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 April 19, 2012
Washington D.C.

Introduction/Opening Remarks

Mr. Drew Kodjak (ICCT, Co-Chair) and Ms. Gay MacGregor (EPA, Co-Chair) called the meeting to order at approximately 9:00 am. Mr. Kodjak and Ms. MacGregor welcomed attendees, reviewed the day's agenda and noted a few switches in the order of the speakers. Mr. Kodjak and Ms. MacGregor asked for all members present to introduce themselves.

Presentations and meeting topics for this meeting are as follows:

- Office Director Comments – Margo Oge, EPA
- Presentation: Operational Strategies to Improve Fuel Efficiency – Dave Berry, Swift
- Presentation: Improving Vessel and Supply Chain Fuel Efficiency – Lee Kindberg, Maersk
- Presentation: Operational Strategies to Improve Fuel Efficiency – Rick Nath, CSX
- Presentation: FedEx Air Ops Sustainability and Fleet Efficiency – Allison Bird, Fed Ex
- Presentation: SmartWay Legacy Fleet Work Group Meeting – Terry Goff, Caterpillar and Buddy Polovick, EPA
- Presentation: MOVES Update – John Koupal, EPA
- Presentation: Outreach for the New Fuel Economy and Environment Label – Kristin Kenausis, EPA
- Presentation: DOE's Fuel Economy Outreach – David Greene, Oak Ridge National Laboratory
- Presentation: Next Steps on Vehicle Labeling – Julie Becker, Auto Alliance
- Presentation: Selling Fuel Economy: Tools and Limitations – Doug Greenhaus, NADA

Presentations are posted online at the MSTRS website: http://www.epa.gov/air/caaac/mobile_sources.html.[1] As the presentations are posted for public view, the notes below primarily reflect the discussions that occurred in response to the presentations.

Comments from the EPA's Office of Transportation and Air Quality Director – Margo Oge, EPA

Margo Oge began by thanking and recognizing the members attending their last MSTRS meeting, who included Sally Allen, Robert Brown, Nick Cernansky, Terry Goff, Tim Johnson, Michelle Robinson, Nancy Seidman, and John Wall. She noted that new members will be approved before the next meeting, and they should be in attendance at that face-to-face meeting. Ms. Oge then provided a brief overview of the programs currently ongoing in EPA's Office of Transportation and Air Quality (OTAQ). The EPA is working with the National Highway Traffic Safety Administration (NHTSA) to finalize the greenhouse gas (GHG) program by mid-summer; the office is in the process of proposing renewable fuel standards for 2013, which must be finalized by November; they are working to finalize the Tier 3 standards in the next year; and they are working with the International Maritime Organization (IMO) to put forward regulations for ocean-going vessels in the Emission Control Areas (ECAs). She also noted that SmartWay continues to be a priority for the Agency. Certification and compliance programs are beginning to represent a larger portion of the OTAQ workload. The office has put forth several regulations over the past 15 years, and the public health benefits of these programs combined have a great cost to benefit ratio of approximately 1:15. As these programs become fully implemented, the workload is growing. They will be receiving 5,000 certifications for vehicles/engines to review, and they will also be implementing the GHG regulations and CAFÉ standards. To do this as efficiently as possible and ensure that everyone is complying is not a simple task. Ms. Oge ended her remarks by allowing time for questions; however, no questions were posed.

Operational Strategies to Improve Fuel Efficiency – Dave Berry, Swift

Swift Transportation started with one truck in 1966 and has grown to operate 16,900 trucks in the U.S. today. The company offers a suite of transportation services and equipment offerings to serve their customers, such as temperature-controlled trailers and trucks that can operate in both the U.S. and Mexico. In the past, to increase efficiency and reduce fuel costs and emissions, there was a focus on equipment improvements. Now, and going forward, there is and will be more focus on how the equipment is used. Swift has put quite an effort into route optimization, in which trucks are matched to loads and destinations to maximize overall efficiency, which has been made possible through the use of computer software systems. In addition to route optimization, other programs Swift has undertaken to reduce fuel use include reduced idling and driver accountability for effective miles per gallons of fuel used. The company also must plan for multi-mode shipments, and optimization helps with the planning for these shipments. The optimization tools combined with other software programs and technology offerings enable tracking and customer notification of shipment status, all of which help increase productivity and reduce costs.

