**Clean Air Act Advisory Committee Meeting**
May 29, 2008
Doubletree Hotel – Crystal City
300 Army Navy Drive
Arlington, Virginia

**Member Introductions and Opening Remarks** – Principal Deputy Assistant Administrator Robert J. Meyers

Rob Brenner, EPA, welcomed everyone to the Clean Air Act Advisory Committee (CAAAC) meeting. He requested all CAAAC members to state their name and organization. Please see the attendance list at the end of this document for a list of the CAAAC members that attended the meeting.

Mr. Brenner introduced Bob Meyers, Principal Deputy Assistant Administrator to EPA. Mr. Brenner explained that EPA's Office of Air and Radiation (OAR) does not currently have an assistant administrator and Mr. Meyers is serving this role. As such, he is currently facing many challenging issues (e.g., ozone; fine particles; toxics), and the OAR is fortunate to have Mr. Meyers as its leader. Mr. Meyers was formally working as a staff member for Congress.

Mr. Meyers thanked everyone who attended the Clean Air Excellence Awards ceremony the previous night. He thanked Pat Childers, EPA, for organizing the event. He also thanked the event sponsors: 3M, Latham & Watkins LLP, National Tribal Air Association, National Association of Homebuilders, and Sunoco. Finally, Mr. Meyers thanked the awards presenters: Mr. Brenner; Bill Auberle, Northern Arizona University; Ben Henneke, Clean Air Action Corporation; Ursula Kramer, Pima County Department of Environmental Quality; Bob Wyman, Latham & Watkins LLP; and Jeff Muffat, 3M.

Mr. Meyers presented the OAR's priorities and outlook. The National Ambient Air Quality Standards (NAAQS) is a priority for the OAR. There is a tight timeframe for the proposed and final rulemaking for lead. The final rule is scheduled for September 15th, not September 1st, as listed on slide 2 of Mr. Meyers' presentation. $NO_2$ and $SO_2$ were combined in a rulemaking, which will be proposed in 2009 and finalized in 2010. With regard to NAAQS implementation, PM 2.5 is ongoing, and EPA will address daily PM designations this fall. EPA is developing a rule to address the Court decision that overturned the previous implementation rule for ozone.

The Clean Air Interstate Rule (CAIR) implementation is still ongoing. There has been litigation addressing this program, and EPA is waiting for a Court decision. In the meantime, EPA is fully implementing the CAIR program. EPA is expecting many flexible air permits at the end of the year. Last week EPA was denied a rehearing in the Clean Air Mercury Rule (CAMR); EPA will respond to this decision.

The Clean Air Visibility Rule (CAVR) State Implementation Plans (SIPs) were due on December 17, 2007, and EPA is examining the SIPs in detail.

The Locomotive and Marine Diesel rule was signed on March 14, 2008. This rule completes the suite of major diesel programs. EPA hopes these programs will be complemented with the International Marine Organization (IMO) and the Oceangoing Vessels later this year. Congress allocated $49.2 million for the Diesel Emissions Reduction Act (DERA) Grants. This program began in the OAR with a $4 million budget. The new emissions standards for small engines are close to being completed.

The 2005 Energy Act required EPA to have a renewable fuels standard of 7.5 billion gallons. Less than 18 months later Congress increased the level to 36 million gallons by 2022. This increase restructured the program within the Clean Air Act (CAA). There is currently a lot of work being done in this area. For example, EPA is writing definitions for the new program. They expect to submit a proposal this fall and a final rule next year. There will be a focus on lifecycle green house gases (GHG) and other non-corn kernel type fuels. This is a substantial change to the program and EPA is responsible for the regulations.

The OAR is responsible for writing the radiation standards for Yucca Mountain. The OAR also has several upcoming deadlines for National Emission Standard for Hazardous Air Pollutants (NESHAPs).

Addressing climate change has been an ongoing and increasing effort within the OAR. Major current efforts of EPA and the Department of Energy (DOE) related to climate change include laws/policies for: renewable fuels, vehicle fuel economy, lighting efficiency, appliance efficiency, federal government operations, accelerated hydrochlorofluorocarbon (HCFC) Phase-Out, and building codes. These laws/policies represent a government-wide effort to reduce GHGs.

Mr. Meyers presented a slide (slide 10) that summarized the Massachusetts v. EPA case. EPA denied a petition to regulate GHGs from mobile sources under the CAA and litigation ensued in court. A decision was made on April 2, 2007. This decision referenced Title II of the CAA (Motor Vehicles).

Mr. Meyers then presented a slide (slide 11) summarizing the Massachusetts v. EPA case today. There is an ongoing effort to develop an Advanced Notice of Proposed Rulemaking (ANPR). There is still an ongoing effort to address 20 in 10 regulations/Executive Order and 202(a) motor vehicles and 211(c) and (o) fuels.

EPA has also received CAA mobile source petitions (7 in total) covering marine, aircraft, and nonroad. They are all slightly different, but mainly follow the original petition that EPA received for motor vehicles on CAA 202(a).

The Mandamus Petition was filed on April 2, 2008. All the legal briefs have now been filed and EPA is awaiting a decision. The Mandamus action requests that the Agency move forward on the endangerment finding under the CAA. This is a finding that GHGs would endanger public health and the environment. Statutory language is similar throughout the CAA so a finding under one section could have a ripple effect.

With regard to Title 1 (Stationary Sources), GHGs have been an issue in ongoing New Source Performance Standards (NSPS) rulemakings. EPA addressed this recently with regard to petroleum refineries. EPA also has the authority for potential regulation under 108 (NAAQS), 111 (NSPS), and 112 (Hazardous Air Pollutants (HAPS)). There is also debate about Prevention of Significant Deterioration (PSD)/New Source Review (NSR) standards.

Last year's appropriations bill required EPA to propose and finalize a mandatory reporting rule for stationary sources. EPA is working assiduously on this rule. It requires EPA to use its authority under the CAA to require GHG reporting from upstream and downstream sources. There are ongoing efforts within the Office of Water regarding $CO_2$ sequestration regulatory standards.

The National Environmental Policy Act (NEPA) has been raised with regard to pending power plant permits. Other natural resource issues pertain to the Endangered Species Act and the EPA Water Strategy.

Other issues pertaining to Massachusetts v. EPA include: the Hill examining climate change legislation for which EPA has provided technical assistance; international discussions, including the full G8 which is scheduled for July; and enterprise sustainability discussions.

In March 2008, the Administrator of EPA announced that the Agency would pursue a GHG ANPR. EPA has been doing a lot of work on this issue because of Massachusetts v. EPA and the Corporate Average Fuel Economy (CAFE) rulemaking. The ANPR is the best vehicle to present: (1) EPA's work to date; (2) the numerous CAA issues arising from action under the Act; (3) approaches to address the various issues; (4) an opportunity for public comment and input on CAA strategies; and (5) information to Congress as it develops climate change legislation. EPA hopes to issue this ANPR in Spring/Summer 2008. The comment period will be 60 to 90 days.

In conclusion, it is a busy time for the OAR. In addition to the OAR's traditional focus on air pollutants, NAAQS, air toxics, and mobile sources, the OAR was presented with a major Supreme Court decision which has resulted in additional work.

Mr. Brenner thanked Mr. Meyers. He stated that a future focus of the CAAAC will be to investigate ways to best link climate change and energy concerns with ongoing clean air work. He asked the CAAAC if they had any comments or questions.

Tim Johnson, Corning Inc., asked Mr. Meyers how EPA's jurisdiction on GHGs lines up with global warming issues in conjunction with DOE, the Department of Transportation (DOT), and other agencies and organizations. Mr. Meyers responded that EPA can only act under statutory authority. EPA's context for jurisdiction is the CAA and the decision of Massachusetts v. EPA which indicated that the air pollutant encompasses GHG emissions. However, EPA does work very closely with DOT; they have had many discussions on mobile sources.

Gary Jones, Printing Industries of America Graphic Arts Technical Foundation, asked a three part question focusing on mandatory GHG reporting. (1) When will the proposal be available? (2) In the issuance of this reporting requirement, will EPA provide guidance on calculations? (3)

How does this requirement mesh with the climate registry program that was launched by states and how does this integrate with other state efforts on mandatory GHG reporting?

