about the second hand value of BEVs than they were earlier in the diffusion process.

**BEV technology improve and model availability increase**

Most automakers announced in 2017 major and concrete investment and production programmes for BEVs, and other types of electrified vehicles such as PHEVs and hybrids. Some of the announcements even specified which assembly plants the BEVs will be produced and the associated investment costs. There will therefore be a huge increase in the availability of BEVs with longer range designed for the mass market in the coming years. There are three potential game changers in the pipeline. Longer range will be possible with larger battery packs and more energy dense lower cost battery cells. These larger packs will also allow at least three times faster charging. The time spent on fast charging will thus become more comparable to filling fossil fuel at a gas station. A larger pack will also increase battery life as fewer charge cycles will be needed for a given mileage. If the purchase cost barriers continue to be repressed through incentives, there is every reason to believe that the market will continue to expand in the coming years.

The market has been cooled down by delays in vehicle deliveries, or too low production capacity, for models such as Tesla Model 3, VW E-Golf and vehicles from Hyundai and Kia. Nissan on the other hand seems to have the ability to deliver large volumes of the new Nissan Leaf. The delivery situation is likely to be subject for delays until the next wave of models designed for the high volumes enters the mass market between 2019 and 2022. The range for these new types of vehicles will be 400-600 km, with fast charge power of 100-150 kW, and up to 350 kW for the largest luxury vehicles.

**National policies influence markets**

Norway is in many ways an ideal place to introduce BEVs. The population is rich, a large share of households owns more than one vehicle, the access to home parking is good, speed limits are low (leading to longer range), and the electricity is cheap and supplied by a robust grid. The cold winters will however give large reductions in range, whereas temperate summers are ideal for longevity of batteries.

The Norwegian BEV market is fuelled by incentives that eliminates the price difference of BEVs and ICEVs, and in many cases make the BEV option the cheapest. Ownership costs are also lower due to the largest annual energy cost savings of using BEVs instead of ICEVs of any country in Europe. Further cost savings are available many places due to local incentives such as the exemptions from toll road and parking charges. These policies have been in place for a very long time leading to opportunities for vehicle importers to profitably and quickly introduce BEVs into the market in large volumes, which they all
have grabbed as soon as their brands started offering BEVs. The market will continue to expand as long as these benefits and incentives continue to be available to new user groups. The user benefits are also available to buyers of second hand vehicles, leading to a strong second hand market demand. The depreciation rate of BEVs launched after 2013 has therefore been more or less the same as that of similar ICEVs. Earlier BEVs have however suffered higher value losses, mainly due to the rapidly decreasing new vehicle prices early in the diffusion process.

Will BEVs meet enough vehicle user's needs?

A small share of early BEV users only own the BEV and have no other vehicles at their disposal unless they rent, loan or use car sharing vehicles in addition. An even smaller share of households owns more than one BEV, with no ICEVs in the household, but these are people that have taken a special interest in the technology. Most BEVs are however owned by multi-vehicle households also owning an ICEV. These households keep the flexibility to effortlessly do long distance driving with the ICEV.

Meeting mass market demand for general purpose vehicles will be very different. People have very different usage patterns and some users need large vehicles capable of rooming much luggage, or have a need to haul heavy trailers or caravans. It will thus be much more difficult to replace the last 20% of ICEVs in the fleet than the first 20%. Long distance driving, such as vacations and weekend trips will be most difficult to replace, especially if the range is less than the distance to be covered for large share of vehicles. It is unlikely that it will be economically viable to build out charging infrastructure to completely cope with the total travel demand on peak travel days. On some roads the demand on peak days can be more than five times larger than that of a normal day. Another challenge could be the ability to charge at the destination, for instance at vacation homes and huts, due to lack of electricity where the vehicle is parked.

Charging infrastructure is lagging fleet increase but improving

Home charging capability is seen as a main attraction of BEVs, and a prerequisite for BEV ownership. 94% charge their vehicle at home. Up to 75% of all households can park on own land, a further 14% less than 100 meters from their doorstep. It can be estimated, based on results from user surveys, that about 42 000 BEV and PHEV owners had installed homechargers (EVSE wallbox) at the end of 2017. A further 142 000 use domestic type Schuco sockets for charging. There were about 7 500 public “slow” chargers available. Additional electric sockets that can be used for charging are however available outdoors in numerous locations without being termed “charging station”. Home charging supports most of the local driving, but when fast chargers are installed in cities they are quickly fully utilized, indicating that some users stretch their vehicles range capability also in daily day traffic.

Fast charging was non-existent in 2010. Today more than 1000 fast chargers are available in Norway. These fast chargers are distributed in more than two hundred physical locations. The rapid expansion of the fast charger network has been the result of a deliberate government policy of supporting the installation of fast chargers since 2011, and various private initiatives. A general support program got the first chargers installed (Transnova), and public tenders resulted in a basic network of chargers every 50 km along all major transport corridors in southern Norway up to Tromsø. A new program will from 2018
support the installation of fast chargers in municipalities that have none. Increasing private investments also leads to more fast chargers being installed in cities and outside shops and restaurants. Life with a BEV has thus become easier in cities, although range anxiety seems to gradually be morphing into a charge queue anxiety. Long distance driving has been enabled across most of Norway, but has so far not often been undertaken by the majority of BEV owners.

Fast charging has been limited to 50 kW, apart from Tesla Superchargers operating at 60-120 kW. That is about to change in 2018. Several operators will install chargers capable of 150 kW charging and some even 350 kW. Vehicles capable of fully utilizing the charging power of these stations will not come on the market until 2019-2020.

Everyone knows the technology and the market will expand

While the BEV diffusion and market introduction started in cities, the market is now rapidly increasing also in rural areas, supported by increased availability of fast chargers, and a knowledge transfer in the population.

All importers offer BEVs across their entire national dealer network, and new models are introduced as soon as they are available in the market. BEVs are thus no longer a city phenomenon, but a real option for most vehicle buyers in most places.

A survey of the general population in early 2018 revealed that 89% of the population of Norway knows someone owning a BEV, 66% have been a passenger in a BEV, and 34% have driven a BEV. Only 22% have never been inside a BEV. The survey also revealed that in the general population the main barriers to sales are range, a lack of sufficient charging infrastructure and uncertainty about battery life. Twice as many respondents believe that ICEV cars will be less attractive in the second hand market than BEVs, as those that believe the opposite. Using purchase intentions of different types of vehicles from the 2018-population survey and splitting it into shares of the total market, it seems to be a potential to sell about 40 000 new BEVs in Norway in 2018, 25-30% of the expected total sales of passenger vehicles.

The range that will be available on future models will meet the needs of larger shares of vehicle buyers. 300 km all year range was seen as sufficient by up to half of ICEV owners and 80% of BEV owners, in a 2016 vehicle owner survey. Short range and long range vehicles will potentially co-exist in the market to cater for different user needs at different cost levels. Another market booster will be an increase in the number of available models, both from a wider range of brands and for user segments currently lacking BEV offerings. One can also expect higher future growth when users that currently own BEVs, trade in their older BEVs for models with longer range and other improvements.

BEV owners spend much less money on energy than ICEV owners do. This advantage comes however at the cost of having to spend more time than ICEV owners when undertaking long distance trips. The reason is that the charging occur at a much slower energy transfer rate than when filling liquid fuels. This trade-off is reduced the longer the range of the vehicle is, and the faster the charging it can accept.
TRB Electric Vehicle Activities

Russell Houston  
June 13, 2018

TRB Staff

- **Scott Babcock**, SPO Rail & Freight - TAD
- **Scott Brotemarkle**, SPO Marine & Intermodal Freight - TAD
- **Richard Cunard**, SPO Traffic & Operations - TAD
- **Ray Derr**, SPO - NCHRP
- **Mariela Garcia-Colberg**, SPO - TCRP
- **Christine Gerencher**, SPO Aviation & Environment - TAD
- **Mark Norman**, Resident Scholar - EO
- **Michael Salamone**, ACRP Manager - CRP
Publications

- (2018) TCRP Synthesis 130: Battery Electric Buses—State of the Practice
- (2017) NASEM – Enhancing the Resilience of the Nation’s Electricity System
- (2015) NASEM – Overcoming Barriers to Consumer Adoption of Plug-in Electric Vehicles

Committees and Projects

- ADC00 - Environment and Energy
- ADC70 - Transportation Energy
- ADC80 - Alternative Transportation Fuels and Technologies
- AHB30 - Vehicle-Highway Automation
- AP020 - Emerging and Innovative Public Transport and Technologies
- AP040 - Automated Transit Systems
- AP050 - Bus Transit Systems
- AR030 - Railroad Operating Technologies
- AT025 – Urban Freight Transportation
- AT060 – Trucking Industry Research
Committees and Projects (Continued)

• D08117 - Impact of Transformational Technologies on Land Use and Transportation
• D20102 - Impacts of Connected and Automated Vehicles on State and Local Transportation Agencies
• D20113 - Research Roadmap -- Transformational Technologies (other than CV/AV)
• TJ1127 - Analysis of Low-Speed Automated Vehicle (LSAV): Pilots and Deployment
• SAS0219 - Synthesis of Clean Vehicles, Fuels, and Practices for Airport Private Ground Transportation Providers
• E0005A - TRB Forum on Preparing for Automated Vehicles and Shared Mobility

Upcoming Projects

• TCRP - Guidebook for Deploying Zero Emission Transit Vehicles Fleet
• NCHRP - Estimates of Emissions Reductions from Future Fleet Changes for Use in Air Quality Models

Upcoming Meetings

• Automated Vehicle Symposium 2018 - July 9-12, 2018, San Francisco, California
• Forum on the Impact of Vehicle Technologies and Automation on Users: Vulnerable Road Users, and Driver Behavior and Performance, November 7-9, 2018, Iowa City, Iowa
• 6th Florida Automated Vehicles (FAV) Summit, November 27-28, 2018, Tampa, Florida
MEMORANDUM
TO: Members, TRB Executive Committee
FROM: Russell Houston
SUBJECT: Future Executive Committee Policy Sessions

June 2018 Policy Session on Public Transportation – Action

At its April meeting, the Subcommittee on Planning and Policy Review (SPPR) explored potential topics for the January 2019 Executive Committee Policy Session, which will be held in Washington, D.C. The SPPR identified transportation’s role in rural well-being as a potential topic. Subsequent to the SPPR meeting, Artificial Intelligence (AI) was suggested as a second potential topic. Below are short summaries of the types of issues that might be explored during a policy session on either topic. The Executive Committee is asked to select one of these topics or a different topic that it would like to focus on at its January 2019 meeting.

Transportation’s Role in Rural Wellbeing

Staff at the U.S. Department of Transportation have indicated to TRB that rural issues is one of its priorities. According to Steven Lockwood, in his paper Transportation in Rural America: Challenges and Opportunities, most transportation policy, analysis, and technology focus on urban transportation. However, nearly 50 million Americans live in rural areas—open country and settlements with fewer than 2,500 residents—spread out in 2,303 non-metropolitan counties across four-fifths of the land area. During the 1990s, millions of Americans moved to non-metro areas, contributing to a 10 percent increase in small urban and rural communities.

During the SPPR meeting in April, members identified transportation’s role in rural well-being as a potential topic for the January 2019 Executive Committee Policy Session. Potential components to well-being that could be discussed include access to health care, jobs, education, fresh food, and social opportunities. Other components include economic development, movement of agricultural produce to markets, impact of energy sector developments and timber industry, safety of rural roads, lack of transit, and tourism to National Parks and scenic areas.

This session could explore the scope of the problem; highlight the unique challenges across various regions and demographic characteristics including age and disabilities; and examine why impediments to well-being still exist and possible solutions.
Transportation and Artificial Intelligence

This session could start with a general overview of the topic and then focus on specific uses of AI in transportation applications. Potential areas to focus on include automated vehicles, traffic operations, travel demand modeling, transportation safety and security, public transportation, and infrastructure design and construction.

AI is characterized as computer applications that show features similar to intelligence of living creatures, such as evolution, collaborative behavior, processing of natural language, dealing with spatial structures, logical reasoning with fuzzy concepts, and learning. Researchers focusing on robotics and artificial intelligence are making strides in developing products to improve mobility and navigation, including for people with special needs. Artificial intelligence is also being explored to improve event horizons (looking ahead in time and space) related to wayfinding and navigation guidance. Potential uses of artificial intelligence are being explored in every mode of transportation--https://interestingengineering.com/the-25-ways-ai-can-revolutionize-transportation-from-driverless-trains-to-smart-tracks.
Past Sessions

A list of past policy session topics is attached. Beginning with sessions conducted after June 2002, the list also includes follow-up activities on the sessions.

