Federal Advisory Committee Act

Clean Air Act Advisory Committee

Mobile Sources Technical Review Subcommittee

Virtual Meeting
October 19, 2020

Welcome & Opening Remarks

Due to concerns regarding COVID-19, this Mobile Sources Technical Review Subcommittee (MSTRS) meeting was held remotely via Microsoft Teams. \The EPA Designated Federal Officer (DFO) opened the meeting at 10:30am on October 19, 2020 and thanked everyone for their attendance and introduced new EPA staff. The DFO also acknowledged two members of the Clean Air Act Advisory Committee (CAAAC) who were in attendance. The DFO noted that the meeting is open to the public and that there would be time later in the day for public comment. Previous meeting minutes as well as materials associated with this virtual meeting, including a summary of this meeting will be available online on the EPA's MSTRS website (https://www.epa.gov/caaac/mobile-sources-technical-review-subcommittee-mstrs-caaac). The DFO welcomed members of the press and invited them to introduce themselves; none spoke up. A list of attendees is provided in Attachment 1. The DFO then summarized the meeting agenda provided below, which would start with remarks from MSTRS Co-Chair and EPA Division Director about the goals and expectations for the meeting.

Virtual Meeting Agenda

10:30-11:00am	Welcome and Opening Remarks
11:00am-12:30pm	Working Session #1 Breakout groups – Technology, Fuels, Personal Mobility, Goods Movement
1:30-2:30pm	Sharing Session
2:35-3:05pm	Working Session #2 Breakout groups – Technology, Fuels, Personal Mobility, Goods Movement
3:15-3:35pm	MOVES Review Workgroup Update
3:35-4:00pm	Remarks from the OTAQ Office Director with Q&A
4:00-4:15pm	Public Comment
4:15-5:00	Close Out, Next Steps, and Final Remarks

Observations and Expectations

The MSTRS Co-Chair welcomed everyone to the meeting, especially those on the west coast who had to wake up very early. The Co-Chair described how the subcommittee's current workgroup process began in 2017 with a discussion of future paradigms and questions like, "Do we have the regulatory structures in place to account for the future?" "What non-regulatory approaches can we use to mitigate the environmental impacts of people/goods movement?" and "What other stakeholders need to be part of this discussion?" The Co-Chair noted that this conversation led to the creation of the four subgroups exploring the areas of fuels, personal mobility, goods movement, and transportation technology. The Co-Chair explained that the goal is for each subgroup to have a draft ready to share with EPA by December 4, and that the objective for this meeting is to be as specific as possible during this time together so everyone can be prepared to work well in the coming weeks. The Co-Chair closed his remarks by thanking the organizers of the meeting and the members in attendance.

The Transportation and Climate Division (TCD) Director (OTAQ/EPA) continued the meeting, noting that he is confident that the input and products from the workgroup will be useful to the EPA in planning for the future. Mr. Simon emphasized that it is important for each group to understand what the others subgroups are working on so that ideas can be shared. The TCD Director also acknowledged that although everyone has been asked to think about these issues decades into the future, the EPA is a political organization, and predicting what will happen so far in the future is extremely difficult; therefore, members are encouraged to think about these issues in a way that appropriately recognizes those limitations.

EPA's Director of the Office of Transportation and Air Quality (OTAQ) then spoke very briefly, stating that although she is scheduled to speak more at length later in the meeting, she wanted to thank everyone for their efforts, and she is excited about what this particular group of people is doing and looks forward to hearing their recommendations going forward.

Questions and Discussion

The DFO thanked the speakers and noted that if anyone has technical issues during the meeting, they should email her or call her office phone number. She noted that with a few minutes left before the breakout groups were scheduled to begin, if anyone had any questions, they could speak up now.

A MSTRS member asked if it would make sense to have some time for each subgroup to talk directly with EPA staff to provide more guidance about direction and framing. The DFO answered that there will be an interim check-in meeting in December with each subgroup and EPA staff to allow for individual discussions about the progress of the report. The DFO added that the EPA would also like to see a report draft around that time, and she will be sending out more information via email to members later as more details and dates are finalized.

Break and Connect to Breakout Rooms

The DFO indicated that it was time for working session #1 to begin and that everyone would reconvene in the general session conference call after the lunch break.

Working Session #1

A list of the topics and MSTRS Breakout Groups is included as Attachment 2 to this meeting summary. Each of the subgroups (Technology, Fuels, Personal Mobility, Goods Movement) met individually during this working session. Summaries of the discussion for each subgroup are included as Attachments 3 through 6 to this document.

Sharing Session

The DFO welcomed everyone back and introduced the order in which representatives from the four subgroups would present a summary of their discussion and take questions: Technology, Fuels, Personal Mobility, and Goods Movement.

Presentation #1: Technology

The Technology subgroup lead presented on behalf of the Technology subgroup. He explained that in March, the team was tasked with addressing the question: "How can the EPA best ensure reduced emissions from transportation where the majority of new fleets are comprised of Zero Emissions (ZE) technology?" The Technology subgroup lead then described the five areas the subgroup has chosen to focus on. (1) Consumer Adoption - what barriers currently exist, and what can the EPA be doing to help expand the Zero Emission Vehicle (ZEV) market? (2) Public Education, (3) Lower Carbon Fuels - The Technology subgroup lead noted that the technology subgroup would be interested in discussing this area with the fuels subgroup, and that one potential recommendation for the EPA in this area would be to treat vehicles as a system and pursue ways in which vehicles currently in the field can see emissions reductions even while the larger fleet is transitioning towards ZE technology, (4) Life Cycle Analyses and Other Agency Analyses - The Technology subgroup lead noted that technology-related emissions reduction can come from the grid, materials used in parts, and vehicle efficiency, (5) Future Paradigm, which The Technology subgroup lead described as covering questions related to efforts to predict what the future will look like and then provide recommendations for how the EPA can be ready to support and regulate emissions in that changed world; for example, should the EPA be focused on continuing to achieve small reductions from internal combustion engine (ICE) vehicles, or begin planning for a world primarily consisting of Low Emission Vehicles (LEVs) and ZEVs? The Technology subgroup lead closed his presentation by noting that the group also discussed the challenge of including equity in these recommendations and potential questions about the definition of "majority."

The DFO thanked the Technology subgroup lead for his presentation and asked if there were any questions from the other members. A MSTRS member asked for elaboration on the subgroup's suggestion to transition to measuring emissions in grams per passenger mile. The Technology subgroup lead responded that all documents created so far are just drafts and that everything is still being discussed.

A summary of the technology subgroup working session discussion is provided in Attachment 3 to these meeting minutes.

Presentation #2: Fuels

The Fuels subgroup lead presented on behalf of the Fuels subgroup. The Fuels subgroup lead explained that the subgroup is anticipating that two-thirds of vehicles in 2030 will still be powered by ICEs, and that while concerns about criteria pollutants have been addressed in light duty vehicles, there is potential for progress in other sectors, such as those groups that are more heavily reliant on liquid fuels. The Fuels subgroup lead expressed agreement with the Technology subgroup lead that considering fuels and vehicles concurrently makes sense, especially because legacy vehicles will continue to be a source of emissions for a long time, and there are many non-fuel sources of vehicle emissions such as tire and brake wear. The Fuels subgroup lead also explained that the existing infrastructure for liquid fuels is aging and will need to be replaced very soon, and if liquid fuel retailers anticipate a decline in gasoline and diesel demand in the future, they may not choose to spend hundreds of thousands of dollars to repair and update the infrastructure. The Fuels subgroup lead emphasized that this presents an opportunity for the EPA to take a leadership role in this area and pull together many different bodies focused on a similar goal to work proactively to encourage innovation in the fuels sector. The Fuels subgroup lead expressed it would be good to look from a holistic perspective and view regulatory structures as a system; for example, there could be a reciprocal relationship between CAFE standards and other standards or programs to provide credits or incentives and streamline the process of bringing new fuels to market. The Fuels subgroup lead concluding by offering to answer questions.

