

Federal Advisory Committee Act
Clean Air Act Advisory Committee

Mobile Sources Technical Review Subcommittee

Co-Chairs: Mr. Drew Kodjak and Ms. Gay MacGregor

Designated Federal Official: Ms. Elizabeth Etchells

Summary of the Subcommittee's Meeting on December 9, 2014
New Orleans, Louisiana

Introduction/Opening Remarks

The meeting was called to order at approximately 10:30 am on December 9, 2014. Mr. Drew Kodjak welcomed everyone to the meeting, reviewed the agenda, and asked all subcommittee members and persons in attendance to introduce themselves. Ms. Gay MacGregor noted that MSTRS membership will expire in May for several people, and new members will need to be recruited. The EPA will be issuing a Federal Register notice to request nominations, and current members can also make recommendations. Ms. MacGregor asked for a vote on the minutes of the May 7, 2014 MSTRS meeting (approved).

Presentations

Presentations are posted online at the MSTRS website: http://www.epa.gov/air/caaac/mobile_sources.html. The notes below primarily reflect the discussions that occurred in response to the presentations.

Ports Work Group Panel – Mike Geller, EPA and Lee Kindberg, MAERSK

Ms. MacGregor reminded the subcommittee that the Ports workgroup has gotten underway since the last MSTRS meeting, with the purpose of helping the EPA determine how port emissions may be reduced. The first face-to-face meeting of the workgroup took place in August in Baltimore, Maryland. They have had several conference calls over the last few months and also met yesterday at the Port of New Orleans. The EPA hopes to have some preliminary recommendations from the workgroup at the next MSTRS meeting and expects to have final recommendations early in the winter of 2016. Ms. MacGregor introduced Dr. Mike Geller and Dr. Lee Kindberg, the co-chairs of the workgroup.

Dr. Geller and Dr. Kindberg provided background about the EPA's Ports Initiative and National Conversation on Ports. The EPA's Port Initiative vision is to develop and implement an environmentally sustainable port strategy that enables a more sustainable ports system, creates healthy air quality for communities and reduces climate risk. To exchange views and develop a shared understanding of the challenges and opportunities of ports and port communities, the EPA hosted a series of webinars in 2013 and 2014 and held a ports stakeholder summit in 2014. From this information exchange, several common themes were noticed. These themes included the idea that ports are just one part of the goods movement supply chain and that any program to reduce port emissions must be flexible, must create a level playing field between ports and must drive real change. Another theme that was discussed was that cross-agency coordination is critical to any program. In addition, ports need to work together to share best practices, and the ports need to interact with their communities. The EPA has asked the MSTRS for recommendations on the development of an EPA-led voluntary port initiative and also in how to effectively measure air quality and greenhouse gas (GHG) performance of ports and/or terminals within

ports. The MSTRS formed the Ports Workgroup in 2014 to address this charge. The workgroup has divided into subgroups to address specific issues, including the definition of a port, federal agency coordination, strategies for community-port engagement, barriers to technology implementation, and port inventories and metrics. These subgroups have begun to work together to develop preliminary recommendations for the EPA. The EPA is also working separately on ports, including updating the marine section of the 2006 Recommendations for Reducing Emissions from the Legacy Diesel Fleet Report, updating the "macro" assessment of the emissions and potential emission reduction strategies for approximately 20 ports across the country, and developing a curriculum to help communities engage with ports. The next steps for the workgroup are to meet via conference calls and webinars and through a face-to-face meeting in the late spring. The EPA is planning a webinar for the ports macro assessment in January and is asking for input for the update to the 2006 Recommendations for Reducing Emissions from the Legacy Diesel Fleet Report by January 15th.

Discussion (organized by general topics discussed)

Workgroup Program Goals and Areas to Address

Dr. Mridal Gautam asked what the goal for the workgroup is. Dr. Geller replied that the goal is to develop recommendations for the EPA to use in developing a program or activities to reduce air emissions at ports.

