

Responses to Comments Received on the Draft PM_{2.5} Exceptional Event Demonstrations

December 20, 2024 – January 21, 2025

On December 20, 2024, the Georgia Environmental Protection Division (EPD) issued a public notice requesting comments on Georgia's Draft PM_{2.5} Exceptional Event Demonstrations. The public comment period ended on January 21, 2025. On January 20, 2025, EPD received written comments from the Midwest Ozone Group. On January 21, 2025, EPD received three sets of written comments from Tall Timbers, the Southern Environmental Law Center, and the United States Environmental Protection Agency (EPA). A summary of the comments and EPD's responses have been provided below.

Midwest Ozone Group Comments

Comment: The Midwest Ozone Group ("MOG") is pleased to provide comments in support of these proposed demonstrations.

MOG fully supports the EPD request that the US EPA Administrator exclude the ambient PM_{2.5} concentrations measured at the Augusta, Columbus, Macon, Sandersville, Atlanta, and Rossville, Georgia, monitoring sites during all these documented events from calculations of annual PM_{2.5} design values and from other regulatory determinations.

As set forth in its proposed demonstrations, EPD has shown that the documented events caused the PM_{2.5} exceedances at the monitors in Augusta, Columbus, Macon, Sandersville, Atlanta, and Rossville, Georgia. EPD correctly notes that exclusion of the data on the relevant dates would result in attainment of the 2024 annual PM_{2.5} NAAQS at these monitors.

Congress has made it clear that data of the nature described in this proposed demonstration cannot and should not be used to implement a National Ambient Air Quality Standard and other matters of regulatory significance.

EPD Response: Georgia EPD appreciates the comments of support. These comments did not result in any changes to our final exceptional event demonstrations submitted to EPA on February 7, 2025.

Tall Timbers Comments

Comment: Please accept these comments supporting the subject Prescribed Fire Exceptional Event Demonstration prepared by the Georgia Environmental Protection Division (EPD).

This demonstration is an essential model for how prescribed fire Exceptional Events can be prepared for other sites struggling to achieve the new annual PM_{2.5} National Ambient Air Quality Standards. Other southeastern states and those western states where prescribed fire is slated to increase are likely to applaud this submission.

Notably, we support EPD's batching of prescribed fire events throughout the three- year reporting period used to establish the average for the annual PM_{2.5} standard. This logical approach reduces the burden on private landowners and public agencies working hard to apply prescribed fire for shared biodiversity benefits, reduced wildfire risk, and better managed air quality in our communities.

We also support the scope of analysis and the justifications you and your staff have provided to address the Exceptional Events Rule qualifications. These will be critical for other states faced with the same issues.

EPD Response: Georgia EPD appreciates the comments of support. These comments did not result in any changes to our final exceptional event demonstrations submitted to EPA on February 7, 2025.

Southern Environmental Law Center Comments

Comment: Protecting Georgians from Unsafe Levels of PM_{2.5} is Essential for Public Health.

The EE Demonstrations would carry significant consequences for communities living with PM_{2.5} levels above the standard. Exposure to fine particle pollution causes serious health problems. While even short-term exposure to fine particles can lead to these health issues, long-term exposure, which is experienced by people living in areas with high particle levels for many years, can lead to more serious consequences, such as reduced lung function, chronic bronchitis, diabetes, cancer, heart attacks, and premature death. Communities that are most at risk from particle pollution are those already suffering from pre-existing health hardships, and vulnerable populations such as communities of color, low-income communities, children, and older adults.

To combat these health burdens, EPA recently strengthened the annual health-based NAAQS for PM_{2.5} from 12 to 9 micrograms per cubic meter. The updated standard will prevent up to 4,500 early deaths and generate as much as \$46 billion in net health benefits in 2032. To deliver these health benefits to the people of Georgia, however, it is crucial that EPD properly identifies areas that are not meeting the new national standard by taking into consideration data that shows exceedances and violations.

EPD Response: Georgia EPD believes that areas meeting and not meeting the new annual PM_{2.5} NAAQS were properly identified in our letter from EPD Director Jeff Cown “Georgia’s Designation Recommendations for the 2024 Annual PM_{2.5} NAAQS” to EPA on February 7, 2025. Also, Georgia EPD believes that sufficient evidence has been presented to support the approval of our exceptional event demonstrations that were submitted to EPA via the State Planning Electronic Collaboration System (SPeCS) on February 7, 2025.

Comment: Prescribed Fires as Exceptional Events in Georgia

The EE Demonstrations make clear that Georgia has a problem managing smoke from prescribed fires to the extent necessary to comply with the new PM_{2.5} NAAQS standard.

EPA issued a series of guidance documents explaining how air agencies should prove exceptional event demonstrations resulting from prescribed fires. These documents envision a far smaller role for prescribed fires in exceptional events than EPD has set forth in the EE Demonstrations. In EPA’s view, prescribed fires “are generally less likely than wildfires to be extreme or have clear impacts on a monitored exceedance or violation” due to their controlled nature. But the EE Demonstrations, in contrast, point to prescribed fires as the cause of 88 exceptional event days at four different locations. EPA also anticipated that “multi-day exceedances or violations would rarely occur when a prescribed fire is properly managed.” But the EE Demonstrations identify eighteen multi-day fire events in Georgia, including one that extended for five consecutive days in Sandersville.

In short, Georgia has not controlled the impact of smoke from prescribed fire (and other open burning events) in the manner envisioned by EPA guidance or as described in the Georgia SMP. As a result, smoke from prescribed fire and other open burning is creating a persistent and

pervasive challenge to Georgia's ability to comply with the new PM_{2.5} NAAQS. The impact of prescribed fire smoke on air quality in Georgia does not appear to be exceptional at all; rather, it appears to be troublingly routine.

EPD Response: Georgia EPD disagrees with this comment. A large number of prescribed fires are necessary to maintain a healthy ecosystem and prevent catastrophic wildfires in Georgia. EPA does not limit the number of exceptional events that are eligible for approval. In addition, the Georgia EPD exceptional events demonstrations have followed EPA's guidance for identifying eligible days and have presented sufficient evidence to support the approval of our exceptional events demonstrations that were submitted to EPA via SPeCS on February 7, 2025.

Comment: The Prescribed Fire EE Demonstrations Do Not Provide the Necessary Support for Excluding the Identified Dates as Exceptional Events.

The Prescribed Fire EE Demonstrations do not provide the information necessary to show a clear causal relationship between the exceedances and prescribed fires on the identified dates, as is required by the Clean Air Act and EPA guidance.

EPD Response: Georgia EPD disagrees with this comment. The Georgia EPD exceptional event demonstrations have followed EPA's guidance for identifying eligible days and have presented sufficient evidence to support the approval of our exceptional event demonstrations that were submitted to EPA via SPeCS on February 7, 2025.

Comment: The Prescribed Fire EE Demonstrations must clarify whether the prescribed fire occurred on public or private lands.