A MSTRS member commented that in order to advance low carbon liquid fuels, there will be a need for standards that create a demand for them, which requires life-cycle-based emissions standard. Another MSTRS member asked if it makes more sense to think of the electricity used to power EVs as renewable, or if there is also carbon sequestration to achieve net negative CO_2 emissions. Mr. Berube responded that the term e-fuels is slightly vague, but there is some type of carbon capture component depending on the fuel in question. The Fuels subgroup lead asked for the EPA to clarify the audience and purpose of the report being produced by the workgroup. The DFO explained that the final report will be made public in some way, and that it will also be discussed by CAAAC, but that the EPA will provide more details later. For now, she explained that the workgroup should consider the EPA to be the primary audience.

A summary of the Fuels subgroup working session discussion is provided in Attachment 4 to these meeting minutes.

Presentation #3: Personal Mobility

The Personal Mobility subgroup lead presented on behalf of the Personal Mobility subgroup, while another subgroup member displayed his PowerPoint slides. The Personal Mobility subgroup lead began by reviewing the scenario being considered by the subgroup: “In a world where the majority of people in the U.S. get from Point A to Point B using a transport mode other than a personally-owned vehicle, describe the EPA’s work and role in reducing emissions transportation while maintaining mobility and accessibility.” The Personal Mobility subgroup

lead explained that the modes being considered were shared mobility, scooters, bikes, walking, water taxis, and ferries, and that the group regards the potential growth of urban aviation as an area to watch. The Personal Mobility subgroup lead then described the factors the EPA may want to consider, including: (1) how disparate factors shape individual mobility or mode choices; (2) how increasing automation and connectivity will impact personal mobility, driver behavior, and community structure, including telework, teleconference and other options; and (3) how to facilitate better inter-governmental collaboration and decision-making among the key decision-making bodies. The Personal Mobility subgroup lead concluded by noting that new research tools will be needed to investigate these questions, including life cycle analyses, modeling, and collaboration with other research bodies as appropriate. In addition, he noted that every policy tool will be needed, including regulations, financial incentives, voluntary programs, and education and outreach.

The DFO thanked the Personal Mobility subgroup lead for his presentation and opened the floor for questions. A MSTRS member asked to what degree automated vehicles are expected to be part of the future being considered by the group. The Personal Mobility subgroup lead responded that they will clearly be present, and that he expects that increasing artificial intelligence will transform things dramatically by 2050, especially through more connected vehicles, infrastructure, and pricing systems as well as greater efficiency in utilization of scarce right-of-way access. The Personal Mobility subgroup lead continued that by addressing interrelated safety, health, sustainability, and environmental concerns, smart technology could shape the system in a positive way, and the EPA needs to look at how to guide the system in the best way possible. The Personal Mobility subgroup lead also noted that adverse effects may occur, which necessitates thoughtful public policies to make sure automated vehicles are designed to work within existing cities rather than cities having to be redesigned to accommodate automated vehicles.

A summary of the personal mobility subgroup working session discussion is provided in Attachment 5 to these meeting minutes.

Presentation #4: Goods Movement

The Goods Movement subgroup lead presented on behalf of the Goods Movement subgroup. The Goods Movement subgroup lead explained that the team has put together a list of themes within the overall topic of goods movement that should be addressed, although they are open to additional suggestions. These themes are: (1) coordination and partnerships across state and federal agencies, including how to make them more efficient and effective; (2) research and technology, including regulations on engines, technology readiness levels, funding streams for technology demonstrations and deployments, and assessing EPA CTI regulations; (3) barriers with managing technological change, since new technology seems to move toward commercialization without adequate vetting; (4) private sector engagement, such as how the EPA can encourage the private sector to meet Paris Agreement targets and support emissions reductions along the supply chain and whether the EPA should provide guidance on renewable energy in the private sector; and (5) regulatory versus non-regulatory approaches, which the Goods Movement subgroup lead noted has been a theme across all subgroups and should be examined looking 10, 20, and 30 years out.

The DFO thanked the Goods Movement subgroup lead and then asked if anyone had questions. A MSTRS member asked if the group talked or thought about the disproportionate impacts of goods movement on communities around ports. The Goods Movement subgroup lead responded that they did not have a lot of time to hone in on that topic, although the EPA recently released guidelines for conducting inventories on ports that could be consulted.

A MSTRS member asked if the group had considered roadway monitoring or hot spots. The Goods Movement subgroup lead responded that they did not, but she indicated that those could warrant their own theme area in the report. The Personal Mobility subgroup lead added that it could also be good to look at cargo cycling and small electronic delivery, such as drones, since these have the potential to get 20% of trucks off the road, and the EPA could encourage that transition.

A summary of the goods movement subgroup working session discussion is provided in Attachment 6 to these meeting minutes.

Working Session #2

Continuing from the first working session, each of the subgroups met again individually during this working session. Summaries of the discussion for each subgroup are included as Attachments 3 through 6 to this document.

MOVES Review Workgroup Update

The DFO introduced OTAQ staff, who provided updates on the development of the next version of the MOVES model, MOVES3.

OTAQ staff provided an overview of the EPA's Motor Vehicle Emission Simulator, or MOVES, what factors it considers, and what it is used for. OTAQ staff then described the MOVES Review Workgroup, which was created by MSTRS to provide input on the development of MOVES.

OTAQ staff explained that the next update of MOVES, titled MOVES3, will be released soon. OTAQ staff noted that some of the changes in the new version include the incorporation of new rules (e.g. HDGHG2, SAFE), new data on heavy-duty and light-duty emissions and on-road vehicle activity, and improved user features. OTAQ staff described the next steps for MOVES3, which include finalization of documentation, release, training, and evaluation. OTAQ staff then gave a more detailed description of the updates for heavy-duty and light-duty emissions.

Questions and Discussion

The DFO thanked OTAQ staff and opened the floor for questions. A MSTRS member asked how the fleet was populated. OTAQ staff answered that they used the most recent available historical data as a baseline, using vehicle registration data from the Department of

Transportation then took projections into account using IHS (formerly Polk Automotive) data. OTAQ staff added that the default values are created at the time the version is released and do not change over time, but that the developers make it easy to update them with more recent information as it becomes available. OTAQ staff also reminded the group that there will be a more detailed technical report that accompanies the MOVES3 release which explains the data and model in more detail.

The Goods Movement subgroup lead asked OTAQ staff to give a brief overview of the new changes that might result from the update, such as NOx emissions, differences in geographic regions, or other high-level findings. OTAQ staff responded that the changes seen for the country as a whole are not the same as the ones seen specific geographic areas; some data shows running NOx emissions going up for heavy-duty vehicles, whereas hoteling emissions are going down due to less activity than previously estimated, and higher emissions are predicted for newer light-duty vehicles at lower speeds. OTAQ staff noted that the EPA will be presenting more detail to the MOVES workgroup in a month or so, and they are happy to provide a similar presentation to the MSTRS if there is interest.

A MSTRS member asked if there will be a summary document discussing the differences that people should expect to see, or other similar documentation. OTAQ staff responded that they are planning to post most of the technical documentation when the model is released and other documents as soon after release as possible. She remarked that there will be an overview document, which they are providing in response to similar requests made on previous model releases.

The DFO then thanked all the presenters and indicated that it was time to hear remarks from OTAQ's Office Director.

Remarks from the Office of Transportation and Air Quality Director

EPA's Director of OTAQOTAQ's Office Director indicated that she was very interested in seeing the final report from the workgroup and that she appreciated the members' thoughtfulness and effort.

OTAQ's Office Director noted that as she was listening to the four subgroup presentations, several common themes and similar insights jumped out at her from all of them. The first was that each group was building ideas about transition and timing into their discussions and recognizing that both the end point and the transition period matter. The second was equity, which OTAQ's Office Director agreed is important and needs to be recognized. The third was a perspective focused on systems and taking into account the links between fuel, technology, and goods and people movement. The fourth was the need for EPA to use different tools and approaches in order to be responsive and flexible. The fifth and final theme was the need for partnerships with many different organizations, rather than the EPA taking sole responsibility for managing everything.

