General Information

Registration

Convention Center, Level 2, I Street Bridge

Registration hours:
Saturday, 3:00 p.m.–7:00 p.m.
Sunday, 7:00 a.m.–7:00 p.m.
Monday, 7:00 a.m.–7:30 p.m.
Tuesday, 7:00 a.m.–7:30 p.m.
Wednesday, 7:00 a.m.–6:00 p.m.
Thursday, 7:00 a.m.–noon (Street Level, Grand Hall)

Registration is required for all attendees.

The registration fee includes admission to workshops (except to the Human Factors workshops), lectern sessions, poster sessions, and exhibits, as well as access to the online compendium of papers, TRB Annual Meeting Online. Additional fees and tickets are required for the Human Factors workshops and for the Chairman’s Luncheon, which have limits on attendance. Tickets are like cash and cannot be replaced if lost.

Admission to the sessions and exhibits is by registration badge only. For security reasons, each meeting attendee must wear a registration badge; the badge must be unobstructed—for example, not obstructed by business cards; people without badges may be escorted from the building.

The phone number for the TRB Registration Desk is 202-249-4004. This number is in operation only during the registration times listed above. Please note that TRB staff members are not able to page registrants or to deliver messages.

Wi-Fi

TRB has arranged for complimentary Wi-Fi Internet access in all meeting rooms and public areas of the convention center and the Marriott Marquis. The capacity is not unlimited. Attendees are asked not to use Wi-Fi for streaming videos or audio, for video conferencing, or for other uses that would require high-level bandwidths.

Please use the appropriate network and password below to log into the Wi-Fi for the building in which you are located. If you move from the Marriott Marquis to the Convention Center, or vice versa, please be sure that you are using the correct network to get the strongest possible signal for your location.

- For the Convention Center
  Network name: TRB Convention Center
  Password: Annual2017
- For the Marriott Marquis
  Network name: TRB Marriott
  Password: Annual2017

Social Media

Twitter
Share your onsite experiences with other attendees via the TRB Annual Meeting hashtag (#TRBAM). Also follow TRB on Twitter (@TRBofNA).

Facebook
Post comments about the meeting on TRB’s Facebook page.

LinkedIn
Connect with TRB on LinkedIn.

Mobile App

View the listings of sessions and events, navigate interactive floor plans, and create a personalized itinerary with reminders. To download the app, go to the App Store or Google Play and search for “TRB 2017.” When you run the app for the first time, you will be asked to enter your e-mail address—you should enter the same address that you used when registering for the Annual Meeting.

New this year: You can sync information from your personal itinerary in the mobile app with your personal itinerary in the Interactive Program. For more information, see page 13.

Interactive Program

Go to www.TRB.org/AnnualMeeting and click the link for “Interactive Program.” You can view the entire program (excluding event room locations) without logging in. Or you can log in with your MyTRB account, see room locations, and build your own personal itinerary.

New this year: You can sync information from your personal itinerary in the Interactive Program with your personal itinerary in the mobile app. For more information, see page 13.

TRB Annual Meeting Online

Your meeting registration provides year-round access to TRB Annual Meeting Online, which includes the following information resources:

- 2017 Compendium of Papers—Free online access to more than 2,730 papers (available in January);
- 2017 Visual Aid Presentations—Slides from more than 3,000 lectern sessions and poster presentations (available in March); and
- Archives—Compendium of Papers and Visual Aid Presentations from the 2011 to 2016 Annual Meetings.

To log into TRB Annual Meeting Online:
Go to http://AMOnline.TRB.org, and click “Login.” When prompted, enter the same e-mail address that you used when registering for the Annual Meeting. For the password, enter the six-digit ID number that appears on your Annual Meeting registration badge.

Exhibits

Convention Center, Level 2, Hall D

Come and see a variety of transportation-related products and services showcased by commercial organizations and TRB Sponsors. For exhibitor listings and a floor plan, see pages 110–xxx.

Exhibit hours:
Sunday, 4:00 p.m.–7:00 p.m. (Opening and Reception)
Monday, 9:00 a.m.–4:00 p.m.
Tuesday, 9:00 a.m.–4:00 p.m.