Past Session Topics
Follow-Up Since 2002

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Rapporteur</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/88</td>
<td>Current Status &amp; Future Outlook for Air, Rail, Trucking, Highway,</td>
<td>Hoel &amp; Koltnow</td>
</tr>
<tr>
<td></td>
<td>Urban, &amp; Water Transportation</td>
<td></td>
</tr>
<tr>
<td>1/89</td>
<td>Marine &amp; Intermodal Transportation</td>
<td>Hoel</td>
</tr>
<tr>
<td>6/89</td>
<td>Transportation Response to Problems of Air Quality</td>
<td>Paaswell</td>
</tr>
<tr>
<td>1/90</td>
<td>High-Speed Ground Transportation</td>
<td>Walton</td>
</tr>
<tr>
<td>6/90</td>
<td>Relationship Between Transportation &amp; Economic Development</td>
<td>Wolpert</td>
</tr>
<tr>
<td>1/91</td>
<td>The Environmental Imperative, Fuel Use, &amp; Surface Transportation</td>
<td>Sussman</td>
</tr>
<tr>
<td></td>
<td>Funding</td>
<td></td>
</tr>
<tr>
<td>6/91</td>
<td>Air Passenger Transportation: Congestion Pricing for Airports</td>
<td>Harris</td>
</tr>
<tr>
<td>1/92</td>
<td>Transportation Policy Research Priorities for the 1990s (USDOT</td>
<td>Lamm</td>
</tr>
<tr>
<td></td>
<td>Associate Administrators for Policy)</td>
<td></td>
</tr>
<tr>
<td>6/92</td>
<td>International Economic Development &amp; U.S. Transportation</td>
<td>Walton</td>
</tr>
<tr>
<td>1/93</td>
<td>U.S. &amp; International Efforts to Assist Russia &amp; Other Former Soviet</td>
<td>Borrone</td>
</tr>
<tr>
<td></td>
<td>Republics on Transportation-Related Problems</td>
<td></td>
</tr>
<tr>
<td>6/93</td>
<td>Implications of U.S. Defense Conversion for Transportation</td>
<td>DeLong</td>
</tr>
<tr>
<td>1/94</td>
<td>Transportation Policy Priorities to Support a National Transportation</td>
<td>Millar</td>
</tr>
<tr>
<td></td>
<td>System</td>
<td></td>
</tr>
<tr>
<td>6/94</td>
<td>The &quot;Green&quot; Car: Technological, Institutional, &amp; Environmental</td>
<td>Yerusalim</td>
</tr>
<tr>
<td></td>
<td>Issues</td>
<td></td>
</tr>
<tr>
<td>1/95</td>
<td>Intermodal Freight Transportation: Barriers, Linkages, and New</td>
<td>Wormley</td>
</tr>
<tr>
<td></td>
<td>Technologies</td>
<td></td>
</tr>
<tr>
<td>6/95</td>
<td>Financing Transportation in the Post-ISTEA Era</td>
<td>Kelly</td>
</tr>
<tr>
<td>1/96</td>
<td>ISTEA: Impacts and Issues for Reauthorization</td>
<td>Wachs</td>
</tr>
<tr>
<td>6/96</td>
<td>Cross-Border Transportation Issues</td>
<td>Martinez</td>
</tr>
<tr>
<td>1/97</td>
<td>Institutional Arrangements for Transportation: Impacts of Changing</td>
<td>Sterman</td>
</tr>
<tr>
<td></td>
<td>Roles</td>
<td></td>
</tr>
<tr>
<td>6/97</td>
<td>Effects of the Federal Role on the U.S. Aviation System: Current</td>
<td>Riniker</td>
</tr>
<tr>
<td></td>
<td>Status, Prospects for &amp; Barriers to Change</td>
<td></td>
</tr>
<tr>
<td>1/98</td>
<td>Zero-Car Households: Strategies To Improve Mobility &amp;</td>
<td>Fitzgerald</td>
</tr>
<tr>
<td></td>
<td>Accessibility for the Carless</td>
<td></td>
</tr>
<tr>
<td>6/98</td>
<td>Land Use and Transportation: Relationships and Trends</td>
<td>Gilbert</td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Rapporteur</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>1/99</td>
<td>The Clean Air Act: Goals, Issues, &amp; Impacts on Transportation</td>
<td>Winstead</td>
</tr>
<tr>
<td>6/99</td>
<td>Industry Consolidation: Regulatory Issues, Cross-Modal Comparisons</td>
<td>McCaig</td>
</tr>
<tr>
<td>1/00</td>
<td>Approaches to Achieving Advances in Transportation Safety</td>
<td>Canby</td>
</tr>
<tr>
<td>6/00</td>
<td>Transportation Implications of E-Commerce and Telecommunications Technology</td>
<td>Giuliano</td>
</tr>
<tr>
<td>1/01</td>
<td>A System Wide View of Transportation Finance</td>
<td>Campbell</td>
</tr>
<tr>
<td>6/01</td>
<td>Freight Transportation in the U.S. Economy: Capacity Issues and Operating Challenges</td>
<td>Wilding</td>
</tr>
<tr>
<td>1/02</td>
<td>U.S. Petroleum Dependence: Issues and Prospects for the Transportation Sector</td>
<td>Frosch</td>
</tr>
<tr>
<td>6/02</td>
<td>Work Force Development and Staffing Needs in Transportation</td>
<td>Meyer</td>
</tr>
<tr>
<td>01/03</td>
<td>Decision-Making Processes for Public Sector Transportation Investments</td>
<td>Kirby</td>
</tr>
<tr>
<td>6/03</td>
<td>Transportation Security Initiatives: Balancing Public Perceptions, Political Expectations, and Practical Applications</td>
<td>Rebendsorf</td>
</tr>
<tr>
<td>01/04</td>
<td>The Impact of Global Warming on Transportation</td>
<td>Kanafani</td>
</tr>
<tr>
<td>06/04</td>
<td>Shifting Patterns and Growth of Global Trade: Implications for the Transportation System</td>
<td>Shucet</td>
</tr>
<tr>
<td>01/05</td>
<td>Innovative International Roadway Safety Initiatives</td>
<td>McNeil</td>
</tr>
<tr>
<td>06/05</td>
<td>How Should America Pay for Transportation?</td>
<td>Morris</td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Rapporteur</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>01/06</td>
<td>Raising the Public Profile of Transportation</td>
<td>Butler</td>
</tr>
<tr>
<td></td>
<td>* TRB will continue to develop information that helps provide the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>foundation for answering the question of why transportation matters;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>however, TRB’s role is not to take on a major transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>profile-enhancement campaign.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* TRB broad and proactive dissemination of the critical issues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>document.</td>
<td></td>
</tr>
<tr>
<td>06/06</td>
<td>20th Century Institutions Mismatched to 21st Century Missions</td>
<td>Miller</td>
</tr>
<tr>
<td></td>
<td>* A theme for the 2006 Technical Activities summer meeting.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* A theme of the 2007 Annual Meeting and the subject of several</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sessions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* The subject of five future specialty conferences and workshops</td>
<td></td>
</tr>
<tr>
<td></td>
<td>including “Transforming Transportation Organizations: Tools and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Techniques for Organizational Development” workshop held in July</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2007.</td>
<td></td>
</tr>
<tr>
<td>01/07</td>
<td>The Energy Component of Transportation Sustainability</td>
<td>Gittens</td>
</tr>
<tr>
<td></td>
<td>* Addressed by several sessions at the 2008 Annual Meeting.</td>
<td></td>
</tr>
<tr>
<td>06/07</td>
<td>Innovative Transportation Performance Measures</td>
<td>Garber</td>
</tr>
<tr>
<td></td>
<td>* The session fulfilled a request by Secretary Peters who was briefed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>on the discussion.</td>
<td></td>
</tr>
<tr>
<td>01/08</td>
<td>Public-Private Partnerships: With an Emphasis on Equity</td>
<td>Rosenbloom</td>
</tr>
<tr>
<td></td>
<td>* Article by Dr. Sandra Rosenbloom was published in the March/April</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2009 issue of TR News on equity issues associated with public-private</td>
<td></td>
</tr>
<tr>
<td></td>
<td>partnerships.</td>
<td></td>
</tr>
<tr>
<td>06/08</td>
<td>The Role of Transportation in Climate Change Mitigation</td>
<td>Johns</td>
</tr>
<tr>
<td></td>
<td>* Spotlight theme of the 2009 Annual Meeting is Transportation,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy, and Climate Change (already selected before policy session).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Resulted in TRB Special Report 299: A Transportation Research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program for Mitigating and Adapting to Climate Change and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conserving Energy, which was released in September 2009.</td>
<td></td>
</tr>
<tr>
<td>01/09</td>
<td>Key Issues in Transportation and Climate Change</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>* Provided input into the papers used to develop TRB Special Report</td>
<td></td>
</tr>
<tr>
<td></td>
<td>299: A Transportation Research Program for Mitigating and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adapting to Climate Change and Conserving Energy, which was</td>
<td></td>
</tr>
<tr>
<td></td>
<td>released in September 2009.</td>
<td></td>
</tr>
<tr>
<td>06/09</td>
<td>Issues and Perspectives on Water Transportation</td>
<td>Scalzo</td>
</tr>
<tr>
<td></td>
<td>* Marine Board now provides regular updates to the SPPR.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Rapporteur</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>01/10</td>
<td>Dialogue with the U.S. DOT Deputy Secretary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* The TRB Executive Committee held a two-part dialogue with U.S.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Department of Transportation (DOT) senior officials on key policy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>issues. The sessions were designed to introduce some of the key DOT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>leaders to the Executive Committee and provide an opportunity for a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>back-and-forth discussion of the administration’s policy plans. No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>formal follow-up.</td>
<td></td>
</tr>
<tr>
<td>06/10</td>
<td>Definitional Issues Related to the Concept of Livability</td>
<td>Clark</td>
</tr>
<tr>
<td>01/11</td>
<td>Multimodal Freight Policy, Corridor-Level Priorities, and Funding</td>
<td>Conti</td>
</tr>
<tr>
<td></td>
<td>Strategies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Considered as part of an SPPR review in November on the role of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>policy sessions in development of Special Reports and other products.</td>
<td></td>
</tr>
<tr>
<td>06/11</td>
<td>Financing and Funding Transportation in a Transitional Period</td>
<td>Seltzer</td>
</tr>
<tr>
<td></td>
<td>* National experts will convene in July 2012 to discuss the issues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and advise TRB on how it could contribute to the discussion.</td>
<td></td>
</tr>
<tr>
<td>01/12</td>
<td>Inland Waterway Transportation: Issues, Challenges, Opportunities</td>
<td>Hancock</td>
</tr>
<tr>
<td></td>
<td>* April 2012 SPPR meeting recommended a policy study. Details to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>be presented to the Executive Committee at its June 2012 meeting.</td>
<td></td>
</tr>
<tr>
<td>06/12</td>
<td>New Information and Telecommunication Technology Applications to</td>
<td>Sperling</td>
</tr>
<tr>
<td></td>
<td>Transportation: Opportunities and Challenges</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* SPPR decided that no follow-up was warranted.</td>
<td></td>
</tr>
<tr>
<td>01/13</td>
<td>International Research Activities: Issues, Priorities, and Lessons</td>
<td>Sinha</td>
</tr>
<tr>
<td></td>
<td>Learned</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* An article for publication in the TR News is being solicited on the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>subject.</td>
<td></td>
</tr>
<tr>
<td>06/13</td>
<td>Energy: Transportation Fuels and Sources</td>
<td>Hendrickson</td>
</tr>
<tr>
<td></td>
<td>* Issues identified may be able to be incorporated into TRB’s strategic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>planning process. Sessions at the 93rd Annual Meeting.</td>
<td></td>
</tr>
<tr>
<td>01/14</td>
<td>Session on Aviation Issues: Challenges and Opportunities</td>
<td>Arroyo</td>
</tr>
<tr>
<td></td>
<td>* Reform of FAA air traffic control as a government owned, privately</td>
<td></td>
</tr>
<tr>
<td></td>
<td>operated entity was added to the list of possible self-initiated policy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>studies.</td>
<td></td>
</tr>
<tr>
<td>06/14</td>
<td>Connected Vehicles—A Pathway to Automation</td>
<td>Washington</td>
</tr>
<tr>
<td></td>
<td>* In October the SPPR will review a series of potential activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>that TRB might undertake as a result of this session.</td>
<td></td>
</tr>
<tr>
<td>01/15</td>
<td>Big Data</td>
<td>Fotheringham</td>
</tr>
<tr>
<td></td>
<td>* TR News article based on policy session being developed.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Rapporteur</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| 06/15 | The Intersection Between Urban Goods Movement, Smart Growth, and Public Health  
* Spawned January 2105 Policy Session on Public Health and Transportation  
* Multiple 2016 workshops and sessions on urban goods movement issues addressed by the session | Breakouts           |
| 01/16 | Advancing Public Health Through Transportation: Challenges, Opportunities, and Lessons Learned  
* Input to Transportation and Public Health Task Force | Breakouts           |
| 06/16 | Cyber Security in an Age of Transformational Technology  
* Input to Transformational Technology Task Force | Breakouts           |
| 01/17 | Climate and Extreme Weather Resilience  
* Input for Resilience Task Force | Houston             |
| 06/17 | Smart Cities and Transportation  
* Input into Transformational Technology Roundtable | Breakouts           |
| 01/18 | Public Transportation: Challenges and Opportunities  
* Policy Study initiated on the role of public transportation and mobility management in an era of new and expanding shared mobility options. | Breakouts           |
MEMORANDUM

TO: Members, TRB Executive Committee
FROM: Russell Houston
SUBJECT: TRB Centennial Activities

At its April meeting, the Subcommittee on Planning and Policy Review (SPPR) provided their concurrence on the plan developed by the Centennial Task Force to help guide the TRB Centennial Celebration. Now that the plan is complete, the Task Force has turned its focus on providing oversight and input on the production of the centennial products.

This memo summarize the Centennial Celebration Plan. Copies of the full plan, which numbers about 30 pages, is available upon request.

The Centennial Celebration Plan Summary

The Task Force’s plan is based on a yearlong celebration that will begin at the 99th Annual Meeting in 2020 and will conclude at the 100th Annual Meeting in 2021. The focus of the 2020 Annual Meeting should be on TRB’s history, and the focus of the 2021 meeting should be on the future. The theme for the celebration is “Moving Ideas: Advancing Society--100 Years of Transportation Research.”

The goal for the celebration is to promote the value of transportation research and TRB’s critical role in the process. In addition, the celebration is focused on recognizing and honoring volunteers, sponsors, major contributors, and staff; highlighting TRB accomplishments and sponsors roles in those accomplishments; celebrating and promoting the TRB community; and eliciting pride in TRB participation.

TRB has adopted the visual identifier below for use on products associated with the centennial and on TRB products produced during the centennial year. Different configurations of the identifier have been developed to accommodate various uses.

TRB will publish a book of no less than 60,000 words in length that will document the its history, key achievements, major programs, and the institutions and individuals that have supported TRB. The book will also analyze the impact of transportation research and TRB’s role in supporting transportation innovation. The book is being produced with the assistance of the National Academies Press and is
scheduled to be completed and ready for distribution by January 2020 to coincide with the beginning of the celebration.

The centennial website, which is scheduled to be launched in the summer of 2019, will be structured around the theme: “TRB was, is, and will be there”. Based on this structure, the centennial website will tell the story of TRB’s history and impacts; highlight TRB’s current activities and opportunities for involvement; and explore the future roles, aspirations, and opportunities for the organization as well as the volunteers that are its underpinning.

TRB is developing a brochure, rich with images, that will be available online and for distribution during the 2019 Annual Meeting. This early product of the centennial celebration is to begin the process of engaging TRB’s volunteers in the celebration and to inform them of the components of the celebration, its themes, and the ways that they can participate.

Three types of videos will be developed as part of the celebration. The first are “short reflections” or 30 to 60 second videos that will be collected from volunteers and friends in response to specific questions. Since questions will be geared toward younger members of the TRB community, it is expected the videos will highlight the diversity of those within the transportation community and potentially attract other young people to join their ranks.

The second video type is a five-minute video that will focus primarily on the future. The audience for the five-minute video will be college and graduate school students with the goal of exciting younger people into considering transportation as a career path. TRB’s History Committee is working on the third video project, which will be oral histories of key TRB volunteers.

A Centennial Booth, focusing on TRB’s history, will be part of the 2020 Annual Meeting exhibit hall. The booth will consist of 30 to 40 banner stands and each banner stand will be able tell a story. As envisioned, a roaming exhibit, which will be on tour during 2020, will reuse the banner stands. The stands selected would be depended upon the size of the area allotted for the exhibit as well as the focus of the organization wishing to host a roaming exhibit. The Centennial Booth at the 2021 Annual Meeting will highlight new and cutting edge technology.

The history book, which will be distributed to all 2020 Annual Meeting attendees and TRB sponsor organizations, as well as sold on TRB’s website, is the keep sake from the centennial.

It is estimates that funding of the production of the book, as well as the other activities related to the celebration will cost between $600,000 and $650,000. To help offset these costs, TRB has adopted a three pronged fundraising plan that includes a modest increase in the registration rate for the 2020 and 2021 Annual Meetings above the increase for inflation, as well as individual (Century Club) and organizational (Century Patron) fundraising programs. Both Century Club and Century Patron members receive recognition for their contribution in various locations including the book, website, and booths. Both plans were developed in cooperation with the National Academy of Sciences’ Development Office.

Finally, a marketing and communications plan has been developed to help ensure that the goals and objectives of the overall Centennial Celebration are met. The plan includes measurable accomplishments, strategies, and tactics that will become a touchstone for the effort during the next two and half years. The plan is considered a living and breathing document that will be updated as needed.
Technical Activities Division Update

Executive Committee Meeting
June 11, 2018

Ann Brach

2018 Annual Meeting Attendance

- Verified attendance: 13,781 (3% increase)
  - 24% new attendees
  - 33% public; 35% private; 33% academic
  - State DOTs: 49 states + DC (poor Alaska)

- Diversity of attendees:
  - 30% students or professionals younger than 36
  - 25% women; 63% men; 12% no response
  - 46% white; 25% non-white; 29% no response
  - 17% from outside the USA
2018 Annual Meeting Events

• New:
  – “War games” workshop
  – Careers in Motion career fair
• Improved:
  – New Attendee Orientation
  – New poster session layout
• All very well-received
• “The best Annual Meeting I’ve attended!”

State DOT Testimonial: Annual Meeting

I thought the exhibit hall this year couldn’t have been better. It covered every conceivable aspect of transportation that impacts us. Key contacts were available face to face for multiple days from every discipline. Getting the right people at the exhibit hall leads to solutions back here at the office, and TRB seems to get the right people. ...

When I go to the TRB Annual Meeting, I want to find information on solving specific operational technical problems, identifying potential new technology, understanding the latest FHWA regulations, identifying funding sources/options from new or modified Federal programs, get feedback from peers on all of the above, learn what the committees related to my tasks are interested in to see if they can help us.
Academic Testimonial: Annual Meeting Poster Sessions

State DOT Testimonial: State Visit

Thank you so much for taking the time to visit us and share great information. Folks who met with you found the meetings to be very informative and I certainly learned a lot myself (TRB is the gift that keeps on giving😊). Until next time!
2019 Annual Meeting Plans ...