OTAQ's Office Director explained that there is now a need for immense effort to be devoted to researching, compiling information, and understanding big topics and large amounts of information in order to translate these ideas into recommendations for the agency about what roles the EPA should play. OTAQ's Office Director emphasized that this is a very important and helpful role that MSTRS plays, and that she could not overstate how excited the EPA is to have this opportunity. OTAQ's Office Director noted that although they are not sure exactly how the information provided by the workgroup will be used, she is confident that it will be useful.

OTAQ's Office Director then provided several updates on what OTAQ has accomplished since the last MSTRS meeting. These included taking a number of regulatory actions, including establishing greenhouse gas standards for aircraft, proposing technical amendments for heavy-duty highway and non-road vehicle engines, promulgating the final SAFE rule, and amending the National Marine Diesel Engine program. OTAQ's Office Director emphasized that she is very proud of the office's efforts to streamline existing fuels regulations to be more efficient, stating that they have removed almost 800 pages of regulatory text without changing the stringency of the rules. OTAQ's Office Director added that the cleaner trucks initiative (CTI) also continues to be a big priority.

OTAQ's Office Director noted that the EPA is working on the development of more stringent NOx standards for heavy-duty vehicles under the CTI, and although the coronavirus outbreak caused their vehicle testing lab to be shut down, they are on schedule for a proposal in early 2021. OTAQ's Office Director mentioned that getting the MOVES update out is also important. OTAQ's Office Director concluded by mentioning that the Diesel Emissions Reduction Act (DERA) program is also busy in the fall and that they are planning to award over $50 million in funds. They also will be starting the 2021 funding cycle shortly.

Questions and Discussion

The DFO thanked OTAQ's Office Director and asked if anyone had questions. A MSTRS member asked whether the renewable fuel standards (RFS) is the right mechanism to use to drive down carbon emissions, considering that there is a move toward electrification but that liquid fuels are still widely used. OTAQ's Office Director responded she is excited to see what the fuels group recommendations are regarding this issue, as there will be increasing electrification in the future. She noted that the RFS is the current mechanism in place; however, she noted that there is a push to use the program to try to get emissions in certain areas and that it is probably more suited to accomplish some of these and not others. The MSTRS added that the team appears to be pushing a lot of balls forward, which is great, and that the MSTRS is excited to see what is next.

A MSTRS member asked if there are any updates on current port efforts related to the report developed by the Ports Workgroup of the MSTRS. OTAQ's Office Director responded that ports are a priority for the office, and that the group in OTAQ focused on ports has been able to build relationships across EPA regional offices and on the ground with different port communities. OTAQ's Office Director noted that one current focus area is in determining what role EPA

headquarters can play that will be the most valuable and impactful, such as developing tools and leveraging resources, like DERA funds. OTAQ's Office Director added that this highlights a different model for the EPA compared to its normal national regulatory approach, which may be useful and relevant going forward.

Public Comment

The DFO thanked OTAQ's Office Director again and indicated that there would now be an opportunity for any members of the public in attendance to comment if they wished.

A CAAAC member spoke up and thanked everyone for having an open meeting. He remarked that there are opportunities to reduce emissions further through existing rules by making use of areas where there is more regulatory flexibility. He asked that the group think about four issues. First, regarding criteria pollutants, he noted that there are some allowances for sulfur content in the existing rules, and he suggested that by tightening up some of these allowances, the rules could reduce criteria pollutant emissions further. Next, for vehicles, due to the existing trading systems, the CAAAC member noted that fleetwide averages may meet CAFÉ and GHG standards but there can be geographic areas where the averages do not meet the standards, due to the types of vehicles purchased and driven there. He suggested that reducing the trading allowances could reduce these geographic disparities. For legacy vehicles, the CAAAC member suggested that the EPA could encourage states to adopt programs like those in Texas and California to incentivize the transition to newer, cleaner vehicles. Finality, the CAAAC member observed that the transportation conformity regulations could probably use some updating. He suggested that the EPA review these regulations and also look for opportunities to improve or streamline those regulations.

No other members of the public volunteered to speak.

Close Out, Next Steps, and Final Remarks

The DFO indicated that the meeting would begin wrapping up and invited anyone who had any final questions or comments to share them.

The Technology subgroup lead asked if there was a way to share documents so members can collaborate on their subgroup reports while maintaining version control and being efficient. The DFO answered that there are limited platforms the EPA can offer, but they could set up a SharePoint site. EPA staff added that the EPA will need to be sure that any sites set up meet the Federal Advisory Committee Act (FACA) requirements.

The Personal Mobility subgroup lead stated that while he was looking through the goods movement report draft, one of the mid-term suggestions for the EPA was developing guidelines for best practices, and he thought it seemed to merit more discussion. For instance, there was a suggested recommendation that delivery by drone be examined. A MSTRS member noted that

the DOE has had several freight delivery webinars that he would be happy to share with the MSTRS or subgroups.

The Goods Movement subgroup lead asked if anyone had thoughts about the most efficient way to move overarching recommendations forward. The MSTRS Co-Chair responded that it would make the most sense to wait and see what the draft reports look like in December, then decide the best direction to go in for the spring. He suggested that each piece be written up by the subgroups and that a separate layer be developed later that ties together areas of overlapping commonality between the groups. OTAQ's TCD Director added that this process will likely be iterative. The Co-Chair observed that the final report should be actionable, and it would be best for the process to not take so long that the EPA has to begin acting before it can review the recommendations of this subcommittee.

Closing Remarks

In closing, the MSTRS Co-Chair thanked everyone for their hard work, including the DFO for her leadership, EPA staff for assisting, the Technology subgroup lead, the Fuels subgroup lead, the Personal Mobility subgroup lead, and the Goods Movement subgroup lead for reporting out, the contractors for assisting, and the OTAQ leadership group. The Co-Chair noted that although there is a long way to go, December is coming soon, and they would like to have the report drafts finished and discussed before people start dropping off for the holidays. OTAQ's TCD Director stated that he agreed with the Co-Chair's remarks.

The DFO added that she was impressed by the depth and breadth of the presentations and requested that the subgroups send her the draft reports via email. The DFO explained that they will be checking in about the path ahead between December and the spring meeting, which will be sometime in March or April. The DFO added that subgroups should feel welcome to continue relying on their EPA scribes and moderators as a resource. The DFO closed by thanking everyone for their time and energy and adjourned the meeting.

Attachment 1

MSTRS Virtual Meeting Attendance List[1]	
Name	**Organization**
Subcommittee Members	
Bob Anderson	Chevron USA Inc.
Matt Barth	Institute of Electrical and Electronics Engineers
Michael Berube	U.S. Department of Energy
Erica Bowman	Southern California Edison
Rasto Brezny	Manufacturers of Emissions Controls Association
Blair Chickasuye	Hewlett Packard
Steve Cliff	California Air Resource Board
Dave Cooke	Union of Concerned Scientists
Elena Craft	Environmental Defense Fund
Andrew Cullen	Penske Logistics
John Eichberger	Fuels Institute
Peg Hanna	New Jersey Department of Environmental Protection
Kent Hoekman	Energies
Michael Iden	Association of American Railroads
Tracey Jacksier	AIR LIQUIDE Research and Development
Rich Kassel	Tri-State Transportation Campaign
James Kliesch	American Honda Motor Co., Inc.
George Lin	Caterpillar, Inc.
Matt Miyasato	South Coast Air Quality Management District (California)
Elaine O'Grady	Northeast States for Coordinated Air Use Management (NESCAUM)
Michael Replogle	NYC Department of Transportation
Joanne Rotondi	Hogan Lovells
Simone Sagovac	Southwest Detroit Community Benefits Coalition
Susan Shaheen	International Journal of Sustainable Transportation
Luke Tonachel	National Resources Defense Council
Cynthia Williams	Ford Motor Company
Other Attendees	
Noelle Baker	Hyundai Kia
Erin Birgfeld	U.S. Environmental Protection Agency
Jim Blubaugh	U.S. Environmental Protection Agency
Kevin Brown	
Amy Bunker	U.S. Environmental Protection Agency
Byron Bunker	U.S. Environmental Protection Agency
Julia Burch	U.S. Environmental Protection Agency

[1] This list of meeting attendees is not comprehensive due to a number of unidentified call-in participants.

