

TRB Transit Safety and Security Committee (AP080)

Meeting Agenda

January 6, 2021 | 10:00AM to 1:00PM ET

Agenda overview

- Welcome and Roll Call
- TRB Staff Brief - AP080 Designation/Committee Membership
- Chair Annual Progress Report
 - TRB National Transit Safety and Security Conference and APTA Mid-Year Safety and Security Seminar
- AP080 Events – 2021 TRB Annual Meeting
- Research Presentations
- AP080 Scope and Strategic Plan
- Other Task Force Updates

Minutes will be provided by the end of the month

Roll Call (M: Member)

<input checked="" type="checkbox"/> Brian Alberts (M)	<input type="checkbox"/> Barry Kross (M)
<input type="checkbox"/> Stephen Anderson (M)	<input type="checkbox"/> Chris Lowe (M)
<input checked="" type="checkbox"/> Mike Baltes (M)	<input checked="" type="checkbox"/> Jerome Lutin (M)
<input type="checkbox"/> Carmen Bianco (M)	<input checked="" type="checkbox"/> Ruben Peña (M)
<input checked="" type="checkbox"/> Roy Chen (M)	<input checked="" type="checkbox"/> Karen Philbrick (M)
<input checked="" type="checkbox"/> John Contestabile (M)	<input checked="" type="checkbox"/> Steve Polunski (M)
<input checked="" type="checkbox"/> Katrina Corcoran (M)	<input type="checkbox"/> Scott Sauer (M)
<input checked="" type="checkbox"/> Alan Danaher (M)	<input checked="" type="checkbox"/> Yu (Fred) Song (M)
<input type="checkbox"/> Larry Day (M)	<input checked="" type="checkbox"/> Lisa Staes (Chair)
<input type="checkbox"/> Charles Dickson (M)	<input type="checkbox"/> Jim Tucci (M)
<input checked="" type="checkbox"/> James Dougherty (M)	<input checked="" type="checkbox"/> Ed Watt (M)
<input checked="" type="checkbox"/> Pamela Fischhauber (M)	<input type="checkbox"/> Jie Yu (M)
<input type="checkbox"/> Ryan Frigo (M)	<input checked="" type="checkbox"/> Jiguang Zhao (M)
<input type="checkbox"/> Kevin Gaddis (M)	<input checked="" type="checkbox"/> Steve Andrle (TRB)
<input checked="" type="checkbox"/> Jodi Godfrey (M)	<input checked="" type="checkbox"/> Mary Kissi (TRB)
<input type="checkbox"/> Dave Goeres (M)	<input checked="" type="checkbox"/> Mariella Garcia-Colberg (TRB)
<input checked="" type="checkbox"/> Abhay (AJ) Joshi (M)	

*Start times and item durations are approximate

10:00 – 10:10AM Welcome and Roll Call

- Committee Chair Lisa Staes called the meeting to order and conducted roll call of the committee members.
- Brendon Hemily, chair of the Public Transportation Group, provided welcoming remarks and TRB updates, and offered his congratulations on the transition from a Task Force to a Standing Committee and the first official committee meeting. He offered that the Annual Meeting virtual conference will be exciting, extending through the month, and has about 15,000 attendees. He also shared the following:
 - This year organizational review will pick up steam again. Diversity and inclusion are important, and a new blue-ribbon award has emerged on diversity.
 - This will encourage diversity in membership and activities.

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- Encourage everyone to fill in demographic information on their TRB profile to allow TRB to see their progress.
 - Revision to triennial strategic plans – AP080 will have an advantage with our strategic plan development given the materials recently produced to become a committee.
 - Theme for 2022: Innovating a more just, resilient, and safe transportation system.
- Steve Andrle added that anything scheduled through TRB in the first half of the year is virtual. Format considerations for those after the first half of the year remain underway.
- Lisa Staes thanked Brendon for his instrumental role and his extraordinary efforts to assist in our transition to a committee.

