

Clean Air Act Advisory Committee

## Mobile Sources Technical Review Subcommittee

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### Virtual Meeting November 29, 2023

#### Welcome & DFO Opening Remarks

Jessie Mroz, the Designated Federal Officer (DFO), welcomed all members, the press, and the public to the Mobile Sources Technical Review Subcommittee (MSTRS) meeting. She stated that going forward, all fall meetings will be virtual, and she thanked the subcommittee for making shift to virtual format. She noted that the meeting is open to the public, and there will be time later in the day for public comment. Ms. Mroz reviewed the meeting agenda.

#### Agenda

10:00 – 10:15 am	DFO Opening Remarks
10:15 – 10:45 am	Introductions and Icebreaker
10:45 – 11:30am	EPA Key Activities Overview
11:30 – 11:45 am	Update from Locomotive Work Group Leads
11:45 – 12:45 pm	Lunch Break
12:45 – 1:30 pm	Presentations on EV Efficiency, Testing, & Labeling
1:30 – 2:15 pm	Presentations on Commercial & Public Fleets
2:15 – 3:15 pm	Breakout Discussion Groups (MSTRS Members Only) <ul style="list-style-type: none"><li>- EV Efficiency, Testing &amp; Labeling</li><li>- Commercial &amp; Public Fleets</li></ul>
3:15 – 3:30 pm	Break
3:30 – 4:00 pm	Discussion Group Report-Out
4:00 – 4:10 pm	Public Comment
4:15 – 4:30 pm	Closing Remarks
4:30 pm	Adjourn

#### Introductions of MSTRS Members

Ms. Mroz introduced Karl Simon, Director of the EPA's Office of Transportation and Air Quality (OTAQ) Transportation and Climate Division. He welcomed the subcommittee and introduced Rachel Muncrief, the committee's new chairperson. Dr. Muncrief introduced herself and asked each member to introduce themselves. MSTRS members shared their names and roles at their companies or organizations. A list of attendees is included in Attachment 1.

## **EPA Key Activities Overview**

Sarah Dunham, the Director of the Office of Transportation and Air Quality, introduced herself and thanked the committee for their contributions. She introduced OTAQ's priority actions and began by discussing pending regulatory proposals.

Two of these proposals set new emission standards covering light, medium, and heavy-duty vehicles for model years 2027 and later. These proposals were released last April. She acknowledged that these proposals address complicated issues, and that OTAQ received a large number of public comments regarding the proposals. Ms. Dunham assured the committee that her team is working through the comments and are continuing to engage with stakeholders.

She continued the discussion by mentioning the environmental impacts of piston engine aircraft and lead pollution. On October 18<sup>th</sup>, OTAQ issued a final endangerment finding that aircraft using leaded fuel contribute to air pollution that endangers public health and welfare. Aircraft using leaded fuel is the largest remaining source of lead emissions to the air in the U.S. The EPA and the Federal Aviation Administration (FAA) will now be obligated to develop regulations to address these emissions. There will be further opportunities for stakeholder engagement to inform the program.

Earlier this month, EPA issued final revisions to regulations that address the preemption of state and local regulation of locomotives, allowing states to adopt and enforce their own standards.

Ms. Dunham went on to describe the Renewable Fuel Standard Program (RFS), which was enacted by Congress to amend the Clean Air Act and give authority to write rules that ensure that a certain amount of renewable fuel is blended into the transportation fuel pool every year. Congress identified annual volume targets, which grew over time through 2022. Starting with year 2023, the EPA must set these targets, and in June the EPA just set volume targets for 2023-2025.

Ms. Dunham's office is also in the process of improving and updating the MOtor Vehicle Emissions Simulator model (MOVES). Version 4 was released in August with several updates. This model is used primarily by state and local governments to inform regulatory updates.

The office is continuing to implement funding streams from the Inflation Reduction Act (IRA) and Bipartisan Infrastructure Law and will be issuing funding notices soon. She also mentioned the Clean School Bus Grant Program, which will soon be awarding additional funds.

