**COMMENTS BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY REGARDING THE DRAFT GUIDANCE ON THE PREPARATION OF EXCEPTIONAL EVENT DEMONSTRATIONS FOR WILDFIRE EVENTS THAT MAY INFLUENCE OZONE CONCENTRATIONS**

**EPA Docket ID No. EPA–HQ–OAR–2015–0229**

**I. Summary**

 In its Federal Register notice on revisions to the Exceptional Events Rule (EER), the Environmental Protection Agency (EPA) provided notice of availability of the draft versions of the non-binding guidance document and invited submission of comments under the same document. The guidance is intended to assist air agencies in the preparation of exceptional events demonstrations for wildfire influences on ozone concentrations that meet the requirements of the Federal Clean Air Act section 319(b) and the EER. This draft guidance document follows the requirements of the EER and provides three different tiers of demonstrations that air agencies can use to develop evidence for exceptional events demonstrations.

**II. Comments**

General Comments:

**Texas supports the concept of a three-tier approach to the submission of exceptional event demonstrations.**

Some situations will be straightforward and compelling, and therefore do not need an exhaustive demonstration, whereas situations that are more complex will need additional data and analysis.

**The EPA should spend considerably more time and effort considering wildfire events that include long-range transport.**

 The Texas Commission on Environmental Quality (TCEQ) believes that the guidance was written primarily with wildfire events involving short transport distances in mind. Many types of evidence suggested in this guidance (e.g. pictures of smoke occurring at an ozone monitoring site) are intended to capture events that are dramatic and obvious in effect (i.e. where the wildfire and receptor monitor are fairly close to one another). Exceptional event demonstrations by Kansas and California are good examples of events that would appear to apply under this guidance as it is currently written. However, there are documented cases where wildfire emissions are transported over hundreds or even thousands of miles, and the guidance should adequately address these situations as well. A recent case study of photochemical modeling by WESTAR/Western Governors Association found that the Texas Gulf Coast near Houston and Beaumont/Port Arthur had relatively frequent ozone impacts from wildfires in the northwestern United States (US) and Canada. There is also a documented record in the scientific literature of transported wildfire emissions affecting ozone levels in the Houston area:

Morris, Gary A., Scott Hersey, Anne M. Thompson, Steven Pawson, J. Eric Nielsen, Peter R. Colarco, W. Wallace McMillan, et al. 2006. Alaskan and Canadian forest fires exacerbate ozone pollution over Houston, Texas, on 19 and 20 July 2004. Journal of Geophysical Research: Atmospheres 111 (D24): - D24S03.

Wildfire emissions transported from the northwestern US to the Texas Gulf Coast, for instance, may not have the dramatic impact of billowing smoke at a monitoring site, but they are still capable of causing significant exceptional events having regulatory significance. As such, it is important that the EPA provide reasonable criteria for long range transport impacts that may not be accurately portrayed by photochemical modeling and such indicators as visible smoke at a monitoring site.

**Providing guidance for exceptional events demonstrations is only a start. The EPA must also ensure that its regional offices evaluate states’ demonstrations in a nationally consistent manner that reflects the guidance.**

Many states have consistently expressed concerns about the inconsistent and unreasonable nature of exceptional event demonstrations evaluations and there is little in this guidance or associated rule proposal that will alleviate those concerns.

Just over a year ago, Texas submitted a demonstration for an ozone exceptional event caused by transported wildfire emissions. As part of its demonstration, Texas submitted the following chart showing co-located hourly measurements of ozone and fine particulate matter (PM2.5) at the site in question:



The EPA’s guidance document *Draft Guidance on the Preparation of Exceptional Event Demonstrations for Wildfire Events that May Influence Ozone Concentrations* clearly regards this evidence as supportive of an exceptional event (ozone and PM2.5 rising and falling together). The regional office discounted this evidence in its review of Texas’ submittal by saying: “The coincident timing of the PM-2.5 and ozone concentrations is not an unusual result because under stagnant conditions both pollutants should rise at the same time.” This is inconsistent with the guidance being put forth for states.

**The initial EPA review period is uncertain and the communication process is not specified adequately. A more structured process should be built into the rule.**

In the flow chart on page 6 (Figure 1), the EPA should commit to a 90-day review of the initial notification of the exceptional event for demonstrations with a regulatory impact. There is no regulatory requirement that EPA make any technical evaluation of a state’s claim at this stage of the exceptional event demonstration process. The EPA is only required to assess whether a regulatory determination is affected (and if so, determine an appropriate due date for the state’s demonstration) and begin regular discussions with the state regarding the potential exceptional event. A 90-day time period is sufficient for the EPA to meet these requirements.