- Larger halls for both exhibits and posters
- Themed “pavilions” in the Exhibit Hall:
  - Active Transportation Promenade
  - Passenger and Public Transportation Concourse
  - Risk and Resilience Row
  - Transformative Technologies Interchange
- Exhibit Hall “theaters” for presentations
- New branding:

![Annual Meeting Ad](Image)

Transportation Research Record

- New website with first papers by Sage
- For authors:
  - Faster publication (“On Line First”)
  - Analytics
  - Proof review
- New peer review software
  - Version control
  - Identity fraud
  - Plagiarism
  - Conflicts of interest
- User groups forming
TRR Strategy Meeting with Sage

• Increasing pace of publication to catch up from contract delay
• Analytics
  – Dividing up the journal will not significantly improve the impact factor for any segment
  – Strategy is to increase citations across all disciplines: more promotion, sharing
  – Diversify measures of impact: TRR is cited by policy documents more than 2x more than all 6 Elsevier transportation journals combined
• Other discussions:
  – Making data sets and other products available
  – Increasing visibility with social science community
  – Marketing and publicity
  – Composition of issues

Technical Activities Committees
Preparation for Critical Issues

• Several iterations of feedback from standing committees and TAC
• 2018 Annual Meeting TAC and Group Executive Board discussions of top issues:
  – TAC discussed issues related to institutional frameworks, passenger and goods movement, infrastructure, operations, social and environmental impacts
  – Group Executive Boards drilled down a level to the particular issues facing their mode or discipline
• Many common or cross-cutting issues and concerns identified, confirming multi-modal and multi-disciplinary nature of issues facing transportation
TAC/GEB Issues compared to TRB Critical Issues

- Characteristics of new technologies & innovation environment
  - Autonomous, shared, data-intensive
- Rapid entry of Silicon Valley entrepreneurs in transportation technology and services
- Changing demographics, values, preferences & behaviors
  - Age distribution disparities, evolving service expectations
- Climate change
  - Increased disruptive events, concern for sustainability
- Roles of public, private, non-profit sectors
  - Changing responsibilities for funding, governance, regulation
- Safety, consumer & environmental protection
  - Regulated vs voluntary compliance, consultative vs fast-track implementation
- Rapid change in priorities from established to innovative
  - Managing transitions, neglecting traditional needs, investments

Purple: TAC is (was) different

Research & Policy Questions in a Fast-Changing World

- Challenges for TAC:
  - Doing it all vs setting priorities
  - Remember, these are 7,000 volunteers!
  - TRB/TAC as mission oriented exchange, market for ideas
  - Maintaining agility without being quixotic, chasing butterflies
  - Avoiding fragmentation, duplication of effort
  - Moving from scope creep to issue clusters
  - Promote collaboration and coordination
  - Generational transitions of volunteer cohort, carrying knowledge, culture, experience forward
  - Defining, communicating, maintaining the DNA of TAC, TRB
  - Communication is critical
- Interesting times ahead

Questions proposed by Joe Schofer and discussed by TAC in their April conference call
SHRP 2 Safety Data Update

Executive Committee Meeting
June 11, 2018

Ann Brach

Data Use

• More than 300 Data Use Licenses (projects):
  – Active: 247
  – Pending: 36
  – Completed: 29

• Datasets available for re-use without cost:
  – 63 datasets already available; 63 more under preparation
  – 57 re-use requests executed to date

• User-Community-Driven webinar series:
  – 7 to date; between 72 and 110 attendees
  – Users present and discuss

• Future support for data:
  – Environmental scans and discussions with big data companies yielded no “silver bullets”
  – Currently contemplating a consortium approach
  – 2019 will pilot a less resource-intensive data support regime to reduce the total annual cost of data maintenance and user support
Example Research Topics

- Roadway geometry and driver speed
- Driver behavior and weather conditions
- Driving style versus crash risk
- Travel pattern analysis
- Hydroplaning
- Work zone configuration and pollutant emissions
- Automated cruise control algorithm design
- High visibility pedestrian crossings
- Drowsy drivers
- Machine learning-based crash fault determination
- Measures of distracted driving
- Risks involved in making long-distance driving trips
- Factors impacting the likelihood of near crashes and crashes
- Epidemiology course projects
- Perception/response time determinants
- Real-time driver assistance based on machine learning
- Freeway deceleration lane design
- Behavior-based predictive lane design
- Reduced data for intersection safety analysis
- Behavioral adaptation after experiencing a crash while texting and driving
- Hazard video library

Comments from Users

- SHRP 2 Safety Data has many things to offer and transportation agency executives should consider it for finding applicable safety countermeasures. Real, live data is important to future success of transportation systems, especially in the area of connected vehicles.
  - [That SHRP 2 data allows us to] analyze real-time driver performance data in relation to driver functional status data is extraordinarily valuable.
  - We would not have found out the effective distraction and secondary task involvement of drivers had it not been for SHRP 2 NDS data.
- SHRP 2 NDS data allowed us to look into driver’s behavior in various traffic and environmental conditions; human factors are hard to get by using traditional data sources. This database has proved useful in allowing our State DOT to discover actual driver behavior instead of assumed behavior.
- Work zone safety is an under-researched topic due to the lack of sufficient data on causal factors. For example, the highway safety manual has just two crash modifications factors related to work zones (duration and length). Our study developed crash prediction models and we are currently building tools for DOTs to use these models.
  - [We would recommend the data] without reservation—these data are unprecedented in the opportunity they offer to analyze the interrelationships between driver, vehicle, and environmental conditions.
  - The data allow things to be understood that cannot be understood using other data sources.
Preliminary Results from 2 studies

• The preliminary results [of our study] showed great potential for helping the transportation community understand how different lighting characteristics contribute to driver behavior and nighttime safety. The results also showed great potential for helping state DOTs develop more optimized lighting designs (not necessarily higher level of lighting) at different roadway settings to reduce nighttime crashes while minimizing energy consumption (from WSDOT report).

• Official statistics from the U.S. government indicate that only approximately 1%–2% of all motor vehicle crashes involve drowsy driving ... [Our study] examined the prevalence of driver drowsiness immediately prior to crashes that occurred in the [SHRP 2 data]. Drowsiness was assessed using a validated measure that is based on the percentage of time that a person’s eyes are closed. Using this measure, drowsiness was identified in 8.8%–9.5% of all crashes examined and 10.6%–10.8% of crashes that resulted in significant property damage, airbag deployment, or injury (from AAAFTS Research Brief).
MARINE BOARD
of the
TRANSPORTATION RESEARCH BOARD

Executive Committee Briefing
June 13-14, 2018

Marine Board
Current Areas of Interest

Autonomous Ships, Vehicles, and Shipping
Building and Fostering a Strong Safety Culture
Challenges in Arctic Operations
Cyber in Marine Transportation
The Future of Navigation
Human and Intellectual Capital
Improving Resiliency in the Marine Transportation System
Marine Incidents and Near-Miss
Sea-Level Rise and Extreme Weather Impacts on Coastal, Port and Waterways Infrastructure
Marine Board Spring Meeting

Date: May 22-24
Location: Savannah, GA
Understanding Port and Corridor Growth Strategies:
Case Study on the Port of Savannah

Day 1 Briefing:
• Savannah Port and Trade Corridor Growth Strategies
• Savannah Harbor Expansion Project (SHEP) – Deepening Project/Navigation Considerations/Waterways Management
• Port of Savannah Technical Tour – Terminals and Connecting Infrastructure
• Tour of Local Major Distribution Centers (IKEA, OA Logistics)

Marine Board Spring Meeting

Day 2 Case Study on the Port of Savannah (cont’d)

3 Beneficial Cargo Owners address decision-making with respect to:
• Planning for long term shifts in trade and carrier deployments (e.g. Panama Canal, mega-ships)
• Short term disruption planning and response (like H. Sandy)
• The role played by inland logistics and free-trade zones

Other Agenda Items
• Future Marine Navigation Technology - Advantages and Challenges
• Marine Board Sponsor Updates
Studies Underway in the Marine Area Under the Auspices of the Marine Board

Revise and Update U.S. Coast Guard Ship Stability Regulations (USCG)
The study committee will review the set of United States Coast Guard (USCG) regulations and policy documents that establish stability requirements for U.S. flag vessels in order to identify, and recommend as appropriate, options to make and keep the requirements current, align them better with international standards, improve their consistency and clarity, and organize them in a manner that facilitates their use and compliance.

Update of National Naval Responsibility for Naval Engineering (ONR)
The study will inform the Office of Naval Research (ONR) on the status of its efforts under the “National Naval Responsibilities: Naval Engineering” (NNR-NE) program to ensure that a healthy science and technology (S&T) and educational enterprise exists and is capable of meeting the future technology needs of the U.S. Navy in developing highly capable and affordable sea systems.

2018 Marine Board Call for Nominations

The Marine Board of the National Academies of Sciences, Engineering, and Medicine is seeking nominations for new members to be appointed to 3-year terms that would commence on November 1, 2018.*

There will be a three vacancies on the Board in 2018 and there is particular interest in candidates with expertise in the following areas:

- Offshore Energy Operations, Safety and Regulation
- Maritime Economics, Policy and International Trade
- Maritime Law and Regulatory Issues
Measuring Effectiveness:
Strategic Plan for TRB International Activities
2018-2023

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. It is crucial to monitor how well TRB’s efforts complement and support the international interests and activities of all its sponsors and of its parent organization, the National Academies of Sciences, Engineering, and Medicine—and whether those ties can be strengthened. The subcommittee has been taking steps to determine how TRB can measure the impact international activities have had on engagement efforts and learning, and to provide 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.

PURPOSE OF REPORT

This report proposes quantitative and qualitative metrics to monitor the implementation of the strategic plan. These metrics can be used by staff and the subcommittee as they prepare their reports to the Executive Director, the Executive Committee, and the Technical Activities Council. The metrics presented have a 5-year horizon but will be measured annually, re-evaluated in Year 3, and adjusted if needed.

Due to uncertainty regarding future funding for TRB programs and due to the fact that the effort to develop a new TRB-wide strategic plan is just getting underway, five-year targets are not being proposed at this time. However, the objectives and metrics will be useful input to the new TRB strategic plan. After the new TRB strategic plan has been approved, the issue of setting targets can be revisited.

APPROACH

To implement the international activities strategic plan that was approved at the Executive Committee in January 2018, volunteers and staff will work together to achieve the objectives in the plan. Many of the volunteer activities identified through international agreements will be coordinated by the Technical Activities Council’s Standing Committee on International
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.

Activities currently underway or proposed to increase engagement and learning:

1. Send and receive annual calls for nominees to serve on newly approved research panels.
2. Compare lists of approved research projects to identify potential twinning research projects or pairing of international project teams working similar research scopes.
3. Consider convening the Standing Committee on International Cooperation (A0010) mid-year committee meeting at an event well attended by TRB members and invite non-committee members to attend.
4. Coordinate with international partner organizations to identify liaisons to TRB committees that align with the missions of these organizations.

Proposed Metrics:
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. Subscriptions to the Newsletter continue to grow every year. TRB currently reaches 165 countries and over 72,000 readers (of which 13,500 are readers outside of the U.S.) with its e-newsletter. Resource for Data: Tracking the total number of readers and the number of email addresses with international addresses. This information will be reviewed annually.

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 1.4 million records of transportation research worldwide. During the 3rd & 4th Quarters of 2017, non-U.S. users searched TRID 874,801 times (80.1% of total searches) from 230 countries and territories.  

Resource for Data: Tracking the location of the users by the network address they connected to when researching on TRID. Location is by nation and rolled up by continent.

C. Number of non-U.S. experts serving on Cooperative Research Program Division project panels and twinning of research projects. The number of twinning research projects is not currently reported and is not expected to increase by a significant level annually. However, we might see an increase in the number of international experts participating on TRB cooperative research project panels.  

Resource of Data: Increases will be manually tracked and included in the annual report of the Subcommittee in January.

D. Number of non-U.S. members participating on TRB Technical Activities Committees. There are roughly 220 TRB Technical Activities committees, each of which may appoint up to 5 International Members. The Subcommittee for International Activities and the Committee on International Cooperation cannot compel a technical activities committee to add international members, if they are not using the designated roles. People can self-register and become a friend of any committee.  

Resource for Data: List of members (U.S. and total) in membership database and included in the annual report of the Subcommittee in January.

F. Engagement of international professionals through the TRR. Once the transition of Transportation Research Record to Sage Publications has been completed, the subcommittee recommends that TRB ask Sage to provide an annual report to TRB that includes the downloads of TRR papers by U.S. and non-U.S. readers, as well as international paper submissions and acceptance rates for annual meeting presentations and publication. Over time, TRB will be able to identify patterns in regional engagement. It is recommended that patterns such as ratios in submission to acceptance and nations submitting papers related to committee calls for papers or the theme of the conference be tracked.  

Resource for Data: Sage Publications will be asked to provide an annual report for this request.

G. The number of International Partner Liaisons on TRB standing committees. An increase in the number of members of committees of international partners as liaisons to TRB committees is desirable. If the liaison is not performing well or a committee is not using its international network, then the partnering effort is a wasted opportunity.  

Resource for Data: A0010 has a Subcommittee of all of TRB’s MOU partner organizations, which discusses member engagement and their efforts for sharing information and supporting forums for learning between the committees. Interviewing
liaisons and committee chairs would inform a narrative as to the value of the partnership. A summary report would be provided as part of the annual review of International Activities.

**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.

**Activities underway or proposed to increase engagement and learning:**

1. Convene events at TRB and TRB co-sponsored events organized by TRB’s international partners, such as workshops and sessions at the TRB annual meeting, Transport Research Arena, International Transport Forum Annual Meeting, and ITS World Congress. Furthermore, recommend TRB committee members to speak in sessions and other events organized by international partners.
2. Explore the possibility of convening the Standing Committee on International Cooperation (A0010), and other standing committees, mid-year committee meeting at an event well attended by TRB members and invite non-committee members to attend.
3. Plan and conduct joint webinars that inform participants from around the world regarding international research and innovation results among our international partners.

**Proposed Quantitative Metrics:**
These objectives would have an impact on the measures for Goal One, too. The activities above should show impacts in the TRB online resources and committee roles. Initially the subcommittee proposes to measure the following:

A. **Number of non-U.S. based organizations that are patrons or exhibitors at the Annual Meeting.** By marketing TRB’s level of international activity and the impact it has, international organizations would consider exhibiting or sponsoring the TRB annual meeting.

*Resource for Data:* Obtain participation data and revenue coming from international organizations from TRB’s contractor.
B. **Number of non-U.S. based organizations that are repeat patrons or exhibitors at the Annual Meeting.**  
*Resource for Data:* Obtain participation data and revenue coming from international organizations from TRB’s contractor.

C. **The number of international attendees at the annual meeting.** The number of international attendees and the number of attendees traveling from each nation varies from year to year. There were approximately 2,700 attendees at the TRB Annual Meeting in 2017, or about 20% of the total attendees. The subcommittee recommends counting the total number of international attendees each year.  
*Resource for Data:* Registration information collected in 2019 will include address and country of residence/origin.

D. **The number of nations and international registrants participating in international webinars.** Assessing the attendee counts by nation, there is little consistency in participation beyond the US and Canada, although Mexico is a distant third. An uptake in the reach and greater penetration into more nations of webinars is likely topic dependent. The penetration also is not dependent on translation from English, as the UK is not a major participant. As webinars are not consistent in number over the year (there is seasonality in the data), the subcommittee recommends annual data reporting.  
*Resource for Data:* International registration data from each webinar.  
Note: international webinars should be offered as “Straight to Recording” for easier scheduling of presenters. The number of international views of straight to recording webinars is typically higher than live webinars.

*Proposed Qualitative Metric:*  
These objectives would have an impact on the measures for Goal One, too. The activities above should show impacts in the TRB online resources and committee roles. Initially the subcommittee recommends measuring the following:

A. **Impacts of International Members of TRB Committees speaking at events organized by international MOU partners.** Many of the action plans to implement MOUs with international partner include the organization of sessions at their annual conferences. Planning a session of TRB committee members at a conference outside the U.S. supports opportunities for engaging with experts who are unfamiliar with TRB resources and support learning about TRB reports and meetings.  
*Resource for Data:* Committee A0010 would support this effort. The committee could survey session attendees and speakers to evaluate the impact satisfaction of this activity. Number of attendees is one way to assess impact, but the quality of the conversation between 10 attendees is more valuable than 50 silent attendees sitting in a session.
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.

Activities underway or proposed to increase engagement and learning:

1. Host social networking events, such as the International Welcome Reception and International Research Matchmaking Reception at annual meeting.
2. Consider opportunities for TRB members to participate on projects supported by TRB’s international partners as well as include them on our projects.

Proposed Qualitative Metric
Compose narrative to demonstrate the impact and value of TRB’s international network.

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.

Activities underway or proposed to increase engagement and learning:

1. Follow the model of reporting to the NASEM Policy and Global Affairs Division to track activities by region and NASEM/TRB mission goals.
2. Develop a process for reviewing and advising the Executive Director on new MOUs or other similar agreements with international partners.
Proposed Qualitative Metric:
TRB will work with its international partners to self-assess the value and impact of their activities implementing each agreement. Annually, TRB writes a report highlighting its international collaborations and other activities that took place during the year. Presentations of TRB’s activities are also given during the Standing Committee on International Cooperation committee meeting during annual meeting.
TRB Cooperative Research Programs
Status Update

TRB Executive Committee
June 13-14, 2018
Woods Hole, MA
NCHRP ● TCRP ● ACRP ● BTSCRP

The National Academies of
SCIENCE • ENGINEERING • MEDICINE
TRB TRANSPORTATION RESEARCH BOARD

NCHRP Highlights

• AASHTO Special Committee on Research & Innovation meets March 27-28, 2018 to allocate $34.4 million in research funds for FY2019
• FY2018 projects are underway; most are in the contractor selection phase.
• FY2019 projects will be announced in mid-April, 2018
• State DOTs, and project panels and research teams associated with NCHRP research published in 2012 were surveyed for information on if/how the research has been used; 546 responses are being analyzed
  – Effort will be repeated for subsequent publication years to capture the value and impact of NCHRP research to state DOTs and others
TCRP Highlights

• Project panels formed for the majority of FY 2018 projects.
• First meetings to draft the RFP were held in April and early May and most of the second meetings (to select contractors) have been scheduled.
• TCRP is in the process of soliciting problem statements for the FY 2019. Problem statements are due on June 15, 2018.
• TCRP is updating its performance metrics and establishing procedures for measuring and reporting these metrics. When adopted, this set of metrics will be viewed as a whole and be part of an overall qualitative assessment of the TCRP Program.

