COMMENTS ON THE ENVIRONMENTAL PROTECTION AGENCY'S MARCH 27, 2018 MEMORANDUM ON INTERSTATE TRANSPORT STATE IMPLEMENTATION PLAN SUBMISSIONS FOR THE 2015 OZONE NATIONAL AMBIENT AIR QUALITY STANDARD

General Comments:

The Texas Commission on Environmental Quality (TCEQ) supports the states as "first actors" position laid out by the Environmental Protection Agency (EPA) in the March 27, 2018 memorandum (2018 Memo) on Interstate Transport State Implementation Plan (SIP) submissions for the 2015 ozone National Ambient Air Quality Standard (NAAQS). The TCEQ also supports the flexibility outlined in the memo with respect to the modeling and technical analysis needed from states in the development of the 2015 ozone NAAQS Transport SIPs. The TCEQ encourages the EPA and its regional offices to continue to work with states in the evaluation of individual state SIPs.

In addition to the general comments, the TCEQ also has the following specific comments with respect to the modeling, analysis, and technical options laid out in the 2018 Memo.

Comments on Analytics:

The TCEQ supports the use of alternative base years when evaluating transport obligations for the 2015 ozone NAAQS.

As previously noted by the TCEQ in comments[1] on several of EPA's past actions on interstate transport, the 2011 base year used by the EPA in its transport modeling was not a representative meteorological year for Texas due to extreme drought and record high temperatures. Since no one year will be representative for all states, the TCEQ agrees that flexibility provided to states to choose alternative base years is useful and appropriate.

Comments on Step 1 – Identify downwind air quality problems:

The TCEQ supports the use of alternative methods of identifying maintenance monitors. Specifically, the TCEQ supports the use of the latest design value that includes the base year to project the future year design values used to identify maintenance monitors.

In the 2018 Memo and previous federal interstate transport actions, the EPA used projected maximum future year design value greater than 71 ppb to identify projected maintenance monitors. The projected maximum future year design value was calculated by using the maximum design value from the set of three design values that include the model base year as

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[1] Comments outlining these arguments were submitted in response to one or more of the following EPA actions:
Preliminary Interstate Ozone Transport Modeling Data for 2015 Ozone NAAQS (submitted 4/5/17);
Notice of Availability of the EPA's 2018 Modeling Platform (submitted 6/24/14); and
Notice of Availability of the EPA's 2011 Modeling Platform (submitted 3/31/14).

the baseline design value to project the future year design values[2]. The EPA's approach assumes that inter-annual variability in design values is mainly attributable to meteorological conditions and any downward trend in design value is due to meteorology not being conducive to ozone formation (81 Federal Register, 74532).

The EPA's approach discounts the well-documented nationwide decrease in ozone concentrations with time. Even accounting for meteorological conditions, ozone formation has been on a downward trajectory in most parts of the country. Figure 1 depicts the meteorologically adjusted ozone trends for the National Climatic Data Center (NCDC) climate regions for May through September (ozone season) for years 2000 through 2016. In Figure 1, a downward trend in meteorologically adjusted ozone (the blue line) in the later years can be seen for most regions. The use of the maximum design value to project the future design values used to identify maintenance monitors can inappropriately emphasize ozone concentrations from the first year of the five-year window through its contribution to the first of three design values[3], so areas that have seen substantial reductions over a five-year period can be penalized for old violations.

To alleviate this deficiency, the TCEQ recommends the use of the latest (instead of the maximum) design value that includes the base year to project the future year design values used to identify maintenance monitors. The TCEQ's recommended approach accounts for meteorological variability while accounting for possible emissions reductions since the latest design value itself consists of monitoring data from a three-year period and using the last of the three design values acknowledges the progress made by states but still accounts for recent excursions. In addition, using the latest of the three design values is consistent with the Federal Clean Air Act's concept of areas formerly in nonattainment coming into attainment and maintaining that status in the future.