Ms. Dunham closed by acknowledging that there are additional other issues of concern that were not mentioned in this presentation. She also is looking forward to working with the MSTRS on the work group charges related to locomotives and the other charges that will be discussed later in this meeting.

### *Discussion*

One MSTRS member thanked Ms. Dunham for the updates, and inquired about IRA 60105G, which was developed to help Section 177 states adopt California standards. The member stated that the last discussions on this topic were in June or July, and that there is some urgency with

the issue. Ms. Dunham thanked the MSTRS member for being engaged with the program and for emphasizing the urgency of the issue.

Another MSTRS member asked when agencies will need to use the new MOVES model in their state implementation plans (SIPs) process. Ms. Dunham referred to Karl Simon, who stated that states can use it immediately, but there is a 2-year grace period.

An MSTRS member asked whether there will be guidance that accompanies the MOVES model to account for demand impacts. Ms. Dunham said that there are several guidance documents available.

## **Update from Locomotive Work Group Leads**

The meeting continued with an update from the Locomotive Work Group Leads, Francisco Dóñez and Zhenying Shao. Dr. Dóñez began by introducing himself and the work group's organizational stakeholders. He reviewed the relevant charge questions, including what factors EPA should consider in developing emission standards for existing locomotive fleets, and what technologies EPA should consider in setting standards for new locomotives. He mentioned that the work group is just getting started and that they had their first meeting in October.

Ms. Shao introduced herself and described current and upcoming activities for the work group. They aim to build a common baseline of knowledge for work group members and form focused writing groups on specific topics like technology, public health, environmental justice, and other factors.

### *Discussion*

A new MSTRS member noted excitement to be on the locomotive work group and hoped that the MSTRS will have an in-person meeting with a railyard tour and possibly discussions with nearby residents. The member also stated that the lived experience should be seriously considered in decision-making. Ms. Mroz noted that they are planning to have an in-person meeting with a railyard tour at the next MSTRS meeting in the spring.

Another member requested that the leads talk more about timing and major milestones that they see for the group. Dr. Dóñez responded that the work group's timing is to be determined, as they are currently still getting acquainted. He also mentioned that the final work group product is expected by August 2024.

One member thanked the leads for their presentation and expressed an interest in knowing how the current manufacturing rules intersect with the use of biofuels.

An MSTRS member mentioned that the U.S. Department of Energy (DOE) has issued a Request for Information (RFI) for zero-emission propulsion technology for the rail sector and asked whether the leads have been talking with the DOE about their work. Dr. Dóñez stated that they have not spoken to DOE directly but are aware of the RFI and will be monitoring it closely. He also noted that some DOE staff are on the work group.

An attendee from DOE stated that a link to the RFI will be put into the chat and that the DOE is looking forward to the comments they receive.

Karl Simon thanked the work group and cochairs for their contributions.

## **Presentations on EV Efficiency, Testing, and Labeling**

Britney McCoy from OTAQ began her presentation with a background on the Office's decarbonization efforts. She stated that OTAQ is currently focusing on electric vehicle education and the fuel economy label. She stated that they are restructuring their methodology to represent real-world conditions, and that the goal is for these labels to provide reliable, consistent data that can be comparable across vehicles.

Dr. McCoy stated that the electric vehicle (EV) label was last designed in 2011. There are currently two websites that customers can use to understand EV label data: fueleconomy.gov, and EPA's Green Vehicle Guide. Fueleconomy.gov is a joint EPA/DOE site which acts as a vehicle search tool for users, and it receives roughly 30 million visits per year. The Green Vehicle Guide is an EPA site that offers a wide range of transport information, beyond just EVs. It is designed to provide information for people to make greener transportation choices. This web resource receives about 90,000 visitors per month.

Dr. McCoy continued by reviewing the testing requirements for fuel economy labeling, which was previously discussed in the subcommittee's May meeting. During the previous meeting, the committee suggested implementing a new electronic version of the EV labels, using QR codes. They also decided that this shift may present some equity concerns. In May, the committee discussed that they should give consumers information that is understandable by the general public. Dr. McCoy posed numerous questions about updating the EV label, inquiring about the fuel economy metric, how to consider different charging types, how conditions impact range, and what should be included on the label. Dr. McCoy turned the discussion over to John Spieth.