As a threshold matter, the Prescribed Fire EE Demonstrations do not distinguish between prescribed fires conducted on public lands or on private property. Throughout its guidance documents, EPA distinguishes between prescribed fire on public lands from those on private property. Yet the EE Demonstrations do not distinguish between the two. The Prescribed Fire EE Demonstrations must clarify whether the site of all prescribed fires referenced in the demonstrations occurred on public lands or private property so they can be properly evaluated as potential exceptional events.

EPD Response: Georgia EPD disagrees with this comment. The EPA guidance does not require the exceptional events demonstrations to distinguish between prescribed fires conducted on public lands and on private lands. Both are covered under the Georgia Smoke Management Plan and both are eligible for exceptional events approval by EPA.

Comment: The Prescribed Fire EE Demonstrations lack information required for prescribed fire exceptional event demonstrations.

The Prescribed Fire EE Demonstrations lack information required by EPA guidance to support an exceptional event approval. EPA directs that exceptional event demonstrations for prescribed fires must provide the following information regarding the fire's nature and location in order to support an exceptional event finding:

1. geographical parameters of the fire, including latitude/longitude and physical description of the area(s) burned;
2. date of the burn(s) that is the subject of the demonstration;
3. the dates of past burns in the same area;
4. time of initial ignition;
5. approximate time of end of burn;
6. total acres burned; and
7. a description of dominant fuel type burned.

Without this information, it is impossible to understand how prescribed fire(s) may have contributed to the high PM_{2.5} levels measured at the relevant monitors.

Some of this information is included in Appendix B of each Prescribed Fire EE Demonstration, but none contain elements 3, 4, 5, or 7. Further, the appendices only include latitude/longitude information for a subset of the fires. These appendices must be supplemented with the required information to meet the threshold requirements for exceptional event demonstrations.

The Prescribed Fire EE Demonstrations must provide more information to establish the clear connection between the location, size, and type of burn events and the exceedance at a given monitor. The Prescribed Fire EE Demonstrations' Narrative Conceptual Model uses an aggregate approach, listing information from all Georgia Forestry Commission permits within 100 km of the monitor on the relevant date. But this information alone is not sufficient to demonstrate that one fire (or the cumulative impact of several fires) caused the exceedance. Simply listing all of the fires that occurred within 100 km on a given day does not capture the full picture. For example, the list may include fires that occurred downwind from the monitor, fires that were initiated too early or late to result in the monitor exceedances, fires that were too small to impact monitor readings over a long distance, or fires that involved fuel types or land management activities unlikely to result in PM_{2.5} readings.

Element 7 - EPA's requirement that states provide information regarding the dominant fuel type used in the prescribed fire - is particularly important in understanding the duration of the fire and the type of smoke it might produce. Without this type of information, it is impossible to understand a prescribed fire's impact on PM_{2.5} readings.

In other words, the information required in elements 1-7 above, which is largely absent from the Prescribed Fire EE Demonstrations, is crucial in understanding whether it was the prescribed fires that actually caused the exceedances at the monitor. Merely listing the number and size of fires in the absence of this other information is insufficient to establish the clear causal relationship required by regulations.

EPD Response: Georgia EPD disagrees with this comment. The EPA guidance does not require all information listed to be included. Georgia EPD has included the most important information from the list (latitude/longitude, dates of burns, and total acres burned). In addition, Georgia EPD added a new paragraph to the *Human Activity Unlikely to Recur at a Particular Location* section

describing the fire-dependent tree stand types found in the counties within a 100-km radius of the monitor.

Comment: Given the known limitations of HMS modeling, the EE Demonstrations must provide additional, corroborating information.

The EE Demonstrations rely on the National Oceanic and Atmospheric Administration’s Hazard Mapping System (HMS) smoke plume data to establish the impact of prescribed fire smoke on the exceeding monitors. However, recent research highlights the limitations of HMS smoke data in predicting the presence of ground-level smoke. Comparing HMS modeling to meteorological conditions observed at airports, research found the HMS modeling to be least accurate in predicting ground level conditions on days classified as “low smoke” days in HMS. Geographically, HMS modeling was found to be least accurate in the “West South Central, East South Central and South Atlantic” regions. In fact, the study recommends that “light smoke plumes should generally be excluded for a binary classification of smoke and non-smoke days at the surface.” Applying the findings of this research to the EE Demonstrations, the HMS modeling should not be taken as dispositive, particularly on days with low smoke conditions.

Even setting aside these limitations, the HMS data still does not support an exceptional event finding for several of the listed dates. For example, the HMS maps for Feb. 26-27, 2021, in Augusta show little evidence of prescribed fire smoke in the area.

The HMS maps for Augusta on April 27-28, 2021, show virtually no smoke within 100 km of the monitor site on the date of the exceptional event or the preceding day.

Other dates where little HMS smoke is present near the monitor include:

Augusta: 2/4/2021, 2/28/2021, 3/8/2021, 3/9/2021, 12/4/2021, 12/16/2021 and 12/8/2023;

Columbus: 2/8/2023 and 3/1/2023;

Sandersville: 1/15/2022, 10/25/2022, 11/19/2022, 1/2/2023, 1/8/2023, 1/17/2023, 1/29/2023, 2/7/2023, and 11/30/2023.

If the exceptional event requests are limited to dates where the HMS data shows medium or heavy smoke present in the vicinity of the monitors (as the International Journal of Wildland Fire research recommends), multiple other dates currently included in the Prescribed Fire EE Demonstrations should be removed.

The Prescribed Fire EE Demonstrations’ Narrative Descriptions also include a number of dates with relatively limited prescribed fire activity in the vicinity of the exceeding monitor. For example, the Augusta Prescribed Fire EE Demonstration claims that data from Dec. 4-6, 2021 should be excluded, but the Narrative Description for those dates lists only fifteen permits for 196 acres on Dec. 4th, thirteen permits for 70 acres on Dec. 5th, and no permits on Dec. 6th. These represent a small fraction of the fire activity reported on other exceptional events dates, which routinely involve over 100 permits and thousands of acres.

The HMS data provides no additional support for concluding that Dec. 4-6, 2021, were exceptional events. Instead, the HMS data shows low levels of smoke widely dispersed throughout the region on these days. Compared to other challenged dates, there is no reason to believe that the low level of prescribed fire activity on the dates would impact the monitors unless they were in close proximity to the exceeding monitor. Applying this example more broadly, a clear causal relationship cannot be shown for any dates on which the Narrative Descriptions identify “few” fires and the HMS data provides no corroborating evidence in the form of medium or high smoke levels in the immediate vicinity of the monitor. The EE Demonstrations should be revised to remove any dates in which there is a low level of prescribed fire activity (according to the Narrative Description’s permit summary) and the HMS data does not provide evidence of medium or high levels of smoke in the immediate vicinity of the monitor.