Mr. Meyers responded that EPA was directed to submit a proposal in nine months. The due date is in September, and EPA is doing its best to meet this deadline. The final rule will be out mid next year.

On the guidance on GHG calculations, the statutory language is broad. It says "upstream and downstream" and directs EPA to look at appropriate thresholds for reporting. However, what is appropriate to one person may not be appropriate to another. EPA is trying to be sensitive to different industry sizes and industry burden. EPA is also looking for a broad range of comments during the proposal stage. EPA will also propose alternatives as directed by Congress. Mr. Meyers stated that he believes the Agency will use the proposal in the final process to solicit a broad range of opinion. In terms of guidance for reporting, EPA will describe existing systems that are adoptable to this rule. In terms of cost efficiency and decreased burden, it will be best to adopt familiar methods that have been used in the past.

EPA is very conscience of state efforts involving mandatory GHG reporting. EPA has received letters from several Senators that request EPA to reach out to existing state reporting systems. EPA will discuss integrating existing reporting systems in the proposal.

Eugene Trisko, Attorney at Law, offered an observation on the CAIR litigation issue, recognizing that the issue is still with the Court and the outcome is uncertain. He stated that one was struck by the line of questioning by a judge on the geographic issues surrounding emission trading under the rule. One is also aware that the Agency has done ample analysis on the CAIR rule and the NOx budget trading rule to show that under a broadly based trading regime you do not encounter issues such as hotspots, etc. Nevertheless, it is important to look ahead and recognize not only the importance of the CAIR rule as a tool of regulatory certainty, but also the relationship of the CAIR rule to the Agency's determination in Best Available Retrofit Technology (BART) (i.e., CAIR is better than BART). Regional haze analyses quantify and demonstrate those benefits.

Looking ahead to possible outcomes, Mr. Trisko stated that his understanding of economic literature that has evaluated emission trading as a tool to deliver cost effective emission reductions, is that it has determined that the majority of the benefits of emission trading occur initially within the system, then within the state level, then at a regional level, and finally at a national level. There may be variations of those trading regimes that could address virtually any possible objection that Mr. Trisko can conceive that a Court might pose. By fashioning an alternative to CAIR that relies more heavily upon these definitions, one might be able to preserve the essential cost effectiveness of the rule as well as preserving its relationship to the CAIR/BART determination.

Mr. Meyers agreed that CAIR is central to a lot of EPA's work over the past several years. He stated that Mr. Trisko's alternative strategies are interesting, but he is hopeful that the Court will sustain the program, though he cannot speculate on the Court's decision.

Janet McCabe, Improving Kids Environment (IKE), asked Mr. Meyers to discuss what the Agency is thinking in terms of CAMR (e.g., monitoring and the petition for certification). Mr. Meyers stated that the Administrator is very interested in the monitoring issue. Many monitors have been purchased and installed, and monitors provide a valuable stream of information for both industry and the public. EPA is looking into available options for monitoring as well as other possible options. With regard to certification, there is a petition for a rehearing. EPA thought that the Agency had the legal basis to reverse what they thought was an error. However, Mr. Meyers said that he did not want to respond to a hypothetical. The issues in the near term are 112(j), which does not apply, and they are evaluating 112(g).

Mr. Johnson stated that the climate change and GHG issue is one of the largest issues facing the Agency today. EPA has not received any additional resources to address it, which would imply that EPA is shifting its resources to address the new GHG priorities. Mr. Johnson asked Mr. Meyers how EPA will address this issue moving forward. Mr. Meyers responded that EPA did receive some additional resources. Congress provided $3.5 million in appropriations for the Reporting Rule. With regard to previous efforts and ongoing efforts to address GHG issues, the Agency has relocated some resources. These resources were redirected in the Office of Transportation and Air Quality. This issue will need to be addressed in the long term; however, EPA will continue to shift resources in the short term. There will also be synergies in these efforts for both criteria pollutants and GHGs in the long term that can be taken advantage of. However, funding will be an issue in the future if the status quo remains.

**Subcommittee/Work Group Report Outs**

Robert Brenner, EPA, said that during the subcommittee meetings, the members had an important discussion about reaching out to the younger generation. One of the Clean Air Excellence Award winners, Pat Mitchell from Auntie Litter has a lot of experience with that issue. She has won numerous awards and she is with the Committee to share what she has learned from reaching out to children.

Pat Mitchell noted that the Clean Air Excellence Award ceremony was beautiful and exciting. The original idea of Auntie Litter came to her through prayer on the beach in Alabama. Uncle Sam is patriotic; if he was married, we would have had an Aunt, who could have been Auntie Litter. She called EPA with this idea but no one had time to develop the idea. She thought more about it for two years and then someone suggested that she become Auntie Litter. Ms. Mitchell made her first appearance in 1990 on Earth Day and since then the nation has become her classroom. She is teaching about land, water, and air quality. Currently, the program has an $80,000 budget. This has contributed to Alabama meeting its goals for ground-level ozone and the efforts to do so for particulate matter. Children are our greatest allies. Through public service announcements, DVDs, and songs and plays about the air, Ms. Mitchell has educated many. When you see the issues through a child's eyes, you are reaching the families and how they make decisions on where to go on vacation, where to eat, and what movie to rent. Ms. Mitchell thanked the group for the opportunity to share her story.

*Pat showed a video about the Auntie Litter Program.*

Mr. Brenner thanked Ms. Mitchell and said that he and Pat Childers, EPA, will be talking to the Office of Environmental Education about linking up with the Auntie Litter program.

Ursula Kramer, Pima County Department of Environmental Quality, thought that last night's ceremony was very nice and that the recipients were very deserving. Operating from a regulatory perspective, she usually has to deal with negative actions. It was very rewarding to go through and look at the good things that have been done and recognize them. There was enthusiasm and the energy level was good, but it was disappointing that the audience was so small. This is an important event and more publicity could generate a greater interest. Mr. Brenner said that he thinks the awards committee can get Congressional staff and members of Congress to come to the event. The awards committee needs to reach out earlier to this group and to groups with interest in the work that is being done. There will be a follow-up call with the awards committee to get all of the reactions on the event.

Bob Wyman, Latham & Watkins LLC, said that he would be happy to participate in that discussion. Mr. Childers deserves credit for an exceptionally prepared event. The awards program should also take advantage of media interest. The awardees have local media outlets that would be interested and the story might even be able to reach national media. Mr. Brenner said that John Millet, the Communications Director at EPA, will be included in this discussion.

Mr. Childers said that there are lessons learned from this year and last year about audience participation, but the media coverage does not end at the ceremony. The awardees will get more recognition in the localities in the next few months. Mr. Brenner added that the Agency usually collects articles and puts them up on their website.

**Permits, New Source Review, and Toxics**

Bill Harnett, EPA, said that the Permits, New Source Review, and Toxics Subcommittee met the day before and heard about the status of the permitting rules that are out for proposal or soon to be. The group also had one issue that they wanted to bring back to the full Committee for discussion. The question is whether to add National Ambient Air Quality Standards (NAAQS) implementation to the Subcommittee mandate. The Subcommittee is trying to conduct revisions to the NAAQS on a court ordered schedule and there are a lot of issues that remain to be discussed and decided upon. The Subcommittee discussed a range of issues that EPA could benefit from discussion on. In particular, the Agency needs information on how to develop rules and guidance. There were extensive discussions in the Subcommittee on this issue and a unanimous vote to add it to the mandate. If the Subcommittee took this effort on, it would coordinate with all other CAAAC groups to make sure there are no conflicts or overlap. In the short term, the Subcommittee will focus on existing State Implementation Plans (SIPs) and how to improve the process. Mr. Brenner added that there has been some discussion within EPA about an add-on to the Air Quality Management (AQM) Work Group, which would also be discussing these issues.

Jeff Muffat, 3M Corporation, said that the court-ordered deadlines and other issues have kept the Subcommittee busy and that the members are always looking for new discussion points.

Janet McCabe, Improving Kids Environment, is on two different Federal Advisory Committee Act (FACAs) and she thinks it is important to have all voices heard on the FACA and ensure that there is a balance in perspective. Mr. Brenner agreed.