John Speith works as the vehicle testing lab director for EPA's lab in Ann Arbor, Michigan. His lab runs numerous tests to evaluate the range and efficiency of various EVs. He described multi-cycle testing as it compares to the 5-cycle adjustment, and asked the committee which of these testing metrics should go on the fuel economy label.

Chris Harto from Consumer Reports contributed his thoughts about the EV label from the customer perspective. Mr. Harto stated that improved knowledge and experience can accelerate the adoption of electric vehicles, and that three areas of data could help consumers understand EVs: EV range and why it matters under different conditions, EV charging information, and battery information.

Mr. Harto stated that current EV range numbers are useful for comparison across vehicles but are limited in their ability to communicate what consumers can really expect. He stated that

information about range under different weather conditions can help consumers understand how their vehicle's performance may vary.

He went on to say that current Level 2 (L2) charging information does not include the wattage or amperage used for testing. There is currently no standardized DC fast charging test. He stated that peak charging speed is useful, but it does not inform about the shape of the charging curve. He proposed the following metric for charging speed: miles of range per minute of charging averaged from 10% SOC (state of charge) to 80% SOC.

Third, Mr. Harto expressed that standard information about the vehicle's battery can be useful, and that companies should provide both the installed battery capacity and the usable battery capacity. He stated that providing basic battery chemistry details will be useful as automakers explore new chemistries.

### *Discussion*

One MSTRS member stated that it would be useful to provide information about vehicle-to-grid ability and the amount of discharge you could get from the vehicle battery in kilowatt-hours (kWh).

Another member discussed the ways that different types of driving can influence range and efficiency, mentioning that there are benefits to one-pedal driving and high regenerative braking. The member also mentioned the units used for measuring a car's economy, and that EV enthusiasts do the reciprocal of miles per gallon equivalent (MPGE): how many miles a car can travel per kWh. The member stated that it would be nice to have an agreed-upon abbreviated test for EV metrics. The member also stated that current charging systems are often variable due to grid limitations and throttling at the charger, so a metric of miles per minute of charging would not be consistent.

One member stated that, as a consumer, it would be interesting to know about the safety of EV batteries and the risks of fires.

An MSTRS member inquired about how EVs are incorporated into the Corporate Average Fuel Economy (CAFÉ) standards, and whether that impacts what tests can be run. Mr. Speith stated that their compliance department may be the best fit to answer that question. The MSTRS member went on to ask about the research regarding EV smart features, and whether there are significant differences in performance metrics. Mr. Speith said that most discussions have been regarding activity level and environment. He stated that the OEM is responsible for submitting data that is appropriate for the test. In general, he stated that the EPA has only studied the energy use of smart features in fully autonomous vehicles and not for non-automated vehicles.

Another member mentioned that it would be more useful to test vehicle programming modes, such as "eco-mode" rather than aggressive driving in the testing cycle. The member said that

automakers should be incentivized to adopt more technologies like eco programming. The member also stated that more research should go into reducing particulate pollution from brake and tire degeneration and that lowering vehicle weight would be good to incentivize to reduce this problem.

## **Presentations on Commercial & Public Fleets**

Ms. Mroz began the next portion of the meeting by introducing Keith Kerman. Mr. Kerman was able to answer a few of the questions posed in the previous presentation. He stated that New York has been doing some good work on speed assist and fire safety.

He stated that the New York City (NYC) fleet is the largest municipal EV fleet in the U.S., which includes the New York City Police Department (NYPD), fire department, and other aspects of the local government. He reviewed the updated NYC Clean Fleet Plan, which has the goal of transitioning 80% of the fleet to EVs by 2035. He described the infrastructure needed to sustain the NYC EV fleet, which includes New York's largest EV charging network. Mr. Kerman specifically mentioned solar carports as a way for the fleet to stay resilient in case of a grid issue. EV infrastructure was built with consideration for environmental justice communities.

Mr. Kerman also stated that the NYC fleet has made the transition to almost entirely renewable fuel and is the first major fleet on the east coast to do so.