MSTRS Virtual Meeting Attendance List[1]	
Name	**Organization**
Susan Burke	U.S. Environmental Protection Agency
Dallas Burkholder	U.S. Environmental Protection Agency
Bill Charmley	U.S. Environmental Protection Agency
Meredith Cleveland	U.S. Environmental Protection Agency
Jessica Daniels	U.S. Environmental Protection Agency
Dominic DiCicco	
Sarah Dunham	U.S. Environmental Protection Agency
Steven Fine	U.S. Environmental Protection Agency
Diana Galperin	U.S. Environmental Protection Agency
Gil Grodzinsky	Georgia Environmental Protection Division
Philip Guiellemette	Flint Hills Resources
Michael Hartrick	Alliance of Automobile Manufacturers
Marilyn Herman	Herman & Associates
Andrew Hoekzema	Capital Area Council of Governments (Texas), Member of CAAAC
Jeff Hove	Fuels Institute
Aaron Hula	U.S. Environmental Protection Agency
Steve Hurd	Caterpillar, Inc.
Maxine Joselow	E&E News
Dale Kardos	Kardos & Associates, LCC
John Kinsman	Edison Electric Institute
George Lin	Caterpillar, Inc.
Sonya Louis Cheatham	Virginia Department of Environmental Quality
Paul Machiele	U.S. Environmental Protection Agency
Andrea Maguire	U.S. Environmental Protection Agency
Britney McCoy	U.S. Environmental Protection Agency
Robin Moran	U.S. Environmental Protection Agency
Rachel Muncrief	International Council on Clean Transportation
Robert O'Keefe	Health Effects Institute
Michael Olechiw	U.S. Environmental Protection Agency
Patricia Paff	U.S. Environmental Protection Agency
Stuart Parker	Inside EPA
Christy Parsons	U.S. Environmental Protection Agency
Clay Pope	Clay Pope Consulting, Member of CAAAC
Julia Rege	Association of Global Automakers
Sarah Roberts	U.S. Environmental Protection Agency
Rafi Ronquillo	U.S. Environmental Protection Agency
Jenny Sigelko	Volkswagen of America
Michael Shell	U.S. Environmental Protection Agency

MSTRS Virtual Meeting Attendance List[1]	
Name	**Organization**
Karl Simon	U.S. Environmental Protection Agency
Lisa Snapp	U.S. Environmental Protection Agency
Thomas Van Heeke	General Motors
Christopher Voigt	Virginia Department of Transportation
Diep Vu	Marathon Petroleum Co.
George Ward	U.S. Environmental Protection Agency
Contractor Support	
Nanishka Albaladejo	SC&A, Inc.
Cory Cook	SC&A, Inc.
Margaret Overton	SC&A, Inc.
Tanya Parise	SC&A, Inc.
Lesley Stobert	SC&A, Inc.

Attachment 2

MSTRS Future Mobility:
Four Scenarios for Evaluation in Subcommittee Subgroups

Objective: EPA would benefit from additional detailed feedback from the MSTRS subcommittee about EPA's role with respect to future mobility paradigms which have been discussed by this subcommittee since mid-2017.

Structure: Ahead of the March 2020 MSTRS committee meeting, members will self-select into four subgroups; each subgroup will have a specific topic to explore, as described below. It is expected that subgroups will initially meet for two hours during the March meeting, again at the following meeting in September, and on their own outside of the formal meetings, as necessary. During the subcommittee meetings, EPA will provide a moderator and scribe for each subgroup. Below, EPA proposes a scenario for each of the subcommittee subgroups to discuss. Each focuses on an aspect of new mobility in which EPA has a particular interest. The scenarios are intended to provide a foundation for each subgroup's discussion by painting a picture of a possible future for the transportation sector. The subgroup is asked to provide insight on how EPA could best ensure continued reductions in transportation emissions, *given that possible future* (i.e., assuming that this future has occurred).

For each of the scenarios, EPA challenges the MSTRS subgroups with a list of questions to initiate discussion. However, the subgroups should not feel strictly bound by the questions posed below. If there are additional questions that arise out of the subgroup's work and which the subgroup believes will be informative for EPA, they are encouraged to pursue those, as well. In addition to the scenarios and the associated questions, OTAQ will also provide a general primer piece on relevant EPA authorities and past categorial actions to help MSTRS members understand what may or may not be feasible as a potential EPA action.

Goal: By the Spring 2021 meeting, each subgroup is encouraged to produce a 15-20 page report providing feedback and insights on their respective topic. This document should assume that the subgroup's future scenario, as described below, occurs. The group should provide insights into what this would imply for EPA's near, mid, and long-term work. That is, structurally, what would need to change about EPA's work to support our mission of emission reductions while maintaining mobility and accessibility? What new factors and approaches would EPA need to consider?

Scenario #1: (Technology) "Zero Emissions"

In a world where the majority of new light-duty and heavy-duty fleets are zero tailpipe emission technologies (e.g., battery-electric, hydrogen fuel cell), describe EPA's work and role in reducing emissions from transportation while maintaining mobility.

Scenario specific questions:

- *What will be needed to ensure the technology deployment happens in a way that achieves emission reductions most efficiently?*
  - *What analyses would EPA need to conduct to evaluate the potential for emission reductions from different transportation subsectors? (e.g., light-duty, heavy-duty, buses)*
  - *How could EPA help see that emissions reduction technologies be utilized in subsectors with the greatest potential for emission reductions?*
- *What analyses will EPA need to conduct to evaluate emissions and energy efficiency from zero-tailpipe emission technologies?*
  - *What type of models or other analysis tools could EPA consider for evaluating emission impacts from electricity or hydrogen generation?*
- *What is EPA's role related to charging or refueling infrastructure?*
  - *With which stakeholders could EPA engage to better understand potential emission impacts of charging or hydrogen refueling infrastructure?*
  - *Are there criteria other than emissions impacts that EPA should consider related to infrastructure, e.g., for providing technical resources or public education?*

Scenario #2: (Personal Mobility) "Share a Ride"

In a world where the majority of people in the U.S. get from Point A to Point B using a transport mode other than a personally owned vehicle, describe EPA's work and role in reducing emissions from transportation while maintaining mobility/accessibility.*

**Transport modes may include but are not limited to taxis, TNCs, fixed and flexible transit, micro-mobility (bikeshare, scooters), and active transport (bike/pedestrian).*

Scenario specific questions:

- *What will be needed to ensure mobility as a service happens in a way that achieves emission reductions most efficiently? Consider both overall transportation emissions reductions and sector specific emissions reductions. Are there differences in technology applications under the different use cases? What could that look like?*
- *What is the infrastructure in place? Does EPA have a role in establishing this infrastructure?*
- *What role should data play in enabling and optimizing shared mobility towards emissions reductions while maintaining mobility/accessibility (e.g., real-time activity info, dynamic on-demand services, occupancy/location data)? What is EPA's role regarding data in this space?*

Scenario #3: (Fuels) "Future Fuels"

In a world where alternative fuels such as electricity and hydrogen are used to meet a significant percentage of the light duty and heavy duty on-road fuel demand, describe EPA's work and role in reducing emissions from the fuel pool.

Scenario specific questions:

- *Are there transportation sub-sectors where liquid fuels will be critical? If so, which ones?*
- *What actions should EPA take to provide that liquid fuels reduce emissions, particularly for fuels such as biofuels where a majority of the emissions could be upstream of the tailpipe?*

Scenario #4: (Goods Movement) "I Want My Stuff!"