Mr. Wyman agreed with Ms. McCabe and asked the group to periodically address the issue of offsets (especially in Southern California). Though no formal group is necessary, the issue could be addressed though a multi-stakeholder proposal.

Elaine Mowinski Barron, Sierra Medical Center, said it would be helpful to know what kind of effect the CAAAC is having, especially in the arena of environmental health.

Anna Garcia, Ozone Transport Commission, said that it is important that implementation rules and guidance documents are well-coordinated and delivered at the appropriate time. Mr. Harnett responded that the Subcommittee would not be setting the NAAQS levels, but rather thinking about issues such as designation guidance and modeling guidance.

The group agreed to add NAAQS implementation to the charge of the Permits, NSR, and Toxics Subcommittee.

**Economic Incentives and Regulatory Innovations**

Ben Henneke, Clean Air Action Corporation, gave an overview of how the CAAAC subcommittees operate and emphasized that participation is encouraged. The subcommittees are a good way to learn about the issues. Mr. Henneke then showed the group some documents that he had pulled out of storage and noted that the issues brought to the CAAAC have progressed, but are still very similar to 10 years ago. The Committee should learn from the past.

In the previous day's Economic Incentives and Regulatory Incentives Subcommittee meeting there was a discussion lead by Carey Fitzmaurice, EPA, about creating educational tools (e.g., blogs). In addition, the Agency reported back to the Subcommittee on the Advanced Coal Technology (ACT) work group outcomes. There will be a new Congress and Administration this fall and Mr. Henneke asked for volunteers to meet to discuss two important issues that need to be addressed prior to the first of the year:

1. Identifying the benefits of pollution reduction strategies on a multi-pollutant basis.
2. Identifying early actions and systematic approaches that can be taken to address air pollution from legacy sources.

One member said that there is a very impressive report out on the impacts of pollution reduction strategies. The group should think about the full range of impacts of these strategies, not just benefits. Mr. Henneke agreed. Ms. Mowinski Barron added that the group should take into account the residual risks involved. Valerie Ughetta, Alliance of Automobile Manufacturers, agreed that the dis-benefits and other non-synergistic effects should be considered. The following members volunteered to work on the group that Mr. Henneke proposed: Jack Goldman, Hearth, Patio & Barbecue Association; Tony DeLucia, East Tennessee State

University; Bill Auberle, Northern Arizona University; Eddie Terrill, Oklahoma Department of Environmental Quality; Ralph Marquez, ESP; Michael Formica, National Pork Producers Council; John McManus, American Electric Power; David Foerter, Institute of Clean Air Companies; Lisa Gomez, Sempra Energy; Rick Bolton, The Center for Toxicology and Environmental Health, LLC; Ms. Garcia; Tim Johnson, Corning Inc.; and Terry Goff, Caterpillar.

Mr. Brenner added that the group should focus on ways to get cleaner air at a lower cost.

**Mobile Source Subcommittee**

John Guy, EPA, said that the Mobile Source Subcommittee met on May 8th and several CAAAC members attended the meeting. There was a full schedule of presentations and discussions. Part of the meeting was Work Group report-outs, including the MOVES model review and inspection and maintenance technologies. In addition, the group had a briefing on diesel retrofits, mid-level ethanol blends, nitrogen oxide (NOx) impacts, greenhouse gas (GHG) lifecycle analysis, the EPA Kansas City Gas Particulate Matter Study, and the National Renewable Energy Laboratory (NREL) boiler emissions study.

Dennis McLerran, Puget Sound Clean Air Agency, asked about whether any effort is being made to make sure that Congress votes on HR 802 so that the U.S. can vote at the International Maritime Organization (IMO) in October. Secondly, he asked if anything is being done to reduce vehicle miles traveled (VMT). Margo Oge, EPA, said that there have been many calls and visits to the Hill on the issue of the IMO and that any other thoughts or efforts on the issue would be appreciated. Secondly, the issue of VMT is one of the three areas of concern for mobile sources (along with engines and fuels). It is hard to change human behavior, but the Agency is working with the Department of Transportation about reauthorizing the new transportation bill with a climate change strategy, which would be important to the state and local agencies. We need help from the other CAAAC members on this issue. Mr. McLerran said that he would be happy to work on this issue.

Chris Hessler, AJW, Inc., said that Congressional staffers are not aware of the IMO timing. He also asked for an update on bringing mobile source technologies to the marketplace. Ms. Oge said that EPA has sent out a document to the National Academy of Sciences (NAS) on this issue. NAS has been asked to look at technologies for fuel efficiency and cost and is in the process of revising the report. There is also a technical document that resulted from work done last year on GHG reductions in mobile sources. In addition, the Advanced Notice of Proposed Rulemaking (ANPR) on GHGs will address this issue.

Mr. Wyman said that there used to be a subcommittee on linking land use to air quality, which looked at the VMT issue. This work should not be lost. The Agency has done a lot of great work in terms of evaluating VMT, incentives, and SIP credits. The CAAAC does not have to reinvent the wheel on this issue.

Don Clay, Koch Industries Inc., added that the electric sector is looking at the plug-in hybrid and asked whether the Agency had considered this technology. Ms. Oge said that EPA did a paper on

plug-in hybrids and that it will continue to consider this technology. Mr. Brenner agreed with Ms. Oge.

Steven Lee Hensley, USA Rice Federation, asked whether anything had been done on the issue of retrofitting and repairing old cars for efficiency. Many U.S. families do not have enough money to buy a new technology.

**EISA Renewable Fuels Provisions & Transportation Fuels GHG Lifecycle Analysis**

Sarah Dunham, Director of Transportation and Climate Division, U.S. EPA, made a presentation to the group on EISA Renewable Fuels Provisions and Transportation Fuels Greenhouse Gas (GHG) Lifecycle Analysis.

Ms. Dunham began with an overview of the policies governing the subject. She provided an update on the Energy Policy Act of 2005, which required ethanol-equivalent volumes of renewable fuels starting with 4.0 billion gallons per year in 2006 and reaching 7.5 billion gallons per year in 2012. The Renewable Fuel Standard (RFS) rule was finalized in May 2007. The Energy Independence and Security Act was passed by Congress and signed by the President in December 2007. The legislation modifies the current RFS program (e.g. provides new waivers and paper credit provisions and includes new obligated parties). The legislation also includes new studies and reports.

The new legislation has new obligations and definitions. The standard is extended to diesel fuel in addition to gasoline and non-road fuel in addition to highway. The obligated parties now include refiners, importers, and blenders of these fuels (gasoline and diesel). The new legislation also eliminates some old categories, including waste-derived ethanol and 90 percent cellulosic ethanol. The definitions also now include new elements, including two key provisions: lifecycle GHG reduction thresholds and existing cropland criterion.

According to the new “existing cropland” criterion, renewable fuels must now be produced from renewable biomass harvested from land “cleared or cultivated” prior to enactment of EISA. The development of this criterion will require extensive stakeholder involvement.

Ms. Dunham next provided information on EPA’s Lifecycle Analysis Methodologies. She provided some background on lifecycle analysis. Lifecycle analysis is also called fuel cycle or well-to-wheel analysis, including a compilation of the GHG impacts of a fuel throughout its lifecycle. Some impacts to consider include production/extraction of feedstock, feedstock transportation, fuel production, fuel distribution and tailpipe emissions. Lifecycle analysis can be used to compare one or more fuels performing the same function.

As part of the RFS rulemaking, EPA conducted an analysis to determine the GHG impact of rule. There have been some updates to RFS Lifecycle work. For example, land use had not been adequately accounted for and the methodology in RFS did not fully account for agricultural sector secondary impacts.

EISA requires lifecycle assessment. Each fuel category required to meet mandated GHG performance thresholds, including conventional biofuel, advanced biofuel, biomass-based diesel, and cellulosic biofuel. The EISA language permits EPA to adjust the lifecycle GHG thresholds by as much as 10 percent. The baseline fuel for comparison is gasoline and diesel fuel in 2005.

Ms. Dunham next read the definition of lifecycle GHG emissions. She said that the definition must account for where you must draw the boundaries. For example, the definition must consider what impacts and secondary impacts are included in the scope.