10:10 – 10:20AM Brief from TRB Staff on AP080 Designation

- Call for Papers for the 2022 TRB Annual Meeting will likely be released in April/May
- Committee Membership
 - How are membership appointments, terms, etc. handled with the transition from a task force to a committee?
 - Steve Andrle explained since AP080 is a new committee, every member appointment starts with the inception of the committee. There will be three-year terms, and then each member is able to serve a second three-year term, before rolling out of member status to allow for other active friends to be invited to join.
 - We should check that every current member wants to be on the committee.
 - John Contestabile recommended that we consider reaching out to all members just prior to the Annual Meeting, thanking them for their participation and providing them an opportunity to step down if they have changed their duties at work for instance and do not have the time to serve anymore; then that opens seats to those active friends who want to be members. He indicated that he used this tactic in his own committee, and it proved successful.
- Nominations for AP080 Secretary – Jodi Godfrey self-nominated and her nomination was seconded by Pam Fischhaber, Karen Philbrick, and Jim Dougherty. Joyce Rose noted election by acclamation in the chat!

10:20 – 10:40AM Chair Annual Progress Report

- AP080 Scope and New Committee Proposal – Thanks to all who put in so much effort
 - A Special Thank You to Dr. Karen Philbrick for reviewing the draft AP080 scope and new committee proposal and providing the edits necessary for a complete and well-written proposal package
- Annual Meeting Call for Papers – 427 papers, 249 were accepted for presentation and 83 for publication. AP080 reviewed 19 papers.
- Paper and Poster Presentation Selections/Assignments (full discussion during next segment)
- Safety and Security Conference Call for Abstracts/Presentations – thanks to all who assisted
- 2020 TRB National Transit Safety and Security Conference and APTA Mid-Year Safety Seminar – Special thank you to TRB Staff and from APTA, Brian Alberts and Polly Hanson
 - 157 participants
 - Conference opening session – Neil Pederson – TRB Executive Director, Paul Skoutelas –

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- APTA President and CEO, and K. Jane Williams - FTA Deputy Administrator
- 10 breakout sessions/41 speakers
- Top 3 attended sessions:
 - Passenger and Public Safety – Collision Warning/Avoidance and Vehicle Safety (98)
 - Transit Employee Safety and Security – Assaults and Bus Barriers (97)
 - FTA PTASP Compliance and SMS (94)
- Potential TRB biennial conference – stay tuned
- How many AP080 members participated? Many indicated their participation in the chat box.
- Special Thank You to APTA, TRB Staff, session reviewers, moderators, and speakers.

10:40 – 10:55AM AP080 Events at TRB Annual Meeting

- Papers reviewed and presentations/papers selected – Katrina Corcoran, Review Coordinator
 - 19 papers – 27 reviewers. 14 papers were accepted for poster presentations and 9 were recommended for publication review. Poster presentations are in 4 groups (mentioned below)
 - Publication recommendations go to the TRR for review
 - Process went really well
 - Great communication. Survey assists in the paper assignment and organization, so please fill out when it comes out again. Katrina asked members to send her an email if they are interested in reviewing papers and did not receive an invitation.
 - Lisa thanked Katrina and requested that she continue to be the Paper Review Coordinator for the committee
- 2021 Annual Meeting Committee Sponsored Poster Sessions – 4 events/14 presentations
 - Transit Safety Events – Technologies and Practices for Collision Avoidance (Event 1277) – 3 presentations
 - Transit Emergency Management and Evacuation (Event 1208) – 3 presentations
 - Transit Security Events – Addressing Crime and Passenger Safety (Event 1185) – 4 presentations
 - Methods and Practices to Improve Transit Safety (Event 1234) – 4 presentations

11:10AM – 12:40PM Research Presentations

- ***Risk Mitigation Planning for Revenue Service Testing of Bus Automated Emergency Braking – Pierce Transit Demonstration***, Heidi Soule, PMO Manager, Pierce Transit, Lakewood, WA and Jerome Lutin, Ph.D. – <https://journals.sagepub.com/doi/full/10.1177/0361198120985857>
 - There is obvious value in reductions of collisions – 32k collisions, almost 100k injuries and 583 fatalities in the past 5 years.
 - Risk mitigation strategies – stakeholder engagement and the creation of stakeholder working groups were beneficial. Lessons learned related to the steps involved in the go - no-go decision making. The executive advisory working group was established to include all necessary representation
 - Go – no-go decision making was necessary due to the innovative prototype testing that was involved with the Pierce transit project. Along each phase of the demonstration project, a go – no-go decision was made to determine the next steps.