**The proposed guidance should suggest additional options for satisfying requirements to identify specific wildfires and wildfire related information when this detailed fire information is not readily available.**

At times, when a number of wildfires occur in multiple areas, it may be difficult to identify each wildfire thought to contribute to an exceptional event as thoroughly as the EPA would like. Detailed information may exist for a single wildfire in Washington that burns on 20,000-30,000 acres of federal land, but Texas is not likely to experience an ozone exceptional event because of that one fire. Texas is most likely to experience a significant exceptional event resulting from aggregation of transported wildfire emissions from a large area.

In its recent submittal of an exceptional event demonstration for ozone caused by wildfires, the TCEQ believes that the exceptional event it experienced in the Houston area on August 26, 2011, was caused by a large number of fires in the northwest U.S. and along the Mississippi River valley in southeast Arkansas, west Tennessee and Mississippi, and northeastern Louisiana. Detailed information on those fires simply did not exist (especially along the lower Mississippi River Valley). Many of these wildfires can occur off federal land where few, if any, reporting requirements exist. The only indication of where fires originated might by an analysis of satellite imagery such as those performed by the National Aeronautics and Space Administration (NASA) or the National Oceanic and Atmospheric Administration (NOAA). The fact that a standard amount of information in an emissions inventory does not appear for these fires does not negate the fact that they occur or could have caused ozone exceptional events.

**The TCEQ appreciates the EPA’s inclusion of appendices with examples of conceptual models, explanations of the EPA’s technical approach to transport, and uses of trajectory models to this guidance. We hope to see more as EPA is able to create them.**

These appendices provide states with insight as to what the EPA wants to see in exceptional event demonstrations and examples of the different types of technical analysis that states might choose to include in their demonstrations. The EPA must not limit states to using only the examples shown in the guidance and appendices. The EPA should continue to work with states to supplement these appendices over time.

Comments addressed to specific sections:

Section 3.2, Event-related Concentration in the Context of Historical Concentrations:

**The EPA’s methodology to evaluate historical comparisons between claimed exceptional event days and non-event days is inappropriate.**

The proposed guidance suggests, "Air agencies should compare the data requested for exclusion with the historical concentrations at the monitor, including all other “high” values in the relevant historical record." It also suggests "Statistical summaries used to characterize non-event, high-concentration day historical data and the differences seen on event days would carry more weight than anecdotal or general assertions of when non-event behavior occurs, without evidence or quantification." The EPA reinforces the suggestion in Section 3.2.1, Examples of Supporting Documentation, when it suggests that air agencies "Identify the cause of other 'peaks' -- fires, other causes, or normal photochemical events, and provide evidence to support the identification when possible."

This suggestion would require States to show not only that the event day was caused by fires, but also show evidence that either any number of high ozone days were NOT caused by wildfires or that a number of these days were also influenced by exceptional events. Fulfilling this request would greatly increase a state’s workload and would decrease a demonstration’s focus on the event in question. This suggestion is clearly an onerous burden for most if not all States.

**A simple comparison of an exceptional event day to historical records is not evidence of a clear causal relationship or acceptable criteria for designation of an exceptional event.**

In Section 3.2.1, the guidance consistently offers percentile ranking as evidence of a clear causal relationship. In light of the apparent importance attributed to this evidence, the guidance is silent on how or why such evidence, by itself, is supportive of a clear causal relationship. Such evidence offers no meteorological or photochemical mechanism that would explain the criteria pollutant measurements. If the EPA continues to use correlation as an evaluation of causation as proposed, we request that a specific threshold by which this evidence would be accepted as demonstrating a causal relationship be provided as well as the methodology for how an event’s percentile ranking should be evaluated. Including a threshold of acceptability or methodology for how this analysis should be evaluated would help address States’ longstanding concerns related to inconsistencies in the EPA’s evaluation of exceptional event evidence. A threshold of acceptability or methodology might also let a state know whether a potential event qualified before it undertook the effort of developing an exceptional event demonstration.

