Transforming Transportation Advisory Committee

Meeting Minutes | June 13, 2024

The Transforming Transportation Advisory Committee (TTAC) held its second meeting virtually via Zoom. In accordance with Federal Advisory Committee Act (FACA) requirements, the full meeting was open to the public via livestream. Vinn White, Designated Federal Officer (DFO), called the meeting to order at 11:30 AM ET.

The following individuals attended the public meeting:

TTAC Committee Members

- TTAC Chair: Kate Gallego, Mayor, City of Phoenix, Arizona
- TTAC Vice Chair: Bryant Walker Smith, Associate Professor, University of South Carolina School of Law (Special Government Employee)
- Nat Beuse, Chief Safety Officer, Aurora
- John Bozzella, President and CEO, Alliance for Automotive Innovation
- Laura Chace, President and CEO, ITS America
- Mark Chung, Executive Vice President, Roadway Practice, National Safety Council
- Matthew Colvin, Chief of Staff, Transportation Trades Department, AFL-CIO
- Steve Dellenback, Vice President of Intelligent Systems, Southwest Research Institute (Special Government Employee)
- Thomas Dwiggins, Chief Fire Officer, Chandler, Arizona Fire Department
- Carol Flannagan, Research Professor and Director of the Center for the Management of Information (Special Government Employee)
- Kelly Funkhouser, Associate Director of Vehicle Technology, Consumer Reports
- Kim Lucas, Director of Mobility and Infrastructure, City of Pittsburgh, Pennsylvania
- Raj Rajkumar, Professor of Electrical and Computer Engineering, Carnegie-Mellon University (Special Government Employee)
- Bryan Reimer, Research Scientist, Center for Transportation and Logistics/AgeLab, Massachusetts (Special Government Employee)
- Catherine Ross, Harry West Professor of City and Regional Planning, Georgia Institute of Technology (Special Government Employee)
- Cole Scandaglia, Senior Legislative Representative and Policy Advisor, International Brotherhood
- Steve Shladover, Research Engineer, University of California Berkeley (Special Government Employee)
- Bernard Soriano, Deputy Director, California Department of Motor Vehicles
- Amie Stepanovich, Vice President of U.S. Policy, Future of Privacy Forum
- Maria Trinidad ("Triny") Willerton, President and Founder, It Could Be Me
- Carol Tyson, Government Affairs Liaison, Disability Rights Education and Defense Fund
- Eileen Vélez-Vega, Secretary, Puerto Rico Department of Public Works and Transportation

TTAC Committee Member Representatives

- Julia Friedlander, Senior Manager, Automated Driving Policy, San Francisco Municipal Transportation Agency on behalf of Jeffrey Tumlin, Director of Transportation, San Francisco Municipal Transportation Agency
- David Quinalty, Head of Federal Government and Policy, Waymo on behalf of Tekedra Mawakana, Co-Chief Executive Officer, Waymo

United States Department of Transportation

- Vinn White, TTAC Designed Federal Officer, U.S. DOT
- Christopher Coes, Acting Under Secretary of Transportation for Policy, U.S. DOT
- Scott Goldstein, Deputy Assistant Secretary for Policy, U.S. DOT
- Stanley Caldwell, Director of the SMART Grants Program, U.S. DOT

Call to Order, Meeting Logistics, Welcome Remarks

Vinn White, TTAC Designed Federal Officer, U.S. DOT, welcomed the TTAC members and meeting attendees. He informed members that today's meeting will provide the opportunity to dig deeper into some of the topics that were originally defined in the first TTAC meeting in January 2024. Since the first meeting, TTAC members have developed subcommittees to tackle these topics, including automated driving systems (ADS) and artificial intelligence (AI), and will present some of their preliminary findings and draft recommendations during this meeting. Vinn also noted that some of the meeting would be dedicated to discussion of new potential topics for the committee to consider, including the role of emerging technology in improving transportation project delivery as well as emerging, overlooked, and underleveraged innovations for safety. Vinn introduced Christopher Coes, Acting Under Secretary of Transportation for Policy, U.S. DOT, to give opening remarks to the committee.

Acting Under Secretary Coes thanked TTAC members for contributing their time and expertise to navigate exciting, yet challenging, transportation topics. He noted that the questions posed to the committee are complex and do not have easy or quick answers, but that the expertise of the members in crafting recommendations and working with the Department of Transportation is more critical than ever. He noted that he looked forward to hearing about TTAC's progress and the work of the subcommittees.

Chair Gallego, the Chair of TTAC and the Mayor of the City of Phoenix, Arizona, thanked Vinn White and Acting Under Secretary Coes for their remarks and the committee. She noted that moving the country forward to continue to be in a leadership position in advanced technology, safety, workforce, and so much more is important and that lessons can be learned from the committee in these areas. Chair Gallego also acknowledged Secretary Pete Buttigieg for his continued leadership and passion on the topics that TTAC is tackling to get right for the country. She noted that the last five months have been productive for the committee and that the work of the subcommittees would be presented today, in addition to a new subcommittee on project delivery that will be led by Kim Lucas, Director of Mobility and Infrastructure, City of Pittsburgh, Pennsylvania.