[1] At the request of the presenter, the presentation made by Dave Berry of Swift is not published on the MSTRS website.

Discussion

Tim Johnson (Corning) noted that it appears that natural gas powered vehicles for line-haul trucks are estimated to provide improved efficiency, but asked whether the logistics of refueling could cause increased costs. Mr. Berry responded that Swift believes that switching to natural gas powered vehicles will be more efficient overall and stated that the fueling network is not a barrier for Swift because the company is so large that it can provide its own fueling stations. However, there are other operational issues, such as safety, that still need to be worked out. He also noted that in the U.S., garbage truck fleets have the most experience with natural gas as a fuel because they return and refuel at the same spot each night.

Ms. Oge asked what Swift would like to see from the SmartWay program. Mr. Berry replied that he would like to see more credit given to operational efficiencies that reduce emissions, where right now the only metric in SmartWay is fuel economy. He would also like to see EPA perform some type of check of the information coming into SmartWay to ensure the data are reasonable. Mr. Berry also stated a concern that the SmartWay certified technologies be considered suggestions only and that they not become prescriptions for technologies that must be used because they may not be the best options in all situations.

Tom Cackette (CARB) asked if there was a specific fuel reduction target expected from route optimization. Mr. Berry responded that while Swift has been performing optimization for 10 years, they have also upgraded trucks, equipment, and operator training during that time, which makes it difficult to attribute any specific reductions to optimization alone. Right now Swift is trying to minimize empty truck mileage (i.e., deadhead), so they have specific metrics they are monitoring to try to identify the results of that effort.

Pamela Campos (EDF) noted that there seemed to be three actions Swift has undertaken to improve fuel efficiency: (1) route optimization, (2) multimodal and customer optimization, and (3) implementation of driver training, and asked whether there were other actions undertaken. Mr. Berry replied that those three were the big actions Swift has undertaken. He also noted that with multi-modal transportation, there must be a relationship and trust built between the companies operating in the different modes.

Mridul Gautam (WVU) asked whether Swift was considering linking to intelligent traffic systems (ITS). Mr. Berry responded that this would be a possibility. He observed that with improvement in technology there could be a lot of improvement in traffic management and safety.

Mr. Kodjak noted that he did not see any fuel reductions attributed to reduction in idle time and asked whether the 5-minute maximum idle time that some rules have instituted has had any impact on the average Swift idle time. Mr. Berry replied that their trucks have automatic idle-off technology that is set for 5 minutes, but it can be overridden in certain circumstances. Swift does monitor idle time very closely.

Improving Vessel and Supply Chain Fuel Efficiency – Lee Kindberg, Maersk

Today's ships run on diesel power and use large containers of standard sizes to load and transport cargo. The vessels run on established routes with set schedules, and the length of the routes requires several vessels to be on the same route in order to provide weekly service. Because fuel use and costs increase exponentially at higher speeds, the ships move at steady, slow speeds. In terms of CO_2 emissions, ocean shipping has the lowest environmental impact of any of the transportation modes, and 90% of all goods transported globally are carried by ships. Since 2009, fuel prices have soared. However, ships have become more efficient also during this time period. In addition to adding newly built ships to its line, Maersk has also instituted technological and operational changes to lower fuel consumption, such as adding waste heat recovery systems and instituting strategic container placement. Maersk is a member of the Clean Cargo Working Group (CCWG), which is a business-to-business forum with the goal "to promote more sustainable product transportation." This group publishes CO_2 estimation methods and emission factors by shipping trade lane. This information allows companies to compare emissions by route. Maersk and other companies have or are beginning to change their thinking on shipping best-practices. There is a movement toward steady-steaming, choosing the right-sized ships for the loads, providing reliably on-time deliveries, showing and sharing vessel performance information, and thinking that sustainability initiatives make business sense.

Discussion

Mr. Kodjak asked about the impact of the International Maritime Organization's (IMO) Energy Efficiency Design Index (EEDI). Ms. Kindberg responded that Maersk has supported the EEDI and the Energy Efficiency Operational Indicator (EEOI), and she thinks both the EEDI and EEOI will be effective. In response to a further question about whether high fuel prices are driving improvements in efficiency more than the EEDI, Ms. Kindberg responded that fuel prices are a big factor, but Maersk started improving efficiency before fuel prices went up.