The EE demonstrations should also include speciation data to corroborate the exceptional events claims. Speciation data, or data about the chemical composition of emissions, directly addresses the nature of the PM_{2.5} readings at specific monitors on specific dates. The monitors at Augusta, Columbus (Baker), and Macon (Allied) are PM_{2.5} speciation monitors, so they have this capacity. EPA guidance indicates that information regarding “chemical composition and/or size distribution” should be used to link pollution at the monitors “with particular sources or phenomenon.” Given that speciation information is available at these monitors, it should be provided to establish the clear causal relationship between prescribed fire smoke and the exceedances. The absence of this information should either be explained or should be inferred to not support the claim that these are exceptional events.

EPD Response: Georgia EPD agrees there may be some limitations with the HMS data in certain situations; however, the HMS data is still a strong piece of evidence in the determination of smoke impacts. In some cases, HMS may show smoke plumes when they do not exist in reality. In other cases, HMS may show no smoke plumes (due to the presence of clouds) when they do exist in reality. In addition, the HMS smoke plume product cannot show plumes being transported and dispersed during the nighttime. Therefore, the lack of HMS smoke plume on the map does not factualize that there was no smoke in the area. All the available evidence must be looked at together to make an educated conclusion based on the weight of evidence. For example, a map showing high PM_{2.5} concentrations at the monitor, the presence of multiple large prescribed fires, but no HMS smoke plumes would likely lead to the conclusion that the prescribed fires were responsible for the high PM_{2.5} concentrations and that HMS missed the smoke plumes. Also, Georgia EPD added HYSPLIT trajectories for two different starting heights (100-m and 500-m) for all prescribed fire exceptional event days to better understand the transport of smoke from prescribed fires. While speciation data may be available for some of the prescribed fire exceptional event days, Georgia EPD does not feel the speciation data is necessary to support our conclusions.

Comment: The EE Demonstrations lack necessary information regarding fire intervals to demonstrate that fires are unlikely to recur.

The EE Demonstrations also lack the necessary information to meet the “unlikely to recur” element. To qualify as an exceptional event, emissions resulting from human activities must be “unlikely to recur at a particular location.” But prescribed fires are, by definition, initiated by

human activity at a scheduled interval. To square the statutory language with the nature of prescribed fire, EPA guidance directs that prescribed fires demonstrations:

[M]ust describe the actual frequency with which a burn was conducted and may rely upon an assessment of either the natural fire return interval or the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem (as documented in a land or resource management plan).

More specifically:

An assessment of whether the prescribed fire meets the “unlikely to recur” criterion based on an area’s natural fire return interval should include (1) a review of the number of years between successive naturally occurring fires for a given vegetation type and (2) a review showing that the actual frequency by which the prescribed fires were conducted matches the natural fire return interval.

To satisfy the first element, the EE Demonstrations cite research regarding the natural fire cycle across the United States. This research categorizes ecosystems at an extremely high level and does not reflect localized nuances. More granular information regarding natural fire cycles in Georgia is available and should be used here.

The EE Demonstrations are unable to meet the second element regarding the actual fire cycle used for these locations. Meeting this requirement is a challenge given the large number of dates covered in the Prescribed Fire EE Demonstrations (88 days) and the number of fires conducted on any given date (often in excess of 100 per monitor per day). Instead of submitting information regarding the actual fire cycle for each of the prescribed fire events, the EE Demonstrations attempt to recreate a generic fire cycle for each county. This number was created by assuming that all areas within 100 km of a monitor and categorized as “rural” by the 2020 U.S. Census are part of the “total burn area.” This number is then divided by the average number of acres burned in each county per year to create the county’s calculated burn cycle. The problems with this approach are numerous and obvious. In reality, a subset of properties in each county are actively managed with prescribed fire and the remainder are not. But without actual, site-specific information regarding the frequency of prescribed fire at thousands of specific locations, the EE Demonstrations fail to demonstrate the fire interval required for the unlikely to recur element.

As with the other information missing from the EE Demonstrations, the lack of information regarding the fire interval used to manage specific properties illustrates the fact that EPD and the Georgia Forestry Commission are not maintaining the information necessary to properly document prescribed fires and comply with EPA’s current exceptional event guidance. Likewise, without this information, it is unsurprising that cumulative impacts of widespread prescribed fire are creating frequent and pervasive challenges for air quality throughout middle Georgia.

EPD Response: Georgia EPD does not think it is reasonable to expect each demonstration to include actual, site-specific information regarding the frequency of prescribed fires at thousands of specific locations. Since information was not available on the actual prescribed fire interval for specific tracts of land, Georgia EPD calculated an average fire interval for each county. Also,

Georgia EPD added a new paragraph describing the fire-dependent tree stand types found in the counties within a 100-km radius of the monitor.

Comment: Georgia's Smoke Management Plan must be enhanced and improved to ensure compliance with the new PM_{2.5} standard.

To qualify as an exceptional event, air pollution must result from an activity that is neither reasonably controllable nor preventable. In the context of prescribed fire, EPA interprets this provision to require that prescribed fire be conducted pursuant to an adopted smoke management plan or basic smoke management practices. The EE Demonstrations use the former approach and rely on the Georgia SMP adopted by Georgia DNR and the Georgia Forestry Commission in 2008.

However, in the intervening sixteen years since the Georgia SMP was adopted, the PM_{2.5} NAAQS has been revised, EPA promulgated guidance regarding prescribed fire and exceptional events, and Georgia's open burning requirements have been amended. As a result, the Georgia SMP is outdated in several critical respects. Given that the EE Demonstrations identify over 88 exceedance days related to prescribed fires, it is clear that the Georgia SMP is falling short of its goal of ensuring compliance with federal air quality standards.

EPA identifies "surveillance and enforcement" and "program evaluation" as critical elements of a smoke management plan. But the EE Demonstrations do not describe any efforts to evaluate the Georgia SMP's performance and ensure its success since it was adopted in 2008. And with respect to the 2021-2023 timeframe, the EE Demonstrations describe no additional measures undertaken to reduce the impact of prescribed fire smoke between the events occurring in 2021 and those in 2023.

"The [Clean Air Act] as a whole, and Section 319(b) in particular is premised on the idea that states should undertake reasonable actions to control emissions and protect public health." The exceptional events provision is intended to apply "in addition to, rather than in place of, reasonable controls." To this end, air agencies seeking to exclude air quality data must show that "appropriate and reasonable" steps have been taken to prevent future exceedances of air quality standards. These steps include preparation of mitigation plans for areas with "historically documented or known seasonal events."

Given the widespread and repeated impacts of smoke from prescribed fires on air quality around Georgia, EPD should have taken steps since 2008 to ensure the Georgia SMP was sufficient. Likewise, additional measures should have been undertaken between 2021 and 2023 to address the problem of prescribed fire smoke. In the absence of such remedial measures to ensure the Georgia SMP's adequacy and reduce the number of monitor exceedances, the recurring impacts of prescribed fire smoke should not be disregarded as exceptional events.