Ms. Dunham next provided an overview of the updated approach. EPA is developing an approach that includes all aspects of biofuels life cycle including detailed agricultural sector impacts and land use change. For the domestic agricultural sector, EPA uses comprehensive agricultural sector model (FASOM) to determine sector-wide impacts of increases in biofuel production. EPA's methodology is consistent with relevant lifecycle guidance and standards.

Ms. Dunham showed an overview of slides to provide examples of the types of results EPA has received from the models and how the results are integrated into the lifecycle analysis for various fuels. She also provided a description of further work on life cycle modeling. EPA continues to have discussions with industry groups, academics and other experts, and EU regulators.

Ms. Dunham next took questions from the committee.

Jack Goldman, Hearth, Patio & Barbecue Association, asked what sort of applicability this methodology might have to other sorts of fuel exchange programs. Ms. Dunham responded that EPA is actively talking about this methodology both inside and outside the agency. Other departments in the agency are flagging other sectors and regulatory efforts that this methodology might work for. Rob Brenner, EPA, stated that it is inevitable that once this methodology is worked out, it will influence a lot of what else is going on at the agency.

Dennis McLerran, Puget Sound Clean Air Agency, said that local fleets are making decisions about whether to continue using biofuels. He added that with pricing impacts, there is political pressure and that timing is important since large fleets are waiting to find out when this analysis will be put into rule. Ms. Dunham responded that the statutory requirement is set for January 2009, but that the timing is ambitious.

Bill Becker, National Association of Clean Air Agencies (NACAA), asked if anyone had heard from any other technologies about whether 20 percent is slowing down investments. Additionally, as part of final rule, does EPA expect to have discussions about other environmental impacts with these finds of ethanol? Ms. Dunham responded that she has not heard that the 20 percent is slowing down any investments.

Tony DeLucia, East Tennessee State University, asked if EPA had looked at the extension of this work for food security and food prices in the economic sense. Ms. Dunham responded that those are critical issues and that a lot of these modeling tools will help us get to some of those issues. She added that EPA is working closely with the U.S. Department of Agriculture (USDA) and the Department of Energy (DOE).

Margo Oge, EPA, added that EPA has received a petition from the Governor of Texas. She added that EPA must respond to petitions that recognize supply or severe economic impacts. EPA is seeking comments on how to deal with these waivers and requests.

Carolyn Green, Sunoco, asked if there is any plan to translate this information into pounds or grams/mile so we can do a comparison on basis of vehicle miles traveled (VMT). This is what the public understands – not British Thermal Unites (BTU). Ms. Dunham responded that this methodology can be communicated in any number of ways and that EPA needs to decide the best ways to present it depending on the context.

Bob Wyman, Latham & Watkins LLP, stated that California has a low carbon fuel standard which will require use of life cycle analysis. The debate is on which set of criteria should be used to determine that. He asked what process EPA is using to determine a single set of criteria? Additionally, he asked to what extent is there consideration for how the demand side will respond to these rules. Ms. Dunham responded that EPA is having extensive conversations with California to share the methodology and analysis with CARB. Secondly, EPA knows that the Agency needs to consider a number of factors, and that demand has to be considered.

Michael Formica, National Pork Producers Council, asked to what extent the analysis will play a part in EPA's decision on livestock industry for severe environmental harm. Secondly, is EPA looking at domestic livestock production or international trade of livestock where methane is not being captured? Ms. Dunham responded that the models do have livestock and the international modeling is integrated. She added that she could share what EPA is doing with Mr. Formica and he could point out anything that may be missing. Ms. Oge added that EPA is evaluating Texas' request and speaking to DOE and the Department of Agriculture.

Tim Johnson, Corning Inc., recommended that EPA consider carbon soot as a carbon gas. It is becoming a major contribution to global warming and is present in diesel emissions, stationary emissions, burning of the forests, etc. You may be ignoring 25-35 percent of greenhouse contributions. Ms. Dunham responded that EPA is aware of the concern and the issue is under consideration.

Robert O'Keefe, The Health Effects Institute, said that given the timeframe EPA is under, do you think you can look at the models design? Secondly, is it possible to disentangle some of these issues? Ms. Dunham responded that EPA does indeed have the opportunity to step back and see how models are running; they already have been extensively used and cross-checked. Additionally, EPA is connecting with historical satellite data. The challenge is going to be to present this data knowing that no models are perfect and recognizing that there is variability. EPA is interested in feedback about balancing this modeling with regulatory decisions.

**Transitioning Vehicle Inspection and Maintenance Programs** – Gene Tierney, EPA

Gene Tierney, EPA, explained that the Mobile Source Technical Review Subcommittee formed the Transitioning Inspection/Maintenance (I/M) Work Group in response to concerns related to the impact of changes to the light vehicle duty fleet in states that run I/M programs. The Work

Group's goal was to develop information that states could use as they change their I/M programs. The Work Group was represented by states, the I/M industry, the auto industry, and consulting businesses.

The 1990 Amendments to the Clean Air Act (CAA) require basic I/M in moderate ozone non-attainment areas and enhanced I/M in serious and worse ozone non-attainment areas. In the past, the different between these two programs has been dynamometer testing of vehicles, including the measurement of NOx emissions from cars. Thirty-three states today conduct special maintenance programs. The states do tailpipe tests on pre-1996 vehicles and on-board diagnostic (OBD) checks only on 1996 and newer vehicles. Most states are maintaining the pre-1996 vehicle testing because they need the emission reductions and there are not any other alternatives.

Since 1996, light vehicle motor vehicles have been required to have OBD systems (i.e., the check engine light). The check engine light illuminates when emissions from a vehicle exceed the certification standards by a factor of 1.5. Most states use this diagnostic system to pass/fail vehicles during inspections.

The Work Group produced a report with three major aspects: (1) review of data related to vehicle trends; (2) analysis of options for innovative approaches to I/M; and (3) assessment of costs, benefits and pitfalls.

Mr. Tierney showed data from EPA's emission factor model MOBILE6. In slide 7 of Mr. Tierney's PowerPoint, the graph on the left represents Light Duty Vehicle Registrations. The hatched area at the bottom represents 1996 and newer vehicles and the yellow region shows pre-1996 vehicles. The slide runs from 2007 to 2012. This graph shows that today, approximately 80 percent of vehicles registered in the U.S. are 1996 or newer vehicles. Therefore, the majority of the fleet is OBD-equipped. By 2012, the percentage will most likely will be around 90 percent. The chart on the right shows vehicle miles (VM) traveled. Today, 90 percent of the vehicle miles traveled are by 1996 or newer vehicles. The motivation to examine this information is to determine if tailpipe emission testing networks should be maintained when the majority of the fleet is OBD-equipped and an OBD test can be conducted in place of an emissions test.

The Work Group took the data analysis one step forward and looked at the emissions contribution of the two segments of the fleet. The two charts on slide 8 show the VOC and NOx emissions from the light vehicle duty fleet. Even though 80 percent of the fleet is comprised of 1996 and newer vehicles and 90 percent of the VM miles traveled are by 1996 and newer vehicles, the pre-1996 vehicles still contribute the bulk of the VOC emissions to the inventory. They are not as big a contributor to NOx emissions because NOx controls were implemented later.

The Work Group broke the data down by the contribution of these two segments to I/M benefits (slide 9). They looked at enhanced I/M programs on a nationwide basis. This analysis changes the slope of the line from the previous chart. In the 2010/2012 timeframe, the amount of initial

emissions reduction from the pre-1996 fleet decreases faster than their contribution to the overall inventory.

The bottom line shows that the fleet is changing; the pre-1996 vehicles are becoming an increasingly smaller portion of the fleet. Their VM contribution is dropping, but they are still high emitters and the Work Group needs to examine this as I/M programs change. Each state, however, needs to examine their fleet, as fleets will differ between states.

Given these trends, how do we design a cost-effective I/M program that continues to get significant reductions from the fleet? To answer this question the Work Group developed three alternative approaches to I/M: (1) using a kiosk; (2) using a data logger; and (3) using remote OBD. A kiosk is a self-service inspection computer. A data logger is a devise that is picked up at a test station or acquired through the mail. It is attached to the OBD port on the car and the information from the OBD is downloaded onto the data logger. The data logger is then disconnected and mailed back to the state or connected to a computer through a USB connection where the information can be uploaded and sent by email. Remote OBD is similar to a data logger except the installation is permanent, and the equipment has a type of communications devise on it.