In a world where goods delivery primarily happens through on-line orders and by direct-to-household-and-business deliveries, describe EPA's work and role in reducing emissions from transportation options in the supply chain (e.g. between the final distribution site and a household or business).*

**Transportation options may include but are not limited to drone delivery, wheeled robot delivery, new delivery business models and processes, connectivity and improved intelligent routing software, 3D printing, etc.*

Scenario specific questions:

- *What will be needed to have technology deployment happen in a way that achieves emission reductions most efficiently? Consider both overall transportation emissions reductions and sector specific emissions reductions. Are there differences in technology applications under the different use cases? What could that look like?*
- *What would an efficient low-emissions goods delivery system look like? Who are the major players? What is EPA's role in this space?*
- *How can EPA best utilize, or encourage utilization of, data to enable and optimize low emissions deliveries? (e.g., real-time activity info, intelligent routing software, etc.)*

Questions for all scenarios

OTAQ has historically undertaken an array of approaches to achieve its mission of reducing emissions of air pollutants from transportation. For each scenario, consider the following questions:

- *What are the opportunities and challenges that may arise in each scenario?*
- *What factors are most important for positive environmental outcomes?*
    - *What approaches could EPA consider to address factors that are important for positive environmental outcomes? (e.g., EPA voluntary programs, new regulations, public education)*
    - *What should EPA keep doing? What needs to change moving forward?*
    - *In what timeframes should EPA consider utilizing the above approaches?*
- *What type of information would EPA need?*
    - *What data gaps need to be filled?*
    - *What additional research is needed?*
    - *Which stakeholders would EPA need to engage with?*
    - *Which metrics provide the best measuring stick for assessing emissions, both impacts and reductions?*
    - *Is real-time data needed?*
        - *If so, what role would real-time data play in reducing transportation emissions in the given scenario?*
        - *What temporal and spatial aspects of data will be particularly relevant to understand?*
    - What information and tools could EPA develop to help educate the public about new mobility options and reducing emissions from transportation?
- *What tools/skills/authority would EPA need to continue reducing transportation emissions in the given scenario?*
- *What role would other stakeholders (local, state govt, industry, NGO, etc.) play in this evolving landscape?*
    - In addition, how would recommendations change considering the following:
    - *Higher levels of automation*
    - *Varying levels of advanced technology penetration*
    - *Legacy fleets*
    - *Urban and rural travel settings*
    - *Activities to mandate or reduce use of certain technologies in other countries*
- *What other new concepts are emerging that we need to take into account – what is the next disruptor? (e.g., vertical take-off and landing (VTOL) vehicles, drones, robot delivery, micromobility, new forms of transit, combined goods and people movement)*

The table below can be a helpful way to organize ideas.

	Timeframes		
EPA Approaches Table	Near Term 5 years	Medium Term 10 years	Longer Term 30 years
EPA Knowledge Building and Stakeholder Engagement			
Public Education and Tools			
Non-regulatory Approaches			
Regulatory Approaches			

List of MSTRS Breakout Groups

Scenario #1: Technology

Moderator: Christy Parsons, EPA
Scribe: Amy Bunker, EPA
Alternate Moderator: Susan Burke, EPA
Additional Technical POC: Bill Charmley, EPA

Members:
Zifei Yang, ICCT
Jim Kliesch, Honda
Rasto Brezny, MECA
Steve Cliff, CARB
Susan Anenberg, GW Public Health
Barbara Kiss, GM
Cynthia Williams, Ford
Luke Tonachel, NRDC

Scenario #2: Personal Mobility

Moderator: Lisa Snapp
Scribe: Aaron Hula
Additional Technical POC: Rich Kassel, Tri-State, MSTRS Chair

Members:
Dave Cooke, Union of Concerned Scientists
Elaine O'Grady, NESCAUM
Adam Cohen, UC Berkeley
Erica Bowman, Southern California Edison
Michael Repogle, NYC DOT
Matt Barth, CE-CERT
Simone Sagovac, SW Detroit Community Benefits Coalition
Vince Valdes, US DOT

Scenario #3: Fuels

Moderator: Diana Galperin
Scribe: Michael Shell
Additional Technical POC: Byron Bunker, EPA

Members:
John Eichberger, Fuels Institute
S. Kent Hoekman, Desert Research Institute
Bob Anderson, Chevron
Tracey Jacksier, Air Liquide
Rashid Shaikh, HEI
Michael Berube, DOE
Joanne Rotondi, Hogan Lovells
Diep Vu, Marathon

Scenario #4: Goods Movement

Moderator: Britney McCoy, EPA
Scribe: Jessica Daniels, EPA
Additional Technical POC: Karl Simon, EPA

Members:
Michael Iden, Association of American Railroads
Nancy Kruger, NACAA
George Lin, Caterpillar
Elena Craft, EDF
Matthew Spears, Cummins
Andrew Cullen, Penske
Matt Miyasato, South Coast
Margaret (Peg) Hanna, NJ EPA
Blair Chikasuye, HP

Attachment 3

Summary of Technology Breakout Sessions

Moderator and EPA Scribe: Christy Parsons and Amy Bunker
Attendees[2]:

- Rasto Brezny
- Kevin Brown
- Susan Burke
- Bill Charmley
- Steve Cliff
- Dominic DiCicco
- Steven Fine
- Gil Grodzinsky
- Michael Hartrick
- Andrew Hoekzema
- John Kinsman
- James Kliesch
- Robin Moran
- Rachel Muncrief
- Robert O'Keefe
- Michael Olechiw
- Clay Pope
- Sarah Roberts
- Luke Tonachel
- Thomas Van Heeke
- Cynthia Williams

Working Session #1 (11:00 am – 12:30 pm) – Meeting Summary

Welcome, Introductions, and Overview

The Technology subgroup leads began the working session by welcoming the attendees and asking everyone to introduce themselves. The Technology subgroup leads then gave an overview of the agenda for the working sessions and the mission of the workgroup. He noted that the discussion draft is currently organized into five overall theme areas: consumer adoption, public education, lower carbon fuels, life cycle analyses, and future paradigm. He added that there is a critical need to educate consumers as well as state and local policymakers and recommend how EPA can play a role.

Discussion of Current Report Draft

[2] Other participants were in attendance at this virtual meeting including Julia Burch, the Designated Federal Official and staff from SC&A (EPA contractor).

Suggestion: Racial and economic equity needs to be included in the report. Additionally, the group should focus on getting to zero emissions, meaning that low emission vehicles will be important in the interim.
Question: What is the definition of majority? (As in, "majority low emission vehicles")
Response: The Subgroup defined "majority" as "greater than 50%" during the Spring 2020 meeting. This may be a useful question to raise to other subgroups during the afternoon sharing discussion. Also consider current states plans to reach 100% zero emissions in specific timeframes; the timing of and transition to 100% zero emissions in the transportation sector should be part of this group's discussion.

Question: What does "future paradigm" mean? Response: The first four themes of the report are about effectively managing the transition to electrification. Future paradigm is focused on what comes afterward and what the EPA should be thinking about regarding vehicle regulations in that future world.

Question: Where can the EPA best focus its efforts? Response: Given current efforts to reduce greenhouse gas emissions and increase efficiency, there is a clear need for complementary efforts to promote lower carbon energy sources for vehicles currently on the road. In general, new vehicles are getting close to zero tailpipe emissions, and the biggest problem is older, higher emitting vehicles.

Question: Consider whether internal combustion engines may have hit their limit in terms of emission reductions? Should focus shift to electric vehicles?

Three recommendations offered in current report draft: (1) Take a holistic approach to controlling carbon emissions by introducing a carbon pricing system; (2) During the transition towards electrification, shift fuel content regulations from vehicle efficiency to passenger efficiency (e.g. grams per passenger mile); and (3) During the transition, establish zero impact air quality metrics to set emission qualification limits designating a Zero Impact Emission Vehicle. In general, the important perspective to keep in mind is this: we are heading towards a world where zero emission vehicles are common, so how do we get consumers into them, and how do we make that transition equitable?