Sam Waltzer, Director of the SmartWay Programs center, began his presentation on the SmartWay program, which is a program to benchmark and report green fleet performance and technology.

He began describing how SmartWay works. The system ranks freight service providers by environmental performance using company-submitted freight activity information and EPA emission factors.

SmartWay allows shippers to identify greener carriers, and carriers gain a competitive advantage.

Mr. Waltzer went on to review SmartWay results. Since 2004, the number of companies that rely upon SmartWay has grown from 15 to over 4,000. SmartWay partners saved over 52 billion dollars in fuel costs, and SmartWay partner energy savings are equivalent to 357 million barrels of oil.

Mr. Waltzer closed his presentation by noting that the "green freight ecosystem" is expected to continue to evolve, and the EPA is considering how it, and other agencies can help drive freight decarbonization and zero-emissions technologies.

### *Discussion*

One member began the discussion by asking whether NYC was looking into ethanol or other biofuel blends for conventional vehicles. Mr. Kerman responded that they are not doing an ethanol-specific initiative for conventional vehicles and are just focusing on electrification.

Another member asked whether SmartWay includes alternative fuel information and whether the program interacts with the DOE Clean Cities program. Mr. Waltzer stated that SmartWay does provide a way for people to find alternative fuel fleets and that it should link nicely with the Clean Cities program. He hopes that SmartWay will also provide an information source for electrification in the future.

An MSTRS member asked Mr. Kerman if he has had any trouble procuring electric vehicles. Mr. Kerman acknowledged that he has seen some delays but has always been able to procure vehicles. He stated that there are some limitations by the manufacturers on the number of EVs that they can order.

A member registered happiness to see a focus on electrification in so many areas and is interested in learning how SmartWay may evolve beyond trucks. Mr. Waltzer said that this shift to include other mobile sources is under consideration.

## **Breakout Discussion Groups**

### Commercial and In-use Fleets Breakout:

Sam Waltzer began the discussion by thanking participants and introducing the breakout questions:

- What are the challenges we see in this area?
- What could EPA do in the space within the next 5 years, in terms of potential solutions to this area?
- Are there specific areas of research or additional work needed?

One MSTRS member began the discussion by stating that the program looks great, but that the problem in Detroit is that program participation is voluntary. The member asked whether the committee foresees a situation in which the program is mandatory and stated that many international partners are surprised about the voluntary nature of our country's programs. Mr. Waltzer stated that the group is looking into providing incentives and informing market choices.

Another member asked whether the questions were specific to the SmartWay program, or relevant to both presentations. Mr. Waltzer responded that the questions are relevant to both presentations. The member continued by stating that supply chain disruption dampens public eagerness to transition to EV and hoped that domestic investment in manufacturing will help this issue. The member also stated that the public has a lot of questions about EV ranges under specific conditions and stated that significant distrust about range metrics is preventing EV adoption. Mr. Waltzer agreed with this statement and mentioned ambulances as an example. Ambulances spend significant time idling, so their range estimates will be different.

An MSTRS stated that waiting for companies to volunteer hasn't worked out well. The member asserted that more specific standards are necessary for change.

One MSTRS member stated that there are some real opportunities to go beyond voluntary participation and that we need stronger federal leadership in setting standards. The member stated that the federal government can set an example for creating an EV marketplace. The member continued to say there is a need for strengthening federal design standards for heavy-duty vehicles because they are currently very dangerous for pedestrians and cyclists. The MSTRS member finished by explaining the benefits of low-emission zones.

An MSTRS member mentioned the Energy Policy Act, which requires fleets to purchase alternative fuel vehicles unless they can demonstrate that they need a waiver. The member stated that state fleets need to be held to a higher standard with waiver requests, noting that Texas fleets are problematic in how they use waivers. This MSTRS member is also interested to see if SmartWay can integrate with other cargo-handling equipment. Mr. Waltzer mentioned that they are trying to better understand how they can apply elements of success from SmartWay to non-road equipment. The MSTRS member stated that it would be easy to expand SmartWay into refuse hauling.