The Work Group examined the advantages and disadvantages of each method. The remote OBD method changes the emission reduction benefit potential of the inspection program. States currently do inspections on an annual or biannual basis. Inspections are expensive and the bulk of the cost of I/M is in the inspection process. Inspection costs are cut nearly in half by transitioning from an annual to biannual inspection period and the benefits are not significantly reduced. In a continuous inspection process (i.e., remote OBD) problems are detected more frequently. The Work Group developed emission reduction credits that states can request in their State Implementation Plan (SIP) process. The state of Oregon has pioneered the use of remote OBD through a pilot project. The Work Group used Oregon's fleet mix and I/M program inputs to do modeling. A continuous program today would result in a 10 percent reduction in VOCs versus 9 percent for an annual program and 8 percent for a biannual program.

The Work Group also performed an analysis of the costs associated with remote OBD and periodic I/M. They made several simplifying assumptions to keep the analysis manageable. First, they assumed that 100 percent of the 1996 or newer vehicles in 2006 doing I/M transitioned to remote OBD. The costs/benefits were analyzed over the life of a static fleet (10 years); however, it is important to note that vehicles drop out of I/M and other vehicles come into I/M.

The chart on slide 14 shows the cost of periodic I/M and remote OBD, and the savings on a national basis for doing remote OBD over periodic I/M. With remote OBD, the Work Group anticipates a $50 cost for installation and a $4-5 billion dollar cost over a 10 year period. Another cost of I/M is the convenience cost. People today must drive to a station, get an inspection, and then drive to their destination. The assumptions for this analysis are the same as those in the exercise that Mr. Tierney just reviewed. Right now the convenience cost is estimated at $9-17 billion. A $9 billion cost assumes the total time for the I/M process is 1 hour while the $17 billion cost assumes the process takes 2 hours. However, there is not good data

about how much time people spend on getting an inspection. By contrast, the remote OBD process results in a $1-2 billion cost. This is a savings of $8-15 billion over a 10 year period in convenience costs. This adds up to an overall savings of $16-22 billion in 10 years. However, not all states will transition to remote OBD, and therefore savings will probably not be this large.

An extensive review was performed on the report, and there were some major concerns. First, for remote OBD there is a feeling that big brother is watching you. However, remote OBD is not anticipated to be a mandatory element of any program. Oregon surveyed customers at inspection stations and 85 percent of motorists supported remote OBD, while 15 percent felt uncomfortable with the tracking system. Second, inspection systems vary from state to state, and remote OBD may not fit in well with a decentralized approach. Many states still do safety checks and remote safety checks are difficult to do. Third, how should states approach pre-OBD vehicles? A few states are transitioning from testing all vehicles to only OBD vehicles. This is creating some political controversy (i.e., why are dirtier cars being let off the hook?), but from a cost effective point of view, this may make sense if a fleet is primarily composed of newer vehicles. There are some things that can be done to address the pre-OBD vehicles such as using remote sensing or performing inspections when vehicles change ownership.

In conclusion, these innovative approaches can reduce the cost of I/M, especially the inspection cost. Using remote OBD can improve the inspection benefits of the program and reduce the convenience costs. States need to carefully analyze and consider local data when making a transition to remote OBD.

For next steps the Work Group is incorporating continuous I/M credits into the Motor Vehicle Emission Simulator (MOVES) model. They have decided to establish a universal protocol for remote OBD. They are also hoping to tap into existing telematic systems.

Rob Brenner, EPA, said that this study was a great example of taking advantage of evolving technology to improve programs.

Dennis McLerran, Puget Sound Clean Air Agency, thanked Mr. Tierney for his work.

Elaine Mowinski Barron, Sierra Medical Center, asked if the Work Group had worked with port authorities on this technology. She said there is transporter traffic and fleet systems that come across the U.S. border from Mexico and Canada, specifically Mexico. Perhaps the port authorities could adopt a kiosk system to clean border traffic air. Mr. Tierney responded that the Work Group did not address this type of international issue, but some of the technologies could be useful in this way. This technology should also be considered in the future for the heavy duty fleet.

Ralph Marquez, ESP, said the issue that will divide people is the convenience vs. privacy issue. Is the program considering a flexible program where people can choose to install the device and the state will receive partial credit depending on the number that switch to the new system? Mr. Tierney responded that the Work Group anticipates that no state will make this mandatory right now. Those that do not switch to the new system will continue doing annual/biannual inspections and will continue to pay the convenience cost. Mr. Marquez added that all the

savings in inspections come from the pockets of the inspectors and they will likely put up a fight. Mr. Tierney agreed. The Work Group has learned that it is difficult to implement changes when there are financial winners and losers.

Pat Childers, EPA, said it is time for the CAAAC members to trust the Work Group and the Work Group's report. He asked if anyone objected to giving EPA the report for review. No one objected.

Ms. Mowinski Barron stressed that it is important for EPA to provide the CAAAC with feedback. Mr. Childers said that a procedure has been set up in which the CAAAC provides reports to EPA and EPA subsequently provides feedback at later CAAAC meetings.

**EPA Initial Response – Advanced Coal Technology Work Group – Anna Marie Wood**

Rob Brenner, EPA, and Ben Henneke, Clean Air Action Corporation, gave a background on the history, formation, and charge of the Advanced Coal Technology Work Group. The Work Group was recommended in September of 2006 with a charge to specifically identify the barriers and opportunities under the Clean Air Act (CAA) to expedite advanced coal technologies (ACT), including capture and storage of $CO_2$. The Work Group was given one year and charged with producing an interim report and final report. The charge was expanded a bit to include opportunities not under the CAA and other important players. The final report included recommendations, which Anna Marie Wood, EPA, would report on.

Ms. Wood outlined the recommendations and noted that they fall into three bins: actions to encourage ACTs, actions related to carbon capture and sequestration (CCS), and energy efficiencies at existing coal plants. The report has been used in various venues and the Agency has responded in some way to each charge. The specific actions are as follows:

- **Early Deployment Fund**: A bill will be introduced this week on the Hill based on the Work Groups' recommendation. Gene Trisko, Attorney at Law, gave an overview of his organization's work on the early deployment fund. They have worked with several members of Congress and other organizations to develop a bill for a fund that will operate for 15 years with a $15 billion fee structure from distribution utilities. The goal is to have an independently financed mechanism now.
- **Incentives Toolkit**: EPA is preparing an Advanced Notice of Proposed Rulemaking (ANPR) in response to the Massachusetts v. EPA decision. Throughout that process, the Agency will be considering new ways to implement a greenhouse gas (GHG) program.
- **State Actions**: There have been conversations with public utility commissions (PUCs) on the issue of cost recovery for integrated resource planning efforts.
- **National Policies to Send a Market Signal and Create a Market Driver**: There has been specific action on various bills on this issue. EPA has provided support on initiatives presented to the Agency.
- **Technology Advancing Agreements**: EPA has a commitment to work with stakeholders on this issue and is ready to bring to bear whatever assistance is necessary to facilitate these agreements.

- **Take Advantage of Existing Opportunities under the CAA**: This will be addressed in the ANPR.
- **EPA Study on Existing Facilities**: The Office of Air and Radiation (OAR) has talked with the Office of Air Programs (OAP) about working with the National Academy of Sciences or another group on this issue.
- **Improve Energy Efficiency**: One idea is to seek hypothetical examples of utilities where the implications of these projects are evident.
- **Carbon Capture and Sequestration**: There have been communications with the Office of Water (OW) and an Underground Injection Control (UIC) rule will be proposed in the summer of 2008.
- **OAR and OW Establish Framework**: OAR has worked to partner on research and risk assessments, and the ongoing partnership has worked well. The two groups have jointly issued experimental well guidance pending further action by EPA.
- **Outreach**: Outreach to other agencies has included the UIC proposal, two stakeholder meetings, consultation with state and local groups, and a series of meetings. More formal education programs are being researched.
- **Accounting Protocol**: The Agency does not want to recreate the wheel on this issue. The GHG mandatory reporting rulemaking will require this kind of reporting. This rule will be proposed in September of 2008.
- **Establish Specifications for Pipeline $CO_2$**: The Agency talked with Interstate Natural Gas Association of America (INGAA) and other stakeholders on this issue.
- **Pipeline Infrastructure Study**: The Agency is looking into this integrated analysis with other organizations.