Suggestion: It might be helpful to lay out some scenarios as part of each recommendation in the report to illustrate the ideas.

Wrap Up and Planning for Sharing Session
Ideas to share with other subgroups: Discussion about meaning and integration of equity; discussion about the definition of majority and what it means to achieve majority zero emission vehicles; and scenarios for the future and the appropriate metrics to use in that world.
The group generally agreed that cross-pollination with other groups, especially the Fuels subgroup, would be beneficial.

Working Session #2 (2:35 pm – 3:05 pm) – Meeting Summary

Opening Discussion
EPA staff reminded the group that the goal is to have a draft available for EPA staff by the beginning of December, and there will be a check-in meeting around the same time.

Discussion of Takeaways from Sharing Session
One member recognized that different subgroups may be overlapping in different elements and topics of their respective reports, and that although the Technology subgroup can decide to have small sections related to those other areas (e.g. fuels), it should stay focused on the technology theme overall.

Another group member mentioned that focusing on particular themes (similar to the Goods Movement subgroup) could be useful for their report as well. The member specifically suggested including the concept of urbanization in the report, as it has a big impact on emissions.

The group also further discussed definitions of equity, particularly the different interpretations of the concept. For example, accessibility can mean products literally being available to consumers, or it can refer more specifically to their affordability.

Next Steps and Plans for December Draft
The group agreed to continue refining their current draft. After some discussion, the group also decided to continue meeting weekly in order to be able to discuss the remaining topic areas and leave enough time to review the entire report as well as take a week off for Thanksgiving.

The group agreed that there is a need to discuss in more detail how to incorporate equity into their discussion as well as a need to figure out how to share documents for collaboration while maintaining version control. They discussed raising this question with the larger group.

Attachment 4

Summary of Fuels Breakout Sessions

Moderator and EPA Scribe: Diana Galperin and Michael Shell
Attendees[3]:

- Bob Anderson
- Michael Berube
- Byron Bunker
- John Eichberger
- Philip Guiellemette
- S. Kent Hoekman
- Tracey Jacksier
- Paul Machiele
- Stuart Parker
- Joanne Rotondi
- Jenny Sigelko
- Diep Vu

Working Session #1 (11:00 am – 12:30 pm) – Meeting Summary

Everyone was welcomed to the meeting and introductions were made by workgroup members in attendance of the Fuels breakout session. The full MSTRS meeting agenda was reviewed with emphasis on the Fuels breakout working sessions to describe how these sessions would integrate into the General Session. The EPA noted that it plans to hold a follow-up MSTRS meeting in December of this year.

The goal of this MSTRS Fuels subgroup is to prepare, by the spring of 2021, a 15-20 page report that provides feedback and insight on the "Future Fuels" scenario described below. For the scenario described below, the EPA has challenged the MSTRS Fuels subgroup with a suggested list of questions to initiate discussion. However, the Fuels subgroup is free to pursue other and additional topics, as well.

Scenario #3: (Fuels) "Future Fuels"

> *In a world where alternative fuels such as electricity and hydrogen are used to meet a significant percentage of the light duty and heavy duty onroad fuel demand, describe EPA's work and role in reducing emissions from the fuel pool.*
> *Scenario specific questions:*
>
> - *Are there transportation sub-sectors where liquid fuels will be critical? If so, which ones?*

[3] Other participants were in attendance at this virtual meeting including Julia Burch, the Designated Federal Official and staff from SC&A (EPA contractor).

- *What actions should EPA take to provide that liquid fuels reduce emissions, particularly for fuels such as biofuels, where a majority of the emissions could be upstream of the tailpipe?*

The subgroup discussed the plan for developing the report. Specifically, the subgroup talked about the draft outline and the scope of the report and the different pieces and topics of the report. The different pieces and topics were assigned to subgroup members who volunteered to draft language on those topics and provide near-team, mid-term and long-term possible recommendations for the following:

- Harmonize Gasoline Specs
- Low-Carbon Biofuels
- Low Carbon Performance Standards
- Non-Fuel/Non-Tailpipe Emissions
- Emissions from Legacy Vehicles
- Hydrogen and E-Fuels

Each subgroup member or team of subgroup members agreed to draft a recommendation on each of the subtopics above. In addition, several workgroup members not specifically assigned to a topic expressed that they wanted to weigh-in and offer thoughts on the different topics of the report. The fuels subgroup agreed to meet again to check on the progress of the different pieces and the status of the report in mid-November this year.

As far as specific other topics discussed during the Fuels working sessions, one topic was the equity issue related to the impact of future fuels and how the different groups would be affected. One concern in terms of equity is related to infrastructure and the ability to deliver fuel in economic markets that are not the most profitable. The workgroup agreed that one major concern is the ability to deliver fuel long term. Another point made was that electric vehicles are less likely to exist in economically disadvantaged areas.

An additional issue that was debated among the subgroup was to what extent the report could make recommendations that could potentially necessitate law changes. It was expressed that it is acceptable to provide recommendations that would go beyond the statutory authority and require law changes. However, it was noted that there are some items completely outside statutory authority where it may not be helpful to make recommendations (no specific examples were given). Another point made was that current regulations are written a certain way now, for example the Renewable Fuel Standard (RFS) and Corporate Average Fuel Economy (CAFE) standards, but these standards may not be that way 20 years from now. This was a key item which the workgroup noted it would consider.

The subgroup discussed other operational concerns such as report logistics and how the draft report would be disseminated and worked on amongst the group. Workgroup members also asked who the audience would be for this report. It was explained that the primary audience is EPA staff, however, the report will be publicly available, but to what extent is unknown at this time.

Working Session #2 (2:35 pm – 3:05 pm) – Meeting Summary

The fuels subgroup resumed following a lunch break and General Session meeting, where the Fuels subgroup shared discussions from the first working session. Workgroup members indicated there was not much from the General Session to add here.

One workgroup member noted that greenhouse gas (GHG) and criteria pollutant emissions have been discussed but asked whether air toxics should be discussed. Another workgroup member stated that air toxic emissions are as much as an issue as GHG and criteria pollutant emissions, adding that there is separate statutory authority for air toxics. A third workgroup member made the point that air toxics is more of an acute issue, and the Agency is good at responding to acute air toxics issues. In terms of this group, the focus is more on long-term goals.

Another point made in regard to legacy issues is related to aging vehicles, where service may be limited after some time. This is an issue that should be thought about, one workgroup member emphasized. Another workgroup member noted that there are issues with compatibility of fuels with older legacy vehicles, noting that even a slight change in the chemical composition could cause vehicle issues. A workgroup member offered to reach out to the National Association of Convenience Stores (NACS) (an association for advancing convenience and fuel retailing) and the Fuels Institute, who conduct predictive modeling. As a closely related matter, one MSTRS Fuels subgroup member noted that there is general recognition that the Lifecycle Analysis (LCA) of GHG emissions under the RFS will be a significant portion of the final report.

Another comment made during the working session, was about the degree to which the Fuels subgroup would recommend improving the RFS and low carbon fuel standards. A member asked if there are groups who have already published proposals for alternatives/options for RFS, perhaps in terms or re-structuring or re-doing the standards entirely. A workgroup member indicated he may have some useful material.

Closing Remarks

In closing, it was noted that everyone's work was appreciated, and all workgroup members confirmed they have what they need to move forward.

Attachment 5

Summary of Personal Mobility Breakout Sessions

Moderator and EPA Scribe: Lisa Snapp and Aaron Hula
Attendees[4]:

- Noelle Baker
- Matt Barth
- Erica Bowman
- Dr. Dave Cooke
- Elaine O'Grady
- Dale Kardos
- Rich Kassel
- Andrea Maquire
- Michael Replogle
- Sarah Roberts
- Simone Sagovac
- Susan Shaheen

Working Session #1 (11:00 am – 12:30 pm) – Meeting Summary

Moderator opened the breakout session and welcomed members. As a first matter, group members were asked if the draft outline prepared for the Personal Mobility subgroup report adequately covered key topics. Overall, members were pleased with the draft outline and felt that it sufficiently addressed key areas of personal mobility.