Lectern Sessions and Workshops

More than 800 sessions and workshops will be presented at the meeting. For a complete list of session and workshop titles, see the “Sessions, Events, and Meetings” section, beginning on page 32. The full description of each session and workshop is available via the mobile app (see page 13). See the schedule at a glance on page 33 for the general timetable.
Spotlight and Hot Topic Sessions
Some 36 sessions and workshops focus on the spotlight theme for the 2017 Annual Meeting: “Transportation Innovation: Leading the Way in an Era of Rapid Change.” In addition, more than 130 sessions and workshops look at one or more of the following hot topics identified by the TRB Executive Committee:

- **Transformational Technologies:** New technologies that have the potential to transform transportation as we know it.
- **Resilience:** How transportation agencies are becoming more adept at preparing for, absorbing, recovering from, and adapting to adverse events.
- **Transportation and Public Health:** Effects that transportation can have on public health by reducing transportation-related casualties, providing easy access to healthcare services, mitigating environmental impacts, and reducing the transmission of communicable diseases.

To find sessions on these topics, look for the Spotlight icon and the Hot Topic icon in the “Sessions, Events, and Meetings” section starting on page 32.

Poster Sessions
Convention Center, Level 2, Hall E
Poster Sessions provide an opportunity to interact with authors in a more personal setting than the conventional lecture. The papers presented in these sessions meet the same review criteria as lecture-session presentations. Poster sessions are listed in the “Sessions, Events, and Meetings” section, beginning on page 32. The full description for each poster session—including the titles and locations of individual posters—is available via the mobile app (see page 13). A floor plan of posters appears on page 22. You can enter the poster sessions through the Hall E entrance, and whenever exhibits are open, you can enter directly from Hall D.

Continuing Education Credits
Nationally recognized Professional Development Hours (PDHs) may be claimed for attending the TRB Annual Meeting. Each hour of participation earns one (1) PDH. Attendees must maintain their own records of attendance. TRB will confirm an individual’s registration at the request of the licensing or certifying agency. A credit statement form for PDHs is on page 34. Please note that neither TRB nor the 2017 Annual Meeting is certified at this time with the state licensing boards of New York and Florida. TRB is working with state boards to become an approved provider of continuing education credits.

Certification Maintenance (CM) credits—approved by the American Planning Association for retaining American Institute of Certified Planners certification—are offered for some sessions at the 2017 TRB Annual Meeting. In the Annual Meeting mobile app, tap the “Program” icon on the home screen, and then tap “CM Sessions,” for a list of sessions that have been approved for CM credits. In addition, on the Annual Meeting Interactive Program, you can click the “Features” drop-down menu in the left column, then check only the box for “AICP Certification,” to filter just for sessions with approved CM credits.

Discussions
After the TRB Annual Meeting, discussions may be submitted for papers that will be published in the *Transportation Research Record: Journal of the Transportation Research Board*. TRB policy is to publish the paper, the discussion, and the author’s closure in the same volume of the *Record*. Attendees interested in submitting a discussion of any paper must notify TRB no later than February 1, 2017. The criteria for discussions of papers and the directions for submittal are posted on TRB Annual Meeting Online (http://AMOnline.TRB.org). Click the link for “Submit a Discussion for an Annual Meeting Paper,” located in the right column under “Important Links.”

Committee Meetings
Except for executive sessions, the meetings of TRB committees are open to all registrants. For details, see the “Committee Meetings” section (pages [66–85]). Meeting titles and times also are listed in the “Sessions, Events, and Meetings” section, beginning on page 32. In addition, you can access full information about meetings via the mobile app (see “Mobile App and Interactive Program,” on page 13).

First-Time Attendees
If you are a first-time attendee, you are encouraged to attend the Welcome and Attendee Orientation Session on Sunday, from 2:30 p.m. to 4:00 p.m. in Ballroom AB on Level 3 of the Convention Center. The session will provide helpful information about how you can become involved in TRB committee activities and how you can make the best use of your time at the Annual Meeting.

Please attach the white “New Attendee” ribbon to your name badge. (You should receive the ribbon with your registration materials.) Long-time attendees are encouraged to offer assistance in navigating the TRB Annual Meeting to participants wearing the New Attendee ribbon.

Newsroom
Convention Center, Level 3, Room 304
The Newsroom is open to media registrants only, during the following hours:

- Sunday, 8:00 a.m.–5:00 p.m.
- Monday, 8:00 a.m.–5:00 p.m.
- Tuesday, 8:00 a.m.–5:00 p.m.
- Wednesday, 8:00 a.m.–5:00 p.m.
- Thursday, 8:00 a.m.–11:00 a.m.

Media registrants may visit the newsroom to collect information about TRB programs and projects. Light refreshments are provided. Wi-Fi access is available from this room if you bring your own devices. The newsroom will not be secure—you are responsible for securing personal belongings while at the Annual Meeting.

