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U.S. Environmental Protection Agency  
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Via Federal eRulemaking Portal: <http://www.regulations.gov> (DOCKET ID No.: EPA-HQ-OAR-2016-0097) "Implementation of the 2015 Primary Ozone NAAQS: Issues Associated with Background Ozone White Paper for Discussion"

**SUBJECT: BP America Inc. Comments on High Ozone Background Levels: White Paper/EPA Workshop**

Dear Sir/Madam:

BP America Inc. (BP) appreciates this opportunity to submit comments on the issues raised by the Environmental Protection Agency's (EPA or the Agency) December 22, 2015 white paper on ozone background and discussed at the February 24-25 workshop convened by EPA in Phoenix, Arizona.

High ozone background is an urgent concern in implementing EPA's recently adopted National Ambient Air Quality Standard (NAAQS) for ozone because states cannot prevent or reduce background, yet may be placed in non-attainment with the NAAQS where background results in unavoidable exceedances of the standard. While EPA's recent white paper and workshop have helped to raise awareness of this problem, BP is concerned that EPA continues to understate its seriousness and advocate policy "solutions" that fail to provide meaningful relief.

In previous submissions to EPA,<sup>1</sup> BP has recommended a path forward that would be workable and effective. BP's recommendations are reiterated in these comments in the hope they will lead EPA to reconsider its current approach and move in a direction that better meets the needs of states subject to the new ozone standard.

**BP's Interests**

Over the past decade, BP has been America's largest energy investor. It employs about 17,000 people across the country and supports some 170,000 other U.S. jobs across the supply chain. BP is also a U.S. producer of fuels, lubricants and petrochemicals and buys, sells and markets energy products throughout the United States. In fact, BP is the largest marketer of natural gas in the United States.

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<sup>1</sup> These submissions are a discussion paper on ozone background provided to EPA during the comment period on the proposed NAAQS and comments on EPA's recent proposed revisions in its exceptional events rule. Both are attached.

BP's Lower 48 Onshore oil and gas production company (L48 Onshore) is one of the nation's largest producers of natural gas. Seventy percent of BP's global well count is comprised of gas wells in the Lower 48. Operating across a vast U.S. geography, from the onshore U.S. Gulf Coast north through the Rocky Mountains, BP's L48 Onshore business has a presence in 6 of the country's top basins. Headquartered in Houston, Texas, L48 Onshore employs 1,240 people across 5 states. It operates more than 10,000 producing wells, and has approximately 70,000 royalty owners.

Because L48 Onshore has significant operations in the Inter-Mountain West, it shares the concern of many states in the region that, if new areas are designated non-attainment because of background ozone, it will be more difficult to get permits for new projects and existing wells may be required to install more controls. These constraints will place additional burdens on the business at a time where it is already severely challenged by the current difficult oil and gas price environment.

### **The Challenge Posed by High Background Levels under the New NAAQS**

When EPA recently lowered the ozone NAAQS to 70 parts per billion (ppb), it stated that, "[u]nder the Clean Air Act (CAA), states are not responsible for reducing emissions from background sources."<sup>2</sup> It also recognized that, at several high-elevation sites in the West, "episodic events [occur] with substantial background concentrations where ozone concentrations approach or exceed the levels of the current NAAQS."<sup>3</sup>

Based on this recognition, EPA pledged to "work directly with air management agencies in these areas to ensure that all CAA provisions that would provide regulatory relief associated with background ozone are recognized."<sup>4</sup> The recent EPA white paper and workshop were intended to further this commitment.

The white paper defines "U.S. background" (USB) as:

"[A]ny O<sub>3</sub> from sources or processes *other than* U.S. manmade emissions of nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC), methane (CH<sub>4</sub>), and carbon monoxide."<sup>5</sup>

The paper further explains that the contributors to high background can vary from one episode to another but, in general, represent a combination of five sources – stratospheric ozone intrusion, wildfires, lightning, biogenic emissions and international transport of ozone and its precursors (typically from Asia).<sup>6</sup>

The white paper reviews the extent of ozone background in the Western U.S. and reaches the following conclusions:

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<sup>2</sup> Memo: Implementing the 2015 Ozone National Ambient Air Quality Standards, October 1, 2015, at 5-6.

<sup>3</sup> 79 Fed. Reg. 75234 (Dec. 17, 2014).

<sup>4</sup> October 1, 2015 memo, *supra*, note 1.

<sup>5</sup> *Implementation of the 2015 Primary Ozone NAAQS: Issues Associated with Background Ozone: White Paper for Discussion*, at 2 (emphasis in original).

<sup>6</sup> *Id.* at 3.

- “Ambient data analyses have shown that mid-tropospheric O<sub>3</sub> concentrations in remote areas, within the U.S. and globally, have been increasing over the past two decades at a rate of approximately 0.4 ppb/year within an overall uncertainty range of 0.1 to 0.7 ppb/year.”<sup>7</sup>
- “USB O<sub>3</sub> can comprise a considerable fraction of the total [maximum daily average 8-hour concentrations] of ozone across the U.S., with the largest relative contributions at higher-elevation, rural locations in the inter-mountain western U.S. in the spring and early summer seasons.”<sup>8</sup>
- Model-based estimates of background ozone show that it “could comprise a substantial fraction (e.g. greater than 70 percent) of the annual average, total hourly O<sub>3</sub> at high elevation sites in the Western US.”<sup>9</sup>
- “[T]here are 26 counties [in the Intermountain West] with at least one site where the 2012-2014 design value exceeds 70 ppb... In [some] urban locations, such as Las Vegas (Clark County, NV) or Salt Lake City (Salt Lake County, UT), the contribution from U.S. manmade emissions is smaller, with values around 30 percent. At rural sites within this region, the contribution from U.S. manmade emissions is still smaller... Overall, this information suggests that it will be important to assess and account for the contributions from USB sources to O<sub>3</sub> nonattainment in this region, particularly in the rural portions.”<sup>10</sup>

The recent workshop further reinforced the seriousness of elevated background in the West and demonstrated that exceedances of the NAAQS attributable to background are likely to be more prevalent than EPA has maintained previously.<sup>11</sup>

### **The Shortcomings of EPA’s Proposed Solutions**

Although EPA agrees that a mechanism to exclude background-related exceedances is required to avoid unwarranted determinations of non-attainment, the tools that it has pointed to are demonstrably inadequate to achieve that goal.

In its ozone NAAQS rulemaking and again in its white paper, EPA has identified three “relief mechanisms” that it argues will mitigate the consequences of high background levels:

- Flagging of exceedances resulting from wildfires or stratospheric ozone as “exceptional events” that should be excluded from attainment determinations under section 319(b) of the CAA and EPA’s Exceptional Events Rule (EER);

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<sup>7</sup> Id. at 8.

<sup>8</sup> Id. at 7.

<sup>9</sup> Id. at 5.

<sup>10</sup> Id. at 11.

<sup>11</sup> See comments and presentations by Owen Cooper, Andrew Langford, Dan Jaffe, Chris Emery, WESTAR, and others.

- Determinations that states in non-attainment should receive greater flexibility in NAAQS compliance because of the influence of international pollutant transport under section 179B of the CAA; and
- Designation of non-attainment areas as “Rural Transport Areas” based on the absence of significant local emission sources under section 182(h) of the CAA.

None of these approaches is comprehensive. Thus, even though it has recognized that background levels are a function of five contributing factors, EPA would not address them holistically but instead use different CAA provisions to deal with each contributor individually. This is problematic because it is the *combination* of factors that is responsible for NAAQS exceedances where they occur – and because identifying and quantifying the role of each separate contributor is difficult, if not impossible. Furthermore, for each of these three relief mechanisms, EPA is demanding demonstrations based on photochemical modeling capabilities and monitoring data that are not currently available. By going beyond the current state of models and monitoring data, EPA will make using the three mechanisms costly and extremely challenging, if not impossible.

As BP and other stakeholders have previously demonstrated,<sup>12</sup> EPA’s preferred mechanisms would – alone or in combination – fail to provide meaningful relief from background-related exceedances for the following reasons:

**EER.** Under the current EER, EPA has precluded states from including biogenic emissions, international transport or lightning in exceptional events (EE) demonstrations. Thus, states seeking relief under the EER would be limited to addressing the impact of wildfires and stratospheric ozone, the only two contributors to background that EPA has classified as “exceptional events.” The states would then need to show that these sources are causally responsible for the exceedance independent of international transport and biogenic emissions. Such a showing would be costly and technically challenging. On most occasions where *total* background is at or close to the level of the standard, it would also likely fall short of justifying relief because the other contributors to background could not be taken into account.

**International Transport Areas.** The International Border Area provisions of section 179B have been rarely used. It is uncertain whether they would apply to long-range pollutant transport from Asia as opposed to emissions from Canada and Mexico, which border the U.S. Even if applicable, these provisions could not be used to avoid a non-attainment demonstration but would simply provide greater flexibility in the timing and measures to meet the standard. Finally, to qualify for relief, the statute requires states to demonstrate that emissions from outside the U.S. are the “but for” cause of non-attainment. However, this will be difficult if not impossible because other background contributors to elevated ozone levels cannot be taken into account and distinguishing among the various contributors can be challenging.

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<sup>12</sup> The limitations of these three provisions are addressed in BP’s paper, *Addressing High Background Levels Under the Clean Air Act*, July 2, 2015 (attached).

**Rural Transport Areas.** A nonattainment area may qualify as a “rural transport area” under Section 182(h) of the CAA if it: 1) does not contain emissions sources that make a significant contribution to monitored ozone concentrations in the area; and 2) does not include and is not adjacent to a Metropolitan Statistical Area. Rural transport areas are only subject to less stringent non-attainment ozone requirements,<sup>13</sup> but still must comply with many of the CAA State Implementation Plan (SIP) requirements. In addition, as the Agency acknowledges, “[h]istorically the EPA has recognized few nonattainment areas under this provision.”<sup>14</sup> Furthermore, as Colorado emphasized in comments on the proposed NAAQS, “in many western states, counties can be much larger than in the east [and] [a]s a result, rural counties that are located adjacent to a county with a Metropolitan Statistical Area (MSA) are excluded from designation as a rural transport area . . . [even though] many of these rural counties have few sources and low population figures.”<sup>15</sup>

### **The Benefits of a Holistic Approach to High Background Levels**

Instead of relying on multiple statutory provisions that are poorly aligned and offer only limited relief, EPA should adopt a holistic framework for addressing high background levels that enables states to aggregate *all* the contributors to background and show that, in totality, they are the *principal* cause of an ozone exceedance.

Under this approach, there would be no requirement to differentiate and quantify the contributions of different background sources and then apply multiple statutory provisions to different contributors. Instead, the focus would be on showing that controllable anthropogenic emissions are not a significant factor in the exceedance and thus, that the NAAQS could not be meaningfully applied to enhance public health.

In previous submissions, BP has identified two paths to implement this holistic approach:

Revising Appendix U.<sup>16</sup> Appendix U to Part 50 was first adopted when EPA issued the 80 ppb 8-hour ozone standard in 1997.<sup>17</sup> It is entitled “Interpretation of the 8-Hour Primary and Secondary [Ozone NAAQS]” and provides data reporting and handling conventions for applying the standard and determining whether areas are in non-attainment.

The original purpose of the Appendix was to codify the Administrator’s decision to base non-attainment designations on the three-year average of the annual fourth-highest daily maximum ozone concentration at a particular monitoring location. Although seemingly technical, this approach represented a major policy decision closely linked to the level at which the NAAQS itself was set. The Agency explained that all members of the EPA Clean Air Scientific Advisory Committee

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<sup>13</sup> 79 Fed. Reg. at 75384.

<sup>14</sup> *Id.* At 75384.

<sup>15</sup> Colorado Department of Public Health and Environment, State of Colorado Comments, Docket ID EPA-HQ-OAR-2008-0699; FRL-9918-43-OAR, March 17, 2015, at 6.

<sup>16</sup> The Appendix U approach is presented in more detail in the BP July 2, 2015 paper on background ozone (attached).

<sup>17</sup> 62 Fed. Reg. at 38895 (July 18, 1997).

(CASAC) “favored [a standard] that would allow for multiple exceedances”, that such a standard would be appropriate “given the nature of the health effects and the absence of a ‘bright line’ that clearly differentiates between acceptable and unacceptable risks,” and that the form of the standard was a “policy judgment” and not a scientific determination.<sup>18</sup> Based on CASAC’s advice, EPA concluded that allowing multiple exceedances would “increase the stability of the standard by providing some insulation from the impacts of extreme meteorological events” and that “increased stability in the standard is important to avoid disruption to ongoing control programs, and thus to maintain ongoing public health protection.”<sup>19</sup>

The considerations emphasized by EPA – assuring the stability of the standard by excluding abnormally high ozone levels from attainment determinations and avoiding disruption of air quality programs by unduly stringent criteria for non-attainment – apply equally to the treatment of elevated background levels in NAAQS implementation. These background levels are not preventable or controllable and, if used as a basis for attainment determinations, would place unmanageable burdens on state air quality control agencies. Exercising the same policy judgment as the Administrator did in 1997, the Agency should revise the form of the new ozone NAAQS in Appendix U to exclude exceedances principally attributable to background from determinations of attainment.<sup>20</sup>

EER Revisions. On November 2, 2015, EPA proposed revisions to the EER to make it more workable and less burdensome.<sup>21</sup> BP’s comments on the proposal recognized that it was a good starting point, but recommended that EPA go further and adopt a framework under which *total background* at or near the level of the NAAQS could be considered an “exceptional event” in making non-attainment designations.<sup>22</sup> The BP comments argued that this approach was supported by the following principles consistent both with the text of section 319(b) and concepts in the EER proposal itself:

- The term “event” is commonly understood to apply to occurrences regardless of duration. Thus, both short-term contributors to background (like wildfires) and longer duration emission sources (like biogenic emissions or international transport) should be considered “events.”
- Any effort to include some elements of background in an EE demonstration while excluding others would be inconsistent with the goals of the statute, unnecessarily add to the states’ analytical burdens and limit the value of the EER.
- It would be unwarranted to exclude international transport from total background. As EPA recognizes in its proposal, international transport is not

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<sup>18</sup> 62 Fed. Reg. at 38869.

<sup>19</sup> 62 Fed. Reg. at 38871.

<sup>20</sup> EPA’s recent white paper on ozone background notes this proposal without attributing it to BP but says (page 12, FN 41) that it will not be discussed in the white paper “due to legal or other deficiencies.” These “deficiencies” are not explained.

<sup>21</sup> 80 Fed. Reg. 72840 (Nov. 20, 2015), as amended by 80 Fed. Reg. 81495 (Dec. 30, 2015).

<sup>22</sup> BP Comments on proposed EER revisions, February 3, 2016 (attached).

controllable by states and, together with other components of background and out-of-state emissions, should be treated as a “natural” pollution source that can be included in an EE demonstration without a showing that it is unlikely to recur at a specific location.

- It would also be inappropriate to exclude lightning-related emission increases from total background since these are clearly “natural”, non-recurring events that are not reasonably controllable or preventable.
- The individual contributors to background can be considered separate “events” or combined and treated as a single “event.” Under either approach, EPA can and should look at whether there is a causal connection between the exceedance and *total background*.
- Accordingly, where modeling or monitoring shows that aggregate background ozone from all sources is the “principal” contributor to the exceedance, a “clear causal relationship” between background and the exceedance should be presumed, without differentiating among the components of background contributing to the exceedance.
- In determining whether high ozone background should be considered an “exceptional event”, the focus should not be on individual contributors standing alone but on the totality of contributing emission sources. Viewed in this light, high elevated background levels at a particular location are an uncommon occurrence and the unique combination of emission sources that cause these high levels should be deemed to be “exceptional.” This will reduce the cost of exceptional events demonstrations and streamline and expedite the process for both states and EPA.

In sum, since high background levels are typically attributable to multiple causes, the best approach to providing relief from background-related exceedances is to allow states to demonstrate that total background – in contrast to U.S. anthropogenic emissions – is the “principal contributor” to the exceedance. This demonstration could be made using source apportionment modeling that clearly differentiates background from U.S. anthropogenic sources.<sup>23</sup> Where U.S. anthropogenic sources can be shown to account for only a small portion of the exceedance (e.g. 30% or less), then total background should be deemed to be the principal contributor to the exceedance and it should be disregarded for non-attainment purposes. EPA should adopt this “total background” framework either through revisions to Appendix U or as part of the ongoing rulemaking to revise the EER.

