

Federal Advisory Committee Act

Clean Air Act Advisory Committee

**Virtual Meeting via Microsoft Teams
December 8-9, 2020**

Welcome & Opening Remarks

Due to increased concerns about safety regarding the coronavirus, this Clean Air Act Advisory Committee (CAAAC) meeting was held remotely via Microsoft Teams. Mr. John Shoaff (EPA) opened the first day of the meeting at 1:00pm on December 8, 2020 by welcoming everyone and giving a brief overview of the logistics for the meeting, including requesting that everyone mute themselves when not speaking and use the “Raise Your Hand” feature and the chat function. Mr. Shoaff then discussed the agenda for the afternoon and introduced Ms. Shanika Whitehurst, the Designated Federal Official (DFO), who also welcomed everyone and conducted the roll call. A list of attendees is provided in Attachment 1. Previous meeting minutes as well as materials associated with this virtual meeting will be available online at EPA’s CAAAC website (<https://www.epa.gov/caaac>).

Virtual Meeting Agenda – December 8th (Day 1)

Time	Item	Presenters/Facilitators
1:00 - 1:10pm	Opening Session: Welcome by Chair, Introductions, DFO Opening Statement	John Shoaff, Director, Office of Air Policy and Program Support Shanika Whitehurst, DFO
1:15 - 2:00pm	OAR Overview & Update on Priorities	Anne Austin, Principal Deputy Assistant Administrator, Office of Air and Radiation
2:05 - 3:00pm	MOVES Emissions Model	David Choi, Director, Air Quality and Modeling Center
3:00 - 3:05pm	Break	
3:05 - 4:00pm	Draft Air Toxics Strategy	Amy B. Vasu, Air Toxics Assessment Group Mike Koerber, Office Director, Office of Air Quality Planning and Standards
4:05 - 5:00pm	Airborne Transmission of COVID-19 Indoors	Paul White, Center for Public Health and Environmental Assessment Laura Kolb, Indoor Environments Division David Rowson, Director, Indoor Environments Division
5:00 - 5:15pm	Wrap Up and Public Comments	

Following the roll call, Mr. Shoaff allowed a moment for members of the public to introduce themselves; nobody did so. He also highlighted the agenda item for public comment that was scheduled at the end of the day. Mr. Shoaff then introduced Ms. Anne Austin, the Principal Deputy Assistant Administrator of the Office of Air and Radiation (OAR), to give an update on the office's priorities and progress.

OAR Overview and Update on Priorities

Ms. Austin began by greeting attendees, acknowledging the 50th anniversary of both the EPA and the Clean Air Act (CAA), thanking Mr. Larry Weinstock for serving as the DFO for many years, and welcoming Ms. Whitehurst for taking over his role as well as for her work as the office's environmental justice (EJ) coordinator.

Ms. Austin then described the latest developments and actions taken by OAR since the last CAAAC meeting. They released another year of air trends data, showing declines in the six criteria air pollutants (CAPs) from 1970 to 2019 while the economy grew significantly, resulting in some of the lowest rates recorded. Ms. Austin explained that early in the Trump Administration, a goal was set to get back on track to meet agency deadlines in a timely fashion, with the most recent priorities being review of the particulate matter (PM) and ozone standards. For PM, the review found a large decline in concentrations from 2000 to 2019, including improvements for monitored low income counties, 80% of which are breathing air that meets the 2012 or 2006 PM National Ambient Air Quality Standards (NAAQS), compared to 43% in 2009. Ms. Austin noted that on December 7, 2020, the EPA announced its final decision to maintain PM standards at the current level, after consideration of over 60,000 comments. Additionally, the EPA is still working on finalizing the ozone NAAQS. There has been a significant decline in ozone-related pollutants such as NO_x and volatile organic compounds (VOCs), and after review, the office issued a proposal to maintain the NAAQS without changes; the comment period for the proposal closed on October 1, 2020, and the office is now reviewing over 50,000 comments that were received to prepare to finalize the rule later in December. Ms. Austin also discussed the office's work on redesignations and State Implementation Plans (SIPs), including redesignating 57 areas to attainment, acting on more than 230 SIPs, and converting 30 Federal Implementation Plans (FIPs) into SIPs.

Turning to other big priorities concluded this year, Ms. Austin noted that the final rules for oil and natural gas production were announced in August, which included removing the transmission and storage segment from regulation as well as eliminating other regulations on the oil and gas industry and streamlining the process for emission control as fugitive emission detection technology improves. Ms. Austin also discussed a rule allowing fuel storage vessels to pass inspections, which is expected to save money and reduce VOCs. The office is also working to improve New Source Review (NSR) and Title V programming, including choosing not to finalize a proposed guidance but continuing to explore whether a future rulemaking would be appropriate. They are also developing training modules for local and state air agencies, which will be posted to the NSR website. The EPA has also finalized several rules and guidelines in the

last quarter of 2020 and is continuing to develop others, including a benefit-cost accounting rule and a procedural clarification for states.

Ms. Austin discussed the EPA's progress on conducting court-ordered residual risk and technology reviews (RTRs), of which 27 have been completed, with 9 more in progress with a deadline of October 2021. The agency is also looking forward to getting feedback on a draft strategy for better addressing air toxics, especially regarding EJ.

On the subject of the Cross-State Air Pollution Rule (CSAPR) update, the updated analysis showed that for 9 out of 27 states being considered, the projected 2021 emissions do not significantly contribute to nonattainment, so the proposal does not include obligations for those states beyond CSAPR. For 12 other states, the EPA is proposing new or amended FIPs that mandate additional emission reductions.

Ms. Austin explained that the EPA is also working on a rule for other solid waste incinerators (OSWI) to encourage compliance and follow CAA requirements. The comment period ended in October, and the agency is aiming to finalize the rule by the end of May. The EPA has also proposed rules related to transportation and enforcement related to tampering. Ms. Austin also noted that the EPA is assessing the possibility of strengthening on-road in-use testing programs, soliciting comments, and reaching out to a range of stakeholders on this issue, with the goal of issuing a notice of proposed rulemaking (NPRM) in early 2021.

Lastly, Ms. Austin acknowledged the recently-released update of the MOVES model and expressed interest in the discussion planned for later in the meeting about COVID-19 and indoor air. Ms. Austin then offered to answer a few short questions before leaving to attend another meeting.

Comments and Discussion

Mr. Dan Nickey asked Ms. Austin about the status of the once-in always-in rule. Ms. Austin responded that the rulemaking was finalized in October.

Mr. Andrew Hoekzema congratulated Ms. Austin and her office on completing the PM NAAQS by the December deadline and expressed hope that this would be a sign that moving forward these reviews can be completed on the statutory 5-year basis. Mr. Hoekzema explained that because the NAAQS was not changed, there is no requirement to conduct a designation process, which has never happened before. Mr. Hoekzema asked what the EPA's plan is to address areas that were designated as attainment following the last NAAQS review, but are now in violation. Ms. Austin responded that she did not have a concrete answer yet and that they are discussing this internally now. She invited engagement on this topic from stakeholders and CAAAC members so they can better understand how states are impacted and what the practical implications of the policy will be. Mr. Hoekzema suggested that the EPA issue a rule to codify

the approach the same way the EPA goes through a rulemaking for the cost-benefit analysis. Ms. Austin thanked Mr. Hoekzema for the suggestion and thanked everyone for listening.

Mr. Shoaff thanked Mr. Nickey and Mr. Hoekzema for their questions and noted that the meeting was running ahead of schedule, so they would go ahead and start the next presentation early. Mr. Shoaff then introduced Mr. David Choi, the Director of the Air Quality and Modeling Center at the Office of Transportation and Air Quality (OTAQ), who would be discussing the newly-released MOVES3 model.

MOVES3 Introduction and Overview - David Choi, EPA

Mr. Choi began by presenting an overview of the presentation and background on the MOVES model. For the latest version of MOVES, MOVES3 – the third major release, there have been several updates to the previous version. This includes new data on light-duty and heavy-duty emissions, incorporation of the effects of new rules, and improved user features. MOVES3 has gone through peer review and was beta tested by a small group of experienced MOVES users. In addition, the MOVES Review Work Group has provided feedback to the EPA via the Mobile Sources Technical Review Subcommittee (MSTRS) of the CAAAC. The updated version of MOVES compared to the previous version has resulted in national emission estimates that are lower for most criteria pollutants and higher for greenhouse gases in future years. Results vary by geographic area, but urban areas generally also have an increase in NO_x levels. Changes in nonroad emission estimates are limited to SO₂ and PM, which decrease with the decrease in diesel sulfur levels. The new version of MOVES must be used in SIPs after its release, with no grace period, except that if a state has done significant work on a SIP using the previous model, it can continue with that model. MOVES3 will also be required to be used for transportation conformity at the end of a 2-year grace period. Technical guidance is available on using MOVES at the county scale for onroad emission inventory development for SIPs and conformity, using MOVES3 at the project scale for hot-spot analyses, using MOVES to model specific control programs and using the model to estimate GHGs.

Comments and Discussion

Mr. Clay Pope asked Mr. Choi about the impact of temperature on onroad diesel and whether that is where the increase in urban emissions comes from. Mr. Choi answered that when they updated the model, they relied on the in-use testing program data provided by manufacturers, which showed that there are more emissions when the vehicles are not fully warmed up because the SCR systems do not work at lower temperatures.