Chair Gallego noted that if technology can be used to deliver projects more effectively, it will save money, improve safety, and make it so that all can have better transportation experiences. Lastly, Chair Gallego acknowledged Laura Chace for bringing the ITS America Expo to the City of Phoenix, AZ where

the community was able to see a lot of the topics TTAC is discussing in-person. Chair Gallego introduced Bryant Walker Smith, the Vice Chair of TTAC and a special government employee.

Bryant Walker Smith thanked Chair Gallego and the committee for meeting. Bryant highlighted the tireless efforts of the subcommittee leaders and volunteers who meet every week to advance the important topics that will be discussed in the meeting. He noted the vigorous discussions have produced lots of agreements, and disagreements, on the important areas the committee identified. The subcommittee chairs and group leads will use this meeting to report on their initial decisions, gaps, and perspectives, and key requests and questions for the larger committee body to consider. Formal considerations and the methods for the TTAC adopting recommendations will happen at a later time. He ended his welcoming remarks by emphasizing that talking about technologies requires talking about people, that he and the rest of the committee clearly care about fellow humans, that he has seen this spirit guide the subcommittee conversations, and that he hopes it continues in this meeting's discussions.

Chair Gallego introduced Bernard Soriano, Deputy Director, California Department of Motor Vehicles and subcommittee lead for the Automated Driving Systems (ADS) group.

Subcommittee Update: Automated Driving Systems (ADS)

Bernard Soriano thanked Chair Gallego and welcomed the committee. Bernard shared that the ADS policy subcommittee has been meeting weekly with the goal of providing U.S. DOT with final recommendations in the three distinct topic areas the group identified, including: public safety and first responder interactions, data collection and data access, and workforce impacts of ADS. Each of the three working groups devised problem statements and draft recommendations to address the challenges identified within their groups. The focus of the recommendations is to make reasonable, relevant, and actionable requests to U.S. DOT. Bernard thanked all of the subcommittee members and their delegates for working on these topics, as well as the U.S. DOT staff for their commitment and engagement. He introduced Chief Thomas Dwiggins, Chief Fire Officer, Chandler, Arizona Fire Department, and lead for the ADS Public Safety and First Responder working group.

ADS Public Safety and First Responder Working Group Updates

Chief Thomas Dwiggins shared the working group was tasked with identifying the public safety and first responder challenges that are currently being experienced with SAE Level 4 (L4)[1] deployments. The strategy of this working group was to first hear from public safety agencies that have deployments, or will soon have deployments, of L4 vehicles on their roadways. In total, the working group had three panels that included members of fire departments, law enforcement, and organizations that have completed research on this topic.

The full list of interviewees includes:

- San Francisco Fire Department
- Los Angeles Fire Department
- Santa Monica Fire Department
- Phoenix Fire Department
- Austin Fire Department
- Mesa Fire Department

- The National Association of State EMS Officials (NASEMSO)
- Scottsdale Fire Department
- San Francisco Police Department
- Los Angeles Police Department
- Santa Monica Police Department
- California Highway Patrol

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[1] SAE International. "Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles," J3016_202104. https://www.sae.org/standards/content/j3016_202104/

- Phoenix Police Department
- Chandler Police Department
- American Association of Motor Vehicle Administrators (AAMVA)
- Virginia Tech Transportation Institute (VTTI)

Chief Dwiggins noted the interviewed groups were passionate about the challenges they faced and that consistent issues were identified across the board. One of the biggest consistent challenges facing these departments is emergency scene interruption, which could include scenes like house fires, police incidents, or emergency medical incidents. Chief Dwiggins shared that these scenes are very dynamic and across the board there are challenges with L4 vehicles entering scenes and posing challenges to responders trying to mitigate the situation. For example, an L4 vehicle blocking an ambulance, running over fire hose lines, or vehicles failing to respond appropriately to blocking mechanisms like cones, flares, or other equipment. He noted that the first ten minutes of an emergency incident are extremely dynamic and most jurisdictions across the country are facing workforce shortages, so human resources need to be dedicated to mitigating a scene and not focused on dealing with L4 vehicles. This is a predominant issue being seen across all jurisdictions.

Chief Dwiggins noted that human traffic control is another issue being seen across departments. The ability for L4 vehicles to understand hand signals or respond to verbal directions is slow at best and very inconsistent across the board. He recounted an experience shared by an interviewee of a firefighter who had to get into an L4 vehicle and move it from the scene. Chief Dwiggins noted that, as a fire chief, his team should be working the scene and not having to move vehicles. Lastly, overall communication with the vehicles is critical. From Texas to California to Arizona, the working group consistently heard about unpredictable vehicle movements. Interviewees wanted some sort of status identifier on the vehicles to know if it was in automated mode or not. Another issue is being able to communicate with the vehicles (or the vehicles' remote assistants) in loud environments.