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<sup>23</sup> Pages 22-23 of the BP discussion paper provides a more detailed discussion of how this calculation might be made.

## Conclusion

BP appreciates the opportunity to comment on background ozone issues as discussed in EPA's white paper and at the recent Arizona workshop. We look forward to continuing the dialogue with the Agency as it continues its work on these issues. If you have any questions, please contact Bob Stout at [Robert.Stout@bp.com](mailto:Robert.Stout@bp.com) or (202) 346-8566; or David van Hoogstraten at [David.vanhoog@bp.com](mailto:David.vanhoog@bp.com) or (202) 457-6596.

Thank you for considering these comments.

Respectfully submitted,



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BP America Inc.

cc: Anna Wood, Director, Air Quality Policy Division (AQPD), Office of Air Quality and Policy Standards (OAQPS), EPA (by email)  
Chet Wayland, Air Quality Assessment Division (AQAD), EPA (by email)  
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David van Hoogstraten, BP America Inc. (by email)  
Dana Wood, North American Gas (BP America Inc.) (by email)

## Attached

1. BP Comments on the Treatment of Data Influence by Exceptional Events
2. BP Paper Addressing High Ozone Background Levels Under the Clean Air Act



February 3, 2016

DOCKET – EPA-HQ-OAR-2013-0572  
U.S. Environmental Protection Agency  
1200 Pennsylvania Ave., NW  
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Attn: [palma.elizabeth@epa.gov](mailto:palma.elizabeth@epa.gov)

**RE: Treatment of Data Influenced by Exceptional Events: Proposed Rule: 80 Fed. Reg. 72840 (Nov. 20, 2015), as amended by 80 Fed. Reg. 81495 (Dec. 30, 2015).**

Dear Sir or Madam:

BP America Inc. (BP) appreciates this opportunity to comment on proposed changes to EPA's regulations governing the demonstration of "exceptional events" (EE) for purposes of air quality designations under the National Ambient Air Quality Standards (NAAQS) and for other regulatory purposes.

BP's focus in these comments is on making the Exceptional Events Rule (EER) a more effective vehicle for providing relief from non-attainment designations where total ozone background is the principal cause of exceedances of the NAAQS. Building on the Clean Air Act (CAA) and the positive aspects of EPA's proposal, we put forward a framework for addressing background concentrations under the EER which we urge EPA to adopt in its final rule.<sup>1</sup>

Overall, BP recommends that EPA allow states to exclude data from one or multiple sources of background when background is the principal contributor to a NAAQS exceedance. The statutory definition of exceptional event does not preclude any known contributors to background from qualifying as an exceptional event. As set forth in this comment letter, wildfires, lightning, stratospheric ozone, biogenics and international transport may each qualify as an exceptional event. Moreover, an unusually high total pollutant background concentration itself may qualify as an exceptional event. BP agrees with EPA's proposed "weight of the evidence" approach to establish that exceptional events have a clear causal relationship to an exceedance. We urge EPA to find that states have made a clear causal relationship showing when one or more sources of background are the principal contributor to the exceedance.

**BP's Interests**

Over the past decade, BP has been America's largest energy investor. It employs about 16,000 people across the country and supports some 190,000 other U.S. jobs across the supply chain. In 2015, BP produced 643,000 barrels of oil equivalent per day in the U.S. It is also a U.S. producer of fuels, lubricants and petrochemicals and buys, sells and markets energy products throughout the country. In fact, BP is the largest marketer of natural gas in the U.S.

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<sup>1</sup> BP supports the separate and more comprehensive comments of the American Petroleum Institute (API), which address a number of issues that BP is not addressing here.



EPA's proposal is of particular interest to BP's Lower 48 Onshore oil and gas production business (L 48 Onshore), which is one of the largest producers of natural gas in the U.S. Approximately seventy percent of BP's global well count is comprised of gas wells in the Lower 48. Operating across a vast U.S. geography, from the onshore U.S. Gulf Coast north through the Rocky Mountains, BP's L 48 Onshore business has a presence in 6 of the country's top basins. Headquartered in Houston, Texas, L48 Onshore employs about 1,300 people across 5 states. It operates more than 9,600 producing wells, and has approximately 70,000 royalty owners.

Wyoming operations are anchored on the giant Wamsutter tight gas field in the south central part of the state. In the San Juan area of Colorado and New Mexico, L48 Onshore operates the largest coal-bed methane field in the U.S. and produces natural gas from tight gas sands. Midcontinent operations cover the prolific Anadarko basin, along with the Arkoma basin and Woodford unconventional gas plays. The business is also home to the East Texas basin. It also has non-operating interests in over 10,000 wells across the US, with substantial positions in both the Eagle Ford and Fayetteville shale.

L48 Onshore shares the concern of many Western states that, if new areas are designated non-attainment because of background ozone, it will be more difficult to get permits for new projects and existing wells may be required to install costly, if not cost-prohibitive, new controls. These constraints will place additional burdens on the business at a time where it is already severely challenged by the current oil and gas price environment, which could inhibit development of valuable natural gas resources.

BP is also one of the top refiners in the U.S. BP operates refineries in Whiting, Indiana, Blaine, Washington, and Oregon, Ohio, which may also be negatively impacted by lowering of the ozone NAAQS and an overly narrow EER which limits the availability of relief for background-related exceedances. Combined, these facilities can process up to 744,000 barrels of crude oil every day —nearly 40 percent of the company's total daily refining capacity. Strategically located across the northern tier of the United States, they provide BP the flexibility to use a wide variety of crude oil types from Alaska, Canada and the lower 48 states, and to serve high-population areas, including the cities of Chicago, Columbus and Seattle.

### **Summary of BP Comments**

EPA's 2007 Exceptional Events Rule (EER), based on section 319(b) of the CAA, responds to an important challenge in implementing the nation's air quality framework: providing states the flexibility to exclude monitoring data from determinations of attainment/non-attainment with air quality standards where the measured levels result from special circumstances that states cannot reasonably control or prevent. Despite good intentions, this rule has proven complex and difficult to implement, and states have been largely unable to avail themselves of the relief it was intended to provide. The implementation burdens imposed by the EER have been recognized not just by states and industry but by EPA itself.

With EPA's recent decision to lower the ozone NAAQS, the states face a new round of attainment determinations. As a result, the EER will assume heightened importance in evaluating how ozone monitoring data should be treated in determining an area's attainment status. Rising levels of background ozone in the Inter-mountain West and other areas, coupled with a tighter ozone NAAQS, underscore the potential benefits of the EER in providing relief where high uncontrollable levels of ozone background are the predominant cause of exceedances of the standard and a designation of non-attainment would be unwarranted.



BP commends EPA for recognizing the challenges in interpreting and applying the current rule and the need to make it more workable and less burdensome. Several elements of EPA's proposal will better enable states to make successful EE demonstrations. However, while the proposal is a good starting point, BP believes that additional provisions are required to ensure that states are not held responsible for background ozone pollution that is outside their control. In addition, EPA must clarify important elements of its proposal to eliminate uncertainty about the extent of relief available and the evidence necessary to obtain it.

The proposal's positive elements include the following:

- EPA has appropriately deleted the requirement to show that an exceedance would not have occurred "but for" the exceptional event and instead chosen to rely on the statutory requirement to demonstrate a "clear causal relationship" between the event and the exceedance.
  - This change will allow a more flexible "weight of the evidence" approach that looks at the nexus between one or more events and an exceedance and the causal role of these events in the exceedance.
- EPA has appropriately eliminated the requirement that the exceedance must be "in excess of historical fluctuations, including background."
  - Deleting this phrase will more closely conform to the statutory requirements by eliminating any inference that elevated ozone levels must be uniquely high when compared to previous concentrations at a location or that recurring "background" sources of ozone cannot be considered "exceptional events" despite their causal role in the exceedance.
- EPA has appropriately proposed that emissions originating outside a state – whether within or beyond US borders -- cannot be considered "reasonably controllable or preventable" and, when combined with non-anthropogenic emission sources, should be treated as "natural" for purposes of applying the EE criteria.
  - This presumption will establish clearly that out-of-state emissions, comprised of both anthropogenic and non-anthropogenic sources, are "natural events" as that term is used in the statutory definition and thereby avoid the need for further time-consuming analysis of whether these emissions could reasonably be reduced by the impacted state or have recurred at specific locations.
- EPA has properly eliminated any separate requirement to show that the exceptional event "affects air quality" because such a showing is subsumed in the requirement to establish a "clear causal relationship" between the event and the NAAQS exceedance.
  - This will further streamline the elements of EE demonstrations.

Building on these improvements to the existing rule, we recommend that EPA strengthen its proposal by squarely addressing the application of the EER to ozone "background" -- i.e. elevated ozone concentrations resulting from the combination of natural emission sources and international transport of ozone and ozone precursors originating outside the US. We recommend that EPA's approach to background be based on the following principles:

- The term "event" is commonly understood to apply to occurrences regardless of duration. Thus, both short-term contributors to background (like wildfires) and longer duration emission sources (like biogenic emissions or international transport) should be considered "events."



- Any effort to include some elements of background in an EE demonstration while excluding others would be inconsistent with the statute, unnecessarily add to the states' analytical burdens and limit the value of the EER.
- It would be unwarranted to exclude international transport from total background. As EPA recognizes in its proposal, international transport is not controllable by states and, together with other components of background and out-of-state emissions, should be treated as a "natural" pollution source that can be included in an EE demonstration without a showing that it is unlikely to recur at a specific location.
- It would also be inappropriate to exclude lightning-related emission increases from total background since these are clearly "natural", non-recurring events that are not reasonably controllable or preventable.
- In determining whether high ozone background data should be excluded from determinations of NAAQS exceedances, the focus should be not on individual contributors standing alone but on the totality of contributing emission sources. Viewed in this light, high elevated background levels at a particular location are an uncommon occurrence and the unique combination of emission sources that cause these high levels should be deemed to be "exceptional." Alternatively, the individual contributors to background can be considered separate "events," but combined for purposes of determining whether there is a clear causal relationship to an exceedance. Under either approach, EPA can and should look at whether there is a causal connection between the exceedance and *total background*.
- Accordingly, where modeling or monitoring shows that aggregate background ozone from all sources is the "principal" contributor to the exceedance, a "clear causal relationship" between background and the exceedance should be presumed, without differentiating among the components of background contributing to the exceedance."

We also recommend that EPA strengthen its rule by:

- Allowing states to submit demonstrations that rely in whole or in part on data from monitors under the jurisdiction of the federal land managers.
- Recognizing that, in judging whether a human activity contributing to high pollutant levels is unlikely to recur, the relevant comparison should be to previous measurements at the same monitoring site and not to measured pollutant levels at any location within the Air Quality Control Region (AQRC).
- Expanding the list of regulatory activities to which the EER applies to include other situations in which data exclusion might be appropriate, e.g., design value estimates, PSD background determinations, transportation hot spot analyses, and future year projections for modeled attainment demonstrations.
- Approving EE demonstrations by default if not responded to by a set deadline and creating a dispute resolution process.

**I. Because Elevated Background Ozone Levels will be a Significant Challenge in Implementing the New Ozone NAAQS, There is a Pressing Need to Provide Relief to States Where an Exceedance of the NAAQS is Causally Related to High Background.**

In recent years, there has been growing concern about increases in background levels of ozone and the difficulty of meeting a lower ozone standard in areas with elevated background at or slightly below the



applicable NAAQS. This concern was a prominent focus in EPA's recent rulemaking to lower the ozone NAAQS. In its proposal, EPA recognized that "certain high elevation sites in the Western U.S. are impacted by a combination of non-local sources" and that, in these areas, "episodic events [occur] with substantial background concentrations where ozone concentrations approach or exceed the level of the current NAAQS."<sup>2</sup> While characterizing these events as "infrequent," the Agency pointed to the EER and certain other CAA provisions as "relief mechanisms" that could ameliorate the impact of high background levels on state air quality programs.<sup>3</sup>

Commenters from states and the regulated community argued that it was unjustified to lower the NAAQS without providing states meaningful protection against being designated in non-attainment on the basis of high background at or close to the standard. While EPA did in fact revise the ozone NAAQS to 70 ppb, it stated that, "[u]nder the CAA, states are not responsible for reducing emissions from background sources" and pledged to "work directly with responsible air management agencies in these areas to ensure that all CAA provisions that would provide regulatory relief associated with background ozone are recognized."<sup>4</sup> To this end, EPA again pointed to the EER and emphasized that it was proceeding expeditiously to propose EER revisions. It also pledged to issue a white paper and organize a workshop on the issues addressed.

In parallel with the EPA rulemaking, BP submitted a detailed position paper on ozone background.<sup>5</sup> In addition to reviewing the principal studies of background and summarizing the concerns of the states, BP provided recommendations on how EPA could effectively address background in the NAAQS non-attainment designation process. BP examined a number of possible relief mechanisms, including improvements in the EER, and suggested how best to use them to avoid basing non-attainment designations on exceedances of the standard attributable to background ozone.<sup>6</sup>

EPA issued the white paper described in its final ozone rule on December 22, 2015.<sup>7</sup> It defines "US background" (USB) as –

"[A]ny O<sub>3</sub> from sources or processes *other than* U.S. manmade emissions of nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC), methane (CH<sub>4</sub>), and carbon monoxide."<sup>8</sup>

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<sup>2</sup> 79 Federal Register at 75234.

<sup>3</sup> Id at 75236.

<sup>4</sup> Memo: Implementing the 2015 Ozone National Ambient Air Quality Standards, October 1, 2015, at 5-6.

<sup>5</sup> *Addressing High Background Levels under the Clean Air Act*, July 2, 2015.

<sup>6</sup> BP recommended that EPA revise Appendix U, which sets out the methodologies EPA will apply to determine whether states comply with the ozone 8-hour NAAQS, by permitting states to demonstrate that any and all background ozone sources alone or in combination are the "principal contributor" to the ozone exceedance and exclude this data from their attainment designations. EPA's recent white paper on ozone background notes this proposal without attributing it to BP but says (page 12, FN 41) that it will not be discussed in the white paper "due to legal or other deficiencies." These unspecified "deficiencies" are not explained. BP continues to believe that the Subpart U approach has considerable merit and urges EPA to continue considering it, particularly if it does not provide full and effective relief to states with high background levels under the EER.

<sup>7</sup> *Implementation of the 2015 Primary Ozone NAAQS: Issues Associated with Background Ozone: White Paper for Discussion*. EPA has now scheduled a two-day workshop to discuss background on February 24 and 25.



The paper further explains that the contributors to high background can vary from one episode to another but, in general, represent a combination of five sources -- stratospheric ozone intrusion, wildfires, lightning, biogenic emissions and International transport of ozone and its precursors:

“One of the largest natural sources of O<sub>3</sub> originates from production of O<sub>3</sub> in the stratosphere through interactions between ultraviolet light and molecular oxygen. O<sub>3</sub> exists in large quantities in the stratosphere and natural atmospheric exchange processes can transport stratospheric air into the troposphere. During certain meteorological conditions, discrete plumes of stratospheric air can be displaced far into the troposphere and impact ground-level O<sub>3</sub> concentrations. These events are called stratospheric intrusions and can result in relatively high USB levels of O<sub>3</sub> at the surface, especially at higher-elevation sites. Other natural sources of O<sub>3</sub> precursor emissions include wildfires, lightning, and vegetation. Biogenic emissions of methane, which can be chemically converted to O<sub>3</sub> over relatively long time scales, can also contribute to USB O<sub>3</sub> levels. Finally, manmade precursor emissions from other countries can contribute to the global burden of O<sub>3</sub> in the troposphere and to increased USB O<sub>3</sub> levels.”<sup>9</sup>

The EPA white paper also provides a technical discussion of the available data on ozone background. BP does not agree with all aspects of this discussion and will present its views separately. However, it is noteworthy that the paper reaches the following conclusions:

- “Ambient data analyses have shown that mid-tropospheric O<sub>3</sub> concentrations in remote areas, within the U.S. and globally, have been increasing over the past two decades at a rate of approximately 0.4 ppb/year within an overall uncertainty range of 0.1 to 0.7 ppb/year.”<sup>10</sup>
- “USB O<sub>3</sub> can comprise a considerable fraction of the total [maximum daily average 8-hour concentrations] of ozone across the U.S., with the largest relative contributions at higher-elevation, rural locations in the inter-mountain western U.S. in the spring and early summer seasons.”<sup>11</sup>
- Model-based estimates of background ozone show that it “could comprise a substantial fraction (e.g. greater than 70 percent) of the annual average, total hourly O<sub>3</sub> at high elevation sites in the Western US.”<sup>12</sup>
- “[T]here are 26 counties [in the Intermountain West] with at least one site where the 2012-2014 design value exceeds 70 ppb. . . . In [some] urban locations, such as Las Vegas (Clark County, NV) or Salt Lake City (Salt Lake County, UT), the contribution from U.S. manmade emissions is smaller, with values around 30 percent. At rural sites within this region, the contribution from U.S. manmade emissions is still smaller. . . . Overall, this information suggests that it will be important to assess and account for the contributions from USB sources to O<sub>3</sub> nonattainment in this region, particularly in the rural portions.”<sup>13</sup>

In short, by EPA’s own admission, there are several locations in the West where a mechanism to exclude background-related exceedances is essential to avoid unwarranted determinations of ozone non-attainment.