Mr. Kodjak asked whether the group has considered a multi-media approach to environmental issues at ports, such as including issues related to water quality. Dr. Geller responded that the group had thought about this, but air quality is what they are focusing on, since addressing air quality at ports is, by itself, a large undertaking. However, they do hope to address other media at least partially through their investigation of how to improve coordination between federal agencies, as well as coordination of the different offices within the EPA. Ms. MacGregor added that it may be possible to address other media as the workgroup investigates technology barriers to entry and defines guiding principles and best practices for port community engagement. Dr. Kindberg noted that for ports in non-attainment areas, air quality and the state implementation plan (SIP) is a high priority, but for ports in attainment areas, water quality is the primary environmental focus. Dr. Geller added that port community engagement and education will naturally encourage a multi-media program.

Dr. Gautam asked whether traffic flow at ports would be addressed by the workgroup. Dr. Kindberg replied that the workgroup will try to identify opportunities to reduce emissions but will not attempt to solve the issues directly. The effort of the workgroup will be to help the EPA and possibly other groups in designing a program that can be implemented to reduce port emissions.

Mr. Alberto Ayala noted that the workgroup seems to be working on a program that is promoting more than just recognition and asked what is seen as the incentive for change. He stated that it would be nice to have the workgroup put something on paper about the advantages of any program they suggest. Dr. Geller replied that he hopes when the group gets back together that they can discuss potential advantages.

Mr. Dana Lowell asked how the program the workgroup is working on will intersect with SmartWay. Dr. Geller answered that there is more complexity with these stakeholders than with the current SmartWay partners, so applying the same SmartWay model would not work, but that certain elements of the SmartWay program could be used for ports. Mr. Karl Simon noted that he thinks there is

potential for overlap with SmartWay and that the EPA is interested in considering how the SmartWay approach could be applied.

Mr. Ayala remarked that the workgroup may need to acknowledge the magnitude of the challenge in reducing port emissions. He noted that heavy investment and political will may be required to get real emissions reductions.

Mr. Arthur Marin noted that there is competitiveness between ports, and ports need to understand that being part of a program or undertaking certain projects will not put them at a disadvantage compared with other ports. Dr. Geller responded that the workgroup is aware of the competition between ports and has heard that the ports are not likely to adopt anything that puts them at a competitive disadvantage.

Mr. Kodjak asked whether only efficiency was going to be considered in the metric of improvement or whether reductions in conventional pollutant emissions, such as PM, were being considered. Dr. Geller stated that multiple pollutant emissions were being considered, and EPA's assessments would include emissions as well as fuel savings. Dr. Kindberg added that efficiency measurements relate emissions to the volume of goods moved at ports.

Ms. Jacky Grimshaw stated that building a bibliography was probably the best place for the workgroup to start because a lot of work building lists of best practices has already been done by other groups. Dr. Geller said that he agreed and noted that the workgroup did not want to recreate things that have already been done by others.

Definition of a Port

Mr. Steve Flint asked why there is a focus on maritime activities in the proposed definition of a port. Dr. Geller and Dr. Kindberg explained that the definition includes marine emissions, in addition to cargo handling and associated land-side activities. In-land and intracoastal waterway ports are not excluded, but the entire supply chain is not being considered.

Mr. Barry Wallerstein noted that the term "in-land ports" is a term used in California for railyards far inland (e.g., 100 miles from the coast), so the workgroup may want to think about how the term "in-land port" is used.

One workgroup member asked whether the definition of a "port" as used by the port authorities had been considered. Dr. Kindberg noted that Susan Monteverde of the American Association of Port Authorities is the chair of the subgroup developing the definition of a "port" for the purposes of the workgroup. She also noted that the group will need to think about clarifying what an "in-land port" is.