Mr. Pope then asked what the assumed penetration of light-duty (LD), heavy-duty (HD), and medium electric vehicles (EVs) is on a state by state level. Mr. Choi responded that modeling hybrids and EVs is something they would like to improve in MOVES in the future, and they are interested in hearing from users and stakeholders on the best way to incorporate them. He also noted that more EV penetration data is needed.

Mr. Steve Flint noted that as you look at the in-use emissions, in particular the HD activity and the actual in-use NOx emissions, they have seen a lot of tampering. Mr. Flint asked what is being used for emissions values in those cases, and where those values come from. Mr. Choi answered that MOVES3 does not account for the latest report on diesel tampering, and they are working to collect more data to hopefully include in a future version of MOVES. MOVES3 does have some tampering and mal-maintenance assumptions built in, but these are different than what was recently reported.

Mr. Flint then asked if MOVES3 builds off the California Air Resources Board (CARB) work on low load emissions. Mr. Choi responded that it does not, but that colleagues working on the Cleaner Trucks Initiative (CTI) have been coordinating with CARB, and they are looking into data in that area.

Finally, Mr. Flint added that when considering PM emissions into 2028 due to brake wear, there is less brake friction with EVs, so as penetration of hybrids and EVs increases, PM should drop considerably because brake wear is reduced. Mr. Choi thanked Mr. Flint for pointing that out and stated that they have a test program to study brake wear emissions, and they have included some EVs.

Ms. Meg Patulski added that she works with Mr. Choi in implementing MOVES3, and to add to his answer to Mr. Pope's question about EVs and hybrids, MOVES3 can be used to model different scenarios for electrification and other future fleet changes as outlined in the technical guidance documents. Also, for a typical hybrid, they treat them as a typical gasoline vehicle for criteria pollutant emissions, including PM, since they are certified like gas vehicles.

Mr. Hoekzema commented that he encourages the EPA to work towards having some kind of default assumption about hybrid and EV penetration as a starting point; for example, for certain rulemakings the EPA has made explicit assumptions about EV penetration, so it would also be important to use those same assumptions in the MOVES model to achieve internal consistency within EPA. Mr. Hoekzema acknowledged that this task is very complex, but it would be helpful to have guidance for local communities on how to model these scenarios. He also complimented the EPA on having the model year forecasting tool that accounted for the drop in vehicle sales during the last recession. He pointed out that it would be good to look at the data for 2020, since there was likely a downturn in sales again that would need to be accounted for in modeling. Mr. Choi agreed that the impact of COVID-19 on transportation is interesting and noted that there's a lot of research being done on how the pandemic has affected a variety of environmental indicators.

Mr. Bob Meyers asked about the extent to which, when the EPA adjusts MOVES, defeat devices and tampering are taken into account. Mr. Choi explained that this is a complicated modeling effort, since you first need to have a good sense of how much dirtier vehicles with tampered devices are compared to certified, compliant vehicles, as well as the prevalence of these vehicles

locally and nationally. Mr. Choi reiterated that the EPA is interested in looking into this further and would like to understand this better with more data. Mr. Meyers responded that the EPA does estimate aggregate level emissions that they think come from tampering and has done some measurements itself along with other groups, so there is some reference data. He then asked if this means that MOVES3 does not currently adjust for tampering, and Mr. Choi confirmed that this is correct.

Mr. Shoaff thanked Mr. Choi for his presentation and everyone for the good discussion. He also encouraged members to visit the links at the end of the slides, especially if they are interested in the training Mr. Choi referenced.

OAQPS Air Toxics Strategy – Mike Koerber and Amy Vasu, EPA

Mr. Koerber began by discussing the recommendations that CAAAC produced five years ago regarding air toxics, which he stated were a significant factor for OAQPS in determining how to proceed with air toxics issues. He explained that this strategy represents an attempt by the office to “get its house in order,” particularly because their work is often siloed, and they hope that this new strategy will help them with internal operations and collaborations. Additionally, given how many bodies deal with air toxics, it is important to be connected internally, with other offices at the federal level, and with agencies and bodies at the state and local level. Mr. Koerber highlighted four topic areas from the recommendations that will be covered by the presentation. First, communication, especially best practices for risk communication and training. Second, community toxics, including partnering with communities, providing cumulative impact information, and considering impacts based on race and income. Third, data gaps. And fourth, highlighting and sharing best practices for dealing with local air toxics issues. Mr. Koerber thanked everyone for these recommendations and noted that not all recommendations were possible to address with this strategy.

Ms. Vasu thanked Mr. Koerber for the introduction and Ms. Whitehurst for displaying the slides. She explained that this is still a draft strategy for OAQPS, and they have been working on revisions and discussing it with their sister offices in OAR as well as regional offices, but they have not yet shared it with external partners. Their goal is to finish developing public-facing materials by January.

Ms. Vasu started her presentation with an overview, noting that OAQPS has been working to develop a strategy for the Air Toxics Program with a focus on providing a structure for the program to more effectively address air toxics issues that arise. The EPA has a vision for the air toxics program that includes having the EPA be the recognized national leader in identifying and addressing air toxics issues. To achieve this vision, several steps need to be taken, including building strong partnerships with frequent engagement, a well-organized plan to meet statutory obligations and to address other air toxics issues, and effective communication with the public. The core principles of their strategy to accomplish this are to identify and prioritize air toxics issues, gather and analyze data, manage and mitigate air toxics issues through regulatory and non-regulatory approaches, and perform outreach. They have developed a 5-step process to

address new and emerging air toxics issues rather than doing this in an ad hoc manner. These steps are early issue identification, preliminary issue characterization by a team, issue communication to senior management, development of an analysis or action plan (when relevant), and implementation of the identified action. The expected results of this process are that issues can be identified and addressed proactively, and better outcomes can be realized by dealing with issues in this systematic manner.

Mr. Koerber reiterated that this is still a draft, so they are briefing different people and offices on it and expect to get good feedback from CAAAC. They also are hoping to have a public-facing document ready by January so people can better understand the specifics.

Comments and Discussion

Mr. Tim Hunt pointed out that most of these process changes presented appear to be internal, and asked if there is an external element or an example of a type of issue that might be flagged by this new process - for example, a hazardous air pollutant (HAP), analytic tool, or source category. Ms. Vasu answered that the process does apply more broadly and would be able to cover any type of issue.

Mr. Nickey noted that the air toxics evaluation team appears to be all internal EPA staff, and asked whether they would consider having members of outside organizations on the team. Ms. Vasu answered that they haven't thought about that, but the focus of the team is to offer a point of contact so that anyone from anywhere can raise an issue. The idea for the team is to spend 15 hours or fewer looking at a particular issue, using the resources they have, reaching out for additional information, and doing a preliminary characterization to bring that information to management to determine how to appropriately respond, such as creating a 1-2 year project team, raising awareness, or something else. Ms. Vasu stated that she was not sure about the benefit of having an outside representative since this is a quick response team, not a project team.

Mr. Hunt explained that something he's observed in the air toxics program is that a lot of schedules and workflow are determined by the courts when deadlines are missed. Mr. Hunt asked how the EPA will deal with existing deadlines and whether part of the strategy is to lay out a logic for how to proceed with outstanding obligations. Ms. Vasu answered that this is a good question and noted that there is a group in the office looking at how to streamline the process for scheduled reviews. Mr. Koerber added that while it's important to be mindful of the CAA and core air toxics programs, the CAA and emissions standards can't solve every problem, and in order to have more flexibility, it will help to be better connected internally and externally to get the right solution for every problem.

Ms. Shannon Broome stated that she applauds the office for thinking about what's going to be impactful for human health as opposed to pursuing *de minimis* issues as a result of statutory obligations and court orders to address pollutants for which the risk is minimal. Ms. Broome

encouraged the EPA to push the envelope on its *de minimis* authority, which she recognized is a controversial stance, but she believes this would be more productive when it comes to protecting underserved communities from undue exposure. Ms. Broome asked whether OAQPS is coordinating with OTAQ or officials working on Title II. Mr. Koerber reiterated that mobile sources is a growth area for this strategy, and although it is still a draft, they recognize that they will need to work across the EPA and other federal offices to address issues correctly. In the near term, Ms. Vasu had mentioned the possibility that an issue gets identified, the screening team looks at it, they recommend focusing more on that issue, and then a project team could be created that might involve OTAQ as well as other related mobile sources offices. However, Mr. Koerber clarified that for now, this is just looking at stationary sources. Ms. Broome added that it is also important to consider what local regulations might already exist to avoid placing a double burden on companies. Mr. Koerber agreed that this speaks to the need to be connected at multiple levels to avoid layering a federal solution on top of a state solution.

Mr. Flint emphasized the need for putting more thought into communications, especially how to communicate about toxics, concentrations, susceptibility, risk, and other environmental health and safety concepts that aren't familiar to non-professionals. Mr. Koerber responded that they have been working on that a lot over the past couple of years, as it has been a priority for Administrator Wheeler. He has brought in a dedicated risk communication advisor to help and has conducted trainings for officials.