Another MSTRS member stated that there have been discussions about the limitations of EPA's voluntary approach and said there have been recent legal developments in warehousing and ports as a source of point source emissions. The member stated that voluntary emissions programs will always be insufficient for the needs of local communities, and the EPA needs to be more aggressive in its authority.

One member stated that fleets are combining all types of green solutions, but that it is difficult to weigh the effectiveness of each solution. The member noted that there is not currently a standardized method of measuring each method and stated that the EPA could help by beginning to standardize protocols for measurement.

Another member stated that the issue of charging infrastructure is extremely challenging, and that vehicle telematics should be considered. Determining where trucks spend their time will assist with infrastructure placement.

A member stated that the EPA needs to look more carefully at vertical integration. The member also stated that environmental justice factors should be incorporated into decision-making.

An MSTRS member mentioned the ways that different infrastructure can influence charging times and stated that people could benefit from knowing how charger efficiency differs between charger types.

One member emphasized the importance of a systems approach in lifecycle analysis. This member stated that overall systems efficiency is critically important because it is typical for improvements in one area to result in increased emissions in another.

Another MSTRS member brought up the importance of system resiliency in infrastructure consideration. The member said that it is important to consider truck delivery times to ensure that charging infrastructure meets the needs of as many vehicles as possible.



Mr. Waltzer transitioned the discussion to question 3.

One member mentioned that not everyone has the funds to pursue zero-emissions initiatives and recommended a zero-emission loaner program to help reduce hesitancy for public agencies to enter the space. The member also stated that the EPA should provide information to stakeholders about the benefits of moving toward EVs. Mr. Waltzer agreed that it is helpful to provide people with low-risk opportunities to try green technology.

Another member stated that the current electric locomotive testing process is extremely rigorous and expensive and asked whether there is an alternative way to test and verify technology quality. Mr. Waltzer stated that the cost of verification testing is the responsibility of the manufacturer.

An MSTRS member stated that it would be helpful to standardize the data and methodologies used in the field so that everybody knows how the equipment operates. Mr. Waltzer agreed and stated that private entities could benefit from the standardization of information.

One member stated that it may be useful for the EPA to get a picture of what the non-participating fleets are doing with their vehicles through some kind of sampling approach.

An MSTRS member spoke about whether the EPA could facilitate incentive programs for turning over old vehicles. The member stated that the companies that generally invest in new vehicles are not those that have older vehicles and that smaller owners/operators are not in the market for EVs. The member suggested that the EPA facilitate a partnership similar to DOE's program, which assembles teaming lists from self-submissions.

One member stated that it would be great to see the EPA work with its federal partners to conduct experiments with low-emission zones.

Another member asked if the EPA had been looking into passenger drones. Mr. Waltzer stated that he was not familiar with this technology.

Mr. Waltzer concluded the breakout meeting by providing a summary of the discussion.

#### EV Efficiency, Testing, and Labeling Breakout:

Britney McCoy began the discussion by thanking participants and introducing the breakout questions:

- What are the challenges we see in this area?
- What could EPA do in the space within the next 5 years, in terms of potential solutions to this area?
- Are there specific areas of research or additional work needed?

After deciding which MSTRS member would be the notetaker for the breakout group, MSTRS members began a discussion of the issues.

One MSTRS member started the discussion by suggesting that if the EPA does not have a behavioral economist on staff to work on EV issues, maybe the agency could partner with a university or other institution to work on the behavioral aspects of the issues. For instance, an expert could help the EPA understand what information to present to nudge people in a certain direction, similar to how this was done with EnergyStar. Another example would be parking pricing, which can impact decisions about whether to drive to certain areas or at certain times.

Another member stated that there is a major challenge in how EVs are tested because the testing can be very time-consuming. The member remarked that there are some solutions, such as abbreviated tests or using real-time data from telematics. The member recommended that telematics data could be used through agreements with the manufacturers, noting that the manufacturers already collect this data. The member also noted that the U.S. Department of Transportation (DOT) and DOE have a lot of information on EVs and their infrastructure, so it would be helpful to have them be part of the conversation.

Another MSTRS member suggested that the labeling process is trying to fit EVs into the construct of gasoline vehicles, and this may need to be reversed. The member also suggested that the label include some information about charging time.