Finally, the Georgia SMP commits to restrict the use of open burning or encourage the use alternative management practices if burning proves an obstacle to attaining air quality standards. This precise scenario described in the Georgia SMP is occurring, but the EE Demonstration does not describe any efforts undertaken to implement these provisions of the Georgia SMP.

EPD Response: Georgia EPD feels confident that our 2008 certified Georgia SMP is adequate to control smoke emissions from prescribed fires and protect public health. At the same time, Georgia EPD is currently working with the Georgia Forestry Commission and DNR Wildlife Resources Division to possibly update Georgia's Smoke Management Plan to ensure continued compliance with the new annual PM_{2.5} standard. In addition, the Georgia Forestry Commission is looking at new approaches for restricting prescribed burning to reduce the number of PM_{2.5} exceedances.

Comment: The EE Demonstrations should exclude open burning events other than prescribed fires.

The Prescribed Fire EE Demonstration for each area includes an Excel spreadsheet with additional detail regarding burn events that occurred within 100 km of the applicable monitor on the relevant dates. However, these spreadsheets are based on open burn permits and include activities that go beyond what is considered prescribed fire under its colloquial meaning, EPA's definition, or the framework established in Georgia's Prescribed Burning Act.

For example, these spreadsheets include agricultural burns and land clearing among the burn events that occurred on the relevant dates and purportedly contributed to the exceptional events. But agricultural burns and land clearing are not prescribed fires. Prescribed fires are the "controlled application of fire to existing vegetative fuels to accomplish land management objectives or to mitigate catastrophic wildfires. Prescribed fire is a land management and resource protection tool used for Georgia's forest lands." Agricultural burns and land clearing are considered by EPD to be separate "burn types," and therefore do not fall under the general category of "prescribed fires." This distinction is important because EPA defines prescribed fire as "any fire intentionally ignited by management actions in accordance with applicable laws, policies, and regulations to meet specific land or resource management objectives." Therefore, if fires burning agricultural waste or for land clearing are not "prescribed fire" under state law, they should not be considered as such for the exceptional event regulations.

EPD Response: Georgia EPD agrees that agricultural burns and land clearing are not currently eligible for exceptional event demonstrations. Although the Excel spreadsheets contain all permitted fires for completeness purposes, only silviculture burns on wildlands were considered for exceptional events and included in the maps in Appendix A.

Comment: Whether EPA approves the EE Demonstrations or not, Georgia EPD must undertake actions to prevent the impact of prescribed fire on air quality.

We do not dispute the importance of prescribed fires for ecological, silvicultural, and other reasons. Likewise, we recognized the logistical issues posed by the widespread use of prescribed fire in Georgia and the fact that these activities largely occur at a smaller scale and more often on private property than in other parts of the country. But the pervasive impacts of these prescribed fires on air quality throughout Georgia documented in the EE Demonstrations make clear that the current approach is not working and must be revisited to ensure that prescribed fires are not conducted at the cost of Georgia's air quality.

EPD Response: Georgia EPD feels confident that our 2008 certified Georgia SMP is adequate to control smoke emissions from prescribed fires and protect public health. At the same time, Georgia EPD is currently working with the Georgia Forestry Commission and DNR Wildlife Resources Division to possibly update Georgia's Smoke Management Plan to ensure continued compliance with the new annual PM_{2.5} standard. In addition, the Georgia Forestry Commission is looking at new approaches for restricting prescribed burning to reduce the number of PM_{2.5} exceedances.

Comment: The EE Demonstrations Must Provide Additional Support to Demonstrate the Ground-Level Impacts of Canadian Wildfire Smoke on Tier 2 Days.

There is no dispute that Georgia's air quality was impacted by smoke from Canadian wildfires in the summer of 2023. But the dates, locations, and extent of those impacts must be documented and supported by the weight of the evidence for exceedances to be disregarded as exceptional events. As they stand, the Canadian Wildfire EE Demonstrations lack the necessary information to support the clear causal relationship between wildfire smoke and exceedances on the Tier 2 dates.

EPA guidance provides a tiered approach to guide air agencies in documenting exceptional events related to wildfires. Historical PM_{2.5} data is used to set certain thresholds, and potential exceptional event dates are categorized based on those thresholds as Tiers 1, 2 or 3. Tier 1 events show the greatest deviation from historic data and therefore require less documentation. Tier 2 events differ from the historic trend to a lesser degree and require "more detailed information to establish a clear causal relationship between smoke transport from the event to the monitored exceedance." For Tier 2 events, air agencies cannot simply demonstrate that smoke was transported to the monitor location (as required for Tier 1 events). Rather, Tier 2 dates require two additional sources of information demonstrating that wildfire smoke was present at and affected the monitor. EPA guidance lists different types of ground-level information that can be used to make this showing. Tier 2 demonstrations should also "distinguish the difference in the non-event pollutant behavior (e.g., concentration, timing, ratios, and/or spatial patterns) from the behavior during the event impact to more clearly show that the emissions from the wildland fire(s) affected the monitor(s)."

The Canadian Wildfire EE Demonstrations include several Tier 2 dates based on the presence of Canadian wildfire smoke. But they lack the localized, ground-level information required to support the clear causal relationship for Tier 2 dates. The Canadian Wildfire EE Demonstrations rely on HYSPLIT back-trajectory maps showing the prevailing wind patterns and EPA Air Now data showing PM_{2.5} at monitors across the country. But these maps conflate information across three dates and three different elevations, making it impossible to discern what is occurring at the ground level on a specific date. Further, because the maps depict a broad range of air quality readings in the same color (monitors reading between 9.1 and 35.5 µg/m³ are yellow), it is not possible to distinguish between monitor readings that are fractionally above the 9.0 standard, versus those nearly quadruple the standard.

The Canadian Wildfire EE Demonstrations also provide regional maps showing PM_{2.5} readings at air quality monitors throughout adjacent states on the exceedance dates. But without more context and a comparison to historical trends, they shed little light on ground level conditions at the challenged monitors. If anything, these maps illustrate that regional variations occur between

monitors and underscore the need for more location-specific analysis.

As with prescribed fire, the Canadian Wildfire EE Demonstrations rely on HMS smoke data to demonstrate the presence of wildfire smoke in the area. But the same limitations on this data apply here, with recent research questioning the reliability of HMS data in predicting ground level PM_{2.5} readings based on low smoke days in the Southeast. Accordingly, as with prescribed fire, the Canadian Wildfire EE Demonstrations must provide additional support demonstrating that wildfire smoke was present at ground level and caused the exceedance at the relevant monitors. The comments above regarding the use of speciation monitor data apply here as well. The availability of speciation information from the monitors at Augusta, Columbus, Macon, and Rossville should be provided to validate the HMS conclusions with respect to wildfire.