Bill Auberle, Northern Arizona University, noted that there are three large rulemakings (the ANPR on GHG, the UIC program, and the Mandatory GHG Reporting) in the works and asked for updates and clarification. Mr. Brenner said that the ANPR puts this work in context with other work in this area and that nothing is at odds with the recommendations of the work group.

John McManus, American Electric Power, said that there is a global demand for coal and it is important to get technology operational and distributed. The plants are looking for new technologies to meet Best Available Control Technology (BACT) standards.

Mark MacLeod, Environmental Defense, noted that Title 10, Subtitle A, Section 1005, Subsection C is the basis of the early deployment of ACTs. The Senate bill will also be on the floor soon.

Jed Mandel, Engine Manufacturers Association, asked to have the presentations distributed in advance. Pat Childers, EPA, responded that they would send them if they are available in advance. Mr. Brenner said that the presentations could be sent in draft form.

Mr. Henneke said that in the Economics Subcommittee meeting the day before, there was agreement that it is important for the Agency to set protocols on how to account for early reductions. Mr. Brenner said that inventories and protocols would be a good discussion for the agenda in the fall. When you look across a range of recommendations and how they form a comprehensive strategy, everything is coming together nicely.

**Discussion – CAAAC Consideration for Updating Vision and Goals Statement**

Ursula Kramer, Pima County Department of Environmental Quality, distributed the outline of the new vision and goals statement for the National Air Program. This will be a piece to help direct the new Administration. It will also guide the future work for the Clean Air Act Advisory Committee (CAAAC) based on results-based management. The group presented some rough ideas at the last meeting and got feedback. They then met and discussed these issues in more detail. This new statement will be broad and inclusive and develop recommendations that get back to results-based management. The next draft of this document will be finished in September and the final document would be issued in January. The Work Group is looking for feedback from CAAAC and is soliciting the group for interest in working on the next version.

A member of the CAAAC agreed that the National Air Program is at a changing point and the CAAAC should step back and take a broader look at the issues.

Jeff Muffat, 3M, asked how this performance management idea fits into the Performance Track program at EPA. Ms. Kramer said that the Performance Track program deals with industry, but this is broader and it is not the traditional regulatory approach.

Bill Auberle, Northern Arizona University, said that he would like the Agency and the Committee to continue to address vehicle miles traveled (VMT) issues and a multimedia approach to environmental quality.

Mr. Brenner said that a lot has happened since the last time one of these statements was issued (e.g., multipollutant policies, stewardship, innovation, partnerships, regulations). The idea of this document should be to pull together everything that the EPA and the CAAAC have learned to create a new theory on how to achieve cleaner air. Ms. Kramer said that the group is looking for an idea of what success would be.

Mr. Brenner added that it would be important for the next Assistant Administrator to be able to weigh in on this document in the draft stage. It would help him/her and give him/her an opportunity to shape this vision.

Gary Jones, Printing Industries of America Graphic Arts Technical Foundation, said that it is important to build off of work that the Committee has already done.

Pat Childers, EPA, reminded the group that the Committee needs to be able to default back to the vision and goals that the members have agreed on to make sure that the work is always consistent.

Janet McCabe, Improving Kids Environment, said that is important to be clear on the purpose and audience for this document.

Tim Johnson, Corning Inc., said that if you look back on CAAAC and National Academy of Sciences (NAS) reports, there have been themes that come through. The agreements and

partnerships have changed over time and the CAAAC should consider whatever has the most value added.

Mr. Jones said that he has been working on the compliance assistance program performance management plan and the biggest challenge has been the Office of Management and Budget (OMB). It is important to have conversations with them about what they want. If the intent is to deliver this document to the new Administration, then it must pass muster on these issues. In addition, the vision should structure the context of the performance measures properly.

Carolyn Green, Sunoco Inc., expressed confusion on how the issues of a CAAAC strategic plan, mission of the organization, measurable and time-specific goals, and performance measures all fit together. The CAAAC needs to figure out what it is best-equipped to do. It may be useful to look at what other Federal Advisory Committee Acts (FACAs) are doing.

Elaine Mowinski Barron, Sierra Medical Center, noted that the CAAAC is supposed to be partnering with another FACA, the National Environmental Justice Advisory Committee (NEJAC). The CAAAC should also make sure that the performance strategies for EPA are current with the literature about performance management for institutions.

Robert O'Keefe, The Health Effects Institute, said that the document is a useful reminder on a large set of issues. EPA needs to step back and look at all of its programs and decide what the key priorities are for the next several years. These priorities should then be associated with goals and targets.

Mr. Childers encouraged the group to read the vision and goals. The work of the CAAAC is important and it is voice that has been heard in the past.

Ms. Green, Ms. Mowinski Barron, and Mr. Muffat agreed to help the Work Group develop the vision and goals document in the coming months.

**Member Lead Discussions**

Pat Childers, EPA, introduced the Member Lead Discussions. He explained that various members would be presenting information on timely subject matters relevant to the committee.

*National Association of Homebuilders (NAHB) National Green Building Program – Emily English and Bob Jones, NAHB*

Bob Jones, NAHB, introduced himself and his organization and thanked EPA for all the work the Agency has done. Emily English, NAHB, next introduced herself and provided an overview of the NAHB Green Building Program.

Over 100,000 green homes have been built and certified by NAHB members. There are approximately 30-40 Home Builders Associations around the nation. By 2007, the demand for green homes had outpaced supply. Builders are responding to the demand. Twelve to twenty

percent of new homes built in 2012 are expected to be green homes – up from just 2 percent in 2006.

NAHB created a website, www.nahbgreen.org, to provide tools and resources to help builders learn about green building. The site is a one-stop-shop for residential green building. Coming soon there will be a network of local green building programs, a National Green Building Standard, a scoring tool for all builder types, and a master certified green professional certification.

Ms. English next described the NAHB Green Goals. The goals are to offer voluntary, cost-effective, flexible solutions, move tools and resources online, allow any builder and remodeler to design, build, verify and certify green homes, and to enhance existing programs.

The steps in green building include design, verification and certification. Ms. English provided details on each step. NAHB is involving a number of stakeholders to develop National Green Building Standards based on green building guidelines. The National Green Building Standard will become an optional basis for builders seeking NAHB Research Home Certification and an alternative for policy makers seeking to encourage the greening of their communities.

Ms. English concluded the presentation by listing several advocacy messages from NAHB. NAHB believes that market-driven, voluntary measures work best for green building and that affordability and cost-effectiveness are top priorities.

Jeff Muffat, 3M, said that there have been discussions about what strategies homebuilders can use. Has NAHB gone out to state committees that are talking about what steps to take? Ms. English responded that NAHB has a state and local government affairs department that does do this sort of outreach and networking. NAHB is getting feedback that the states are just waiting for national standard to come out.

Valerie Ughetta, Alliance of Automobile Manufacturers, asked for an estimate on the cost differences. Ms. English mentioned that one example is that the cost increase for a bronze home was $1,400 and goes up to $21,000 for emerald standard, but that there is a full study available from NAHB.

Ben Henneke, Clean Air Action Corporation, asked about the payback from energy savings. Ms. English responded that it varies greatly, but that usually it takes 7-10 years for payback.

M. Jones mentioned that in 10 to 15 years there will not be any discussion of “green building” because it will all be green building. Builders used to say that the home was built to code, but now all homes must be built to code.

Robert Wyman, Latham & Watkins LLP, asked how the NAHB Green Standard compares to LEEDS. Mr. Jones responded that the difference really is mandate. As long as we are able to, we want it to be volunteer-based for NAHB. Mandated means extra costs to the consumer.

Ms. English added that the difference also is in the philosophy of the organization. NAHB has a consensus process with lots of third party insight. The standard is more flexible and allows for more options and is more cost-effective. LEED certification involves tons of paperwork. NAHB wants the process to be simple and affordable and allow a lot of options from which builders can choose.