Mr. Cackette and Mr. Johnson both asked questions about fuel costs in relation to total costs for shipping. Ms. Kindberg replied that fuel costs represent over half of the variable operating costs of the ships. The costs to ship goods are generally a very small percentage of the consumer price of the goods, but it depends on how many items fit in a container and some other factors.

Michelle Robinson (UCS) expressed interest in seeing the results of the industry efforts that have been made through the CCWG. Ms. Kindberg stated that there is a paper available through the CCWG that discusses how supply chain calculations have been used to improve efficiency.

Operational Strategies to Improve Fuel Efficiency – Rick Nath, CSX

CSX was founded in 1827 and currently operates in 23 eastern U.S. states with approximately 21,000 miles of rail and 3,900 locomotives. CSX has instituted a number of programs to improve fuel efficiency and reduce locomotive greenhouse gas (GHG) emissions, including automated cruise control, reduced idling, operator training, and the use of Event

Recorder Automated Download (ERAD) technology. Each of these programs has reduced fuel use, and the automated cruise control, or trip optimizer, has resulted in a 3% to 5% fuel savings alone. Other programs underway or under consideration include train pacing, train power matching, consist management (locomotive grouping management), dwell time reduction, decreased wind resistance, and the improvement of rail connections with the National Gateway program.

Discussion

Ms. Campos asked about possible fuel reduction in moving from single to double height trains. Mr. Nath responded that CSX expects the efficiencies would be quite large, and they would expect intermodal business to grow, but he is not sure of an exact figure.

Bob Sawyer (UC-Berkeley) asked whether Mr. Nath foresaw an electrified train network in the U.S. Mr. Nath replied that he was unsure, and one big question is who would pay for it. If CSX were to undertake that, there would need to be a profit motive. CSX has about 21,000 miles of track, which would be a lot to electrify, but it could be more viable perhaps to electrify just the mains.

Ms. Oge asked about the payback period for the trip optimizers CSX has installed. Mr. Nath explained that CSX started installing the optimizers about 15 months ago and they hope to put them on 100% of the line-haul locomotives. The payback period CSX generally looks for is five years or less to go ahead with an upgrade, so it should be within that timeframe. Mr. Nath believes the trip optimizer cost is approximately $20,000 per locomotive.

FedEx Air Ops Sustainability and Fleet Efficiency – Allison Bird, Fed Ex

Fed Ex participates in a program called Fuel Sense, which is made up of 30 separate sub-programs designed to conserve fuel. Saving fuel is critical because of the costs involved. While safety is always the first priority, reducing fuel use to the minimum needed is important, and no amount of fuel savings is too small to consider. For aircraft, one way to reduce fuel use is to carry only the fuel that is needed, considering contingencies. Others include reducing the amount of time the auxiliary power unit (APU) runs, taxiing without using all engines, upgrading engines, optimizing cargo placement in the aircraft, and reducing aircraft weight. Where it is possible, Fed Ex is also performing optimized descent, where there is less airport circling before landing, choosing closer alternate airports, and reducing the time between aircraft takeoffs. Other initiatives Fed Ex is conducting include upgrading the paint to low-drag coatings on the aircrafts, using flight software to optimize flight patterns and reduce dog-legs, and using real-time tracking software to reduce delays and reduce APU usage. The combined total fuel savings of all the Fuel Sense sub-programs is expected to be 46.5 million gallons for the 2012 fiscal year for Fed Ex.

Discussion

Mr. Johnson asked whether the EU CO_2 mandates have changed Fed Ex's approach to operations. Ms. Bird replied that those mandates have not really affected Fed Ex yet, but noted

that there may be unintended consequences from the mandates. For instance, demand and fleet management generally determine how flights are routed, but the mandates are based on arrival in the EU, which may cause carriers to make an intermediate and unnecessary stop somewhere else, such as Greenland, to reduce the flight distance before arrival in the EU.