Finally, the Canadian Wildfire EE Demonstrations pose a consistency problem with respect to wildfire smoke when taken together. They rely on macro scale data and repeatedly reference the regional impacts of wildfire smoke, yet the dates claimed as exceptional events vary widely. For example, although Sandersville and Atlanta are roughly 100 miles apart, the EE Demonstrations claim sixteen dates as exceptional events at Sandersville but only two at Atlanta. This discrepancy underscores the need for more localized information to support these demonstrations.

EPD Response: For the Canadian Wildfire EE demonstrations, Georgia EPD added HYSPLIT trajectories for three different starting times for each day: (1) midnight at the start of the exceedance day, (2) noon of the exceedance day, and (3) midnight at the end of the exceedance day. Also, Georgia EPD added hourly PM_{2.5} concentration plots for each day and preceding day to Appendix E. According to the EPA guidance document, Tier 2 events require three pieces of evidence to support the causal demonstration that emissions from Canadian Wildfires affected the monitor. Georgia EPD has included at least three pieces of evidence (HYSPLIT, HMS smoke plumes, and PM_{2.5} time series plots) for all Tier 1 and Tier 2 events. In some cases, a fourth piece of evidence was added (upper air maps from the Storm Prediction Center).

In response to the comment on the regional impacts of wildfire smoke and the number of Canadian Wildfire exceptional event demonstrations by monitor, it should be noted that while many monitors across Georgia were impacted on numerous days by Canadian Wildfires, Georgia EPD is only allowed to submit exceptional events for just enough days to be regulatorily significant. It only took two Canadian Wildfires exceptional event days to bring the Atlanta monitor into attainment (from 9.1 to 9.0 µg/m³), while it took 16 Canadian Wildfires exceptional event days and 47 prescribed fire exceptional event days to bring the Sandersville monitor into attainment (from 10.0 to 9.0 µg/m³).

Comment: The EE Demonstrations Do Not Meet the Mitigation Requirements for Smoke Resulting From Fourth of July Fireworks.

The EE Demonstrations seek to exclude monitoring data on three days in Augusta, GA, based on smoke from Fourth of July fireworks. Federal regulations allow exceedances resulting from firework smoke to be excluded only if the air agency's demonstration otherwise satisfies the relevant statutory and regulatory requirements.

The three days EPD seeks to exclude data from are July 4, 2021, July 5, 2021, and July 4, 2023. All three exceedances took place in Augusta and are Tier 1 events. Although smoke from Fourth of July fireworks may qualify as a significant integral national celebration, the EE Demonstrations must further show that adequate mitigation efforts were undertaken to minimize the impacts of the fireworks. Air agencies are required, at a minimum, to provide prompt public notification when air quality concentrations exceed or are expected to exceed the applicable standard; to provide for public education regarding actions that individuals can take to reduce exposure to unhealthy levels of air quality following the exceptional event; and to provide for the implementation of appropriate measures to protect public health from exceedances caused by the exceptional event.

The Augusta Firework EE Demonstration only provides information about *general* mitigation strategies that it has undertaken with respect to the health impacts of smoke—not mitigation strategies specific to fireworks. For example, it discusses the interactive wildfire and burn permit map on the Georgia Forestry Commission’s website. That map, however, contains no information specific to firework smoke and is not an obvious place for the public to seek information related to the health impacts of Fourth of July firework smoke.

The Augusta Firework EE Demonstration does not explain any public education or public notification measures that were undertaken specific to firework smoke to mitigate public health risks that may have resulted from Fourth of July fireworks. For example, other parts of the country have established incentive programs to encourage the use of drones or laser shows instead of firework displays to celebrate the occasion with less smoke. The Augusta Firework EE Demonstration also lacks any information related to public notifications about the unhealthy air quality resulting from the fireworks on those days. This is particularly important because the public would not necessarily assume that the risk from firework smoke would extend to the following day on July 5th.

The Augusta Firework EE Demonstration also states that there are “several areas of Georgia that have historically presented fireworks displays on July Fourth.” Federal rules institute additional mitigation requirements for areas with historically documented or known seasonal events. The Augusta Firework EE Demonstration fails to include any of those heightened mitigation requirements, despite claiming the Fourth of July fireworks to be exceptional events that are historically documented and known. If high levels of firework smoke are a recurring problem and are significant enough to be categorized as exceptional events, the Augusta Firework EE Demonstration should have engaged in the required mitigation steps and created a mitigation plan.

EPD Response: As described in our EE demonstration, the public has access to the Georgia EPD Ambient Air Monitoring Program website which provides near real-time ambient air concentrations of multiple criteria pollutants (O₃, PM_{2.5}, SO₂, NO₂, and CO) across the state. This enables the public to track PM_{2.5} concentrations in near real-time and take any protective actions if they deem it necessary.

EPA Comments

Applicable to All Area Demonstrations:

Comment: EPA was not able to reproduce the Tier 1 and Tier 2 Thresholds presented in the Figure 1 diagrams in all of the demonstrations. When using EPA's online Tiering Tool available here: <https://www.epa.gov/air-quality-analysis/pm25-tiering-tool-exceptional-events-analysis>, the Tiering Thresholds are slightly different. For example for the Atlanta Canadian Wildfire Draft EE Demo, the threshold values for the Fire Station #8 Monitor (AQS ID # 13-121-0039) with "Rand I Fire Flags" excluded, as recommended by EPA's PM_{2.5} Wildland Fire Exceptional Events Tiering Document (<https://www.epa.gov/system/files/documents/2024-04/final-pm-fire-tiering-4-30-24.pdf>), are: Tier 1 Threshold = 24.3 ug/m³ and Tier 2 Threshold = 16.2 ug/m³. These are slightly higher than the Tier 1 Threshold = 22.65 ug/m³ and Tier 2 Threshold = 15.1 ug/m³ provided in the Atlanta Canadian Wildfire Draft EE Demo. Please explain this discrepancy and confirm that all of the Tiering Levels in all of the Draft EE Demos are in the correct Tier as provided by EPA's Tiering Tool. If this discrepancy results in any Tier 1 values being changed to Tier 2 values, additional supporting evidence should be provided in the Clear Causal Demonstration as discussed in Section 5.4 of the Tiering Guidance Document.