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<sup>8</sup> White Paper at 2 (emphasis in original).

<sup>9</sup> Id. at 3.

<sup>10</sup> Id. at 8.

<sup>11</sup> Id. at 7.

<sup>12</sup> Id. at 5.

<sup>13</sup> Id. at 11.



## II. EPA Should Allow States to Exclude Total Background from Determinations of NAAQS Exceedances when it is the Principal Cause of the NAAQS Exceedance.

Although EPA has taken positive steps in its proposal to allow greater consideration of background in the EE process, it has not provided a clear and workable framework for basing EE demonstrations on total background. Our recommendations for such a framework are presented below.

### A. Removing the Non-Statutory Bars to Considering Background in the Current EER is an Encouraging But Incomplete Step.

The current EER and EPA guidance explicitly preclude basing EE demonstrations on the contributions to background of biogenic sources and international transport. Under the rule, EE demonstrations must show that “the event is associated with a measured concentration in excess of normal historical fluctuations, including background.”<sup>14</sup> EPA explained this limitation in its May 10, 2013 Q&A guidance as follows:

*“Both exceptional events and North American background can involve emissions from natural events like forest wildfires or stratospheric ozone intrusions. However, exceedances due to natural emissions that occur every day and contribute to policy relevant background, such as biogenic emissions, do not meet the definition of an exceptional event and are thus not eligible for exclusion under the EER. Routine anthropogenic emissions outside of the U.S. contribute to policy relevant background, but are not exceptional events.”<sup>15</sup>*

These *per se* exclusions of important components of background have no basis in the statutory text. They would also be counterproductive because they would force states to differentiate between “short duration” contributors to background (which could constitute EEs) and less episodic background sources (which would not). This artificial distinction would create enormous practical problems because of the difficulty of quantifying the contributions of different sources to total background. It would also reduce the likelihood of a successful EE demonstration by limiting the types of background that states could use to establish a causal connection between an exceedance and emission sources that are beyond a state’s control.

We are pleased that EPA’s proposed EER revisions would eliminate the bar on including emission fluctuations caused by background in EE demonstrations. However, as discussed below, EPA should go further and explicitly allow states to apply a “total background” approach which includes biogenic emissions, international transport, lightning, wildfires and stratospheric ozone. When it can be shown that these aggregated emission sources are a principal contributor to an exceedance, EPA should presume a causal relationship and treat total background as an “exceptional event.”

EPA may be reluctant to adopt this approach because it views biogenic emissions and international transport as outside the definition of “event” and therefore different from short-term contributors to background like wildfires and stratospheric intrusion.<sup>16</sup> However, as shown below, both the statute and

<sup>14</sup> 40 C.F.R. § 50.14(c)(3)(iv)(C).

<sup>15</sup> US EPA. 2013. “Interim Exceptional Events Rule Frequently Asked Questions.” Accessed at [http://epa.gov/ttn/analysis/docs/EER\\_QA\\_Doc\\_5-10-13\\_r3.pdf](http://epa.gov/ttn/analysis/docs/EER_QA_Doc_5-10-13_r3.pdf), Question 16a, p. 20 (emphasis added).

<sup>16</sup> For example, the preamble states that “it is important to note, however, that the transported natural emissions must be event-related (e.g. wildfires or stratospheric ozone intrusion) versus ongoing on a daily basis.” 80 FR 72864.



the framework in EPA's proposal contradict this distinction. Instead, total background and the emission sources comprising it can each be considered "exceptional events." Further, states may establish the "clear causal relationship" required by the statute by demonstrating either that one or more elements of background are a principal contributor to an exceedance or by making this showing for total background.

**B. "Events" under Section 319(b) can be Short-term or Continuing.**

While some contributors to background like wildfires or stratospheric intrusion may be short-duration events, others like biogenic emissions<sup>17</sup> or international transport occur over an extended period, albeit at varying levels.

The word "event" – a term not defined in section 319(b) of the CAA – is commonly understood to mean "something that happens" and is synonymous with "occurrence."<sup>18</sup> This definition does not place time-limits on "events" or exclude occurrences that continue over time. Thus, there is no basis to conclude categorically that one-time wildfires are "events" but ongoing biogenic or international transport emissions are not.

Indeed, while section 319(a) of the CAA only allows anthropogenic sources to be considered EEs if they "are unlikely to recur at a particular location," no such limitation is placed on natural emission sources. Thus, even if they are continuing and recur at a location, such emissions cannot be excluded from EE demonstrations.

EPA recognizes this explicitly in its proposal:

"[T]he statute . . . does not limit the occurrence frequency of a natural event. Natural events may recur, even frequently. Air agencies can request, and the EPA can agree, to exclude data affected by a natural event if an air agency's demonstration meets the other requirements of the [EER]."<sup>19</sup>

Thus, natural pollution sources like biogenic emissions should fall within the exceptional events definition if, alone or in combination with other natural emission sources, they have a "clear causal relationship" to an exceedance.<sup>20</sup>

Under EPA's proposal, one element of demonstrating such a causal relationship is a comparison of the exceedance with historical concentrations at or near the monitor where the exceedance was measured.<sup>21</sup> The proposed rule identifies "the types of analyses that are necessary and sufficient in a demonstration to address the comparison to historical concentrations."<sup>22</sup>

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<sup>17</sup> Biogenics can have a large impact on total ozone and contribute significantly to exceedances. The WESTAR WESTJump project showed that biogenics can contribute up to 10-20 ppb of ozone when excluding ozone formed from biogenic VOC and anthropogenic NOx, making estimates conservatively low (see pg. 89, 104, 106, and 107 of the report at [http://www.wrapair2.org/pdf/WestJumpAQMS\\_FinRpt\\_Finalv2.pdf](http://www.wrapair2.org/pdf/WestJumpAQMS_FinRpt_Finalv2.pdf) and appendix B at [http://www.wrapair2.org/pdf/Appendix\\_B\\_O3\\_10hi\\_Model\\_Days.xlsx](http://www.wrapair2.org/pdf/Appendix_B_O3_10hi_Model_Days.xlsx)).

<sup>18</sup> Merriam Webster Dictionary, accessed online on January 28, 2016.

<sup>19</sup> 80 FR 72854.

<sup>20</sup> At an absolute minimum, higher than normal levels should be considered an "event" since they are "atypical".

<sup>21</sup> 80 FR 72861-62.

<sup>22</sup> 80 FR 72862.



While this comparison can be useful in some situations, EPA itself recognizes that establishing a causal relationship requires a “holistic weight of evidence approach” and that other information beyond a comparison to historical concentrations could be dispositive. For example, exceedances caused by high background concentrations, including biogenic emissions, may not be one-time events but may have occurred previously at a given location. This should not disqualify them from inclusion in EE demonstrations. As EPA explains in explaining why it decided to remove the “in excess of historical fluctuations” language in the current rule:

“The phrase ‘in excess’ might be interpreted to mean that the concentration at issue must be higher than all historical concentrations, but the EPA maintains that Congress did not intend this, nor would such an interpretation be reasonable. Concentrations that are exceedances of a standard but are not higher than all concentrations recorded at a particular monitor may be causally connected to an event of the type that Congress clearly identified for treatment as an exceptional event.”<sup>23</sup>

**C. Under EPA’s Proposal, International Transport Should be Considered a Natural Event and Combined with Other Natural Sources of Background.**

As noted above, EPA has previously advised in its EER guidance that international transport of pollutants and their precursors cannot be the basis of an EE demonstration.<sup>24</sup> This exclusion is contrary to the plain language of section 319(b) of the CAA.<sup>25</sup> Moreover, since international transport is not readily controllable or preventable, it represents the very type of circumstance at which section 319(b) is targeted and should be eligible to be treated as an EE if it meets the other elements of the statutory EE definition.<sup>26</sup>

Fortunately, the EER proposal embodies a different approach that would negate this prior guidance. The proposal states that: “Certain events, national or international in origin and from natural or anthropogenic sources, may cause exceedances that are eligible for exclusion under the [EER].” EPA adds that it “believes that the [EER] will often be the most appropriate mechanism to use when addressing transported emissions . . . because [the EER] may be used during the initial area designations process and may make a difference between an attainment versus a non-attainment

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<sup>23</sup> 80 FR 72851.

<sup>24</sup> A recent article by NOAA researchers in *Science* highlights the contribution of international transport to high ozone levels. The authors cite the trend of higher ozone levels “at rural high-elevation sites in the Western United States” and attribute this trend to “greater exposure to enhanced ‘baseline ozone’ that flows across the Northern Pacific Ocean or is transported down from the lower stratosphere.” They emphasize that “[o]bserved springtime baseline ozone 3 to 8 km above western North America has increased significantly since the 1980s and 1990s, and the trend is strongest in air masses that are transported directly from South and East Asia.” Owen R. Cooper et al., *Challenges of a lowered U.S. ozone standard*, 348 (Iss. 6239) *SCIENCE* 1096-1097 (June 5, 2015).

<sup>25</sup> Section 319(b)(1)(B) contains express exclusions for described weather conditions and other meteorological events but doesn’t mention international transport. This omission is evidence that Congress did not perceive any bar to considering international transport as an exceptional event but anticipated that it would be judged by the same statutory criteria as other events. Nor should any inference be drawn from section 179B, which creates a special non-attainment category for international border orders. The existence of this provision doesn’t mean that Congress sought to preclude other remedies. And in any event, it is not clear that the provision extends beyond North American border areas and encompasses intercontinental transport as EPA itself has noted. See 69 FR 32450, 32452 (June 10, 2004) (approving SIP for El Paso).

<sup>26</sup> CAA 319(b)(1)(A)(ii).



designation.”<sup>27</sup> Indeed, EPA specifically notes that “international transport events are different” from intrastate emissions “because it is not reasonable to expect the downwind air agency . . . to have required or persuaded the upwind foreign country to have implemented controls on emissions.”<sup>28</sup>

The proposed rule also makes clear that transported pollution from outside the state can be considered a “natural event” for purposes of the EER when combined with emissions from non-anthropogenic sources and thus need not meet the non-recurring test otherwise applicable to anthropogenic emissions:

“An event with a mix of natural emissions and reasonably controlled human emission sources may be considered a natural event . . . regardless of the magnitude of emissions generated by these reasonably controlled anthropogenic sources and regardless of the relative contribution of these emissions and emissions arising from natural sources in which human activity has no role.”<sup>29</sup>

EPA then makes clear that this principle presumptively applies to transported emissions because the downwind state need not demonstrate that interstate or international emission sources are reasonably controlled and can treat the combination of these manmade and natural emissions as a “natural event.”<sup>30</sup>

In short, the combination of international transport and other sources of background can be considered a “natural event” under the EER and would not be subject to a requirement to demonstrate that the international contribution to an exceedance is “unlikely to recur at a particular location.” This contribution could, therefore, be continuing and recurring, even though its precise impact may vary over time and at different places.

While EPA’s analysis provides a sound basis to treat international transport as a natural event, there are other supportable grounds for this approach. For example, EPA can reasonably conclude that international ozone transport fits this description because, while originating from anthropogenic sources, the ozone reaches the US due to wind patterns and other meteorological mechanisms beyond human control and therefore definable as natural events.

#### **D. Lightning Should be Treated as an Exceptional Event.**

EPA should confirm that lightning may qualify as an exceptional event because it is not reasonably controllable or preventable and it is a natural event. In fact, nothing in the limited legislative history for Section 319(b) suggests that natural sources of air pollutants, like biological processes of lightening, are barred from consideration as exceptional events. Recent modeling studies have shown that lightning can greatly contribute to ozone levels in the US: “Lightning increases mean surface ozone in summer by 10 ppbv in the Intermountain West, with moderate variability.”<sup>31</sup>

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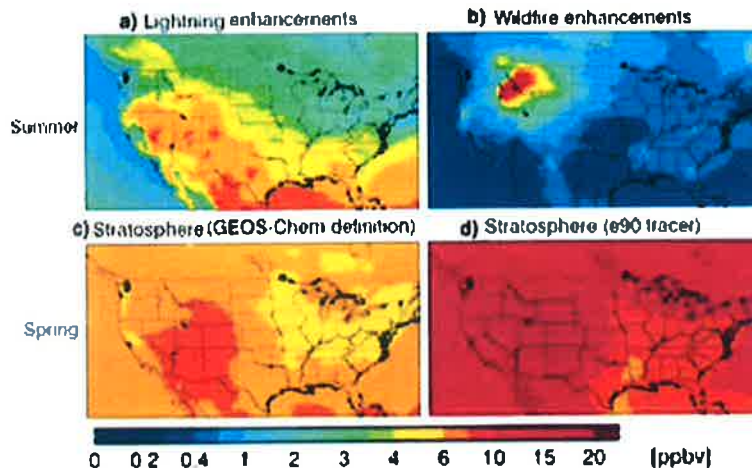
<sup>27</sup> 80 FR 72864

<sup>28</sup> 80 FR 72865.

<sup>29</sup> 80 FR 73854.

<sup>30</sup> 80 FR 72865.

<sup>31</sup> Zhang, L; Jacob, DJ; Yue, X; Downey, NV; Wood, DA; Blewitt, D. 2014. “Sources contributing to background surface ozone in the US intermountain West.” *Atmos. Chem. Phys.* 14:5295-5309.



(Zhang et al., 2014)

"The maximum lightning influence in the model time series (17.9 ppbv) is associated with a total ozone concentration of 66 ppbv. For the model population with total ozone in excess of 65 ppbv the lightning influence averages  $6.1 \pm 2.1$  ppbv at Chiricahua NM and  $7.9 \pm 3.2$  ppbv at Grand Canyon NP, similar to the seasonal averages."<sup>32</sup>

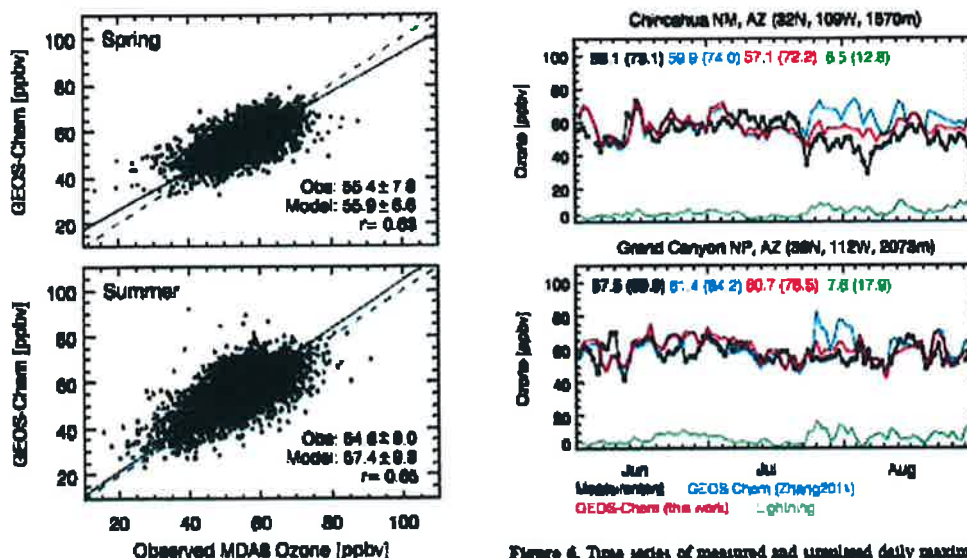


Figure 5. Simulated vs. observed daily maximum 8 h average (MDA8) ozone concentrations at the ensemble of CASTNet sites in the Intermountain West (Fig. 4) for 2004–2008: spring (March–May; top panel) and summer (June–August; bottom panel). Each point represents a daily value for a site in Fig. 4. Also shown are the 1:1 line (dashed line) and the reduced-major-axis regression lines (solid lines). The mean concentrations, standard deviations, and correlation coefficients ( $r$ ) are shown inset.