*Health Effects Institute Science to Inform Policy – Bob O'Keefe, Vice President, Health Effects Institute*

Bob O'Keefe, the Health Effects Institute (HEI), stated that the HEI was developed 25 years ago from a partnership between EPA and the Worldwide Vehicle and Engine Manufacturers. Ten years ago the partnership was expanded to include industry and other agencies (both national and international) and nongovernmental organizations (NGOs). The HEI has funded over 260 studies around the word.

Because the HEI often does research that is in the midst of controversial regulatory debates, the HEI is structured to create credibility and transparency in its work. It balances funding from industry and government because funding is sometimes viewed as a form of bias. The HEI has an Independent Board and Expert Science Committee. The EPA Administrator and industry agrees to the board. The research committee can serve two 4 year terms. Because the HEI works in a controversial nexus, it has a separate review committee that intensively peer reviews all of the HEI results. The committee develops a commentary stating whether or not the studies have contributed to science. All of the HEI results and data are reported in an effort to be transparent. The HEI does not take policy positions.

The HEI products are in four key areas: targeted interdisciplinary research, re-analysis, review & synthesis of existing science, and continuous improvement in methods. The bulk of the HEI's work is in targeted interdisciplinary work. The HEI conducts re-analysis of key studies that are central to national ambient air quality standards (NAAQS), but approaches re-analysis with caution.

The HEI spends a lot of time thinking about whether its work has an impact. Mr. O'Keefe presented a graph showing the number of HEI Reports cited in EPA PM NAAQS Documents. The HEI strives to make its work relevant to regulatory settings around the world. Mr. O'Keefe presented a map of the world showing the location of the HEI funded studies that are underway. There are many domestic studies as well as studies conducted in Europe for the European Union and the World Health Organization. The HEI has a strong role in promulgating air quality guidelines that are translated to inform regulatory decisions in China, India, and Latin America.

The HEI has a 5-year strategic planning cycle, which was developed with broad input from sponsors, science, and various stakeholders. The targeted priority topics are: (1) health effects of the air pollution mixture; (2) emerging fuels and technologies; (3) assessing the public health impact of air quality actions; and (4) enhanced international perspective.

Mr. O'Keefe next discussed the National Particle Toxicity Component Initiative (NPACT). This is a systematic, multidisciplinary program to compare toxicity of PM components and gases in

the context of sources. It is a multi-sector/government initiative. The initiative brings together oil, vehicles, steel, pulp and paper, and utilities on the industry side. The government side is comprised of EPA, States, and environmental organizations. The HEI funded teams from the University of Washington, the Lovelace Respiratory Research Institute (LRRI), New York University, and Yale. The study takes advantage of detailed monitoring networks across the U.S. at the time of STM networks which were strategically located and did very detailed speciation of PM and other pollutants and metal. In that context, toxicology and both short term and long term epidemiology were coordinated. This 5-year program is designed to deliver results for NAAQS and future PM decisions. Comprehensive results of all the studies are expected in 2011 and 2012.

Mr. O'Keefe presented a map showing human population sites. There are three cohorts that comprise the long term component of this study: the American Cancer Society, the Women's Health Initiative, and the Mesa Air cohort. The American Cancer Society tends to be a middle aged, white cohort. The Mesa Air cohort is a multi-ethnic group, which allows the HEI to have a range of potentially sensitive subpopulations in the study.

There is a toxicological piece to the study. Mr. O'Keefe presented a map showing companion animal studies (integrated 6-month mouse ambient studies in diverse PM settings). These sites are places where teams are using the same animal model to take advantage of using concentrated ambient particles (CAPs). Each area has a different traffic pattern and sulfate measure.

There is a study being done at the LRRI where the same animals are being exposed to particles from vehicles under very controlled conditions. Putting this together allows one to step back to look at the epidemiology across parts of the country with regional variation and condition mixes to compare the animal and human studies.

The HEI is committed to accountability and it attempts to move along the regulatory chain: regulatory action, emissions, air quality, exposure, and, finally, human health.

The HEI has a suite of accountability studies such as short term intervention studies and studies examining actions and events over the longer term. Short term intervention studies include: traffic reduction measures, targeting fuels and combustion, and multiple sources. An example of a longer term study is the implementation of a title of the Clean Air Act. Changes that occur over the long term (i.e., the weather, the economy) are difficult to account for. However, the HEI is involved in two of these accountability studies – cleaner wood stoves (Montana) and the 2008 Olympics (Beijing). Mr. O'Keefe briefly reviewed the PowerPoint slides (slides 14 and 15) detailing these studies. Mr. O'Keefe stated that EPA and the Chinese are planning a meeting for next September after the Olympics to review lessons learned and to evaluate whether the measures that were implemented should remain in place. This will hopefully show the benefits to improving fuel quality in Beijing.

The HEI also has a review underway looking at the health impacts of traffic. For example, the HEI supported a study that was published in the New England Journal of Medicine, which found an elevated risk of heart attack with hours spent in traffic. Traffic is defined as being on a bike,

in a bus, or in a car. There were also some air pollution associations. The study is expected to be published in 2009.

The last area that Mr. O'Keefe highlighted was the HEI's international work. The International program allows the HEI to fund the best science competitively around the world to inform decisions in the developed world. There is a second grouping of international studies that are mainly developing country studies. The purpose of the studies is to inform air pollution health decisions in emerging countries and markets. This work is done through the Public Health and Air Pollution in Asia (PAPA) program. There are seven time series studies of PM and other gases being done under this program in China, India, and Thailand, and an additional component in Vietnam. This program has also compiled the Asian literature of 450 studies. This helped to analyze the health effects of air pollution across the region and to support the publication of a benchmark review of the health effects of air pollution in developing countries in Asia.

Pat Childers, EPA, asked if the Clean Air Act Advisory Committee (CAAAC) had any questions.

Valerie Ughetta, Alliance of Automobile Manufacturers, asked if there is a spread of data being gathered in urban and rural sources in the national particles and toxicity study. Mr. O'Keefe said there is an attempt to look at rural and urban areas, but data collection depends on the location of the EPA STM monitors. Ms. Ughetta asked if there is a rural and agricultural data source. Mr. O'Keefe said that the first phase of the study is looking at particulates and different types of particles. The next phase, which involves linking a particular particle to a particular source, is tricky. This is the next generation of particle research so they are not at the point where they can say that they are looking at a particular source of particles in a particular area. Ms. Ughetta then asked about particle size range. Mr. O'Keefe stated that the size range is broad.

Elaine Mowinski Barron, Sierra Medical Center, said the study involving PM and toxic substances on speciation has been discussed for a long time. She asked if Mr. O'Keefe saw this study as addressing the residual risks of both criteria pollutants and toxic substances that are not addressed in the CAA. Mr. O'Keefe responded that the study is not designed to look at residual risks; the study is designed to look at particle toxicology and to help inform EPA's NAAQS decisions. Ms. Mowinski Barron asked if the study is looking at high risk populations of people with chronic disease and obesity. Mr. O'Keefe said that the cohorts have information about a range of risk factors, including socioeconomic status and obesity. Therefore, one would be able to examine this question in at least some of the cohorts.

Rob Brenner, EPA, said that the HEI is very important to some of the work at EPA. The HEI is accurate in terms of their studies' relevance to upcoming decisions being made by EPA and Congress. The new roadway issue is becoming very important in terms of the toxics issue. This is an area that they need to spend more time on; it is important from an environmental justice perspective and a health perspective. Mr. Brenner stated that he would like Mr. O'Keefe to speak about this issue in more detail at a later date. Mr. O'Keefe said that the HEI talks to EPA about issues, which helps to make their studies relevant.

*Corning: Framing of Issues on Long Term Automotive Strategic Planning – Tim Johnson, Corning Incorporated*

Tim Johnson, Corning Inc., said his job at Corning is to keep an eye on the future. Corning Inc. develops emission control equipment for vehicles, power plants, and other applications. About 20 years ago there was no need for long term planning. Corning would receive a regulation from EPA and they would develop a catalytic converter. By knowing how many vehicles were being manufactured and what type of catalytic converters they were making, Corning could easily plan capital expenditure. Now that Corning is looking at emissions such as $CO_2$, PM, and NOx, planning capital expenditure is not as simple. Mr. Johnson was hired to help in this endeavor.