Chief Dwiggins shared that initial recommendations created by the working committee were based on all of the challenges heard from across the stakeholders. The initial recommendation is for U.S. DOT to create a workplan for fleet operated ADS - public safety interactions, including:

- Data collection & measurement of interactions
- Equipment necessary for effective communication
- Voice to voice exterior
- Exterior status indicator (engaged - disengaged)
- Ability to receive public safety geofencing alerts
- Training & standards for remote advisor staff

Chief Dwiggins noted that on the topic of data collection, the officials consulted want the ability to measure data as solutions noted in the recommendation list are implemented, as to ensure they are working. On the topic of effective communication, he noted the largest interest with public safety right now is communication with the vehicle. There must be a process in place where law enforcement, emergency medical services, and firefighters have some type of exterior voice to voice communication with the vehicle. This communication needs to allow for the emergency responder to be able to hear and speak with an operator without the need to get inside of the vehicle, and this interaction needs to be quick. Additionally, exterior status lights that can show when a vehicle is engaged in automated mode was something that was desired across all interviewees. Further, the ability for law enforcement, hazmat

teams, or any other responders to be able to drop a pin around an incident and create a geofenced radius around the scene is important to keep automated vehicles out of these areas. Lastly, Chief Dwiggins noted that training and standards for remote advisor staff will be important so that responders can have consistent interaction with different vehicles.

Chief Dwiggins noted that through the engagement with public safety agencies several close calls with automated vehicles were noted across the board, not just in one community. It is important to act now to fix some of these issues or provide solutions, which would be a big win for public safety.

Bernard Soriano thanked Chief Dwiggins and noted that a lot of the recommendations are focused on urban and city environments but that commercial vehicles traversing highways is also something the working group will be considering moving forward.

Catherine Ross noted that the recommendations presented by the working group suggest the need for multi-jurisdictional cooperation that does not currently exist. Ensuring this type of cooperation can be put in place would help the group structure and frame challenges being seen.

Vinn White commented in response to Catherine Ross that further considerations from other federal agencies that may have equities in this space or a role to play may also be worth considering when engaging additional groups.

John Bozzella asked if any ADS companies or fleet operators were part of the working group. Further echoing Catherine Ross's point, bringing in additional perspectives from these private sector actors could help highlight important elements needed to address the challenges raised. Bernard Soriano responded that both Aurora and Waymo were in the working group. Nat Beuse noted that the comments provided by him, in addition to those provided by Waymo, may not be representative of the whole ADS community and that work can still be done to engage other stakeholders. Nat also noted that NHTSA has already opened investigations on several of the issues raised so far, so the recommendations are both in response to the urgency of the topic from U.S. DOT leadership but also responsive to actual experiences that first responders are bringing up. Nat Beuse shared [via chat] that other road users could also benefit from solutions.

Laura Chace highlighted the need for a more holistic recommendation on the connectivity within ADS, so that the ability to communicate with any and all road users and agencies, beyond emergency responders, is available. She acknowledged the primary focus of this group is on the topic of public safety, but that the topic of communication may be incorporated. David Quinalty agreed with Laura Chace on the idea of communication and shared that U.S. DOT has worked on standard communications around work zones to be utilized by local and State agencies to communicate with road users. Having a uniform and consistent way that agencies could communicate, if every agency had their own proprietary system or format, can make it challenging for ADS companies to adapt.

Julia Friedlander noted that a lot of lessons can be learned from a highway context, but that further adaptation is needed in a more urban context. Expertise from organizations like the Open Mobility Foundation can help bridge that gap and identify how to adapt these lessons to the new issues being faced on urban roads.

Raj Rajkumar asked [via chat] for exterior voice calls, could a phone number be listed as decal on the vehicle? Bernard Soriano noted that during emergency situations the working group heard clearly from interviewees that being on their phones during an emergency is not ideal. Chief Dwiggins agreed, noting that the first 10 minutes of an incident there are no human resources available to make phone calls to the

company and also move the vehicle. The working group, and the stakeholders, are looking for a much quicker solution. Exterior communication on the vehicle is preferable.

Automated Driving Systems (ADS) – Data Collection

Bernard Soriano introduced Steve Shladover, Research Engineer, University of California Berkeley (Special Government Employee) and lead for the ADS – Data Collection working group. Steve thanked Bernard and the committee for their contributions to the data collection working group, which includes almost half of all TTAC members. This large group allowed for a large range of representation across industry, labor, state and local governments, researchers, and public interest groups.

Steve Shladover shared the working group focused not only on data collection but also the dissemination of data. Because of the diverse representation of members in the working group, there was a lot of sensitivity about how the group expressed recommendations and balanced perspectives. As a basis of moving forward, the working group developed background observations including:

1. High safety expectations for ADS, but difficult to generalize actual ADS safety across the entire industry

2. Publicly available ADS data represents much more limited conditions and amount of driving than baseline human driving

Speaking to the first topic, Steve Shladover commented that is it very difficult with the available data to draw strong conclusions about the safety and practices across the industry. Even if one or two companies share safety data it is not enough to generalize across the industry because characteristics can widely vary. On the second topic, apples-to-apples comparisons were repeatedly brought up in the working group, because of the large quantity of data that exists on human driving data versus the small set that exists on automated driving.

Steve Shladover shared the group's problem statements and recommendations, which were developed to show the problems that needed action to lead to group towards development of actionable recommendations. The working group developed six primary draft recommendations, including the following:

1. **Facilitate early learning (sharing data and experience gained from initial ADS deployments)**
   a. Steve commented that it is important to be able to share the knowledge gained from early deployments throughout the country so as to not reinvent the wheel.
2. **Support state and local participation in defining new analysis approaches and supporting data collection**
   a. This includes the need for participation by state and local agencies to define what is needed for new analysis approaches and what support can be given to help with that analysis.
3. **Sponsor ADS impact research and analysis, with stakeholder engagement in definition of methods**
   a. Steve reiterated the third problem statement is to help quantify the different benefits and risks stakeholders are identifying and again support the broader set of ADS impact assessment needs
4. **Seek applicable lessons from other transportation modes**
   a. Steve noted this was a broad problem statement but that lessons may be derived from other modes, like aviation, where there have been decades of experience in sharing data about safety and critical situations, while also protecting confidentiality.