Figure 6. Time series of measured and unsimulated daily maximum 8 h average (MDA8) ozone concentrations at Chiricahua NM and Grand Canyon NP (both in Arizona) in summer (June–August) 2007. Measurements (black line) are compared to model results from the Zhang et al. (2011) simulation (blue line) and from this work (red line). Also shown are simulated ozone enhancements from lightning as compared by the difference between our standard simulation and a sensitivity simulation with lightning emissions turned off (green). The mean (maximum) concentrations for the time period are shown inset.

(Zhang et al., 2014)

<sup>32</sup> Zhang, L.; Jacob, D.J.; Yue, X.; Downey, N.V.; Wood, D.A.; Blewitt, D. 2014. "Sources contributing to background surface ozone in the US intermountain West." *Atmos. Chem. Phys.* 14:5295–5309.



**E. Individual Contributors to Background can be Combined to Demonstrate a Causal Link Between Background and the Exceedance.**

The statute allows states to exclude data from one or multiple “events” if they collectively contribute to an exceedance.<sup>33</sup> Thus, states should have the option of treating the individual components of background as separate “events” or aggregating these individual contributors to background and treating total background as a single “event.”<sup>34</sup> Under either approach, it should be permissible to satisfy the requirement for a “clear causal relationship” on the basis of the impact of *total background* on the exceedance.

Equally important, total background at a location is not static but depends on the interaction of several contributors that vary by time and place. Although some elements of background may be relatively continuous, high levels of background at or close to the NAAQS are uncommon circumstances, in which the different contributors to background combine in a way that produces elevated ozone concentrations. Thus, far from being routine, total background that is causally connected to a NAAQS exceedance is the result of an unusual set of events that, in combination, may qualify as “exceptional.”

**F. Source Apportionment Modeling Quantifying the Relative Role of Total Background and Anthropogenic Emissions is the Best Way to Examine the Causal Link between Background and an Exceedance.**

Since high background levels are typically attributable to multiple causes, the best way to provide relief for background-related exceedances is to allow states to demonstrate that total background – in contrast to U.S. anthropogenic emissions – is the “principal contributor” to the exceedance. This demonstration could be made using source apportionment modeling that clearly differentiates background from U.S. anthropogenic sources.<sup>35</sup> Where U.S. anthropogenic sources can be shown to account for only a small portion of the exceedance (e.g. 30% or less), then total background should be deemed to be principal contributor to the exceedance, satisfying the “clear causal relationship” test in the statute and EPA’s proposal.

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<sup>33</sup> Section 319(b)(2)(A) directs EPA to promulgate regulations governing “air quality monitoring data influenced by exceptional events.” Similarly, paragraph (3)(B)(iv) requires EPA regulations to include a petition process “to exclude air quality monitoring data that is directly due to exceptional events” from the attainment determination process. Congress’ use of the plural “events” suggests a recognition that multiple events that impact an exceedance can be considered together in applying the statutory criteria.

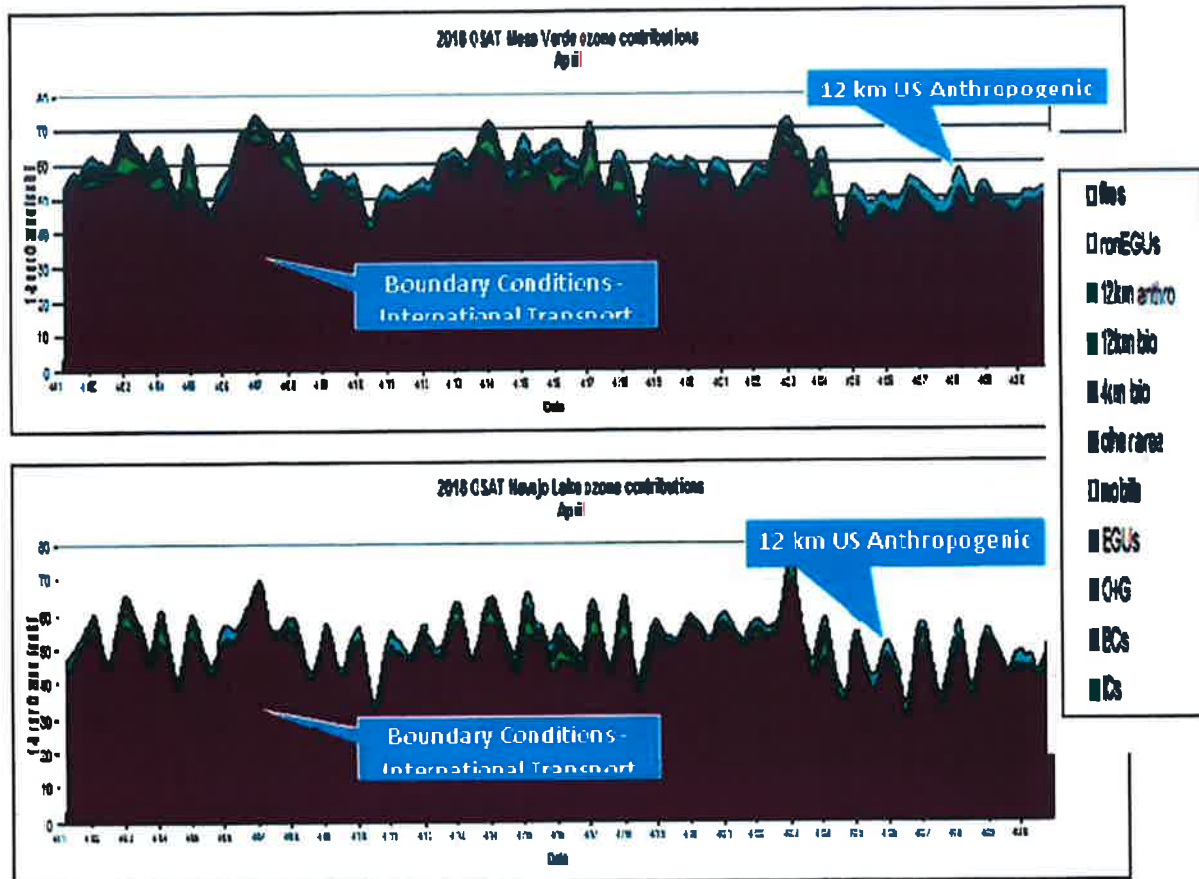
By discussing the combination of transported pollution and other emission sources as a “natural event”, EPA likewise seems to recognize that multiple events can be combined in a single EE demonstration, but its final rule should be explicit on this point.

<sup>34</sup> States could also limit the demonstration to one element of background (i.e. wildfires) if they believe that component is the predominant factor causing the exceedance.

<sup>35</sup> Pages 22-23 of the BP discussion paper provides a more detailed discussion of how this calculation might be made.



The following figures illustrate how such an analysis could be made in the Four Corners area of the Southwest, where modeling shows that US anthropogenic emissions have a small impact on total ozone and the combination of biogenics, fires, and international transport can easily exceed 70 ppb ozone:<sup>36</sup>



One important benefit of this “total background” approach is that it would avoid the need to differentiate among and quantify the contributions of different background sources or separate the contribution of infrequent background events (wildfires) from sources that are recurring (like biogenic emissions). This will reduce the cost of EE demonstrations and streamline and expedite the process for both states and EPA. Thus, we urge EPA to recognize in the final rule that a “clear causal relationship” can be demonstrated by evidence establishing that total background from all sources is the “principal contributor” to an exceedance.

**G. Other CAA Mechanisms Cited by EPA as Addressing Ozone Background are Inadequate and Cannot Substitute for an Effective EER.**

During the ozone NAAQS rulemaking and again in its white paper on ozone background, EPA has pointed to two other CAA mechanisms that it believes provide relief to states facing high background levels: (1)

<sup>36</sup> Stoeckenius, T.E., C.A. Emery, T.P. Shah, J.R. Johnson, L.K. Parker and A.K. Pollack, 2009 and 2010. Air Quality Modeling Study For the Four Corners Region and Addendum. ENVIRON International Corp., Revised Report, August 2009 and January 2010. (<http://www.nmenv.state.nm.us/aqb/4C/Modeling.html>)



designation as a Rural Transport Area; and (2) regulatory flexibility under the international transport provisions of the CAA. EPA may believe that these mechanisms, and not the EER, should be used to address “continuing” sources of background such as biogenic and international transport emissions.

These policies as now constructed do not provide meaningful relief to states with high background ozone levels.<sup>37</sup> The rural transport and international transport provisions of the CAA have been used rarely. They authorize a modest reduction in regulatory burdens for eligible states but do not provide a means to avoid non-attainment designation in the first instance. Being designated as non-attainment initiates a cascading set of costly requirements on the state and regulated community. Even where the rural and international transport provisions apply, states will remain obligated to develop a baseline emissions inventory, implement nonattainment new source review, control existing sources and adopt transportation and general conformity requirements. In states where non-attainment is the result of high background levels that cannot be controlled or prevented, these efforts will have no air quality benefits but rather will simply impose costs and burdens on the state and the regulated community.

These considerations further demonstrate why the “total background” approach under the ERR is clearly preferable to other CAA provisions in providing meaningful relief to states impacted by high background ozone.

### **III. Several Other Aspects of EPA’s Proposal Must be Modified or Clarified**

BP offers the following additional recommendations for improving the EER:

#### **A. Monitors under the Jurisdiction of FLMs**

EPA should allow states to submit EE demonstrations for monitors under the jurisdiction of the Federal Land Managers (FLMs). Many of the CASTNET monitors are under the jurisdiction of the FLMs. Due to limited resources, the FLMs may not submit EER requests for exceedances at their monitors and the states should be allowed to do so since the monitors impact their attainment determinations.

#### **B. Comparison of Current and Past Emission Levels**

EPA should modify the proposal so that, in determining whether exceedances due to human activity are non-recurring, the appropriate comparison is between current and past emissions at the monitoring site and not throughout the relevant Air Quality Control Region (AQRC). Many of the AQRCs in the west are larger than some eastern states. Demonstrating that the event has not occurred more than 2 times in a Western AQRC will be far harder than an Eastern AQRC. Since attainment/non-attainment designations for an AQRC are based on measurements from a single monitor in an AQRC, the determination whether an exceedance is recurring should be based on historical emission levels at the same monitoring site.

#### **C. Regulatory Activities to which the EER Applies**

EPA should expand the list of regulatory activities for which relief is available under the EER and incorporate other situations in which data exclusion might be appropriate, e.g., design value estimates, PSD background determinations, transportation hot spot analyses, future year projections for modeled

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<sup>37</sup> Pages 16-17 of the July 2, 2015 BP discussion paper discuss these provisions in greater detail.



attainment demonstrations, into the EER. Addressing these situations through the EER would ensure a single process for states to address data exclusion.

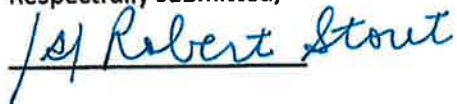
#### **D. Schedule and Process for Acting on EE Demonstrations**

To avoid the long delays and uncertainty in EPA's review of current EE packages and the resources required to meet EPA requests for data, we also propose that, if demonstrations contain all the required elements, they should be automatically approved by EPA if there are no Agency objections within 1 year of submission of the demonstration package. Given the large number of background-related exceedances likely to be flagged under the new standard, an expedited process that results in rapid decisions is essential to afford certainty to states and EPA itself during the non-attainment designation process. Also, if EPA denies the approval, there should be a clear dispute resolution process that the states can access to assure that the Agency's decision has a sound basis.

#### **Conclusion**

BP appreciates the opportunity to comment on EPA's proposal and looks forward to working with the Agency on the final rule. If you have any questions, please contact me or Amy Trojecki, Sr. Director, Regulatory Affairs at [amy.trojecki@bp.com](mailto:amy.trojecki@bp.com) or 202-346-8583.

Respectfully submitted,



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July 2, 2015

## **ADDRESSING HIGH OZONE BACKGROUND LEVELS UNDER THE CLEAN AIR ACT**

### **Summary and Conclusions**

On December 17, 2014, the Environmental Protection Agency (“EPA”) published proposed National Ambient Air Quality Standards (“NAAQS”) for ozone.<sup>1</sup> The proposed rule would lower the threshold for attainment of the ozone NAAQS from 75 parts per billion (“ppb”) to between 65 and 70 ppb.<sup>2</sup>

Many areas of the country experience high background levels of ozone, resulting from a combination of international transport, stratospheric intrusion, biogenic emissions, forest fires and lightning. In the Intermountain West, modelled background ozone levels approach or exceed the proposed standard, without any significant contribution from U.S. anthropogenic emissions. At such high background levels, it will be impossible to attain the new standard. Thus, non-attainment designations and resulting implementation efforts will not produce any improvement in public health in these areas. States in the Western US have expressed deep concern that, because of high background, compliance with a lower NAAQS will be difficult if not impossible and have asked EPA for relief.

In the proposed NAAQS, EPA recognizes that “certain high-elevation sites in the western U.S. are impacted by a combination of non-local sources.”<sup>3</sup> EPA acknowledges that in these areas, “there can be episodic events with substantial background contributions where ozone concentrations approach or exceed the level of the current NAAQS.” However, EPA claims that these events “are relatively infrequent” and then points to three “relief mechanisms” that it argues will ameliorate the impact of high background levels: 1) designation as a Rural Transport Area; 2) regulatory relief through the international transport provisions of the CAA; and 3) flagging of background-related exceedances as “exceptional events” under the Exceptional Events Rule (“EER”).<sup>4</sup>

These policies as now constructed do not provide meaningful relief to states with high background ozone levels. The rural transport and international transport provisions of the CAA have been used rarely. They authorize a modest reduction in regulatory burdens for eligible states but do not provide a means to avoid non-attainment designation in the first instance. Being designated as non-attainment initiates a cascading set of costly requirements on the state and regulated community. Even where the rural and international transport provisions apply, states will remain obligated to submit state implementation plans (“SIPs”) and thus will be required to develop a baseline emissions inventory, implement

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<sup>1</sup> 79 Fed. Reg. 75234 (Dec. 17, 2014).

<sup>2</sup> Although this paper proposes a framework for addressing high background levels in the attainment designation process, we oppose lowering the ozone NAAQS from the current level of 75 ppb for several reasons, including that the relevant health effects data fail to demonstrate that a more stringent standard is necessary to protect public health.

<sup>3</sup> 79 Fed. Reg. at 75242.

<sup>4</sup> *Id.* at 75236.

nonattainment new source review, control existing sources and adopt transportation and general conformity requirements.

The EER likewise provides insufficient relief. It greatly restricts the circumstances under which background can qualify as an "exceptional event" and imposes rigorous causation requirements that are extremely difficult to meet and compel states to incur large costs in making EE demonstrations. Very few demonstrations have been approved by EPA and the review process has been protracted and uncertain.

The CAA requires EPA to set a NAAQS at levels that are "requisite to protect public health." A standard that will not deliver any improvement in public health because states lack the ability to reduce background ozone would not meet this requirement. The Act's legislative history confirms that Congress did not expect NAAQS to be set at background levels because such a standard would be impossible to achieve. Similarly, while cost and technical feasibility are not relevant in setting NAAQS, background is in a different category because it cannot be controlled or prevented. Requiring states to implement a standard that cannot be attained would be contrary to the design of the Act, which is focused on practical steps the states can take to improve air quality.