Mr. Cackette asked about the amount of total fuel savings that are due to operational changes. Ms. Bird responded that most of the savings are due to operational changes, but some are also due to the use of newer planes.

Ms. Campos asked about whether Fed Ex uses any real-time or quick-return feedback software for the pilots. Ms. Bird stated that they have a communication plan and pilots see information about fuel use before the flight, which is based on engineering estimates. After the flight, the pilots can see how much fuel is still on-board when they land.

Mr. Kodjak asked about other airlines that have been involved in the IATA program. Ms. Bird replied that she was not sure what other airlines were involved but could provide that information to Mr. Kodjak after the meeting.

Jackie Grimshaw (CNT) asked whether fuel use was calculated for the idle time of trucks and planes during loading. Ms. Bird answered that the planes do not run at all during loading and would use on-ground electricity during this time. The planes are also serviced while being loaded.

Mr. Sawyer asked whether flight speeds were reduced to reduce fuel consumption. Ms. Bird replied that Fed Ex does reduce flight speeds when possible.

SmartWay Legacy Fleet Work Group Meeting – Terry Goff, Caterpillar and Buddy Polovick, EPA

Mr. Polovick and Mr. Goff provided a summary of the second face-to-face meeting of the SmartWay work group. Mr. Goff reviewed the three subgroups of the work group and the potential products of each. The three subgroups focus on (1) accelerating and sustaining SmartWay in the trucking and rail sectors, (2) opportunities for supply chain fuel and emissions reductions in freight modes, such as marine vessels and air transportation, and (3) opportunities in the nonroad sector. Mr. Polovick reviewed the workgroup process for developing recommendations and the potential timeline for workgroup, culminating in final recommendations in the Spring of 2013. Mr. Goff reviewed some of the important points noted during the meeting discussion for each subgroup. For subgroup 1, three points were highlighted, including easing access to data and improving transparency, broadening the SmartWay participants to include smaller fleets, and the importance of maintaining and not diluting the SmartWay brand. For subgroup 2, one main point discussed was that there are already carbon and emissions accounting systems in place through other programs, so SmartWay should try to verify or certify one or more of those programs rather than creating another system. For Subgroup 3, there are diverse business sectors, and there was much discussion about how to include or exclude certain sectors from the SmartWay program. There was also discussion about whether a separate program may be better suited for the non-road sector.

Discussion

Ms. MacGregor noted that the group had a good, interactive session. She also noted that starting small with a certain sector for non-road could work to build a program for the non-road sector as a whole.

Mr. Johnson recommended that the workgroup try to quantify the achievements of SmartWay to date and then also quantify the potential achievements for each subgroup.

Ms. Campos commented that there are potential emissions reductions associated with intermodal management and asked whether the workgroup could consider trying to use SmartWay to bridge the gap between companies in different modes. She also asked whether the workgroup could explore whether there is a role for SmartWay in verifying compliance with voluntary programs.

Arthur Marin (NESCAUM) asked that, as the workgroup thinks about the marine and air modes, the workgroup also consider whether individual facilities, such as ports, could be part of SmartWay.

MOVES Update – John Koupal, EPA

The MOVES model is the current mobile source emissions model EPA uses, which replaces the MOBILE model. There have also been several versions of MOVES, with the current version being MOVES2010a. The EPA is going to release a minor update, MOVES2010b very soon and then a major revision in version MOVES2013. Ongoing validation has been an important element of MOVES design and implementation, with the goal of identifying data gaps and improvements needed for the next version. The EPA has collected a lot of validation data for emission rates through remote sensing and dynamometers. From this data, they have found that MOVES generally predicts emissions accurately within the standard errors of the collected data. However, the model does has trouble predicting emissions for older vehicles (i.e., over 10 years old), and this is most likely due to the small sample sizes of vehicles in this age range. The MOVES predictions are also generally in line with data from tunnel and roadside studies. MOVES also has shown improvement in predicting emissions than the last version of MOBILE. As EPA prepares to work on the MOVES2013 version of the model, it would like to revitalize the workgroup it had established to advise the work on the MOVES2010 version. This would entail a relatively small group of people, such as one person per trade group, which would meet every two to three months over the next year. Organizations that had previously been involved in the MOVES workgroup, and also any other organization that would like to participate, should contact John Koupal and nominate a representative.