**The EPA’s guidance should consider how implementation of rules and other control strategies affects the representativeness of historical data.**

The implementation of rules or other control strategies should change air quality significantly in a nonattainment area. Historical air quality data prior to these control strategies might reasonably be incomparable to air quality data after the implementation of control strategies. This could limit the amount of data available to air agencies in making historical comparisons. If the EPA insists on requiring historical comparisons, the TCEQ requests that the EPA’s guidance be revised to include the ability for states to exclude historical data that may not be representative of current emission levels due to implemented control strategies.

**The TCEQ suggests that a box-whisker plot for a given time period with whiskers set at the fifth percentile/95th percentile or first percentile/99th percentile could also illustrate the percentile ranking or “exceptionality” of an event day.**

This visualization option shows additional information about the historical distribution of maximum daily ozone averages not shown in the charts shown by the EPA.

Section 3.3:

**A summary table/chart of the Tier requirements in Section 3.3 is needed.**

A summary table/chart of the Tiers would be useful for reference, especially in the Highlights section. Table 2 could be used as a guide but it needs to include the requirements for Tier 3.

Section 3.4, Key Factor of and Suggested Evidence to Include in Tier 1 Demonstrations:

**An over-reliance on seasonal comparisons between days influenced by wildfire and days not influenced by wildfire is not appropriate for areas that experience peak local ozone production during fire season.**

During its ozone season, Texas may experience high ozone events similar in magnitude to exceptional events but not caused by exceptional events. For instance, the highest ozone values in the Dallas/Fort Worth and Houston areas (August and September) tend to occur during an active portion of the wildfire season in the western United States. Exceptional events caused by wildfires during these months may not appear to be any more dramatic or unusual than other exceedances or NAAQS violations, but that does not mean that Texas is responsible for those exceedances or NAAQS violations caused by wildfire emissions transport. This standard also highlights the TCEQ’s concerns about the EPA’s assertion that percentile ranking or the exceptionality of a monitor measurement is an important indicator of a causal relationship.

**The EPA suggests in Section 3.4.1, Evidence of the Event, Monitor(s), and Exceedance Meet the Key Factor for Tier 1 Demonstrations, “…event-related exceedances should be at least 5-10 ppb higher than non-event related concentrations for them to be clearly distinguishable.” This guidance is based on the false premise that a high percentile or big number equals a clear causal relationship.**

The approach may work in a situation where the monitoring site in question rarely experiences a maximum daily average above fifty-five or sixty parts per billion (ppb) ozone, but is not appropriate for an area where monitoring sites may experience levels closer to the ozone standard more regularly. In areas that regularly experience maximum daily averages above 60 ppb, a wildfire does not need to contribute a particularly large amount of additional ozone for its effect to be important. This approach is not reasonable where exceedances may occur because of a mixture of local anthropogenic sources and transported wildfire emissions. One ppb or less of ozone can result in the difference between attainment and nonattainment. The EPA should emphasize the clarity of the causal relationship – not the magnitude of the alleged event.

**Lidar data is available that can help establish a clear causal relationship as suggested in Section 3.4.2, Evidence that the Fire Emissions Were Transported to the Monitor(s).**

The Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP) instrument onboard the Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO) satellite can produce high-resolution vertical profiles of aerosols and clouds. In addition, the aerosols can be broken into sub-types such as dust, smoke, or ice crystals. It can provide evidence of whether smoke mixed to the ground level. This evidence should be included as one potential tool for establishing a clear causal relationship.

**The EPA should do more work to look at the use of satellite products with plume depth and altitude data and how it will evaluate this evidence.**

Some satellite platforms/products indicate depth and types of pollutants based on assumptions of the atmosphere. The EPA should determine how they would use/evaluate that type of information if included in a demonstration.

Section 3.5, Key Factors of and Suggested Evidence to Include in Tier 2 Demonstrations:

**The EPA’s use of the ratio of fire emissions to distance (from fire to impacted monitor) in Section 3.5.1, Evidence that the Event, Monitor(s), and Exceedance Meet the Key Factors for Tier 2 Demonstrations, is an inappropriate method for evaluating demonstrations and applying tiers.**

Key factor #1 is the ratio of fire emissions to fire distance, where emissions are the sum of nitrogen oxides (NOX) and volatile organic compounds (VOC) emissions. This method is flawed. A number of studies provide compelling evidence that ozone and/or ozone precursors transported from South Asia affect ozone levels measured in California. A simple ratio may be supportive evidence for localized fire impacts, but should not discount the possibility of transport over very large distances.