EPA has consistently considered background ozone levels in determining where to set the ozone NAAQS. In its 1979 NAAQS revisions, EPA carefully reviewed the data on background levels, concluding that they were "usually well below the proposed levels of the standards" and in any event exceedances of the standard resulting from background "could be disregarded for regulatory purposes" under established EPA policies.<sup>5</sup> In its 1997 ozone NAAQS revisions, EPA again considered proximity to background ozone as an important factor in setting the NAAQS and selected a standard at the upper end of the range under consideration to avoid an overlap with background. The DC Circuit then determined that background levels were a permissible consideration in promulgating a NAAQS under the CAA.

EPA is now considering NAAQS levels significantly lower than the 1979 and 1997 standards and, in the intervening years, background ozone has increased and the evidence documenting high background levels has become more robust and compelling. For EPA to disregard this evidence and set a standard that cannot be achieved in large portions of the country because the standard is near, at or below background levels would be arbitrary and capricious and unlawful under the CAA. The only defensible course would be to set the standard above background or, alternatively, create meaningful mechanisms for states with high background levels to obtain relief from being designated in non-attainment.

Because existing policies fail to provide such relief, EPA must develop a new, more effective and workable mechanism by which states can exclude exceedances attributable principally to background ozone from non-attainment designations. The revisions to the EER that EPA is reportedly developing will fall well short of this objective and must be replaced by a more comprehensive approach.

Under this approach, EPA should not limit relief to some sources of background and exclude others. Instead, an exceedance principally attributable to background should qualify for relief whether the background is due to biogenic emissions, wildfires, stratospheric intrusions,

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<sup>5</sup> 44 Fed. Reg. 8202, 8212 (February 8, 1979).

lightning, and/or international transport. In addition, there should be no requirement to identify and quantify the precise role played by these factors, a task that would be time-consuming, technically challenging and cost-prohibitive. Rather, a state should be required to show, by monitoring or modelling, that overall background ozone is the principal contributor to the exceedance. Benchmark criteria that would give states different paths to make this showing are described below.

The best vehicle for adopting this new framework would be revisions to Appendix I to 40 C.F.R. Part 50. This Appendix provides methodologies and data handling conventions for determining whether the ozone NAAQS is met at ambient ozone air quality monitoring sites. As recognized in the 1997 NAAQS revisions and reinforced by the Clean Air Scientific Advisory Committee (“CASAC”), EPA has broad policy discretion in determining the conditions under which standard exceedances at particular monitoring locations will be deemed to demonstrate non-attainment. This discretion can be used to establish criteria for disallowing exceedances resulting principally from high background rather than controllable anthropogenic emissions.

Another path to provide this relief would be modification of the EER. This would require reexamination of key elements of both the EER itself and EPA guidance that broadly restrict when international transport of anthropogenic emissions and even naturally occurring ozone can form the basis for an approvable EE demonstration. While EPA’s efforts to revise the EER are commendable, the Agency needs to make changes far broader than those under consideration if it seeks to rely on the EER as the basis for excluding background-related exceedances from non-attainment designations. As discussed below, we believe section 319(b) of the CAA can be interpreted to give EPA significantly broader authority to disallow these exceedances and therefore recommend a significant overhaul of the EER if EPA chooses not to provide relief under Appendix I to Part 50.

Whatever vehicle EPA uses, it must afford greater simplicity and speed of decision-making than the current cumbersome EE demonstration process. States have been deterred from using this process by the resource-intensive and costly data and documentation requirements, the lack of regional consistency and the lengthy delays that have occurred before EPA takes action on demonstration packages. Our recommendations for a streamlined, cost-effective process are outlined below.

With many states and industry expressing deep concern about high background levels, EPA must give the highest priority to addressing this issue at the same time that it releases a final NAAQS this fall. The final rule should be accompanied by a proposed rule modifying either Appendix I or the EER and EPA should set an expeditious schedule for finalizing this rule early in 2016.

## **I. High Background Levels Will Make a Lower Ozone Standard Unattainable in Large Parts of the U.S.**

### **A. The Prevalence of High Background Levels**

Background ozone comes from natural sources and long-range ozone transport. Natural sources of ozone include emissions of ozone precursors (VOCs and NO<sub>x</sub>) from events such as wildfires or lightning, biogenic emissions tied to natural processes in soil, plants and animals, and the intrusion of ozone into the troposphere from the ozone layer in the stratosphere (SST

events). Long-range transport of ozone comes from emissions of ozone precursors outside the U.S. (Asia in particular) and in distant regions within U.S. boundaries and the movement of these pollutants into downwind areas.

Figure 1 is a map that shows that background ozone concentrations in the Western half of the U.S. are as high as 50 and 70 ppb. In particular, high elevation sites in the West are disproportionately impacted by a combination of non-local sources like international transport, stratospheric ozone and ozone originating from wildfires. These concentrations were determined by a modelling exercise that zeros out all anthropogenic sources in North America from current concentrations, leaving only background to account for the remaining ozone concentrations. Notably, these estimates do not include ozone and ozone precursors that are internationally transported from Canada and Mexico or background ozone from forest fires.<sup>6</sup> Moreover, this modelling likely underestimates peak background ozone as the models are not good at replicating the peak concentrations.<sup>7</sup> The concern raised by the modeling results, as noted by Zhang et al. 2011, is that “[i]f the NAAQS is lowered in the 60-70 ppbv range, areas of the intermountain West will have little or no ability to reach compliance through North American regulatory controls.”<sup>8</sup>

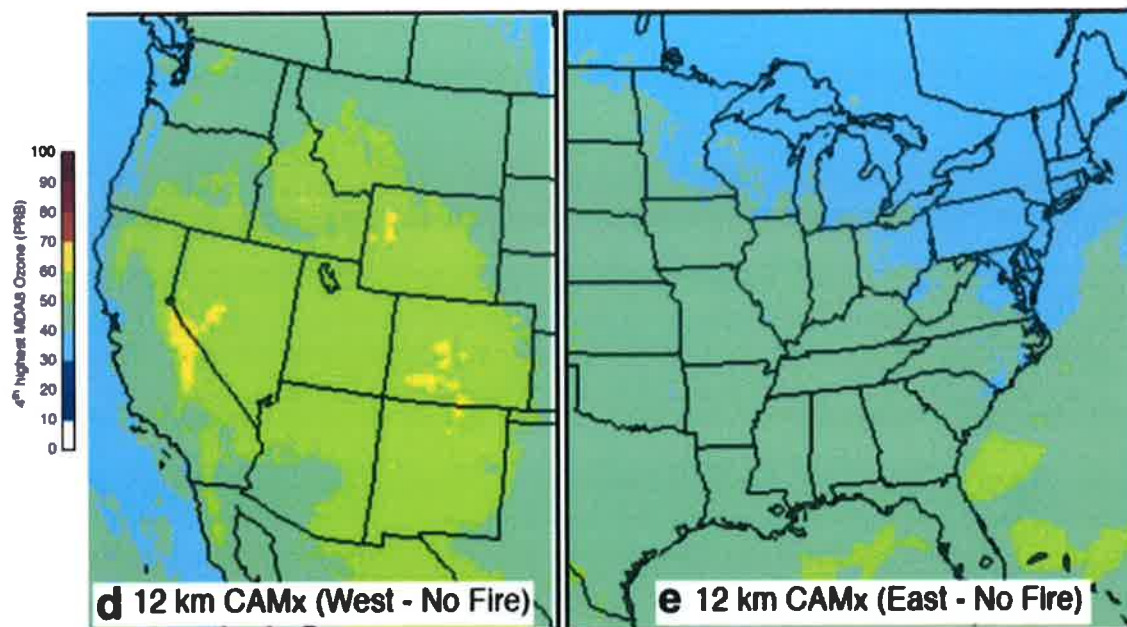
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<sup>6</sup> With forest fires, ozone can be as high as 90 ppb.

<sup>7</sup> EPA’s own model performance evaluation showed that the model was consistently under-predicting ozone by 5 to 10 ppb on a mean basis (not maximum).

<sup>8</sup> Lin Zhang et al., *Improved estimate of the policy-relevant background ozone in the United States using the GEOS-Chem global model with  $1/2 \times 2/3$  horizontal resolution over North America*, 45 ATMOSPHERIC ENVIRONMENT 6769, 6773-6774 (2011).

**Figure 1: North American Background Ozone<sup>9</sup>**



Langford *et al.* (2014)<sup>10</sup> conducted a study in Clark County, Nevada that found that stratosphere-troposphere transport directly contributed in excess of 30 ppb ozone to the three ozone NAAQS exceedances observed over six weeks of study. Additionally, they found that international transport from Asia contributed > 10 ppb on two of those occasions. Langford *et al.* (2014) argue that if the ozone NAAQS is lowered below 75 ppb --

The shrinking margin between the NAAQS and increasing springtime background concentrations means that even modest episodic additions of 5-10 ppbv from STT or Asian pollution can potentially lead to exceedances of the NAAQS. Exceedance events will become increasingly frequent if the NAAQS is decreased to 70 ppbv or less . . .<sup>11</sup>

<sup>9</sup> C.J. Emery *et al.*, *Regional and global modeling estimates of policy relevant background ozone over the United States*, 47 *ATMOSPHERIC ENVIRONMENT* 206, 213 (2012) (emphasis added).

<sup>10</sup> A.O. Langford *et al.*, *An Overview of the 2013 Las Vegas Ozone Study (LVOS): Impact of stratospheric intrusions and long-range transport on surface air quality*, 109 *ATMOSPHERIC ENVIRONMENT* 305 (2015).

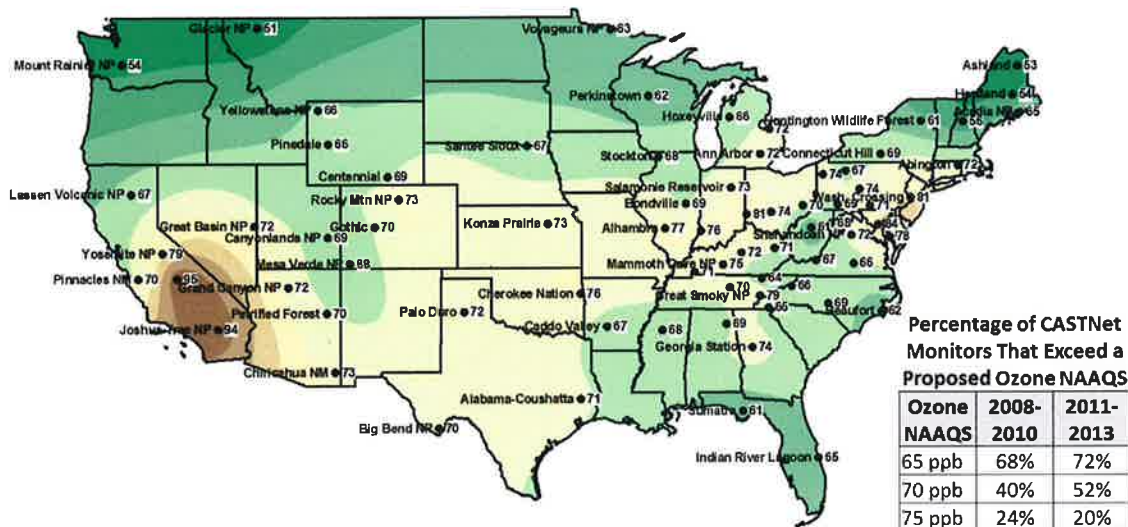
<sup>11</sup> *Id.* at 307.

They go on to state that:

The mean surface MDA8 ozone at Jean, NV in rural Clark County was 66 ppbv during May and June of 2012, which is only 9 ppbv less than the current 2008 NAAQS and greater than some values that are currently being considered ([www.epa.gov/oaqps001/greenbk/hindex.html](http://www.epa.gov/oaqps001/greenbk/hindex.html)). The number of exceedance days in Clark County during the 43-day LVOS field campaign would have increased from 3 to 14 if the NAAQS had been 70 ppbv instead of 75 ppbv, and from 3 to 25 if the NAAQS had been 65 ppbv. In other words, exceedances of the NAAQS generated by high background concentrations and stratospheric intrusions would have occurred on 60% of the days during LVOS, making these events the rule rather than the exception.<sup>12</sup>

Strong evidence of high background levels, particularly in the West, is provided by CASTNET monitoring at National Parks and National Forests across the US. Results are summarized in Figure 2 below:

**Figure 2: CASTNET 2010-2012 Ozone Design Values<sup>13</sup>**



Values are three-Year Average of Fourth Highest Daily Maximum 8-Hour Average Ozone Concentrations (ppb) for 2010-2012

Many if not most of the National Parks and Forests across the country exceed the proposed ozone NAAQS of 65-70 ppb. Some 68-89% of the National Parks and Forests exceed 65 ppb ozone depending on the three years averaged. 35%-52% of the National Parks and Forests exceed 70 ppb. Yellowstone National Park, which has little influence from domestic

<sup>12</sup> *Id.* at 320 (emphasis added).

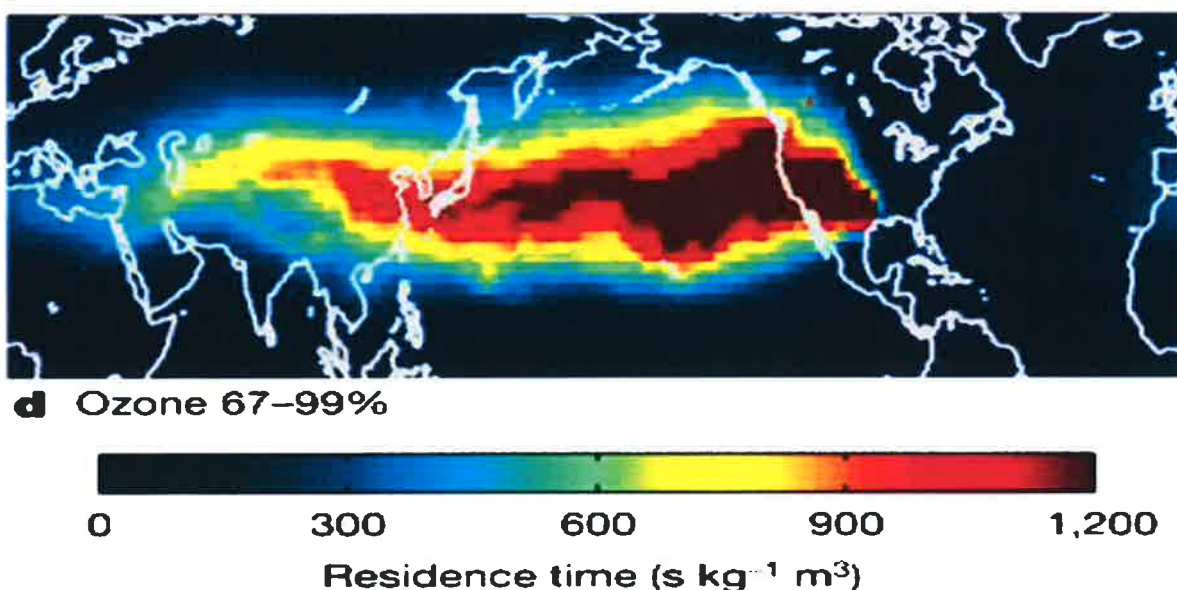
<sup>13</sup> Data were accessed from <http://epa.gov/castnet/javaweb/index.html> on February 20, 2013 by A. Hendler, URS Corporation, Austin, TX.

transport, has an ozone level of 66 ppb. Big Bend, which borders Mexico, has a level of 70 ppb.

A recent article by NOAA researchers in *Science* highlights the contribution of international transport to these high ozone levels. The authors cite the trend of higher ozone levels “at rural high-elevation sites in the Western United States” and attribute this trend to “greater exposure to enhanced ‘baseline ozone’ that flows across the Northern Pacific Ocean or is transported down from the lower stratosphere.” They emphasize that “[o]bserved springtime baseline ozone 3 to 8 km above western North America has increased significantly since the 1980s and 1990s, and the trend is strongest in air masses that are transported directly from South and East Asia.”<sup>14</sup>

Figure 3 shows the 15-day transport history of air masses with high ozone values (67-99 percentiles). It demonstrates that air descending on the western US spent a significant period of time in the western Pacific and East Asia, where ozone and ozone precursors were picked up and lofted to the United States.