The TCEQ supports the use of current monitoring data to finalize the nonattainment/maintenance status of monitors in the future year.

Monitors that are currently attaining the standard should not be considered as nonattainment and/or maintenance monitors for the purpose of interstate transport. Requiring upwind states to reduce emissions for a monitor that is currently attaining the standard based solely on modeling with its inherent uncertainties is inappropriate.

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[2] The baseline design value refers to the DV_b in Equation 4.1 on page 96 of "Draft Modeling Guidance for demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze", and is used to calculate future design values in a relative sense using modeled and monitored values.

[3] In the five-year design value window used for determining if a monitor is a nonattainment monitor, the first-year accounts for only one-ninth of the value projected, but if the highest of the three design values is the first then it counts for one-third in categorizing a monitor as maintenance. Thus, the EPA's approach of using the maximum design value has the potential to significantly over-weigh the oldest data used despite subsequent progress.

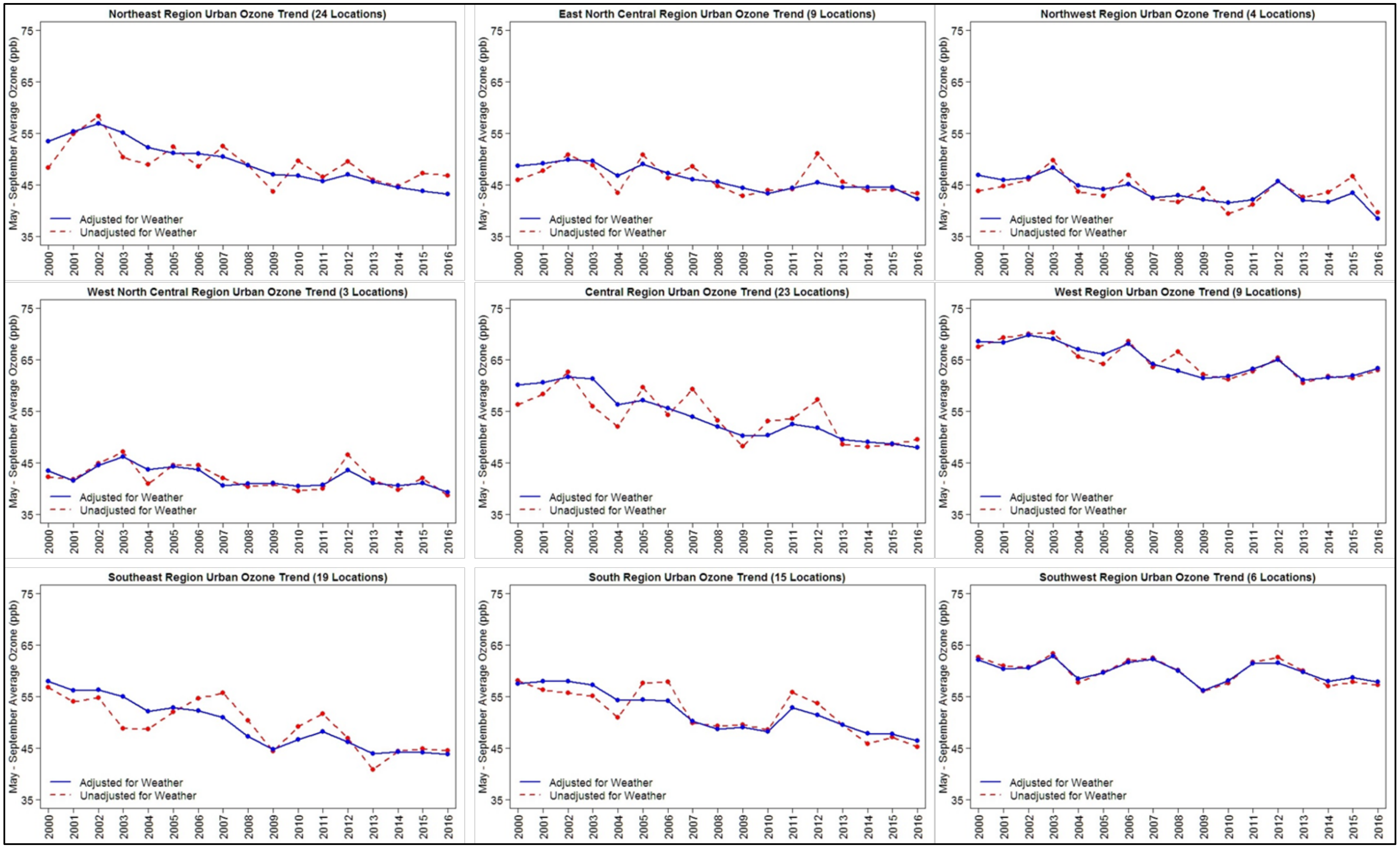

Figure 1: Meteorologically-Adjusted Ozone Trends for NCDC Climate Regions for 2000 through 2016[4]

[4] Data for this analysis shown in Figure 1 was obtained from the EPA's Air-Trends webpage (https://www.epa.gov/air-trends/trends-ozone-adjusted-weather-conditions)

Comments on Step 2 – Identify upwind states that contribute to those downwind air quality problems to warrant further review and analysis

The TCEQ recommends that the EPA use the same grid cells and episode days in the contribution calculation as the design value calculation.

In the 2018 Memo, the EPA has laid out a contribution calculation method that is different from its previous interstate transport evaluations. Although the EPA has moved to using the top ten days (with a minimum of at least 5 days greater than 60 ppb), the days used are the **top ten modeled future year days** as opposed to the top ten modeled base year days used in the calculation of the future year design value (DV_F). In addition, the contribution calculations use the monitor cell value instead of the cell with the maximum daily eight-hour average in the "3x3" matrix surrounding the monitor cell. The EPA has not provided a justification for why the contribution calculation uses different grid-cells and episode days than the DV_F calculation. Not using the same grid cells and episode days is inconsistent with the EPA's own modeling guidance.