EPD Response: For the Macon-Allied and Fire Station #8 sites, Georgia EPD chose to exclude "R and All I Flags" option rather than "R and I Fire Flags" on the EPA tiering tool, as there were other contributors to high PM_{2.5} data in Georgia. Based on the EPA Tiering Guidance, it is not clear if the "R and I Fire Flags" is suggested or required. Georgia EPD believes that the "R and All I Flags" option is the most appropriate for determining the tiers since the calculation of the 98th percentile value used to determine the tiering thresholds should exclude high PM_{2.5} concentrations caused by fire events as well as high PM_{2.5} concentrations caused by other possible types of exceptional events that are unrelated to fires (e.g., Saharan dust, fireworks, etc.). It does not seem appropriate to determine different tiering thresholds for each type of exceptional event (e.g., "R and I Fire Flags" vs. "R and I Saharan Dust Flags" vs. "R and I Holiday Fireworks Flags"). Rather, all informational flags regardless of types of exceptional events "R and All I Flags" should be used when determining the tiering threshold so we have a single tiering threshold that is applicable to all exceptional events. Additionally, the reason the tiering values are different than what the EPA expected for Augusta, Columbus-Baker, Sandersville, and Rossville-Williams St. is because those tiers were calculated manually by Georgia EPD. The tiering values for the Augusta and Sandersville sites were manually calculated because the data used in the EPA tiering tool did not match the information in EPA's Air Quality System (AQS). A side-by-side check of the two sets of data was performed and discrepancies were found. For the Columbus-Baker site, Georgia EPD calculated the tiers manually because the data had to combine the previous Columbus-Cusseta site data with Columbus-Baker site data to have 5 years of data. For Rossville-Williams St., Georgia EPD manually calculated those tiers because the tiers should be based on FRM data only since the FEM data has a NAAQS exclusion, and it also needed to be combined with the previous Rossville-Maple St. site data to include 5 years of data.

Applicable to All Canadian Wildfire Demonstrations:

Comment: Section 3 of the documents discuss *Public Notification*. It is recommended that the documents be supplemented with any other actions taken to notify the public about the potential for elevated air quality impacts from the Canadian Wildfires, if any additional notification was done. Examples of other notification methods include: social media posts; press releases; providing information to local media outlets; and information provided by the National Weather Service.

EPD Response: Georgia EPD has supplemented the *Public Notification* section of our documents with examples of additional actions taken in Georgia to notify the public about the potential for elevated air quality impacts from the Canadian Wildfires.

Comment: In the “*Clear Causal Relationship and Supporting Analyses*” sections, the HYSPLIT Trajectories are stated to “begin at the time that the exceedance was observed,” but in the Figures in Appendix C, the back-trajectories all appear to be started beginning at midnight of each exceedance day. Please address this discrepancy.

EPD Response: Georgia EPD clarified the language and added two additional start times for the HYSPLIT trajectories to Appendix C. The new text reads, “Three different starting times were modeled with HYSPLIT for each day: (1) midnight at the start of the exceedance day, (2) noon of the exceedance day, and (3) midnight at the end of the exceedance day.”

Comment: To provide additional support for the information provided in the “*Clear Causal Relationship and Supporting Analyses*” sections, we recommend addition of hourly PM_{2.5} concentration plots for each day and preceding day similar to those provided in the Appendix A diagrams for the Prescribed Fire Demonstrations. This would help to show the timing of the smoke intrusion episodes.

EPD Response: Georgia EPD has added hourly PM_{2.5} concentration plots for each day and preceding day to Appendix E.

Comment: Appendix D: It is recommended that the AQI ranges shown in the figures be updated to be consistent with revisions provided in the final 2024 PM_{2.5} NAAQS (e.g., Good is now in the range of 0-9 ug/m³).

EPD Response: Georgia EPD has updated the AQI ranges in Appendix D to be consistent with revisions provided in the final 2024 PM_{2.5} NAAQS.

Applicable to All Prescribed Fire Demonstrations:

Comment: *Section 2: Narrative Conceptual Model Section:* Since only prescribed fires that occur on wildland are eligible to be treated as exceptional events according to the 2016 Exceptional Events Rule, it is recommended that it be clearly indicated that the permitted silvicultural prescribed fires that are the subject off the EE Demos occur on wildlands. It is also recommended to include the definition of wildland provided in the 2016 Exceptional Events Rule (or reference

the definition in the rule) and to “connect the dots” between Georgia’s prescribed burning definitions and those in the Exceptional Events Rule.

EPD Response: Georgia EPD added text to the *Narrative Conceptual Model* section to clearly indicate that the permitted silvicultural prescribed fires that are the subject of our EE demos occurred on wildlands. Also, the definition of “wildland” provided in the 2016 Exceptional Events Rule was added.

Comment: *Section 2: Narrative Conceptual Model Section:* It is recommended that this Section include more description of the prescribed fire events affecting the specific monitors in each demonstration. We suggest including a broad description of how similarities among these events generally affected the concentrations at the monitoring site and the environmental conditions that contributed to the exceedance (e.g., fires generally in close proximity to the monitor, fires upwind of monitor, acres burned, stable boundary layer, calm surface winds, etc.). This would more thoroughly address the requirement to explain how emissions from the events led to the exceedance or violation at the affected monitor(s).

EPD Response: Georgia EPD added text to the *Narrative Conceptual Model* section to generally describe the conditions that contributed to the PM_{2.5} exceedances.

Comment: *Section 2: Narrative Conceptual Model Section:* In the discussion of the public notification action, we recommend that discussion of any other actions taken to notify the public about the potential for elevated air quality impacts from large (greater than 1000 acres) prescribed fires as discussed in Section C of Georgia’s April 16, 2008, certified *Basic Smoke Management Plan*. Examples of other notification methods could include: social media posts; press releases; providing information to local media outlets; and information provided by the National Weather Service.

EPD Response: Georgia EPD added a new paragraph to the *Narrative Conceptual Model* section discussing the Georgia Forestry Commission’s media notification system described in Section C of Georgia’s April 16, 2008, certified *Basic Smoke Management Plan*. Also, the additional notifications provided by partners in the Georgia Prescribed Fire Council has been included.

Comment: *Section 4: Human Activity Unlikely to Recur at a Particular Location:* Georgia’s approach for demonstrating that prescribed fires are unlikely to recur in specific counties appears to be acceptable to meet this criteria. We recommend that discussion also be added to explain that information on the actual prescribed fire return interval for specific tracts of land is not readily available, which is why the procedure described in this section was used. Also, we recommend briefly describing the fire-dependent ecosystems or species (e.g., long leaf pine, red-cockaded woodpecker, etc) that are found in the counties where there is frequent prescribed burning, and that it is needed to maintain these fire-adapted ecosystems or species.

EPD Response: Georgia EPD added a new sentence to the *Human Activity Unlikely to Recur at a Particular Location* section that states, “Since information was not available on the actual prescribed fire interval for specific tracts of land, Georgia EPD calculated an average fire interval for each county.” Next, Georgia EPD added a new paragraph in the same section describing the

fire-dependent tree stand types found in the counties within a 100-km radius of the monitor. Also, Georgia EPD added a new paragraph to the *Not Reasonably Preventable* section describing the rare fire-dependent animal species found in the counties within a 100-km radius of the monitor.

Comment: Appendix A Figures:

- We recommend removing “satellite detected fires” from the caption as these are not displayed on the maps.
- For the maps, please indicate the averaging interval of the concentrations beside the monitor icons. We assume these values are the 24-hour average values, but this should be clarified.
- We recommend stating that the solid blue line in the time series indicates the concentrations recorded by the monitor. It would also be helpful to state the significance of the yellow, orange, and red dashed lines.

EPD Response: Georgia EPD updated Appendix A to address EPA’s comments.