TCRP Projects 2018

• Recent Decline in Public Transportation Ridership: Analysis, Causes, and Responses
• Tactile Walking Surface Indicators to Aid Wayfinding for Visually Impaired Travelers in Multimodal Travel
• Evaluation of Non-Punitive Employee Safety Reporting to Improve Transit Safety
• Reinventing Transit Networks for a New Mobility Future
• Guide to Joint Development for Public Transportation Agencies
• Application and Monetization of Data Collected by Transit Agencies
• Guidebook for Deploying Zero Emissions Transit Vehicle Fleets
ACRP –Highlights

Launch of IdeaHub Collaborative Application for Problem Statements.

- More than 70 ideas working their way into problem statements.
- Hundreds of modal industry practitioners participating in ideation discussion.

ACRP cont’d

Reviewed progress developing ACRP implementation plan.

- Interviewed dozens of modal industry practitioners.
- Met with several industry trade associations to discuss implementation tactical ideas.
- Scanned other industries for lessons learned.
### Publications – 2017

<table>
<thead>
<tr>
<th>Program</th>
<th>Research Reports</th>
<th>Syntheses</th>
<th>Research Results Digests</th>
<th>Web-Only Documents</th>
<th>Legal Research Digests</th>
<th>WebResources</th>
<th>Annual Report</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCHRP</td>
<td>28</td>
<td>15</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>61</td>
</tr>
<tr>
<td>ACRP</td>
<td>19</td>
<td>7</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>39</td>
</tr>
<tr>
<td>TCRP</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Total all CRP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>120</td>
</tr>
</tbody>
</table>

**TRB Cooperative Research Programs**

**BTSCRP –** The Behavioral Traffic Safety Cooperative Research Program
BTSCR\P began as ....
The National Cooperative Research and Evaluation Program (NCREP)

- Established by Congress in MAP-21 in 2012
- Jointly managed by GHSA and NHTSA.
- Individual projects administered by NHTSA.
- About 18 projects to date.
- Transition to TRB in October 2017 as BTSCR\P.

BTSCR\P – Highlights

- Signed a contract with Governors Highway Safety Association to administer this new program.
- Funding from NHTSA
- Approx. $2.5 million / year through FAST Act.
- Contracts pending for four FY2018 projects
- Solicited problem statements for FY2019 projects.
“CRP 2.0”

- Business Process Review
- Integration of Synthesis and IDEA programs
- Centralization of Publishing Services
- Centralization of Travel Support
- Staff reorganization
On the horizon: research for ....
American Association of Motor Vehicle Administrators.
CONSENSUS AND ADVISORY STUDIES DIVISION
Acting 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.

DISCUSSION ITEMS

Status Update on Current Studies
Transit and Mobility Management
Candidate Self-Initiated Studies

INFORMATION ITEMS

Potential Studies
Studies Under Way
Candidate Self-Initiated Studies
# SUMMARY OF POTENTIAL STUDIES

<table>
<thead>
<tr>
<th>Study</th>
<th>Sponsor</th>
<th>Scope</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Study on the Performance of Innovative Materials</td>
<td>USACE</td>
<td>Evaluate use, and potential use, of innovative materials in USACE water resources projects. Evaluate sources of infrastructure degradation and opportunities to use innovative materials cost-effectively. Recommendations to USACE.</td>
<td>Approved in Sec. 1046 of the Water Infrastructure Improvement for the Nation Act of 2016. USACE interested in funding, but not able to commit money from FY 2018 budget.</td>
</tr>
<tr>
<td>2. Coast Guard Maritime Domain Awareness</td>
<td>USCG</td>
<td>Assessment of available unmanned, autonomous, or remotely controlled maritime domain awareness technologies for use by the Coast Guard.</td>
<td>Passed in H.R. 2518, Coast Guard Authorization Act of 2017. Senate and House negotiating reauthorization.</td>
</tr>
</tbody>
</table>
### SUMMARY OF POTENTIAL STUDIES

<table>
<thead>
<tr>
<th>Study</th>
<th>Sponsor</th>
<th>Scope</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Health Effects of Airplane Noise and Pollution</td>
<td>FAA</td>
<td>Study of noise and health effects on residential communities as a result of increased air traffic from NextGen developments</td>
<td>H.R. 3938, introduced 10/4/2017. Lead unit is likely to be the Board on Environmental Studies and Toxicology.</td>
</tr>
<tr>
<td>6. Human-Systems Integration for Process Safety and Worker Empowerment in the Offshore Oil Industry</td>
<td>Gulf Research Program (NASEM)</td>
<td>Study and advise on approaches for to improving process safety and worker empowerment in the offshore oil and gas industry through a human-systems integration approach</td>
<td>Proposed to GRP on 5/17/2018/ Anticipated collaboration with Board on Human-Systems Integration (BOHSI).</td>
</tr>
</tbody>
</table>
## STATUS OF POLICY STUDIES UNDER WAY
(Expenditures through March 2018)

<table>
<thead>
<tr>
<th>PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Review of USCG Vessel Stability Standards</td>
</tr>
<tr>
<td>2. National Naval Responsibility-Naval Engineering</td>
</tr>
<tr>
<td>3. Assessment of Technologies for Improving Fuel Economy of Light-Duty Vehicles—Phase 3</td>
</tr>
<tr>
<td>4. Future Interstates Study</td>
</tr>
<tr>
<td>5. Research and Technology Coordinating Committee</td>
</tr>
<tr>
<td>6. Long-term Infrastructure Performance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPONSOR</th>
<th>FUNDED AMOUNT</th>
<th>SPENT</th>
<th>SCHEDULE BEGAN</th>
<th>COMPLETION</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>USCG</td>
<td>$158,000</td>
<td>25%</td>
<td>9/2017</td>
<td>7/2018</td>
<td>Committee met for final time on 5/30/2018. Report in development</td>
</tr>
<tr>
<td>NHTSA</td>
<td>$2,688,000</td>
<td>8%</td>
<td>10/2017</td>
<td>7/2021</td>
<td>Led by Board on Energy and Environmental Systems. Committee met for first time 5/10/2018. Next meeting scheduled for</td>
</tr>
<tr>
<td>FHWA</td>
<td>$4,745,000</td>
<td>60%</td>
<td>6/2016</td>
<td>12/2018</td>
<td>Final meeting on 5/8/2018. Drafting of final report underway</td>
</tr>
<tr>
<td>FHWA</td>
<td>$320,000 annually for 5 years ($1.6 million total)</td>
<td>42%</td>
<td>7/2017</td>
<td>6/2022</td>
<td>Last meeting 1/2018. Next meeting likely during 11/2018.</td>
</tr>
</tbody>
</table>
### STATUS OF POLICY STUDIES UNDER WAY
(Expenditures through March 2018)

<table>
<thead>
<tr>
<th>Study Description</th>
<th>Agency</th>
<th>Expenditure</th>
<th>Percentage</th>
<th>Start Date</th>
<th>End Date</th>
<th>Status</th>
</tr>
</thead>
</table>
Preparing for the Future of a Mixed Fleet of Conventional, Connected, and Automated Vehicles
Federal policy is promoting connectivity among vehicles and infrastructure that would communicate with one another to enhance safety. The private sector is developing autonomous vehicles that would rely on sensors without constant driver control and ultimately no driver control. Because the automotive fleet is taking increasingly longer to turn over as vehicles become more reliable and expensive, there is likely to be a long span of time when CAVs and AVs will be operating side-by-side with conventional driver-operated vehicles. A study would examine what is known about the likelihood of a prolonged mixed fleet in light of historical experience with deployment of new technologies within and outside the transportation domain. It would examine the potential implications of this mixed fleet on traffic safety and operations and highway design and planning. The study committee would consider public policy options for minimizing the adverse effects of a mixed fleet, from changes in traffic control regulations to exclusive use roadways. In addition to considering policy options for a transition strategy, the study committee may consider options shortening the period of a mixed fleet, through means such as subsidy and incentive programs aimed at accelerating fleet turnover.

Public Policy Response to Ethical Issues Arising from Vehicle Automation
As transportation vehicles become increasingly automated and connected, state and federal safety regulatory oversight roles face the challenge of ensuring their safe operations while not hindering the introduction of safety-enhancing systems and technologies. Important questions remain, however, about how car companies and/or public policy will engineer for safety. Will CAV/AVs be programmed to prioritize passenger safety, road user safety generally, or in combination with other goals? Federal policy leaves these decisions to the car companies and to voluntary committees of standards organizations. A study committee could consider how strong the public presence should be in the making of these ethical decisions and the standards that result and how this public presence could be introduced.

Accommodating the Pending Electric Vehicle Revolution
As battery technology improves and governments impose zero- and low-emission mandates, vehicle manufacturers are responding with promises of increased production of electric vehicles (EVs). The introduction of electric driving is a complex and unpredictable process that is likely require additional government support, at least during the transition phases. For instance, uncertainties remain about the development of charging infrastructure to accommodate EVs in cities with limited private parking, regulatory barriers to the deployment of charging infrastructure, and the impact of an expanding EV fleet on the electric grid. There is a growing literature on EV policies at state and national levels such as from California, Norway, Germany, New Zealand, Australia, and France. A study committee could review this literature to identify strategies that have been successful in promoting and accommodating EVs, and where gaps in policy responses remain that have the potential to hinder such outcomes.

Investing in Resilience: Strategies to Aid Decision Makers
Increasing the resilience of transportation assets to extreme events is in society’s longer-term interest but not necessarily high in the calculus of decisionmakers facing budgetary constraints and other immediate demands on transportation funds. A study committee could examine strategies for adapting and strengthening of the country’s transportation infrastructure to rising sea levels, stronger storm surges, and more frequent flooding. These strategies may range from “no-regrets” approaches to investing in
resilience to options for retreating from highest-risk areas altogether. The committee could examine and advise on policies, special finding programs, research, and investments that can be undertaken by all levels of government to ensure that can aid decisionmakers as they seek balance the shorter-term interest with longer-term imperative for asset resilience and adaptability.

**Ensuring Public-Private Partnerships in the Public Interest**

As the use of public-private partnerships (P3) grows in transit, highways, ports, and airports, there is a need to ensure that the public interest is protected in the long term while also providing adequate incentives for this private investment. Accordingly, a committee could examine the experience of P3s and other private financing tools in enhancing the delivery and production of necessary transportation infrastructure and their record of success in accommodating public goals. The committee would draw on the evidence to consider the appropriate role of private sector contractors in delivering public transportation services and in managing publicly-owned transportation facilities.
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?

Executive Committee approval is requested for two sponsored and six co-sponsored conferences as part of the consent agenda.
<table>
<thead>
<tr>
<th>Title</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 58th Annual Workshop on Transportation Law</td>
<td>Mid-July 2019</td>
<td>Cleveland, Ohio</td>
</tr>
<tr>
<td>2. Joint Planning Conference on Performance Based Planning, Programming and Systems Management</td>
<td>Early September 2019</td>
<td>Atlanta, Georgia</td>
</tr>
<tr>
<td>3. 2018 International Symposium on Emerging Trends in Transportation*</td>
<td>October 4-6, 2018</td>
<td>Waikiki Beach, Hawaii</td>
</tr>
<tr>
<td>5. Geo-Congress 2019: 8th International Conference on Case Histories in Geotechnical Engineering*</td>
<td>March 24-27, 2019</td>
<td>Philadelphia, PA</td>
</tr>
<tr>
<td>6. Joint Meeting of the AASHTO Technical Committee on Roadside Safety Design and TRB Roadside Safety Design Committee (AFB20)*</td>
<td>June 2019</td>
<td>Nevada</td>
</tr>
<tr>
<td>8. 3rd International Conference on Information Technology in Geo-Engineering (3rd ICITG 2019)*</td>
<td>September 29 - October 2, 2019</td>
<td>Guimarães, Portugal</td>
</tr>
</tbody>
</table>

* TRB participates as a cosponsor
### 1. 58th Annual Workshop on Transportation Law
**TRB Sponsored**

<table>
<thead>
<tr>
<th>Location:</th>
<th>Cleveland, Ohio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Mid-July, 2019</td>
</tr>
<tr>
<td>Description:</td>
<td>The Annual Workshops on Transportation Law provide a forum in which attorneys from federal, state, and local transportation and transit agencies as well as private sector practitioners can come together once a year to get the latest information on the issues at the forefront of transportation law as well as exchange problems and proposed solutions. The workshops affords significant educational opportunities in a variety of substantive areas of transportation law including the professional responsibility and ethical obligations of lawyers and it also provides extensive intellectual and practical content, with the objective of increasing the participant's professional competence. Sessions are developed and presented at the initiative of the TRB Legal Resources committees.</td>
</tr>
<tr>
<td>Expected Attendees:</td>
<td>175 - Open to all. This workshop attracts lawyers, engineers, and transportation planners.</td>
</tr>
<tr>
<td>Anticipated Products:</td>
<td>The Law Workshops are a major source of continuing legal education credits, nationally for attorneys in the transportation sector. They also provide a forum for the mid-year meetings of the Legal Resources committees and, as such, both an opportunity to attract new members to the work of the committees and to generate potential topics for legal research based on needs identified in the sessions.</td>
</tr>
<tr>
<td>Sponsor:</td>
<td>Transportation Research Board</td>
</tr>
<tr>
<td>Other Sponsors:</td>
<td>N/A</td>
</tr>
<tr>
<td>Funding:</td>
<td>The workshop will be funded by registration fees</td>
</tr>
<tr>
<td>TRB Committees:</td>
<td>Legal Resources Executive Board (AL000), Transportation Law (AL010); Transit and Intermodal Transportation Law (AL020); Contract Law (AL030); Emerging Technology Law (AL040); Environmental Issues in Transportation Law (AL050); Standing Committee on Eminent Domain and Land Use (AL060); and Tort Liability and Risk Management (AL070) committees.</td>
</tr>
<tr>
<td>TRB Role:</td>
<td>Group and Committee chairs working with TRB staff will plan and organize the conference. Sessions and presentations will be based on the legal issues and needs currently relevant to transportation agencies including new regulations, policies and initiatives of all divisions of the United States Department of Transportation (DOT), other Federal agencies such as the United States Environmental Protection Agency (EPA) and state and local transportation organizations.</td>
</tr>
<tr>
<td>TRB Staff:</td>
<td>Robert J. Shea, Senior Program Officer/Counsel for Legal Research and Joanice L. Johnson, Associate Program Officer.</td>
</tr>
</tbody>
</table>
2. Joint Planning Conference on Performance Based Planning, Programming and Systems Management
TRB Sponsored

<table>
<thead>
<tr>
<th>Location</th>
<th>Atlanta, Georgia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Early September, 2019</td>
</tr>
<tr>
<td>Description</td>
<td>TRB, AASHTO, and AMPO propose a jointly sponsored conference on performance based planning and management that will build on the conversations from Spokane as well as other research to specifically address the methods and practice of performance based planning, programming and management. The conference will draw practitioners and research professionals from a wide array of backgrounds and organizations to explore the methods and practice of data-driven decision-making in an interactive and engaging forum.</td>
</tr>
<tr>
<td>Expected Attendees:</td>
<td>350-400 – open to all</td>
</tr>
<tr>
<td>Anticipated Products:</td>
<td>Presentations will be posted online after the conference for access by registered attendees and TRB sponsors.</td>
</tr>
<tr>
<td>Sponsor:</td>
<td>Transportation Research Board</td>
</tr>
<tr>
<td>Other Sponsors:</td>
<td>AASHTO, AMPO may also be a sponsor.</td>
</tr>
<tr>
<td>Funding:</td>
<td>Registration fees and patron funding will fund the conference expenses.</td>
</tr>
<tr>
<td>TRB Committees:</td>
<td>Statewide Multimodal Planning (ADA10), Metropolitan Planning, Policy and Process (ADA20), Programming and Investment Decision making (ADA50), Task Force on Data for Decisions and Performance Measures (AA030T), Performance Management (ABC30), Asset Management (ABJ20)</td>
</tr>
<tr>
<td>TRB Role:</td>
<td>TRB will be providing all coordination of the conference program and materials.</td>
</tr>
<tr>
<td>TRB Staff:</td>
<td>Jennifer L. Weeks, Senior Program Officer; Tom Palmerlee, Senior Program Officer; Mary Kissi, Associate Program Officer</td>
</tr>
</tbody>
</table>
3. 2018 International Symposium on Emerging Trends in Transportation
   **TRB Co-Sponsored**