One MSTRS member opined that much could be learned from the EnergyStar program and applied to EVs. The member also noted that it would be nice for the label to include more information about range in different weather conditions and what systems in the vehicle impact the range (e.g., battery, HVAC system). The member suggested that the label could also contain sustainability information, particularly related to the battery.

An MSTRS member commented that regarding testing, care should be taken not to require more tests or additional work. The member also remarked that real-time data would not be able to be used for the purposes of data to include in the label, since the label is needed before the vehicles would be in use. The member also suggested that the label be kept as uncluttered as possible and include only what a mainstream consumer needs to know to make a purchasing decision. The member further noted that there is legislation that requires certain information to be on the label, which could be a barrier to changing what is included.

One MSTRS member offered that California is focusing on providing improved range information to consumers.

A meeting attendee stated that the sticker should focus on a few important facts, but it could include a QR code that links to further information that is standardized across all EVs. The attendee noted that manufacturer websites include different types of information, so direct comparisons are currently difficult. The attendee also was unsure about how willing manufacturers would be to share telematics data.

One MSTRS member agreed that it would be good to provide tiered levels of label-related data but was uncertain about the best way to supply that data to people. The member also suggested that basic information about charging and maintaining an EV would be good information to provide.

One meeting attendee asked whether there were any plans for the EPA to conduct consumer surveys about the information to include on labels. Dr. McCoy responded that is difficult for the EPA to conduct surveys due to the information collection request requirements imposed on the agency, so the EPA frequently relies on other data sources rather than conducting surveys itself.

An MSTRS member stated that the EPA could do a Request for Information notice but noted that there is already a lot of consumer research about this issue available. The member added that a big concern among consumers is the charging infrastructure.

Britney McCoy asked the group whether anyone had personally purchased an EV within the last year or so. She noted that she recently purchased an EV, and she did not look at the label when she was conducting her research. An attendee also mentioned not looking at the label but going to fueleconomy.gov when looking for vehicle information. An MSTRS member responded that they looked at information available through Consumer Reports.

One MSTRS member submitted that people want to see EV efficiency in terms of miles per kilowatt-hour rather than the reverse.

To conclude the session, an MSTRS member summarized the discussion.

## **Discussion Group Report-Out**

After a brief break, Clay Pope provided a summary of the EV Efficiency breakout, and Sam Waltzer provided a summary of the Commercial and In-Use Fleets breakout.

### *Discussion*

One MSTRS member asked Mr. Pope whether their group discussed the preferred metric for fuel economy. Mr. Pope responded that the group consensus was that MPGE is a confusing metric, and that it would be more beneficial to report a vehicle's true range efficiency per mile. The MSTRS member stated that the MPG metric for fuel-powered vehicles helps people understand how much money they spend, and a similar EV metric would be helpful. The MSTRS member recommended the use of miles per kilowatt-hour.

Another MSTRS member agreed about the utility of using miles per kilowatt-hour and stated that this metric is easily translatable to MPGE.

One MSTRS member also mentioned the debate about whether it is beneficial to provide information on DC fast charge infrastructure or Level 2 infrastructure. The member stated that long-range highway driving makes the 150 kwh DC Fast Charge a good natural starting point.

An MSTRS member stated that the average person likely doesn't know how much they pay for energy per kilowatt-hour. The member suggested looking at the energy guide model for electric vehicles, and a useful metric would be "cost per year" to operate an electric vehicle.

Another member brought up battery technology and stated that total charge/discharge cycles would be good information to include on the website. The member stated that education would be helpful so that the public knows that slower charging is better.

An MSTRS member mentioned that it was nice to hear that the In-Use Fleets breakout group discussed charging infrastructure. The member remarked that there is a perception that the infrastructure is insufficient, and this presents a barrier to EV adoption.

Another MSTRS member discussed the potential benefits of incentivizing smaller, lighter, and slower electric vehicles like E-cargo bikes. This member hopes the EPA can provide support to advancing adoption and regulatory actions involving these vehicles.

Ms. Mroz closed the discussion by stating that EPA will take these remarks into consideration for the development of charge questions for the MSTRS.