Mr. Johnson stated that there is a new regulatory and market environment for automotives. There is also a rapid technology evolution based on a fixed infrastructure. Technology is evolving exponentially and it will continue to do so until we reach the capacity to absorb it. Mr. Johnson stated that the purpose of his presentation was to frame the issues for those not familiar with the playing field and to discuss what to watch to predict the future.

Mr. Johnson discussed regulations and drivers. He presented a graph showing a comparison of $CO_2$ regulations on vehicles worldwide as a function of time (see slide 4 of Mr. Johnson's PowerPoint presentation). Most of the standards are fuel economy standards, but they have been translated into $CO_2$ on the European test cycle. The tightest fuel economy standards are in Japan, followed by Europe. Europe is tightening its standards in the coming years to the standard levels of Japan or to even stricter standards. China follows Europe. If China continues to tighten regulations at the same rate, it will be with Japan and Europe in approximately 5-10 years. The U.S. has the highest standards. California, however, has some very dramatic reductions coming in the future.

Europe has been improving its fuel economy and Greenhouse gas (GHG) standards at 1.3 percent per year for 10 years. They did this by penetrating the fleet with 50 percent light duty diesel. This was accomplished in a market environment. There is now a proposal to change this to 3.8 percent per year. The implication of this is that something will have to change. The U.S. will have a 1 percent per year improvement beginning in 2007/2008, followed by a 4 percent per year average requirement.

Mr. Johnson next showed a chart showing technology evolution being driven by regulations (see slide 5). In the early part of the 1990s, there was significant indication that criteria pollutant emissions were going to significantly drop. However, Corning did not know which technologies would be used to meet these requirements. They had some indication of what was in the laboratory, but they saw a significant development of technology for 10 years. Mr. Johnson said he thinks it has been flattening out in the last few years. From the criteria pollutant 90 percent regulation tightening, Corning developed a whole list of technologies for vehicles that were not foreseen back in the early 1990s.

There is now a new arena for $CO_2$, however, Corning does not know which technologies will be leveraged to achieve these $CO_2$ targets. They can guess based on European experience with increased light duty diesel, regulatory mandates in the U.S. such as biodiesels, etc.

Mr. Johnson next presented the framework of the auto industry and the strategic planning at which they are looking. On the powertrain side, there are gasoline and diesel technologies as listed on slide 7. For gasoline, there are conventional vehicle engines, direct injection, homogeneous compression charged ignition (HCCI)/charged auto-ignition (CAI), and high efficiency dilute gasoline engines (HEDGE). These technologies are on different timelines and deliver different levels of fuel economy, emission patterns, and costs.

Light duty diesel infrastructure is in Europe. Europe has different regulations coming in 2014; they are 2.5 times higher in NOx than in the U.S. If you are a European manufacture and you want to sell light duty diesels in the U.S., how do you balance your capital investment on hitting the European 6 regulation 8 years from now versus the U.S. regulations today? There is also conventional diesel combustion and mixed mode combustion. These two decisions need to be made in the context of a fixed fuel infrastructure. Once a refinery is built, the ration of gasoline to diesel fuel is fairly well fixed. If more diesels are in the U.S., the refinery mix will not be correct. The price of diesel rises and the price of gasoline drops because they both have to rise to meet the new diesel demand so there is differential pricing in the market which impacts consumer choice between gasoline and diesel. There are also geographical differences. Europe is a diesel economy and the rest of the world is becoming a diesel economy with increased freight transport. There is a strong interaction between these two components.

In addition to this there is hybridization. There are battery technologies that are developing quickly. There are also Hybrid Electric Vehicles (HEV), Plug-in Hybrid Electric Vehicles (PHEV), and Extended Range Hybrid Electric Vehicles (ERHEV). The hybrid technologies feed into the gasoline and diesel technologies. There is a question of which one can be economically justified to hybridize. Hybridization technologies have to be meshed with gasoline and diesel technologies feeding into the fuels which creates the differential pricing.

Biofuels are now thrown into the mix. Gasoline supply is increasing, diesel supply is not increasing, the demand of diesel is rising, and there is differential pricing occurring because of biofuels in the gasoline and diesel arena. This drives the decision between gasoline and diesel hybrid. Mr. O'Keefe stated that we need to watch the second and third generation of fuels to see where they are most efficient. We have refinery feedstock options and the lifecycle analysis that Sarah Dunham, EPA, discussed.

All of this is in light of $CO_2$ regulation and particulate pollution emissions. Tightening regulations drives different types of technologies so lead time is needed in this regard.

Finally, there is the consumer. All the infrastructure feeds into an international scale and there are huge feedback groups going back to the beginning. In each box on slide 7, there is a multi-billion dollar decision being made.

Things to watch going into the future include: powertrain developments, refineries, and hybridization, biofuels, grid, regulations, and the consumer.

Tom Stricker, Toyota Motor North America, Inc., stated that he would add one more item to the chart with all the boxes. With regard to the overlay of the regulations, a key point is the difference between the way different regions of the world regulate $CO_2$ and fuel economy. Mr. Johnson said that the current fuel mix in the fleet and the European drive cycle need to be standardized.

Mr. Brenner said air quality and environmental issues used to be a question. Today, air quality and environmental issues are a central part of the decision making process. Mr. Brenner thanked all the presenters.

Mr. Childers said that he will schedule the September CAAAC meeting for September 17th/18th or the 24th/25th. He asked the CAAAC members to email him with their preferences. He also requested the CAAAC members to email him with topics that they would like to discuss at the meeting.

Mr. Childers thanked everyone and the meeting was adjourned.

# Clean Air Act Advisory Committee Meeting
# May 29, 2008
# Doubletree Hotel, Arlington, Virginia

**List of Attendees**

| Name | Affiliation |
|---|---|
| Charles Collett | National Association of Home Builders |
| Jed Mandel | Engine Manufacturers Association |
| Jeff Muffat | 3M Corporation |
| Richard Bolton | The Center for Toxicology and Environmental Health, LLC |
| Chris Hessler | AJW, Inc |
| Valerie Ughetta | Alliance of Automobile Manufacturers |
| John McManus | American Electric Power |
| Charles Knauss | Bingham McCutchen LLP |
| Ben Henneke | Clean Air Action Corporation |
| Tim Johnson | Corning Inc. |
| Mark MacLeod | Environmental Defense |
| Tony DeLucia | East Tennessee State University |
| Robert Brenner | EPA |
| Beth Craig | EPA |
| Robert Meyers | EPA |
| Bill Harnett | EPA |
| Pat Childers | EPA |
| Anna Marie Wood | EPA |
| Ralph Marquez | ESP |
| Dan Greenbaum | The Health Effects Institute |
| Jack Goldman | Hearth, Patio & Barbecue Association |
| Janet McCabe | Improving Kids Environment |
| David Foerter | Institute of Clean Air Companies (ICAC) |
| Elaine Mowinski Barron | Sierra Medical Center |
| Don Clay | Koch Industries Inc. |
| Robert Wyman | Latham and Watkins LLP |
| Bill Becker | National Association of Clean Air Agencies (NACAA) |
| Phil Wakelyn | National Cotton Council |
| Michael Formica | National Pork Producers Council |
| Stephen Hartsfield | National Tribal Air Association (NTAA) |
| William Auberle | Northern Arizona University |
| Eddie Terrill | Oklahoma Department of Environmental Quality |
| Anna Garcia | Ozone Transport Commission (OTC) |
| Ursula Kramer | Pima County Department of Environmental Quality |
| Gary Jones | Printing Industries of America Graphic Arts Technical Foundation |
| Dennis McLerran | Puget Sound Clean Air Agency |

| Name | Affiliation |
|---|---|
| Lisa Gomez | Sempra Energy |
| Jack McClure | Shell Oil Products Company |
| Carolyn Greene | Sunoco, Inc. |
| Buddy Garcia | Texas Commission on Environmental Quality |
| Kelley Green | Texas Cotton Ginners |
| Robert O'Keefe | The Health Effects Institute |
| Tom Stricker | Toyota Motor North America, Inc. |
| Eugene Trisko | Attorney at Law |
| Steven Lee Hensley | USA Rice Federation |