<table>
<thead>
<tr>
<th>Location:</th>
<th>Waikiki Beach, Hawaii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>October 4-6, 2018</td>
</tr>
<tr>
<td>Description:</td>
<td>The Chinese Overseas Transportation Association (COTA) is sponsoring the 2018 International Symposium on Emerging Trends in Transportation. With a theme on Emerging Technologies for Future Mobility Systems, this Fall Symposium series is a new addition to the successful Summer CICTP Conferences and Winter TRB Workshops, organized by COTA and its partners annually for the past 18 years. The Symposium aims to stimulate the exchange of ideas among transportation professionals in academia, industry, and government on emerging policy, technology, and innovation trends. The Symposium welcomes the submission of short papers for technical sessions, presentation abstracts for lightening talk sessions, and session/workshop proposals from all transportation professionals.</td>
</tr>
<tr>
<td>Expected Attendees</td>
<td>150 – open to all</td>
</tr>
<tr>
<td>Anticipated Products:</td>
<td>No publications will be developed during this event by TRB, but COTA is expected to produce Conference Proceedings that will be distributed to conference attendees and made available on COTA website.</td>
</tr>
<tr>
<td>Sponsor:</td>
<td>Chinese Overseas Transportation Association (COTA)</td>
</tr>
<tr>
<td>Other Sponsors:</td>
<td>TBD</td>
</tr>
<tr>
<td>Funding:</td>
<td>Funding will be managed by COTA through registration fees and support from other sponsors. TRB will not have any involvement in the financial aspects of this conference.</td>
</tr>
<tr>
<td>TRB Committees:</td>
<td>AV060 Airfield and Airspace Capacity and Delay Committee (AV060)</td>
</tr>
<tr>
<td>TRB Role:</td>
<td>COTA has invited the TRB committee on Airfield and Airspace Capacity and Delay (AV060) to participate in the conference event. The AV060 committee will contribute on organizing sessions related to air transportation. The topics include Urban Air Mobility with On-Demand eVTOL, Impact of TNCs and Emerging CAV on Air Transportation. The AV060 committee will be hosting a committee meeting for AV060 members and friends during the event as well with the objective of attracting new people to the AV060 committee.</td>
</tr>
<tr>
<td>TRB Staff:</td>
<td>Christine Gerencher, phone 202-334-2970, fax 202-334-2030, <a href="mailto:cgerencher@nas.edu">cgerencher@nas.edu</a></td>
</tr>
</tbody>
</table>
4. Maritime Risk Symposium 2018
Preparing for Maritime Impacts as the Global Fuel Mix Is Decarbonized
Co-Sponsored

<table>
<thead>
<tr>
<th>Location:</th>
<th>Oak Ridge National Laboratory, Oak Ridge TN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>November 14-16, 2018</td>
</tr>
<tr>
<td>Description:</td>
<td>The 2018 Maritime Risk Symposium brings together government, industry, and academic leaders – both domestic and international – to explore the implications of the fast-approaching new energy landscape for the maritime transportation system. Recognizing the global trend toward decarbonizing the fuel mix, the symposium will address issues facing us as consumers, transporters, and producers of energy, as well as maritime resilience and environmental stewardship.</td>
</tr>
<tr>
<td>Expected Attendees:</td>
<td>200 - Invitation Only</td>
</tr>
<tr>
<td>Anticipated Products:</td>
<td>Web postings of presentations, Possible proceedings</td>
</tr>
<tr>
<td>Sponsor:</td>
<td>United States Coast Guard</td>
</tr>
<tr>
<td>Other Sponsors:</td>
<td>Oak Ridge National Lab – Department of Energy</td>
</tr>
<tr>
<td>Funding:</td>
<td>There is no financial obligation to TRB</td>
</tr>
<tr>
<td>TRB Committees:</td>
<td>Marine Board, Marine Group (AW000), Marine Environment Committee (AW030)</td>
</tr>
<tr>
<td>TRB Role:</td>
<td>Members of TRB’s Marine Board, Marine Group and Marine Environment Committee will contribute to the program planning committee for this event.</td>
</tr>
<tr>
<td>TRB Staff:</td>
<td>Scott Brotemarkle</td>
</tr>
</tbody>
</table>
### 5. Geo-Congress 2019
8th International Conference on Case Histories in Geotechnical Engineering
TRB Co-Sponsored

<table>
<thead>
<tr>
<th>Location:</th>
<th>Philadelphia, PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>March 24-27, 2019</td>
</tr>
<tr>
<td>Description:</td>
<td>Geo-Congress 2019, the Eighth International Conference on Case Histories in Geotechnical Engineering, will follow this series of acclaimed international conferences, bringing together researchers, practitioners, students and policy makers from around the globe to share their geo-accomplishments and carry on the tradition of using case histories to cultivate engineering judgment espoused by Terzaghi, Peck, Prakash, and so many other legendary geoengineers. The conference will feature experiences and observations from hundreds of geotechnical projects, including recent “MegaProjects,” and a wide range of knowledge-enhancing technical and panel sessions, short courses, and workshops. <a href="https://www.geocongress.org/">https://www.geocongress.org/</a></td>
</tr>
<tr>
<td>Expected Attendees:</td>
<td>1200 - Open to all.</td>
</tr>
<tr>
<td>Anticipated Products:</td>
<td>6-8 volumes of Proceedings published by topic by ASCE</td>
</tr>
<tr>
<td>Sponsor:</td>
<td>Geo-Institute of American Society of Civil Engineers (ASCE)</td>
</tr>
<tr>
<td>Other Sponsors:</td>
<td>Schnabel Engineering, AERO Aggregates and several other corporations have already committed to sponsorship.</td>
</tr>
<tr>
<td>Funding:</td>
<td>There is no financial obligation to TRB. The conference will be funded by sponsors, patrons, exhibitors and registration fees.</td>
</tr>
<tr>
<td>TRB Committees:</td>
<td>Committees on Soil and Rock Properties (AFP30) and Foundations of Bridges and Other Structures (AFS30)</td>
</tr>
<tr>
<td>TRB Role:</td>
<td>TRB members of the above committees are 4 of the 5 conference chairs in charge of planning and organizing the technical content of conference. Additional TRB committee chairs and members will help peer-review abstracts, attend, moderate sessions and make presentations in plenary and technical sessions. TRB will promote conference through relevant TRB media (e.g. TRB website, TRB e-newsletter, etc.).</td>
</tr>
<tr>
<td>TRB Staff:</td>
<td>Nancy Whiting, Sr. Program Officer - Soils, Geology and Foundations <a href="mailto:nwhiting@nas.edu">nwhiting@nas.edu</a></td>
</tr>
</tbody>
</table>
6. Joint Meeting of the AASHTO Technical Committee on Roadside Safety Design and TRB Roadside Safety Design Committee (AFB20)

TRB Co-Sponsored

<table>
<thead>
<tr>
<th>Location:</th>
<th>Nevada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>June 2019</td>
</tr>
<tr>
<td>Description:</td>
<td>This meeting is intended to discuss implementation and improvements to the AASHTO Manual for Assessment of Safety Hardware, discuss recent and completed research that may support future editions of the manual, and to discuss roadside safety design research needs.</td>
</tr>
<tr>
<td>Expected Attendees:</td>
<td>100-120 - by invitation. Open to members of AASHTO Technical Committee on Roadside Safety Design TRB Committee on Roadside Safety Design – open to all</td>
</tr>
<tr>
<td>Anticipated Products:</td>
<td>A collection of research needs statements developed to enhance the safety features of roadside hardware.</td>
</tr>
<tr>
<td>Sponsor:</td>
<td>AASHTO</td>
</tr>
<tr>
<td>Other Sponsors:</td>
<td>TRB</td>
</tr>
<tr>
<td>Funding:</td>
<td>The meeting will be funded by the sponsor and registration. There is no financial obligation to TRB.</td>
</tr>
<tr>
<td>TRB Committees:</td>
<td>Roadside Safety Design Committee (AFB20)</td>
</tr>
<tr>
<td>TRB Role:</td>
<td>TRB committee members will help plan the agenda and participate in the meeting. The meeting will be promoted through relevant TRB media (e.g. TRB website, TRB e-newsletter, etc.).</td>
</tr>
<tr>
<td>TRB Staff:</td>
<td>Nelson Gibson</td>
</tr>
</tbody>
</table>
#### TRB Co-Sponsored

<table>
<thead>
<tr>
<th>Location</th>
<th>Honolulu, Hawaii, USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>July 22-25, 2019</td>
</tr>
<tr>
<td>Description</td>
<td>BEI-2019, an official conference of the Bridge Engineering Institute (BEI), is a forum for international researchers and practitioners around the world. State-of-the-art knowledge in bridge engineering and related fields will be discussed with distinguished speakers in plenary and parallel sessions. <a href="http://www.beibridge.org">www.beibridge.org</a></td>
</tr>
<tr>
<td>Expected Attendees</td>
<td>200 – open to all</td>
</tr>
<tr>
<td>Anticipated Products</td>
<td>Accepted manuscripts will be published in the Proceedings of BEI-2019</td>
</tr>
<tr>
<td>Sponsor</td>
<td>American Concrete Institute (ACI)</td>
</tr>
<tr>
<td>Other Sponsors</td>
<td>University of Colorado</td>
</tr>
<tr>
<td>Funding</td>
<td>The conference will be funded by attendance. There is no financial obligation to TRB.</td>
</tr>
<tr>
<td>TRB Committees</td>
<td>Standing Committee on Structural Fiber Reinforced Polymers</td>
</tr>
<tr>
<td>TRB Role</td>
<td>Members of the AFF80 committee active in the field will participate in the conference planning and the conference event, to advance research and knowledge on past, current and future deployment of FRP in bridges which are consistent with the goals of the AFF80 Committee.</td>
</tr>
<tr>
<td>TRB Staff</td>
<td>Stephen Maher, Associate Director – Design, Technical Activities Division</td>
</tr>
</tbody>
</table>
**8. 3rd International Conference on Information Technology in Geo-Engineering**

*(3rd ICITG 2019)*

**TRB Co-Sponsorship**

<table>
<thead>
<tr>
<th>Location:</th>
<th>Guimarães, Portugal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>September 29 - October 2, 2019</td>
</tr>
<tr>
<td>Description:</td>
<td>The 3rd International Conference on Information Technology in Geo-Engineering (3rd ICITG) aims to address the most updated developments in information communication and technologies in geo-engineering. It covers the application to laboratory and field tests, as well as the monitoring and survey of geo-structures. It also embraces intelligent geomaterials, intelligent construction and all the related aspects with design, construction and maintenance of geo-structures. <a href="http://www.3rd-icitg2019.civil.uminho.pt/">http://www.3rd-icitg2019.civil.uminho.pt/</a></td>
</tr>
<tr>
<td>Expected Attendees:</td>
<td>300-400, open to all.</td>
</tr>
<tr>
<td>Anticipated Products:</td>
<td>Workshops (1st day) + published proceedings by Springer Series in Geomechanics and Geoengineering submitted for indexing by Scopus and Web of Science. In addition, authors can also submit full-length papers for special issues of the following journals: Underground Space (<a href="https://www.journals.elsevier.com/underground-space">https://www.journals.elsevier.com/underground-space</a>), Journal of Smart Infrastructure and construction (<a href="https://www.icevirtuallibrary.com/page/jsmic/promo">https://www.icevirtuallibrary.com/page/jsmic/promo</a>)</td>
</tr>
<tr>
<td>Other Sponsors:</td>
<td>Under request, expecting several research institutes, universities, geo-engineering companies and administrations.</td>
</tr>
<tr>
<td>Funding:</td>
<td>The conference will be funded by the sponsors, conference registration fees, and technical exhibitors. There is no financial obligation to TRB.</td>
</tr>
<tr>
<td>TRB Committees:</td>
<td>Soil and Rock Properties (AFP30), Seasonal Climatic Effects on Transportation Infrastructure (AFP50), Engineering Behavior of Unsaturated Geomaterials (AFP60), Transportation Earthworks (AFS10), Geotechnical Instrumentation and Modeling (AFS20), Geospatial Data Acquisition Technologies in Design and Construction (AFB80), and possibly others.</td>
</tr>
<tr>
<td>TRB Role:</td>
<td>TRB committee members will help develop technical content for the conference. They will peer-review abstracts, papers, moderate sessions, and make presentations in plenary and technical sessions and workshops. The conference will be promoted through relevant TRB media (e.g. TRB website, TRB e-newsletter, etc.) and conference information shared with relevant committees.</td>
</tr>
<tr>
<td>TRB Staff:</td>
<td>Nancy Whiting, SPO Soils, Geology and Foundations, <a href="mailto:nwhiting@nas.edu">nwhiting@nas.edu</a></td>
</tr>
</tbody>
</table>
TRB Conferences, Webinars, and Recordings
January 12, 2018 – June 12, 2018

Conferences
(*indicates event cosponsored by TRB)

AASHTO Technical Committee on Geometric Design and TRB Committees on Geometric Design and Operational Effects of Geometric Design Joint Summer Meeting*
June 10-12, 2018
Franklin, Tennessee

I-TED 2018: International Transportation and Economic Development Conference
June 6-8, 2018
Washington, D.C.

3rd International Conference on Transportation Infrastructure and Materials* (ICTIM2018)
June 1-4, 2018
Tianjin, China

4th GeoShanghai International Conference (GeoShanghai 2018)*
May 27-30, 2018
Shanghai, China

ITF Summit: Transport and Security Research Day 2018*
May 22, 2018
Leipzig, Germany

Tenth National Aviation System Planning Symposium*
May 20-22, 2018
Anchorage, Alaska

Road Safety on Five Continents (RS5C)*
May 16-18, 2018
Jeju Island, South Korea

Transport Research Arena 2018*
April 16, 2018
Vienna, Austria

International Conference on Advances in Materials and Pavement Performance Prediction (AM3P)*
April 16, 2018
Doha, Qatar
Fourth Annual Contra Costa Redefining Mobility Summit
March 29, 2018
San Ramon, California

2018 Ferry Safety and Technology Conference*
March 21, 2018
New York, New York

ACRP Insight Event: Airport Roles in Reducing Transmission of Communicable Diseases
March 6, 2018
Washington, D.C.