**Figure 3: Asian Transport of Ozone Precursors<sup>15</sup>**



Furthermore, background ozone is high in the West when ozone is high. As shown in Table 1 by the Western States Area Resources (“WESTAR”) Council, representing air directors from 15 states in Table 1, more than 75% of total ozone in the west at sites greater than 65 ppb was from background ozone. The West-e Jump-Start Modelling Study

<sup>14</sup> Owen R. Cooper et al., *Challenges of a lowered U.S. ozone standard*, 348 (Iss. 6239) SCIENCE 1096-1097 (June 5, 2015).

<sup>15</sup> O.R. Cooper et al., *Increasing springtime ozone mixing ratios in the free troposphere over western North America*, 463 NATURE 344, 346 (January 21, 2010).

(WestJumpAQMS) – Final Report from September 2013 showed similar results for the entire West.<sup>16</sup>

**Table 1: Modelled Percent Background and Non-US ozone (ppb) at Western Sites with Average Design Values above 65 ppb and Total Background Values above 75 Percent**<sup>17</sup>

State	County	Design Values		Other (ppb)	Biogenic (ppb)	Boundary Conditions (ppb)	Total Background (ppb)	Background % of Avg Design Value
		2018 Average (ppb)	2018 Max (ppb)					
Nevada	Clark	70.0	70.7	2.0	2.3	52.8	57.1	82%
New Mexico	Dona Ana	69.3	70.3	16.6	4.9	34.8	56.3	81%
Arizona	Cochise	69.2	70.1	4.2	2.9	56.4	63.5	92%
Nevada	Clark	68.7	68.7	1.8	2.6	51.3	55.7	81%
Nevada	White Pine	68.6	70.5	4.9	2.2	52.6	59.7	87%
Arizona	Coconino	68.4	69.4	2.5	2.2	53.0	57.8	84%
New Mexico	Dona Ana	68.3	72.9	18.8	4.6	34.2	57.6	84%
Utah	Washington	68.1	69.3	2.5	3.1	48.5	54.0	79%
Arizona	La Paz	67.6	68.3	1.7	2.8	48.2	52.7	78%
New Mexico	Bernalillo	66.7	68.5	2.7	2.6	49.5	54.8	82%
Utah	Utah	66.4	69.3	1.1	2.3	50.5	53.8	81%
Utah	Carbon	66.2	66.2	0.8	1.9	50.5	53.2	80%
Utah	Utah	65.9	66.6	1.1	2.5	48.8	52.4	80%
New Mexico	Bernalillo	65.8	66.7	5.4	3.9	41.1	50.4	77%
Utah	San Juan	65.7	66.0	1.1	2.2	52.3	55.6	85%
Arizona	Coconino	65.1	65.8	1.6	1.7	54.8	58.1	89%
Utah	Duchesne	65.1	65.1	0.8	1.6	52.9	55.3	85%
New Mexico	Dona Ana	65.1	66.4	15.6	4.6	32.7	52.9	81%

Source: Air Quality Modeling Technical Support Document for the 2008 Ozone NAAQS Transport Assessment. Office of Air Quality Planning and Standards, U.S. EPA, January 2015

In sum, background is a predominant contributor to high ozone levels within the range of the proposed NAAQS across the Intermountain West.

<sup>16</sup> <http://www.wrapair2.org/WestJumpAQMS.aspx>.

<sup>17</sup> The Western States Air Resources (WESTAR) Council, Comments on the Proposed Revision to the National Ambient Air Quality Standards for Ozone, Docket No. OAR-HQ-OAR-2008-0699, March 16, 2015, p. 7.

## B. Western State Concerns

With remarkable unanimity, in their comments on the proposed NAAQS, Western states and their representatives expressed deep concerns about high ozone background and the impossibility of attaining a lower standard on the basis of local controls. Excerpts from these comments underscore the high level of concern.

An example is Nevada's comments, which state:

Recent air quality modeling by the USEPA, the Western Regional Air Partnership (WRAP), other federal agencies, and academia has demonstrated the significance of long-range transport (LRT), stratospheric intrusions (SI), and fire emissions to local ozone concentrations in Nevada and the western U.S. generally. The effects of these background emissions sources can overwhelm local efforts to attain the NAAQS. Studies have shown that background ozone levels are increasing over time. . . . The USEPA's assertion that its modeling shows that ozone levels are primarily due to U.S. anthropogenic sources is belied by USEPA's own ozone transport analysis for Nevada. The NDEP suggests the USEPA's modeling may under predict the role of background sources on monitored concentrations in Nevada and other portions of the western U.S. as a result of the treatment of boundary conditions and fire emissions in the model as well as model performance in the West.

USEPA must recognize the broad implications of the under prediction of the impacts of boundary concentrations and fire emissions to western states as they strive to implement the proposed ozone standard, given the few implementation tools available to states (e.g., exceptional events exclusions, rural transport areas, and international transport). Control of local sources in western states will have little effect on lowering monitored ozone concentrations at remote monitors across the West. Local contributions are so minor that, if areas within Nevada's jurisdiction are in nonattainment with the new proposed standard, the NDEP will be in the untenable position of having no meaningful control strategies to achieve attainment with the new standard. Therefore, the NDEP requests USEPA provide common-sense approaches to implementation of a new ozone standard that take into account the limited actions that western states may take to achieve meaningful reductions.<sup>18</sup>

The immense challenges of high background in the West were also highlighted by the WESTAR comments:

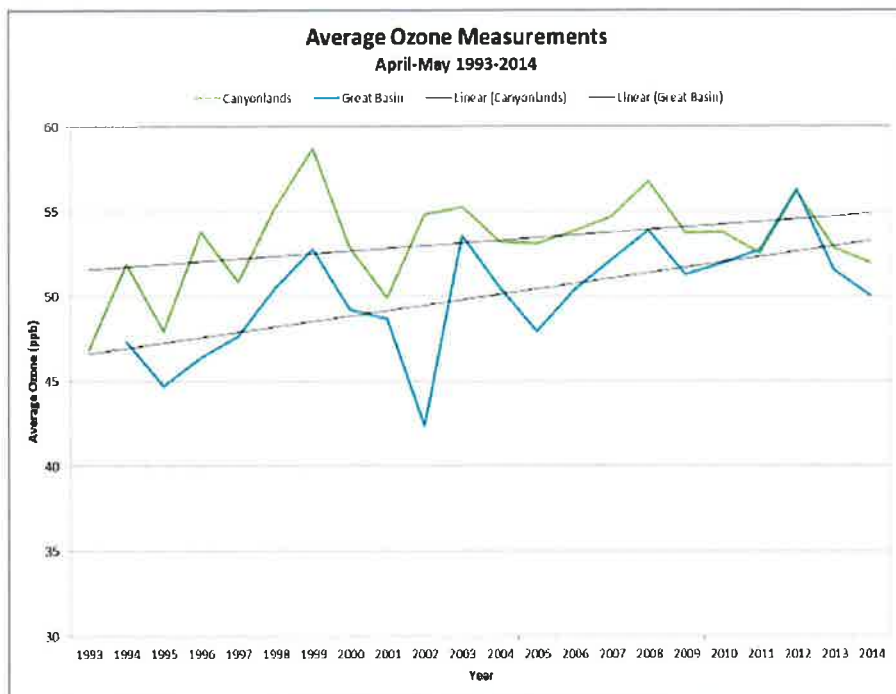
If EPA adopts a standard in the proposed range of 65 to 70 parts per billion, it is inevitable that new non-attainment areas will be designated in the west. Some of these areas will also inevitably be designated predominantly as a result of ozone transported from outside the non-attainment area boundaries. In a recent assessment of ozone monitoring data, it was estimated that background ozone concentrations -

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<sup>18</sup> Nevada Division of Environmental Protection, Technical Comments by the Nevada Division of Environmental Protection regarding USEPA's National Ambient Air Quality Standards for Ozone; Proposed Rule (79 FR 75234), March 12, 2015, p. 3 (emphasis added).

non-anthropogenic background and transported anthropogenic ozone combined - ranged from 47 ppb to 68 ppb at six western cities during ozone episodes. There are also indications that these background and transported levels are increasing. Figure 1 is an example of increasing ozone levels in two western national parks. Several researchers have suggested that these increases may be due to increases in ozone transported from Asia. A contributing factor may also be increases in wildfire across the west and emissions growth in Mexico and Canada.<sup>19</sup>

**Figure 1:** Monitored ozone trends at Canyonlands and Great Basin National Parks  
(Hourly average of all values for April and May)



Echoing these concerns in strong terms were the comments of Colorado:

EPA data shows substantially higher background ozone is present in the western U.S., including Colorado. The Integrated Science Assessment (2013) demonstrates that spring and summer western background levels of ozone are substantially higher than those found in the east. In its proposal, EPA states that as of 2007, background levels range between 25-50 ppb, noting that the largest seasonal averages occur in the western states. CDPHE submits that this data is outdated, and notes that Colorado's background levels are often higher than 50 ppb, reaching levels as high as 65-74 ppb. Such levels are well within, and even above, the proposed range. For example, between 2003 and 2014, the Gothic site near Crested Butte has had an average design

<sup>19</sup> The Western States Air Resources (WESTAR) Council, Comments on the Proposed Revision to the National Ambient Air Quality Standards for Ozone, Docket No. OAR-HQ-OAR-2008-0699, March 16, 2015 , p. 4-5.

value of between 65 and 69 ppb. The United States Forest Service's Shamrock site has an average design value for the same time period of between 68 and 74 ppb. Both of these sites are in remote areas with few, if any, anthropogenic sources of ozone precursor emissions. The elevation of certain sites is just one contributing factor to the higher background levels. Colorado's elevated background levels have four primary sources: 1) stratospheric intrusions; 2) interstate transport; 3) international transport, primarily from Asia; and 4) wildfires and other smoke events.

.....  
CDPHE reiterates that as a revised ozone standard approaches background levels – as the values discussed in the proposal quickly do in Colorado – attainment is made exceedingly difficult, unless EPA takes steps to specifically deal with this issue. Colorado strives to protect public health and welfare through targeted, cost-effective regulations. EPA should follow the same principles, and should not adopt a standard that imposes an undue burden on the state and its sources. Nor should EPA adopt a standard that could be unattainable due to background levels and transport issues.<sup>20</sup>

Wyoming's concerns were equally fundamental:

The AQD is concerned about the effect that background ozone has on monitored ozone levels, and the difficulty of implementation of controls as the ozone standard is reduced. . . .

Because of its dismissal of data from high-elevation sites, exclusionary date range, and omission of rural data, the AQD considers the EPA's analysis and conclusions of the influence of background on total ozone levels to be incomplete and not representative of observed conditions in the Intermountain West. Given the high fractional contribution of background to total measured and modeled ozone concentrations in the West, and more specifically in Wyoming, the AQD considers that a lower primary standard would put an undue responsibility on Wyoming and other high-elevation rural states to address high ozone concentrations that are beyond the states' abilities to control. Without a better understanding of background and what the anthropogenic contribution to background is, it will be difficult and ineffectual for rural western states to develop plans that focus on controlling anthropogenic sources.<sup>21</sup>

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<sup>20</sup> Colorado Department of Public Health and Environment, State of Colorado Comments, Docket ID EPA-HQ-OAR-2008-0699; FRL-9918-43-OAR, March 17, 2015, p. 3-4 (emphasis added).

<sup>21</sup> Wyoming Department of Environmental Quality, The State of Wyoming, Department of Environmental Quality -Air Quality Division Comments on the Proposed National Ambient Air Quality Standards for Ozone, March 17, 2015, p. 1-2 (emphasis added).

These concerns are shared broadly across the states, according to a recent survey by the Association of Air Pollution Control Agency (“AAPCA”), which concluded that:

A majority of state agency comments raised concerns about the role of background ozone, including both naturally-occurring and internationally-transported contributions to ground-level ozone, as an achievability or implementation challenge (26 states). Similarly, a majority of state comments identified limitations to the Clean Air Act tools highlighted by U.S. EPA for regulatory relief to address background ozone (24 states).<sup>22</sup>

In short, if EPA lowers the NAAQS, states that have previously been in attainment will likely come into non-attainment largely because of high background levels approaching or exceeding the new limit. These areas may have to develop costly state implementation plans, yet it will be difficult, if not impossible, to achieve the standard because states simply cannot control background ozone sources.

## **II. The CAA Requires EPA to Set the NAAQS Above Background Levels or Provide a Meaningful Remedy for Background-Related Exceedances**

CAA Section 109 requires that NAAQS be set at a level “requisite to protect” the public health and welfare with an adequate margin of safety.<sup>23</sup> The Supreme Court has interpreted this directive to mean that the NAAQS must be “not lower or higher than is necessary ... to protect the public health,” *Whitman v. Am. Trucking Ass’n*, 531 U.S. 457, 475–76 (2001). A standard set near, at or below background levels that states lack any ability to reduce would not improve public health and thus would not be “requisite” under the CAA. As EPA itself has recognized, “states are not responsible for reducing emissions that are not in their control.”<sup>24</sup>

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<sup>22</sup> Association of Air Pollution Control Agencies, *State Environmental Agency Perspectives on Background Ozone & Regulatory Relief*, [http://www.csg.org/aapca\\_site/documents/AAPCASurvey-StateEnvironmentalAgencyPerspectivesonBackgroundOzoneandRegulatoryRelief-June201.pdf](http://www.csg.org/aapca_site/documents/AAPCASurvey-StateEnvironmentalAgencyPerspectivesonBackgroundOzoneandRegulatoryRelief-June201.pdf), June 2015, p. 2.

<sup>23</sup> 42 U.S.C. § 7409.

<sup>24</sup> “EPA’s Proposal to Update the Air Quality Standards for Ground-Level Ozone: Tools for Addressing Background Ozone,” <http://www.epa.gov/glo/pdfs/20141125fs-tools.pdf> (Nov. 25, 2014).

While cost and technical feasibility are not relevant factors in setting the NAAQS,<sup>25</sup> background is in a different category because it cannot be controlled or prevented. Requiring states to implement a standard that cannot be attained would be contrary to the design of the Act, which is focused on the practical steps the states can take to improve air quality. For example, section 107(a) provides that SIPs must specify the manner in which the NAAQS “will be achieved and maintained” (emphasis added). Similarly, section 110(a)(2)(C) requires that SIPs must include enforcement and regulatory measures “necessary to assure that [NAAQS] are achieved” (emphasis added). This focus on implementability would be undermined if EPA could set a NAAQS at a level which states cannot meet because they lack the ability to control background.

The relationship between the proposed standard and background has long been recognized as an important consideration in the standard-setting process. In its report on the 1977 Amendments to the CAA, the House of Representatives explained that it did not intend NAAQS to be set at background levels:

Some have suggested that since the standards are to protect against all known or anticipated effects and since no safe thresholds can be established, the ambient standards should [b]e set at zero or background levels. Obviously, this no-risk philosophy ignores all social and economic consequences and is impractical.<sup>26</sup>

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<sup>25</sup> As the DC Circuit concluded in *Lead Industries Ass’n v EPA*, 647 F.2d 1130, 1149 (DC Cir. 1980), “the Administrator may not consider economic and technological feasibility in setting air quality standards . . . [because] of a deliberate decision by Congress to subordinate such concerns to the achievement of health goals.” The court invoked this principle in rejecting challenges to the 1979 ozone NAAQS revisions in *API v Costle*, 665 F.2d 1176, 1185 (DC Cir. 1981), further explaining that the “‘technology-forcing’ requirements of the Act were expressly designed to force regulated sources to develop pollution control devices that might at the time appear to be economically or technological infeasible.”

The DC Circuit in *API* also rejected the City of Houston's argument that “natural factors” made attainment of the NAAQS impossible. Insofar as the court concluded that background is not relevant in setting the level of the NAAQS, *API* is no longer controlling in light of EPA's explicit consideration of background during the 1997 standard revisions and the DC Circuit's approval of EPA's approach in *American Trucking Ass'ns*. See page 15 and footnote 35.

<sup>26</sup> H.R. Rep. No. 294, 95<sup>th</sup> Cong, 1<sup>st</sup> Sess. 127 (1997).