Draft Canadian Wildfire EED at Atlanta GA:

Comment: We recommend expanding the *Introduction* Section to include a discussion of the status of the existing monitors compared to the 2024 Annual PM_{2.5} NAAQS. The Atlanta-Sandy Springs- Roswell MSA is comprised of 13 monitoring sites, several are PM_{2.5} monitors. As shown on the maps in Appendix D, it would be helpful to add a brief discussion to the *Introduction* or *Narrative Conceptual Model* Section indicating that the other monitors in the MSA were also impacted by the Canadian wildfire smoke, but that these monitors are not exceeding the PM_{2.5} NAAQS and thus are not eligible for exclusion under the Exceptional Events Rule. This discussion would help demonstrate that there is a wide-scale impact from the long-distance transport of the smoke as discussed in the *Clear Causal Relationship* Section. Also, it would be helpful to acknowledge that Exceptional Event requests are being made for other monitors in Georgia which are violating the PM_{2.5} NAAQS that have also been impacted by Canadian wildfire smoke.

EPD Response: Georgia EPD has expanded the *Introduction* section to include a discussion on the other PM_{2.5} monitors in the Atlanta area and across the state of Georgia.

Draft Canadian Wildfire EED at Augusta GA:

Comment: *Introduction* (pg. 1): The year of initial notification date in last paragraph should be 2024, not 2023.

EPD Response: Georgia EPD updated the year from 2023 to 2024.

Comment: *Appendix D:*

- The captions for all figures reference “three sites... in excess of the PM_{2.5} NAAQS”. Which sites are being referenced? It is recommended that the captions be expanded to refer to the large number of sites reporting elevated PM_{2.5} concentrations.
- It is recommended that a marker be added denoting the Augusta monitor to help clarify the maps.

EPD Response: Georgia EPD updated the captions in Appendix D to refer to the numerous sites that measured concentrations that exceeded the level of annual PM_{2.5} NAAQS. Also, a star marker has been added to represent the Augusta monitor.

Draft Canadian Wildfire EED at Columbus GA:

Comment: *Introduction (pg. 1):* The year of initial notification date in last paragraph should be 2024, not 2023.

EPD Response: Georgia EPD updated the year from 2023 to 2024.

Comment: *Figures B1, C1 for 6/29/23:* While these figures show that there is likely transport of Canadian Wildfire Smoke to the monitor, the back-trajectories do not clearly show smoke originating in wildfires in Canada, and there are many fires locally near the monitoring site. Given that the discussion on pg. 6 mentions smoke “descending to near-surface level,” and because this event is Tier 2, it is recommended to include additional meteorological analyses supporting the transport and descent of smoke from Canada (e.g., upper air wind maps, vertical soundings at/near the site, convergence/divergence maps to infer large-scale vertical motions, time series showing increases in concentrations).

EPD Response: Georgia EPD added HYSPLIT trajectories for three different starting times for each day: (1) midnight at the start of the exceedance day, (2) noon of the exceedance day, and (3) midnight at the end of the exceedance day. Also, Georgia EPD added hourly PM_{2.5} concentration plots for each day and preceding day to Appendix E. This provides at least a total of three pieces of evidence (HYSPLIT, HMS plumes, and PM_{2.5} time series plots) demonstrating that the Canadian Wildfire emissions affected the monitor. For 6/29/23, a fourth piece of evidence was added (upper air maps from the Storm Prediction Center).

Draft Canadian Wildfire EED at Macon GA:

Comment: *Introduction (pg. 1):* The year of initial notification date in last paragraph should be 2024, not 2023.

EPD Response: Georgia EPD updated the year from 2023 to 2024.

Comment: *Figures B3, C3 for 7/20/23:* While these figures show that there is likely transport of Canadian Wildfire Smoke to the monitor, the back-trajectories do not clearly show smoke originating in wildfires in Canada, and there are many fires locally near the monitoring site. Given that the discussion on pg. 6 mentions smoke “descending to near-surface level,” and because this event is Tier 2, it is recommended to include additional meteorological analyses supporting the transport and descent of smoke from Canada (e.g., upper air wind maps, vertical soundings at/near the site, convergence/divergence maps to infer large-scale vertical motions, time series showing increases in concentrations). Alternative, if it is believed that smoke from more localized fires in the southeast is the primary cause of the exceedance, additional information should be provided linking these fires to the exceedance.

EPD Response: Georgia EPD added HYSPLIT trajectories for three different starting times for each day: (1) midnight at the start of the exceedance day, (2) noon of the exceedance day, and (3) midnight at the end of the exceedance day. Also, Georgia EPD added hourly PM_{2.5} concentration plots for each day and preceding day to Appendix E. This provides at least a total of three pieces of evidence (HYSPLIT, HMS plumes, and PM_{2.5} time series plots) demonstrating that the Canadian Wildfire emissions affected the monitor. For 7/29/23, a fourth piece of evidence was added (upper air maps from the Storm Prediction Center).

Draft Canadian Wildfire EED at Sandersville GA:

Comment: *Figures B13, C13 for 7/20/23:* While these figures show that there is likely transport of Canadian Wildfire Smoke to the monitor, the back-trajectories do not clearly show smoke originating in wildfires in Canada, and there are many fires locally near the monitoring site. It is recommended to include additional meteorological analyses supporting the transport and descent of smoke from Canada (e.g., upper air wind maps, vertical soundings at/near the site, convergence/divergence maps to infer large-scale vertical motions, time series showing increases in concentrations). Alternatively, if it is believed that smoke from more localized fires in the southeast is the primary cause of the exceedance, additional information should be provided linking these fires to the exceedance.

EPD Response: Georgia EPD added HYSPLIT trajectories for three different starting times for each day: (1) midnight at the start of the exceedance day, (2) noon of the exceedance day, and (3) midnight at the end of the exceedance day. Also, Georgia EPD added hourly PM_{2.5} concentration plots for each day and preceding day to Appendix E. This provides at least a total of three pieces of evidence (HYSPLIT, HMS plumes, and PM_{2.5} time series plots) demonstrating that the Canadian Wildfire emissions affected the monitor. For 7/20/23, a fourth piece of evidence was added (upper air maps from the Storm Prediction Center).

Draft Holiday Fireworks EED at Augusta:

Comment: EPA recommends strengthening the *Narrative Conceptual Model* Section for the fireworks exceptional events demonstration with more detail, such as time, location, and duration of specific fireworks displays. Despite listing fireworks locations as part of the demonstration on page 3, the demonstration does not identify any fireworks locations except for the vague descriptor, “downtown Augusta.” It is recommended that a specific organized fireworks display presented by the city of Augusta or nearby municipality be identified and referenced as the cause of the exceedances at the monitor. A key criterion of the Exceptional Events Rule for fireworks is that “such use of fireworks is significantly integral to traditional national, ethnic, or other cultural events including, but not limited to, July Fourth celebrations.” A general reference to undocumented use of fireworks by local citizens without a specific time and location does not adequately demonstrate that fireworks caused the exceedance at the monitor.