2018 Planning for Shifting Trade Workshop*
January 30, 2018
Tampa, FL

Webinars

TRB Webinar: Legally Defensible Disadvantaged Business Enterprise Disparity Studies
June 13, 2018

TRB Webinar: Classifying Fracture Critical Members
June 7, 2018

TRB Webinar: Tools for a Sustainable Transit Agency
June 5, 2018

TRB Webinar: Resiliency in Practice: Strategies for Knowledge, Information, and Data
May 30, 2018

TRB Webinar: Internal Curing of Concrete Pavements: State-of-the-Practice
May 24, 2018

TRB Webinar: Organizational Change for Performance and Asset Management
May 22, 2018

TRB Webinar: Case Studies: The Diversity of Roundabouts
May 21, 2018
Online
TRB Webinar: Preventative Maintenance at General Aviation Airports
May 17, 2018

TRB Webinar: Who’s Riding TNCs and What Does It Mean for Public Agencies?
May 15, 2018

May 10, 2018

NTI Webinar: NCHRP Project 20-65 Task 69: Consolidation of Rural Transit Systems*
May 3, 2018
Online

TRB Webinar: Air Cargo Facility Planning and Activities
May 3, 2018

8th Symposium on Pavement Surface Characteristics: SURF 2018*
May 2, 2018
South Brisbane, Australia

TRB Webinar: Development and Management of Sustainable Information Portals
May 2, 2018

TRB Webinar: Design for Stream Restoration and Channel Stability at Stream Crossings
April 30, 2018

TRB Webinar: Generating Revenue from Commercial Development On or Adjacent to Airports
April 26, 2018

TRB Webinar: Technology Changes Influencing the Decline of Vehicle Emissions
April 25, 2018
Online

TRB Webinar: Design Guidelines for Bridges Subjected to Light Rail Transit Loads
April 24, 2018

TRB Webinar: Bases/Subbases for Concrete Pavements: State-of-the-Practice
April 17, 2018
TRB Webinar: Public-Private Partnerships and the Mobility on Demand Sandbox Program
April 16, 2018
Online

TRB Webinar: Modern Traffic Signal Preemption at Highway-Rail Grade Crossings
April 11, 2018

TRB Webinar: Road Safety and Vulnerable Road Users in Low- and Middle-Income Countries
April 9, 2018

TRB Webinar: Addressing Significant Weather Impacts on Airports
April 5, 2018

TRB Webinar: Quality Assurance and Quality Control for Pavement Preservation
April 3, 2018

TRB Webinar: The Future of Airport Surface Management Tools and Benefits to Operational Efficiency
April 2, 2018

TRB Webinar: Pavement Marking Maintenance: Practices and Proposed Standards
March 29, 2018

TRB Webinar: Specifying and Measuring Asphalt Density to Ensure Pavement Performance
March 27, 2018
Online

TRB Webinar: Pavement Maintenance Programming Using 3D Laser Technology
March 26, 2018
Online

TRB Webinar: Cold Recycled & Reclaimed Asphalt Concrete Properties for Pavement Design
March 22, 2018
Online

TRB Webinar: Interpreting the Results of Airport Water Monitoring
March 21, 2018

TRB Webinar: Intersection Control Evaluation for Roundabouts and Alternative Intersections
March 20, 2018
TRB Webinar: Permeable Concrete Pavements: State-of-the-Practice  
March 15, 2018

TRB Webinar: Modeling the Relationship Between Vehicle Speed and Fuel Consumption  
March 14, 2018  
Online

TRB Webinar: Improving the Resilience of Transit Systems Threatened by Natural Disasters  
March 12, 2018

TRB Webinar: Assessing Community Annoyance with Helicopter Noise  
March 8, 2018

TRB Webinar: Spatial Modeling for Highway Performance Monitoring System Data: Part 2  
March 6, 2018

TRB Webinar: Considerations for Pavement Applications and Maintenance at Airports  
February 28, 2018

TRB Webinar: Spatial Modeling for Highway Performance Monitoring System Data: Part 1  
February 27, 2018

TRB Webinar: Data Management and Governance Practices at Transportation Agencies  
February 26, 2018

TRB Webinar: TRID Searching  
February 22, 2018  
Online

TRB Webinar: Leveraging Transportation Mode Expertise for Community Resiliency  
February 15, 2018

TRB Webinar: Roller-Compacted Concrete Pavements State-of-the-Practice  
February 14, 2018

TRB Webinar: Runway Protection Zone Risk Assessment Tool  
February 7, 2018
TRB Webinar: A New Functional Classification System to Aid Contextual Design
February 5, 2018
Online

TRB Webinar: Transportation Network Companies: Challenges and Opportunities for Airport Operators
January 31, 2018

TRB Webinar: Standardizing Truck GPS Data to Evaluate Truck Freight Bottlenecks
January 29, 2018
Online

TRB Webinar: Vizguide: Data Visualization for Transportation Agencies
January 23, 2018

TRB Webinar: Uses of Social Media During an Airport Emergency
January 18, 2018

TRB Straight to Recording

TRB Straight to Recording for All: Funding Industrial Aviation
1/29/2018
Marketing and Communications Plan Update: June 2018
Lisa Berardi Marflak
Director – Communications/Media

In 2016, TRB rolled out its Strategic Marketing and Communications Plan. The plan contained 10 recommendations and their status outlined below:

1. Develop communications tracks
   \textit{Status: Completed}
   \textit{Activities include:}
   \begin{itemize}
   \item All Consensus Studies receive a communications strategy prior to report release to evaluate target audience and determine whether a broad or targeted dissemination strategy be used to spread the word of reports.
   \item The Cooperative Research Programs (CRP) are asking contractors to develop implementation plans for their research. TRB’s Communications Director is working with the Director of the Cooperative Research Program to determine which reports need press releases prior to being issued.
   \item TRB staff from CRP, Consensus Studies, and Technical Activities have developed an informal “speakers bureau” whereby TRB staff plan to attend as many as 38 meetings and conferences in 2018 to spread the word about TRB’s transformational technology portfolio.
   \item The National Academies Press has recently released Impact Reports that provide quantitative and qualitative information regarding downloads and usage for reports. Impact reports are developed for the Consensus Study Directors, and can be self-generated by all TRB staff.
   \end{itemize}

2. Seek TRB staff feedback and prepare employees for communications activities + update introductory materials
   \textit{Status: Completed}
   \textit{Activities include:}
   \begin{itemize}
   \item PowerPoint slides, talking points, logos, and tutorials are posted in TRB’s intranet site
   \item Staff received training during staff meetings in 2016 and 2017 on branding and finding resources on AcademyNet
   \end{itemize}

3. Transform the website:
   \textit{Status: Completed and ongoing}
   \textit{Activities include:}
   \begin{itemize}
   \item Refreshed the \url{www.TRB.org} homepage
   \item Refreshed Cooperative Research Program homepages (in progress)
   \item Work with The National Academies of Sciences, Engineering, and Medicine on a unified web concept (in progress)
   \end{itemize}
4. Update the e-newsletter: Gather usage information
   **Status: Completed**
   **Activities include:**
   - Surveyed newsletter subscribers in September 2016:
     - 87% satisfied or very satisfied
     - Increase from 82% in 2003
     - TRB conducts regular campaigns to increase subscriber awareness of customizing the newsletter.
   - TRB has increased the number of banner and sidebar advertising and highlights the accomplishments of volunteers to help provide engaging content.

5. Create web content once, publish everywhere (Deploy an integration tool)
   **Status: Completed**
   **Activities include:**
   - Developed a process with The National Academies Press to collect analytics and measure the impact of reports through an online tool. This tool also measures media mentions and social media engagement for each report.

6. Explore partnering with other transportation organizations
   **Status: Completed and Ongoing**
   **Activities include:**
   - Memorandums of Understanding have been developed with the following organizations:
     1. Women's Transportation Seminar (WTS)
     2. Conference of Minority Transportation Professionals (COMTO)
     3. International Road Federation – Geneva (IRF)
     4. World Road Association (PIARC)
       - TRB hosted a live webinar on "Road Safety and Vulnerable Road Users in Low- and Middle-Income Countries" on April 9, 2018.
       - The webinar highlighted perspectives from around the world about vulnerable road users, human factors, and road safety.
       - Presenters from Sweden and Italy discussed case studies that have addressed world road safety, and a presenter from the World Road Association (PIARC) explained how to develop and disseminate knowledge about road safety for countries at all levels of development.
       - More 500 people from over 40 countries participated in the first joint international webinar. [View the recorded webinar here](#)
5. China Highway and Transportation Society

- Other partnerships:
  1. American Traffic Safety Services Association (ATSSA)
  2. ITS America
  3. Transport Research Arena (TRA – Europe)
  4. International Transport Forum

7. Update return-on-investment materials  
   **Status: Completed**  
   **Activities include:**
   - Using Aptify data, employees of sponsors can now quantify committee participation, Annual Meeting registration, webinar registration, and professional development information.
   - Providing detailed information on the number of employees of sponsors subscribed to receive TRB’s products, including newsletters, journals, and magazine.

8. Review the TRNews  
   **Status: Completed and ongoing**  
   **Activities include:**
   - Administering a survey that demonstrated satisfaction with the TR News.
   - Assessed and updated its subscriber list to ensure that TRB sponsors are receiving the magazine.
   - *TR News* will be undergoing a redesign of its layout.

9. Explore state site visit practices  
   **Status: Completed**  
   - Technical Activities Staff evaluate site visits on a yearly basis and tailor the site visit to the need of the sponsor. Site visits are routinely summarized in a yearly article in the *TR News*.

10. Explore a TRB ambassador program  
    **Status: To be explored in 2018**  
    - Cost and level of effort will need to be explored, as well as how other programs, like TRB’s Airport Cooperative Research Program and Transit Cooperative Research Program, measure success of these initiatives.
Subcommittee on Planning and Policy Review (SPPR)
Meeting Summary
Keck Center, Washington, DC
April 3, 2017

Attendance
Members present
Katherine Turnbull (chaired meeting), Daniel Sperling (via phone), Roger Huff, Susan Hanson, Ed Comstock (substituting for Mary Brooks), Gary Thomas, Chris Hendrickson, Joe Schofer (substituting for Hyun-A Park), and Sandy Larson (via phone).

Staff present
Neil Pedersen, Mark Norman, Ann Brach, Patrice Davenport, Russell Houston, Lisa Marflak, Gary Walker, Tom Menzies, Chris Hedges, Karen Febey, Michael Covington

Chairman’s Opening Remarks
Turnbull welcomed the committee. During introductions, Menzies noted that the Studies and Special Program Division has been renamed Consensus and Advisory Studies Division. Turnbull sought motions to approve the minutes from the Fall SPPR meeting and the consensus agenda. Both were approved.

Executive Director’s Update
Pedersen reported that discussions are underway with USDOT and the modal agencies to continue their support for TRB’s core program. Multi-year agreements are being negotiated. The Federal Motor Carriers Safety Administration (FMCSA) is no longer a sponsor but OSTR has increased its funding (with support from the Volpe Center) and the US Department of Energy has become a sponsor. During discussions, DOT staff have indicated that “workforce” and “rural transportation” are particularly important issues for the administration. We expect a lot of turnover in states with so many governorships up for election. We are anticipating having to explain the benefits of TRB to many state DOTs under new leadership after the elections.

TRB continues to look for opportunities for additional sponsors and is pursuing the Global Affiliates program to grow private-sector support. There has been significant growth in the annual meeting patron program. The number of exhibits and sponsored receptions at the annual meeting have also increased. The career fair and job board were successful ventures. Although not large sources of revenue, these activities are desirable to attract younger professionals. Asked how the TRB Centennial is factored into the budget, Pedersen noted that the celebration has its own budget, which will be discussed later.

Pedersen reported that TRB is beginning the process of developing a new strategic plan, which it will need to coordinate with the NRC operational and strategic plan. This effort
will be discussed later. He also pointed to the success of TRB involving NAS, NAE, and NAM members, which is a particularly important goal for the institution. In addition, TRB has a good track record of collaborating with other NRC divisions, especially in doing consensus studies.

TRB has been engaging more with international organizations, resulting in a number of MOUs. We have also increased our involvement with APTA and reengaged with ITS America. Diversity remains an important goal, and our inclusion and diversity implementation plan will be discussed later in the meeting. We are also working to market the annual meeting at specialty conferences. We continue to seek to measure the impact of our activities and products. It is notable that NCHRP has hired an implementation manager, whose role will entail doing more systematic analysis of programs impacts.

When asked about efforts to increase private sector support, Pedersen noted that TRB is seeking to increase support from all segments, including local and state government, private companies, universities, and MPOs. We recognize there is a limited number of federal agency sponsors, so we need to broaden our efforts.

When asked by Comstock how the Marine Board can become more involved in TRB’s efforts to increase funding, Pedersen suggested that Davenport should meet with the Marine Board to discuss the Global Affiliates program when the group next meets in Washington (November timeframe).

When asked by Henderson how TRB tracks downloads from internet, Pedersen noted that NAP is tracking downloads. We are starting to obtain enough data from NAP to do more productive analysis.

**Technical Activities Update**

Brach reported that the 2018 Annual Meeting attendance increased by 3% from 2017 to 13,781. About 25% of attendees are new to the meeting, which is typical for most years. There is roughly an even split among public, private, and academic participants. About 30 percent of attendees are students or young professionals. Nevertheless, gender and race data have proven difficult to obtain because of non-responsiveness. Foreign participants account for 17% of attendees, which is typical for most years. We continue to try to improve our survey questions in attempt to improve accuracy.

The New Attendee Welcoming Session and Career Fair were successful, as were the Resilience Caucus and the “War Game” event. We have had a lot of positive feedback about the poster session layout (with an aisle down middle). Attendees commented on how the layout facilitated communication. We also heard many positive comments about the strong quality of the Annual Meeting’s content, including the exhibits.
Next year we will have larger halls for the poster session and we intend to organize themed sections of the exhibit halls, or (“pavilions”). We intend to provide theaters for exhibitors to make presentations.

The *Transportation Research Record* is being published by Sage and the benefits are already being observed. For instance, papers are being posted as soon as edited, authors now have the opportunity to approve the proofs, and we have increased our ability to verify author identity and check for plagiarism. We are in the process of acquiring new peer review software.

Schofer reported that TAC has been engaging in a strategic alignment initiative that has led to conversations with group and section chairs to generate a list of issues similar to the critical issues list. Some cut across a number of number groups, such as environment and automated vehicles. TAC leadership realizes that it needs to think strategically about how our volunteer structure is organized, particularly as we respond to requests for new committees, subcommittees, and task forces. He showed a slide summarizing the issues list, and gave the example of planning and forecasting as being particularly challenging in an environment where there are major transformations such as TNCs. When asked by Hendrickson how TRB attracts computer scientists, Schofer observed that these experts have their own specialty conferences and often do not connect with the transportation community even on topics of mutual interest such as automation.

### Inclusion and Diversity Plan

Pedersen noted that the Executive Committee had previously adopted the TRB Inclusion and Diversity Strategic plan and created a special committee to provide oversight of implementation. Carol Lewis is chairing the committee, which has several SPPR members. TRB’s division leaders were given lead responsibility for implementation. Febey and Mariela Garcia-Colberg are the two co-leaders in support of implementation. Febey reported that staff have developed 7 strategies with action items and possible metrics for monitoring performance. The first meeting of the special committee is pending but will the committee will have an update at the June Executive Committee meeting. Febey noted that there is a low response rate to questions about race, gender, and ethnicity questions in MyTRB. We are looking for ways to increase the response rate above the current level of 25%.

Brach reported that TAC is paying close attention to the diversity of 750 positions that rotate each year. Last year there was a 2 percent increase in underrepresented minorities. We are in the process of developing a list of conferences that TRB staff should be attending, especially conferences with large minority participation. Turnbull commented that she believes the TAC group chairs are taking seriously their responsibility to increase diversity and that progress is being made. She believe that augmenting such observations with trend data should help. Pedersen noted that we have had some data quality issues that we are working on to better present the diversity of our panels.
Global Affiliates Program
Davenport reported that the Global Affiliates program is 6 months old. Staff have been talking with affiliates to obtain their ideas on how to make the program successful. We have learned that many affiliates want better access to, and understanding of, their benefits. In response, we have put together a benefits access guide for each level of the Global Affiliates program. The “welcome” package contains links and contact information. We have had positive feedback on this package. We continue to attend conferences in effort to spread the word about the program. Our goal is 10% growth for 2018, which would generate about $75k in new revenue.

Asked by Comstock what the Marine Board can do to assist, Davenport promised to attend the board’s next Washington meeting to discuss the program. Pedersen also pointed to TRB’s goal to continue to increase involvement of the maritime community in TRB.

Forum/Roundtable Update and Future
Norman reported that Washington State DOT and ZipCar joined as forum sponsors. The first forum event was well received by private sector participants, many of them new to TRB. The discussion centered on 5 focus areas for strategic R&D needs. We purposely let the participants drive much of the discussion in an effort to give them a sense of ownership and an opportunity to share their perspectives.

NCHRP has hired a contractor to develop a research roadmap for automation. The forum is providing funds to the same contractor to develop a more strategic roadmap, considering longer longer-range impacts of automation on topics land use, demographics, and economic development. The forum has commission a white paper to flesh out the case for a roadmap. The white paper will be presented during the July meeting in San Francisco. We are also developing a website for the forum and considering the commissioning of more white papers.

Norman reported that with current commitments (which include direct labor for staffing and paying meeting costs and the travel of public sector participants and chairs of relevant TRB committees), we anticipate having enough money left over for commissioning white papers, but not a lot of cushion.

Hanson asked whether we should continue with the forum. Sperling suggested that the emphasis should be on providing participants with access to TRB volunteers beyond the chairs of standing committees. For instance, we could solicit a few key people to run break-out sessions—allowing participants an opportunity to learn and network.

Future of Roundtable/Forum
Norman noted that at the last SPPR meeting he was asked to discuss the value propositions and challenges of the forum and to consider criteria for future forums in
light of experience to date. Asked by Huff about the feedback received from participants, he reported that sponsors indicated they were finding value in the forum, but he emphasized that the value proposition will need to be continually enhanced for sponsors.

Norman noted that a goal of the forum is to attract new stakeholders—such as technology companies—allowing them to become more familiar with TRB. The forums can also provide additional opportunities to retain existing stakeholders by giving them more options for participating in TRB. There are challenges, however. It takes a long time to develop the roundtables—a lot of groundwork and a lot of work to get financial commitments from new stakeholders. To get this commitment from a broad enough set of participants, we have had to provide some “sweetheart” deals.