- One member agreed with the overall sentiment that the outline provides a good start to organizing the report, but strongly encouraged members to consider or think about what the overall document should look like – e.g., where should our focus be?
- A few members inquired on the depth and complexity of the report, and at least one member suggested that the group revisit questions previously laid out by the committee members to ensure that no topic was missed. It was noted that the report should include more detail than would be presented in, for example, a memo, but less detail than would be presented in, for example, a thesis paper. It was also noted that the original outline components came from the questions posed by the committee members.
- At least one member inquired on the length of the report, which was verified to be 15-20 pages per subgroup.

The proposed draft outline is divided into six main sections/topics: the scenario; work to be performed; how various factors may impact work performed; available and new research, data collection, modeling and analysis tools; other tools (including regulatory and policy approaches, financial incentives, voluntary programs, and education and outreach); and desired outlines or

[4] Other participants were in attendance at this virtual meeting including Julia Burch, the Designated Federal Official and staff from SC&A (EPA contractor).

future scenarios and recommendations. Members were asked to volunteer to writeup one or more section(s) or subsection(s) of the report, based on their experience and knowledge of the topic(s) discussed.

To help assign these topic areas, the group reviewed the outline section by section (or slide by slide). During the review, a number of comments, questions and concerns came up about the context and the future of the report, along with several suggested changes to help clarify the EPA's role in encouraging/promoting various modes of transportation. A summary of these remarks is provided further below.

Slide #2 – Review: Our Scenario

Slide snapshot: This slide (or part of the outline) restated the overall intent of the subgroup report: *"In a world where the majority of people in the US get from Point A to Point B using a transport mode other than a personally-owned vehicle, describe EPA's work and role in reducing emissions transportation while maintaining mobility and accessibility,"* and listed the modes under consideration – i.e., share mobility, micro-mobility, active transport, water taxis.

- At least one member stated their belief that the modes under consideration seemed to be scattered.
- One member cautioned how terms are defined in the report, noting that terms, like micro-mobility are broader than currently suggested in the outline. Members agreed that expanding the number/types of examples provided may help clarify terms.
- One member inquired on the inclusion of air mobility (urban aviation). It was noted that although discussions on air mobility will likely have a placeholder in the final report, it would not be a main area of focus but rather included for public awareness purposes only.
- At least one member inquired if the group was considering shared mobility concepts, like mobility on demand or mobility as a service, or the unification of these modes. Members agreed that the inclusion of these concepts is important and added them to the list of modes to be considered (under the shared mobility mode).
- Another member added that the notion of connectivity and cross mobile integration has slowly creeped into the Department of Transport's (DOT) language and asked that members think how this concept might be incorporated further in the report.
- Subgroup members volunteered to write up this section of the report.

Slide #3 – "First Principle" to Guide Our Work

Slide snapshot: This slide (or part of the outline) listed three key principles used to guide work to be performed. These general principles included reducing tailpipe and lifecycle GHG and criteria pollutants through new personal mobility options; integrating principles of environmental justice, while increasing equity, affordability, accessibility, and mobility to create economic opportunity; and creating an efficient transportation system that integrates safety and health concerns.

- Overall, members approved the draft language, as written and shown in the outline, for this section of the report and agreed that the three principles listed in the draft outline are detailed enough to provide a high-level introductory paragraph.
- No additional information or modifications were made to this section (or slide).

Slide #4 – EPA Should Consider How Various Factors May Impact our "First Principles"
Slide snapshot: This slide (or portion of the outline) provided several examples of factors that may impact one or more of the three principles mentioned in the previous slide. These factors included disparate factors (e.g., land use, urban design, pricing, etc.); increases in automation and connectivity (e.g., telework, teleconference, etc.); and inter-governmental collaborations.

- Members briefly discussed the format of this section of the report, noting that the subtopics (or bullets) listed in draft outline could each be a separate section in the report.
- At least one member questioned the sequence in which the subtopics are presented in the draft outline and recommended that the members revisit this order once draft sections have been written.
- Members briefly discussed factors to be considered, including the impact of land used, urban design, pricing structure, etc., on mobility. During this discussion, at least one member stressed the need to drive the message and differentiate between decisions made by individuals versus decisions made for individuals. The member briefly explained how government and private activities/policies can impact or limit the choices an individual can make. Another member suggested that the report include separate sections, one on decisions made by individuals and one on decisions made for individuals.
- Members were asked to think about how the EPA could play a more effective role in influencing public choice or corporate investments.
- At least one member cautioned against grouping land use and urban design with pricing, nothing that these two buckets operate on different levels. Members were asked to think about differences in infrastructure and how that would make one mode of transportation possible and not another. It was decided that the report would include an overarching section on land use and pricing and then separate, individual sections for each factor.
- One member highlighted the point that interagency cooperation at the federal level works differently than other areas of government, largely due to the influences of politics.
- Members briefly discussed whether telework should be included in discussions on connectivity. It was suggested that the report discuss telework in the terms of equity, noting that the current pandemic crisis has highlighted various issues of inequity.
- Subgroup members volunteered to writeup this section of the report.

Slide #5 – New Research Tools Will Be Needed
Slide snapshot: This slide (or section of the outline) focused on existing and new research tools that can be used to improve research, data collection, modeling and analysis, and included topics like identification of data needs and identification of critical research areas.

- In general, members agreed that a better understanding of how and why people use one mode of transportation over another is needed, and how policies can change behavior.
- At least one member suggested that the report, as outlined, fails to capture the elastically of these modes.
- Some members pointed out that the draft outline incorrectly labels a few research data modeling and analysis examples as "new" when they have been available for some time. The outline (or slide) was modified and corrected.
- At least one member questioned the effectiveness and the reliability of proposed transport modes to deliver projected emission reductions if they are not guaranteed to be viable

long-term. The member suggested that the financial sustainability of highlighted modes be considered when recommending modes of transportation. The member stressed that many of the modes currently highlighted in the draft outline are currently not financially viable. The member expressed concern that referenced modes cannot be sustained long-term without offering financial or other incentives, and further added that the playing field for shared mobility is not level. Members were asked to consider how the EPA could better highlight unsuitable trends and help modes be more financially sustainable. It was suggested that, in general, the US could put a greater focus on research; compared to other western countries and China, the US largely underestimates the importance of research.

- At least one member recommended that the report include or propose some ideas on how to improve and encourage additional research.
- Subgroup members volunteered to writeup this section of the report.

Slide #6 – Every Policy Tool will be Needed

Slide snapshot: This slide (or section of the outline) discussed available tools, including regulatory and policies approaches, financial incentives, voluntary programs, and education and outreach.

- Members briefly discussed, in general, the process and the financial incentives and benefits of voluntary programs, like SmartWay and EnergyStar.
- At least one member suggested making the connection between voluntary programs and what they would look like in markets where mobility service providers exist.
- Subgroup members volunteered to write up this section of the report.

Slide #7 – Desired Outcomes Over the Coming Year

Slide snapshot: This slide (or section of the outline) discussed how the EPA can ensure ongoing emissions reductions in transportation, the framework need to provide feedback on a given scenario, needed changes to current EPA work to support the mission of emission reductions through mobility and accessibility, and the intention to provide a number of recommendations/future scenarios.

- Overall, members approved the draft language, as written and shown in the outline, for this section of the report. No additional information or modifications were made to this section (or slide).

Working Session #2 (2:35 pm – 3:05 pm) – Meeting Summary

Moderator opened the breakout session and welcomed back members. First, members were asked if they had any additional comments, questions, and/or concerns about the outline. There remarks are presented below.