## **Public Comment**

Ms. Mroz opened the floor for public comment.

Bill Robertson of the California Air Resources Board provided comment on the SmartWay discussion and stated that he was glad to hear about how the technology and landscape of clean technology is evolving.

Ms. Mroz stated that she and the EPA staff are available via email for further questions.

## **Closing Remarks**

Rachel Muncrief stated that she appreciated everybody's engagement with the meeting and noted that she looks forward to a potential in-person meeting in the spring. She thanked Ms. Mroz and Ms. Dunham for their support.

Ms. Mroz thanked Dr. Muncrief for conducting her first meeting as chairperson and thanked EPA staff, guest speakers, and public observers for their participation. Ms. Mroz stated that members should expect to receive a Doodle Poll regarding the date for MSTRS spring meeting. Following these remarks, Ms. Mroz adjourned the meeting.

**Attachment 1**  
**Meeting Attendees**

<b>MSTRS Members</b>	
<b>Name</b>	<b>Affiliation</b>
Mary Arnold	Civics United for Railroad Environmental Solutions, Inc.
Matt Barth	Institute of Electrical and Electronics Engineers
Chris Bliley	Growth Energy
John Boesel	CALSTART
Lori Clark	North Central Texas Council of Governments
Michael Cleveland	Association of American Railroads
Dave Cooke	Union of Concerned Scientists
Raquel Garcia	Southwest Detroit Environmental Vision
Michael Geller	Manufacturers of Emission Controls Association
Megan Green	Mecklenburg County Government
Mike Hartrick (alternate)	Alliance for Automotive Innovation
Aaron Katzenstein	South Coast Air Quality Management District
George Lin	Caterpillar
Ellen Mantus	Health Effects Institute
Rachel Muncrief	International Council on Clean Transportation
Elaine O'Grady	Northeast States for Coordinated Air Use Management
Clay Pope	Capital Access Partners
Tara Ramani	Texas A&M Transportation Institute
Michael Replogle	Institute for Transportation and Development Policy
Joanne Rotondi	Hogan Lovells
Matt Rudnick	General Motors Company
Lubna Shoaib	East-West Gateway Council of Governments
Sydney Vergis	California Air Resources Board
Diep Vu	Marathon Petroleum Company
Erik White	National Association of Clean Air Agencies
Kate Zyla	Georgetown Climate Center
<b>Other Attendees</b>	
	Frank Acevedo
	Noelle Baker
	Felicia Barnes
	Anna Bowman
	James Coverdale
	Francisco Dóñez
	Sarah Dunham
	Morgan Ellis
	Lauren Ferner
	Tim French
	Shawn Gallagher
	Gil Grodzinsky

Alex Guillen
Chris Harto
John Harkin
Emil Hasl
Laurie Holmes
Brian Kelly
Keith Kerman
John Kinsman
Tammy Klein
Sonya Lewis-Cheatham
William Lobach
Britney McCoy
Jessica Mroz
Chris Nevers
Luis Olmedo
Pam O'Neal
Stuart Parker
Terry Riesen
Sarah Roberts
Bill Robertson
Theresa Romanosky
Allen Schaeffer
Zhenying Shao
Karl Simon
John Speith
Lesley Stobert
Abby Swaine
Tom Van Heeke
Christopher Voigt
Sam Waltzer
Travis Webb
Deborah Wilson

## **Attachment 2**

### **Chat Comments**

[11/29 11:16 AM] Jessie Mroz

Hello all – as a friendly reminder – we are not taking any public comments or questions until the end of the meeting today. We are only taking questions from MSTRS members at this time.

[11/29 11:22 AM] Jessie Mroz

<https://www.energy.gov/eere/bioenergy/bioenergy-technologies-office-funding-opportunities>

[11/29 1:27 PM] Jessie Mroz

From Mike Hartrick with Auto Innovators – The answer is yes. Manufacturers need a city and highway efficiency test for CAFE calculations.

[11/29 1:49 PM] Jessie Mroz

Just as an FYI for all – we will be posting the slides along with the meeting summary to the MSTRS website.