5. **Update transportation data collection, analysis and distribution approaches to support ADS assessment**
    a. This problem statement can have broad implications through U.S. DOT but is a way of recognizing the need to deal with the available baseline data about transportation system performance and the need to update data collection analysis and distribution in general.
6. **Update NHTSA Standing General Order (SGO) data collection and dissemination based on inputs from a new Request for Information (RFI)**
    a. Steve noted this final problem statement is focused on the NHTSA SGO and the need for a new RFI to capture input from a variety of stakeholders about how SGO data collection could be enhanced.

Steve Shladover noted there is a lot of subtlety around each draft recommendation that is not captured in these overarching statements. The committee was provided with an additional draft document prior to the meeting to review full descriptions of each problem statement and recommendation area.

Chair Gallego thanked Steve Shladover and opened the floor to questions. Bryant Walker Smith asked on behalf of Raj Rajkumar if a black box, virtual or physical in automated vehicles would be useful. Steve noted the group did not discuss that level of detail but there is work currently going on in the standardization world around this topic area. The TTAC working group is more focused on higher level needs for data collection instead of specific mechanisms for collecting vehicle data.

Catherine Ross asked if the working group identified something as an immediate or highest priority. Steve responded that sharing of early data was an area the working group thought could be done quickly and with significant value, additionally the NHTSA SGO RFI is an area members think could be addressed soon.

Carol Tyson commented that, especially for fleet-based vehicles, equity performance measures that look at environmental justice considerations, what neighborhoods are being currently serviced, whether or not wheelchair users are being provided rides and the wait times for those rides versus non-wheelchair users, and service denials would be useful metrics to collect. Steve responded that some of that language appears in the longer text version of the recommendations. Additionally, the working group is looking at a broader topic related to the Safe System Approach.

Nat Beuse commented that it would be beneficial for U.S. DOT to provide reactions to initial recommendations or problem statements related to safety as this would be useful to narrow and focus work. Vinn White responded that U.S. DOT can be responsive to requests to review and provide reactions to the recommendations under development by the group.

Bryant Walker Smith noted that what agencies do with the data after collection is important too, including the analysis conducted as well as the dissemination of those data. To the extent data are always being collected, those datasets could already be analyzed and communicated more quickly than new data can be collected. Steve noted that the topic of how to disseminate data and insights gleaned from it to enhance public understanding came up during the working group meetings.

John Bozzella commented that a more formal rulemaking process could be used to update the SGO. Steve Shladover responded that an RFI would be a faster process based on group consensus.

Raj Rajkumar [via chat] asked if there is a fundamental conflict between the public need for data access and companies' investments in data collection in terms of time, effort and resources. Bernard also noted that the group had a healthy discussion related to how data is collected and the dissemination of that

information. Noting that conventionally driven vehicles do not have reporting at the same level currently as automated vehicles, so there was a balance to strike on the level of data to be collected.

Amie Stepanovich asked if there was a discussion on what categories of data are implicated, including the extent to which data includes personal data. Privacy was mentioned in the presentation, but Amie inquired if that is a part of the consideration for the recommendations, either if it is thought to be a part of one of the current recommendations or a recommendation for discussion in future subcommittee meetings? Steve noted that personal privacy data concerns were also discussed. The working group believes there may be an opportunity for different levels of information reporting that would be suitable for public agencies and researchers who can protect confidentiality.

Chair Gallego thanked Steve and the working group for their continued discussions and attention to detail.

Automated Driving Systems (ADS) – Workforce and Economic Impact

Chair Gallego introduced Cole Scandaglia, lead for the Workforce and Economic Impact working group. Cole noted that the group was tasked with thinking about the economic and workforce impacts of AV. He noted that many different segments of the workforce, from mechanics, dispatchers, loaders and others, work in transportation and may be impacted with wide-scale AV adoption. Cole noted that with every technological change, there are new job opportunities as well as economic opportunities that have not fully conceptualized yet.

The working group does not have a finalized document, but they have outlined several recommendation categories to narrow their focus and finalize in the coming months. The categories include:

1. **Identifying Stakeholders**

    a. **Problem Statement**: In considering workforce and economic impacts, DOT may not always be aware of specific equities and expertise.

2. **DOT Research Directives/Data Needs**

    a. **Problem Statement:** Substantial research exists and is continuing to be conducted on the impacts of ADAS and ADS deployment. In addition to continuing to monitor scholarship in this regard, DOT should produce its own research.

3. **Existing DOT Tools**

    a. **Problem Statement:** What tools does DOT currently possess to address impacts of the deployment of AVs, and how should these tools be deployed?

4. **Interagency Cooperation**

    a. **Problem Statement:** Relevant authorities and expertise on addressing different elements of workforce and economic impacts are spread between multiple federal agencies, as well as within.