The TCEQ recommends modeling at fine grid resolutions (≤ 4 km) for evaluating the transport contributions at coastal (or mountainous) monitors, instead of removing cells from the future design value or contribution calculation.

The land/sea (lake) breeze, shallow inversion layer, and rotating winds of coastal meteorology are difficult for prognostic models to represent, especially at 12 km or coarser grid resolutions. The EPA's approach of removing water cells from the design value and/or contribution calculation without regard to meteorological conditions or systematic model performance biases, could artificially enhance the local production or interstate transport of ozone. Consider the situation where a coastal monitor's highest ozone concentrations generally come from offshore transport from nearby or local sources but the meteorological model's error keeps the highest concentrations just offshore. By removing the water cells from the design value and contribution calculations, the source attribution could focus on long-range transport sources that do not contribute to the highest ozone. The reverse situation could occur as well. The TCEQ encourages EPA to develop a refined approach to accounting for land-water interfaces, including fine grid modeling, rather than arbitrarily removing grid cells from the design value and contribution calculations.

The TCEQ supports a two-step process to determine if upwind states contribute significantly to nonattainment or interfere with maintenance at downwind monitors.

The EPA's approach to determine if upwind states contribute significantly to nonattainment or interfere with maintenance at downwind monitors (Step 2 of the 4-step CSAPR framework) has been to use a quantitative and "bright-line" criterion of 1% of the NAAQS to link downwind monitors to upwind states. The TCEQ has commented several times on the inappropriateness of the 1% of NAAQS[5], especially for the 2015 ozone NAAQS since 1% of the NAAQS is 0.7 ppb

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[5] Comments outlining these arguments were submitted in response to one or more of the following EPA actions:
[Preliminary Interstate Ozone Transport Modeling Data for 2015 ozone NAAQS](#) (submitted 4/5/17);
[Disapproval of Texas SIP for the Interstate Transport for the 2008 ozone NAAQS](#) (submitted 5/11/16); and
[Updated Transport Modeling Data for the 2008 ozone NAAQS](#) (submitted 10/15/17);

which is a very low threshold. In addition, the EPA's approach does not consider the geographical variability of the ozone problem, a consideration that the EPA itself has acknowledged in the 2018 Memo.