Mr. Tomás Carbonell asked the presenters to elaborate more on the role of community engagement in the overall strategy; what steps are being taken to ensure that communities are empowered and have the capacity needed to communicate problems and concerns to the agency? Additionally, is there any step built into the strategy to assess how it is working in terms of improving public health outcomes? Mr. Koerber responded to the first question, noting that it is a matter of knowing who the communities are and how to identify them, which is where the screening team comes in. Typically, outreach is a very broad brush without much focus or targeted efforts to listen and shape the message appropriately, so this strategy recognizes the need to improve on that. Mr. Koerber noted that in regard to the second question, things are still fairly open. People are aware that the office puts out an annual trends report, so that might be a vehicle to communicate better about air toxics on the national level, and maybe it could include some case studies, but this is something to work on.

Mr. William Spratlin began by commending OAQPS for making such progress over the years to arrive at the draft strategy. He explained that when it comes to planning for how to allocate the office's resources, one suggestion is to think about how to respond to the political realities of dealing with a community on the ground, especially in a crisis situation. Mr. Spratlin also suggested that it would be useful to reach out to industries and companies, since they are in those communities and will be familiar with local opinions and activities in a way that will aid in communication. Finally, Mr. Spratlin reminded the presenters that although they are working on strategies to communicate with people who aren't scientific experts, the issue is not only scientific – some people just do not trust the government, and the EPA needs to figure out how

to contend with that. Mr. Koerber thanked Mr. Spratlin and agreed that as officials from the federal government, credibility is very important, and they must build trust with the community by showing that they care about the community's issues. He hopes this strategy will better facilitate getting the right people involved in decision-making.

Mr. Meyers noted that the EPA regularly conducts a National Air Toxics Assessment (NATA), with the most recent one being in 2018, and also runs a grant program related to community toxics. He asked how this new strategy will work with those efforts in terms of risk calculation and reduction. Mr. Koerber responded with the strategy, their goal is to "fit the puzzle pieces together" – by determining what information they are gathering and why, and also determining what data should be gathered and how that data would be used. He noted this information is currently clearer for the NAAQS program than it is for air toxics. For instance, one question to be investigated might be, "Is the NATA useful?" The end result of this exercise could be changes to some programs or re-allocation of resources.

Mr. Bob Hodanbosi wanted to follow up on Mr. Carbonell's comment by drawing attention to the local air agencies that are doing a good job of working with communities; some reach out and have training sessions and have periodic meetings with community groups to ensure consistent communication even prior to having a problem. This provides that when an issue arises, they have already developed trust and lines of communication. Mr. Hodanbosi specifically pointed to the Louisville, KY air agency as a good example of a group that uses this approach but acknowledged that the federal government will always have a slight disadvantage by coming in as an outsider. He then asked if OAQPS will create a document that goes through the previous recommendations given by CAAAC and providing a response to each. Mr. Koerber stated that they could consider doing so if that would be useful, and that they have periodically gone back and reviewed them while developing the strategy, although some are more relevant and actionable than others.

Ms. Gillian Mittelstaedt commented that the mission and vision statement pieces were good ideas, and that the office should circle back with EJ groups and tribal communities to get their input. Ms. Mittelstaedt also suggested that the EPA continue to collaborate with other partners. Mr. Koerber noted in response that they are meeting with the National Tribal Air Association (NTAA) steering committee and executive committee very soon as part of their road show, and in 2021 they will begin engaging with community groups to get input from those stakeholders.

Mr. Hoekzema commented that the EPA could look at how risk is communicated for the NAAQS program and apply it to the air toxics program also. He noted that for both programs, it is not obvious that there is a "safe" level of risk associated with exposure to the pollutants. He encouraged OAQPS to be thinking about ways to explain the nuances of these standards and frame risk differently in a positive light focused on public benefit. Mr. Hoekzema also stated that he does find the NATA helpful, but that it stops short of providing recommended next steps if risk is at a certain level. He suggested that it might be helpful to states and communities to give some recommendations or a blueprint that they can follow after reviewing the information in the

report; for example, some voluntary program along the lines of the ones that already exist for PM and ozone.

COVID-19 and Indoor Airborne Transmission - Paul White, Laura Kolb, and David Rowson, EPA

Mr. Rowson thanked the members for their presence and noted that they would aim to save the second half of their time for questions.

Ms. Kolb explained that she would provide a brief overview from the Office of Air and Radiation on the transmission of COVID indoors, which they have been following for many months and posting updated information about on their website in both English and Spanish. COVID mainly spreads from close contact from person to person, but there is some uncertainty about different transmission pathways; research shows that it can remain airborne for longer times and distances than previously thought, including beyond the 6ft distance recommended. The longer individuals occupy a space, the more people there are in a space, and the smaller the space, the higher the chance is of disease transmission. However, steps can be taken to reduce transmission, which is the focus of online materials.

Ms. Kolb noted that the layout of a building and the heating, ventilation, and air conditioning (HVAC) system can impact the airborne spread of the virus. Cleaning can't eliminate transmission on its own, and the EPA recommends increasing the ventilation and filtration of the air in a space as one layer of precaution. Ventilation is also a critical measure to reduce exposure to cleaning products, disinfectants, and their byproducts. By themselves, ventilation and filtration are not sufficient to fully protect from the disease, since airborne transmission is not the only route of infection, but the evidence supports implementing a variety of measures to reduce risk.

Ms. Kolb explained that airborne transmission of COVID-19 is a concern because infected people can expel the virus through the mouth and nose. The number of COVID particles in aerosols can vary depending on the stage of infection and the person, but they can be released by an infected individual regardless of symptoms and travel up to 15ft according to recent studies. The movement of airborne particles, including the distance traveled and the time they can remain infectious, depends on air conditions. This can be modeled with physical models, and the importance of different transmission routes is a subject of ongoing research. COVID-19 can remain airborne in indoor environments for hours, potentially increasing in concentration over time. Without intervention, the chance of transmission increases over time. Virus containing particles can float for a long time and will accumulate unless there is sufficient filtration and ventilation. Often, indoor ventilation cannot be changed or altered, though additional filtration can be added to most spaces. Sunlight has a germicidal effect outdoors, and people tend to spend more time together indoors, which makes indoor environments more dangerous.

Ms. Kolb emphasized that it is essential to layer many precautions instead of relying on just one; limiting indoor occupancy, ventilation - meaning ventilation with air from outside, not just the recirculation of air - and filtration are key elements of this approach. The CDC and the EPA agree on these overall recommendations. Also, it is best to filter air using an upgraded MERV-13 filter and place portable air cleaners in places that are more dense or hard to reach. Active areas of research include aerosol or airborne transmission, how long COVID-19 can survive airborne transport, and how many virus particles are needed to infect a target.

Mr. Rowson then described the work being done to track and understand airborne transmission and indoor air concerns to inform a number of different needs; for example, directing research with ORD and other organizations to identify gaps in understanding, working with other federal agencies to support the White House Task Force on COVID-19, and developing science and translating it into public guidance with the CDC. Their website has detailed guides for the general public focused on indoor air transmission that was developed in coordination with the CDC. Additionally, there are FAQs geared towards questions from the press and public that have been coming to the agency. They are also providing technical assistance to certain stakeholders through webinars and are working with the schools community through a different webinar series to help them figure out how to manage indoor air quality to limit exposure and transmission. They are also working to support tribes by partnering with the National Tribal Air Association (NTAA) and Healthy Homes Network to deliver resources and information for those communities. Finally, they served in an informal role to help GSA reopen and operate federal buildings safely.

Mr. White from the Office of Research and Development (ORD) then provided an overview of research on indoor COVID-19 airborne transmission; in particular, there are two ongoing projects on this topic. One specific area of concern is the spread of the virus within an office environment. ORD is hoping to provide information to support managers to make better evaluations of the potential for exposure and risk associated with employees returning to the workplace. They also are providing information about the benefits to be gained from fairly simple mitigation actions.

Comments and Discussion

Ms. Mittelstaedt began by requesting that ORIA consider the public interest when considering the wood heater donation program. She then noted that based on her research on wood smoke, she is concerned that during COVID, tribal homes with older wood stoves are experiencing much higher levels of ultrafine PM pollution within their homes. Ms. Mittelstaedt asked if these particles are potentially giving COVID particles something to attach to, and if so, if this means that homes relying on wood heat are at greater risk from COVID. Mr. Rowson responded that they would take Ms. Mittelstaedt's comment into consideration and mentioned that there is ongoing research in that area. Ms. Kolb stated that they would get back in touch regarding her question about wood smoke particles and COVID.

Ms. Mary Peveto explained that on the west coast, residents have found themselves in a horrible situation in 2020 because they were unable to gather indoors due to COVID, but simultaneously wildfires were creating some of the worst outdoor smoke conditions, which also affected hospitals. Given that climate change and wildfires will be ongoing issues, Ms. Peveto asked how the EPA is going to balance the risk of exposure to a viral infection indoors and the risk of being exposed, through outdoor gatherings or increased ventilation, to harmful outdoor air quality. Mr. Rowson responded that there are multiple ways of thinking about this issue: what do you do when there is a situation that requires sheltering indoors in the midst of a contagious pandemic, and how do you create the technological or behavioral guidance about what an individual should do if they're sheltering in place from a hazard during a pandemic. He noted that their office is actively working with both the outdoor and indoor environments groups to develop the right guidance and identify solutions, such as designating "clean rooms" within a home, that might be translatable to other circumstances. Mr. Cascio added that ORD is working on offering some guidance and information based on research projects in Montana and Northern California focused on indoor and outdoor PM levels during wildfires in different types of buildings and with different HVAC systems.