Speaker Ready Room
Convention Center, Street Level, Salon F
The speaker ready room is open to session speakers and poster presenters only. The room provides speakers with the opportunity to upload their latest presentations (if they have not previously done so) for availability online to attendees. For lectern sessions, the uploaded presentations also will be ready to display when the speaker arrives in the session room. Hours are as follows:

- Saturday, 3:00 p.m.–7:00 p.m.
- Sunday, 7:00 a.m.–6:00 p.m.
- Monday, 7:00 a.m.–6:00 p.m.
- Tuesday, 7:00 a.m.–6:00 p.m.
- Wednesday, 7:00 a.m.–4:30 p.m.
- Thursday, Closed

Use of Smartphones
TRB encourages the use of smartphones in sessions and workshops for note taking, tweeting, and other activities. However, please be courteous—please silence your phone and avoid interfering with the experience of other attendees.

No Smoking
The use of tobacco products is strictly prohibited. District of Columbia law prohibits smoking at all functions and events and in the public areas of the convention center and hotels. Thank you for not smoking at TRB events.
First Aid and Emergencies

- In an emergency:
  - In the Convention Center, call 202-249-3333 (or house phone number 3333).
  - In the Marriott Marquis, call 202-824-9667 (or house phone number 59667).

  Please use the above numbers (and not 911).
- Nonemergency first aid is available in the Convention Center during all event hours. When the exhibits are open, go to the First Aid Station in Exhibit Hall D (near booth 306). At other times, call 202-249-3109.

Coat Check

*Convention Center, Street Level, Room 148*

Coat-check services are available during the following hours:

Sunday, 7:00 a.m.–11:00 p.m.
Monday, 7:00 a.m.–10:00 p.m.
Tuesday, 7:00 a.m.–10:00 p.m.
Wednesday, 7:00 a.m.–8:00 p.m.

Nursing Mothers Room

TRB has provided a room in the Convention Center for use by nursing mothers. The room contains a refrigerator, if needed for temporary milk storage. If you need access to the room, please go to the Information Desk on the L Street Bridge (Level 2) of the Convention Center for details.

Shared Information Table

*Convention Center, Level 2*

TRB provides a shared information table, which may be used only by nonprofit associated groups and only for the purpose of displaying flyers to announce upcoming conferences; no posters are allowed. No other promotional material of any kind is permitted. TRB staff will remove and discard any non-TRB materials or signs placed in public areas of the Convention Center or hotels. The table is located along the corridor between the L Street Bridge and the Hall E Entrance.

Venues and Connector Hours

The 2017 TRB Annual Meeting is being held at the following venues:

**Walter E. Washington Convention Center**
801 Mount Vernon Place, NW
Washington, DC 20001
(202) 249-3000

**Marriott Marquis Washington, D.C.**
901 Massachusetts Avenue, NW
Washington, DC 20001
(202) 824-9200

The two buildings are across the street from one other, and are connected by an underground walkway—or connector—that links Level M2 of the Marriott Marquis with the Lower Level of the Convention Center. The connector is open during the following hours:

Saturday, 7:00 a.m.–11:00 p.m.
Sunday, 7:00 a.m.–11:00 p.m.
Monday, 6:00 a.m.–11:00 p.m.
Tuesday, 6:00 a.m.–11:00 p.m.
Wednesday, 6:00 a.m.–10:00 p.m.
Thursday, 6:00 a.m.–5:00 p.m.

Keep It Green!

TRB is committed to promoting green practices. Throughout the Convention Center and the Marriott Marquis, you will find separate receptacles for paper, glass, compost, and other waste. Please use the appropriate receptacles.

When you depart from the meeting, please drop off your plastic badge holder in one of the badge recycling bins located by the exits of the Convention Center and the Marriott Marquis. Thank you for doing your part to protect the environment.

Plan to Attend Next Year!

Onsite Food Outlets

**Convention Center**

The convention center offers a variety of outlets from which you can purchase food and beverages. Look for these icons on the Convention Center floor plans (pages 18–19).

**Downtown Food District**
*Lower Level, near the connection to Marriott Marquis*

Serving American fare, Asian, Mexican, Jamaican, pizza, crepes, and smoothies; Sunday through Wednesday, 11:00 a.m.–3:00 p.m.