Mr. Wallerstein stated that ports should be considered to be everything that is within their fence line and that it does not help the community understand what the port's emission sources are if an inventory only includes mobile sources. Similarly, Mr. Flint stated that port communities want to understand the whole picture, and the focus of the workgroup should not be just on the mobile sources at ports. Dr. Kindberg replied that the workgroup has struggled with this issue, but noted that the program is aimed at the port and port-related activities in the supply chain and not just the activities that occur within the port gates. Mr. Flint also noted that not all ports communicate well with their communities.

Dr. Geller responded that one of the goals of the workgroup is to develop recommendations to help improve communication.

Mr. Wallerstein suggested that the word “institutional” be added to “infrastructure” barriers in the port definition.

Mr. Ayala asked where the boundaries were for the port, particularly regarding ships. Dr. Kindberg responded that the workgroup has discussed the distance out to sea that should be considered for ship emissions. The workgroup has not decided yet where to place that boundary, but the edge of the Emissions Control Area (ECA) has been considered, as well as state boundaries. Mr. Ayala stated that it would be good to include the distance at which the emissions make a difference to the air quality at and near the port. Ms. Meg Patulski added that for typical assessments, it is not customary to go out as far as the ECA, which is 200 nautical miles, but to go out some distance from the port. Dr. Geller noted that the workgroup is considering this issue and is continuing discussions on this matter.

Mr. Kodjak noted that the chicken chiller at the Port of New Orleans, as seen during the port tour prior to the start of the MSTRS meeting, is the largest energy consumer in the area, and he asked whether upstream power plant emissions would be factored into port activities. Dr. Kindberg noted that the workgroup had included port storage and warehousing in the definition of a port, but had not included outside stationary sources that would be covered by other rules.

Mr. Lowell noted that some stationary sources could be included in the definition of a “port,” such as on-site power generation for the port. Dr. Kindberg clarified that there is electric generation at ports around the world, but the workgroup has not included this in the “port” definition right now because it would be covered by stationary source rules. Mr. Don Anair suggested that the upstream electricity emissions should be considered in this effort, considering that port electrification may be suggested as an emission reduction strategy and may become the wave of the future. Dr. Kindberg suggested that electrification could be considered as a separate workgroup of the MSTRS because the issue is bigger than just the electrification related to ports.

Ms. Grimshaw registered concern about truck traffic related to the port. Dr. Kindberg responded that trucking, rail and other port-related transportation activities would be included in the definition of a port and would be addressed by any program developed.

Funding for Port Programs

Mr. Brian Barnes stated that South Carolina has received several DERA grants, with a 50/50 split between federal and private funding for their projects. He noted that these projects have measurable public health benefits and that help is needed to continue with these types of projects. He hopes this will be possible through reauthorization of DERA.

Mr. Wallerstein stated that the \$30 million to \$50 million total available DERA funds nationwide is not nearly enough money to keep U.S. ports up-to-date. California spends billions of dollars on its ports, which dwarfs the amount of money available for the rest of the country. He noted that the DERA reauthorization is coming up, and those funds should be used to modernize the country’s ports.

Mr. Simon noted that some actions related to ports can be done in Washington, but where work will really be done is in the regional and local areas. He also stated that the U.S. Maritime Administration (MARAD) also agrees that this issue can only be partly addressed at the national level.

Dr. Joe Kubsh stated that California has billions of dollars to spend on transportation issues, and it is not realistic to think that this amount of funding would be available elsewhere.

EPA Ports Assessment

Mr. Jim Kliesh asked why 2011 data was being used in the EPA ports analysis. Dr. Geller replied that it is the most recent year of data available in the National Emissions Inventory (NEI), which is the source of data they will be using.

Mr. Ayala asked whether the group was considering the larger ships that will be making port calls in the future due to the expansion of the Panama Canal. Dr. Geller stated that the workgroup will not be making the actual inventory, but that the EPA is taking this into account in the future projections it is performing. Dr. Kindberg noted that the largest ships that will fit through the new Panama Canal locks are in the 12,000 to 13,000 twenty-foot equivalent unit (TEU) size, so the largest of ships will still not fit through. Mr. Simon asked whether this also applies to the possible new canal through Nicaragua that the Chinese are proposing. Dr. Kindberg replied that the Chinese have not shared their plans with her industry yet, so that is unknown at this point.