We would like the forums to be attract new participants to TRB and to be financially self-supporting with a potential to add net revenue. Also, TRB does not want to compete with its existing TRB programs. We recognize that the added revenue may not be net revenue. There is also a burden on TRB staff because of the variety of candidate topic areas. The bandwidth in staff time and expertise is limited.

As for criteria for selecting a forum topic, Norman believes it must have staying power and consist of issues that can be addressed with research.

Hanson observed that the forums are not a great source of revenue and appear to require a lot of staff work. Because staff slack time seems low, she believes this could be an issue. She believes a forum might be appropriate for a fast-moving topic where there is rapid change and it is impractical to wait for the results of a typical CRP or consensus report. Comstock agreed, noting that the forums are not a great source of revenue, but perhaps a great source of relevance. Thomas also commented that the forums could be important for engaging people who are not normally engaged in TRB. Sperling believes the forums are important for keeping TRB relevant and vibrant. He worries that if we are not hiring staff, then we may not be considering it to be an investment. He stressed the importance of making sure the early topics are done well, which may require dedicated staff.

Pedersen agreed that TRB needs to put a lot of effort into the existing forum to make it as relevant and valuable as possible to the participants. He noted, however, that the forum could not have been launched without the NCHRP support. Future forums will have to have a viable financial model. He pointed out that HMD has succeeded with forums because of deep pockets in the pharmaceutical industry where there is great difficulty in gaining access to regulators. TRB needs to be realistic from a financial standpoint, and not view this as a moneymaker but rather as a way to diversify our stakeholders and stay relevant.

**marine board report**

Comstock reported that the Marine Board will meet in Savannah in May. The group will be touring multimodal facilities and a Kia distribution center. He noted that autonomous ships are an interest of the MB. Technology and economic factors are driving the maritime industry to autonomous systems—for profits, environmental protection, and
mission effectiveness. There are questions about the education and training pipelines and how these systems will interact with legacy systems and human operators. The systems need to be at least as safe as conventional systems. It seems that technology is moving faster than safety and regulatory standards. There is a need to define requirements for testing in complex environments, including confined areas or at sea, and for the transition period of manned to unmanned ships. The MB is especially interested in areas such as reliability, risk management, design standards, human factors, mixed mode operations, traffic management implications, and interactions with aerial and subsea systems. Consideration of conventions and regulations. Hendrickson noted that the NRC’s Aeronautics and Space Engineering Board is doing a study on integrating drones into airspace system. The report should be released by summer.

Candidates Topics for 2019 Annual Meeting Policy Session

Houston reported that electric vehicles will be the topic for the summer EC meeting with 3 speakers preceded by Dan Sperling giving an overview of of the topic. Speakers will discuss electric power grid implications and electrification in relation to automation.

Candidate topics for the January 2019 meeting are the administration’s infrastructure funding plan, rural issues, and workforce issues. Turnbull commented that workforce issues should include retraining workers losing jobs to automation. Rural issues should also involve access to national parks. Pedersen emphasized that because workforce is a broad topic, there would be a need to narrow it to a particular concern such as displacement of workers and training them for new technologies. With regard to infrastructure funding, he believes we will not know enough information by June to make any decision on this topic. Hendrickson agreed and suggested that rural health and wellbeing could be tied to transportation, along with the safety of rural roads. Thomas agreed that we should not pursue infrastructure funding and that rural issues is a sensible topic. He noted that rural transit systems are contracting with TNCs because of limited funding. Hanson would like to hear how different rural areas around the country deal differently with their challenges.

Houston was charged with proposing rural issues to the Executive Committee as the topic for the January policy session.

Centennial and NASEM Fundraising Plans

Larson gave the highlights of a memo outlining the Centennial fundraising plan. She estimated that the plan would bring in $500k, which is $150k less than needed for the celebration. If the full funds do not materialize, there is prioritized set of products.

The National Academies’ Capital Campaign

Staff from the NASEM development office explained the ongoing fundraising effort by the institution. Hanson asked if the TRB Centennial would be counted as part of the NASEM total. The totals would be included, but TRB would have complete control over
the Centennial funds. Hendrickson asked if the NASEM funds are being raised for operating, endowment, or capital. The development staff reported that the funds would go mainly to projects that need funding, but contributors can also restrict the funds to other uses such as endowment.

**Update on NAPA Review and Next Steps**

NRC Deputy Executive Officer Jim Hinchman expressed his appreciation for the contribution of SPPR members and gave a brief overview of NAPA report and how it has led to the NRC Transformation initiative. NAS President Marcia McNutt worries that our products are slow, expensive, and out of touch with modern communications techniques. The NAPA report concluded that the organization is out of date in many respects and suggested a number of ways to improve our operations, administration, and study process. In response the NRC has initiated the transformation initiative led by 4 task forces with supporting working groups. A large number of staff are involved in the effort with the goal of having detailed plans in the next few months. The intention is to end up looking more like a modern consulting organization that frees program staff to do program work and leads to more flexibility and creativity in how we do our work and serve our sponsors.

Asked by Huff what constitutes “the gold standard” of the study process, Hinchman said our aim is to make the study process faster and to find new and creative ways to provide advice. He noted that every study director does the process a little differently. He reported how teams are looking at faster ways to get contacts in place and recruit members. We face special challenges because of our reliance on volunteers. He assured SPPR that we will not change our core values—independence, objectivity, and evidence-based conclusions and recommendations.

**TRB Strategic Plan Update**

Pedersen asked SPPR a series of questions on how TRB should go about updating its strategic plan. How should we engage with the critical issues list? How can we most effectively meet sponsor needs, provide alternative services and products, generate new revenues, and take advantage of marketing and communications opportunities? What should be the target timeframe for the plan’s adoption? How can we use the plan as part of our centennial effort? Who will do work of planning, volunteers or staff? How will we communicate the new plan? How will we measure performance?

Hanson asked that more thought be given to the audience. She noted that during development of the last plan in 2014, the audience was assumed to be TRB staff, and thus it was oriented around internal processes. She emphasized that a strategic plan is a living document that it needs to be built on and not thrown out. We see should see if there are specific things that need updating. She believes the plan should remain oriented inward to staff. She does not believe the critical issues list is suited to this effort, because it is outward-looking, serving a different purpose and different audience.
Hendrickson agreed and pointed out that the discussion of the forums should inform the strategic planning process. The Centennial plan and fundraising effort should also be informative, and perhaps provide a base for future fundraising capacity. Pedersen noted that as time has passed, he is guided increasingly by his performance goals, suggesting that the strategic plan must evolve. He promised to draft a memo for the Executive Committee that reflects SPPR’s advice on the process for updating the plan.

**Communications of Critical Issues**

Marflak reported various ways TRB can release and communicate the critical issues document at the Annual Meeting. These include talking points for committee chairs to include in chair packets and PowerPoint presentations that the EC chair and other Executive Committee members can use as part of a release event. We should target DOT employees and other transportation officials to ensure they are aware of the release. We will have a social media push, use tracking metrics, and schedule a series of webinars. Pedersen stated that we would want to see if there are some topics that TAC would want to take on, allowing the groups to organize some of these webinars.

**CRP Update**

Hedges noted that his unit has recently initiated the Behavioral Traffic Safety CRP. The program originated in MAP-21 and was continued in the FAST ACT. It had been jointly managed by GHSA and NHTSA. GHSA wasn’t satisfied with the pace of performance so it turned to CRP. Funding from NHTSA is $2.5 million per year. The program has inherited 4 projects from the previous cycle and is currently soliciting project ideas for FY 2019. He noted that the American Association of Motor Vehicle Administrators is interested in a synthesis program to track issues associated with state vehicle and driver licensing. He noted that CRP has hired a consultant to undertake a business process review. The review is partly complete. The next step is to look for opportunities to implement changes. The review is timed well with the NAPA review and the transformation process.

**Consensus Studies Update**

Menzies reported that all FAST Act studies are on schedule. The Future of the Interstates Committee is winding down its meetings. He asked SPPR to review a draft prospectus for a new self-initiated study on the role of public transit systems in providing Mobility as a Service. The general topic had been approved previously by the Executive Committee. Hendrickson suggested that the study pay close attention to international experience. SPPR approved the prospectus.
TRANSPORTATION RESEARCH BOARD
2018 EXECUTIVE COMMITTEE

OFFICERS

CHAIR:  Dr. Katherine F. Turnbull, Executive Associate Director, Texas A&M Transportation Institute, 3136 TAMU, College Station, TX 77843-3135, (979) 845-6005, k-turnbull@tamu.edu

VICE CHAIR: Ms. Vicki Arroyo, Executive Director, Georgetown Climate Center, Asst. Dean, Centers & Institutes, Professor from Practice, and Environmental Law Program Director, Georgetown Law, 600 New Jersey Ave, NW, Suite 357 E.B.W. Library, Washington, D.C. 20006, (202) 661-6556, arroyo@law.georgetown.edu

EXECUTIVE DIRECTOR: Mr. Neil J. Pedersen, Transportation Research Board, National Research Council, 500 Fifth Street, N.W., Washington, D.C. 20001, (202)334-2936, fax (202)334-2920, npedersen@nas.edu

MEMBERS

Mr. Scott E. Bennett, Director, Arkansas Department of Transportation
2019 P.O. Box 2261, Little Rock, AR 72203-2261, (501) 569-2211; email: scott.bennett@ahtd.ar.gov

Mr. Carlos M. Braceras, Executive Director, Utah Department of Transportation
2021 4501 South 2700 West, Box 141265, Salt Lake City, UT 84114-1265, (801)965-4027, email: cbraceras@utah.gov

Ms. Ginger Evans, Commissioner, City of Chicago Department of Aviation
2021 10510 West Zemke Boulevard, Chicago, IL 60666 (773)686-8060, email: ginger.evans@cityofchicago.org

Mr. Nathaniel P. Ford, Chief Executive Officer, Jacksonville Transportation Authority
2020 121 W. Forsyth Street, Suite 200, Jacksonville, FL 32202, (904) 632-5500, email: nford@jtafla.com

Dr. A. Stewart Fotheringham, Professor, NAS 2020 School of Geographical Sciences and Urban Planning, Coor Hall, Fifth Floor, Arizona State University, Tempe, AZ 85287-5302, (480)965-7533, email: stewart.fotheringham@asu.edu; sfotheri@asu.edu
(Members continued)

Dr. Susan Hanson, Distinguished University Professor Emerita, School of Geography, NAS 2019  Clark University, Worcester, MA  
Mailing Address: 645 Natural Turnpike, Box 5, Ripton, VT 05766, (802) 388-9977, email: shanson@clarku.edu

Mr. Steve Heminger, Executive Director, Metropolitan Transportation Commission, 2019  375 Beale Street, San Francisco, CA 94105, (4150) 778-5210, email: SHeminger@mtc.ca.gov

Dr. Chris T. Hendrickson, Duquesne Light Professor of Engineering, NAE 2021  Dept. of Civil and Environmental Engineering, Carnegie Mellon University, 5000 Forbes Avenue, Porter Hall 119, Pittsburgh, PA 15213-3890, (412) 268-1066, fax (412) 268-7813, email: cth@cmu.edu

Mr. Jeffrey D. Holt, Managing Director, Power, Energy and Infrastructure Group, 2019  BMO Capital Markets Corp., 3 Times Square, 28th Floor, New York, NY 10036 (212) 605-1606; email: jeff.holt@bmo.com

Dr. S. Jack Hu, Vice President for Research and J. Reid and Polly Anderson 2019  Professor of Manufacturing, University of Michigan, 4080 Fleming Administration Building, 503 Thompson Street, Ann Arbor, MI 48109-1340, (734)936-2680, jackhu@umich.edu

Mr. Roger B. Huff, President, HGLC, LLC, 29828 Harrow Drive  
2021  Farmington Hills, MI 48331, (313)550-3322; email: rhuff10208@aol.com

Dr. Geraldine Knatz, Professor of Practice of Policy and Engineering  
NAE 2021  USC Sol Price School of Public Policy, USC Viterbi School of Engineering 3620 South Vermont Avenue, KAP 268A, Los Angeles, CA 90089-2531, (562)-343-0226, gknatz@charter.net, knatz@usc.edu

Ms. Melinda McGrath, Executive Director, Mississippi Department of Transportation, 2019  P.O. Box 1850, Jackson, MS 39215-1850, (601) 359-7004, mmcgrath@mdot.ms.gov

Mr. Patrick K. McKenna, Director, Missouri Department of Transportation, 2020  P.O. Box 270, Jefferson City, MO 65102-0270, (888) 275-6636, patrick.mckenna@modot.mo.gov
Members continued)

Mr. Brian W. Ness, Director, Idaho Transportation Department,
2021 P.O. Box 7129, Boise, ID  83707-1129, (208)334-8807
direct mail: brian.ness@itd.idaho.gov

Mr. James P. Redeker, Commissioner, Connecticut Department of Transportation
2021 2800 Berlin Turnpike, Newington, CT 06131-7546
(860) 594- 2802, email: james.redeker@ct.gov

Ms. Leslie S. Richards, Secretary, Pennsylvania Department of Transportation
2021 400 North Street, Harrisburg, PA  17120
(717) 7875574, email: lesrichar@pa.gov

Dr. Mark L. Rosenberg, Executive Director, The Task Force for Global Health, Inc.,
NAM 2019 325 Swanton Way, Decatur, GA 30030-3001, (404)687-5635,
fax (404)371-1087-5635, email: mrosenberg@taskforce.org

Dr. Daniel Sperling, Professor of Civil Engineering and Environmental Science
and Policy; Director, Institute of Transportation Studies,
University of California, Davis, One Shields Avenue,
Davis, CA 95616, (530)752-7434, fax (530)752-6572,
d sperling@ucdavis.edu

Mr. Gary C. Thomas, President/Executive Director, Dallas Area Rapid Transit,
2019 1401 Pacific Avenue, Dallas, TX  75266, (214) 749-2544,
direct mail: gthomas@dart.org

Mr. Pat Thomas, (Retired) Senior Vice President, UPS State Government Affairs,
2019 12314 Blair Ridge Road, Fairfax, VA 22033,
(307)267-4078, plthomas4@verizon.net

Dr. James M. Tien, Distinguished Professor and Dean Emeritus,
College of Engineering, University of Miami,
1251 Memorial Drive, Coral Gables, FL 33146-2509
(305) 284-7888, jmtien@miami.edu

Mr. Dean H. Wise, Dean Wise, LLC, 6 Stratford Road,
2019 Winchester, MA  01890, (781) 570-9159, Dean@DeanWiseLLC.com

Mr. Charles A. Zelle, Commissioner, Minnesota Department of Transportation,
2020 395 John Ireland Boulevard, St. Paul, MN  55155-1899,
MS 100, Transportation Building, (651)366-4800
charlie.zelle@state.mn.us
EX OFFICIO MEMBERS

Mr. Ronald L. Batory, Administrator, Federal Railroad Administration,  
U.S. Department of Transportation, 1200 New Jersey Avenue, SE,  
Washington, D.C., 20590, (202)493-6014, fax (202)493-6009, ronald.batory@dot.gov

Mr. Michael R. Berube, Director, Office of Vehicle Technologies,  
U.S. Department of Energy, Sustainable Transportation  
1000 Independence Avenue, N.W., Washington, D.C. 20585,  
(202)586-8061, (fax) (202)586-9260, email: Michael.Berube@ee.doe.gov

Dr. Mary R. Brooks, Adjunct Professor, Rowe School of Business, Dalhousie University, PO Box 15000, Halifax, Nova Scotia BH3 4R2 Canada  
(902)494-1825, email: m.brooks@dal.ca

RADM Mark H. Buzby, Administrator, Maritime Administration,  
U.S. Department of Transportation, 1200 New Jersey Avenue, SE,  
Washington, D.C. 20590, (202)366-5823, fax (202)366-3890, mark.buzby@dot.gov

Mr. Steven Cliff Deputy Executive Officer, California Air Resources Board,  
Planning and Technical Support Division, 1001 I Street, Sacramento, CA  
95812, (916) 539-3264, email: steve.cliff@arb.ca.gov

Mr. Howard R. Elliott, Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation,  
1200 New Jersey Avenue, SE, Washington, D.C. 20590,  
(202)366-4433, fax (202)366-3666, email: phmsa.administrator@dot.gov

Mr. Daniel K. Elwell, Acting Administrator, Federal Aviation Administration,  
U.S. Department of Transportation, 800 Independence Avenue, SW,  
Room 1010, Washington, D.C., 20591, (202)267-8111, fax (202)267-5047, dan.elwell@faa.gov