The TCEQ encourages the EPA to consider the use of a two-step process to determine if upwind states contribute significantly to nonattainment or interfere with maintenance at downwind monitors. In the first step a screening threshold would be used to identify projected nonattainment and/or maintenance monitors that warrant further review and analysis to determine if upwind states contribute significantly to nonattainment or interfere with maintenance. The screening threshold might be region-specific or state-specified, would be scientifically justified and should account for model performance (i.e., a higher screening threshold could be appropriate).

The first step would be followed by use of a "weight-of-evidence" analysis, similar to the analysis and definition used by the EPA in the NO_X SIP Call (63 Federal Register 57376), that would use a multi-factor approach to determine whether an upwind state contributes significantly to nonattainment or interferes with maintenance at downwind monitors and link downwind monitors to upwind states. The purpose of this step would be to determine if there is a pattern of interstate transport from upwind that impacts the nonattainment/maintenance status of the downwind monitors. A weight-of-evidence approach would allow states to conduct a more comprehensive and tailored approach that accounts for regional factors in determining whether upwind states contribute significantly to nonattainment or interfere with maintenance at downwind monitors. States could use the conceptual model of ozone formation for the monitors under review to tailor their analysis (and subsequent remedies, if needed) and could use techniques such as back-trajectory analysis, direct decoupled method (DDM), modeled future year high-ozone days, etc. If the weight-of-evidence analysis shows that a state contributes to nonattainment or interferes with maintenance at the downwind monitors under review, and thereby "links" the upwind state to the downwind monitor, upwind states can then use additional techniques to determine how much of their contribution is significant.

The TCEQ supports the use of the weight-of-evidence approach only in the context of the "Good Neighbor" provision in the Federal Clean Air Act, i.e., for upwind states identifying and quantifying significant contribution at downwind monitors and not for states with downwind monitors to assign responsibilities to upwind states. States with downwind monitors have other regulatory processes, i.e., 126(b) petition process and informal processes available to raise these concerns.

Comments on Step 3 – Identifying air quality, cost, and emission reduction factors to be evaluated in a multi-factor test to identify emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS at downwind monitors

The TCEQ supports the consideration of the impact of international emissions on projected downwind nonattainment and maintenance monitors in the context of determining the amount of emissions reductions needed from linked upwind states.

With lowering ozone standards, background and international emissions play significant roles in the attainment status of many monitors making it crucial that the EPA undertake a more comprehensive analysis of the ozone problem at projected downwind nonattainment and maintenance monitors when determining/devising the remedy required from impacting upwind states. A key first step would be to identify and quantify the impact of international emissions on future design values of monitors.

The TCEQ suggests that the EPA consider expanding its photochemical modeling domain to include all of the closest international sources – Canada and Mexico. Figure 2 provides an example of a domain of 36 km grid resolution covering all of Canada and Mexico (displayed in red) and a domain of 12 km grid resolution covering the continental United States.