Mr. Max Sherman suggested that there is little research to be done now on COVID that will affect the course of the pandemic. However, it could be helpful to study novel techniques that could be currently be helpful, such as bipolar ionization, which is a technology designed to sanitize air spaces and is currently available for purchase Ms. Katherine Ratliff stated that she agreed with this assessment and that they are honing in on those technologies, especially given that vendors are eager to have their products evaluated.

Mr. Steven Marcus pointed out that although the discussion has focused primarily on office and home environments, there are still classroom environments that need to be considered. Mr. White responded that despite their priority focus in other areas, they hope that some of the technology and research they are working on will be relevant to schools. He added that with many researchers all looking into these topics at the same time, the literature should continue to develop and expand to cover many different areas.

Wrap Up and Public Comments

Mr. Shoaff invited the co-chairs of the CAA 50th Anniversary Report Workgroup to give a brief introduction on their work and provide information about what members should expect for the second day of the meeting. Mr. Shoaff also thanked the whole workgroup for their efforts, as well as the supporting contractors for the group.

Ms. Gail Good expressed excitement on behalf of the workgroup about sharing their work and discussing the report with CAAAC members. Ms. Good explained that they would cover the process to date and go through the draft outline, which was shared with the CAAAC in the meeting invitation for the second day. Following that introduction, they would transition to breakout groups for individual topics using a different meeting link provided in the agenda. She

mentioned that notes would be taken during each session, and they are most interested in discussing the challenges and solutions related to the breakout group topics. Ms. Good encouraged everyone to consider which topics they would want to attend in advance of those sessions. Ms. Mittelstaedt added that these sessions will be an opportunity for discussion, but that they are by no means the last chance for CAAAC members to contribute to the report, and they encourage everyone to share additional thoughts via the issue write-up form and email after the meeting.

Mr. Shoaff thanked Ms. Good and Ms. Mittelstaedt and reminded everyone that the breakout session topics and links could be found in the agenda circulated by Ms. Whitehurst. He then stated that they would proceed with the final item on the agenda: a session to hear any comments from the public.

Ms. Natalene Cummings stated that although she is not a member of the public, she wanted to contribute her voice to support Ms. Mittelstaedt's earlier comment about woodstoves. Ms. Cummings explained that based on her conversations with members of tribes in Region 5, particularly in Wisconsin, woodstoves are widely used but very rarely EPA certified, and any help in upgrading those stoves to something safer and cleaner would be very helpful.

Mr. Shoaff thanked Ms. Cummings and noted after a pause that he did not see any other raised hands from members of the public wishing to comment. Ms. Whitehurst thanked everyone for their attention and participation and reminded members to join the meeting a few minutes early the next day to help resolve any technical issues that might come up. Mr. Shoaff then adjourned the first day of the meeting.

December 9th (Day 2) Introduction

Mr. Shoaff opened the second day of the meeting at 1:00pm on December 9, 2020 by explaining that the day's discussion would focus on the CAA anniversary report workgroup charge and progress to date. He also described the agenda for the day, which is shown below.

Virtual Meeting Agenda - Day 2

Time	Item	Presenters/Facilitators
1:00 - 1:15pm	Introduction (EPA)	
1:15 - 2:00pm	Opening of CAA 50 Group Review of Charge Report Development Process Review of Draft Report Outline	Workgroup Co-Chairs Gillian Mittelstaedt Gail Good Bob Meyers
2:00 - 2:05pm	Break	
2:05 - 2:45pm	Break-Out Groups Session 1 a. Climate/Greenhouse Gases b. Permitting	Bob Meyers Shannon Broome
2:45 - 3:25pm	Break-Out Groups Session 2 a. Environmental Justice b. Mobile Sources c. Measurement and Sensors	Gillian Mittelstaedt Bob Meyers Gail Good
3:25 - 4:05pm	Break-Out Groups Session 3 a. Attainment b. Toxics c. Other (Open, Could Include Indoor Air)	Gail Good, Andrew Hoekzema Shannon Broome Gillian Mittelstaedt, Bob Meyers
4:05 - 4:10pm	Break	
4:10 - 4:50pm	Report Out and Discussion (Including EPA Reaction/Input)	Break-Out Group Facilitators
4:50 - 5:00pm	Wrap-up and End of Meeting (EPA)	

Mr. Shoaff noted that the workgroup charge was circulated over the summer of 2020 in recognition of the 50th anniversary of both the CAA and the EPA, The charge requests feedback on the key accomplishments of the CAA and advise for the EPA on the remaining challenges and strategies for addressing them related to the Act. Mr. Shoaff then introduced the workgroup chairs and thanked them and the full workgroup for their efforts.

Opening of Clean Air Act 50th Anniversary Report (CAA 50) Workgroup

Ms. Good thanked Mr. Shoaff for the introduction and Ms. Whitehurst for displaying the presentation and explained that the co-chairs would talk about how the workgroup has interpreted EPA's charge and what process they have used to put together the report outline. Ms. Good noted that when the charge was initially received, the goal was to have a report draft ready

to share with the full CAAAC at this meeting; this was very ambitious, and they wanted to be able to get a lot of input and feedback and use the report to make useful recommendations, so they have worked on the outline instead to allow more time to develop a helpful report. They developed a survey and distributed it to the CAAAC to get feedback, and it is still monitored and active for any members who want to provide additional feedback. Ms. Good added that their meetings have centered on drafting the outline, and they can provide more insight into their meetings and discussions during the breakout sessions. The outline was provided as part of the meeting materials. Getting good feedback from the full CAAAC is very important to the workgroup, and Ms. Good emphasized that the discussion during the meeting would not be the last opportunity to provide input. If anyone has more ideas they want to add after the meeting, they can reach out to one of the co-chairs. Ms. Good concluded by mentioning that at the next CAAAC meeting, the workgroup intends to present a draft of the report and solicit feedback again.

Ms. Mittelstaedt discussed two topics: the input received to date and a few examples of previous CAAAC reports to provide a sense of the end-goal for the workgroup. First, there was the survey that was sent out in October; fourteen responses were received, and the link will remain open if anyone wants to provide further thoughts. Ms. Mittelstaedt noted that the survey is structured like an issue write-up form so that members can provide more substantial comments that will be helpful in writing the report. In terms of the responses so far, both the accomplishments and future challenges provided by respondents span many levels, from specific parts of the CAA to broader processes or topics. Ms. Mittelstaedt stated that they are prioritizing the future challenges section of the report, and they strongly value hearing from a diverse set of viewpoints going forward. In looking at past reports, the recommendations provided by CAAAC have ranged in the level of detail and addressed areas such as specific provisions or process and implementation issues. Ms. Mittelstaedt emphasized that with numerous changes to be expected due to technology, climate change, electrification, and a host of other trends, it is very important to think about how the EPA can adapt to these challenges and use the CAA to take the agency in a new and productive direction.

Ms. Good then reiterated how the breakout sessions would work and noted that each would have facilitators and note takers. The facilitator would begin by giving a quick synopsis of the workgroup's discussion of the topic to date and highlight areas where they would like feedback or comments. Ms. Good added that since time is limited, people should keep their comments focused and specific.

Mr. Meyers then provided an overview of the draft report outline, which was distributed to CAAAC members prior to the meeting. He emphasized that it isn't set in stone and reminded the group that EPA's charge asked for it to be divided into two main sections focused on the accomplishments of the CAA and future challenges that might fall under its scope. The first section of the outline is the introduction, which includes a summary, description of the process, and objectives of the report. The next section discusses accomplishments, and it somewhat follows the structure of the CAA itself. Mr. Meyers noted that the organization of the outline is not based on importance, and they do want to make sure that everything is included. The third section discusses future challenges, which is not structured very much yet, but does somewhat

mirror the accomplishments section. Mr. Meyers added that they still need to define each issue specifically in relation to the CAA, keeping in mind that not everything can be addressed using the Act. He reiterated the request for CAAAC members to provide feedback on these issues and point out any others that they might have missed. Finally, the fourth section is for conclusions and recommendations. The workgroup recognizes there may not always be consensus on recommendations, and their priority is going to be transparency and providing a diversity of viewpoints.

Mr. Shoaff thanked the co-chairs for their work and leadership as well as the workgroup members for their contributions. Mr. Meyers then offered to answer any initial questions from the CAAAC, as there was a little time left in the schedule. Ms. Broome suggested that someone explain the breakout sessions again, which Mr. Shoaff did; Ms. Mittelstaedt suggested putting the links in the meeting chat as well, and Ms. Whitehurst did this.

Mr. Hoekzema asked Mr. Shoaff if he or other EPA staff present had any preliminary reactions to the outline or what had been presented so far. Mr. Shoaff responded that he was impressed to date, and that he recognized that the time frame was a challenge. He did not have any specific comments about the substance of the outline, but he noted that it would be a challenge to structure and allocate space to the various issues. Mr. Shoaff added that the EPA would appreciate succinctness where possible, and that they are standing by to provide support to the extent that they can. He also stated that he is interested in hearing more about the expected time frame of the report and that it would be great to have progress towards a draft in time for the spring CAAAC meeting. Mr. Meyers spoke up and said that in terms of support from EPA, the workgroup might like to have certain technical information from the EPA and the EPA's help with facilitating briefings with different programmatic personnel to better understand what EPA is working on and what advice would be most helpful. Mr. Shoaff responded that the EPA would do their best to answer questions and provide clarity and status reports as needed.