EPD Response: Georgia EPD added additional information for the July 4, 2023, event including location and time of firework demonstrations and the organizations responsible for the demonstrations.

Comment: For the July 4, 2023, HYSPLIT plot (Appendix A, Figure 3), the trajectories originate from west of the monitor while downtown Augusta is located northeast of the monitor. Especially in this case, additional information is needed to demonstrate that emissions were transported to the monitor to show a clear causal relationship between the event and exceedance.

EPD Response: Georgia EPD added additional information for the July 4, 2023, event including hourly PM_{2.5} concentrations, hourly wind speed, hourly wind direction, and PM_{2.5} speciation data.

Comment: Appendix A: The captions for each of the Figures in Appendix A should be revised to describe the link to the specific time and location where the fireworks displays were held. The discussion about silviculture burn permits should be removed as that is not the claimed reason for the Exceptional Events, or an explanation should be added as to why they are included in the Figure.

EPD Response: Georgia EPD updated the captions in Appendix A by removing references to silviculture burn permits.

Draft Prescribed Fires EED at Augusta:

Comment: *Appendix A:* In order to help interpret the figures in Appendix A, we recommend that they be revised to identify the duration of the HYSPLIT back trajectories, and/or the length of time that the markers represent on each trajectory.

- July 23, 2021: The pervasive smoke visible the day before along with the limited permits (and acreage) issued for silviculture prescribed burns seems inconsistent with the description that the silviculture fires caused the exceedance. We recommend that additional information be provided to demonstrate the clear causal relationship.
- December 5, 2021: The description of the event does not agree with the timeseries concentrations. The exceedance seems driven by concentrations in the late morning. We recommend revising the description of the event in the *Clear Causal Relationship* Section.
- December 16, 2021: The limited silviculture prescribed fires near the back trajectories calls into question the claim that these fires caused the exceedance. We recommend that additional information and discussion be provided to support the claim.
- November 6, 2023: The pervasive smoke visible the day before along with the limited permits (and acreage) issued for silviculture prescribed burns seems inconsistent with the description that the local silviculture prescribed fires caused the exceedance. Based upon the level of widespread elevated PM_{2.5} concentrations across the southeast and entire eastern U.S., it appears likely that the cause could be long distance transport of wildfire smoke. We recommend that additional information be provided to demonstrate the clear causal relationship.
- December 7 & 8, 2023: It is difficult to interpret the hourly concentration plots at the bottom of these figures for these dates since it appears that a constant PM_{2.5} concentration occurred for the entire day. If this is due to only FRM data being available for the hourly concentration plots, we suggest explaining this in the caption.

EPD Response: Georgia EPD added the length of time that the markers represent on each HYSPLIT trajectory. For July 23, 2021, the 500-m HYSPLIT trajectories were added for

additional support. For December 5, 2021, the description of the event has been revised to more clearly describe the causal relationship. For December 16, 2021, the description of the event has been revised to more clearly describe the causal relationship. For November 6, 2023, the 500-m HYSPLIT trajectories were added for additional support. For December 7-8, 2023, the captions in Appendix A were updated to indicate when FRM data (which does not provide hourly concentrations) was used.

Draft Prescribed Fires EED at Columbus:

Comment: Appendix A: Given that 2/8/23, 3/1/23, and 3/7/23 are tier 2 events, it is recommended that additional information be provided to support these days as discussed in Section 5.4 of the PM_{2.5} Wildland Fire Exceptional Events Tiering Guidance Document. This information could include additional analyses of the meteorology for this day.

EPD Response: According to the EPA guidance document, Tier 2 events require three pieces of evidence to support the causal demonstration that emissions from prescribed fires affected the monitor. Georgia EPD has included at least three pieces of evidence (HYSPLIT, HMS smoke plumes, and PM_{2.5} time series plots) for all Tier 1 and Tier 2 events.

Draft Prescribed Fires EED at Macon:

Comment: Appendix A includes maps for every date listed in Table 1, including the Canadian wildfires. These maps are confusing because the separate Canadian Wildfire Demonstration for those dates identified in Table 1 make a clear causal connection to the wildfires. If it is believed that the prescribed fires on these dates were also the cause of the exceedances at the Macon monitor, the prescribed fire demonstration should be revised to discuss the cumulative effects of both the Canadian Wildfires and nearby prescribed fires. If the inclusion of these figures in Appendix A was an error, we recommend removing them.

EPD Response: The maps associated with the Canadian Wildfire events have been removed from Appendix A.

Comment: Appendix A: For 4/7/21, 12/3/21, 3/3/22, 3/7/22, it is difficult to interpret the concentration plots for these dates since it appears that a constant PM_{2.5} concentration occurred for the entire day. If this is due to only FRM data being available for the hourly concentration plots, we recommend explaining this in the caption.

EPD Response: For 4/7/21, 12/3/21, 3/3/22, 3/7/22, the captions in Appendix A were updated to indicate when FRM data (which does not provide hourly concentrations) was used.

Comment: Appendix A: Given that 10/3/23 and 11/8/23 are Tier 2 events, it is recommended that additional information be provided to support these days as discussed in Section 5.4 of the PM_{2.5} Wildland Fire Exceptional Events Tiering Guidance Document. This information could include additional analyses of the meteorology for this day.

EPD Response: According to the EPA guidance document, Tier 2 events require three pieces of evidence to support the causal demonstration that emissions from prescribed fires affected the monitor. Georgia EPD has included at least three pieces of evidence (HYSPLIT, HMS smoke plumes, and PM_{2.5} time series plots) for all Tier 1 and Tier 2 events.

Draft Prescribed Fires EED at Sandersville:

Comment: Table 1: The discrepancy in the Tier 1 thresholds using EPA's Tiering Tool discussed in General Comment 1 above results in a number of days that are identified as Tier 1 in Table 1, should instead be classified as Tier 2. Using EPA's PM_{2.5} Tiering Tool, the Tier 1 threshold for the Sandersville monitor is 18.75 ug/m³. Therefore, the following dates should be Tier 2: 5/18/22; 10/7/22; 11/3/22; 1/2/23; and 2/24/23. Given that that these dates should be Tier 2 events, it is recommended that additional information be provided to support these days as discussed in Section 5.4 of the PM_{2.5} Wildland Fire Exceptional Events Tiering Guidance Document. This information could include additional analyses of the meteorology for these days.

EPD Response: As discussed in a previous response to comments, Georgia EPD believes that our approach for determining tiering thresholds is appropriate and that 5/18/22, 10/7/22, 11/3/22, 1/2/23, and 2/24/23 have been correctly classified as Tiers 1 days. According to the EPA guidance document, Tier 2 events require three pieces of evidence to support the causal demonstration that emissions from prescribed fires affected the monitor. Georgia EPD has included at least three pieces of evidence (HYSPLIT, HMS smoke plumes, and PM_{2.5} time series plots) for all Tier 1 and Tier 2 events.