Mr. Wallerstein noted that with the new ozone standard, attainment data will be for year 2037, so the EPA might want to consider interpolating the data at 2040 and also to consider more than just CO₂ at that projection date.

Mr. Wallerstein encourages the EPA to talk with its environmental justice (EJ) staff about EJScreen. Ms. MacGregor noted that the EPA's Office of Transportation and Air Quality (OTAQ) is in constant communication with the EJ staff about the EJScreen tool.

Presentation: NREL Research and Thoughts on Connected and Automated Vehicle Energy Impacts – Jeff Gonder, NREL

In a comprehensive energy impact assessment, dramatic potential energy impacts across vehicle automation levels were seen. While greater efficiencies may be seen, there is also the potential for more travel and for increased numbers of people traveling with automated vehicles. There are several sources of data that are being used to analyze the effects of connected and automated vehicles (CAV), including the Alternative Fuels Data Center (AFDC), the National Fuel Cell Technology Evaluation Center (NFC TEC), the Transportation Secure Data Center (TSDC), Fleet DNA and FleetDASH. The data from these sources can be merged with other data, such as data for climate, road grades, and drive cycles/routing to support real-world analyses. The use of CAV technology may enable modestly higher efficiencies, including improved efficiency of existing vehicles by maximizing ideal conditions, using green routing and reducing aggressive driving. There may also be a synergy with automation and electrification of vehicles in which the electrified driveline makes automation easier and information connectivity helps with vehicle/grid integration. Significant uncertainties remain about the energy impacts, and thoughtful policies will be needed to encourage the desired outcomes of CAV technology.

Discussion

Mr. Kodjak asked whether OTAQ could have a significant role in the adoption of CAV technologies. Mr. Gonder responded that there should be some environmental benefits to these technologies; however, their adoption could also lead to greater sprawl and more travel. He noted that the drivers toward CAV technologies are likely to be safety and the potential for reduced accidents.

Ms. Grimshaw asked a clarifying question about what “travel by underserved” meant, as displayed in a chart in the presentation. Mr. Gonder replied that it represents travel by the very old, those too young to drive, and others for which travel is difficult now.

Mr. Ayala asked whether platooning was only done with two trucks. Mr. Gonder responded that platooning would usually involve two or three trucks, but more than that would not usually be done because it would create a train or wall that other drivers would have difficulty getting through to exit a highway.

Mr. Ayala noted that the off-cycle credit applies to light-duty vehicles and asked whether a similar approach would be recommended for heavy-duty vehicles. Mr. Gonder responded that such an approach could be done for heavy-duty vehicles also.

Mr. Bob Babik commented that vehicles are already becoming more connected, noting that navigation systems that were once used only to determine how to get from place to place can now be used to optimize a route based on traffic conditions. He also noted that green routing is complex to implement but is the way of the future.

Road to Connected and Automated Driving – John Capp, GM

While at this point the environmental impacts of autonomous vehicles are unknown, there is a lot of enthusiasm about these cars, with several companies developing automation technology and demonstration vehicles. There is potential for these vehicles to reduce crashes, reduce congestion and improve the ability for the aged and disabled to travel. Automated vehicle travel is not a new concept, and GM developed some concept cars in the 1950's. In that age, the vision was for magnetic strips to be placed in the roads, and cars would follow those strips. In the 2007 DARPA Urban Challenge, a GM vehicle with many external sensors, "Boss," won the race. The exciting result of this race was that people began to believe that automated travel was truly possible. Today, companies are adding technology to vehicles that brings them closer to automation, such as collision alerts, lane departure alerts, emergency automatic braking, and adaptive cruise control. The next step for GM is "supercruise," which will be available in the 2017 Cadillac. This is a freeway automated driver assist system that keeps the vehicle centered in the lane and keeps pace with traffic, but is not fully autonomous. This vehicle would include sensors of different types all around the vehicle and would be integrated with GPS. Vehicle-to-vehicle (V to V) technology would also be included to enable the cars to communicate with each other. The approach GM is taking is to incrementally go toward fully autonomous driving.