Ms. Mittelstaedt mentioned that there is a lot of work produced around the CAA by a variety of groups, including the EJ community, scientists, tribal groups, governor's associations, and others, and this work might be useful to cite or reference in the report so EPA staff can seek out those materials if they want to look further at a given issue.

Mr. Shoaff then directed meeting attendees to go to the breakout groups links. Below is a summary of each of the breakout sessions.

Breakout Group Session #1a: Climate Change and Greenhouse Gases

Moderator: Bob Meyers

Attendees*:

William Bahnfleth
Tomas Carbonell
Henry Ferland
Jeremy Fincher
Steve Flint
Sara Hayes
Mitch Hescoc
Adrienne Hollis
Tim Hunt
Lee Logan
Steven Marcus
Eric Massey

Gillian Mittelstaedt
Heather Olson
Jacob Palmieri
Stuart Parker
Mike Pring
Clay Pope
Kim Scarborough
Kris Ray
Max Sherman
Jamie Song
Victoria Sullivan
Bob Wyman

* Other participants in attendance at this virtual meeting included staff from the EPA and SC&A Inc. (EPA contractor).

Welcome, Introduction and Overview

Mr. Bob Meyers, one of the workgroup co-chairs, opened the discussion by explaining that the workgroup is interested in input around climate and greenhouse gases in terms of the accomplishments of the CAA, future challenges, and recommendations for how to use the CAA to address those issues. Mr. Meyers then briefly described how climate and the CAA have historically interacted, starting with the Supreme Court decision in *Massachusetts v. EPA* in 2007 and the endangerment finding that was finalized at the end of 2009. Mr. Meyers also noted that most EPA activity in this area has focused on mobile sources; for example, the light and heavy-duty vehicle standards established under Obama, and the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule under Trump. Finally, Mr. Meyers added that the workgroup discussion to date had focused more on future challenges than past successes, that the interpretation of accomplishments might be controversial, and that they are interested in hearing more about how to deal with other greenhouse gases that are not regulated as criteria air pollutants.

Discussion Topics

Areas of discussion and comments made during the session included the following:

- The power sector remains a major source of climate pollution.
- There is a lack of resources for states to address climate change.
- There are issues regarding the scope of the EPA’s authority to address this issue. Also, there is a likelihood of the EPA being challenged in court for any rulemakings in this area.
- Due to uncertainty around how regulations will change, industries lack the ability to plan for the future.
- For carbon offsets, there are questions about how they will be defined, generated, accredited, traded, and standardized nationally.
- Replacing natural gas with hydrogen fuel will increase NOx emissions, so this should not be considered a silver bullet solution.
- The goal should be to decrease GHG emissions, not just shift them internationally; border adjustments could be an important factor.
- There is academic dispute around the models for conducting life-cycle analyses. For example, there are problems with double counting and determining where to place credit or burden. Someone needs to take a leadership role in standardizing this.
- The EPA is limited by its budget and smaller staff. The report should acknowledge not only potential roles for the EPA to play, but also the Agency’s capacity to play those roles.
- There has been a decline in public understanding and agreement around climate change.
- There is a need for interagency cooperation on this issue.
- On the part of the energy providers, developing new technologies is important.
- It is critical to have good data and information.

Suggestions for Solutions

Breakout session attendees offered the following suggestions regarding the use of the CAA to address climate and greenhouse gas issues in the future, which the workgroup could choose to incorporate into the report as proposals for how the EPA can proceed:

- The report should send the clear message that climate change is an existential threat that the EPA needs to address in a substantial and serious way.
- The EPA has clear authority to regulate mobile sources and methane emissions from oil and gas production and can go further in these areas.
- The EPA should be willing to be aggressive on this issue when Congress is deadlocked.
- One task the EPA could take on now is in enhancing the available information tools.

- The lifecycle of industries and products should be considered in determining total carbon emissions from the production and use of that product.
- Tools should be devised to help consumers choose between low and high-carbon footprint products and services.
- Voluntary corporate activities should be incentivized.
- The EPA should partner with states to provide clearinghouses, model rules/legislation, and other support. This way, the EPA can take advantage of more flexible state authorities to achieve objectives that are less clearly authorized under the CAA.
- Regarding authority, the EPA could consider trade tools; use section 115 that provides reciprocity by trading partners.
- One strategy to reduce GHGs could be to regulate other pollutants for their GHG co-pollutant benefits (i.e., address GHGs by targeting specific CAPs).
- To help industries plan and comply more effectively, the EPA should provide consistent directions, long term goals, and transparency.
- The EPA should consider consumer and investor demand for cleaner energy and how to incentivize that transition.
- The EPA could support research and development programs to improve technological capabilities.
- In developing any new regulations or programs, the EPA should be careful to avoid conflicting or overlapping with other Federal and state programs or regulations.
- To improve resource efficiency for EPA and industries, the permitting process should be streamlined.
- The EPA should take a leadership role in standardizing a system for accounting and trading offsets and carbon credits and work with other agencies and states on this issue.
- The EPA should improve education about climate change to build public support, address declining consensus about climate change and debunk increasing misinformation.

Breakout Group Session #1b: Permitting

Moderator: Shannon Broome

Attendees*:

Natalene Cummings

Veronica Figieroa

Gail Good

Robert Hodanbosi,

Andrew Hoekzema

Jason Howanitz,

Dan Nickey

William Spratlin,
Mary Uhl

* Other participants in attendance at this virtual meeting included staff from the EPA and SC&A Inc. (EPA contractor).

Welcome, Introduction and Overview

Everyone was welcomed to the meeting and introductions were made by workgroup members in attendance of the first breakout group session on the topic of Permitting. The moderator laid out the general objectives of the breakout group session. These objectives include recognizing successes in permitting, identifying current/future challenges related to permitting, and discussion how these topics would be written up in the anniversary report.

Discussion Topics

Areas of discussion and comments made during the session included the following:

- The Prevention of Significant (PSD) framework is a great accomplishment.
- The Title V program is another accomplishment made in permitting under the CAA.
- An additional success of CAA permitting is the small business assistance program under the Title V program. Specifically, the small business assistance program is included under section 507 of the CAA and is funded by the fees generated under the Title V program. Prior to permitting, there was no support for small businesses, and this has been a tremendous improvement. The small business assistance program gives direct grants to facilities to install controls, and the CAA is the only mechanism for direct funding.
- Additional successes under CAA permitting include the tribal minor source review program and funding made available for tribal governments.
- With the Title V program funding based on emissions, and with emissions going down (which the commenter noted is great), available funds are also going down which is already an issue in some states where facilities and/or power plants have shut down.

Suggestions for Solutions

Breakout session attendees offered the following suggestions regarding the use of the CAA to address permitting issues in the future, which the workgroup could choose to incorporate into the report as proposals for how the EPA can proceed:

- One suggestion regarding funding was to revise the CAA, however other attendees expressed concern with opening this issue back up.
- States could be encouraged to collect fees above the minimum to fund their permitting programs. it is at the States' discretion to collect more than the presumptive minimum.

- The Title V program could be re-designed to collect fees based on the sources it is covering, *i.e.*, “category” fees (*e.g.*, electric generating units, etc.) in order to collect fees for what the work really is.
- For permit streamlining, the Ohio EPA serves as a good model the EPA could use or point to other state agencies to follow how to streamline permitting.

Breakout Group Session #2a: Environmental Justice (EJ)

Moderator: Gillian Mittelstaedt

Attendees*:

William Bahnfleth,
 Tomas Carbonell
 Natalene Cummings
 Jeremy Fincher
 Deana Gonzales
 Zachary Good
 Sara Hayes
 Mitch Hescoc,
 Adrienne Hollis
 Jason Howanitz
 Eric Massey
 Mary Peveto
 Kim Scarborough
 Mary Uhl,

* Other participants in attendance at this virtual meeting included staff from the EPA and SC&A Inc. (EPA contractor).

Welcome, Introduction and Overview

Ms. Mittelstaedt welcomed everyone to the meeting. She noted that the EPA specifically requested EJ to be included in the report. She also mentioned that in the survey sent to the CAAAC members, comments were received that emphasized the importance of making EJ programs transparent, sensitive to community interests, and driven by scientific and economic information. She remarked that there has been a lot of change and development in conversation/understanding of EJ since the CAA was created. Since that time, the EPA has created the EJ office, EJ-specific grant programs were established, EJ priorities were integrated into other funding opportunities, data collection and modeling was developed for EJ purposes, and collaborative partnerships have been established (NEJAC, Federal Interagency Workgroup on EJ). Ms. Mittelstaedt then requested input from the attendees regarding accomplishments and future challenges and solutions related to the CAA and EJ.

Discussion of Topics to Include in the Report

Areas of discussion and comments made during the session included the following:

- Education is important in helping communities understand the issues.
- The EPA needs to think about how to help impacted communities, how to view problems from perspectives other than just economic/business-oriented and how to involve communities in decision-making.
- Accessibility/affordability of monitoring technology/data is an issue.
- It is important for air monitoring to be conducted in communities and not only at the facility fence line.
- Sometimes communities are polluted not by a single large source, but many smaller sources, which are more difficult to regulate.
- There are differences in how states approach EJ issues, which is not standardized or consistent, and some are more aggressive than others.
- There is a lack of regulatory authority or CAA language to tackle some issues.
- There are limits to relying on monitoring data alone to determine whether there is an issue in a community. The data is not always representative.
- EJ is a huge topic that encompasses many other issues and affects different groups of people; covering it adequately will necessarily make the report longer, but this is still important to do.
- Enforcement is important.