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- The buses in the demonstration were older New Flyer buses and they were overwhelmed and unable to support the project. That led to a critical problem, because Pierce was not willing to move forward without OEM support. Though the OEM is still interested in the technology in a possible new generation of buses.
- Key no-go decision for revenue service testing of the warning or emergency braking was due to the 4 hour training requirement for each operator, plus the age of the older buses ('06-'07 models), resulted in what Pierce Transit determined as an unfavorable investment of time and resources.
- The systems are still collecting the information, and the data will be analyzed. Dr. Lutin showed samples of the data that is collected for the lidar detector PASS system, the TELS system, and the Nuvo DAS system. Hotspot mapping helps to identify where most alerts are logged.
- Passenger motion is also logged, with some anonymization to remove PII.
- Veritas forensic economics accounting will include Washington insurance pool information to show actual historical data and determine the percentage of claims that can be mitigated with this technology.
- The focus is to save lives and save money – knowledge transfer is key.
- Expect the unexpected – one of the buses that was equipped was hit by a car that ran a red light and interrupted the data collection for that bus.
- John Contestabile asked if GPS coordinates are collected – Jerry responded that they do get all that information from the bus GPS.
 - John followed up asking if this is the most significant project that has been done? – There have been several FTA funded projects – but Jerry is not aware of any others beyond what Pierce has done.
 - The FTA SRD Interim report has information on several other FTA funded demonstration projects currently or recently underway:
<https://www.transit.dot.gov/sites/fta.dot.gov/files/2020-05/FTA-Research-Report-No.-0166.pdf>
- Any lessons learned, challenges, best practices that you might want to share? –
 - Heidi Soule mentioned that COVID was unexpected, early OEM communication was important, really fantastic partners were beneficial, FTA and all partners were very supportive, and WSTIP was very helpful.
- As it related to the installation of the equipment, were there bike rack issues or other structural issues?
 - A ton of engineering went into this to determine the best option for installation. DCS worked with the engineering department to ensure we could remove it quickly if we had to tow the bus, to reduce damage to the sensors. The sensors had to clear the bike rack. It did ultimately work how it is installed.
- Andrew Krum also added that the implementation of technology on vehicles, the equipment installation is important to consider. Stakeholder and equipment and data acquisition are important too.
- John Contestabile asked for clarification that these instruments are for collecting data but are ultimately planned to apply automated emergency braking. Yes – commercialization is part of the project. That is part of the business case that is being developed.