Discussion

Ms. MacGregor noted that some of the MOVES workgroup meetings would be held through webinar. In response to a question about the start of the workgroup, Mr. Koupal stated that EPA would like to get the workgroup together in the next month or two, so organizations that would like to participate should contact him in the next week or two.

Nancy Seidman (MassDEP) commented that MOVES is a big improvement over the MOBILE model, but the improvements came at a price, including reduced ease of use, increased run time, and more difficult file management. She stated that she would like to see improvements in these features to make the system more usable for state agencies.

Ms. Oge suggested that because state agencies represent a large portion of the MOVES users, there be more than one state agency representative involved in the MOVES workgroup.

Mr. Sawyer commented that older vehicles are still an issue, since they are often the highest emitters.

Mr. Johnson asked how the mobile emissions inventory differs when it is based on MOVES data rather than MOBILE data. Mr. Koupal replied that the MOVES inventory has 30-40% more NOx, and PM emissions are also increased, in comparison with the MOBILE data.

John Viera (Ford) asked whether there were sectors that should be on the workgroup this time that were not involved in the previous workgroup. Mr. Koupal responded that it would be good to get small engine manufacturers and any groups interested in non-road emissions involved in this workgroup.

Outreach for the New Fuel Economy and Environment Label – Kristin Kenausis, EPA

The fuel economy labels have evolved quite a bit since they were first developed in 1974. Since 1993, with a small update in 2008, a simple and familiar label with the gas pump graphic has been in use. For model year 2013, the new label, which has more information, will fully replace this label, and the new label can be used voluntarily for model year 2012. The EPA is getting ready to launch a public relations campaign to inform consumers about the content of the new label. The campaign will involve primarily print media and radio ads, but brochures, handouts, and bookmarks will be distributed at trade and auto shows. The EPA is also preparing material for auto dealerships, enhancing its website and developing social media information, and working with fueleconomy.gov. The new label has also been found to be adequate to meet the needs of certain Federal Trade Commission and California Air Resources Board requirements, so that redundant labels for the different regulatory bodies are not required. Going forward, EPA plans to conduct market research after one to two years of use of the new label to determine whether the label needs any changes to meet consumer needs.

Discussion

Due to time constraints, questions were held until after the last presentation in this group of presentations about fuel economy and automobile labels.

DOE's Fuel Economy Outreach – David Greene, Oak Ridge National Laboratory

The Department of Energy (DOE), in cooperation with EPA, runs a fuel economy information program that includes the yearly Fuel Economy Guide and the website

www.fueleconomy.gov. Website traffic on www.fueleconomy.gov is expected to reach over 40 million visits in 2012. The DOE attributes the website's popularity to its focus on the consumer, innovation and continuous improvement. The website has been listed in the top five government apps for saving time and money and was been referenced in over 1,500 newspaper, TV, radio and magazine articles in 2011. A new section was added to the website to explain the new fuel economy and environment label. Also, beginning with model year 2013, every label will have a QR code that links to the website with information specific to the vehicle the consumer scanned. The most popular feature of the website is a "Find and Compare Cars" tool that allows users to compare estimated miles per gallon and yearly fuel costs between specific vehicles. This tool can also be personalized based on user driving conditions. Explaining the performance of hybrid and electric cars is a challenge, both with the label and on the website. While the website currently has information about plug-in hybrid vehicles, it will also soon have a new calculator specifically for these vehicles.

Discussion

Due to time constraints, questions were held until after the last presentation in this group of presentations about fuel economy and automobile labels.

Next Steps on Vehicle Labeling – Julie Becker, Auto Alliance

The goals of the Auto Alliance for the new vehicle labels are to achieve a single national label, help consumers understand fuel-efficient vehicle technologies, and resolve the day-to-day issues with workability. While there has been much progress on moving toward a single label, the smog index deserves further discussion because the rating depends on the vehicle's point of sale and test group certification method, which can result in different smog index ratings for the same vehicle. The new labels are more complicated and contain more information than the current labels. To help consumers understand the advanced technologies and fuel economy, vehicle manufacturers have their own websites, distribute information at trade shows, and use media outlets to explain this information. The Auto Alliance believes EPA should track consumer experience with the label to determine which attributes consumers care most about and whether information is presented in a way that allows meaningful comparison among advanced technology vehicles. This information and consumer acceptance of the label should be considered in the midterm evaluation of the label. The Auto Alliance would like to see flexible, streamlined ways to resolve workability issues.