Consistent with this principle, EPA's Policy Assessment for the proposed NAAQS observed that the CAA "does not require the Administrator to establish a primary NAAQS at a zero-risk level or at background concentration levels..., but rather at a level that reduces risk sufficiently so as to protect public health with an adequate margin of safety."<sup>27</sup>

Thus, although EPA has declined to consider cost and technological feasibility in setting NAAQS levels, the Agency has consistently sought to avoid adopting standards that are at or below ozone background.<sup>28</sup>

For example, in the preamble to the 1979 ozone NAAQS, EPA took pains to point out that it was "cognizant of the background levels that can be attributed to natural sources," that it had been conducting an active "research program seeking to determine the nature and extent of background concentrations of ozone" and that this issue "was treated extensively" in the standard development process.<sup>29</sup> It then discussed the available data, concluding that background "levels are usually well below the proposed levels of the standard, especially during the season of the most active production of photochemical ozone." EPA also noted the potentially "significant role" of stratospheric ozone in the buildup of background levels but concluded that "even if commonly occurring ozone were increased by 40 percent, the resulting concentration would be insufficient to exceed the standard levels being promulgated."<sup>30</sup>

While finding that background would generally be below the new standard, however, EPA recognized that "natural events could occasionally cause contravention of the promulgated standard levels." The Agency stressed that such exceedances would not place areas in non-attainment because "EPA policy . . . permits data for such occurrences to be disregarded for regulatory purposes."<sup>31</sup>

In issuing the 1997 ozone standard, EPA went further and rejected a standard of 70 ppb, as opposed to the 80 ppb level adopted, because of its proximity to background levels. The preamble to the 1997 standard explained to this decision as follows:

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<sup>27</sup> U.S. Environmental Protection Agency, *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* (Policy Assessment), p. 3-133 (2014), p. 1-4 (citations omitted), available at <http://www.epa.gov/ttn/naaqs/standards/ozone/data/20140829pa.pdf>.

<sup>28</sup> While the technology-forcing goals of the Act leave no room to consider the performance of available emission controls in setting the NAAQS, background is fundamentally different because it cannot be controlled or reduced even with the highest degree of technological innovation.

<sup>29</sup> 44 Fed. Reg. 8202, 8212 (Feb. 8, 1979).

<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

. . . the Administrator gives significant weight to the following considerations: \* \* \* (3) As many commenters have noted, based on information in the Criteria Document with regard to ambient concentrations of O<sub>3</sub> from background sources, an 8-hour standard set at [a 70 ppb] level would be closer to peak background levels that infrequently occur in some areas due to nonanthropogenic sources of O<sub>3</sub> precursors, and thus more likely to be inappropriately targeted in some areas on such sources.<sup>32</sup>

In its initial decision reviewing the 1997 ozone NAAQS, the DC Circuit noted EPA's determination that a lower standard 'would be "closer to peak background levels that infrequently occur in some areas due to non-anthropogenic sources of O<sub>3</sub> precursors."<sup>33</sup> The court explained that:

EPA's language, coupled with the data on background ozone levels, may add up to a backhanded way of saying that, given the national character of the NAAQS, it is inappropriate to set a standard below a level that can be achieved throughout the country without affirmatively extracting chemicals from nature. That may well be a sound reading of the statute but EPA has not explicitly adopted it . . . .<sup>34</sup>

Reviewing the NAAQS again on remand from the Supreme Court, the DC Circuit agreed that "relative proximity to peak background ozone concentrations" was a factor that "EPA could consider" when choosing among alternative levels.<sup>35</sup>

Now, nearly 20 years after the 1997 NAAQS revisions, EPA is considering a standard 10-15 ppb lower, background levels have increased significantly in many states and the evidence of high background from modelling and monitoring is more extensive and compelling. Thus, for EPA to now disregard background after assigning significant weight to it in setting the 1979 and 1997 standards would be arbitrary and capricious and would likely be set aside as contrary to the CAA. The only defensible course to avoid this outcome would be to set the standard above background or, alternatively, create meaningful mechanisms for states with high background levels to obtain relief from being designated in non-attainment.<sup>36</sup>

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<sup>32</sup> Environmental Protection Agencies, National Ambient Air Quality Standards for Ozone, Final Rule, 62 Fed. Reg. 38856, 38868 (July 18, 1997).

<sup>33</sup> *American Trucking Ass'n v. EPA*, 175 F.3d 1027, 1036 (DC Cir. 1999), *reversed in part and affirmed in part on other grounds* in *Whitman*, 531 U.S. 457 (2001).

<sup>34</sup> *Id.* (emphasis in original).

<sup>35</sup> *Am. Trucking Ass'n v. EPA*, 283 F.3d 355, 379 (DC Cir. 2002).

<sup>36</sup> These mechanisms should apply not only to any new standard but to the existing 75 ppb standard, since high background is creating compliance challenges under this standard which the EER and other mechanisms are inadequate to remedy.

### **III. Why the Relief Mechanisms Outlined in EPA's Proposal Are Inadequate To Address High Ozone Background Levels**

Seeking to demonstrate that states will not be designated in non-attainment because of high background levels, EPA maintains in its proposal that "it has policies that allow for the exclusion of air quality monitoring data from design value calculations when they are substantially affected by certain background influences."<sup>37</sup> However, as shown below, the three mechanisms identified by EPA will not provide meaningful relief to states experiencing exceedances of the new standard because of high background levels and thus will put the final NAAQS in legal jeopardy if it is set at levels at or below background in many parts of the country.

#### **A. Rural Transport Areas**

In its ozone proposal, EPA argues that some high background ozone areas which are in nonattainment may be treated as "Rural Transport Areas" under Section 182(h) of the CAA. A nonattainment area may qualify for this designation if it: 1) does not contain emissions sources that make a significant contribution to monitored ozone concentrations in the area; and 2) does not include and is not adjacent to a Metropolitan Statistical Area. If a nonattainment area is recognized as a Rural Transport Area, it is subject to less stringent non-attainment ozone requirements.<sup>38</sup> Nonetheless, states would still be required to develop SIPs and prepare emissions inventories, nonattainment NSR permitting still applies, offsets are still required, and control requirements for new and existing sources are still necessary.

This provision obviously would not help an area avoid designation as nonattainment in the first place; it only lessens a nonattainment area's regulatory burden. In addition, EPA has rarely designated areas under this provision. The proposed ozone rule only lists two counties as having been recognized as Rural Transport Areas, both of which were designated as such for the 1979 one-hour ozone standard.<sup>39</sup> As the Agency acknowledges, "[h]istorically the EPA has recognized few nonattainment areas under this provision."<sup>40</sup> Furthermore, as Colorado emphasized in its comments, "in many western states, counties can be much larger than in the east [and] [a]s a result, rural counties that are located adjacent to a county with a Metropolitan Statistical Area (MSA) are excluded from designation as a rural transport area . . . [even though] many of these rural counties have few sources and low population figures, considerations that actually support their designation as rural transport areas."<sup>41</sup>

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<sup>37</sup> 79 Fed. Reg. at 75242.

<sup>38</sup> *Id.* at 75384.

<sup>39</sup> *Id.*, fn. 278 (for the 1979 1-hour ozone standard in Essex County, New York and Smyth County, Virginia).

<sup>40</sup> *Id.* at 75384.

<sup>41</sup> Colorado Comments at 6.

## B. International Transport

EPA's proposal also argues that states with high background levels of ozone can seek relief in their attainment demonstrations by showing that "an area might have met the O<sub>3</sub> NAAQS by the attainment date 'but for' emissions contributing to the area originating outside the U.S." States bordering Canada and Mexico will be most influenced by international ozone levels, "but other locations can also potentially be affected when conditions are favorable for long-range transport."<sup>42</sup>

Under Section 179B of the CAA, states that demonstrate that international ozone was the "but-for" cause of their nonattainment and that have adopted all Reasonably Available Control Measures can still receive approval from EPA for their SIPs. In such a case, there would be "no adverse consequence for a finding that the area failed to attain the NAAQS by the relevant attainment date." However, as with Rural Transport Areas, Section 179B does not relieve states from the burden of developing and implementing SIPs but merely protects them from the automatic "bump ups" to higher nonattainment classifications and precludes sanctions for not attaining the standard. Furthermore, the ozone proposal only identifies three occasions when EPA has ever used Section 179B authority; only one of these instances involved ozone.<sup>43</sup> And EPA has indicated that "all section 179B approvals should be on a contingency basis" and are "valid only as long as the area's modelling data continue to show . . . attainment, but for emissions from outside the United States."<sup>44</sup>

Whether and how the provisions of section 179B would apply to transport from Asia or other non-continental sources are uncertain. EPA's Phase 2 Implementation Rule for the 1997 8-hour O<sub>3</sub> NAAQS states:

With respect to the applicability of section 179B to areas affected by emissions from very distant, foreign sources, EPA currently has not taken a position. If and when there are any SIP submittals that request a section 179B dispensation of such a basis, EPA will examine those submittals on a case-by-case basis, including focusing on the sufficiency of the technical demonstration, in order to make a determination of section 179B applicability.<sup>45</sup>

In short, section 179B provides limited relief to areas impacted by international transport but does not provide a mechanism to exclude exceedances resulting from international transport from consideration in non-attainment designations.

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<sup>42</sup> 79 Fed. Reg. at 75384.

<sup>43</sup> *Id.* at 75385 (to approve attainment plans for Mexican border areas – ozone, PM<sub>10</sub>, and carbon monoxide in El Paso, TX; PM<sub>10</sub> in Nogales, AZ; and PM<sub>10</sub> in Imperial Valley, CA).

<sup>44</sup> 69 Fed. Reg. 32450, 32452 (June 10, 2004) (approving SIP for El Paso).

<sup>45</sup> 70 Fed. Reg. 71612, 71624 (Nov. 29, 2005).

### C. Exceptional Events Rule (EER)

Of the three options for flexibility proffered by EPA, two (the rural and international transport designations) are very rarely used, and also do not authorize EPA to provide relief from nonattainment status based on high background levels. The third mechanism identified by EPA, the EER, is likewise a poor vehicle as now constituted to exclude high background levels from attainment determinations.

Section 319(b) of the CAA, enacted by Congress in 2005, establishes an exclusion from non-attainment demonstrations for ozone exceedances caused by exceptional events. It requires EPA to promulgate regulations “governing the review and handling of air quality monitoring data influenced by exceptional events.”<sup>46</sup> Section 319 defines “exceptional event” as an event that:

- (i) affects air quality;
- (ii) is not reasonably controllable or preventable;
- (iii) is an event caused by human activity that is unlikely to recur at a particular location, or is a natural event; and
- (iv) is determined by the Administrator through the process established in the regulations to be an exceptional event.<sup>47</sup>

In order for air quality data to be excluded on the basis of the occurrence of an exceptional event, the CAA further requires a clear causal relationship between the measurement under consideration and the event that is claimed to have affected the air quality in the area.<sup>48</sup>

EPA’s implementing regulations, promulgated in 2007, add two requirements to the statutory provisions that create further challenges in making an exceptional events demonstration. A state’s demonstration to EPA must show that:

- (i) The event is associated with a measured concentration in excess of normal historical fluctuations, including background; and
- (ii) There would have been no exceedance or violation but for the event.

These conditions not only preclude basing a demonstration on background ozone levels (from biogenic or non-US anthropogenic sources) but impose a high burden of proof to exclude all other possible causes of the exceedance other than the exceptional event.

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<sup>46</sup> 42 U.S.C. § 7619(b)(2)(A).

<sup>47</sup> 42 U.S.C. § 7619(b)(1)(A).

<sup>48</sup> 42 U.S.C. § 7619(b)(3)(B)(ii).

EPA's May 10, 2013 guidance and accompanying Q&As further explain EPA's position that background levels of a pollutant that fall within "normal historical fluctuations" cannot constitute an exceptional event:

An exceptional event is a natural event (excluding stagnations, inversions, high temperatures, or precipitation) or an anthropogenic event that is unlikely to recur in the same location. Both exceptional events and North American background can involve emissions from natural events like forest wildfires or stratospheric ozone intrusions. However, exceedances due to natural emissions that occur every day and contribute to policy relevant background, such as biogenic emissions, do not meet the definition of an exceptional event and are thus not eligible for exclusion under the EER. Routine anthropogenic emissions outside of the U.S. contribute to policy relevant background, but are not exceptional events. Air agency preparation of a demonstration package and the EPA's subsequent review of the demonstration package is case-by-case based on a weight-of-evidence approach and does not explicitly consider whether the event type might contribute to North American background, or any other background definition. However, if a natural event that contributes to background ozone causes an observed concentration that meets the statutory definition of an exceptional event and fulfills all of the exceptional event criteria, the EPA would consider the event to be an exceptional event."<sup>49</sup>

In short, while acknowledging that increases in background levels due to unusual occurrences such as wildfires and stratospheric intrusion might be considered exceptional events,<sup>50</sup> EPA precludes states from any reliance on high biogenic emissions or international transport in making an exceptional events demonstration.

Even apart from EPA's position that high biogenic emissions or long-range ozone transport are ineligible for treatment as exceptional events, the EER process is yielding minimal benefits because of the highly inefficient case-by-case analysis and decision-making required for each individual EE package submitted by states. Packages require expensive modelling and monitoring, which few consulting firms have the expertise to complete and which states find difficult to afford. Also, there are very few co-located monitors with CO or PM, making it difficult to identify the source of ozone and ozone precursors. Moreover, there are no protocols for identifying exceptional events. States must determine on their own what information might be required to make their case. Each EPA Regional Office has different criteria for reviewing and approving EE demonstrations.

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<sup>49</sup> US EPA. 2013. "Interim Exceptional Events Rule Frequently Asked Questions." Accessed at [http://epa.gov/ttn/analysis/docs/EER\\_QA\\_Doc\\_5-10-13\\_r3.pdf](http://epa.gov/ttn/analysis/docs/EER_QA_Doc_5-10-13_r3.pdf), Question 16a, p. 20 (emphasis added).

<sup>50</sup> Ozone formation due to lightning is also excluded by EPA as the result of "routine natural emissions."

The result of these problems is that decisions on EE packages are typically delayed for many months and few are granted. EPA has only approved three EE demonstration packages for ozone: a stratospheric intrusion event for Wyoming, an associated fire event for Kansas, and a wildfire event for Sacramento. This is less than 0.01% of total observations of exceptional events for 2006-2010.<sup>51</sup>

With a more stringent ozone standard, the number of EE packages could increase significantly. This will only result in more delay, cost and uncertainty if the current process remains in place.

The states have voiced deep concern about the workability of the EE process as now structured to address high background under a lower standard. For example, on June 12, 2013, Amanda Smith, the Executive Director of Utah's Department of Environmental Quality testified to the House Subcommittee on Environment of the Space, Science, and Technology Committee that:

Since 2008 Utah has submitted 12 exceptional event demonstrations for particulate matter, requiring about 4,000 hours of technical work, that have not been approved by [EPA] Region 8. There were many other events, including ozone levels affected by western wildfires that we did not even attempt to demonstrate as exceptional events because the technical criteria were too difficult to meet. If the exceptional event process doesn't work for particulate matter – it certainly won't work for the complicated science behind rural background ozone (emphasis added).

In its comments on EPA's proposal, WESTAR, representing air directors in 15 Western states, was unstinting in its criticisms of the current EE process:

Inaction by EPA will result in failure for many areas within the western U.S to attain or maintain the ozone NAAQS. The current EPA tools available to the western states to address natural background, transported ozone within rural areas, and international background do not and cannot effectively address these constraints and, in most cases, require states to spend additional resources on efforts that provide little to no improvement in air quality or assist in attainment of the ozone NAAQS. In actuality, these tools either saddle areas with the burden of a nonattainment designation for emissions that are outside of their control or force states to develop costly demonstrations for exceptional events that are not exceptional in nature or occurrence.

.....

[P]ast experience shows that a large portion of state and local air quality management agencies' resources have been consumed by investigating, analyzing and preparing demonstrations for suspected exceptional events. Due to the intense amount of work required to prepare these demonstrations, few resources are left to focus on providing public health protections

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<sup>51</sup> US EPA. 2012. "Health Risk and Exposure Assessment for Ozone: First External Review Draft." EPA 452/P-12-001. Accessed at <http://www.epa.gov/ttn/naaqs/standards/ozone/data/20120816healthrea.pdf>.