Suggestions for Solutions

Breakout session attendees offered the following suggestions regarding the use of the CAA to address EJ issues in the future, which the workgroup could choose to incorporate into the report as proposals for how the EPA can proceed:

- The EPA should strengthen its National Environmental Justice Advisory Council (NEJAC) and the Federal Interagency Workgroup on EJ and revisit how people are chosen for the NEJAC. There has been criticism that it currently is based more on likeability than qualifications.
- The EPA should focus on providing a just transition for fossil fuel workers.
- To improve the environment in EJ communities, the EPA should consider all actions, from planting trees to electrification of bus lines, and everything in between.
- The EPA should encourage community engagement and empowerment to make communities part of the processes and solutions.

- There needs to be recognition of the limits of what air pollution agencies can actually do, for example, redlining is out of their control.
- There has been a lot of conversation and planning around EJ, but real action is also needed to solve problems.
- The EPA should work to find ways to incorporate citizen science into their efforts.
- In the report, EJ should be integrated across all issues rather than in a separate subsection.
- EJ concerns and cumulative impacts should be integrated into the standard-setting process under the CAA.
- The rulemaking offices at the EPA need to work with other offices within EPA as well as the Department of Justice (DOJ) to make sure EJ standards are enforced. There is also a need for something that will work on both state and federal levels.
- Better support and resources should be provided to state and local agencies beyond just documents and website materials.
- The EPA should allow more opportunities for communities to participate in the public comment process on rulemakings.

Breakout Group Session #2b: Mobile Sources

Moderator: Bob Meyers

Attendees*:

Bob Wyman
 Clay Pope
 Jamie Song
 Steve Flint
 Steven Marcus
 Stuart Parker
 Victoria Sullivan

* Other participants in attendance at this virtual meeting included staff from the EPA and SC&A Inc. (EPA contractor).

Welcome, Introduction and Overview

Everyone was welcomed to the meeting and introductions were made by the attendees of the first breakout group session on the topic of Mobile Sources. The moderator, Bob Meyers, began by summarizing the discussions the workgroup has had so far regarding the successes and challenges of the Clean Air Act regarding emissions from mobile sources.

Discussion Topics

Areas of discussion and comments made during the session included the following:

- One major success in this area has been getting the lead out of gasoline.
- Another key success for mobile sources has been the increases in stringency of criteria pollutant standards for fuels. Fuel sulfur content has also been greatly reduced.
- Another success has been the advancement in technology and especially electrification, which was enabled by Sections 209 and 177 of the Act.
- Fuel standards have effects as soon as the fuel is in place, rather than requiring a waiting period for the fleet to turn over to realize emissions reductions.
- Gasoline is still the largest source of atmospheric benzene, and motor vehicles are the largest source of GHGs.
- There may be a downturn in mass transit that lasts forever due to COVID.
- One attendee noted that if the EPA is not the one to set standards, the question is how the EPA can encourage standardization. Another attendee commented that this is not a new issue, and the marketplace will likely fix it. There was discussion about how the better technology does not always win, such as in the VHS vs. Betamax battle.

Suggestions for Solutions

Breakout session attendees offered the following suggestions regarding the use of the CAA to address mobile source pollution issues in the future, which the workgroup could choose to incorporate into the report as proposals for how the EPA can proceed:

- Vehicle miles traveled (VMT) grows when the economy grows, and it is best not to try to contain VMT through policies or regulations.
- There is an increasing consensus that the future light-duty fleet will be electric, but for trucks, there will likely be a switch to other fuel sources. There needs to be thought given to long-term standards that align with these realities and that minimize the investments needed to improve old technologies.
- The EPA may need to decouple itself from the National Highway Traffic Safety Administration (NHTSA) in developing standards.
- Regarding vehicle electrification and the needed infrastructure, the EPA should not be picking technology winners or losers.
- Agencies should convene discussions on how to move forward with a modern transportation system. A broad-based dialogue would likely be fruitful, is absolutely warranted, and should be recommended in this report.
- There should be some discussion in the report about the transition in original equipment manufacturers (OEMs) to hydrogen fuel cell or battery electric vehicles (BEVs).

- The US should move toward zero emission vehicles (ZEVs) so that the issue is addressed here rather than in China.
- To encourage a proliferation of BEVs, there needs to be interoperability in the systems.
- The EPA could subsidize charges to encourage ZEVs and BEVs.
- While discussion today so far is suggesting a shift in the source of fuel for mobile sources to utilities, the report should acknowledge that the workgroup is not suggesting driving the oil and gas industry out of business.
- Any new system needs to recognize early adopters of technologies and account for those that have had sunk costs rather than just recognizing the new players.
- The EPA could work with the Federal Energy Regulatory Commission (FERC) to ensure that renewable energy is used. The goal is to reduce emissions in total, not just shift them from the mobile sources to utilities.

Breakout Group Session #2c: Measurement and Sensors

Moderator: Gail Good

Attendees:

Veronica Figueroa
Robert Hodanbosi,
Andrew Hoekzema
Gary Jones
Dan Nickey
Kris Ray
William Spratlin

* Other participants in attendance at this virtual meeting included staff from the EPA and SC&A Inc. (EPA contractor).

Welcome, Introduction and Overview

Everyone was welcomed to the second breakout group session on the topic of measurement and sensors. The general objectives were laid out, which were to recognize successes and identify future challenges related measurement and sensors. The moderator also wanted to make sure the group discussed the role of the EPA in this work, the citizen aspect, as well as the area of communication.

Discussion Topics

Areas of discussion and comments made during the session included the following:

- There has been a lot of progress in this area, from using wet chemistry in the beginning to computer analysis today.
- There has also been notable advancement in sensor technology.
- AirNow Fire is an example of how data from low-cost sensors are used to track and present air quality to the public. It is exciting that there is emerging technology that supplements existing stationary monitors that are supposed to represent a whole area.
- Regarding personal sensors, it is a challenge to determine exactly how the data obtained can be used.
- One issue with personal sensors is the timeframe used when collecting data and how that timeframe is related to public health data. Another issue is determining the quality of the data.
- There is an increasing trend in use as these sensors become more and more available. There is also better sensor technology.
- The PurpleAir personal air pollution monitor is an example of a new sensor that has been recognized by air agencies. The EPA can influence the market and establish guidance to steer development and progress in this area of personal exposure monitors.

Suggestions for Solutions

Breakout session attendees offered the following suggestions regarding the use of the CAA to address measurement and sensor issues in the future, which the workgroup could choose to incorporate into the report as proposals for how the EPA can proceed:

- It would be helpful for the report to include background information regarding the improvements that have been made in this area.
- There needs to be guidance around sensor data parameters.
- The EPA needs to continue to consider how to communicate sensor data to the public.
- The EPA should work with state and local air agencies in this area. The EPA already requires states to review their monitoring networks.

At the conclusion of the session, it was noted that the report will identify successes and highlights around measurements and sensors and advancement in technology. It was also noted that as discussed during the session, particulate measurements of PM10 and PM2.5 continually go to AirNow. It was further noted that the EPA can be more precise now with the improvements that have been made in measurement technology.

Breakout Group Session #3a: Attainment

Moderator: Gail Good, Andrew Hoekzema

Attendees*:

Natalene Cummings

Veronica Figueroa

Steven Flint

Zachary Good

Robert Hodanbosi

Gary Jones

Michael Lebeis,

Eric Massey

Bob Meyers

Stuart Parker

Clay Pope

Kim Scarborough

William Spratlin

Victoria Sullivan

Mary Uhl,

* Other participants in attendance at this virtual meeting included staff from the EPA and SC&A Inc. (EPA contractor).

Welcome, Introduction and Overview

Ms. Gail Good, one of the workgroup co-chairs, opened the discussion by reviewing the objectives for the session: first, looking retrospectively at the accomplishments of the CAA, and second, considering future challenges and solutions related to the CAA and attainment. Mr. Andrew Hoekzema, one of the workgroup members, added that the workgroup's discussions had mostly focused on the NAAQS review process, area designations, SIP requirements, interstate transport, and transportation conformity. Mr. Hoekzema requested input related to those specific issues from the attendees.

Discussion Topics

Areas of discussion and comments made during the session included the following:

- The NAAQS reviews typically take many years, and it is an issue that they are not done on schedule.
- A question is what should be done with existing NAAQS when revising a NAAQS (revoke?).
- Where science indicates there is no clear health threshold, it is not clear how the pollutants should be handled.

- It is not clear how areas that are not attaining a NAAQS but were not designated nonattainment after the last review process should be handled. There is no clear timeline or requirement for designation.
- There is still no comprehensive framework for dealing with interstate transport.
- It is not clear whether transportation conformity work is actually producing environmental benefit. Perhaps it could be done differently.
- International transport plays a larger role as the NAAQS are lowered.
- CAA provision 179b only freezes requirements but does not encourage attainment, and it can be a burden to do the necessary inventories.
- There is an excessive amount of documentation and resources required to report exceptional events. This is perhaps not the best use of state resources if the EPA can track, provide information, or help flag potential exceptional events.
- There is a lack of consistency in reviews of exceptional events reports. This can present a potential equity issue in how they are evaluated.
- The impacts of weather and climate change on the concentrations of certain pollutants, especially ozone, is an issue for NAAQS attainment.
- Domestic transportation is an issue. There are impacts from upwind states on downwind states. This is especially an issue in the northeast. There is limited ability to sue upwind states.
- There are merits to modeling and monitoring. Neither provides a complete picture, and there are different limitations and benefits of each.