Discussion

Due to time constraints, questions were held until after the last presentation in this group of presentations about fuel economy and automobile labels.

Selling Fuel Economy: Tools and Limitations – Doug Greenhaus, NADA

The National Automobile Dealers Association (NADA) is a trade organization that represents new light-duty vehicle sellers/leasers. Since 2007, sales of new cars and trucks have been lower than previous years due to the sagging U.S. economy, but sales are picking up again.

Since the 1970's, the average age of the light-duty vehicle fleet has been steadily increasing, from 6.5 years to over 10.5 years in 2011. During that period, fuel economy has also improved, most dramatically in the early 1980's and again in the years since 2004. However, it is important to note that while regulatory mandates may force fuel-efficient vehicles to be manufactured, it does not force consumers to buy them. The market dictates what is purchased, and fuel efficiency is only one factor consumers consider when purchasing a new vehicle. Consumers also consider the current and perceived future costs of fuel when thinking about the importance of fuel efficiency, and the recent wide fluctuations in price add uncertainty to this factor. Consumers must be able to pay for new vehicles and willing to pay extra, in some cases, to get improved fuel economy. While the new fuel economy label is not what NADA had hoped for due to its complexity, it may be helpful to interested consumers at the point of sale. NADA is working with dealerships on educating staff about the information on the new label, and with issues in transitioning from the old to the new label.

Discussion (reflecting questions for each of the presenters in the group of presentations about a fuel economy and automobile labels)

Joseph Kubsh (MECA) asked whether any of the panelists knew what payback period is acceptable to consumers. Mr. Greenhaus responded that it would be between three to five or three to six years, based on the average length of time new car buyers keep their cars. Mr. Green added that very little is really known about how consumers value fuel economy. There is very little data available, but some survey data suggests that a half-year to three-year payback period is what people are willing to do. He also noted that consumers generally do not think about payback time at all when making these decisions. Ms. Becker added that the new label shows a 5-year cost/savings compared to the average vehicle. Ms. Kenausis noted that consumers replacing a 10-year old vehicle will almost automatically get a bump up in fuel economy.

Roland Hwang (NRDC) asked about consumer acceptance of the new label and how this will be gauged in the mid-term review of the label. Ms. Becker responded that it will be important to examine the take-rates of twin vehicles – where one has a regular engine and one is a hybrid, for example. Mr. Greenhaus noted that it is important to examine which vehicles people bought and why they chose those vehicles.

Mr. Viera asked whether there would be any focus groups as part of EPA's public awareness campaign. Ms. Kenausis replied that no focus groups were planned but they have worked with small groups of users in developing the label.

Ms. Campos asked whether DOE, NADA, and EPA could work together to develop an app that tracks fuel efficiency and that could track improvements in efficiency by driver operational changes. Mr. Greene stated that he liked this idea and would hope to do this in the future. He also noted that some auto manufacturers are developing systems for consumers to track efficiency. For instance, Fiat has an application where consumers can get real data from their vehicles by plugging a smart-phone into the vehicle.

Tom Balon (MJ Bradley) commented that having a single number for fuel efficiency on the label can be problematic, especially for electricity costs, which vary regionally. Ms.

Kenausis acknowledged this issue and explained that the values shown on the label are based on the national average residential electricity costs. She noted that people will be able to get more specific information for their location if they use the QR code on the labels. Mr. Greenhaus commented that it is important to note that actual individual fuel economy may vary from the values on the label.

Adjournment

Ms. MacGregor asked for a vote on the minutes of the October 6, 2011 Mobile Sources Technical Review Subcommittee (MSTRS) meeting (approved). Ms. MacGregor next mentioned that an environmentally–friendly vehicle conference co-sponsored by the US EPA, US DOE and Environment Canada, along with many partners, will take place September 10 – 12 in Baltimore, Maryland. This will be the first of these conferences to be held in the U.S. Ms. MacGregor noted the possible dates for the next MSTRS meeting include November 13-15, 2012 and asked for feedback from the members on these dates. She also noted that she will be looking into possibly having the next meeting at a subcommittee member's facility, which would allow for more ready access to snacks and drinks during the meeting. With no further comments or questions from the MSTRS member, speakers, or audience, the meeting was adjourned.