In many areas where wildfires and prescribed burns take place, the NOX emissions in the surrounding areas are low, so that ozone formation in the area is NOX-limited. Therefore, it seems that NOX emissions would be more important than VOC emissions to fire-related ozone formation. Forested rural areas will contain ample amounts of highly reactive biogenic VOC, so ozone formation may not be affected by the addition of biomass burning VOC. In fact, one can conceive of a low-temperature, very smoky fire that emits a lot of VOC, but very little NOX (e.g., burning of field waste after harvest)—this fire plume is unlikely to generate a lot of ozone in a NOX-limited environment. Therefore, the ratio of fire emissions (NOX+VOC) to fire distance can probably vary greatly among fires that make the same amount of ozone downwind. It would be better to set the criterion for NOX emissions only, unless a compelling case can be made for the impact of biomass burning VOC emissions upon ozone formation during a specific event. That means that the stated criterion of >=100 tons/day/km should be lowered, since VOC will not be included. This concept also appears to ignore or discount the potential for high altitude or high velocity transport of wildfire emissions. The approach should consider this because emissions that traveled 500 miles overnight (10 hours) or at high altitude with limited chance of NOX reaction may have a much different impact potential than those that travel the distance over a period of 10 days or at ground level.

**Wildfire emissions information may be available for wildfires occurring on federal land, but the quantity and quality of emissions information for fires occurring off federal land is much less consistent.**

The TCEQ appreciates that the EPA is working to provide air agencies with year and day specific emissions information for non-National Emissions Inventory (NEI) years, the chances of being able to provide data for wildfires off federal land are very low. As such, the EPA should not require this detailed information for a demonstration if the information does not readily exist.

**The proposed guidance for the Tier 2 Key Factor #2 lacks an explanation or methodology for how the EPA will use an event’s exceptionality as a factor to establish the existence of clear causal relationship in evaluating a State’s exceptional event demonstration.**

“The second key factor for a Tier 2 demonstration considers the characteristics of the event-related concentration versus the non-event O3 concentration distribution at the monitor. Addressing key factor #2 involves showing that the exceedance due to the exceptional event:

* is in the 99th or higher percentile of the 5-year distribution of O3 monitoring data, OR
* is one of the four highest O3 concentrations within 1 year (among those concentrations that have not already been excluded under the EER, if any)." (pp. 18-19)

This appears to contradict the EPA statement in Section 3.2, Event-related Concentration in the Context of Historical Concentrations, (pg. 10) that "There is no pass or fail threshold for the historical concentrations data presentation."

This criterion is also irrelevant to demonstrations if the causal event is beyond a state’s ability to control or prevent.

Without a clear explanation from the EPA on the methodology they will use to evaluate this part of a State’s submittal, there are no assurances that those submittals will be evaluated consistently or reasonably. Moreover, the guidance should not contradict itself on this point.

**Including photographic evidence of smoke at an impacted monitor as a part of an exceptional event demonstration is impractical in cases where smoke has been transported farther than a short distance.**

This recommendation assumes that emissions from a wildfire must be associated with visible smoke emissions. It is common to have odor and high PM2.5 readings from wildfire (and presumably NOX and VOC) in locations that do not have visible smoke. The likelihood that States will be able to obtain photographic evidence of smoke at an impacted monitoring site seems doubtful unless those monitoring sites are in close proximity to air agency offices or a camera system is installed at every monitoring site. This idea seems especially impractical for air agencies with large numbers of monitoring sites or with events that occur a significant distance from an impacted monitor.

**The variable “Q” in Section 3.5.1, Evidence that the Event, Monitor(s), and Exceedance Meet the Key Factors for Tier 2 Demonstrations, is not well defined.**

On page 17, item number five should explicitly define “Q” as the sum of NOX and reactive VOC (rVOC) emissions in tons/day from the fire(s).

**The TCEQ believes it will be difficult for states to provide the level of detail requested by the EPA in Section 3.5.1, Evidence that the Event, Monitor(s), and Exceedance Meet the Key Factors for Tier 2 Demonstrations.**

The proposed guidance says “5) For each fire and each day, identify the sum of NOX and reactive VOC (rVOC) emissions in tons/day.” The sum of NOX and rVOC is a poor indicator of ozone-forming potential. Therefore the EPA should request that NOX and rVOC emissions data by provided separately if available but recognize in guidance that this is not a requirement for an exceptional event demonstration. Furthermore, it may prove difficult to obtain emissions information about particular fires even in a NEI year.