Suggestions for Solutions

Breakout session attendees offered the following suggestions regarding the use of the CAA to address attainment issues in the future, which the workgroup could choose to incorporate into the report as proposals for how the EPA can proceed:

- The EPA should determine whether it can use CAA subpart 1 for ozone nonattainment or the more prescriptive subpart 2.
- The EPA needs to ensure that the tools are in place for states dealing with international transport for attainment of the NAAQS and regional haze rules. One area where help is needed is in the determination of the proportion of nonattainment that is due to international transport, especially since international data can sometimes lag by a decade or more.
- Additional modeling and projections from the EPA would be helpful to state and local governments to use in developing SIPs or making predictions regarding attainment.

- The EPA needs to standardize and streamline how exceptional events are evaluated and also provide more assistance to states regarding exceptional events.
- In the NAAQS review process, the form of the NAAQS should be reassessed in addition to the level. This would be appropriate, and there could be benefits to changes in the form.
- The EPA should consider conducting a rulemaking to define how attainment designations are made. This would allow for public comment on the process and could be an action to codify the current guidelines.
- Some parts of the designation guidelines are out of date and need updating, such as jurisdictional boundaries.

Breakout Group Session #3b: Toxics

Moderator: Shannon Broome

Attendees*:

Tomas Carbonell
 Jeremy Fincher
 Jason Howanitz
 Robert Meyers
 Dan Nickey

* Other participants in attendance at this virtual meeting included staff from the EPA and SC&A Inc. (EPA contractor).

Welcome, Introduction and Overview

Everyone was welcomed to the third breakout group session on the topic of air toxics. The main objectives were to recognize successes and identify future challenges related to air toxics. The moderator summarized some of the primary programs that cover toxics, including the maximum achievable control technology standards (MACT) program, the residual risk and technology review (RTR) program, and the urban air toxics program. The various programs related to air toxics are covered under different subsections of CAA section 112.

Discussion Topics

Areas of discussion and comments made during the session included the following:

- One success is that the EPA’s “once-in, always-in” policy that had hindered pollution prevention for hazardous air pollutants (HAP) for many years has recently been rescinded.

- Another success is that the EPA has issued many RTR rules.
- As part of a new effort, the EPA has started The School Air Toxics Monitoring Initiative (note: this initiative will monitor the outdoor air toxics around schools).
- The National Air Toxics Assessment (NATA) was recognized as a success by the group, but the group also mentioned that there are remaining opportunities in this area.
- Another area of progress, but that was identified as also an opportunity, is the implementation of the fence-line air monitoring program at petroleum refineries.
- A future challenge or area for growth is with how residual risk is characterized and communicated.
- The Mercury and Air Toxics Standards (MATS) rule has been finalized.

Suggestions for Solutions

Breakout session attendees offered the following suggestions regarding the use of the CAA to address air toxics issues in the future, which the workgroup could choose to incorporate into the report as proposals for how the EPA can proceed:

- Concerning NATA, there is a time lag that needs to be shortened because the emissions data is outdated by the time it is published.
- NATA needs to include accurate data to avoid the illusion of higher risk levels than what really exists.
- There is a need for a plain language translation of regulations. For example, there are a series of rules that cover chemical plants that cite and refer to several other rules, which make the rules difficult to follow and understand.
- It would be beneficial to show the before and after results of specific rules across the country.
- The EPA could expand fence-line monitoring programs to other facilities or industries.
- There are legitimate concerns related to hot spots, which is the confluence of emissions from many sources. This has not been the focus of RTRs, but it is an important issue.

Breakout Group Session #3c: Other (including indoor air)

Moderator: Gillian Mittelstaedt

Attendees*:

Adrienne Hollis
 William Bahnfleth
 Kris Ray
 Mary Peveto
 Sara Hayes

Steven Marcus

* Other participants in attendance at this virtual meeting included staff from the EPA and SC&A Inc. (EPA contractor).

Welcome, Introduction and Overview

Everyone was welcomed to the third breakout group session on the topic of indoor air and other issues. The main objectives were to recognize successes and identify future challenges related to indoor air and to also discuss other issues that attendees wished to introduce. The moderator, Gillian Mittelstaedt, summarized some of the primary discussions the workgroup has had so far regarding the successes and challenges of the Clean Air Act regarding indoor air quality.

Discussion Topics

Areas of discussion and comments made during the session included the following:

- Considering EJ, energy efficiency has a role to play for indoor air quality, such as in having affordable air conditioning to filter the air.
- The EPA needs teeth or regulatory power to address indoor air and to also address other areas, such as extreme events and climate change.
- In Eastern Washington, exposure to wildfire smoke is the biggest concern. Reducing PM, as well as CO and CO₂, exposure on a long-term basis would be helpful rather than thinking about these exposures on a 1-hour or 8-hour basis. The first step would be to have everyone develop a smoke-ready plan for their buildings and vehicles.
- Work is being done in Oregon to try to protect students in schools from pollution, such as from wildfires. Engineering standards for HVAC systems are needed to address pollution from outdoor air infiltration and indoor air recirculation.
- The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has ventilation standards that specifically reference the NAAQS, but ASHRAE is a bit constrained related to ambient air quality and also for events like wildfires.

Suggestions for Solutions

Breakout session attendees offered the following suggestions regarding the use of the CAA to address indoor air issues in the future, which the workgroup could choose to incorporate into the report as proposals for how the EPA can proceed:

- The EPA could drive the building industry toward developing engineering standards for HVAC systems to address pollution infiltration and recirculation.
- COVID-19 will spark standards related to infection control, and this present a prime opportunity to also develop related standards for indoor air quality. It was noted that

some of the largest outbreaks of COVID-19, such as in Italy, were associated with high levels of ambient PM.

- While it does not appear that the CAA could provide authority to address indoor air quality through improved energy efficiency, energy efficiency is a prime way to address climate change. The EPA could provide leadership, such as in SIP planning, to encourage energy efficiency, which could produce co-benefits for indoor air.
- The EPA should determine how energy efficiency credits can be given in SIPs.
- Due to the CAA's limitations, consideration should be given to authorities that could improve indoor air by way of improving outdoor air.
- More medical doctors should be involved in the process of advising the EPA on indoor air quality and other pollution-related issues.

Report Out and Discussion

Mr. Shoaff welcomed everyone back to the main meeting and asked the co-chairs to direct how they would like the sharing session to go. Mr. Meyers responded that it would make sense to follow the order on the agenda and asked how much time they would have. Mr. Shoaff answered that to cover eight sessions in 40 minutes, each session could have five minutes, and he requested that the climate and GHG session go first.

Mr. Meyers presented on behalf of the climate and GHG group. He noted that several members of the session emphasized the need to treat climate change as an existential threat and the importance of the EPA being willing to take substantial actions, although it would obviously be necessary to coordinate with other agencies. Some suggestions included relying on section 115 of the CAA in addition to previously used authorities. The EPA could also consider co-pollutants - that is, targeting other emissions that are often associated with CO₂ in order to achieve GHG reductions. The group also discussed life cycle and GHG accounting, such as for building materials, or putting labels on consumer products. Mr. Meyers concluded that the discussion covered a lot of ground, the challenge will be understanding that there are going to be a diverse set of perspectives on what the EPA can do under the authority of the CAA. The general consensus is that climate change is a major challenge, and the EPA should continue to invite input from CAAAC on this subject.

Mr. Shoaff asked if anyone had questions for Mr. Meyers. Ms. Broome asked if he could clarify what he meant by product labelling. Mr. Meyers responded that the group discussed what the private sector has done in terms of carbon accounting, specifically for wood products used in construction, and that one way of thinking about it would be considering carbon intensity.

Next, Ms. Broome presented on behalf of the permitting breakout group. The group noted that the frameworks for permitting and attainment were accomplishments, as well as the minor NSR programs and the ability of states to tailor them according to local needs. They also discussed the small business assistance programs, which are unique to the CAA and helpful. In terms of challenges, the structure of fees will need to be reconsidered because revenue will decline as

emissions go down. Permit trading, PSD monitoring requirements, transparency around modeling, and access to data were identified as other challenges. There were no questions from the group for Ms. Broome.

Next, Ms. Mittelstaedt presented on behalf of the EJ group. For accomplishments, they discussed the establishment of the EJ office, specific programs and grants, and the fact that EJ priorities appear across funding sources. For future challenges, they identified education, the task of learning from impacted communities, inconsistencies in enforcement across state and local areas, and the fact that engagement still needs to become more robust to address issues.

Mr. Meyers then presented on behalf of the mobile sources breakout group. For accomplishments, they identified vehicle technology improvements, tighter standards, addressing ozone through catalytic converters, sulfur and CAP standards, and fuel programs. For future challenges, they discussed the California waiver, electrification, infrastructure equity, access to charging, how to reward early adopters, and the geographic shift in emissions from zero emission vehicles to utilities. Mr. Meyers also mentioned their conversation about the role of the private sector and demand-driven changes.