Cole noted that the group has brainstormed a variety of topics from U.S. DOT exercising non-statutory preferences and grantmaking to certain workforce data reporting requirements. ADS standards related to workforce will need to be standardized so that grant applicants will understand the requirements evenly across programs and modes. Bryant Walker Smith thanked Cole and the working group for starting these conversations and categories and noted that the applicability of this work may extend beyond ADS. Cole agreed and noted that different levels of requirements may be seen across different types of jobs, not all of

which can be regulated. So, understanding safety outcomes and the particular role of regulation are important in these discussions.

Vinn White also responded, noting the first recommendation of U.S. DOT engaging with stakeholders to ensure the right conversations are being had to understand issues and respective authorities is important. Understanding who in the federal government needs to be part of these discussions will also be helpful. Nat Beuse called upon TTAC members to join the conversations on this topic and share their insights.

Bernard Soriano noted that while the categories from the working group are currently broad, there are more immediate actions that U.S. DOT could look into. For example, FMCSA could look at entry level driver qualifications relative to new technologies that are currently available on commercial vehicles and also technologies that are anticipated on commercial vehicles in the near future.

Subcommittee Update: Artificial Intelligence (AI) Impacts on Transportation

Chair Gallego introduced Steve Dellenback, lead of the AI Impacts on Transportation subcommittee. Steve thanked the members of the working group, which includes 12 to 14 active members who have met on a weekly basis. The key tasks of the working group include:

1. Identifying applications of AI to transportation that DOT should be monitoring most closely
2. Identifying transportation-specific needs for guidance on the application of AI. Additional Questions/Issues to consider:
3. Identifying transportation-specific risks from AI that DOT should monitor (e.g., security, privacy, social equity biases, etc.). What role should DOT play in oversight with respect to these risks?
4. Identifying transportation-specific benefits from AI that the DOT should embrace.

Steve Dellenback discussed the process taken by the subcommittee, which included group discussions, homework assignments, consolidating the inputs, and group review. He emphasized that AI is not new, but generative AI has brought renewed attention to the technology. For example, decision support systems have been in use for over twenty years. He highlighted the rapid advancement in the industry as well as the importance of transparency to avoid bias.

The subcommittee developed an overview of their work, which categorizes AI applications into four areas – surface transportation, transit, vehicles, and freight. The working group further identified considerations across all four categories, including: human impact, climate and environmental impacts, cybersecurity, and AI development. Steve noted that in discussions the subcommittee separated drivers and passengers to accommodate use cases such as infant monitoring systems within vehicles. Additionally, he clarified that vulnerable road users (VRU) includes wheelchair users and other pedestrians, cyclists, and motorcyclists, among others. Further, the subcommittee drafted "why" statements to give insight into the process for why the group is undertaking this work and what is included in each category. This document was distributed to TTAC members prior to the meeting and wasn't covered in depth during the presentation. Steve also noted that currently the subcommittee does not have any members with expertise in aviation or maritime domains and encouraged all members with expertise in this area to join. Steve opened the floor for comments from TTAC members.

Secretary Eileen Vélez-Vega highlighted the importance of infrastructure technology and the main concern within U.S. DOT is safety. Having connected vehicles and infrastructure to stop connected vehicles at traffic signals is important. Infrastructure also needs to be adaptable and ready for new technologies and funding is needed to help with this. Laura Chace followed up on the Secretary's

comment and suggested incentivizing and funding secure connectivity and digitization, noting that there is an opportunity to make some recommendations in this area.

Steve Shladover noted the importance of focusing on use cases of AI that include significant risks when the AI does not perform as expected. Steve Dellenback noted this has been discussed by the subcommittee but is challenging when the technology is in a black box. David Quinalty added to Steve Shladover's comment, noting that there is a robust regulatory regime in place for safety critical applications of AI and that efforts could be directed elsewhere to ensure positive outcomes.

Triny Willerton noted that she has recently come into contact with a working group that is exploring different ways for VRUs to communicate with AI and requested putting them in contact with the Subcommittee. Steve Dellenback shared his email address with Triny.

John Bozzella noted that AI is already in use in the vehicle world including in the design and manufacturing process. He emphasized the importance of recognizing the value and benefits of what AI is creating in the safety space, in addition to the risks.

Secretary Eileen Vélez-Vega highlighted the concept of complete streets and referenced a successful implementation by Florida DOT. Complete streets will reduce safety risks and make AI easier to implement. In the chat, she also noted that AI has been used in Puerto Rico's Department of Motor Vehicle services. Julia Friedlander and Laura Chace agreed in the chat with use cases for complete streets.

Carol Tyson [via chat] noted that, on the topic of infrastructure, disability advocates have been raising where infrastructure changes needed for AVs might also lead to more accessible infrastructure for disabled travelers (i.e., clearer street markings and crosswalks, safer and accessible pick up / drop off spaces …). Disability advocates have encouraged OEMs and government stakeholders to partner and utilize available funding for accessibility or AV infrastructure to do both.

Nat Beuse noted that it may be worth looking beyond road vehicles to technologies such as delivery bots and drones, emphasizing U.S. DOT's extensive modal jurisdiction. He also noted the need to clarify the term "trusted and verified".

Steve Dellenback noted that this is an area of overlap with the ADS Data subcommittee. Bernard Soriano noted that the are many tools available for traditionally regulated technologies, while more novel technologies such as delivery drones may need additional focus. Steve Dellenback clarified that the subcommittee is interested in focusing on maritime and aviation but is lacking the appropriate expertise to tackle those topics in depth. He added that many AI issues are consistent across the various modes.