Mobile Sources Technical Review Subcommittee
April 19, 2012

Presenters and Subcommittee Members in Attendance

Name	**Organization**	**Organization Abbreviation (as used in this document)**
Thomas Balon*	MJ Bradley and Associates, LLC	MJ Bradley
Julie Becker	Alliance of Automobile Manufacturers	The Alliance
Dave Berry	Swift Transportation	Swift
Allison Bird	Fed Ex	Fed Ex
Tom Cackette*	California Air Resources Board	CARB
Pamela Campos*	Environmental Defense Fund	EDF
Nicholas Cernansky*	Drexel University	Drexel University
Elizabeth Etchells	US Environmental Protection Agency, Designated Federal Official	EPA
Mridul Gautam*	West Virginia University	WVU
Terry Goff*	Caterpillar	Caterpillar
Jacky Grimshaw*	Center for Neighborhood Technology	CNT
David Greene	Oak Ridge National Laboratory	Oak Ridge
Doug Greenhous	National Automobile Dealers Association	NADA
Roland Hwang*	Natural Resources Defense Council	NRDC
Phil Heirigs for Al Jessel*	Chevron Corporation	Chevron
Tim Johnson*	Corning	Corning
Kristin Kenausis	US Environmental Protection Agency	EPA
Lee Kindberg*	Maersk	Maersk
Drew Kodjak*	International Council on Clean Transportation, Co-chair --MSTRS	ICCT
John Koupal	US Environmental Protection Agency	EPA
Joseph Kubsh*	Manufacturers of Emissions Controls Association	MECA
Michael Leister*	Marathon Petroleum Company LLC	Marathon
Gay MacGregor	US Environmental Protection Agency	EPA
Arthur Marin*	Northeast States for Coordinated Air Use Management/ Northeast States Center for a Clean Air Future	NESCAUM

Rick Nath	CSX Corporation	CSX
Margo Oge	US Environmental Protection Agency	EPA
Buddy Polovick	US Environmental Protection Agency	EPA
Michelle Robinson*	Union of Concerned Scientists	UCS
Ichiro Sakai*	American Honda Motor Company, Inc.	Honda
Robert Sawyer*	University of California, Berkeley	UC - Berkeley
Nancy Seidman*	Massachusetts Department of Environmental Protection	MassDEP
Chrisotpher Standlee*	Abengoa Energy	Abengoa
John Viera*	Ford Motor Company	Ford
Bob Jorgensen for John Wall*	Cummins Inc.	Cummins

***** Denotes Subcommittee Member or alternate

Attendees

Jim Blubaugh	US Environmental Protection Agency
Linda Bluestein	US Department of Energy
John Cabaniss	Global Automakers
Elena Constantine	Metropolitan Washington Council of Governments (MWCOG)
Elena Craft	Environmental Defense Fund
Angela Dickens	US Environmental Protection Agency
Karen Ellis	Fed Ex
Anthony Erb	US Environmental Protection Agency
Allison Finder	Motor & Equipment Manufacturers Association (MEMA)
Julie Hawkins	US Environmental Protection Agency
Joanne Howard	Deere & Company
Dale Kardos	DKA Inc.
Patrick Kelly	American Petroleum Institute (API)
David Lax	American Petroleum Institute (API)
Roy Mann	CNH Global
Sarah Mazur	US Environmental Protection Agency
Randal Mitchel	Waste Management
Rachel Nealer	US Environmental Protection Agency
Stuart Parker	IWP News
Anita Rajan	Mitsubishi Motors
Allen Schaeffer	Diesel Tech Forum
Karl Simon	US Environmental Protection Agency
Dennis Smith	US Department of Energy

Arman Tanman	US Environmental Protection Agency
Kuang Wei	US Environmental Protection Agency

EPA Contractor Support

Lesley Stobert	EC/R Incorporated
Alden West	EC/R Incorporated