Next, Ms. Good presented on behalf of the measurement and sensors group. The group focused on monitoring technology and acknowledged that it has come a long way. Some of the challenges are focused on the use of technology, including accuracy, standardization, and how measurements are communicated. For successes, they talked about the Air Quality Index. However, Ms. Good stated that it would be helpful to get more updates on the work EPA is currently doing. Mr. Hoekzema, who also facilitated the session, added that one idea they discussed was to make the placement of regulatory monitors part of the review process.

Mr. Hoekzema then presented on behalf of the attainment breakout group. He stated that there was good feedback on four out of five issues that they wanted to discuss. For NAAQS reviews, the EPA has tended lately to not evaluate potential changes to the form of the NAAQS, but in light of higher year-to-year variability, international impacts, and climate change, they proposed that the EPA could spend more time and effort looking at the standards' formats to account for limitations in their ability to control pollution. For designations, the EPA has guidance documents that govern criteria and processes, but the group suggested that it might be more appropriate to do this in a rulemaking. Additionally, they discussed the merits of monitors vs. modeling, out of cycle designations, and using modeling to classify ozone designations rather than the current system, which causes marginal classifications and does not encourage better planning. For SIP requirements, the group discussed the lack of offsets for existing nonattainment areas and the need for more information about the extent of influence of international emissions, especially for smaller states that can't afford to conduct their own modeling. For exceptional events, there is a huge amount of documentation required for just one event, and Mr. Hoekzema indicated that some people had thoughts about the equity of how those events are handled across states and regions and whether it is appropriate to give leeway to states who avoided nonattainment designations as a result of these events. The group also discussed the need to facilitate the ability of states to remove old controls that are now unnecessary. Finally,

for interstate transport, the group thought it was important from an equity standpoint to think about timing, the extent to which states are impacted by other states, and how to prevent states from needing to overcompensate for others.

Next, Ms. Broome presented on behalf of the toxics group. Overall, she described there being consensus that the EPA has accomplished a great deal by conducting the MACT reviews on an aggressive schedule. Other accomplishments include residual risk determinations and analyses, pollution prevention, the school air toxics initiative, the EPA's practice of recognizing impacts on small businesses and communication with businesses, and the urban air toxics strategy. Future challenges identified include dealing with the time lag of NATA, improving resource allocation to get more accurate data, creating plain language translations of regulations, assessment of the effectiveness of rules through future monitoring and fence-line monitoring, managing the impacts of area source rules on small businesses, and the MATS rule.

Lastly, Ms. Mittelstaedt presented on behalf of the "Other" breakout group, which was created to cover other topics that aren't related to specific statutes or provisions of the CAA, including indoor air quality. The group primarily discussed indoor air, climate change, and EJ, which Ms. Mittelstaedt noted are all interconnected issues. Although the CAA does not explicitly address indoor air, intrusion rates indicate that outdoor pollutants generally enter indoor spaces at concentrations up to 70%. Given that we spend about 97% of our time in homes, schools, vehicles, and workplaces, it is very important for the EPA to consider how to regulate ambient spaces. In terms of challenges going forward, climate change was identified as a major issue that will affect many areas over time, including by driving people indoors more and exacerbating EJ issues. Further integration and collaboration with the medical community were also proposed. Ms. Mittelstaedt concluded that these issues are important for the EPA to address, but it is not clear whether the levers of the CAA are appropriate to use.

Wrap-Up and End of Meeting

Mr. Shoaff thanked each of the presenters and asked whether the co-chairs had any comments they wanted to make regarding the next steps for the workgroup and the report. Mr. Meyers responded that they need to begin actually writing the report, and while they already have a small amount of content prepared, this will be a huge task, and they're not sure how long it will take given not only the quantity of material but also the complexity of the issues being addressed. Mr. Meyers reiterated that they want the report to be as helpful, substantial, insightful, and complete as possible, so they invite participation by the whole CAAAC throughout the process. Ms. Mittelstaedt concurred with this assessment and recognized that there is a huge wealth of knowledge and experience among CAAAC members and taking advantage of that resource will make the report much better. She added that including perspectives from the field will be very useful for EPA.

Mr. Shoaff asked if there were any other comments. Mr. Hoekzema thanked the co-chairs for their help and the EPA for allowing the workgroup to have such flexibility in formulating the report. He also encouraged the other CAAAC members to view the report as a huge opportunity to contribute their ideas and perspectives to a report that will be lasting and hopefully impactful.

He requested that they follow up and share more information later if they want. Mr. Hoekzema then expressed that he hopes to present a draft and get approval at the next CAAAC meeting. Mr. Shoaff noted that the timing is flexible, and it would be great to be able to host the meeting in person, although they don't know the time horizon yet. He added that the EPA would stand by to assist with the report however they can.

Mr. Flint then pointed out that workgroup chairs can start by reaching out to the people who participated in each breakout group to help with the report writing. He also expressed agreement with Mr. Hoekzema's comment, stating that this is an opportunity for everyone to accomplish what he believes they joined the committee to do: put forth recommendations for the EPA to continue responding to challenges through the provisions of the CAA. Mr. Flint also expressed that he was disappointed by the previous day's meeting when Ms. Austin was not able to stay and participate in discussion longer.

Mr. Shoaff thanked Mr. Flint for his comment and proposed to wrap up the meeting. He thanked everyone for their time and participation and expressed enthusiasm about seeing their recommendations and advice through the report. Mr. Shoaff also reminded members that they welcome feedback on the issues that were discussed on the first day and thanked the workgroup co-chairs and members for their hard work. Finally, he thanked Mr. Jonathan Lubetsky, Ms. Whitehurst, and Ms. Stobert for their support with the meeting, wished everyone a healthy holiday season, and stated that they would be in touch about scheduling for the spring meeting. Ms. Whitehurst also thanked everyone, reminded them to stay tuned for the date of the next meeting, and encouraged them to email her if they have questions. Ms. Whitehurst then adjourned the meeting.

Attachment 1

CAAAC Meeting Attendance List	
Committee Members	
Name	Organization
Dr. William Bahnfleth	Penn State University
John Booher	Briggs and Stratton
Shannon Broome	Hunton Andres Kurth
Deborah Brown	American Lung Association
Tomas Carbonell	Environmental Defense Fund
Natalene Cummings	Forest County Potawatomi Community
Veronica Figueroa	Mosaic Fertilizer
Jeremy Fincher	Sac and Fox Nation
Steven Flint	New York Department of Environmental Conservation
Gail Good	Wisconsin Department of Natural Resources
Sara Hayes	American Council for an Energy-Efficient Economy
Mitchell Hescox	Evangelical Environmental Network
Bob Hodanbosi	Ohio Environmental Protection Agency
Andrew Hoekzema	Capital Area Council of Governments
Dr. Adrienne Hollis	Union of Concerned Scientists
Jason Howanitz	Jefferson County Department of Health
Timothy Hunt	American Forest and Paper Association, American Wood Council
Elizabeth Jacobs	Akwesasne Housing Authority
Gary Jones	Specialty Graphic Imaging Association Foundation
Dr. Steven Marcus	Rutgers University
Eric Massey	APS
Robert Meyers	Crowell and Moring
Gillian Mittelstaedt	Tribal Healthy Homes Network
Daniel Nickey	Iowa Waste Reduction Center Business and Community Services
Mary Peveto	Neighbors for Clean Air
Clay Pope	Consultant
Kris Ray	Confederated Tribes of the Colville Reservation
Maria Robinson	Massachusetts House of Representatives
Kimberly Scarborough	Public Service Electric & Gas
Dr. Max Sherman	Lawrence Berkeley National Laboratory
John Shoaff	U.S. Environmental Protection Agency
William Spratlin	Aptim Environment and Infrastructure
Ted Steichen	American Petroleum Institute

Vickie Sullivan	Duke Energy
Mary Uhl	Western States Air Resources Council
T.J. Wallington	Ford Motor Company
Shanika Whitehurst	U.S. Environmental Protection Agency
Robert Wyman	Latham and Watkins, LLP, National Climate Coalition
Other Attendees	
Anne Austin	U.S. Environmental Protection Agency
Wayne Cascio	U.S. Environmental Protection Agency
David Choi	U.S. Environmental Protection Agency
Rachel Feinstein	(not identified)
Deana Gonzales	(not identified)
Zachary Good	(not identified)
David Harlow	U.S. Environmental Protection Agency
Meagan Harvey	(not identified)
Catrice Jefferson	U.S. Environmental Protection Agency
Miles Keogh	(not identified)
John Kinsman	(not identified)
Mike Koerber	U.S. Environmental Protection Agency
Laura Kolb	U.S. Environmental Protection Agency
Michael Lebeis	(not identified)
Jonathan Lubetsky	U.S. Environmental Protection Agency
Wendy McQuilken	U.S. Environmental Protection Agency
Heather Olson	U.S. Environmental Protection Agency
Jacob Palmieri	(not identified)
Stuart Parker	(not identified)
Brendan Philip	(not identified)
Mike Pring	(not identified)
Sean Reilly	(not identified)
David Rowson	U.S. Environmental Protection Agency
Kathryn Sargeant	U.S. Environmental Protection Agency
Jamie Song	U.S. Environmental Protection Agency
Whitney Tull	(not identified)
Amy Vasu	U.S. Environmental Protection Agency
Paul White	U.S. Environmental Protection Agency
Contractor Support	
Lesley Stobert	SC&A, Inc.
Margaret Overton	SC&A, Inc.
Tanya Parise	SC&A, Inc.