Steve introduced the Surface Transportation slide and noted the importance of integrating across agencies as the consumer and vehicle don't distinguish between state roads and local roads. John Bozzella noted the complexity of the system and the role of AI in driving the connection between vehicles using the system and the infrastructure. He added that AI can accentuate V2X communications.

Laura Chace highlighted several currently available infrastructure safety applications noted in the presentation. Intersection sensor technologies can identify a pedestrian in an intersection and hold vehicles. Drones and sensors can be used to do predictive analytics on aging infrastructure. Emergency response detection sensors have been shown to detect an incident 10 minutes faster than 911 calls. This reduces time to response and reduces secondary crashes by up to 25%.

Bryant Walker Smith noted that the "why" statements created by the subcommittee may help prioritize recommendations and could lead to general statements that help U.S. DOT prioritize activities for years.

Julia Friedlander recommended the subcommittee consider the impact and potential improvement of mapping applications on travel patterns, particularly for cyclists. She noted the difficulty cyclists face in finding safe routes when using traditional mapping applications.

Steve Dellenback noted that the subcommittee's next steps include finalizing the "why" statements and preparing final recommendations for review by the entire TTAC prior to the next large group meeting.

New Topic Discussion: Role of Emerging Technology in Improving Transportation Project Delivery

Vinn White reconvened the TTAC meeting after a short break and introduced Scott Goldstein, Deputy Assistant (DAS) Secretary for Transportation Policy, Office of the Secretary U.S. DOT to kick-off the discussion.

DAS Goldstein thanked the members for their discussion and noted that the role of emerging technology in improving transportation project delivery is a very important topic, especially amidst the nation's historic investments through the Bipartisan Infrastructure Law. He noted that getting the pre-implementation phase right is essential to delivering projects that provide benefits and support the intended outcomes, as well as keeping projects on time and on budget. Scott noted that engaging early and often with affected communities and stakeholders to resolve issues prevents later and more expensive disruptions. Ensuring projects are delivered well and expeditiously and that, once the project is completed, it is maintained is essential.

DAS Goldstein noted that the Secretary has tasked U.S. DOT with identifying opportunities to improve project delivery and a Project Delivery Center of Excellence has been developed, as well as modernizing rules around the use of disadvantaged business enterprises for the first time in decades, as well launching efforts to modernize NEPA.

U.S. DOT is interested in TTAC providing ideas both in terms of types of technologies and innovation that could help project sponsors and project delivery teams comply with important federal environmental, permitting, and civil rights requirements as well as ways to move meaningfully engage with affected communities and stakeholders while keeping to project schedules and costs.

Chair Gallego thanked DAS Goldstein and relayed a story of a new airport terminal in Phoenix, AZ that stakeholders wanted completed in a short timeframe, but it will take the next decade to complete, so balancing resident wants with requirements, like NEPA, is a challenge worth focusing on. Vice Chair Smith shared that he was excited about this topic because there are opportunities for technologies that are not public-facing that may have a great impact.

Kim Lucas, subcommittee lead and Director for the City of Pittsburgh's Department of Mobility and Infrastructure, thanked U.S. DOT leadership for bringing this important topic to TTAC. From a city perspective, she noted that while technologies and goals for cities have evolved, the processes and mechanisms to spend federal money have been working the same way for many years. TTAC has the opportunity to look at those processes and see if additional opportunities exist to evolve some of those processes and make it easier for cities to manage and implement federal grants.

Mark Chung noted that the National Safety Council has worked with various grantees and sees certain challenges when applying for federal funds, including communities with the greatest need are often

lacking the resources to put together a federal grant package. Mark suggested that AI or other technology tools may help these communities develop packages. Second, communities have noted that the evaluation process for applications can be lengthy from time of submittal to announcing winners. Shortening that timeframe would be beneficial to communities. Triny Willerton echoed Mark Chung's comments and noted that the delay in processing federal grants can be challenging. Identifying ways to expedite that process would help communities and provide safety benefits. Chair Gallego responded that she agrees with Mark's comments and the NEPA challenge previously mentioned involving a real-time review would be very exciting to see.

Secretary Vélez-Vega noted that many different tools and ways of handling project delivery could be addressed by TTAC, and the types of projects will dictate those tools, whether the project is in the design, building, or bidding phase. She noted that AASHTO brings together stakeholders that would be able to help TTAC formulate ideas in this area, and she would be happy to act as a liaison between the two groups.

DAS Goldstein thanked the group for their thoughtful comments and shared that feedback on the different steps in the federal grantmaking process would be useful. He asked members if any information from U.S. DOT would be helpful to further these conversations and develop recommendations. Chair Gallego added that work already completed by Secretary Buttigieg on community engagement and nationally collecting information has been useful, including information on rural partners and younger demographics.

Kim Lucas shared that the subcommittee will be looking to narrow the scope of the recommendations and if U.S. DOT has specific technologies they would like more feedback on. Scott Goldstein shared that types of process improvements applicable across technologies would be useful, not just for technology projects but across the board. He noted that technology has a role to play in improving project delivery and any insights on how technology can be used in this area would be useful. Information on process transformation, including through the usage of technology, would also be insightful.

Vice Chair Smith suggested listening to project partners about the barriers they are facing, reflecting on internal project delivery processes, and identifying challenges during those processes.