Discussion

Ms. Grimshaw asked whether the technology discussed was only available in GM's Cadillacs or whether it was available in other vehicles. Mr. Capp responded that some of the options are available in other vehicles, but it is an optional package for all the vehicles in which it is offered.

Mr. Ayala asked whether "supercruise" would be offered in vehicles as an option or whether it would be standard in some vehicles. Mr. Capp replied that it would be part of a technology package on a high-end model of Cadillac and then it would penetrate through the lineup to other vehicles.

Mr. Wallerstein asked whether there may be issues with hacking into the V to V system. Mr. Capp responded that this is an area of concern, and the communication system needs to be secure. He also added that better sensors and faster computers will also be needed.

Mr. Phil Heirigs asked whether drivers could become too complacent with semi-autonomous driving. Mr. Capp answered that they are doing a lot of research to understand how to combat this with "supercruise." They are trying to design a system that ensures drivers keep their eyes on the road.

Autonomous Mining Truck Efficiency - A Total Systems Perspective – Rey Agama, Caterpillar

A Caterpillar core value is to promote sustainability with their products and services. To improve fuel efficiency and reduce emissions, including CO₂, a total systems perspective is needed. This includes optimizing the fuel, machine components, machine systems and the job site. Autonomous mine trucks are in use today, and these vehicles are able to negotiate complex haul roads, maneuver through mine site traffic and navigate efficiently to and between loading points and dump sites. The use of these autonomous hauling vehicles has improved mine site safety, improved fuel efficiencies, reduced water truck usage and increased the lifespan of major truck components.

Discussion

Mr. Kodjak asked for a sense of how much easier it is to use autonomous vehicles in these mine settings than other settings. Mr. Agama replied that the major benefits of this technology are not having an operator and reducing fuel use per ton of material mined. He also noted that the trucks are controlled through the Cat MineStar System.

Mr. Simon asked whether these trucks can be used in other places or in other applications. Mr. Agama responded that the company envisions this technology to be used in construction applications in the future.

Mr. Barnes asked whether there is a pathway for verification of this technology. Mr. Agama replied that he did not believe there is.

Mr. Simon commented that for autonomous vehicles, the regulatory process and the marketplace are not coordinated. He noted that he hopes regulators can think about the issues regarding autonomous vehicle use proactively rather than trying to deal with issues as they arise.

Update from EPA

Mr. Simon gave an overview of the status of the ongoing work of OTAQ. Mr. Simon noted that the MOVES model was released in July, some technical fixes were released in October, and the EPA provided training on the model last week. This was the first major update to MOVES since 2010. He noted that some states have challenged the MOVES model on the grounds that it does not address ethanol use appropriately. Mr. Simon mentioned that the EPA is working on the heavy-duty vehicles

Phase 2 proposal, which will be issued in March 2015, with the final rule expected in March 2016. He noted that a report on the results of Phase 1 will be issued next year. For the light-duty vehicles program, they are working on the mid-term evaluation. They have also released the light-duty automotive technology, carbon dioxide emissions, and fuel economy trends report, which shows that model year 2013 car and truck fuel economy is at a record high. Regarding aircraft emissions, the EPA anticipates a proposed endangerment finding next spring, concerning lead emissions from piston aircraft, which will lay the groundwork for a potential international regulation. OTAQ has also completed a rigorous assessment of the petition review process for the renewable fuels standard (RFS), and from that process, they have prioritized the program and announced that the EPA will not be continuing to develop annual standards. The emissions control area (ECA) for ocean going vessels has the potential for massive compliance benefits, and the EPA has also been working hard to develop an enforcement process for the ECA. For the Diesel Emissions Reduction Act (DERA), there is currently a request for proposal out for ports, and they are working to streamline the grant and rebate distribution processes. Also, the DERA reauthorization process starts in 2016 for the grant program.