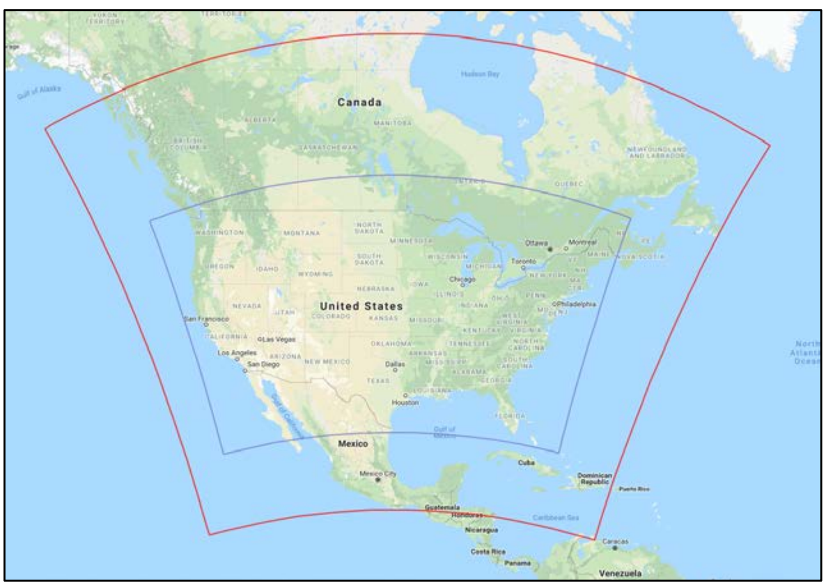

Figure 2: Example Extended Photochemical Modeling Domain Covering Canada and Mexico

While the use of the extended domain in photochemical modeling would account for the impacts of Canada and Mexico, many states also have impacts from Asia that need to be quantified. The quantification of the impact of non-U.S. anthropogenic emissions would aid states and the EPA to understand and account for these impacts while determining significant contributions and not requiring overcontrol of emissions by downwind states.

The TCEQ supports the use of techniques that would result in the equitable distribution of responsibilities among several upwind states that impact a single downwind monitor and minimizes over control.

There are several ways that optimization techniques (e.g. linear programming) could be applied to interstate transport to apportion responsibility among linked states without over-controlling the contributing states as per *Homer City*. The need for such an approach arises because several states may have significant contributions (as determined in Step 2[6]) to a monitor, but reducing contributions from every contributing state to the point that the contribution is no longer significant would in many cases be more than what is required to bring the downwind monitors into attainment. For example, in the modeling presented in the 2018 Memo, for the NY-Richmond monitor (AQS ID: 360850067), the amount of reductions needed for the monitor to reach attainment in the future year is 11.3 ppb (81.3 ppb -70 ppb) whereas the sum of contributions from all "linked" states (using an example of the ozone Significant Impact Level of 1 ppb as the screening threshold) would be 27.94 ppb. Requiring all the upwind linked states to bring their contribution below the screening threshold (and thereby removing close to 22 ppb) would result in over-control.

The EPA should consider the use of optimization techniques to attain objectives such as minimizing total (or maximum) reduction across all contributing states. This optimization would be conducted prior to determining the amount of emissions reductions needed and would only determine the target level of contributed ozone that each upwind state would need to address to ensure that the downwind monitor reaches and maintains the standard. Each state would then be free to find its preferred set of measures to meet its target reduction of contributed ozone rather than applying a one-size-fits-all mandate from the EPA. States could use techniques such as DDM to convert the ozone reduction (ppb) target to a precursor emissions reduction goal (tons).

International contribution could be included in the optimization program as another state. This would spread the required reductions across a larger set of contributors (correctly attributing international contributions to international sources) and offer some relief to contributing states that otherwise would need to make larger reductions to compensate for foreign pollution.

The TCEQ supports alternative considerations in handling responsibilities related to maintenance monitors. Specifically, the TCEQ supports the consideration of downwind states' obligations to install local controls when determining upwind states' responsibilities.

For maintenance monitors, it is inappropriate and unfair to require upwind states to consider or implement controls when the downwind state in which the maintenance monitor is located does not have any obligations to control local emissions. There should first be an evaluation of nearby sources and emissions in the downwind state prior to evaluation of upwind state emissions sources.

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[6] The quantified significant contribution could an amount quantified by states in Step 2 or any other region- or state-determined screening threshold.