Catherine Ross shared the NEPA process should have a more flexible segmented approach to not impede the overall delivery of a project. Further, reviewing the scale, time, and impact to costs at the end of the project and reflecting on how to better manage this work would also be insightful. More flexibility across the entire project process is required for successful projects. Kim Lucas responded that financial implications and delays in projects are important considerations in this area. She recounted a story about the Fern Hollow bridge collapse and that through emergency declaration certain processes regarding funding and order of operations were easier to navigate, so there are likely lessons learned from those types of processes as well.

Kim Lucas also noted that certain communities that are doing a great job in relation to project delivery would be insightful resources for TTAC, as well as communities that are struggling so those challenges can be captured. DAS Goldstein shared that U.S. DOT is hearing from communities of all sizes and private sector entities on issues with project delivery and working through the Project Delivery Center of Excellence to process and build from information received.

Laura Chace agreed that figuring out pain points for different stakeholders would be important as they will all require different solutions. She noted the I-95 Bridge collapse that also went through different emergency processes and that lessons may be gleaned from how that project was handled. On the topic of

grants, Laura noted the SMART grants took a lot of processing time because of NEPA waiver requirements. AI may be an area to help with processing information.

Vinn White thanked the group for their comments and shared that the group's scoping discussions so far have been useful. He encouraged the group to continue refining the scope and identifying challenges they see. Julia Friedlander, in the chat, shared that any information gathering on project delivery would be useful to keep the full TTAC aware and any U.S. DOT provided resources on this topic would help.

New Topic Discussion: Emerging, Overlooked, and Underleveraged Innovation for Safety

Vice Chair Smith re-introduced the topic of emerging, overlooked, and underleveraged innovation for safety that was formulated in the inaugural TTAC meeting. He proposed that TTAC describe how DOT can transform transportation by improving safety through innovations that could be imminently available (emerging), that do not receive sufficient attention (overlooked), or that are not being used to their full potential (underleveraged). Bryant walked through the key questions and inputs, and pointed out that Laura Chace recently gave a testimony to the Senate Committee on Commerce, Science, and Technology highlighting the constructive roles that technologies can play in road safety. He then turned to Mark Chung to describe how the Safe System Approach should inform to the transformation of transportation and the work of TTAC.

Mark Chung thanked Vice Chair Smith and the TTAC members for elevating the topic of safety in the meeting's conversation. He gave a reminder to the committee on the state of crashes on our nation's roadways, and that in recent history the US has surpassed over 40,000 fatalities annually on roadways. Although the last couple of years have plateaued and decreased the number of fatalities, the roadways are not necessarily safer than 20 years ago.

Mark Chung shared the challenge before the committee is finding ways to transform transportation such that no one dies on the nation's roadways. He encouraged the TTAC work to be through the lens of the U.S. DOT formalized Safe System Approach framework to ensure that recommendations embody the key principles of safety.

He shared that at the center of the Safe System Approach is the assumption that people make mistakes and that approaches to build tolerances and safeguards are created, so that if one aspect of the system fails there are other safety nets. He gave examples of a roundabout or rumble strips as examples.

The Safe System Approach is not a new concept and has been applied in many different countries, and Europe has realized tremendously from its implementation. US DOT formally embraced the approach in its National Roadway Safety Strategy guidance released in 2022, and many initiatives have been launched across the US from safety advocacy groups to those applying for grants and implementing ideas in their communities.

Mark Chung asked that recommendations embody the Safe System Approach framework for current and future work, from mobility, safety, and transformation topics. Vice Chair Smith thanked Mark Chung for his presentation and opened the floor for questions.

Triny Willerton thanked Mark and agreed that it is important to use this approach for the basis of TTAC work, as everyone should be able to get to their destination safely. She noted that how the discussion around crashes is framed need to be a culture shift, as people tend to blame inanimate objects rather than the driver. Realizing that and shifting the discussion can be impactful to the work of this committee.

Catherine Ross asked how the Safe System Approach can be drilled down to the state and local level. Triny Willerton responded that it is part of the National Roadway Safety Strategy and at the local level implementation has been very successful on roadways in Boulder, CO. Scott Goldstein also added that U.S. DOT is happy with the changes happening but recognizes that over 40,000 people are dying every year on our roadways and more work still need to be done. He noted that states are adopting the Safe System Approach as it is materializing in projects and planning through grants like Safe Streets and Roads for All. U.S. DOT is also working with public and private sector entities through the Call-to-Action Campaign which includes commitments from State DOTs and safety offices. Additionally, U.S. DOT is working closely with allies in action to track their commitments.

Kim Lucas shared that at a convening of US and EU researchers hosted by the National Academies of Science, a discussion around climate change and that actually moving the needle on lofty targets that we have in the next couple of decades for a better environment and safety on roadways are not mutually exclusive. There are many intertwined issues around housing, affordability of childcare, and schools in addition to infrastructure that should be considered. Secretary Eileen Vélez-Vega agreed with Kim Lucas, sharing that working across sectors has been useful in reducing fatalities. In Puerto Rico, the Department of Transportation and Department of Education have worked together on safety plans. They have also leveraged work from the International Road Federation to work through scenarios on different topics including emergency management.