**Uptown Food District**
*Level 2, next to TRB registration*

Serving American fare, including hamburgers, wings, southern style BBQ, pizza, sandwiches, salads, and hot and cold breakfasts; Sunday, 7:00 a.m.–5:00 p.m.; Monday and Tuesday, 7:00 a.m.–7:00 p.m.; and Wednesday, 7:00 a.m.–5:00 p.m. *(Hours for some food options may vary.)*

**Hall E Food Stations**
*Exhibit Hall E*

Serving Peruvian, Indian, Jamaican, American, and hot and cold breakfasts; Monday and Tuesday, 8:00 a.m.–5:30 p.m.; and Wednesday, 8:00 a.m.–1:30 p.m. *(Hours for some food options may vary.)*

**Networking Zones in Exhibit Hall**
*Exhibit Hall D*

**Networking Zone 1:** Grab & Go Café;
**Networking Zone 2:** Asian fare, panini, and smoothies;
Open during exhibit hours, Monday and Tuesday, 9:00 a.m.–4:00 p.m. *(Hours for some food options may vary.)*

**Conventions Center Coffee Stand and Carts**

- *Compass Coffee in Grand Hall*
- *Outside Salon B*
- *L Street North Lobby*

Serving coffee, tea, and light fare, Sunday through Wednesday, 7:00 a.m.–3:00 p.m.; and Thursday, 7:00 a.m.–1:00 p.m.

**Marriott Marquis**

The Marriott Marquis offers a variety of outlets from which you can purchase food and beverages. Look for these icons on the Marriott floor plans (pages 23–26).

**Anthem**
*Lobby Level*, serving American fare and a special TRB lunch buffet; open for breakfast and lunch daily, 6:30 a.m.–2:00 p.m.

**The Dignitary**
*Lobby Level*, bar serving American fare; open for dinner daily, 5:00 p.m.–midnight

**High Velocity**
*Lobby Level*, sports bar serving American fare; open for lunch and dinner daily, 11:00 a.m.–1:00 a.m.

**Lobby Bar**
*Lobby Level*, serving dinner daily, 4:00 p.m.–midnight.

**Grab-N-Go Cart**
*Lobby Level*, serving soft drinks, pastries, and sandwiches; open daily, 7:00 a.m.–9:00 p.m.

**Starbucks**
*Lobby Level*, open for breakfast and lunch daily, 6:00 a.m.–6:00 p.m.

**Coffee Cart**
*Level M4*, serving coffee, fruit, pastries, and snacks, Monday through Wednesday, 7:00 a.m.–3:00 p.m.
**Use the Mobile App!**

- **Get full session details:** The app provides more detailed information than appears in this *Final Program*—including descriptions, individual presentation titles, and speaker names for all lectern sessions, poster sessions, and workshops.
- **See where you’re going:** Click on the room name for any event, or on the booth number for any exhibitor, and you’ll see exactly where it is on the floor plan.
- **Find what you’re looking for:** Use the app’s powerful search feature to locate any event, exhibitor, or presenter instantly by key word.
- **Build your personalized itinerary:** Look up any event and add it to your personal schedule.

To download the mobile app, go to the App Store or Google Play and search for “TRB 2017.” When running the app for the first time, you will be asked to enter your email address (you should enter the same address to which your Annual Meeting registration confirmation was sent). The app supports the following operating systems: iOS 7 to 10 on iPhone/iPad or OS 4.1 (Jelly Bean) to 6.0 (Marshmallow) on Android.

**New this year:** You can sync information from your personal itinerary in the mobile app with your personal itinerary in the Interactive Program. See instructions below.

**Use the Interactive Program**

Go to www.TRB.org/AnnualMeeting and click the button for “Interactive Program.” You can view the entire program (excluding event room locations) without logging in. Or you can log in with your MyTRB account and view room locations and build your own personal itinerary. (If you have not used MyTRB before, click the link on the lower left of the page to set your password; then enter the email address that you used when registering for the meeting.)

**New this year:** You can sync information from your personal itinerary in the Interactive Program with your personal itinerary in the mobile app. See the instructions below:

**How to Sync Personal Itineraries**

This year, for the first time, you can sync your personal itinerary in the online Interactive Program with your personal itinerary in the mobile app. Here’s how:

- Run the mobile app,
- Tap the “My Meeting” icon on the home page,
- Tap “Connect to Sync the TRB Interactive Program,”
- Create an account with the Eureka cloud storage service. This cloud account will be the intermediary for passing program information back and forth between the interactive program and your mobile app. You must provide your email address and set up a password for Eureka.
- If you created a Eureka account last year to sync between your mobile devices, enter that login and password. If you forgot your password, select that message and an email will be sent to you so that you can reset.
- If you do not already have a Eureka cloud account, tap “Create an Account” to create one.
- Enter your first name, last name, email address, and the password that you want to use for Eureka. Then tap “Sign Up.” (Or, if you have a Gmail account, you can tap the “Google” button, and enter your existing Gmail address and password, then tap “Sign In.”)
- You then will reach your Eureka profile page. Tap the “Sync with TRB Interactive Program” button at the bottom of the page.
- A pop-up window will ask for your login and your annual meeting registration ID. For the login, use the same email address that you used when registering for the meeting. For the annual meeting registration ID, use the 6-digit registration number that appears on your registration badge (and on your registration confirmation email). Then click “Confirm.”
- The “Sync with TRB Interactive Program” button will flash, and then a message will appear below it to indicate that you are logged in.
- Your mobile app itinerary is now synced with your Interactive Program itinerary. If you had one event in one itinerary and a different event in another itinerary, both events will now appear in both itineraries. The itineraries will remain synced as long as the app is running on your device and has access to the Internet. Any changes to one will be reflected almost immediately in the other.
- Tap the home icon to return to the home page and continue using the Mobile App.
- If you need help, visit one of the TRB Information Desks, which are located on Level 2 of the convention center and on the M1 level of the Marriott Marquis.
<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Phone Number</th>
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</thead>
<tbody>
<tr>
<td>Cambria Suites</td>
<td>889 O Street, NW</td>
<td>(202) 299-1188</td>
</tr>
<tr>
<td>The Donovan</td>
<td>1155 14th Street, NW</td>
<td>(202) 737-1200</td>
</tr>
<tr>
<td>The Dupont Circle Hotel</td>
<td>1500 New Hampshire Avenue, NW</td>
<td>(202) 483-6000</td>
</tr>
<tr>
<td>Embassy Suites Convention Center</td>
<td>900 10th Street, NW</td>
<td>(202) 739-2001</td>
</tr>
<tr>
<td>Fairfax at Embassy Row</td>
<td>2100 Massachusetts Avenue, NW</td>
<td>(202) 293-2100</td>
</tr>
<tr>
<td>Fairfield Inn Downtown</td>
<td>500 H Street, NW</td>
<td>(202) 289-5959</td>
</tr>
<tr>
<td>Grand Hyatt</td>
<td>1000 H Street, NW</td>
<td>(202) 582-1234</td>
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<tr>
<td>Hampton Inn Convention Center</td>
<td>901 6th Street, NW</td>
<td>(202) 842-2500</td>
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<td>Henley Park</td>
<td>926 Massachusetts Avenue, NW</td>
<td>(202) 638-5200</td>
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<td>Hilton Garden Inn Downtown</td>
<td>815 14th Street, NW</td>
<td>(202) 783-7800</td>
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<td>Homewood Suites Convention Center</td>
<td>465 New York Avenue, NW</td>
<td>(202) 628-4663</td>
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<td>Loews Madison</td>
<td>1177 15th Street, NW</td>
<td>(202) 862-1600</td>
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<tr>
<td>Marriott Marquis</td>
<td>901 Massachusetts Avenue, NW</td>
<td>(202) 824-9200</td>
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<tr>
<td>Marriott Metro Center</td>
<td>775 12th Street, NW</td>
<td>(202) 737-2200</td>
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<td>The Mayflower Hotel</td>
<td>1127 Connecticut Avenue, NW</td>
<td>(202) 347-3000</td>
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<tr>
<td>Melrose Georgetown</td>
<td>2430 Pennsylvania Avenue, NW</td>
<td>(202) 955-6400</td>
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<tr>
<td>Monaco</td>
<td>700 F Street, NW</td>
<td>(202) 628-7177</td>
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<tr>
<td>Morrison Clark</td>
<td>1015 L Street, NW</td>
<td>(202) 898-1200</td>
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<tr>
<td>Palomar</td>
<td>2121 P Street, NW</td>
<td>(202) 448-1800</td>
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<tr>
<td>Renaissance Downtown</td>
<td>999 Ninth Street, NW</td>
<td>(202) 898-9000</td>
</tr>
<tr>
<td>Washington Plaza</td>
<td>10 Thomas Circle, NW</td>
<td>(202) 842-1300</td>
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## Schedule at a Glance

### Transportation Research Board

#### 96th Annual Meeting

<table>
<thead>
<tr>
<th>Sunday January 8</th>
<th>Monday January 9</th>
<th>Tuesday January 10</th>
<th>Wednesday January 11</th>
<th>Thursday January 12</th>
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<td><strong>8 a.m.</strong></td>
<td><strong>9 a.m.</strong></td>
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<td><strong>Noon</strong></td>
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<td><strong>11 p.m.</strong></td>
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- **Monday January 9**
  - Welcome & Attendee Orientation
  - Exhibit Hall Opening and Reception
  - Deen Lecture
  - Young Professional Reception

- **Tuesday January 10**
  - Chairman’s Luncheon
  - Workshops

- **Wednesday January 11**
  - Workshops

- **Thursday January 12**
  - Workshops