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- John Contestabile added that space challenges are associated with multiple technologies added to police vehicles also. Individual manufacturers bolt on all these difference systems and all the space is not holistically approached to maximize vehicle organization. Siloed applications are a challenge for transit as well.
- **Transit Bus Operator Temporary Barrier for COVID-19**, Andrew Krum, Virginia Tech Transportation Institute
 - Shifting gears to talk about COVID-19 and ways to learn from our experience.
 - This research problem aimed to reduce exposure risks for transit bus operators considering front door entry, supporting passengers with special needs and potential air exchange with a goal to reduce exposure of droplets or particles in the air, and to maximize fresh air inside the bus for passengers.
 - There were three temporary barriers that were tested to fit various bus ages/makes/models. All three were designed to not interfere with the bus. Front hatches near the bus operator, with flat front buses, the air speed increases on the roof and sides of the bus when it is in motion. That creates a vacuum to pull air out. However, when the front hatch is at or behind the rear axle, when in motion, there was not significant pressure to pull air out, it actually allowed air into the bus. So, when located on the front of the bus, the hatch pulls air out.
 - Telltale airjet observations allowed a visualization of air flow, through a change in the string motion.
 - Airspeeds were collected focused on the temporary barrier rows, with and without the barriers.
 - Air flow fogging was also conducted for airflow calculations.
 - Observations:
 - Open rear roof hatch drew air out when driver window is closed. When driver window is open, rear roof hatch pulled air in, no matter if a barrier was installed or not.
 - Open rear roof hatch drew air out when HVAC return is closed, and passenger air is active.
 - Front roof hatch near operator pulled air out. Front roof hatch rearward of front axle drew air in.
 - Rear mounted return buses: preferred flow when barrier in place and driver window is closed. If defroster with fresh air option is available, and rear hatch open and passenger window closed, was ideal.
 - A driver HVAC booster fan pulls passenger air to the driver – not preferred.
 - Interior cooling temperatures were largely unaffected by barriers.
 - The Gillig bus did not have a fresh refresh setting, but had a front hatch that was rear of the axle. So that was a good trade off.
 - Benefits to passengers as well.
 - The cad design and parts details are available to anyone interested – contact Andrew Krum - akrum@vtti.vt.edu.
 - How is this being shared with the industry? Andrew has prepared a brief, and is presenting as much as possible and looking for recommendations on how to improve the knowledge transfer.

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- Karen Philbrick suggested possibly considering an APTA webinar.
- Did you test different operating speeds? Yes. Many scenarios were conducted at idle, 10mph, and 25mph.
- Can we leverage behavioral economics by suggesting something like encouraging all windows open?
 - For two of the buses, the windows are always closed, and do not open by transit agency decision. With a fogging test, we noticed that with transit bus windows open, the change was significant with a change in pressure, such as when the bus starts moving. It may stabilize as movement reaches static speed. What we are really talking about is the air dynamics along the side of the bus.
- Any findings transferable to rail cars? FTA has provided some great guidance from the beginning, and they have experts to examine that. They do recognize the differences.
- Mariela Garcia-Colberg mentioned that TCRP approved a study on COVID 19 and air quality protections. It will be an inside study, and will be selectively searching for a panel. Looking for a panel of experts to serve on this. If interested, contact Mariela: mgarciacolberg@nas.edu .
- Andrew: after this work, working with the CDC, looking at school bus, coach buses, etc. there are not two door options, and operators are at similar exposure levels. So closer to a barrier A design, that surrounds the operator. This will require more eloquent solutions, rather than the install and mostly forget like the transit option here. Andrew looks forward to seeing this accomplished.
- During the break one attendee asked if the meeting would be recorded and available. While the meeting is not recorded, the presentation slides, agenda, and minutes will be posted to the Committee [Website](#) and emailed to attendees that provided their contact information.
- ***TSA Demonstration of SenseGuard for CBRNE Systems at Transit Sites***, Eric Tyson and Christian Rose, ENSCO
 - Switching from research perspective to a demonstration project, this presentation covered background information and the risks that can be addressed through the implementation of ENSCO's SenseGuard system. Eric Tyson and Christian Rose also provided a general description of the TSA-sponsored demonstration and corresponding technical content.
 - A singular approach to detect threats (chemical, biological, radiation, nuclear, and explosive (CBRNE)) did not previously exist. These threats are typically detected through multiple technologies that do not communicate with each other. The SenseGuard technology is intended to complete all these detections and overcome communication challenges, monitoring multiple types of threats.
 - SenseGuard may also improve response times and expedite mitigation steps.
 - The SenseGuard Physical Systems Information Management (PSIM) removes false positives and provides manual override capabilities. SenseGuard is a software that integrates sensors, building management systems security systems, HVAC systems and

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integrates communication with all the devices. This has been in operation since 2002 at critical locations in the National Capital Region.