Nat Beuse asked Mark Chung if there were any ideas around how U.S. DOT could monitor or track how well the implementation of Safe System Approach is going around the country. He noted over a 50% increase in alcohol related fatalities on roadways in California over the last three years, and if there can be ways to hold states accountable for reducing fatalities. Mark Chung noted that a state-by-state report card does exist, produced by Advocates for Highway and Auto Safety. That may be a piece of data to be reviewed by the group.

Laura Chace noted that different technology-based safety solutions, in relation to under leveraged and overlooked categories, may be useful. Both physical improvements to infrastructure as well as digital solutions may yield safety benefits that have not yet been explored. Vice Chair Smith agreed and noted that the roadways in his state of South Carolina are ten times more dangerous than the United Kingdom in terms of per capita fatalities. He introduced Stan Caldwell to talk about innovation with the SMART Grants program at U.S. DOT.

Stan Caldwell thanked Vice Chair Smith and TTAC for their time. SMART Grants was created by the Bipartisan Infrastructure Law and releases $100 million annually to communities across eight technology areas defined by Congress. Stan noted that geographic, technological, and community diversity are all elements of the SMART program, which has two stages. So far, SMART has funded $48 million in 93 projects across 39 states, including Washington, D.C. and Puerto Rico. SMART currently has an open opportunity period for Stage One of the program and will be closing on July 12, 2024. SMART focuses on proven technologies that are not yet widely adopted, and these grants serve as champions for those innovative technologies, which as the program evolves has seen aggregation of technologies into clusters across the country. Stan Caldwell noted projects ranging from drones monitoring work zones to intersection safety. Stan Caldwell noted that SMART has modal administrative partners across U.S. DOT who work directly with recipients to help address issues related to procurement, NEPA, and other processes.

Vice Chair Smith thanked Stan Caldwell and opened the floor to discussion. David Quinalty noted that automated driving technology is one tool in the Safe System Approach and that AVs have the ability to

follow speed limits. Further tools that cost the government very little to implement can be used as market forces around new technologies and create safer roadways.

Laura Chace noted [via chat] that TTAC should think about updating infrastructure to be smart and connected for all vehicle types and not just AVs exclusively. There is also an opportunity to incorporate recommendations for how U.S. DOT can support states and localities to make these infrastructure investments.

Kelly Funkhouser noted that the goal of this new topic area is not to create new technologies or invent something brand new but to take what is already out there and gaining adoption across the market. There is an opportunity for TTAC to provide recommendations directly to U.S. DOT on how to best do that.

Bryan Reimer also noted, via chat, that this topic will also allow for the industry to begin thinking about how the insurance industry can play a bigger role in promoting technology and behaviors that can lead to safer roads.

Triny Willerton noted that SMART does not require a cost-sharing match and that can lower the barrier to entry for a lot of communities. Ensuring access to grant programs can ultimately save lives and reducing barriers, like removing cost-sharing, are important.

John Bozzella noted that a midterm and long-term research agenda that will allow for U.S. DOT to get data that is needed to regulate industry, through funding demonstration programs, can ensure that safe technologies are being deployed. NHTSA should be at the core of that discussion. On the topic of overlooked technologies, John noted that by not seizing the opportunities associated with V2X there are fewer life saving technologies that have been implemented.

Laura Chace echoed John Bozzella's comments and offered that complete streets need to have an updated conceptual approach that incorporates technology, data and V2X communications to understand what is happening in these environments. Julia Friedlander noted that speed limiters are a known technology than can reduce speed and have a dramatic safety effect and is something worth considering.

Carol Flannagan noted that the committee should be mindful of framing on this topic as to not run the risk of orienting the discussion around tools that can be solved as opposed to problems that need to be solved. TTAC should focus on the problems instead of the technologies.

Kelly Funkhouser agreed that TTAC should not just look at technologies for the sake of the technology but also what consumer acceptance will be, as that can determine the success of a technology's implementation. Amie Stepanovich echoed these comments and noted human factors as important to consider with the adoption and development of technologies.

Catherine Ross suggested discussing more with communities to see what underutilized technologies are needed. Carol Tyson noted that access to technologies and solutions is also critical to understand and that equities around those technologies should be kept in the conversation. David Quinalty shared the AV Accessibility Act [via chat], as a study for how infrastructure could be modified to help people with disabilities benefit from AV ride-hailing.

Vice Chair Smith polled the room on making this a formal topic for TTAC consideration. The group agreed to move forward with this topic as a subcommittee and several members expressed interest.

Recap Meeting Progress and Review Next Steps

Chair Gallego thanked U.S. DOT staff and TTAC members for a productive meeting. The next TTAC meeting is tentatively expected to take place on October 17, 2024, in-person, with the location still to be determined. The Chair and Vice Chair will be working with U.S. DOT leadership to finalize the process for making formal recommendations and will share the information back out to the members once available. Members should anticipate more information on the two new topics discussed during the meeting, as well as how to get involved with those groups.

Vinn White thanked the members for their commitment and work. He reiterated that U.S. DOT will be working with the Chair and Vice Chair on formalizing recommendation procedures, and that the charter for TTAC will be extended.

Mayor Kate Gallego
Chair, TTAC

Ben Levine
Designated Federal Officer, TTAC[2]

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[2] Ben Levine succeeded Vinn White as DFO of TTAC subsequent to the June 13, 2024 meeting