Ms. Audrey Farley, Acting Assistant Secretary for Research and Technology Office of the Secretary, U.S. Department of Transportation,  
1200 New Jersey Avenue, SE, Washington, D.C., 20590,  
(202)366-4412, fax (202)493-2381, audrey.farley@dot.gov

Mr. LeRoy Gishi, Chief, Division of Transportation, U.S. Bureau of Indian Affairs (BIA),  
U.S. Department of the Interior, 20817 Tall Forest Drive, Germantown, MD 20876, (202) 513-7711, fax (202)219-1193, email: irrigishi@earthlink.net
Ex Officio Members (continued)

Mr. John T. Gray, Senior Vice President, Policy and Economics, Association of American Railroads, 50 F Street, NW, 12th Floor, Washington, D.C. 20001-1530, (202) 639-2319, fax (202)639-2286, jgray@aar.org


Mr. Nikola Ivanov, University of Maryland, College Park, CATT Laboratory, 3105 J. Kim Engineering Building, College Park, MD 20742, (301)405-3626, email: ivanovn@umd.edu

Major General Donald E. (Ed) Jackson, Deputy Commanding General for Civil and Emergency Operations, U.S. Army Corps of Engineers, 441 G Street, NW, Washington, D.C. 20314-1000, (202)761-0001, fax (202)761-4463, Donald.E.Jackson@usace.army.mil


Dr. Craig A. Rutland, U.S. Air Force Pavement Engineer, Air Force Civil Engineer Center 139 Barnes Drive, Suite 1, Tyndall AFB, FL 32403-5319 (850) 283-6083, email: craig.rutland.1@us.af.mil

Mr. Karl Simon, Director, Transportation and Climate Division, U.S. EPA Office of Transportation and Air Quality, 1301 Constitution Ave, NW, Washington, D.C. 20004, (202) 566 1191, simon.karl@epa.gov
Ex Officio Members (continued)

Mr. Paul P. Skoutelas, President and CEO, American Public Transportation Association, Suite 1100, 1300 I Street, NW, Washington, D.C. 20005, (202)496-4889, fax (202)496-4324, pskoutelas@apta.com

Ms. K. Jane Williams, Deputy Administrator, Federal Transit Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, S.E., 4th Floor - East Building, Washington, D.C. 20590, (202)366-8511, fax (202)366-9854, email: k.jane.williams@dot.gov

Mr. Frederick G. "Bud" Wright, Executive Director, American Association of State Highway and Transportation Officials, 444 N. Capitol Street, NW, Suite 249, Washington, D.C. 20001, (202)624-5810, fax (202)624-5806, bwright@aashto.org


Representatives to the TRB Executive Committee:

Technical Activities Council:
Hyun-A Park, President, Spy Pond Partners, LLC
2018 1165 Massachusetts Avenue, Suite 101
Arlington, Massachusetts 02476-4333
(617)500-4857, hpark@spypondpartners.com

David Ballard, Senior Economist, Gellman Research Associates (GRA), Inc.
2018 115 West Avenue, Suite 201, Jenkintown, Pennsylvania 19046
(215)884-7500, bdballard@gra-inc.com

George Avery Grimes, CEO Advisor, Patriot Rail Company
2018 1572 Leyden Street, Denver, CO 80220,
(303)625-3386, george.avery.grimes@gmail.com

Joseph L. Schofer, Professor and Associate Dean of Engineering, b Northwestern University
2018 McCormick School of Engineering, 2145 Sheridan Road,
Evanston, Illinois, United States 60208-3100, (847)491-5221,
j-schofer@northwestern.edu

William S. Varnedoe, P. E., Principal, The Kercher Group, Inc.,
2018 100 Navaho Drive, Suite 125, Raleigh, NC 27609
(984)255-0003, svarnedoe@kerchergroup.com
Changes in Executive Committee Membership

Members Who Have Been Appointed Since the Executive Committee Last Meeting

Mr. Carlos M. Braceras, Executive Director, Utah Department of Transportation

Mr. Brian W. Ness, Director, Idaho Transportation Department

New Representatives of Sponsors

Mr. Ronald L. Batory, Administrator, Federal Railroad Administration

Mr. Daniel K. Elwell, Acting Administrator, Federal Aviation Administration

Mr. Nikola Ivanov, University of Maryland, College Park, CATT Laboratory

Major General Donald E. (Ed) Jackson, Deputy Commanding General for Civil and Emergency Operations, U.S. Army Corps of Engineers

Mr. Raymond Martinez, Administrator, Federal Motor Carrier Safety Administration
EXECUTIVE OFFICE

Neil J. Pedersen, Executive Director, TRB  
npedersen@nas.edu

Cynthia 'Cindy' Baker, Executive Assistant  
cbaker@nas.edu

Patrice Davenport, Deputy Director, TRB Program Development & Strategic Initiatives  
pdavenport@nas.edu

Karen S. Febey, Senior Report Review Officer  
kfebey@nas.edu

Russell W. Houston, Associate Executive Director  
rhouston@nas.edu

Lisa Berardi Marflak, Director, Communications/Media  
rhouston@nas.edu

TECHNICAL ACTIVITIES (Division A)

Ann M. Brach, Director  
abrach@nas.edu

STUDIES AND SPECIAL PROGRAMS (Division B)

Thomas Menzies, Acting Director  
tmenzies@nas.edu

ADMINISTRATION AND FINANCE (Division C)

Gary Walker, Director  
gwalker@nas.edu

COOPERATIVE RESEARCH PROGRAMS (Division D)

Christopher Hedges, Director  
chedges@nas.edu
TRB Staff Organization and Divisional Responsibilities

EXECUTIVE DIRECTOR
Neil J. Pedersen

ASSISTANT EXECUTIVE DIRECTOR
Russell W. Houston
- Annual Meeting Exhibit and Patron Programs
- Committee and Panel Approvals
- Communications
- Information Technology
- Transportation Research Information Services

TECHNICAL ACTIVITIES
Ann Brach
- Annual Meeting Program
- Conferences and Workshops
- Legal Studies
- SHRP2 Safety Data
- Standing Technical Committees
- State Visits
- Transportation Research Record: Journal of the Transportation Research Board

PROGRAM DEVELOPMENT AND STRATEGIC INITIATIVES DIRECTOR
Mark Norman
- Critical & Emerging Issues
- Revenue Development
- Strategic Initiatives

Consensus and Advisory Studies Division
Tom Menzies
- Marine Board
- Policy Studies
- Research Program Advisory Committees

ADMINISTRATION AND FINANCE
Gary J. Walker
- Administrative Services
- Affiliates Accounts
- Budgets and Finance
- Publications Sales and Distribution

SR. REPORT REVIEW OFFICER
Karen S. Febey
- Minority Student Fellows Program
- Report Review

COOPERATIVE RESEARCH PROGRAMS
Christopher Hedges
- Airport Cooperative Research Program
- IDEA (Innovations Deserving Exploratory Analysis) Programs
- National Cooperative Freight Research Program
- National Cooperative Highway Research Program
- National Cooperative Rail Research Program
- Publications
- Syntheses of Current Practice
- Transit Cooperative Research Program

HR DIRECTOR
Claudette Louard-Clarke
- Human Resources
- Staff Development Training

TRB Executive Committee Meeting, June 13-14, 2018
## DESCRIPTIONS OF TRB DIVISIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Office</td>
<td>2</td>
</tr>
<tr>
<td>Technical Activities (Division A)</td>
<td>6</td>
</tr>
<tr>
<td>Consensus and Advisory Studies (Division B)</td>
<td>8</td>
</tr>
<tr>
<td>Administration and Finance (Division C)</td>
<td>10</td>
</tr>
<tr>
<td>Cooperative Research Programs (Division D)</td>
<td>11</td>
</tr>
</tbody>
</table>
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; develops and 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 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 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.

Susan Hanson, Chair of the TRB Division Committee (formerly called the Subcommittee on NRC Oversight), heads the committee and 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 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 72,000 people from around the world receive the E-Newsletter.
- The TRB Webinar Series produces more than 100 webinars per year on a variety of topics. TRB’s webinars are produced with funding received from TRB Sponsors and Sustaining Circle Affiliates. Accordingly, employees of TRB Sponsors and Sustaining Circle 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

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

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

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

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.

**Practice-Ready Papers Database**

The PRP database helps practitioners easily find TRB Annual Meeting and TRR papers identified by peer reviewers on TRB’s standing committees as presenting research results immediately applicable to problems or issues. The database offers a search by keywords, title, author, index term, subject area, and date of publication.

**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 (Division A)
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 made up of more than 5,000 volunteers and supplemented by designated TRB representatives from each state, over 150 universities, and 35 transit agencies.

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. 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 and task forces](#).
  - [Aviation Group Brochure](#)
  - [Design and Construction Group Brochure](#)
  - [Freight Systems Group Brochure](#)
  - [Law Group Brochure](#)
  - [Marine Group Brochure](#)
  - [Public Transportation Group Brochure](#)
- **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, the TRB Executive Committee, and TRB Staff. 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 & Workshops** are sponsored and cosponsored by many of the Division’s standing committees and task forces.
- **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 12,000 attendees.

TRB Executive Committee Meeting, June 13-14, 2018
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*.

- **The SHRP 2 Safety data program** promotes conditions under which the safety data from the second Strategic Highway Research Program is made available to qualified users and provides technical and policy guidance for data implementation and oversight.”

June 1, 2018
CONSENSUS AND ADVISORY STUDIES (DIVISION B)
Tom Menzies, Acting Director

The Consensus and Advisory Studies (CAAS) Division conducts policy studies at the request of the U.S. Congress, executive branch agencies, states, and other sponsors.

With the guidance of committees drawn from the nation’s leading experts, the Policy Studies group produces reports examining complex and controversial transportation issues. Studies cover all modes of transportation and a variety of safety, economic, environmental, and research policy issues. The U.S. Congress and the executive branch have adopted many recommendations from TRB policy reports, attesting to the substantive value of the findings. The Subcommittee on Planning and Policy Review provides oversight for TRB’s policy work. Since 1998, all completed policy study reports are posted on the TRB website. Informing Transportation Policy Choices, a document that provides an overview of all TRB policy studies from 1983 through 2003, is also posted on the Policy Studies page of the website.

POLICY STUDIES

With the guidance of committees drawn from the nation’s leading experts, the Policy Studies group produces reports examining complex and controversial transportation issues. Studies cover all modes of transportation and a variety of safety, economic, environmental, and research policy issues. The U.S. Congress and the executive branch have adopted many recommendations from TRB policy reports, attesting to the substantive value of the findings. The Subcommittee on Planning and Policy Review provides oversight for TRB’s policy work. Since 1998, all completed policy study reports are posted on the TRB website. Informing Transportation Policy Choices, a document that provides an overview of all TRB policy studies from 1983 through 2003, is also posted on the Policy Studies page of the website.

Two-page overview of TRB's policy work

SYNTHESIS OF INFORMATION REPORTS

Under the sponsorship of the Cooperative Research Programs administered by TRB, the Synthesis unit prepares reports on current practice and knowledge for a range of key highway, transit, and airport topics. Practitioners and researchers make extensive use of the reports.

A highway committee, a transit committee, and an airport committee of the Cooperative Research Programs select the study topics each year. A consultant experienced in the topic area researches and writes each Synthesis report, with guidance from an expert panel.

INNOVATIONS DESERVING EXPLORATORY ANALYSIS PROGRAMS

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

The state DOTs collectively fund highway-related research through the NCHRP IDEA program. Research on innovations applicable to transit practice is carried out under the Transit IDEA program, funded by FTA through TCRP. FRA sponsors the Rail Safety IDEA program, which funds projects to improve the safety of rail operations.

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

An annual summary of completed and current projects is published for each of the IDEA programs and distributed at the TRB Annual Meeting. These summaries also are available on the IDEA page of the TRB website, along with the IDEA Program Announcement, which contains forms and guidelines for submitting proposals. A less formal publication, Ignition, features interviews with IDEA investigators and transportation leaders, plus articles that highlight promising projects. Issues of Ignition are archived on the IDEA website.
ADMINISTRATION AND FINANCE DIVISION (Division C)
Gary J. Walker, Director

TRB’s Finance and Administration division manages more than $100M in annual revenue and expenditures in support of TRB’s various transportation research programs. Finance staff monitors federal and state contracts and grants, prepare budgets for continuing operations and individual projects, and control expenditures. Financial staff also assists in managing various aspects of TRB's member and sponsor relations, other benefits and services to our customers, subscription programs, and the TRB e-Bookstore. Our services are aligned with the three core areas of our interaction with TRB members and customers as follows:

- **Join / Support TRB**: Find information on the many ways to become involved with, give funding support to, and/or become an affiliate member of TRB, including:
  - High level agency sponsorship for TRB’s Core Programs
  - Mid-range organizational affiliation with TRB
  - Individual levels of membership and services
  - Subscriptions to our publications – most available in both hard copy and electronic form

- **TRB Products and Services**: Browse or search for various products and services, including:
  - Purchasing individual publications via our e-Bookstore
  - Pay-per-view certain TRB publications on-line
  - Visit and browse in our TRB Library
  - Conference registrations

- **Financial Information**: Find answers to customer questions such as:
  - How to get reimbursed for committee/panel travel
  - Who are the points of contact for financial questions on programs such as SHRP2, NCHRP, Marine Board
  - Who to contact regarding a contract or consulting agreement with TRB
Cooperative Research Programs Division (Division D)
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 acute 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 Standing Committee on Research (SCOR) 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, 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 federally authorized 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.
National Cooperative Freight Research Program
The NCFRP carries out applied research on problems facing the freight industry that are not being adequately addressed by existing research programs. The program, which began in late 2006, is sponsored by the Office of the Assistant Secretary for Research and Technology (formerly Research and Innovative Technology Administration) of the U.S. Department of Transportation. NCFRP covers a range of issues to improve the efficiency, reliability, safety, and security of the nation's freight transportation system. The NCFRP was not reauthorized in the MAP-21 surface transportation legislation. However, work on previously approved projects will continue until completed.

Hazardous Materials Cooperative Research Program
The HMCRP is a stakeholder-driven, problem-solving program, researching real-world, day-to-day operational issues in hazardous materials transportation with near- to mid-term time frames. The program, which began in late 2006, is sponsored by the Pipeline and Hazardous Materials Safety Administration of the U.S. Department of Transportation. The HMCRP was not reauthorized in the MAP-21 surface transportation legislation. However, work on previously approved projects will continue until completed.

National Cooperative Rail Research Program
The NCRRP, initiated in Spring 2012, conducts applied research on problems that are shared by freight, intercity passenger (including high speed rail) and commuter rail operators. Authorized in the Passenger Rail Investment and Improvement Act, the NCRRP undertakes research and other technical activities in a variety of rail subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration. The program is sponsored by the Federal Railroad Administration (FRA), with program oversight provided by an independent governing board (the NCRRP Oversight Committee) appointed by the Secretary, U.S. DOT. One year of funding was provided for the program, with no additional funding thereafter. Work on previously approved projects will continue until completed.

Under all of these programs, TRB organizes panels of experts to provide guidance on technical aspects of the research and to translate the problems into project statements with well-defined objectives. Research proposals are then solicited from private and public research organizations with capability and experience in the problem areas to be studied. The technical panels review the proposals, recommend contract awards, monitor research in progress, provide technical guidance, and determine the acceptability of the final reports. More than 3,000 experienced practitioners and research specialists currently serve on Cooperative Research Program panels. TRB also manages programs of smaller studies focused on synthesizing current practices and analyzing legal issues in the NCHRP, TCRP, and ACRP programs. Findings and publications from these synthesis and legal research projects have been well received by highway, transit, and airport practitioners.
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.

Also assisting the Executive Committee is its Subcommittee on Consensus and Advisory Studies (CAAS), 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 CAAS generally meets in April and October in Washington, DC.
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 200 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.
TRB STANDING OVERSIGHT COMMITTEES

TRB Division Committee

Composition
Composed of 7 members of Executive Committee (at least three of whom must be members of one of the Academies). The Chair, Vice Chair, and 2 other members serve 3-year terms. The Chair, Vice Chair, and the immediate Past Chair of the TRB Executive Committee serve 1-year terms, the Vice Chair and immediate Past Chair as *ex officio* nonvoting members.

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 NRC 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*. Bias/conflict of interest statements are required.

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, and ACRP) are entities that are appointed and exist 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 SNO Chair and, as appropriate, by 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 Projects

Description
Supported by NCHRP, TCRP, ACRP, NCFRP, or HMCRP 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 Projects

Description
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
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 the 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 National Cooperative Highway Research Program and other 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).

June 1, 2018