Adjournment

Ms. MacGregor informed the subcommittee that a Doodle poll would be sent out to members to request information about dates for the next MSTRS meeting. She also noted that the presentations would be posted on the website soon and that she will be sending everyone the minutes from this meeting.

Mr. Ayala asked about the process for building the meeting agenda. Ms. MacGregor stated that she will ask for ideas for the agenda in the e-mail she sends out with the Doodle poll, but noted that she thinks at least part of the next meeting will be devoted to greenhouse gases. Mr. Kodjak noted that if members suggest a topic for the agenda, it would also be helpful to suggest a few speakers.

Mr. Kodjak and Ms. MacGregor thanked the subcommittee members for their attendance and participation and adjourned the meeting.

Mobile Sources Technical Review Subcommittee
December 9, 2014

Presenters and Subcommittee Members in Attendance

| Name | Organization | Attendance |
|--|---|-------------------|
| Reynaldo Agama | Caterpillar | X |
| Don Anair | Union of Concerned Scientists | X |
| Alberto Ayala | California Air Resources Board | X |
| Robert Babik | General Motors | X |
| Deborah Bakker | Hyundai | X |
| John Capp | General Motors | X |
| Lindsay Chason | Home Depot | |
| Steve Flint | New York Department of Environmental Protection | X |
| Mridul Gautam | Mid-Atlantic Research Institute | X |
| Jeff Gonder | National Renewable Energy Laboratory | X |
| Jacky Grimshaw | Center for Neighborhood Technology | X |
| Philip Heirigs | Chevron | X |
| Robert Jorgensen | Cummins | |
| Lee Kindberg | Maersk | X |
| Drew Kodjak | International Council on Clean Transportation | X |
| Joseph Kubsh | Manufacturers of Emission Controls Association | X |
| Dana Lowell (for Thomas Balon) | MJ Bradley and Associates | X |
| Gay MacGregor | EPA | X |
| Arthur Marin | Northeast States for Coordinated Air Use Management | X |
| Marcelo Norsworthy (for Pamela Campos) | Environmental Defense Fund | X |
| Raul Rojas | Freie University, Berlin | X |
| Jim Kliesh (for Ichiro Sakai) | American Hondo Motor Co. | X |
| Robert Sawyer | American Lung Association in CA | |
| Dan Short (for Mike Leister) | Marathon Petroleum | X |

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|----------------------------------|---|---|
| Karl Simon | EPA | X |
| Christopher Standlee | Abengoa Energy | X |
| Christine Tennent | Corning | X |
| John Viera | Ford | |
| Luke Tonachel (for Roland Hwang) | Natural Resources Defense Council | X |
| Barry Wallerstein | South Coast Air Quality Management District | X |

Attendees

| Name | Organization | Attendance |
|-------------------|---|-------------------|
| Alyson Azzara | International Council on Clean Transportation | X |
| Brian Barnes | South Carolina Department of Health and Environmental Control | X |
| Paxcal Bellavance | Environment Canada | X |
| Liz Etchells | EPA | X |
| Mike Geller | EPA | X |
| Jo-Anna Jones | South Central Planning and Development Commission | X |
| Angelo Logan | East Yard Communities for Environmental Justice | X |
| Reema Loutan | EPA | X |
| Meg Patulski | EPA | X |
| Mike Rochford | Caterpillar | X |

Contractor Support

| Name | Organization | Attendance |
|----------------|---------------------|-------------------|
| Lesley Stobert | EC/R Incorporated | X |
| Alden West | EC/R Incorporated | X |