- One member asked about the report's timeframe and date of completion. It was noted that section drafts are due Friday, December 4, 2020. This circulation date was selected largely because it provides members with enough time to provide substantive comments/feedback on individual sections before the holidays. The plan is to consolidated subgroup reports and share the final combined report at the next MSTRS meeting, currently scheduled for spring 2021.

- It was suggested that the next subgroup meeting be held after Nov 3, 2020. At least one member felt that additional subgroup meetings are unnecessary and asked if the number of meetings could be reduced. Other members supported the sentiment, so no additional meetings were scheduled.
- As the Personal Mobility subgroup begins to prepare the subgroup report, including preparing written descriptions and write-ups for each section and subsection, members collectively agreed that the establishment or creation of a shared site would help measure and track progress made on the report, as well as provide a single location for members to communicate with one another. Subgroup member agreed to setup such a site on the behalf of group members.

A few members expressed some additional remarks specific to one or more outline sections. There remarks are presented below.

Slide #4 – EPA Should Consider How Various Factors May Impact our "First Principles"

- Regarding the scope of the subgroup, it was noted that telework maybe outside the scope. In general, members felt that the topic/subject should be discussed. At least one member interpreted telework as an external factor as it relates to technology, automation connectively, rather than an actual mode.

Slide #6 – Every Policy Tool will be Needed

- Regarding incentives funding, one member noted that whether it comes from the federal government or projects like DERA, what seems to be an increasing issue is that there is no template or guidance about prioritizing work on legacy fleets versus investments for future technology transition. The member proposed the question, How could we (EPA) effectively guide local communities and states to spend those dollars to make a perceptible change, knowing industries are going to be funding the transition of vehicles, regardless?

Slide #7 – Desired Outcomes Over the Coming Year

- One member questioned the efficiency of writing/offering recommendations or discussing future scenarios for the report, at this current time. Many of the members shared the sentiment that the results of the upcoming Presidential election will likely impact how and what recommendations and future scenarios are offered. To preserve resources (time and effort), members agreed to focus on writing portions of the paper that are likely to remain unchanged despite the outcome of the election and revisit recommendations and future scenarios at a later date.
- At least one member suggested that future scenarios currently identified are not contingent upon the election, and argued that they can be implemented at the federal level to some degree regardless of the Administration, with the hope that they are adopted by coalitions of states even if they are not fully implemented at the federal level.
- One member stated that regardless of the election outcome, the EPA could still assist with the analytical pieces that would support the future scenarios proposed.
- One member applauded the enthusiasm of organizations, like the EPA, DOT and Department of Energy (DOE), to get involved; however questioned how federal

policies/strategies align with local and regional policy making, considering most modes of transportation are regulated at a regional or local level. The member stressed that the regional and local levels is where land use in a built-environment happens.

Before closing out the session, members were asked if they had any additional thoughts about the questions and comments made during the Sharing Session. These remarks are presented below.

- One commenter stated their support for switching to grams per passenger mile noting that it would be a positive development in terms of setting standards for GHG emissions, criteria pollutants, etc., particularly if applied to mobility provider firms and manufacturers, for example. The member added that as better monitoring is developed, another input is available to strengthen financial incentives to use low-carbon and low-impact modes (e.g., shared scooters). Another member cautioned against the grams per passenger mile standard. The member noted that the application or usefulness of the switch is highly dependent on the entity being regulated. For example, the member stated that regulating an entity that sells mileage is different than a vehicle manufacturer who arguably doesn't sell mileage.
- One member proposed the scenario (regarding efficiency in the infrastructure system), What if we were to transition over the next 20 years to measuring the number of occupants in each passenger vehicle so that we can get a better sense how infrastructure is being used or how well a vehicle was being used? That information could be used to set policies around emissions from that vehicle on a life-cycle basis. Another member suggested that in this scenario, one barrier would be manufacturers, and implied that these stakeholders would not be incentivized to ensure their consumers are utilizing HOV lanes, for example, as long as they continue to sell (or have an investment in the selling of) personal vehicles.
- Members were asked to think about how the EPA can play a role in providing guidance and knowledge for municipalities and state governments to create the right incentive programs. One member underscored the point that influences/changes in behaviors are likely to come as a result of state/municipal policies or at the individual level.
- One member believed that there should be some coordination between the EPA and other agencies, like DOT, that are currently tracking mobilities issues, in terms of developing best practices, understanding that they don't regulate the rights-of-way at a local/regional level, but trying to understand how they can foster this type of innovation. The member asked what role the EPA is playing relative to other federal agencies.

Another member offered the example that in the case of state implementation plans (SIPs), states are free to develop a SIP to meet the national ambient air quality standards (NAAQS). The member added that Texas and New York, for example, may have the same ozone non-attainment designation, but the SIPs produced by these states can be entirely different, even though they are based on the same EPA guidance. The member posed the question, If EPA was providing guidance, then how do you credit changes made by states? For example, how would New York be credited if it decides to put in a robust system of bike sharing.

Attachment 6

Summary of Goods Movement Breakout Sessions

Moderator and EPA Scribe: Britney McCoy and Jessica Daniels
Attendees[5]:

- Blair Chikasuye
- Elena Craft
- Andrew Cullen
- Peg Hanna
- Michael Iden
- George Lin
- Matt Miyasato
- Patricia Paff
- Stuart Parker
- Sara Roberts
- Karl Simon

Working Session #1 (11:00 am – 12:30 pm) – Meeting Summary

The Goods Movement team briefly discussed the status of their compiled draft before discussing three topic areas: barriers, research and technology, and the business model for goods movement.

In the discussion of barriers, the primary focus was on the current certification process for new technologies. The panel was concerned that commercialization of a product could not be based on the standard certification process as this does not fully translate to mass production. The panel also discussed that the current process should evolve with new technologies as many emerging green technologies are not covered by EPA's certification process. It was recommended that an expedited version of reliability growth testing be implemented and to investigate processes complementary to regulatory forcing to improve the process. The panel also discussed a need for federal funding as many local areas cannot support green infrastructure and policies using their own funds. The panel also recognized that outreach and coordination would be of upmost importance going forward in terms of adopting the EPA's Port Emissions Inventory Guidelines.

Somewhat overlapped with the barriers discussion, the research and technology discussion focused on differences between state and federal standards, notably between California's truck rules and the EPA's Cleaner Trucks Initiative (CTI). While the participants appreciated the current partnerships between industry, States, and EPA, disconnects were still noted as states or regions often lead or follow EPA's decisions rather than moving forward together. It was also mentioned that advancements in information technology would be included in the report.

[5] Other participants were in attendance at this virtual meeting including Julia Burch, the Designated Federal Official and staff from SC&A (EPA contractor).

Regarding current business models, the members discussed the motivations of businesses to reduce emissions, indicating that federal involvement is not as much of a driving a force as consumer desire. According to the participants, global competition and customer goals were further encouraging environmental goals to be tightened. The team members thought the EPA should consider business relationships and the enablers and barriers throughout the goods movement process from producer to consumer, stating that there was an opportunity for the EPA to cooperate with the goods movement industry.

To conclude the meeting, the members decided to focus on connecting Goods Movement to other sections of the report and to focus on addressing feedback from the other teams in the further development of the section. The team also sought to coordinate the theme of regulatory vs. non-regulatory issues and further develop an equity theme that ensured a community perspective.

Working Session #2 (2:35 pm – 3:05 pm) – Meeting Summary

In reviewing the sharing session, the Goods Movement team saw an opportunity to connect their themes to several other subgroups, including transition to alternative fuels, EPA coordination with developing technology and personal mobility, as well as upgrading EPA's MOVES model. Additionally, the feasibility of air quality assessment on the community level was discussed. While the information these assessments provide was considered desirable, the team thought the process was generally difficult to implement with currently available resources.

Team members plan on reviewing their individual sections and including relevant information from other groups prior to their next revision deadline. The regulatory/non-regulatory theme discussion was tabled until team leads could discuss the matter further.