In order for states to utilize the provisions of the Exceptional Events Rule in a practical fashion, EPA must streamline the onerous process, provide the tools and guidance required to prepare demonstrations, and respond to demonstrations in a timely fashion. . . . Modeling of exceptional events will likely play a large role in meeting the rule's technical requirement to demonstrate that there would have been no exceedance or violation but for the event. Many air quality agencies do not have the expertise to run models for exceptional events, nor do they have the staffing levels required to maintain an updated emissions inventory for modeling. Most western states would likely need to hire additional staff or contract the work out, both difficult processes in a time of constrained budgets, tight deadlines and increased workloads.<sup>52</sup>

In its comments, Colorado was equally pointed:

Repeatedly throughout the proposal, EPA recognizes that western states are faced with higher background concentrations of ozone, and more frequent events causing higher background levels. EPA points to its exceptional events rule as the primary means of addressing this issue. However, under EPA's existing procedures, submitting exceptional events is a huge administrative burden without a corresponding public health and environmental benefit. Further, a lower primary standard will mean more exceptional events in the west. CDPHE welcomes EPA's proposal to streamline the exceptional events rule, but notes that even a revised exceptional events rule likely would not completely address concerns about a NAAQS set at a level that might be unachievable due to elevated background levels.

Colorado has considerable experience with the current exceptional events policy. The burden of documenting an exceptional event is considerable. Such a demonstration amounts to a technical exercise akin to developing a SIP for a small area. Furthermore, the resources involved in preparing an exceptional events request are significant. Substantiating an exceptional events application can easily overburden a state's resources of time, staff and modeling capabilities. Obtaining EPA approval is a lengthy process that usually involves multiple rounds of review, challenges, added analysis, and new data retrieval and processing. EPA does not always act on exceptional events requests in a timely fashion. Colorado has numerous exceptional event evaluations being developed, and others already submitted to the EPA that remain in limbo. A lower standard would likely result in more exceptional event submittals, burdening both the states and EPA.<sup>53</sup>

Wyoming, which submitted the only successful EE demonstration for ozone, was likewise highly critical:

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<sup>52</sup> The Western States Air Resources (WESTAR) Council, Comments on the Proposed Revision to the National Ambient Air Quality Standards for Ozone, Docket No. OAR-HQ-OAR-2008-0699, March 16, 2015, p. 9-10 (emphasis added).

<sup>53</sup> Colorado Department of Public Health and Environment, State of Colorado Comments, Docket ID EPA-HQ-OAR-2008-0699; FRL-9918-43-OAR, March 17, 2015, p. 5 (emphasis added).

The AQD contends that, with the frequency of these events, there will be an overwhelming amount of resources needed from both state agencies and the EPA in order to use the EER as a viable method of relief.

The AQD is the only agency in the nation so far that has received concurrence for a stratospheric intrusion event. Based on this experience, each demonstration took between four and eight months to produce with assistance from the EPA's stratospheric intrusion workgroup. Demonstrations that the EPA has posted as examples for wildfire impacts and ozone would require from the AQD 15 months and contractor assistance of \$150,000 to produce. The AQD has determined that future demonstrations will require comparable resource commitments. The amount of state agency staff time and funding necessary for producing demonstrations of this complexity is unworkable for the AQD. The EPA must work to streamline the EER process and provide working technical tools if the EPA intends to rely on the EER as the method of relief.<sup>54</sup>

In short, EPA's reliance on the current EE process to provide relief from non-attainment designations for exceedances resulting from high background levels is unwarranted and would not justify setting a NAAQS at a level below background in many areas of the US. While EPA is considering revising the EER to make limited improvements, these improvements (as we understand them) would fall significantly short of providing a workable mechanism to take background into account in making non-attainment designations.

#### **IV. To Comply with the CAA, EPA Must Adopt a Workable and Efficient Process that Excludes Exceedances Resulting from High Background Levels from Non-Attainment Determinations**

##### **A. Proposed Framework for Addressing Background in the Attainment Process**

If EPA sets a standard at or below background in many parts of the U.S., the Agency must develop a comprehensive framework that provides meaningful tools that states can use to exclude exceedances attributable principally to high background levels from non-attainment designations.

We propose that states should be allowed to remove exceedances from attainment designations if they meet one or more of certain benchmark criteria showing that background ozone is the principal contributor to exceedances of the standard, such as:

- A baseline ozone monitor upwind of local sources that exceeds the standard (*i.e.*, ozone exceedance is not controllable by local sources) along with trajectory analyses showing that local sources were not impacting the upwind baseline monitor.

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<sup>54</sup> Wyoming Department of Environmental Quality, The State of Wyoming, Department of Environmental Quality -Air Quality Division Comments on the Proposed National Ambient Air Quality Standards for Ozone, March 17, 2015, p. 15 (emphasis added).

- Modeling data indicating that background ozone is the principal cause of the ozone exceedance.
- Other monitoring data demonstrating that background ozone was the principal contributor to the ozone exceedance, including but not limited to, relative humidity, particulate matter and carbon monoxide concentrations, and high nighttime/ low daytime ozone levels.

Refinement of these benchmark criteria and development of additional criteria could be accomplished through further technical discussions with EPA experts.

In contrast to the current EER, this approach would not limit the types of background eligible for consideration but would include all sources of ozone that are not controllable or preventable by the state. This includes biogenic emissions from plants and animals, stratospheric intrusions, wildfires, lightening and international transport. In addition, it would be unnecessary to determine whether the exceedance reflects infrequent or common sources of background so long as background levels are the principal contributor to the exceedance.

In most areas, background ozone is a combination of naturally occurring and internationally transported ozone and ozone precursors and determining the precise sources of background at a particular monitoring location is difficult if not impossible. Under our proposed criteria, there would be no requirement to differentiate and quantify the contributions of different background sources. Instead, the focus would be on demonstrating that controllable anthropogenic emissions are not a significant factor in the exceedance. This would greatly reduce costs and simplify demonstrations.

To avoid the long delays and uncertainty in EPA's review of current EE packages and the resources required to meet EPA requests for data, we also propose that, if demonstrations meet benchmark criteria like those described above, they should be automatically approved by EPA if there are no Agency objections within 90-120 days of submission of the demonstration package. Given the large number of background-related exceedances likely to be flagged under the new standard, an expedited process that results in rapid decisions is essential to afford certainty to states and EPA itself during the non-attainment designation process.

In this regard, the current deadlines in the EER for flagging exceedances and submitting demonstrations are too stringent and will overwhelm state resources. Phased deadlines that give states greater latitude to plan and manage their workloads but do not delay non-attainment designations are highly desirable. The schedule for flagging exceedances and submitting demonstration packages in EPA's ozone proposal is an improvement but is still too tight in some respects and can be loosened further.

## B. Implementing the Proposed Framework Under Appendix I to Part 50

We recommend that EPA implement the above approach by revisions to Appendix I to Part 50.<sup>55</sup> This Appendix was first adopted when EPA issued the 80 ppb 8-hour ozone standard in 1997.<sup>56</sup> It is entitled “Interpretation of the 8-Hour Primary and Secondary [Ozone NAAQS]” and provides data reporting and handling conventions for applying the standard and determining whether areas are in non-attainment.

The principal purpose of the Appendix was to codify the Administrator’s decision to base non-attainment designations on the three-year average of the annual fourth-highest daily maximum ozone concentration at a particular monitoring location. Although seemingly technical, this approach represented a major policy decision closely linked to the level at which the NAAQS itself was set. The Agency explained that all CASAC members “favored [a standard] that would allow for multiple exceedances”, that such a standard would be appropriate “given the nature of the health effects and the absence of a ‘bright line’ that clearly differentiates between acceptable and unacceptable risks,” and that the form of the standard was a “policy judgment” and not a scientific determination.<sup>57</sup> Based on CASAC’s advice, EPA concluded that allowing multiple exceedances would “increase the stability of the standard by providing some insulation from the impacts of extreme meteorological events” and that “increased stability in the standard is important to avoid disruption to ongoing control programs, and thus to maintain ongoing public health protection.”<sup>58</sup>

The considerations emphasized by EPA – assuring the stability of the standard by excluding abnormally high ozone levels from attainment determinations and avoiding disruption of air quality programs by unduly stringent criteria for non-attainment -- apply equally to the treatment of elevated background levels in NAAQS implementation. These background levels are not preventable or controllable and, if used as a basis for attainment determinations, would place unmanageable burdens on state air quality control agencies. Exercising the same policy judgment as the Administrator did in 1997, the Agency should revise the form of the new ozone NAAQS in Appendix I to exclude exceedances attributable to background from determinations of attainment. This can be accomplished by incorporating in the Appendix the three benchmark criteria discussed above.<sup>59</sup>

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<sup>55</sup> Because the NAAQS would be unlawful without an effective mechanism to address background-related exceedances, EPA has inherent authority to craft such a mechanism as part of its NAAQS rulemaking. While we believe that Appendix I offers an attractive vehicle for this purpose, there may be others identified by EPA that are also sufficient.

<sup>56</sup> 62 Fed. Reg. 38895 (July 18, 1997).

<sup>57</sup> 62 Fed. Reg. at 38869.

<sup>58</sup> 62 Fed. Reg. at 38871.

<sup>59</sup> There would be no merit to the argument that because Congress has provided for rural and international transport areas and relief from exceptional events, it intended to foreclose other, more comprehensive approaches to background ozone. These provisions are all intended to

### C. Implementing the Framework through a Revised EER

We believe that the policy discretion EPA has to determine the form of a new ozone NAAQS under Appendix I is the best vehicle for providing states the flexibility to discount exceedances principally attributable to background in determinations of attainment. However, the authority in CAA section 319 to address exceptional events offers opportunities for relief that EPA's current regulations and guidance do not reflect and would also provide the basis for an improved mechanism to address background.

EPA's current EER includes two constraints not required by the CAA that EPA should eliminate in its upcoming modification of the EER.<sup>60</sup>

*First*, as noted previously, the regulations provide that the state must demonstrate that "there would have been no exceedance or violation but for the event."<sup>61</sup> This is an unworkably high threshold. As EPA acknowledges, "background O<sub>3</sub> is difficult to measure."<sup>62</sup> In some areas, state and local regulatory bodies may have difficulty identifying the causes of high background ozone. In other areas, there will not be a single but-for cause of the background ozone and it may be challenging to isolate the relative contributions of different sources. The stringent "but for" test therefore blocks areas affected by elevated background ozone from availing themselves of the relief that the EER seeks to provide.

EPA should eliminate this "but for" requirement, which is nowhere specified in the statute. The CAA already requires that there be a "clear causal relationship" between the measured exceedance and the exceptional event. This statutory requirement is sufficient to ensure that the state demonstrate a nexus between an uncontrollable contributor to high ozone levels and exceedances of the standard.

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address narrow, discrete issues and provide no indication that they represent the only remedies available for high ozone background levels. Indeed, if EPA lacked authority to fashion broad remedies to high background, then its new NAAQS would be unlawful, as explained in Part II above.

<sup>60</sup> We understand that EPA is planning to propose revisions to the EER in the Fall of 2015 and promulgate a final version in the Summer of 2016 along with guidance addressing EE demonstrations for exceedances resulting from wildfires.

<sup>61</sup> 40 C.F.R. § 50.14(c)(3)(iv)(D).

<sup>62</sup> 79 Fed. Reg. at 75382.

*Second*, as also discussed previously, the regulations provide that the event must be “associated with a measured concentration in excess of normal historical fluctuations, including background”.<sup>63</sup> Under this provision, areas with historically high levels of background ozone cannot obtain relief under the EER because these levels are not “in excess of normal” fluctuations. For example, the preamble to the EER states that EPA believes that it is unreasonable to exclude “significant, but routine background air quality impacts” from attainment calculations.”<sup>64</sup> EPA’s position is that even biogenic sources of background are ineligible to be EEs: according to EPA’s Q&As, “exceedances due to natural emissions that occur every day . . . do not meet the definition of an exceptional event.”<sup>65</sup>

These limitations are nowhere specified in the statute. Section 319 provides that an EE is an event that (i) affects air quality and (ii) is not reasonably controllable or preventable. High background levels clearly meet these criteria, regardless of duration or source. Moreover, while the statute provides that events caused by “human activity [must be] unlikely to recur at a particular location,” no such restriction is placed on natural events. Thus, background ozone from biogenic sources, wildfires, lightning and stratospheric intrusion should qualify as EEs, regardless of whether the resulting ozone levels are “normal” or not.

The CAA does not define “natural event,” but the regulations provide that it is “an event in which human activity plays little or no direct causal role.”<sup>66</sup> We believe that EPA can reasonably conclude that international ozone transport fits this description because, while originating mainly from anthropogenic sources, the ozone reaches the US due to wind patterns and other meteorological mechanisms beyond human control and therefore definable as natural events. Also, because the impact of international transport is complex and difficult to pinpoint, the resulting ozone levels can be deemed “unlikely to recur at a particular location” even if attributable in part to human activity.

Although CAA section 319 never defines what constitutes an “event”, EPA’s apparent interpretation is that an “event” must be limited in duration and thus cannot include contributors to background ozone such as biogenic emissions and international transport

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<sup>63</sup> 40 C.F.R. § 50.14(c)(3)(iv)(C) (emphasis added).

<sup>64</sup> 72 Fed. Reg. at 13569.

<sup>65</sup> US EPA. 2013. “Interim Exceptional Events Rule Frequently Asked Questions.” Accessed at [http://epa.gov/ttn/analysis/docs/EER\\_QA\\_Doc\\_5-10-13\\_r3.pdf](http://epa.gov/ttn/analysis/docs/EER_QA_Doc_5-10-13_r3.pdf), Question 16a, p. 20. Although CAA section 319 never defines what constitutes an “event”, EPA’s apparent interpretation is that an “event” must be limited in duration and thus cannot include contributors to background ozone such as biogenic emissions and international transport which are continuous, albeit at fluctuating levels. This is a needlessly restrictive concept of an “event.” Moreover, even though some elements of background may be continuous, exceedances of the NAAQS tend to be exceptional circumstances, in which the different contributors to background combine in a way that produces uniquely high ozone concentrations. These exceedances can be considered “events.”

<sup>66</sup> 40 C.F.R. § 50.1(k).

which are continuous, albeit at fluctuating levels. This is a needlessly restrictive concept of an “event.” Moreover, even though some elements of background may be continuous, exceedances of the NAAQS tend to be exceptional circumstances, in which the different contributors to background combine in a way that produces high ozone concentrations. These exceedances can clearly be considered “events.”

Accordingly, EPA should revise the EER to delete the requirement that an exceedance can be considered an EE only if in excess of normal historical fluctuations, including background. Instead, the rule should provide that all exceedances attributable principally to background should be treated as EEs, whether the background is the result of biogenic emissions, wildfires, lighting, stratospheric intrusion or international transport. Thus, there would be no requirement to conduct time-consuming and costly analyses to identify and quantify the factors contributing to the exceedance so long as the state could demonstrate that anthropogenic emissions are playing either no role in the exceedance or one that is insignificant.

The three benchmark criteria discussed above would provide a cost-effective and straightforward framework for implementing this approach and should likewise be incorporated in a revised EER. The rule should also provide for a streamlined process, as described above, for submitting and reviewing EE demonstration packages and should not require states to submit these packages when they are proposing designations. Because the EER revisions EPA is reportedly contemplating are far too narrow to provide meaningful and effective relief, the Agency must rethink and broaden its approach if it wishes to use the EER to fully address background ozone.

## **Conclusion**

High ozone background levels are ubiquitous in many parts of the country and will prevent attainment of the new ozone standard unless background-related exceedances are excluded from determinations of non-attainment. Current mechanisms to address background are inadequate despite EPA’s contrary claims and will put states in the impossible position of devoting time and resources to implementing a standard that cannot be attained because of high ozone levels that are beyond their ability to control. A standard set at, below or near background levels would not pass muster under the CAA unless EPA significantly broadens and streamlines the process for excluding background-related exceedances from non-attainment designations. This paper outlines a framework to achieve this goal and identifies two implementation paths – under Appendix I to Part 50 or under a substantially improved EER that goes well beyond EPA’s contemplated EER revisions. It is essential that EPA issue a proposal using these or other vehicles at the time it promulgates a new NAAQS and finalize that proposal early in 2016.