- Are there any cyber implications to the data that is collected through these systems? Is that addressed? There are multiple ways to handle cyber security, some use a closed network. You can also use a multifactor identification process to set variable rights for users.
- ENSCO worked closely with onsite rules and requirements. The system is configurable based on the concept of operations or business rules. The ability to look at checklists helps to simplify responses and track all necessary information.
- In the case of an event, areas can be locked with magnetic doors, and other tracking sensors and cameras can help to mitigate the event itself, without endangering a person.
- Everything in the system is shown in the operators and SMEs, depending on their permissions.
- SenseGuard is portable and customizable. A TSA demonstration project is planned, but has been delayed due to COVID. It has been remotely configured, and some chemical attack scenarios were conducted to demonstrate the features. The plan is to have an end user demonstration and stakeholder demonstration as well.
- Port Authority of NY NJ was the selected site. The intent was kept as a portable installation, so no hardwiring. Dedicated computer network meets the tiered operator and supervisor CONOPS to provide for multiple user stations. This was able to simulate many location types at airports as well.
- Refined interface through iterations to coordinate with procedures and CONOPs. Ran scenarios, including false positives. Leveraged building surveillance as well.
- Ultimately resulted in all virtual simulations, and no physical demonstrations.
- Well-suited for transit. Interface and customization were invaluable.
- Future improvements include deployment to cloud-based platform will allow for managers to interact from mobile devices rather than confining access to control room access.
- Contact Eric Tyson Tyson.eric@ensco.com or Christian Rose Rose.christian@ensco.com if you have questions.

12:40 – 12:50PM AP080 Scope and Strategic Plan

- AP080 Scope – Special thank you to Karen Philbrick for her thorough review and comments.
- AP080 Strategic Plan – target draft by May 31, to take to the full committee for June, and target a final plan for July 31, 2021.
 - Karen Philbrick asked if we would be updating the 2016 plan or creating a new plan? Lisa indicated it would be great to begin with the existing Task Force Strategic Plan and edit that focusing on what we can complete in the next few years (4 to 5 pages is a good target length). Steve mentioned that a template may be available soon – focus on content and not template formatting.
- New Strategic Plan – Process and Volunteers – Looking for at least 4 volunteers
 - Pam Fischaber
 - Karen Philbrick
 - James Dougherty

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- John Contestable (voluntold)
- Ed Watt
- Jodi Godfrey

12:50 – 1:00PM Other TRB and Committee Updates

- TRB/TCRP Panel Needs/Open Invitations – Mariela: in October the new topics were selected. We need people to serve on panels. Go to my TRB and access new studies and nominate, or let people that may be interested know, to submit nominations by Feb 5th!
- TCRP Synthesis (March 19, 2021) – counting on this committee to provide Mariela with new topic ideas – this year we have two (transit safety risk methodologies, and cybersecurity in transit). Many Syntheses published: TCRP Synthesis [145](#) on collision avoidance technologies, Synthesis [146](#) on security preparedness, and just finished [TCRP Report 218](#) on non-punitive employee reporting systems. This is the other side of TRB, and we need plenty of participants on the panel.
- TRB AP080 Call for Papers for 2022 Annual Meeting (April/May 2021) – Lisa stated that we need to develop a call for papers specific to our committee interests, targeting a final call for papers to be prepared and submitted in early March. She asked for at least two volunteers:
 - Karen Philbrick
 - Ruben Pena
 - Jodi Godfrey
- TCRP IDEA (May 15, 2021)
- TCRP Problem Statements (June 18, 2021)
- Other TRB/TCRP Updates
 - Karen asked about the refunds regarding the change in the registration price that was supposed to be refunded in regard to the Mid-Year meeting. Steve Andrle asked Karen to contact him.
- Other Member Discussion
 - June virtual meeting will be scheduled to discuss the AP080 Standing Committee on Transit Safety and Security Strategic Plan.
 - Lisa will contact members via email regarding the strategic plan progress and call for papers for the 2022 TRB Annual Meeting.
 - Special thanks to all those that keep this group moving

1:00PM

ADJOURN